

POSSE
HERRERA
RUIZ

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



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Act. 411 PRESENTACION

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Folios: 283



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del año 2010



Industria y Comercio
SUPERINTENDENCIA

DELEGATURA DE NUEVAS CREACIONES

SOLICITUD FASE NACIONAL -PCT

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54. TITULO: COMBINACIONES DE COMPUESTOS ACTIVOS

51. CLASIFICACION INTERNACIONAL:

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A01N 59/02 (2006.01), A01N 59/20 (2006.01), A01P 21/00 (2006.01),
A01P 3/00 (2006.01).),

71. SOLICITANTE:

BAYER INTELLECTUAL PROPERTY GMBH

DOMICILIO:

Alfred Nobel Strasse 10, Monheim ALEMANIA

74. APODERADO: HELENA CAMARGO WILLIAMSON

22. BOGOTÁ D.C., AGOSTO 25 DE 2014



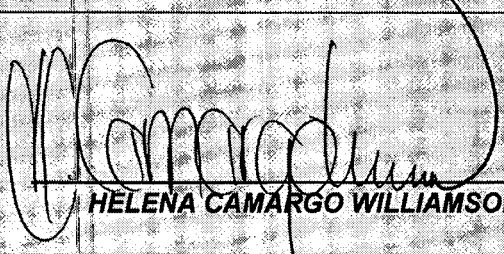
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Act. 411 PRESENTACION Folios: 283

I adhesivo de radicación

DIRECCIÓN DE NUEVAS CREACIONES
SOLICITUD FASE NACIONAL -PCT

1	TIPO DE SOLICITUD	☒ Patente de invención ☒ Capítulo I	☐ Patente de Modelo de Utilidad ☐ Capítulo II
2	DATOS SOLICITUD INTERNACIONAL PCT (86)		
Solicitud Internacional No.		PCT/EP2013/053578	Fecha 22/02/2013
Publicación internacional No.		WO 2013/127704 A1	Fecha 06/09/2013
3	TÍTULO DE LA INVENCIÓN (200 caracteres o espacios máximos)		
COMBINACIONES DE COMPUESTOS ACTIVOS			
4	CLASIFICACIÓN INTERNACIONAL (CIP)		
A01N 43/80 (2006.01), A01N 37/34 (2006.01), A01N 37/38 (2006.01), A01N 37/46 (2006.01), A01N 37/50 (2006.01), A01N 43/40 (2006.01), A01N 43/50 (2006.01), A01N 43/54 (2006.01), A01N 43/56 (2006.01), A01N 43/653 (2006.01), A01N 45/02 (2006.01), A01N 47/12 (2006.01), A01N 47/14 (2006.01), A01N 47/24 (2006.01), A01N 57/12 (2006.01), A01N 59/02 (2006.01), A01N 59/20 (2006.01), A01P 21/00 (2006.01), A01P 3/00 (2006.01).			
SOLICITANTE (S) Esta persona también es inventor. Para datos adicionales utilizar hoja de información complementaria			
APELLIDOS O RAZÓN SOCIAL		NOMBRE	IDENTIFICACIÓN TIPO
BAYER INTELLECTUAL PROPERTY GMBH			
6	DATOS DEL SOLICITANTE		
DIRECCIÓN Alfred Nobel Strasse 10, CIUDAD Monheim DEPARTAMENTO/ESTADO PAÍS DE RESIDENCIA ALEMANIA		No. TELÉFONO CORREO ELECTRÓNICO NACIONALIDAD O LUGAR DE CONSTITUCIÓN ALEMANIA	
7	INVENTOR (ES) Para datos adicionales utilizar hoja de información complementaria		
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DIRECCIÓN DE CORREO ELECTRÓNICO:			
8	DATOS INVENTOR (ES)		
PAÍS RESIDENCIA	DEPARTAMENTO/ESTADO	CIUDAD	DIRECCIÓN
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OTRO(S) SOLICITANTE(S) Y/O (OTRO(S)) INVENTOR(ES)			
☐ Los demás solicitantes y/o (demás) inventores se indican en una hoja a continuación.			
9	☐ REPRESENTANTE LEGAL ☒ APODERADO		
APELLIDOS		NOMBRES	IDENTIFICACIÓN
CAMARGO WILLIAMSON		HELENA	C.C 35.455.268 de Bogota T.P 76985
DIRECCIÓN CARRERA 7 N° 71 – 52, TORRE A, PISO 5		No. TELÉFONO 3257300	
CIUDAD BOGOTÁ		CORREO ELECTRÓNICO helena.camargo@phrlegal.com	
PAÍS COLOMBIA		No. RADICACIÓN DE PROTOCOLO DE PODER GENERAL PODER PROT. 13 102341	
10	DECLARACIONES DE PRIORIDAD ☒ SI ☐ NO		
(33) PAÍS DE ORIGEN		CÓDIGO PAÍS	(31) NÚMERO (32) FECHA (AAAA/MM/DD)
COMUNIDAD EUROPEA			12157090.7 27/02/2012

11	DECLARACIÓN SOBRE USO DE RECURSOS GENÉTICOS O BIOLÓGICOS		
Declaro que el objeto de la presente solicitud de patente fue obtenido a partir de recursos genéticos o biológicos de los que cualquiera de los países miembros de la Comunidad Andina es país de origen.			
☐ SI ☒ NO			
Nota: En caso afirmativo deberá anexar copia del contrato de acceso de recursos genéticos o productos derivados, o certificado o número de registro, expedido por la Autoridad competente.			
12	DECLARACIÓN SOBRE USO DE CONOCIMIENTOS TRADICIONALES		
Declaro que el objeto de la presente solicitud de patente fue obtenido a partir de conocimientos tradicionales de comunidades indígenas, afroamericanas o locales de países miembros de la Comunidad Andina.			
☐ SI ☒ NO			
Nota: En caso afirmativo deberá anexar la licencia o autorización de uso de conocimiento tradicional, o certificado, o número de registro expedido por la Autoridad competente.			
13	REDUCCIÓN DE TASAS		
Declaro que carezco de medios económicos para presentar la solicitud de patente.			
☐ SI ☒ NO			
Nota: En caso de ser persona natural y carecer de medios económicos, y por lo tanto, aplique la reducción de tasas a que se refiere la resolución vigente en tarifas, debe firmar la presente solicitud bajo la gravedad de juramento.			
Micro, pequeñas y medianas empresas ☐			
Universidades públicas o privadas ☐			
Entidades sin ánimo de lucro ☐			
Debe aportar los documentos que se indican en el numeral 17 de anexos			
14	AUTORIZACIÓN DE NOTIFICACIÓN EN LÍNEA ☒ SI ☐ NO		
Manifiesto que he leído y entendido perfectamente los términos y condiciones de uso de medios electrónicos para las notificaciones en línea a través de Internet de los actos administrativos proferidos por la Superintendencia de Industria y Comercio que deben ser notificados personalmente y, en consecuencia, autorizo el servicio de notificación a través de internet.			
15	COMPROBANTE DE PAGO O PAGO ELECTRONICO	N°	Fecha
16	FIRMA DEL SOLICITANTE, DEL APODERADO O DEL REPRESENTANTE LEGAL Junto a cada firma, indicar el nombre del firmante y su calidad (si tal calidad no es obvia al leer el petitorio)		
 HELENA CAMARGO WILLIAMSON			
17	ANEXOS		
Documentación Técnica Solicitud Internacional en castellano		Documentación Jurídica	
1. ☒ Descripción N° de folios:		9. ☒ Poderes, si fuera el caso, PODER PROT 13 102341	
2. ☒ Reivindicaciones N° Reivindicaciones:		10. ☐ Documento que legalmente pruebe la cesión del inventor al solicitante o a su causante.	
3. ☒ Dibujos y/o figuras N° folios:		11. ☐ Copia del contrato de acceso de recursos genéticos o productos derivados, certificado o número de registro, si fuera el caso.	
4. ☒ Resumen.		12. ☐ Copia de la licencia o autorización de Conocimientos Tradicionales, certificado o número de registro, si fuera el caso.	
5. ☐ Certificado de depósito de material biológico si fuera el caso.		13. Reducción de tasas	
6. ☐ Listado de secuencias de nucleótidos y/o aminoácidos en forma digital si fuera el caso.		Micro, pequeñas o medianas empresas	
7. ☒ Arte final 12 x 12.		☐ Copia simple de la declaración de renta del año inmediatamente anterior, o en su defecto prueba documental idónea.	
8. ☐ Anexo formato digital.		☐ Documento de constancia de cumplimiento con lo establecido en la ley 905 de 2004.	
		Universidades públicas o privadas	
		☐ Copia acto de reconocimiento institucional emitido por el Ministerio de Educación	
		Entidades sin ánimo de lucro	
		☐ Copia de registro vigente en Cámara de comercio.	
		☐ Hoja de información complementaria.	
		☐ Otros, especificar	
		14. ☒ Comprobante de pago de la tasa de presentación de la solicitud.	
		15. ☐ Comprobante de pago por reivindicación de prioridad.	
		16. ☐ Comprobante de pago de la tasa por concepto de excedente de palabras en la publicación.	
		17. ☐ Comprobante de pago por reivindicación adicional a 10.	

Combinaciones de compuestos activos

La presente invención se refiere a combinaciones de compuestos activos, en particular dentro de una composición fungicida, que comprende (A) una tiazolilisoaxazolina de fórmula (I) y un compuesto activo como fungicida adicional (B). Además, la invención se refiere a un procedimiento para controlar de forma curativa o preventiva los hongos fitopatogénicos de plantas o cultivos, al uso de una combinación de acuerdo con la invención para el tratamiento de la semilla, a un procedimiento para proteger una semilla y, además, a la semilla tratada.

Ya se sabe que se pueden usar determinadas tiazolilisoaxazolinas como fungicidas (veánse los documentos WO2008/013925, WO2008/013622, WO2009/094407, WO2009/094445, WO2009/055514, WO2010/065579, WO2011/85170, y WO 2011/076699).

Debido a que las demandas ecológicas y económicas realizadas sobre los ingredientes activos modernos, por ejemplo fungicidas, están aumentando de forma constante, por ejemplo con respecto al espectro de actividad, toxicidad, selectividad, tasa de aplicación, formación de residuos y fabricación favorable, y que también puede haber problemas, por ejemplo, con las resistencias, existe una necesidad constante de desarrollar nuevas composiciones fungicidas que presenten ventajas con respecto a las composiciones conocidos al menos en algunas áreas.

La presente invención proporciona combinaciones/composiciones de compuestos activos que en algunos aspectos, al menos, logran el objetivo indicado.

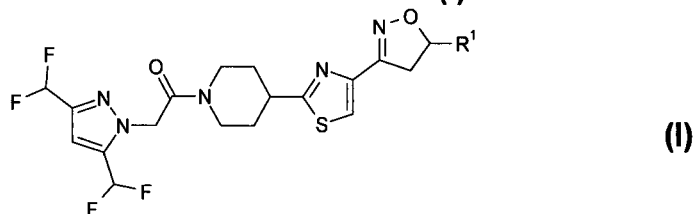
En la actualidad se ha hallado, de modo sorprendente que las combinaciones de acuerdo con la invención no solo producen la mejora aditiva del espectro de acción con respecto a los fitopatógenos que se van a controlar que era de esperar en principio, sino que se obtiene un efecto sinérgico que extiende el intervalo de acción del componente (A) y del componente (B) de dos maneras. En primer lugar, se reducen las tasas de aplicación del componente (A) y del componente (B) mientras que la acción continúa siendo igualmente buena. En segundo lugar, la combinación aún obtiene un alto grado de control fitopatogénico incluso cuando los dos compuestos individuales han sido

totalmente ineficaces en tal intervalo de tasas de aplicación bajas. Esto permite, por una parte, una sustancial ampliación del espectro de fitopatógenos que se pueden controlar y, por otra parte, un aumento de la seguridad en el uso.

Además de la actividad sinérgica fungicida, las combinaciones de compuestos activos
5 de acuerdo con la invención también tienen propiedades sorprendentes que, en un sentido más amplio, se pueden llamar sinérgicas, tal como, por ejemplo: ampliación del espectro de actividad a otros fitopatógenos, por ejemplo a cepas resistentes de enfermedades de plantas; menores tasas de aplicación de los compuestos activos; control suficiente de las plagas usando las combinaciones de compuestos activos de
10 acuerdo con la invención incluso a tasas de aplicación en las que los compuestos individuales no muestran ninguna o prácticamente ninguna actividad; comportamiento ventajoso durante la formulación o durante el uso, por ejemplo durante la molienda, el tamizado, la emulsión, la disolución o la dispersión; aumento de la estabilidad de almacenamiento y estabilidad a la luz; formación de residuos ventajosa; mejora del
15 comportamiento toxicológico o ecotoxicológico; mejora de las propiedades de la planta, por ejemplo mejor crecimiento, aumento de los rendimientos de la cosecha, un sistema de raíces mejor desarrollado, un área foliar más grande, hojas más verdes, brotes más fuertes, menor requerimiento de semillas, fototoxicidad más baja, movilización del sistema de defensa de la planta, buena compatibilidad con las plantas. En
20 consecuencia, el uso de las combinaciones o composiciones de compuestos activos de acuerdo con la invención contribuye considerablemente a mantener sano el cereal joven, lo que aumenta, por ejemplo, la supervivencia invernal de la semilla de cereal tratada, y también protege la calidad y rendimiento. Además, las combinaciones de compuestos activos de acuerdo con la invención pueden contribuir a la mejora de la
25 acción sistémica. Incluso si los compuestos individuales de la combinación no tienen propiedades sistémicas suficientes, las combinaciones de compuestos activos de acuerdo con la invención aún pueden tener esta propiedad. De una manera similar, las combinaciones de compuestos activos de acuerdo con la invención pueden producir una mayor persistencia de la acción fungicida.

Por consiguiente, la presente invención proporciona una combinación que comprende:

(A) al menos una tiazolilisoxazolina de fórmula (I)



en la que

5 R¹ representa fenilo, que está al menos sustituido con un metilsulfoniloxi y opcionalmente está adicionalmente sustituido con sustituyentes seleccionados del grupo que consiste en metilo, metoxi, flúor o cloro,

o una sal aceptable para uso agroquímico de la misma,

y

10 (B) al menos un compuesto activo adicional seleccionado de los siguientes grupos

- (1) inhibidores de la síntesis de ergosterol,
- (2) inhibidores de la cadena respiratoria en el complejo I o II,
- (3) inhibidores de la cadena respiratoria en el complejo III,
- (4) inhibidores de la mitosis y división celular,
- 15 (5) compuestos capaces de tener una acción en varios sitios,
- (6) compuestos capaces de inducir una defensa en el huésped,
- (7) inhibidores de la biosíntesis de aminoácidos y/o proteínas,
- (8) inhibidores de la producción de ATP,
- (9) inhibidores de la síntesis de la pared celular,
- 20 (10) inhibidores de la síntesis de lípidos y membrana,
- (11) inhibidores de la biosíntesis de melanina,
- (12) inhibidores de la síntesis de ácido nucleico,
- (13) inhibidores de la transducción de señales,
- (14) compuestos capaces de actuar como desacoplante,
- 25 (15) otros fungicidas.

Se da preferencia a las combinaciones que comprenden al menos un compuesto de la fórmula (I) seleccionado del grupo que consiste en

- (I-1) metanosulfonato de 2-{3-[2-(1-{[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}fenilo,
- (I-2) metanosulfonato de 2-{3-[2-(1-{[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}-6-fluorofenilo,
- 5 (I-3) metanosulfonato de 2-{3-[2-(1-{[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}-3-clorofenilo,
- (I-4) metanosulfonato de 2-{3-[2-(1-{[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}-5-metilfenilo,
- (I-5) metanosulfonato de 2-{3-[2-(1-{[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}-5-clorofenilo,
- 10 (I-6) metanosulfonato de 2-{3-[2-(1-{[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}-4-metilfenilo,
- (I-7) metanosulfonato de 2-{3-[2-(1-{[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}-4-clorofenilo,
- 15 (I-8) metanosulfonato de 2-{3-[2-(1-{[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}-6-clorofenilo.

En la siguiente descripción los números entre paréntesis detrás de un nombre de compuesto representan el N° de registro CAS de dicho compuesto.

También se da preferencia a las combinaciones que comprenden al menos un
20 compuesto activo adicional (B) seleccionado de los siguientes grupos:

- (1) Inhibidores de la biosíntesis de ergosterol por ejemplo (1.1) aldimorf (1704-28-5), (1.2) azaconazol (60207-31-0), (1.3) bitertanol (55179-31-2), (1.4) bromuconazol (116255-48-2), (1.5) ciproconazol (113096-99-4), (1.6) diclobutrazol (75736-33-3), (1.7) difenoconazol (119446-68-3), (1.8) diniconazol (83657-24-3), (1.9) diniconazol-M
25 (83657-18-5), (1.10) dodemorf (1593-77-7), (1.11) acetato de dodemorf (31717-87-0), (1.12) epoxiconazol (106325-08-0), (1.13) etaconazol (60207-93-4), (1.14) fenarimol (60168-88-9), (1.15) fenbuconazol (114369-43-6), (1.16) fenhexamid (126833-17-8), (1.17) fenpropidin (67306-00-7), (1.18) fenpropimorf (67306-03-0), (1.19) fluquinconazol (136426-54-5), (1.20) flurprimidol (56425-91-3), (1.21) flusilazol (85509-

19-9), (1.22) flutriafol (76674-21-0), (1.23) furconazol (112839-33-5), (1.24) furconazol-
cis (112839-32-4), (1.25) hexaconazol (79983-71-4), (1.26) imazalilo (60534-80-7),
(1.27) sulfato de imazalilo (58594-72-2), (1.28) imibenconazol (86598-92-7), (1.29)
ipconazol (125225-28-7), (1.30) metconazol (125116-23-6), (1.31) miclobutanilo
5 (88671-89-0), (1.32) naftifina (65472-88-0), (1.33) nuarimol (63284-71-9), (1.34)
oxpoconazol (174212-12-5), (1.35) paclobutrazol (76738-62-0), (1.36) pefurazoato
(101903-30-4), (1.37) penconazol (66246-88-6), (1.38) piperalina (3478-94-2), (1.39)
procloraz (67747-09-5), (1.40) propiconazol (60207-90-1), (1.41) protioconazol
(178928-70-6), (1.42) piributicarb (88678-67-5), (1.43) pirifenox (88283-41-4), (1.44)
10 quinconazol (103970-75-8), (1.45) simeconazol (149508-90-7), (1.46) espiroxamina
(118134-30-8), (1.47) tebuconazol (107534-96-3), (1.48) terbinafina (91161-71-6),
(1.49) tetraconazol (112281-77-3), (1.50) triadimefon (43121-43-3), (1.51) triadimenol
(89482-17-7), (1.52) tridemorf (81412-43-3), (1.53) triflumizol (68694-11-1), (1.54)
triforina (26644-46-2), (1.55) triticonazol (131983-72-7), (1.56) uniconazol (83657-22-
15 1), (1.57) uniconazol-p (83657-17-4), (1.58) viniconazol (77174-66-4), (1.59)
voriconazol (137234-62-9), (1.60) 1-(4-clorofenil)-2-(1H-1,2,4-triazol-1-il)cicloheptanol
(129586-32-9), (1.61) 1-(2,2-dimetil-2,3-dihidro-1H-inden-1-il)-1H-imidazol-5-carboxilato
de metilo (110323-95-0), (1.62) N'-{5-(difluorometil)-2-metil-4-[3-
(trimetilsilil)propoxi]fenil}-N-etil-N-metilimidoformamida, (1.63) N-etil-N-metil-N'-{2-metil-
20 5-(trifluorometil)-4-[3-(trimetilsilil)propoxi]fenil}imidoformamida, (1.64) 1H-imidazol-1-
carbotioato de O-[1-(4-metoxifenoxi)-3,3-dimetilbutan-2-il] (111226-71-2).

(2) inhibidores de la cadena respiratoria en el complejo I o II, por ejemplo (2.1) bixafeno
(581809-46-3), (2.2) boscalida (188425-85-6), (2.3) carboxina (5234-68-4), (2.4)
diflumentorim (130339-07-0), (2.5) fenfuram (24691-80-3), (2.6) fluopiram (658066-35-
25 4), (2.7) flutolanilo (66332-96-5), (2.8) fluxapiroxad (907204-31-3), (2.9) furametpir
(123572-88-3), (2.10) furmeciclox (60568-05-0), (2.11) isopirazam (mezcla de
racemato sin-epimérico 1RS,4SR,9RS y racemato anti-epimérico 1RS,4SR,9SR)
(881685-58-1), (2.12) isopirazam (racemato anti-epimérico 1RS,4SR,9SR), (2.13)
isopirazam (enantiómero anti-epimérico 1R,4S,9S), (2.14) isopirazam (enantiómero

anti-epimérico 1S,4R,9R), (2.15) isopirazam (racemato sin-epimérico 1RS,4SR,9RS),
(2.16) isopirazam (enantiómero sin-epimérico 1R,4S,9R), (2.17) isopirazam
(enantiómero sin-epimérico 1S,4R,9S), (2.18) mepronilo (55814-41-0), (2.19)
oxicarboxina (5259-88-1), (2.20) penflufeno (494793-67-8), (2.21) pentiopirad (183675-
5 82-3), (2.22) sedaxano (874967-67-6), (2.23) tfluzamida (130000-40-7), (2.24) 1-metil-
N-[2-(1,1,2,2-tetrafluoroetoxi)fenil]-3-(trifluorometil)-1H-pirazol-4-carboxamida, (2.25) 3-
(difluorometil)-1-metil-N-[2-(1,1,2,2-tetrafluoroetoxi)fenil]-1H-pirazol-4-carboxamida,
(2.26) 3-(difluorometil)-N-[4-fluoro-2-(1,1,2,3,3,3-hexafluoropropoxi)fenil]-1-metil-1H-
pirazol-4-carboxamida, (2.27) N-[1-(2,4-diclorofenil)-1-metoxipropan-2-il]-3-
10 (difluorometil)-1-metil-1H-pirazol-4-carboxamida (1092400-95-7), (2.28) 5,8-difluoro-N-
[2-(2-fluoro-4-[[4-(trifluorometil)piridin-2-il]oxi]fenil)etil]quinazolin-4-amina (1210070-84-
0), (2.29) benzovindiflupir, (2.30) N-[(1S,4R)-9-(diclorometilen)-1,2,3,4-tetrahidro-1,4-
metanonaftalen-5-il]-3-(difluorometil)-1-metil-1H-pirazol-4-carboxamida, (2.31) N-
[(1R,4S)-9-(diclorometilen)-1,2,3,4-tetrahidro-1,4-metanonaftalen-5-il]-3-(difluorometil)-
15 1-metil-1H-pirazol-4-carboxamida, (2.32) 3-(difluorometil)-1-metil-N-(1,1,3-trimetil-2,3-
dihidro-1H-inden-4-il)-1H-pirazol-4-carboxamida, (2.33) 1,3,5-trimetil-N-(1,1,3-trimetil-
2,3-dihidro-1H-inden-4-il)-1H-pirazol-4-carboxamida, (2.34) 1-metil-3-(trifluorometil)-N-
(1,3,3-trimetil-2,3-dihidro-1H-inden-4-il)-1H-pirazol-4-carboxamida, (2.35) 1-metil-3-
(trifluorometil)-N-[(1S)-1,3,3-trimetil-2,3-dihidro-1H-inden-4-il]-1H-pirazol-4-
20 carboxamida, (2.36) 1-Metil-3-(trifluorometil)-N-[(1R)-1,3,3-trimetil-2,3-dihidro-1H-inden-
4-il]-1H-pirazol-4-carboxamida, (2.37) 3-(difluorometil)-1-metil-N-[(3S)-1,1,3-trimetil-2,3-
dihidro-1H-inden-4-il]-1H-pirazol-4-carboxamida, (2.38) 3-(difluorometil)-1-metil-N-
[(3R)-1,1,3-trimetil-2,3-dihidro-1H-inden-4-il]-1H-pirazol-4-carboxamida, (2.39) 1,3,5-
trimetil-N-[(3R)-1,1,3-trimetil-2,3-dihidro-1H-inden-4-il]-1H-pirazol-4-carboxamida,
25 (2.40) 1,3,5-trimetil-N-[(3S)-1,1,3-trimetil-2,3-dihidro-1H-inden-4-il]-1H-pirazol-4-
carboxamida.

(3) inhibidores de la cadena respiratoria en el complejo III, por ejemplo (3.1)
ametotradina (865318-97-4), (3.2) amisulbrom (348635-87-0), (3.3) azoxistrobina
(131860-33-8), (3.4) ciazofamida (120116-88-3), (3.5) coumetoxistrobina (850881-30-

- 0), (3.6) coumoxistrobina (850881-70-8), (3.7) dimoxistrobina (141600-52-4), (3.8) enestroburina (238410-11-2), (3.9) famoxadona (131807-57-3), (3.10) fenamidona (161326-34-7), (3.11) fenoxistrobina (918162-02-4), (3.12) fluoxastrobina (361377-29-9), (3.13) kresoxim-metilo (143390-89-0), (3.14) metominostrobin (133408-50-1),
- 5 (3.15) orisastrobina (189892-69-1), (3.16) picoxistrobina (117428-22-5), (3.17) piraclostrobina (175013-18-0), (3.18) pirametostrobin (915410-70-7), (3.19) piraxistrobina (862588-11-2), (3.20) piribencarb (799247-52-2), (3.21) triclopiricarb (902760-40-1), (3.22) trifloxistrobina (141517-21-7), (3.23) (2E)-2-(2-[[6-(3-cloro-2-metilfenoxi)-5-fluoropirimidin-4-il]oxi]fenil)-2-(metoxiimino)-N-metiletanamida, (3.24)
- 10 (2E)-2-(metoxiimino)-N-metil-2-(2-[[[(1E)-1-[3-(trifluorometil)fenilo]etiliden]amino]oxi]metil]fenil)etanamida, (3.25) (2E)-2-(metoxiimino)-N-metil-2-{2-[(E)-1-[3-(trifluorometil)fenilo]etoxi]imino]metil]fenil}etanamida (158169-73-4), (3.26) (2E)-2-{2-[[[(1E)-1-(3-[(E)-1-fluoro-2-feniletetil]oxi]fenil)etiliden]amino]oxi]metil]fenil}-2-(metoxiimino)-N-metiletanamida (326896-28-0), (3.27) (2E)-2-{2-[[[(2E,3E)-4-(2,6-diclorofenil)but-3-en-2-iliden]amino]oxi]metil]fenil}-2-(metoxiimino)-N-metiletanamida,
- 15 (3.28) 2-cloro-N-(1,1,3-trimetil-2,3-dihidro-1H-inden-4-il)piridin-3-carboxamida (119899-14-8), (3.29) 5-metoxi-2-metil-4-(2-[[[(1E)-1-[3-(trifluorometil)fenilo]etiliden]amino]oxi]metil]fenil)-2,4-dihidro-3H-1,2,4-triazol-3-ona,
- 20 (3.30) (2E)-2-{2-[[[ciclopropil[(4-metoxifenil)imino]metil]sulfanil]metil]fenil}-3-metoxiprop-2-enoato de metilo (149601-03-6), (3.31) N-(3-etil-3,5,5-trimetilciclohexil)-3-(formilamino)-2-hidroxibenzamida (226551-21-9), (3.32) 2-{2-[(2,5-dimetilfenoxi)metil]fenil}-2-metoxi-N-metilacetamida (173662-97-0), (3.33) (2R)-2-{2-[(2,5-dimetilfenoxi)metil]fenil}-2-metoxi-N-metilacetamida (394657-24-0).
- 25 (4) Inhibidores de la mitosis y la división celular, por ejemplo (4.1) benomilo (17804-35-2), (4.2) carbendazim (10605-21-7), (4.3) clorfenazol (3574-96-7), (4.4) dietofencarb (87130-20-9), (4.5) etaboxam (162650-77-3), (4.6) fluopicolida (239110-15-7), (4.7) fuberidazol (3878-19-1), (4.8) pencicuron (66063-05-6), (4.9) tiabendazol (148-79-8), (4.10) tiofanato-metilo (23564-05-8), (4.11) tiofanato (23564-06-9), (4.12) zoxamida

(156052-68-5), (4.13) 5-cloro-7-(4-metilpiperidin-1-il)-6-(2,4,6-trifluorofenil)[1,2,4]triazolo[1,5-a]pirimidina (214706-53-3), (4.14) 3-cloro-5-(6-cloropiridin-3-il)-6-metil-4-(2,4,6-trifluorofenil)piridazina (1002756-87-7).

(5) Compuestos capaces de tener una acción en varios sitios, como por ejemplo (5.1) mezcla de Burdeos (8011-63-0), (5.2) captafol (2425-06-1), (5.3) captano (133-06-2), (5.4) clorotalonilo (1897-45-6), (5.5) hidróxido de cobre (20427-59-2), (5.6) naftenato de cobre (1338-02-9), (5.7) óxido de cobre (1317-39-1), (5.8) oxiclورو de cobre (1332-40-7), (5.9) sulfato de cobre(2+) (7758-98-7), (5.10) diclofluanida (1085-98-9), (5.11) ditianona (3347-22-6), (5.12) dodina (2439-10-3), (5.13) domina base libre, (5.14) ferbam (14484-64-1), (5.15) fluorofolpet (719-96-0), (5.16) folpet (133-07-3), (5.17) guazatina (108173-90-6), (5.18) acetato de guazatina, (5.19) iminocadina (13516-27-3), (5.20) albesilato de iminocadina (169202-06-6), (5.21) triacetato de iminocadina (57520-17-9), (5.22) mancopper (53988-93-5), (5.23) mancozeb (8018-01-7), (5.24) maneb (12427-38-2), (5.25) metiram (9006-42-2), (5.26) metiram zinc (9006-42-2), (5.27) oxina-cobre (10380-28-6), (5.28) propamidina (104-32-5), (5.29) propineb (12071-83-9), (5.30) azufre y preparaciones de azufre que incluyen poli(sulfuro de calcio) (7704-34-9), (5.31) tiram (137-26-8), (5.32) tolilfluanida (731-27-1), (5.33) zineb (12122-67-7), (5.34) ziram (137-30-4).

(6) Compuestos capaces de inducir una defensa en el huésped, como por ejemplo (6.1) acibenzolar-S-metilo (135158-54-2), (6.2) isotianilo (224049-04-1), (6.3) probenazol (27605-76-1), (6.4) tiadinilo (223580-51-6).

(7) Inhibidores de la biosíntesis de aminoácidos y/o proteína, por ejemplo (7.1) andoprim (23951-85-1), (7.2) blasticidina-S (2079-00-7), (7.3) ciprodinilo (121552-61-2), (7.4) kasugamicina (6980-18-3), (7.5) hidrato de clorhidrato de kasugamicina (19408-46-9), (7.6) mepanipirim (110235-47-7), (7.7) pirimetanilo (53112-28-0), (7.8) 3-(5-fluoro-3,3,4,4-tetrametil-3,4-dihidroisoquinolin-1-il)quinolina (861647-32-7).

(8) Inhibidores de la producción de ATP, por ejemplo (8.1) acetato de fentina (900-95-8), (8.2) cloruro de fentina (639-58-7), (8.3) hidróxido de fentina (76-87-9), (8.4) siltiofam (175217-20-6).

(9) Inhibidores de la síntesis de pared celular, por ejemplo (9.1) bentiavalicarb (177406-68-7), (9.2) dimetomorf (110488-70-5), (9.3) flumorf (211867-47-9), (9.4) iprovalicarb (140923-17-7), (9.5) mandipropamid (374726-62-2), (9.6) polioxinas (111113-80-7), (9.7) polioxorim (22976-86-9), (9.8) validamicina A (37248-47-8), (9.9) valifenalato (283159-94-4; 283159-90-0).

(10) Inhibidores de la síntesis de lípidos y de la membrana, por ejemplo (10.1) bifenilo (92-52-4), (10.2) cloroneb (2675-77-6), (10.3) dicloran (99-30-9), (10.4) edifenfós (17109-49-8), (10.5) etridiazol (2593-15-9), (10.6) yodocarb (55406-53-6), (10.7) iprobenfós (26087-47-8), (10.8) isoprotiolano (50512-35-1), (10.9) propamocarb (25606-41-1), (10.10) clorhidrato de propamocarb (25606-41-1), (10.11) protiocarb (19622-08-3), (10.12) pirazofós (13457-18-6), (10.13) quintozeno (82-68-8), (10.14) tecnazeno (117-18-0), (10.15) tolclofós-metilo (57018-04-9).

(11) Inhibidores de la biosíntesis de melanina, por ejemplo (11.1) carpropamida (104030-54-8), (11.2) diclocimet (139920-32-4), (11.3) fenoxanilo (115852-48-7), (11.4) ftalida (27355-22-2), (11.5) piroquilona (57369-32-1), (11.6) triciclazol (41814-78-2), (11.7) {3-metil-1-[(4-metilbenzoil)amino]butan-2-il}carbamato de 2,2,2-trifluoroetilo (851524-22-6).

(12) Inhibidores de la síntesis de ácidos nucleicos, por ejemplo (12.1) benalaxilo (71626-11-4), (12.2) benalaxil-M (kiralaxilo) (98243-83-5), (12.3) bupirimato (41483-43-6), (12.4) clozilacon (67932-85-8), (12.5) dimetirimol (5221-53-4), (12.6) etirimol (23947-60-6), (12.7) furalaxilo (57646-30-7), (12.8) himexazol (10004-44-1), (12.9) metalaxilo (57837-19-1), (12.10) metalaxil-M (mefenoxam) (70630-17-0), (12.11) ofurace (58810-48-3), (12.12) oxadixilo (77732-09-3), (12.13) ácido oxolínico (14698-29-4).

(13) Inhibidores de la transducción de señales, por ejemplo (13.1) clozolinato (84332-86-5), (13.2) fenpiclonilo (74738-17-3), (13.3) fludioxonilo (131341-86-1), (13.4) iprodiona (36734-19-7), (13.5) procimidona (32809-16-8), (13.6) quinoxifeno (124495-18-7), (13.7) vinclozolina (50471-44-8).

- (14) Compuestos capaces de actuar como un desacoplante, como por ejemplo (14.1) binapacril (485-31-4), (14.2) dinocap (131-72-6), (14.3) ferimzona (89269-64-7), (14.4) fluazinam (79622-59-6), (14.5) meptildinocap (131-72-6).
- (15) Otros compuestos, como por ejemplo (15.1) bentiazol (21564-17-0), (15.2) betoxazina (163269-30-5), (15.3) capsimicina (70694-08-5), (15.4) carvona (99-49-0), (15.5) quinometionato (2439-01-2), (15.6) piriofenona (clazafenona) (688046-61-9), (15.7) cufraneb (11096-18-7), (15.8) ciflufenamida (180409-60-3), (15.9) cimoxanilo (57966-95-7), (15.10) ciprosulfamida (221667-31-8), (15.11) dazomet (533-74-4), (15.12) debacarb (62732-91-6), (15.13) diclorofeno (97-23-4), (15.14) diclomezina (62865-36-5), (15.15) difenzoquat (49866-87-7), (15.16) metilsulfato de difenzoquat (43222-48-6), (15.17) difenilamina (122-39-4), (15.18) ecomato, (15.19) fenpirazamina (473798-59-3), (15.20) flumetover (154025-04-4), (15.21) fluoroimida (41205-21-4), (15.22) flusulfamida (106917-52-6), (15.23) flutianilo (304900-25-2), (15.24) fosetil-aluminio (39148-24-8), (15.25) fosetil-calcio, (15.26) fosetil-sodio (39148-16-8), (15.27) hexaclorobenceno (118-74-1), (15.28) irumamicina (81604-73-1), (15.29) metasulfocarb (66952-49-6), (15.30) isocianato de metilo (556-61-6), (15.31) metrafenona (220899-03-6), (15.32) mildiomicina (67527-71-3), (15.33) natamicina (7681-93-8), (15.34) dimetilditiocarbamato de níquel (15521-65-0), (15.35) nitrotal-isopropilo (10552-74-6), (15.36) octilinona (26530-20-1), (15.37) oxamocarb (917242-12-7), (15.38) oxifentiina (34407-87-9), (15.39) pentaclorofenol y sales (87-86-5), (15.40) fenotrina, (15.41) ácido fosforoso y sus sales (13598-36-2), (15.42) fosetilato de propamocarb, (15.43) propanosina-sodio (88498-02-6), (15.44) proquinazid (189278-12-4), (15.45) pirimorf (868390-90-3), (15.45e) (2E)-3-(4-terc-butilfenil)-3-(2-cloropiridin-4-il)-1-(morfolin-4-il)prop-2-en-1-ona (1231776-28-5), (15.45z) (2Z)-3-(4-terc-butilfenil)-3-(2-cloropiridin-4-il)-1-(morfolin-4-il)prop-2-en-1-ona (1231776-29-6), (15.46) pirrolnitrina (1018-71-9), (15.47) tebufloquina (376645-78-2), (15.48) tecloftalam (76280-91-6), (15.49) tolnifanida (304911-98-6), (15.50) triazóxido (72459-58-6), (15.51) triclamida (70193-21-4), (15.52) zarilamida (84527-51-5), (15.53) 2-metilpropanoato de (3S,6S,7R,8R)-8-bencil-3-[(3-[(isobutiriloxi)metoxi]-4-metoxipiridin-

- 2-il]carbonil)amino]-6-metil-4,9-dioxo-1,5-dioxonan-7-ilo (517875-34-2), (15.54) 1-(4-{4-[(5R)-5-(2,6-difluorofenil)-4,5-dihidro-1,2-oxazol-3-il]-1,3-tiazol-2-il}piperidin-1-il)-2-[5-metil-3-(trifluorometil)-1H-pirazol-1-il]etanona (1003319-79-6), (15.55) 1-(4-{4-[(5S)-5-(2,6-difluorofenil)-4,5-dihidro-1,2-oxazol-3-il]-1,3-tiazol-2-il}piperidin-1-il)-2-[5-metil-3-(trifluorometil)-1H-pirazol-1-il]etanona (1003319-80-9), (15.56) 1-(4-{4-[5-(2,6-difluorofenil)-4,5-dihidro-1,2-oxazol-3-il]-1,3-tiazol-2-il}piperidin-1-il)-2-[5-metil-3-(trifluorometil)-1H-pirazol-1-il]etanona (1003318-67-9), (15.57) 1H-imidazol-1-carboxilato de 1-(4-metoxifenoxi)-3,3-dimetilbutan-2-ilo (111227-17-9), (15.58) 2,3,5,6-tetracloro-4-(metilsulfonil)piridina (13108-52-6), (15.59) 2,3-dibutil-6-clorotieno[2,3-d]pirimidin-4(3H)-ona (221451-58-7), (15.60) 2,6-dimetil-1H,5H-[1,4]ditiino[2,3-c:5,6-c']dipirrol-1,3,5,7(2H,6H)-tetrona, (15.61) 2-[5-metil-3-(trifluorometil)-1H-pirazol-1-il]-1-(4-{4-[(5R)-5-fenil-4,5-dihidro-1,2-oxazol-3-il]-1,3-tiazol-2-il}piperidin-1-il)etanona (1003316-53-7), (15.62) 2-[5-metil-3-(trifluorometil)-1H-pirazol-1-il]-1-(4-{4-[(5S)-5-fenilo-4,5-dihidro-1,2-oxazol-3-il]-1,3-tiazol-2-il}piperidin-1-il)etanona (1003316-54-8), (15.63) 2-[5-metil-3-(trifluorometil)-1H-pirazol-1-il]-1-{4-[4-(5-fenilo-4,5-dihidro-1,2-oxazol-3-il)-1,3-tiazol-2-il]piperidin-1-il}etanona (1003316-51-5), (15.64) 2-butoxi-6-yodo-3-propil-4H-cromen-4-ona, (15.65) 2-cloro-5-[2-cloro-1-(2,6-difluoro-4-metoxifenil)-4-metil-1H-imidazol-5-il]piridina, (15.66) 2-fenilfenol y sales (90-43-7), (15.67) 3-(4,4,5-trifluoro-3,3-dimetil-3,4-dihidroisoquinolin-1-il)quinolina (861647-85-0), (15.68) 3,4,5-tricloropiridina-2,6-dicarbonitrilo (17824-85-0), (15.69) 3-[5-(4-clorofenil)-2,3-dimetil-1,2-oxazolidin-3-il]piridina, (15.70) 3-cloro-5-(4-clorofenil)-4-(2,6-difluorofenil)-6-metilpiridazina, (15.71) 4-(4-clorofenil)-5-(2,6-difluorofenil)-3,6-dimetilpiridazina, (15.72) 5-amino-1,3,4-tiadiazol-2-tiol, (15.73) 5-cloro-N'-fenilo-N'-(prop-2-in-1-il)tiofene-2-sulfonohidrazida (134-31-6), (15.74) 5-fluoro-2-[(4-fluorobencil)oxi]pirimidin-4-amina (1174376-11-4), (15.75) 5-fluoro-2-[(4-metilbencil)oxi]pirimidin-4-amina (1174376-25-0), (15.76) 5-metil-6-octil[1,2,4]triazolo[1,5-a]pirimidin-7-amina, (15.77) (2Z)-3-amino-2-ciano-3-fenilprop-2-enoato de etilo, (15.78) N'-(4-{[3-(4-clorobencil)-1,2,4-tiadiazol-5-il]oxi}-2,5-dimetilfenil)-N-etil-N-metilimidoformamida, (15.79) N-(4-clorobencil)-3-[3-metoxi-4-(prop-2-i-1-

- iloxi)fenilo]propanamida, (15.80) N-[(4-clorofenil)(ciano)metil]-3-[3-metoxi-4-(prop-2-in-1-iloxi)fenilo]propanamida, (15.81) N-[(5-bromo-3-cloropiridin-2-il)metil]-2,4-dicloropiridina-3-carboxamida, (15.82) N-[1-(5-bromo-3-cloropiridin-2-il)etil]-2,4-dicloropiridina-3-carboxamida, (15.83) N-[1-(5-bromo-3-cloropiridin-2-il)etil]-2-fluoro-4-iodopiridina-3-carboxamida, (15.84) N-[(E)-[(ciclopropilmetoxi)imino][6-(difluorometoxi)-2,3-difluorofenil]metil]-2-fenilacetamida (221201-92-9), (15.85) N-[(Z)-[(ciclopropilmetoxi)imino][6-(difluorometoxi)-2,3-difluorofenil]metil]-2-fenilacetamida (221201-92-9), (15.86) N'-{4-[(3-terc-butil-4-ciano-1,2-tiazol-5-il)oxi]-2-cloro-5-metilfenil}-N-etil-N-metilimidoformamida, (15.87) N-metil-2-(1-{[5-metil-3-(trifluorometil)-1H-pirazol-1-il]acetil}piperidin-4-il)-N-(1,2,3,4-tetrahidronaftalen-1-il)-1,3-tiazol-4-carboxamida (922514-49-6), (15.88) N-metil-2-(1-{[5-metil-3-(trifluorometil)-1H-pirazol-1-il]acetil}piperidin-4-il)-N-[(1R)-1,2,3,4-tetrahidronaftalen-1-il]-1,3-tiazol-4-carboxamida (922514-07-6), (15.89) N-metil-2-(1-{[5-metil-3-(trifluorometil)-1H-pirazol-1-il]acetil}piperidin-4-il)-N-[(1S)-1,2,3,4-tetrahidronaftalen-1-il]-1,3-tiazol-4-carboxamida (922514-48-5), (15.90) {6-[[[(1-metil-1H-tetrazol-5-il)(fenil)metiliden]amino]oxi]metil]piridin-2-il}carbamato de pentilo, (15.91) ácido fenazino-1-carboxílico, (15.92) quinolin-8-ol (134-31-6), (15.93) sulfato de quinolin-8-ol (2:1) (134-31-6), (15.94) 6-[[[(1-metil-1H-tetrazol-5-il)(fenil)metiliden]amino]oxi]metil]piridin-2-il}carbamato de terc-butilo.
- (16) Otros compuestos, como por ejemplo (16.1) 1-metil-3-(trifluorometil)-N-[2'-(trifluorometil)bifenil-2-il]-1H-pirazol-4-carboxamida, (16.2) N-(4'-clorobifenil-2-il)-3-(difluorometil)-1-metil-1H-pirazol-4-carboxamida, (16.3) N-(2',4'-diclorobifenil-2-il)-3-(difluorometil)-1-metil-1H-pirazol-4-carboxamida, (16.4) 3-(difluorometil)-1-metil-N-[4'-(trifluorometil)bifenil-2-il]-1H-pirazol-4-carboxamida, (16.5) N-(2',5'-difluorobifenil-2-il)-1-metil-3-(trifluorometil)-1H-pirazol-4-carboxamida, (16.6) 3-(difluorometil)-1-metil-N-[4'-(prop-1-in-1-il)bifenil-2-il]-1H-pirazol-4-carboxamida, (16.7) 5-fluoro-1,3-dimetil-N-[4'-(prop-1-in-1-il)bifenil-2-il]-1H-pirazol-4-carboxamida, (16.8) 2-cloro-N-[4'-(prop-1-in-1-il)bifenil-2-il]piridina-3-carboxamida, (16.9) 3-(difluorometil)-N-[4'-(3,3-dimetilbut-1-in-1-il)bifenil-2-il]-1-metil-1H-pirazol-4-carboxamida, (16.10) N-[4'-(3,3-dimetilbut-1-in-1-

il)bifenil-2-il]-5-fluoro-1,3-dimetil-1H-pirazol-4-carboxamida, (16.11) 3-(difluorometil)-N-(4'-etinilbifenil-2-il)-1-metil-1H-pirazol-4-carboxamida, (16.12) N-(4'-etinilbifenil-2-il)-5-fluoro-1,3-dimetil-1H-pirazol-4-carboxamida, (16.13) 2-cloro-N-(4'-etinilbifenil-2-il)piridina-3-carboxamida, (16.14) 2-cloro-N-[4'-(3,3-dimetilbut-1-in-1-il)bifenil-2-il]piridina-3-carboxamida, (16.15) 4-(difluorometil)-2-metil-N-[4'-(trifluorometil)bifenil-2-il]-1,3-tiazol-5-carboxamida, (16.16) 5-fluoro-N-[4'-(3-hidroxi-3-metilbut-1-in-1-il)bifenil-2-il]-1,3-dimetil-1H-pirazol-4-carboxamida, (16.17) 2-cloro-N-[4'-(3-hidroxi-3-metilbut-1-in-1-il)bifenil-2-il]piridina-3-carboxamida, (16.18) 3-(difluorometil)-N-[4'-(3-metoxi-3-metilbut-1-in-1-il)bifenil-2-il]-1-metil-1H-pirazol-4-carboxamida, (16.19) 5-fluoro-N-[4'-(3-metoxi-3-metilbut-1-in-1-il)bifenil-2-il]-1,3-dimetil-1H-pirazol-4-carboxamida, (16.20) 2-cloro-N-[4'-(3-metoxi-3-metilbut-1-in-1-il)bifenil-2-il]piridina-3-carboxamida, (16.21) (5-bromo-2-metoxi-4-metilpiridin-3-il)(2,3,4-trimetoxi-6-metilfenil)metanona, (16.22) N-[2-(4-[[3-(4-clorofenil)prop-2-in-1-il]oxi]-3-metoxifenil)etil]-N2-(metilsulfonil)valinamida (220706-93-4), (16.23) ácido 4-oxo-4-[(2-feniletil)amino]butanoico, (16.24) {6-[[[(Z)-(1-metil-1H-tetrazol-5-il)(fenil)metilen]amino]oxi]metil]piridin-2-il}carbamato de but-3-in-1-ilo, (16.25) 4-Amino-5-fluorpirimidin-2-ol (Forma mesómero: 6-amino-5-fluorpirimidin-2(1H)-on), (16.26) 3,4,5-trihidroxibenzoato de propilo

Todos los asociados de mezcla mencionados de las clases (1) a (16) pueden formar opcionalmente, si sus grupos funcionales lo permiten, sales con bases o ácidos adecuados.

También se da particular preferencia a las combinaciones que comprenden al menos un compuesto activo adicional (B) seleccionado de los siguientes grupos:

(2.1) bixafeno, (2.2) boscalida, (2.6) fluopiram, (2.8) fluxapiroxad, (2.11) isopirazam (mezcla de racemato sin-epimérico 1RS,4SR,9RS y racemato anti-epimérico 1RS,4SR,9SR), (2.12) isopirazam (racemato anti-epimérico 1RS,4SR,9SR), (2.13) isopirazam (enantiómero anti-epimérico 1R,4S,9S), (2.14) isopirazam (enantiómero anti-epimérico 1S,4R,9R), (2.15) isopirazam (racemato sin-epimérico 1RS,4SR,9RS), (2.16) isopirazam (enantiómero sin-epimérico 1R,4S,9R), (2.17) isopirazam (enantiómero sin-epimérico 1S,4R,9S), (2.27) N-[1-(2,4-diclorofenil)-1-metoxipropan-2-

il]-3-(difluorometil)-1-metil-1H-pirazol-4-carboxamida, (2.29) N-[9-(diclorometilen)-1,2,3,4-tetrahidro-1,4-metanonaftalen-5-il]-3-(difluorometil)-1-metil-1H-pirazol-4-carboxamida, (3.1) ametoctradina, (3.2) amisulbrom, (3.3) azoxistrobina, (3.4) ciazofamida, (3.9) famoxadona, (3.10) fenamidona, (3.12) fluoxastrobina, (3.16) picoxistrobina, (3.17) piraclostrobina, (3.22) trifloxistrobina, (4.6) fluopicolida, (5.1) mezcla de Burdeos, (5.4) clorotalonilo, (5.5) hidróxido de cobre, (5.7) óxido de cobre, (5.8) oxiclورو de cobre, (5.9) sulfato de cobre(2+), (5.16) folpet, (5.23) mancozeb, (5.25) metiram, (5.26) metiram zinc, (5.29) propineb, (5.30) azufre y preparaciones de azufre que incluyen poli(sulfuro de calcio), (7.7) pirimetanilo, (9.2) dimetomorf, (9.4) iprovalicarb, (9.5) mandipropamida, (10.9) propamocarb, (10.10) clorhidrato de propamocarb, (12.9) metalaxilo, (12.10) metalaxil-M (mefenoxam), (14.4) fluazinam, (15.9) cimoxanilo, (15.24) fosetil-aluminio, (15.25) fosetil-calcio, (15.26) fosetil-sodio, (15.41) ácido fosforoso y sus sales, (15.42) propamocarb-fosetilato, (15.54) 1-(4-{4-[(5R)-5-(2,6-difluorofenil)-4,5-dihidro-1,2-oxazol-3-il]-1,3-tiazol-2-il}piperidin-1-il)-2-[5-metil-3-(trifluorometil)-1H-pirazol-1-il]etanona, (15.55) 1-(4-{4-[(5S)-5-(2,6-difluorofenil)-4,5-dihidro-1,2-oxazol-3-il]-1,3-tiazol-2-il}piperidin-1-il)-2-[5-metil-3-(trifluorometil)-1H-pirazol-1-il]etanona, (15.56) 1-(4-{4-[5-(2,6-difluorofenil)-4,5-dihidro-1,2-oxazol-3-il]-1,3-tiazol-2-il}piperidin-1-il)-2-[5-metil-3-(trifluorometil)-1H-pirazol-1-il]etanona, (15.60) 2,6-dimetil-1H,5H-[1,4]ditiino[2,3-c:5,6-c']dipirrol-1,3,5,7(2H,6H)-tetrona, (15.90) {6-[[[(1-metil-1H-tetrazol-5-il)(fenil)metiliden]amino}oxi]metil]piridin-2-il}carbamato de pentilo.

Todos los asociados de mezcla nombrados de las clases (1) a (15) pueden formar opcionalmente, si sus grupos funcionales lo permiten, sales con bases o ácidos adecuados.

En una realización preferida la presente invención se refiere a mezclas que comprenden el compuesto (I-1) como compuesto de fórmula (I) y un componente (B), en particular las mezclas (I-1) + (1.1), (I-1) + (1.2), (I-1) + (1.3), (I-1) + (1.4), (I-1) + (1.5), (I-1) + (1.6), (I-1) + (1.7), (I-1) + (1.8), (I-1) + (1.9), (I-1) + (1.10), (I-1) + (1.11), (I-1) + (1.12), (I-1) + (1.13), (I-1) + (1.14), (I-1) + (1.15), (I-1) + (1.16), (I-1) + (1.17), (I-1) + (1.18), (I-1) + (1.19), (I-1) + (1.20), (I-1) + (1.21), (I-1) + (1.22), (I-1) + (1.23), (I-1) + (1.24),

- (l-1) + (1.25), (l-1) + (1.26), (l-1) + (1.27), (l-1) + (1.28), (l-1) + (1.29), (l-1) + (1.30),
(l-1) + (1.31), (l-1) + (1.32), (l-1) + (1.33), (l-1) + (1.34), (l-1) + (1.35), (l-1) + (1.36),
(l-1) + (1.37), (l-1) + (1.38), (l-1) + (1.39), (l-1) + (1.40), (l-1) + (1.41), (l-1) + (1.42),
(l-1) + (1.43), (l-1) + (1.44), (l-1) + (1.45), (l-1) + (1.46), (l-1) + (1.47), (l-1) + (1.48),
5 (l-1) + (1.49), (l-1) + (1.50), (l-1) + (1.51), (l-1) + (1.52), (l-1) + (1.53), (l-1) + (1.54),
(l-1) + (1.55), (l-1) + (1.56), (l-1) + (1.57), (l-1) + (1.58), (l-1) + (1.59), (l-1) + (1.60),
(l-1) + (1.61), (l-1) + (1.62), (l-1) + (1.63), (l-1) + (1.64), (l-1) + (2.1), (l-1) + (2.2),
(l-1) + (2.3), (l-1) + (2.4), (l-1) + (2.5), (l-1) + (2.6), (l-1) + (2.7), (l-1) + (2.8), (l-1) + (2.9),
(l-1) + (2.10), (l-1) + (2.11), (l-1) + (2.12), (l-1) + (2.13), (l-1) + (2.14), (l-1) + (2.15),
10 (l-1) + (2.16), (l-1) + (2.17), (l-1) + (2.18), (l-1) + (2.19), (l-1) + (2.20), (l-1) + (2.21),
(l-1) + (2.22), (l-1) + (2.23), (l-1) + (2.24), (l-1) + (2.25), (l-1) + (2.26), (l-1) + (2.27),
(l-1) + (2.28), (l-1) + (2.29), (l-1) + (3.1), (l-1) + (3.2), (l-1) + (3.3), (l-1) + (3.4),
(l-1) + (3.5), (l-1) + (3.6), (l-1) + (3.7), (l-1) + (3.8), (l-1) + (3.9), (l-1) + (3.10),
(l-1) + (3.11), (l-1) + (3.12), (l-1) + (3.13), (l-1) + (3.14), (l-1) + (3.15), (l-1) + (3.16),
15 (l-1) + (3.17), (l-1) + (3.18), (l-1) + (3.19), (l-1) + (3.20), (l-1) + (3.21), (l-1) + (3.22),
(l-1) + (3.23), (l-1) + (3.24), (l-1) + (3.25), (l-1) + (3.26), (l-1) + (3.27), (l-1) + (3.28),
(l-1) + (3.29), (l-1) + (3.30), (l-1) + (3.31), (l-1) + (3.32), (l-1) + (3.33), (l-1) + (4.1),
(l-1) + (4.2), (l-1) + (4.3), (l-1) + (4.4), (l-1) + (4.5), (l-1) + (4.6), (l-1) + (4.7), (l-1) + (4.8),
(l-1) + (4.9), (l-1) + (4.10), (l-1) + (4.11), (l-1) + (4.12), (l-1) + (4.13), (l-1) + (4.14),
20 (l-1) + (5.1), (l-1) + (5.2), (l-1) + (5.3), (l-1) + (5.4), (l-1) + (5.5), (l-1) + (5.6), (l-1) + (5.7),
(l-1) + (5.8), (l-1) + (5.9), (l-1) + (5.10), (l-1) + (5.11), (l-1) + (5.12), (l-1) + (5.13),
(l-1) + (5.14), (l-1) + (5.15), (l-1) + (5.16), (l-1) + (5.17), (l-1) + (5.18), (l-1) + (5.19),
(l-1) + (5.20), (l-1) + (5.21), (l-1) + (5.22), (l-1) + (5.23), (l-1) + (5.24), (l-1) + (5.25),
(l-1) + (5.26), (l-1) + (5.27), (l-1) + (5.28), (l-1) + (5.29), (l-1) + (5.30), (l-1) + (5.31),
25 (l-1) + (5.32), (l-1) + (5.33), (l-1) + (5.34), (l-1) + (6.1), (l-1) + (6.2), (l-1) + (6.3),
(l-1) + (6.4), (l-1) + (7.1), (l-1) + (7.2), (l-1) + (7.3), (l-1) + (7.4), (l-1) + (7.5), (l-1) + (7.6),
(l-1) + (7.7), (l-1) + (7.8), (l-1) + (8.1), (l-1) + (8.2), (l-1) + (8.3), (l-1) + (8.4), (l-1) + (9.1),
(l-1) + (9.2), (l-1) + (9.3), (l-1) + (9.4), (l-1) + (9.5), (l-1) + (9.6), (l-1) + (9.7), (l-1) + (9.8),
(l-1) + (9.9), (l-1) + (10.1), (l-1) + (10.2), (l-1) + (10.3), (l-1) + (10.4), (l-1) + (10.5),

- (I-1) + (10.6), (I-1) + (10.7), (I-1) + (10.8), (I-1) + (10.9), (I-1) + (10.10), (I-1) + (10.11),
- (I-1) + (10.12), (I-1) + (10.13), (I-1) + (10.14), (I-1) + (10.15), (I-1) + (11.1), (I-1) + (11.2),
- (I-1) + (11.3), (I-1) + (11.4), (I-1) + (11.5), (I-1) + (11.6), (I-1) + (11.7), (I-1) + (12.1),
- (I-1) + (12.2), (I-1) + (12.3), (I-1) + (12.4), (I-1) + (12.5), (I-1) + (12.6), (I-1) + (12.7),
- 5 (I-1) + (12.8), (I-1) + (12.9), (I-1) + (12.10), (I-1) + (12.11), (I-1) + (12.12), (I-1) + (12.13),
- (I-1) + (13.1), (I-1) + (13.2), (I-1) + (13.3), (I-1) + (13.4), (I-1) + (13.5), (I-1) + (13.6),
- (I-1) + (13.7), (I-1) + (14.1), (I-1) + (14.2), (I-1) + (14.3), (I-1) + (14.4), (I-1) + (14.5),
- (I-1) + (15.1), (I-1) + (15.2), (I-1) + (15.3), (I-1) + (15.4), (I-1) + (15.5), (I-1) + (15.6),
- (I-1) + (15.7), (I-1) + (15.8), (I-1) + (15.9), (I-1) + (15.10), (I-1) + (15.11), (I-1) + (15.12),
- 10 (I-1) + (15.13), (I-1) + (15.14), (I-1) + (15.15), (I-1) + (15.16), (I-1) + (15.17),
- (I-1) + (15.18), (I-1) + (15.19), (I-1) + (15.20), (I-1) + (15.21), (I-1) + (15.22),
- (I-1) + (15.23), (I-1) + (15.24), (I-1) + (15.25), (I-1) + (15.26), (I-1) + (15.27),
- (I-1) + (15.28), (I-1) + (15.29), (I-1) + (15.30), (I-1) + (15.31), (I-1) + (15.32),
- (I-1) + (15.33), (I-1) + (15.34), (I-1) + (15.35), (I-1) + (15.36), (I-1) + (15.37),
- 15 (I-1) + (15.38), (I-1) + (15.39), (I-1) + (15.41), (I-1) + (15.42), (I-1) + (15.43),
- (I-1) + (15.44), (I-1) + (15.45), (I-1) + (15.46), (I-1) + (15.47), (I-1) + (15.48),
- (I-1) + (15.49), (I-1) + (15.50), (I-1) + (15.51), (I-1) + (15.52), (I-1) + (15.53),
- (I-1) + (15.54), (I-1) + (15.55), (I-1) + (15.56), (I-1) + (15.57), (I-1) + (15.58),
- (I-1) + (15.59), (I-1) + (15.60), (I-1) + (15.61), (I-1) + (15.62), (I-1) + (15.63),
- 20 (I-1) + (15.64), (I-1) + (15.65), (I-1) + (15.66), (I-1) + (15.67), (I-1) + (15.68),
- (I-1) + (15.69), (I-1) + (15.70), (I-1) + (15.71), (I-1) + (15.72), (I-1) + (15.73),
- (I-1) + (15.74), (I-1) + (15.75), (I-1) + (15.76), (I-1) + (15.77), (I-1) + (15.78),
- (I-1) + (15.79), (I-1) + (15.80), (I-1) + (15.81), (I-1) + (15.82), (I-1) + (15.83),
- (I-1) + (15.84), (I-1) + (15.85), (I-1) + (15.86), (I-1) + (15.87), (I-1) + (15.88),
- 25 (I-1) + (15.89), (I-1) + (15.90), (I-1) + (15.91), (I-1) + (15.92), (I-1) + (15.93),
- (I-1) + (15.94).

En otra realización particularmente preferida la presente invención se refiere a mezclas que comprenden el compuesto (I-1) como compuesto de fórmula (I) y un componente (B), en particular las mezclas (I-1) + (2.1), (I-1) + (2.2), (I-1) + (2.6), (I-1) + (2.8),

(I-1) + (2.11), (I-1) + (2.12), (I-1) + (2.13), (I-1) + (2.14), (I-1) + (2.15), (I-1) + (2.16),
(I-1) + (2.17), (I-1) + (2.29), (I-1) + (3.1), (I-1) + (3.2), (I-1) + (3.3), (I-1) + (3.4),
(I-1) + (3.9), (I-1) + (3.10), (I-1) + (3.12), (I-1) + (3.16), (I-1) + (3.17), (I-1) + (3.22),
(I-1) + (4.6), (I-1) + (5.1), (I-1) + (5.4), (I-1) + (5.5), (I-1) + (5.7), (I-1) + (5.8), (I-1) + (5.9),
5 (I-1) + (5.16), (I-1) + (5.23), (I-1) + (5.25), (I-1) + (5.26), (I-1) + (5.29), (I-1) + (5.30),
(I-1) + (7.7), (I-1) + (9.2), (I-1) + (9.4), (I-1) + (9.5), (I-1) + (10.9), (I-1) + (10.10),
(I-1) + (12.9), (I-1) + (12.10), (I-1) + (14.4), (I-1) + (15.9), (I-1) + (15.24), (I-1) + (15.25),
(I-1) + (15.26), (I-1) + (15.41), (I-1) + (15.42), (I-1) + (15.54), (I-1) + (15.55),
(I-1) + (15.56), (I-1) + (15.60), (I-1) + (15.90).

10 En una realización preferida la presente invención se refiere a mezclas que comprenden
el compuesto (I-2) como compuesto de fórmula (I) y un componente (B), en particular las
mezclas (I-2) + (1.1), (I-2) + (1.2), (I-2) + (1.3), (I-2) + (1.4), (I-2) + (1.5), (I-2) + (1.6), (I-
2) + (1.7), (I-2) + (1.8), (I-2) + (1.9), (I-2) + (1.10), (I-2) + (1.11), (I-2) + (1.12), (I-
2) + (1.13), (I-2) + (1.14), (I-2) + (1.15), (I-2) + (1.16), (I-2) + (1.17), (I-2) + (1.18), (I-
15 2) + (1.19), (I-2) + (1.20), (I-2) + (1.21), (I-2) + (1.22), (I-2) + (1.23), (I-2) + (1.24), (I-
2) + (1.25), (I-2) + (1.26), (I-2) + (1.27), (I-2) + (1.28), (I-2) + (1.29), (I-2) + (1.30), (I-
2) + (1.31), (I-2) + (1.32), (I-2) + (1.33), (I-2) + (1.34), (I-2) + (1.35), (I-2) + (1.36), (I-
2) + (1.37), (I-2) + (1.38), (I-2) + (1.39), (I-2) + (1.40), (I-2) + (1.41), (I-2) + (1.42), (I-
2) + (1.43), (I-2) + (1.44), (I-2) + (1.45), (I-2) + (1.46), (I-2) + (1.47), (I-2) + (1.48), (I-
20 2) + (1.49), (I-2) + (1.50), (I-2) + (1.51), (I-2) + (1.52), (I-2) + (1.53), (I-2) + (1.54), (I-
2) + (1.55), (I-2) + (1.56), (I-2) + (1.57), (I-2) + (1.58), (I-2) + (1.59), (I-2) + (1.60), (I-
2) + (1.61), (I-2) + (1.62), (I-2) + (1.63), (I-2) + (1.64), (I-2) + (2.1), (I-2) + (2.2), (I-
2) + (2.3), (I-2) + (2.4), (I-2) + (2.5), (I-2) + (2.6), (I-2) + (2.7), (I-2) + (2.8), (I-2) + (2.9), (I-
2) + (2.10), (I-2) + (2.11), (I-2) + (2.12), (I-2) + (2.13), (I-2) + (2.14), (I-2) + (2.15), (I-
25 2) + (2.16), (I-2) + (2.17), (I-2) + (2.18), (I-2) + (2.19), (I-2) + (2.20), (I-2) + (2.21), (I-
2) + (2.22), (I-2) + (2.23), (I-2) + (2.24), (I-2) + (2.25), (I-2) + (2.26), (I-2) + (2.27), (I-
2) + (2.28), (I-2) + (2.29), (I-2) + (3.1), (I-2) + (3.2), (I-2) + (3.3), (I-2) + (3.4), (I-2) + (3.5),
(I-2) + (3.6), (I-2) + (3.7), (I-2) + (3.8), (I-2) + (3.9), (I-2) + (3.10), (I-2) + (3.11), (I-
2) + (3.12), (I-2) + (3.13), (I-2) + (3.14), (I-2) + (3.15), (I-2) + (3.16), (I-2) + (3.17), (I-

2) + (3.18), (l-2) + (3.19), (l-2) + (3.20), (l-2) + (3.21), (l-2) + (3.22), (l-2) + (3.23), (l-2) + (3.24), (l-2) + (3.25), (l-2) + (3.26), (l-2) + (3.27), (l-2) + (3.28), (l-2) + (3.29), (l-2) + (3.30), (l-2) + (3.31), (l-2) + (3.32), (l-2) + (3.33), (l-2) + (4.1), (l-2) + (4.2), (l-2) + (4.3), (l-2) + (4.4), (l-2) + (4.5), (l-2) + (4.6), (l-2) + (4.7), (l-2) + (4.8), (l-2) + (4.9), (l-2) + (4.10), (l-2) + (4.11), (l-2) + (4.12), (l-2) + (4.13), (l-2) + (4.14), (l-2) + (5.1), (l-2) + (5.2), (l-2) + (5.3), (l-2) + (5.4), (l-2) + (5.5), (l-2) + (5.6), (l-2) + (5.7), (l-2) + (5.8), (l-2) + (5.9), (l-2) + (5.10), (l-2) + (5.11), (l-2) + (5.12), (l-2) + (5.13), (l-2) + (5.14), (l-2) + (5.15), (l-2) + (5.16), (l-2) + (5.17), (l-2) + (5.18), (l-2) + (5.19), (l-2) + (5.20), (l-2) + (5.21), (l-2) + (5.22), (l-2) + (5.23), (l-2) + (5.24), (l-2) + (5.25), (l-2) + (5.26), (l-2) + (5.27), (l-2) + (5.28), (l-2) + (5.29), (l-2) + (5.30), (l-2) + (5.31), (l-2) + (5.32), (l-2) + (5.33), (l-2) + (5.34), (l-2) + (6.1), (l-2) + (6.2), (l-2) + (6.3), (l-2) + (6.4), (l-2) + (7.1), (l-2) + (7.2), (l-2) + (7.3), (l-2) + (7.4), (l-2) + (7.5), (l-2) + (7.6), (l-2) + (7.7), (l-2) + (7.8), (l-2) + (8.1), (l-2) + (8.2), (l-2) + (8.3), (l-2) + (8.4), (l-2) + (9.1), (l-2) + (9.2), (l-2) + (9.3), (l-2) + (9.4), (l-2) + (9.5), (l-2) + (9.6), (l-2) + (9.7), (l-2) + (9.8), (l-2) + (9.9), (l-2) + (10.1), (l-2) + (10.2), (l-2) + (10.3), (l-2) + (10.4), (l-2) + (10.5), (l-2) + (10.6), (l-2) + (10.7), (l-2) + (10.8), (l-2) + (10.9), (l-2) + (10.10), (l-2) + (10.11), (l-2) + (10.12), (l-2) + (10.13), (l-2) + (10.14), (l-2) + (10.15), (l-2) + (11.1), (l-2) + (11.2), (l-2) + (11.3), (l-2) + (11.4), (l-2) + (11.5), (l-2) + (11.6), (l-2) + (11.7), (l-2) + (12.1), (l-2) + (12.2), (l-2) + (12.3), (l-2) + (12.4), (l-2) + (12.5), (l-2) + (12.6), (l-2) + (12.7), (l-2) + (12.8), (l-2) + (12.9), (l-2) + (12.10), (l-2) + (12.11), (l-2) + (12.12), (l-2) + (12.13), (l-2) + (13.1), (l-2) + (13.2), (l-2) + (13.3), (l-2) + (13.4), (l-2) + (13.5), (l-2) + (13.6), (l-2) + (13.7), (l-2) + (14.1), (l-2) + (14.2), (l-2) + (14.3), (l-2) + (14.4), (l-2) + (14.5), (l-2) + (15.1), (l-2) + (15.2), (l-2) + (15.3), (l-2) + (15.4), (l-2) + (15.5), (l-2) + (15.6), (l-2) + (15.7), (l-2) + (15.8), (l-2) + (15.9), (l-2) + (15.10), (l-2) + (15.11), (l-2) + (15.12), (l-2) + (15.13), (l-2) + (15.14), (l-2) + (15.15), (l-2) + (15.16), (l-2) + (15.17), (l-2) + (15.18), (l-2) + (15.19), (l-2) + (15.20), (l-2) + (15.21), (l-2) + (15.22), (l-2) + (15.23), (l-2) + (15.24), (l-2) + (15.25), (l-2) + (15.26), (l-2) + (15.27), (l-2) + (15.28), (l-2) + (15.29), (l-2) + (15.30), (l-2) + (15.31), (l-2) + (15.32), (l-2) + (15.33), (l-2) + (15.34), (l-2) + (15.35), (l-2) + (15.36), (l-2) + (15.37), (l-2) + (15.38), (l-2) + (15.39), (l-2) + (15.41), (l-2) + (15.42), (l-2) + (15.43),

(I-2) + (15.44), (I-2) + (15.45), (I-2) + (15.46), (I-2) + (15.47), (I-2) + (15.48), (I-2) + (15.49), (I-2) + (15.50), (I-2) + (15.51), (I-2) + (15.52), (I-2) + (15.53), (I-2) + (15.54), (I-2) + (15.55), (I-2) + (15.56), (I-2) + (15.57), (I-2) + (15.58), (I-2) + (15.59), (I-2) + (15.60), (I-2) + (15.61), (I-2) + (15.62), (I-2) + (15.63), (I-2) + (15.64), (I-2) + (15.65),
 5 (I-2) + (15.66), (I-2) + (15.67), (I-2) + (15.68), (I-2) + (15.69), (I-2) + (15.70), (I-2) + (15.71), (I-2) + (15.72), (I-2) + (15.73), (I-2) + (15.74), (I-2) + (15.75), (I-2) + (15.76), (I-2) + (15.77), (I-2) + (15.78), (I-2) + (15.79), (I-2) + (15.80), (I-2) + (15.81), (I-2) + (15.82), (I-2) + (15.83), (I-2) + (15.84), (I-2) + (15.85), (I-2) + (15.86), (I-2) + (15.87), (I-2) + (15.88), (I-2) + (15.89), (I-2) + (15.90), (I-2) + (15.91), (I-2) + (15.92), (I-2) + (15.93), (I-2) + (15.94).

En otra realización particularmente preferida la presente invención se refiere a mezclas que comprenden el compuesto (I-2) como compuesto de fórmula (I) y un componente (B), en particular las mezclas (I-2) + (2.1), (I-2) + (2.2), (I-2) + (2.6), (I-2) + (2.8), (I-2) + (2.11), (I-2) + (2.12), (I-2) + (2.13), (I-2) + (2.14), (I-2) + (2.15), (I-2) + (2.16), (I-2) + (2.17), (I-2) + (2.29), (I-2) + (3.1), (I-2) + (3.2), (I-2) + (3.3), (I-2) + (3.4), (I-2) + (3.9),
 15 (I-2) + (3.10), (I-2) + (3.12), (I-2) + (3.16), (I-2) + (3.17), (I-2) + (3.22), (I-2) + (4.6), (I-2) + (5.1), (I-2) + (5.4), (I-2) + (5.5), (I-2) + (5.7), (I-2) + (5.8), (I-2) + (5.9), (I-2) + (5.16), (I-2) + (5.23), (I-2) + (5.25), (I-2) + (5.26), (I-2) + (5.29), (I-2) + (5.30), (I-2) + (7.7), (I-2) + (9.2), (I-2) + (9.4), (I-2) + (9.5), (I-2) + (10.9), (I-2) + (10.10), (I-2) + (12.9), (I-2) + (12.10), (I-2) + (14.4), (I-2) + (15.9), (I-2) + (15.24), (I-2) + (15.25), (I-2) + (15.26), (I-2) + (15.41), (I-2) + (15.42), (I-2) + (15.54), (I-2) + (15.55), (I-2) + (15.56), (I-2) + (15.60), (I-2) + (15.90).

En una realización preferida la presente invención se refiere a mezclas que comprenden el compuesto (I-3) como compuesto de fórmula (I) y un componente (B), en particular las
 25 mezclas (I-3) + (1.1), (I-3) + (1.2), (I-3) + (1.3), (I-3) + (1.4), (I-3) + (1.5), (I-3) + (1.6), (I-3) + (1.7), (I-3) + (1.8), (I-3) + (1.9), (I-3) + (1.10), (I-3) + (1.11), (I-3) + (1.12), (I-3) + (1.13), (I-3) + (1.14), (I-3) + (1.15), (I-3) + (1.16), (I-3) + (1.17), (I-3) + (1.18), (I-3) + (1.19), (I-3) + (1.20), (I-3) + (1.21), (I-3) + (1.22), (I-3) + (1.23), (I-3) + (1.24), (I-3) + (1.25), (I-3) + (1.26), (I-3) + (1.27), (I-3) + (1.28), (I-3) + (1.29), (I-3) + (1.30), (I-

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3) + (1.31), (l-3) + (1.32), (l-3) + (1.33), (l-3) + (1.34), (l-3) + (1.35), (l-3) + (1.36), (l-3) + (1.37), (l-3) + (1.38), (l-3) + (1.39), (l-3) + (1.40), (l-3) + (1.41), (l-3) + (1.42), (l-3) + (1.43), (l-3) + (1.44), (l-3) + (1.45), (l-3) + (1.46), (l-3) + (1.47), (l-3) + (1.48), (l-3) + (1.49), (l-3) + (1.50), (l-3) + (1.51), (l-3) + (1.52), (l-3) + (1.53), (l-3) + (1.54), (l-3) + (1.55), (l-3) + (1.56), (l-3) + (1.57), (l-3) + (1.58), (l-3) + (1.59), (l-3) + (1.60), (l-3) + (1.61), (l-3) + (1.62), (l-3) + (1.63), (l-3) + (1.64), (l-3) + (2.1), (l-3) + (2.2), (l-3) + (2.3), (l-3) + (2.4), (l-3) + (2.5), (l-3) + (2.6), (l-3) + (2.7), (l-3) + (2.8), (l-3) + (2.9), (l-3) + (2.10), (l-3) + (2.11), (l-3) + (2.12), (l-3) + (2.13), (l-3) + (2.14), (l-3) + (2.15), (l-3) + (2.16), (l-3) + (2.17), (l-3) + (2.18), (l-3) + (2.19), (l-3) + (2.20), (l-3) + (2.21), (l-3) + (2.22), (l-3) + (2.23), (l-3) + (2.24), (l-3) + (2.25), (l-3) + (2.26), (l-3) + (2.27), (l-3) + (2.28), (l-3) + (2.29), (l-3) + (3.1), (l-3) + (3.2), (l-3) + (3.3), (l-3) + (3.4), (l-3) + (3.5), (l-3) + (3.6), (l-3) + (3.7), (l-3) + (3.8), (l-3) + (3.9), (l-3) + (3.10), (l-3) + (3.11), (l-3) + (3.12), (l-3) + (3.13), (l-3) + (3.14), (l-3) + (3.15), (l-3) + (3.16), (l-3) + (3.17), (l-3) + (3.18), (l-3) + (3.19), (l-3) + (3.20), (l-3) + (3.21), (l-3) + (3.22), (l-3) + (3.23), (l-3) + (3.24), (l-3) + (3.25), (l-3) + (3.26), (l-3) + (3.27), (l-3) + (3.28), (l-3) + (3.29), (l-3) + (3.30), (l-3) + (3.31), (l-3) + (3.32), (l-3) + (3.33), (l-3) + (4.1), (l-3) + (4.2), (l-3) + (4.3), (l-3) + (4.4), (l-3) + (4.5), (l-3) + (4.6), (l-3) + (4.7), (l-3) + (4.8), (l-3) + (4.9), (l-3) + (4.10), (l-3) + (4.11), (l-3) + (4.12), (l-3) + (4.13), (l-3) + (4.14), (l-3) + (5.1), (l-3) + (5.2), (l-3) + (5.3), (l-3) + (5.4), (l-3) + (5.5), (l-3) + (5.6), (l-3) + (5.7), (l-3) + (5.8), (l-3) + (5.9), (l-3) + (5.10), (l-3) + (5.11), (l-3) + (5.12), (l-3) + (5.13), (l-3) + (5.14), (l-3) + (5.15), (l-3) + (5.16), (l-3) + (5.17), (l-3) + (5.18), (l-3) + (5.19), (l-3) + (5.20), (l-3) + (5.21), (l-3) + (5.22), (l-3) + (5.23), (l-3) + (5.24), (l-3) + (5.25), (l-3) + (5.26), (l-3) + (5.27), (l-3) + (5.28), (l-3) + (5.29), (l-3) + (5.30), (l-3) + (5.31), (l-3) + (5.32), (l-3) + (5.33), (l-3) + (5.34), (l-3) + (6.1), (l-3) + (6.2), (l-3) + (6.3), (l-3) + (6.4), (l-3) + (7.1), (l-3) + (7.2), (l-3) + (7.3), (l-3) + (7.4), (l-3) + (7.5), (l-3) + (7.6), (l-3) + (7.7), (l-3) + (7.8), (l-3) + (8.1), (l-3) + (8.2), (l-3) + (8.3), (l-3) + (8.4), (l-3) + (9.1), (l-3) + (9.2), (l-3) + (9.3), (l-3) + (9.4), (l-3) + (9.5), (l-3) + (9.6), (l-3) + (9.7), (l-3) + (9.8), (l-3) + (9.9), (l-3) + (10.1), (l-3) + (10.2), (l-3) + (10.3), (l-3) + (10.4), (l-3) + (10.5), (l-3) + (10.6), (l-3) + (10.7), (l-3) + (10.8), (l-3) + (10.9), (l-3) + (10.10), (l-3) + (10.11), (l-3) + (10.12), (l-3) + (10.13), (l-

3) + (10.14), (I-3) + (10.15), (I-3) + (11.1), (I-3) + (11.2), (I-3) + (11.3), (I-3) + (11.4), (I-3) + (11.5), (I-3) + (11.6), (I-3) + (11.7), (I-3) + (12.1), (I-3) + (12.2), (I-3) + (12.3), (I-3) + (12.4), (I-3) + (12.5), (I-3) + (12.6), (I-3) + (12.7), (I-3) + (12.8), (I-3) + (12.9), (I-3) + (12.10), (I-3) + (12.11), (I-3) + (12.12), (I-3) + (12.13), (I-3) + (13.1), (I-3) + (13.2), (I-3) + (13.3), (I-3) + (13.4), (I-3) + (13.5), (I-3) + (13.6), (I-3) + (13.7), (I-3) + (14.1), (I-3) + (14.2), (I-3) + (14.3), (I-3) + (14.4), (I-3) + (14.5), (I-3) + (15.1), (I-3) + (15.2), (I-3) + (15.3), (I-3) + (15.4), (I-3) + (15.5), (I-3) + (15.6), (I-3) + (15.7), (I-3) + (15.8), (I-3) + (15.9), (I-3) + (15.10), (I-3) + (15.11), (I-3) + (15.12), (I-3) + (15.13), (I-3) + (15.14), (I-3) + (15.15), (I-3) + (15.16), (I-3) + (15.17), (I-3) + (15.18), (I-3) + (15.19), (I-3) + (15.20), (I-3) + (15.21), (I-3) + (15.22), (I-3) + (15.23), (I-3) + (15.24), (I-3) + (15.25), (I-3) + (15.26), (I-3) + (15.27), (I-3) + (15.28), (I-3) + (15.29), (I-3) + (15.30), (I-3) + (15.31), (I-3) + (15.32), (I-3) + (15.33), (I-3) + (15.34), (I-3) + (15.35), (I-3) + (15.36), (I-3) + (15.37), (I-3) + (15.38), (I-3) + (15.39), (I-3) + (15.41), (I-3) + (15.42), (I-3) + (15.43), (I-3) + (15.44), (I-3) + (15.45), (I-3) + (15.46), (I-3) + (15.47), (I-3) + (15.48), (I-3) + (15.49), (I-3) + (15.50), (I-3) + (15.51), (I-3) + (15.52), (I-3) + (15.53), (I-3) + (15.54), (I-3) + (15.55), (I-3) + (15.56), (I-3) + (15.57), (I-3) + (15.58), (I-3) + (15.59), (I-3) + (15.60), (I-3) + (15.61), (I-3) + (15.62), (I-3) + (15.63), (I-3) + (15.64), (I-3) + (15.65), (I-3) + (15.66), (I-3) + (15.67), (I-3) + (15.68), (I-3) + (15.69), (I-3) + (15.70), (I-3) + (15.71), (I-3) + (15.72), (I-3) + (15.73), (I-3) + (15.74), (I-3) + (15.75), (I-3) + (15.76), (I-3) + (15.77), (I-3) + (15.78), (I-3) + (15.79), (I-3) + (15.80), (I-3) + (15.81), (I-3) + (15.82), (I-3) + (15.83), (I-3) + (15.84), (I-3) + (15.85), (I-3) + (15.86), (I-3) + (15.87), (I-3) + (15.88), (I-3) + (15.89), (I-3) + (15.90), (I-3) + (15.91), (I-3) + (15.92), (I-3) + (15.93), (I-3) + (15.94).

En otra realización particularmente preferida la presente invención se refiere a mezclas que comprenden el compuesto (I-3) como compuesto de fórmula (I) y un componente (B), en particular las mezclas (I-3) + (2.1), (I-3) + (2.2), (I-3) + (2.6), (I-3) + (2.8), (I-3) + (2.11), (I-3) + (2.12), (I-3) + (2.13), (I-3) + (2.14), (I-3) + (2.15), (I-3) + (2.16), (I-3) + (2.17), (I-3) + (2.29), (I-3) + (3.1), (I-3) + (3.2), (I-3) + (3.3), (I-3) + (3.4), (I-3) + (3.9), (I-3) + (3.10), (I-3) + (3.12), (I-3) + (3.16), (I-3) + (3.17), (I-3) + (3.22), (I-3) + (4.6), (I-

3) + (5.1), (I-3) + (5.4), (I-3) + (5.5), (I-3) + (5.7), (I-3) + (5.8), (I-3) + (5.9), (I-3) + (5.16), (I-3) + (5.23), (I-3) + (5.25), (I-3) + (5.26), (I-3) + (5.29), (I-3) + (5.30), (I-3) + (7.7), (I-3) + (9.2), (I-3) + (9.4), (I-3) + (9.5), (I-3) + (10.9), (I-3) + (10.10), (I-3) + (12.9), (I-3) + (12.10), (I-3) + (14.4), (I-3) + (15.9), (I-3) + (15.24), (I-3) + (15.25), (I-3) + (15.26), (I-3) + (15.41), (I-3) + (15.42), (I-3) + (15.54), (I-3) + (15.55), (I-3) + (15.56), (I-3) + (15.60), (I-3) + (15.90).

En una realización preferida la presente invención se refiere a mezclas que comprenden el compuesto (I-4) como compuesto de fórmula (I) y un componente (B), en particular las mezclas (I-4) + (1.1), (I-4) + (1.2), (I-4) + (1.3), (I-4) + (1.4), (I-4) + (1.5), (I-4) + (1.6), (I-4) + (1.7), (I-4) + (1.8), (I-4) + (1.9), (I-4) + (1.10), (I-4) + (1.11), (I-4) + (1.12), (I-4) + (1.13), (I-4) + (1.14), (I-4) + (1.15), (I-4) + (1.16), (I-4) + (1.17), (I-4) + (1.18), (I-4) + (1.19), (I-4) + (1.20), (I-4) + (1.21), (I-4) + (1.22), (I-4) + (1.23), (I-4) + (1.24), (I-4) + (1.25), (I-4) + (1.26), (I-4) + (1.27), (I-4) + (1.28), (I-4) + (1.29), (I-4) + (1.30), (I-4) + (1.31), (I-4) + (1.32), (I-4) + (1.33), (I-4) + (1.34), (I-4) + (1.35), (I-4) + (1.36), (I-4) + (1.37), (I-4) + (1.38), (I-4) + (1.39), (I-4) + (1.40), (I-4) + (1.41), (I-4) + (1.42), (I-4) + (1.43), (I-4) + (1.44), (I-4) + (1.45), (I-4) + (1.46), (I-4) + (1.47), (I-4) + (1.48), (I-4) + (1.49), (I-4) + (1.50), (I-4) + (1.51), (I-4) + (1.52), (I-4) + (1.53), (I-4) + (1.54), (I-4) + (1.55), (I-4) + (1.56), (I-4) + (1.57), (I-4) + (1.58), (I-4) + (1.59), (I-4) + (1.60), (I-4) + (1.61), (I-4) + (1.62), (I-4) + (1.63), (I-4) + (1.64), (I-4) + (2.1), (I-4) + (2.2), (I-4) + (2.3), (I-4) + (2.4), (I-4) + (2.5), (I-4) + (2.6), (I-4) + (2.7), (I-4) + (2.8), (I-4) + (2.9), (I-4) + (2.10), (I-4) + (2.11), (I-4) + (2.12), (I-4) + (2.13), (I-4) + (2.14), (I-4) + (2.15), (I-4) + (2.16), (I-4) + (2.17), (I-4) + (2.18), (I-4) + (2.19), (I-4) + (2.20), (I-4) + (2.21), (I-4) + (2.22), (I-4) + (2.23), (I-4) + (2.24), (I-4) + (2.25), (I-4) + (2.26), (I-4) + (2.27), (I-4) + (2.28), (I-4) + (2.29), (I-4) + (3.1), (I-4) + (3.2), (I-4) + (3.3), (I-4) + (3.4), (I-4) + (3.5), (I-4) + (3.6), (I-4) + (3.7), (I-4) + (3.8), (I-4) + (3.9), (I-4) + (3.10), (I-4) + (3.11), (I-4) + (3.12), (I-4) + (3.13), (I-4) + (3.14), (I-4) + (3.15), (I-4) + (3.16), (I-4) + (3.17), (I-4) + (3.18), (I-4) + (3.19), (I-4) + (3.20), (I-4) + (3.21), (I-4) + (3.22), (I-4) + (3.23), (I-4) + (3.24), (I-4) + (3.25), (I-4) + (3.26), (I-4) + (3.27), (I-4) + (3.28), (I-4) + (3.29), (I-4) + (3.30), (I-4) + (3.31), (I-4) + (3.32), (I-4) + (3.33), (I-4) + (4.1), (I-4) + (4.2), (I-

4) + (4.3), (l-4) + (4.4), (l-4) + (4.5), (l-4) + (4.6), (l-4) + (4.7), (l-4) + (4.8), (l-4) + (4.9), (l-4) + (4.10), (l-4) + (4.11), (l-4) + (4.12), (l-4) + (4.13), (l-4) + (4.14), (l-4) + (5.1), (l-4) + (5.2), (l-4) + (5.3), (l-4) + (5.4), (l-4) + (5.5), (l-4) + (5.6), (l-4) + (5.7), (l-4) + (5.8), (l-4) + (5.9), (l-4) + (5.10), (l-4) + (5.11), (l-4) + (5.12), (l-4) + (5.13), (l-4) + (5.14), (l-4) + (5.15), (l-4) + (5.16), (l-4) + (5.17), (l-4) + (5.18), (l-4) + (5.19), (l-4) + (5.20), (l-4) + (5.21), (l-4) + (5.22), (l-4) + (5.23), (l-4) + (5.24), (l-4) + (5.25), (l-4) + (5.26), (l-4) + (5.27), (l-4) + (5.28), (l-4) + (5.29), (l-4) + (5.30), (l-4) + (5.31), (l-4) + (5.32), (l-4) + (5.33), (l-4) + (5.34), (l-4) + (6.1), (l-4) + (6.2), (l-4) + (6.3), (l-4) + (6.4), (l-4) + (7.1), (l-4) + (7.2), (l-4) + (7.3), (l-4) + (7.4), (l-4) + (7.5), (l-4) + (7.6), (l-4) + (7.7), (l-4) + (7.8), (l-4) + (8.1), (l-4) + (8.2), (l-4) + (8.3), (l-4) + (8.4), (l-4) + (9.1), (l-4) + (9.2), (l-4) + (9.3), (l-4) + (9.4), (l-4) + (9.5), (l-4) + (9.6), (l-4) + (9.7), (l-4) + (9.8), (l-4) + (9.9), (l-4) + (10.1), (l-4) + (10.2), (l-4) + (10.3), (l-4) + (10.4), (l-4) + (10.5), (l-4) + (10.6), (l-4) + (10.7), (l-4) + (10.8), (l-4) + (10.9), (l-4) + (10.10), (l-4) + (10.11), (l-4) + (10.12), (l-4) + (10.13), (l-4) + (10.14), (l-4) + (10.15), (l-4) + (11.1), (l-4) + (11.2), (l-4) + (11.3), (l-4) + (11.4), (l-4) + (11.5), (l-4) + (11.6), (l-4) + (11.7), (l-4) + (12.1), (l-4) + (12.2), (l-4) + (12.3), (l-4) + (12.4), (l-4) + (12.5), (l-4) + (12.6), (l-4) + (12.7), (l-4) + (12.8), (l-4) + (12.9), (l-4) + (12.10), (l-4) + (12.11), (l-4) + (12.12), (l-4) + (12.13), (l-4) + (13.1), (l-4) + (13.2), (l-4) + (13.3), (l-4) + (13.4), (l-4) + (13.5), (l-4) + (13.6), (l-4) + (13.7), (l-4) + (14.1), (l-4) + (14.2), (l-4) + (14.3), (l-4) + (14.4), (l-4) + (14.5), (l-4) + (15.1), (l-4) + (15.2), (l-4) + (15.3), (l-4) + (15.4), (l-4) + (15.5), (l-4) + (15.6), (l-4) + (15.7), (l-4) + (15.8), (l-4) + (15.9), (l-4) + (15.10), (l-4) + (15.11), (l-4) + (15.12), (l-4) + (15.13), (l-4) + (15.14), (l-4) + (15.15), (l-4) + (15.16), (l-4) + (15.17), (l-4) + (15.18), (l-4) + (15.19), (l-4) + (15.20), (l-4) + (15.21), (l-4) + (15.22), (l-4) + (15.23), (l-4) + (15.24), (l-4) + (15.25), (l-4) + (15.26), (l-4) + (15.27), (l-4) + (15.28), (l-4) + (15.29), (l-4) + (15.30), (l-4) + (15.31), (l-4) + (15.32), (l-4) + (15.33), (l-4) + (15.34), (l-4) + (15.35), (l-4) + (15.36), (l-4) + (15.37), (l-4) + (15.38), (l-4) + (15.39), (l-4) + (15.41), (l-4) + (15.42), (l-4) + (15.43), (l-4) + (15.44), (l-4) + (15.45), (l-4) + (15.46), (l-4) + (15.47), (l-4) + (15.48), (l-4) + (15.49), (l-4) + (15.50), (l-4) + (15.51), (l-4) + (15.52), (l-4) + (15.53), (l-4) + (15.54), (l-4) + (15.55), (l-4) + (15.56), (l-4) + (15.57), (l-4) + (15.58), (l-4) + (15.59), (l-

4) + (15.60), (I-4) + (15.61), (I-4) + (15.62), (I-4) + (15.63), (I-4) + (15.64), (I-4) + (15.65),
(I-4) + (15.66), (I-4) + (15.67), (I-4) + (15.68), (I-4) + (15.69), (I-4) + (15.70), (I-
4) + (15.71), (I-4) + (15.72), (I-4) + (15.73), (I-4) + (15.74), (I-4) + (15.75), (I-4) + (15.76),
(I-4) + (15.77), (I-4) + (15.78), (I-4) + (15.79), (I-4) + (15.80), (I-4) + (15.81), (I-
5 4) + (15.82), (I-4) + (15.83), (I-4) + (15.84), (I-4) + (15.85), (I-4) + (15.86), (I-4) + (15.87),
(I-4) + (15.88), (I-4) + (15.89), (I-4) + (15.90), (I-4) + (15.91), (I-4) + (15.92), (I-
4) + (15.93), (I-4) + (15.94).

En otra realización particularmente preferida la presente invención se refiere a mezclas
que comprenden el compuesto (I-4) como compuesto de fórmula (I) y un componente
10 (B), en particular las mezclas (I-4) + (2.1), (I-4) + (2.2), (I-4) + (2.6), (I-4) + (2.8), (I-
4) + (2.11), (I-4) + (2.12), (I-4) + (2.13), (I-4) + (2.14), (I-4) + (2.15), (I-4) + (2.16), (I-
4) + (2.17), (I-4) + (2.29), (I-4) + (3.1), (I-4) + (3.2), (I-4) + (3.3), (I-4) + (3.4), (I-4) + (3.9),
(I-4) + (3.10), (I-4) + (3.12), (I-4) + (3.16), (I-4) + (3.17), (I-4) + (3.22), (I-4) + (4.6), (I-
4) + (5.1), (I-4) + (5.4), (I-4) + (5.5), (I-4) + (5.7), (I-4) + (5.8), (I-4) + (5.9), (I-4) + (5.16), (I-
15 4) + (5.23), (I-4) + (5.25), (I-4) + (5.26), (I-4) + (5.29), (I-4) + (5.30), (I-4) + (7.7), (I-
4) + (9.2), (I-4) + (9.4), (I-4) + (9.5), (I-4) + (10.9), (I-4) + (10.10), (I-4) + (12.9), (I-
4) + (12.10), (I-4) + (14.4), (I-4) + (15.9), (I-4) + (15.24), (I-4) + (15.25), (I-4) + (15.26), (I-
4) + (15.41), (I-4) + (15.42), (I-4) + (15.54), (I-4) + (15.55), (I-4) + (15.56), (I-4) + (15.60),
(I-4) + (15.90).

En una realización preferida la presente invención se refiere a mezclas que comprenden
el compuesto (I-5) como compuesto de fórmula (I) y un componente (B), en particular las
mezclas (I-5) + (1.1), (I-5) + (1.2), (I-5) + (1.3), (I-5) + (1.4), (I-5) + (1.5), (I-5) + (1.6), (I-
5) + (1.7), (I-5) + (1.8), (I-5) + (1.9), (I-5) + (1.10), (I-5) + (1.11), (I-5) + (1.12), (I-
5) + (1.13), (I-5) + (1.14), (I-5) + (1.15), (I-5) + (1.16), (I-5) + (1.17), (I-5) + (1.18), (I-
25 5) + (1.19), (I-5) + (1.20), (I-5) + (1.21), (I-5) + (1.22), (I-5) + (1.23), (I-5) + (1.24), (I-
5) + (1.25), (I-5) + (1.26), (I-5) + (1.27), (I-5) + (1.28), (I-5) + (1.29), (I-5) + (1.30), (I-
5) + (1.31), (I-5) + (1.32), (I-5) + (1.33), (I-5) + (1.34), (I-5) + (1.35), (I-5) + (1.36), (I-
5) + (1.37), (I-5) + (1.38), (I-5) + (1.39), (I-5) + (1.40), (I-5) + (1.41), (I-5) + (1.42), (I-
5) + (1.43), (I-5) + (1.44), (I-5) + (1.45), (I-5) + (1.46), (I-5) + (1.47), (I-5) + (1.48), (I-

5) + (1.49), (l-5) + (1.50), (l-5) + (1.51), (l-5) + (1.52), (l-5) + (1.53), (l-5) + (1.54), (l-5) + (1.55), (l-5) + (1.56), (l-5) + (1.57), (l-5) + (1.58), (l-5) + (1.59), (l-5) + (1.60), (l-5) + (1.61), (l-5) + (1.62), (l-5) + (1.63), (l-5) + (1.64), (l-5) + (2.1), (l-5) + (2.2), (l-5) + (2.3), (l-5) + (2.4), (l-5) + (2.5), (l-5) + (2.6), (l-5) + (2.7), (l-5) + (2.8), (l-5) + (2.9), (l-5) + (2.10), (l-5) + (2.11), (l-5) + (2.12), (l-5) + (2.13), (l-5) + (2.14), (l-5) + (2.15), (l-5) + (2.16), (l-5) + (2.17), (l-5) + (2.18), (l-5) + (2.19), (l-5) + (2.20), (l-5) + (2.21), (l-5) + (2.22), (l-5) + (2.23), (l-5) + (2.24), (l-5) + (2.25), (l-5) + (2.26), (l-5) + (2.27), (l-5) + (2.28), (l-5) + (2.29), (l-5) + (3.1), (l-5) + (3.2), (l-5) + (3.3), (l-5) + (3.4), (l-5) + (3.5), (l-5) + (3.6), (l-5) + (3.7), (l-5) + (3.8), (l-5) + (3.9), (l-5) + (3.10), (l-5) + (3.11), (l-5) + (3.12), (l-5) + (3.13), (l-5) + (3.14), (l-5) + (3.15), (l-5) + (3.16), (l-5) + (3.17), (l-5) + (3.18), (l-5) + (3.19), (l-5) + (3.20), (l-5) + (3.21), (l-5) + (3.22), (l-5) + (3.23), (l-5) + (3.24), (l-5) + (3.25), (l-5) + (3.26), (l-5) + (3.27), (l-5) + (3.28), (l-5) + (3.29), (l-5) + (3.30), (l-5) + (3.31), (l-5) + (3.32), (l-5) + (3.33), (l-5) + (4.1), (l-5) + (4.2), (l-5) + (4.3), (l-5) + (4.4), (l-5) + (4.5), (l-5) + (4.6), (l-5) + (4.7), (l-5) + (4.8), (l-5) + (4.9), (l-5) + (4.10), (l-5) + (4.11), (l-5) + (4.12), (l-5) + (4.13), (l-5) + (4.14), (l-5) + (5.1), (l-5) + (5.2), (l-5) + (5.3), (l-5) + (5.4), (l-5) + (5.5), (l-5) + (5.6), (l-5) + (5.7), (l-5) + (5.8), (l-5) + (5.9), (l-5) + (5.10), (l-5) + (5.11), (l-5) + (5.12), (l-5) + (5.13), (l-5) + (5.14), (l-5) + (5.15), (l-5) + (5.16), (l-5) + (5.17), (l-5) + (5.18), (l-5) + (5.19), (l-5) + (5.20), (l-5) + (5.21), (l-5) + (5.22), (l-5) + (5.23), (l-5) + (5.24), (l-5) + (5.25), (l-5) + (5.26), (l-5) + (5.27), (l-5) + (5.28), (l-5) + (5.29), (l-5) + (5.30), (l-5) + (5.31), (l-5) + (5.32), (l-5) + (5.33), (l-5) + (5.34), (l-5) + (6.1), (l-5) + (6.2), (l-5) + (6.3), (l-5) + (6.4), (l-5) + (7.1), (l-5) + (7.2), (l-5) + (7.3), (l-5) + (7.4), (l-5) + (7.5), (l-5) + (7.6), (l-5) + (7.7), (l-5) + (7.8), (l-5) + (8.1), (l-5) + (8.2), (l-5) + (8.3), (l-5) + (8.4), (l-5) + (9.1), (l-5) + (9.2), (l-5) + (9.3), (l-5) + (9.4), (l-5) + (9.5), (l-5) + (9.6), (l-5) + (9.7), (l-5) + (9.8), (l-5) + (9.9), (l-5) + (10.1), (l-5) + (10.2), (l-5) + (10.3), (l-5) + (10.4), (l-5) + (10.5), (l-5) + (10.6), (l-5) + (10.7), (l-5) + (10.8), (l-5) + (10.9), (l-5) + (10.10), (l-5) + (10.11), (l-5) + (10.12), (l-5) + (10.13), (l-5) + (10.14), (l-5) + (10.15), (l-5) + (11.1), (l-5) + (11.2), (l-5) + (11.3), (l-5) + (11.4), (l-5) + (11.5), (l-5) + (11.6), (l-5) + (11.7), (l-5) + (12.1), (l-5) + (12.2), (l-5) + (12.3), (l-5) + (12.4), (l-5) + (12.5), (l-5) + (12.6), (l-5) + (12.7), (l-5) + (12.8), (l-5) + (12.9), (l-

5) + (12.10), (I-5) + (12.11), (I-5) + (12.12), (I-5) + (12.13), (I-5) + (13.1), (I-5) + (13.2), (I-5) + (13.3), (I-5) + (13.4), (I-5) + (13.5), (I-5) + (13.6), (I-5) + (13.7), (I-5) + (14.1), (I-5) + (14.2), (I-5) + (14.3), (I-5) + (14.4), (I-5) + (14.5), (I-5) + (15.1), (I-5) + (15.2), (I-5) + (15.3), (I-5) + (15.4), (I-5) + (15.5), (I-5) + (15.6), (I-5) + (15.7), (I-5) + (15.8), (I-5) + (15.9), (I-5) + (15.10), (I-5) + (15.11), (I-5) + (15.12), (I-5) + (15.13), (I-5) + (15.14), (I-5) + (15.15), (I-5) + (15.16), (I-5) + (15.17), (I-5) + (15.18), (I-5) + (15.19), (I-5) + (15.20), (I-5) + (15.21), (I-5) + (15.22), (I-5) + (15.23), (I-5) + (15.24), (I-5) + (15.25), (I-5) + (15.26), (I-5) + (15.27), (I-5) + (15.28), (I-5) + (15.29), (I-5) + (15.30), (I-5) + (15.31), (I-5) + (15.32), (I-5) + (15.33), (I-5) + (15.34), (I-5) + (15.35), (I-5) + (15.36), (I-5) + (15.37), (I-5) + (15.38), (I-5) + (15.39), (I-5) + (15.41), (I-5) + (15.42), (I-5) + (15.43), (I-5) + (15.44), (I-5) + (15.45), (I-5) + (15.46), (I-5) + (15.47), (I-5) + (15.48), (I-5) + (15.49), (I-5) + (15.50), (I-5) + (15.51), (I-5) + (15.52), (I-5) + (15.53), (I-5) + (15.54), (I-5) + (15.55), (I-5) + (15.56), (I-5) + (15.57), (I-5) + (15.58), (I-5) + (15.59), (I-5) + (15.60), (I-5) + (15.61), (I-5) + (15.62), (I-5) + (15.63), (I-5) + (15.64), (I-5) + (15.65), (I-5) + (15.66), (I-5) + (15.67), (I-5) + (15.68), (I-5) + (15.69), (I-5) + (15.70), (I-5) + (15.71), (I-5) + (15.72), (I-5) + (15.73), (I-5) + (15.74), (I-5) + (15.75), (I-5) + (15.76), (I-5) + (15.77), (I-5) + (15.78), (I-5) + (15.79), (I-5) + (15.80), (I-5) + (15.81), (I-5) + (15.82), (I-5) + (15.83), (I-5) + (15.84), (I-5) + (15.85), (I-5) + (15.86), (I-5) + (15.87), (I-5) + (15.88), (I-5) + (15.89), (I-5) + (15.90), (I-5) + (15.91), (I-5) + (15.92), (I-5) + (15.93), (I-5) + (15.94).

En otra realización particularmente preferida la presente invención se refiere a mezclas que comprenden el compuesto (I-5) como compuesto de fórmula (I) y un componente (B), en particular las mezclas (I-5) + (2.1), (I-5) + (2.2), (I-5) + (2.6), (I-5) + (2.8), (I-5) + (2.11), (I-5) + (2.12), (I-5) + (2.13), (I-5) + (2.14), (I-5) + (2.15), (I-5) + (2.16), (I-5) + (2.17), (I-5) + (2.29), (I-5) + (3.1), (I-5) + (3.2), (I-5) + (3.3), (I-5) + (3.4), (I-5) + (3.9), (I-5) + (3.10), (I-5) + (3.12), (I-5) + (3.16), (I-5) + (3.17), (I-5) + (3.22), (I-5) + (4.6), (I-5) + (5.1), (I-5) + (5.4), (I-5) + (5.5), (I-5) + (5.7), (I-5) + (5.8), (I-5) + (5.9), (I-5) + (5.16), (I-5) + (5.23), (I-5) + (5.25), (I-5) + (5.26), (I-5) + (5.29), (I-5) + (5.30), (I-5) + (7.7), (I-5) + (9.2), (I-5) + (9.4), (I-5) + (9.5), (I-5) + (10.9), (I-5) + (10.10), (I-5) + (12.9), (I-

5) + (12.10), (I-5) + (14.4), (I-5) + (15.9), (I-5) + (15.24), (I-5) + (15.25), (I-5) + (15.26), (I-5) + (15.41), (I-5) + (15.42), (I-5) + (15.54), (I-5) + (15.55), (I-5) + (15.56), (I-5) + (15.60), (I-5) + (15.90).

En una realización preferida la presente invención se refiere a mezclas que comprenden
5 el compuesto (I-6) como compuesto de fórmula (I) y un componente (B), en particular las mezclas (I-6) + (1.1), (I-6) + (1.2), (I-6) + (1.3), (I-6) + (1.4), (I-6) + (1.5), (I-6) + (1.6), (I-6) + (1.7), (I-6) + (1.8), (I-6) + (1.9), (I-6) + (1.10), (I-6) + (1.11), (I-6) + (1.12), (I-6) + (1.13), (I-6) + (1.14), (I-6) + (1.15), (I-6) + (1.16), (I-6) + (1.17), (I-6) + (1.18), (I-6) + (1.19), (I-6) + (1.20), (I-6) + (1.21), (I-6) + (1.22), (I-6) + (1.23), (I-6) + (1.24), (I-6) + (1.25), (I-6) + (1.26), (I-6) + (1.27), (I-6) + (1.28), (I-6) + (1.29), (I-6) + (1.30), (I-6) + (1.31), (I-6) + (1.32), (I-6) + (1.33), (I-6) + (1.34), (I-6) + (1.35), (I-6) + (1.36), (I-6) + (1.37), (I-6) + (1.38), (I-6) + (1.39), (I-6) + (1.40), (I-6) + (1.41), (I-6) + (1.42), (I-6) + (1.43), (I-6) + (1.44), (I-6) + (1.45), (I-6) + (1.46), (I-6) + (1.47), (I-6) + (1.48), (I-6) + (1.49), (I-6) + (1.50), (I-6) + (1.51), (I-6) + (1.52), (I-6) + (1.53), (I-6) + (1.54), (I-6) + (1.55), (I-6) + (1.56), (I-6) + (1.57), (I-6) + (1.58), (I-6) + (1.59), (I-6) + (1.60), (I-6) + (1.61), (I-6) + (1.62), (I-6) + (1.63), (I-6) + (1.64), (I-6) + (2.1), (I-6) + (2.2), (I-6) + (2.3), (I-6) + (2.4), (I-6) + (2.5), (I-6) + (2.6), (I-6) + (2.7), (I-6) + (2.8), (I-6) + (2.9), (I-6) + (2.10), (I-6) + (2.11), (I-6) + (2.12), (I-6) + (2.13), (I-6) + (2.14), (I-6) + (2.15), (I-6) + (2.16), (I-6) + (2.17), (I-6) + (2.18), (I-6) + (2.19), (I-6) + (2.20), (I-6) + (2.21), (I-6) + (2.22), (I-6) + (2.23), (I-6) + (2.24), (I-6) + (2.25), (I-6) + (2.26), (I-6) + (2.27), (I-6) + (2.28), (I-6) + (2.29), (I-6) + (3.1), (I-6) + (3.2), (I-6) + (3.3), (I-6) + (3.4), (I-6) + (3.5), (I-6) + (3.6), (I-6) + (3.7), (I-6) + (3.8), (I-6) + (3.9), (I-6) + (3.10), (I-6) + (3.11), (I-6) + (3.12), (I-6) + (3.13), (I-6) + (3.14), (I-6) + (3.15), (I-6) + (3.16), (I-6) + (3.17), (I-6) + (3.18), (I-6) + (3.19), (I-6) + (3.20), (I-6) + (3.21), (I-6) + (3.22), (I-6) + (3.23), (I-6) + (3.24), (I-6) + (3.25), (I-6) + (3.26), (I-6) + (3.27), (I-6) + (3.28), (I-6) + (3.29), (I-6) + (3.30), (I-6) + (3.31), (I-6) + (3.32), (I-6) + (3.33), (I-6) + (4.1), (I-6) + (4.2), (I-6) + (4.3), (I-6) + (4.4), (I-6) + (4.5), (I-6) + (4.6), (I-6) + (4.7), (I-6) + (4.8), (I-6) + (4.9), (I-6) + (4.10), (I-6) + (4.11), (I-6) + (4.12), (I-6) + (4.13), (I-6) + (4.14), (I-6) + (5.1), (I-6) + (5.2), (I-6) + (5.3), (I-6) + (5.4), (I-6) + (5.5), (I-6) + (5.6), (I-6) + (5.7), (I-6) + (5.8), (I-

6) + (5.9), (l-6) + (5.10), (l-6) + (5.11), (l-6) + (5.12), (l-6) + (5.13), (l-6) + (5.14), (l-6) + (5.15), (l-6) + (5.16), (l-6) + (5.17), (l-6) + (5.18), (l-6) + (5.19), (l-6) + (5.20), (l-6) + (5.21), (l-6) + (5.22), (l-6) + (5.23), (l-6) + (5.24), (l-6) + (5.25), (l-6) + (5.26), (l-6) + (5.27), (l-6) + (5.28), (l-6) + (5.29), (l-6) + (5.30), (l-6) + (5.31), (l-6) + (5.32), (l-6) + (5.33), (l-6) + (5.34), (l-6) + (6.1), (l-6) + (6.2), (l-6) + (6.3), (l-6) + (6.4), (l-6) + (7.1), (l-6) + (7.2), (l-6) + (7.3), (l-6) + (7.4), (l-6) + (7.5), (l-6) + (7.6), (l-6) + (7.7), (l-6) + (7.8), (l-6) + (8.1), (l-6) + (8.2), (l-6) + (8.3), (l-6) + (8.4), (l-6) + (9.1), (l-6) + (9.2), (l-6) + (9.3), (l-6) + (9.4), (l-6) + (9.5), (l-6) + (9.6), (l-6) + (9.7), (l-6) + (9.8), (l-6) + (9.9), (l-6) + (10.1), (l-6) + (10.2), (l-6) + (10.3), (l-6) + (10.4), (l-6) + (10.5), (l-6) + (10.6), (l-6) + (10.7), (l-6) + (10.8), (l-6) + (10.9), (l-6) + (10.10), (l-6) + (10.11), (l-6) + (10.12), (l-6) + (10.13), (l-6) + (10.14), (l-6) + (10.15), (l-6) + (11.1), (l-6) + (11.2), (l-6) + (11.3), (l-6) + (11.4), (l-6) + (11.5), (l-6) + (11.6), (l-6) + (11.7), (l-6) + (12.1), (l-6) + (12.2), (l-6) + (12.3), (l-6) + (12.4), (l-6) + (12.5), (l-6) + (12.6), (l-6) + (12.7), (l-6) + (12.8), (l-6) + (12.9), (l-6) + (12.10), (l-6) + (12.11), (l-6) + (12.12), (l-6) + (12.13), (l-6) + (13.1), (l-6) + (13.2), (l-6) + (13.3), (l-6) + (13.4), (l-6) + (13.5), (l-6) + (13.6), (l-6) + (13.7), (l-6) + (14.1), (l-6) + (14.2), (l-6) + (14.3), (l-6) + (14.4), (l-6) + (14.5), (l-6) + (15.1), (l-6) + (15.2), (l-6) + (15.3), (l-6) + (15.4), (l-6) + (15.5), (l-6) + (15.6), (l-6) + (15.7), (l-6) + (15.8), (l-6) + (15.9), (l-6) + (15.10), (l-6) + (15.11), (l-6) + (15.12), (l-6) + (15.13), (l-6) + (15.14), (l-6) + (15.15), (l-6) + (15.16), (l-6) + (15.17), (l-6) + (15.18), (l-6) + (15.19), (l-6) + (15.20), (l-6) + (15.21), (l-6) + (15.22), (l-6) + (15.23), (l-6) + (15.24), (l-6) + (15.25), (l-6) + (15.26), (l-6) + (15.27), (l-6) + (15.28), (l-6) + (15.29), (l-6) + (15.30), (l-6) + (15.31), (l-6) + (15.32), (l-6) + (15.33), (l-6) + (15.34), (l-6) + (15.35), (l-6) + (15.36), (l-6) + (15.37), (l-6) + (15.38), (l-6) + (15.39), (l-6) + (15.41), (l-6) + (15.42), (l-6) + (15.43), (l-6) + (15.44), (l-6) + (15.45), (l-6) + (15.46), (l-6) + (15.47), (l-6) + (15.48), (l-6) + (15.49), (l-6) + (15.50), (l-6) + (15.51), (l-6) + (15.52), (l-6) + (15.53), (l-6) + (15.54), (l-6) + (15.55), (l-6) + (15.56), (l-6) + (15.57), (l-6) + (15.58), (l-6) + (15.59), (l-6) + (15.60), (l-6) + (15.61), (l-6) + (15.62), (l-6) + (15.63), (l-6) + (15.64), (l-6) + (15.65), (l-6) + (15.66), (l-6) + (15.67), (l-6) + (15.68), (l-6) + (15.69), (l-6) + (15.70), (l-6) + (15.71), (l-6) + (15.72), (l-6) + (15.73), (l-6) + (15.74), (l-6) + (15.75), (l-6) + (15.76),

(I-6) + (15.77), (I-6) + (15.78), (I-6) + (15.79), (I-6) + (15.80), (I-6) + (15.81), (I-6) + (15.82), (I-6) + (15.83), (I-6) + (15.84), (I-6) + (15.85), (I-6) + (15.86), (I-6) + (15.87), (I-6) + (15.88), (I-6) + (15.89), (I-6) + (15.90), (I-6) + (15.91), (I-6) + (15.92), (I-6) + (15.93), (I-6) + (15.94).

En otra realización particularmente preferida la presente invención se refiere a mezclas que comprenden el compuesto (I-6) como compuesto de fórmula (I) y un componente (B), en particular las mezclas (I-6) + (2.1), (I-6) + (2.2), (I-6) + (2.6), (I-6) + (2.8), (I-6) + (2.11), (I-6) + (2.12), (I-6) + (2.13), (I-6) + (2.14), (I-6) + (2.15), (I-6) + (2.16), (I-6) + (2.17), (I-6) + (2.29), (I-6) + (3.1), (I-6) + (3.2), (I-6) + (3.3), (I-6) + (3.4), (I-6) + (3.9), (I-6) + (3.10), (I-6) + (3.12), (I-6) + (3.16), (I-6) + (3.17), (I-6) + (3.22), (I-6) + (4.6), (I-6) + (5.1), (I-6) + (5.4), (I-6) + (5.5), (I-6) + (5.7), (I-6) + (5.8), (I-6) + (5.9), (I-6) + (5.16), (I-6) + (5.23), (I-6) + (5.25), (I-6) + (5.26), (I-6) + (5.29), (I-6) + (5.30), (I-6) + (7.7), (I-6) + (9.2), (I-6) + (9.4), (I-6) + (9.5), (I-6) + (10.9), (I-6) + (10.10), (I-6) + (12.9), (I-6) + (12.10), (I-6) + (14.4), (I-6) + (15.9), (I-6) + (15.24), (I-6) + (15.25), (I-6) + (15.26), (I-6) + (15.41), (I-6) + (15.42), (I-6) + (15.54), (I-6) + (15.55), (I-6) + (15.56), (I-6) + (15.60), (I-6) + (15.90).

En una realización preferida la presente invención se refiere a mezclas que comprenden el compuesto (I-7) como compuesto de fórmula (I) y un componente (B), en particular las mezclas (I-7) + (1.1), (I-7) + (1.2), (I-7) + (1.3), (I-7) + (1.4), (I-7) + (1.5), (I-7) + (1.6), (I-

7) + (1.7), (l-7) + (1.8), (l-7) + (1.9), (l-7) + (1.10), (l-7) + (1.11), (l-7) + (1.12), (l-7) + (1.13), (l-7) + (1.14), (l-7) + (1.15), (l-7) + (1.16), (l-7) + (1.17), (l-7) + (1.18), (l-7) + (1.19), (l-7) + (1.20), (l-7) + (1.21), (l-7) + (1.22), (l-7) + (1.23), (l-7) + (1.24), (l-7) + (1.25), (l-7) + (1.26), (l-7) + (1.27), (l-7) + (1.28), (l-7) + (1.29), (l-7) + (1.30), (l-7) + (1.31), (l-7) + (1.32), (l-7) + (1.33), (l-7) + (1.34), (l-7) + (1.35), (l-7) + (1.36), (l-7) + (1.37), (l-7) + (1.38), (l-7) + (1.39), (l-7) + (1.40), (l-7) + (1.41), (l-7) + (1.42), (l-7) + (1.43), (l-7) + (1.44), (l-7) + (1.45), (l-7) + (1.46), (l-7) + (1.47), (l-7) + (1.48), (l-7) + (1.49), (l-7) + (1.50), (l-7) + (1.51), (l-7) + (1.52), (l-7) + (1.53), (l-7) + (1.54), (l-7) + (1.55), (l-7) + (1.56), (l-7) + (1.57), (l-7) + (1.58), (l-7) + (1.59), (l-7) + (1.60), (l-7) + (1.61), (l-7) + (1.62), (l-7) + (1.63), (l-7) + (1.64), (l-7) + (2.1), (l-7) + (2.2), (l-

7) + (2.3), (l-7) + (2.4), (l-7) + (2.5), (l-7) + (2.6), (l-7) + (2.7), (l-7) + (2.8), (l-7) + (2.9), (l-7) + (2.10), (l-7) + (2.11), (l-7) + (2.12), (l-7) + (2.13), (l-7) + (2.14), (l-7) + (2.15), (l-7) + (2.16), (l-7) + (2.17), (l-7) + (2.18), (l-7) + (2.19), (l-7) + (2.20), (l-7) + (2.21), (l-7) + (2.22), (l-7) + (2.23), (l-7) + (2.24), (l-7) + (2.25), (l-7) + (2.26), (l-7) + (2.27), (l-7) + (2.28), (l-7) + (2.29), (l-7) + (3.1), (l-7) + (3.2), (l-7) + (3.3), (l-7) + (3.4), (l-7) + (3.5), (l-7) + (3.6), (l-7) + (3.7), (l-7) + (3.8), (l-7) + (3.9), (l-7) + (3.10), (l-7) + (3.11), (l-7) + (3.12), (l-7) + (3.13), (l-7) + (3.14), (l-7) + (3.15), (l-7) + (3.16), (l-7) + (3.17), (l-7) + (3.18), (l-7) + (3.19), (l-7) + (3.20), (l-7) + (3.21), (l-7) + (3.22), (l-7) + (3.23), (l-7) + (3.24), (l-7) + (3.25), (l-7) + (3.26), (l-7) + (3.27), (l-7) + (3.28), (l-7) + (3.29), (l-7) + (3.30), (l-7) + (3.31), (l-7) + (3.32), (l-7) + (3.33), (l-7) + (4.1), (l-7) + (4.2), (l-7) + (4.3), (l-7) + (4.4), (l-7) + (4.5), (l-7) + (4.6), (l-7) + (4.7), (l-7) + (4.8), (l-7) + (4.9), (l-7) + (4.10), (l-7) + (4.11), (l-7) + (4.12), (l-7) + (4.13), (l-7) + (4.14), (l-7) + (5.1), (l-7) + (5.2), (l-7) + (5.3), (l-7) + (5.4), (l-7) + (5.5), (l-7) + (5.6), (l-7) + (5.7), (l-7) + (5.8), (l-7) + (5.9), (l-7) + (5.10), (l-7) + (5.11), (l-7) + (5.12), (l-7) + (5.13), (l-7) + (5.14), (l-7) + (5.15), (l-7) + (5.16), (l-7) + (5.17), (l-7) + (5.18), (l-7) + (5.19), (l-7) + (5.20), (l-7) + (5.21), (l-7) + (5.22), (l-7) + (5.23), (l-7) + (5.24), (l-7) + (5.25), (l-7) + (5.26), (l-7) + (5.27), (l-7) + (5.28), (l-7) + (5.29), (l-7) + (5.30), (l-7) + (5.31), (l-7) + (5.32), (l-7) + (5.33), (l-7) + (5.34), (l-7) + (6.1), (l-7) + (6.2), (l-7) + (6.3), (l-7) + (6.4), (l-7) + (7.1), (l-7) + (7.2), (l-7) + (7.3), (l-7) + (7.4), (l-7) + (7.5), (l-7) + (7.6), (l-7) + (7.7), (l-7) + (7.8), (l-7) + (8.1), (l-7) + (8.2), (l-7) + (8.3), (l-7) + (8.4), (l-7) + (9.1), (l-7) + (9.2), (l-7) + (9.3), (l-7) + (9.4), (l-7) + (9.5), (l-7) + (9.6), (l-7) + (9.7), (l-7) + (9.8), (l-7) + (9.9), (l-7) + (10.1), (l-7) + (10.2), (l-7) + (10.3), (l-7) + (10.4), (l-7) + (10.5), (l-7) + (10.6), (l-7) + (10.7), (l-7) + (10.8), (l-7) + (10.9), (l-7) + (10.10), (l-7) + (10.11), (l-7) + (10.12), (l-7) + (10.13), (l-7) + (10.14), (l-7) + (10.15), (l-7) + (11.1), (l-7) + (11.2), (l-7) + (11.3), (l-7) + (11.4), (l-7) + (11.5), (l-7) + (11.6), (l-7) + (11.7), (l-7) + (12.1), (l-7) + (12.2), (l-7) + (12.3), (l-7) + (12.4), (l-7) + (12.5), (l-7) + (12.6), (l-7) + (12.7), (l-7) + (12.8), (l-7) + (12.9), (l-7) + (12.10), (l-7) + (12.11), (l-7) + (12.12), (l-7) + (12.13), (l-7) + (13.1), (l-7) + (13.2), (l-7) + (13.3), (l-7) + (13.4), (l-7) + (13.5), (l-7) + (13.6), (l-7) + (13.7), (l-7) + (14.1), (l-7) + (14.2), (l-7) + (14.3), (l-7) + (14.4), (l-7) + (14.5), (l-7) + (15.1), (l-7) + (15.2), (l-

7) + (15.3), (I-7) + (15.4), (I-7) + (15.5), (I-7) + (15.6), (I-7) + (15.7), (I-7) + (15.8), (I-7) + (15.9), (I-7) + (15.10), (I-7) + (15.11), (I-7) + (15.12), (I-7) + (15.13), (I-7) + (15.14), (I-7) + (15.15), (I-7) + (15.16), (I-7) + (15.17), (I-7) + (15.18), (I-7) + (15.19), (I-7) + (15.20), (I-7) + (15.21), (I-7) + (15.22), (I-7) + (15.23), (I-7) + (15.24), (I-7) + (15.25), (I-7) + (15.26), (I-7) + (15.27), (I-7) + (15.28), (I-7) + (15.29), (I-7) + (15.30), (I-7) + (15.31), (I-7) + (15.32), (I-7) + (15.33), (I-7) + (15.34), (I-7) + (15.35), (I-7) + (15.36), (I-7) + (15.37), (I-7) + (15.38), (I-7) + (15.39), (I-7) + (15.41), (I-7) + (15.42), (I-7) + (15.43), (I-7) + (15.44), (I-7) + (15.45), (I-7) + (15.46), (I-7) + (15.47), (I-7) + (15.48), (I-7) + (15.49), (I-7) + (15.50), (I-7) + (15.51), (I-7) + (15.52), (I-7) + (15.53), (I-7) + (15.54), (I-7) + (15.55), (I-7) + (15.56), (I-7) + (15.57), (I-7) + (15.58), (I-7) + (15.59), (I-7) + (15.60), (I-7) + (15.61), (I-7) + (15.62), (I-7) + (15.63), (I-7) + (15.64), (I-7) + (15.65), (I-7) + (15.66), (I-7) + (15.67), (I-7) + (15.68), (I-7) + (15.69), (I-7) + (15.70), (I-7) + (15.71), (I-7) + (15.72), (I-7) + (15.73), (I-7) + (15.74), (I-7) + (15.75), (I-7) + (15.76), (I-7) + (15.77), (I-7) + (15.78), (I-7) + (15.79), (I-7) + (15.80), (I-7) + (15.81), (I-7) + (15.82), (I-7) + (15.83), (I-7) + (15.84), (I-7) + (15.85), (I-7) + (15.86), (I-7) + (15.87), (I-7) + (15.88), (I-7) + (15.89), (I-7) + (15.90), (I-7) + (15.91), (I-7) + (15.92), (I-7) + (15.93), (I-7) + (15.94).

En otra realización particularmente preferida la presente invención se refiere a mezclas que comprenden el compuesto (I-7) como compuesto de fórmula (I) y un componente (B), en particular las mezclas (I-7) + (2.1), (I-7) + (2.2), (I-7) + (2.6), (I-7) + (2.8), (I-7) + (2.11), (I-7) + (2.12), (I-7) + (2.13), (I-7) + (2.14), (I-7) + (2.15), (I-7) + (2.16), (I-7) + (2.17), (I-7) + (2.29), (I-7) + (3.1), (I-7) + (3.2), (I-7) + (3.3), (I-7) + (3.4), (I-7) + (3.9), (I-7) + (3.10), (I-7) + (3.12), (I-7) + (3.16), (I-7) + (3.17), (I-7) + (3.22), (I-7) + (4.6), (I-7) + (5.1), (I-7) + (5.4), (I-7) + (5.5), (I-7) + (5.7), (I-7) + (5.8), (I-7) + (5.9), (I-7) + (5.16), (I-7) + (5.23), (I-7) + (5.25), (I-7) + (5.26), (I-7) + (5.29), (I-7) + (5.30), (I-7) + (7.7), (I-7) + (9.2), (I-7) + (9.4), (I-7) + (9.5), (I-7) + (10.9), (I-7) + (10.10), (I-7) + (12.9), (I-7) + (12.10), (I-7) + (14.4), (I-7) + (15.9), (I-7) + (15.24), (I-7) + (15.25), (I-7) + (15.26), (I-7) + (15.41), (I-7) + (15.42), (I-7) + (15.54), (I-7) + (15.55), (I-7) + (15.56), (I-7) + (15.60), (I-7) + (15.90).

En una realización preferida la presente invención se refiere a mezclas que comprenden el compuesto (I-8) como compuesto de fórmula (I) y un componente (B), en particular las mezclas (I-8) + (1.1), (I-8) + (1.2), (I-8) + (1.3), (I-8) + (1.4), (I-8) + (1.5), (I-8) + (1.6), (I-8) + (1.7), (I-8) + (1.8), (I-8) + (1.9), (I-8) + (1.10), (I-8) + (1.11), (I-8) + (1.12), (I-8) + (1.13), (I-8) + (1.14), (I-8) + (1.15), (I-8) + (1.16), (I-8) + (1.17), (I-8) + (1.18), (I-8) + (1.19), (I-8) + (1.20), (I-8) + (1.21), (I-8) + (1.22), (I-8) + (1.23), (I-8) + (1.24), (I-8) + (1.25), (I-8) + (1.26), (I-8) + (1.27), (I-8) + (1.28), (I-8) + (1.29), (I-8) + (1.30), (I-8) + (1.31), (I-8) + (1.32), (I-8) + (1.33), (I-8) + (1.34), (I-8) + (1.35), (I-8) + (1.36), (I-8) + (1.37), (I-8) + (1.38), (I-8) + (1.39), (I-8) + (1.40), (I-8) + (1.41), (I-8) + (1.42), (I-8) + (1.43), (I-8) + (1.44), (I-8) + (1.45), (I-8) + (1.46), (I-8) + (1.47), (I-8) + (1.48), (I-8) + (1.49), (I-8) + (1.50), (I-8) + (1.51), (I-8) + (1.52), (I-8) + (1.53), (I-8) + (1.54), (I-8) + (1.55), (I-8) + (1.56), (I-8) + (1.57), (I-8) + (1.58), (I-8) + (1.59), (I-8) + (1.60), (I-8) + (1.61), (I-8) + (1.62), (I-8) + (1.63), (I-8) + (1.64), (I-8) + (2.1), (I-8) + (2.2), (I-8) + (2.3), (I-8) + (2.4), (I-8) + (2.5), (I-8) + (2.6), (I-8) + (2.7), (I-8) + (2.8), (I-8) + (2.9), (I-8) + (2.10), (I-8) + (2.11), (I-8) + (2.12), (I-8) + (2.13), (I-8) + (2.14), (I-8) + (2.15), (I-8) + (2.16), (I-8) + (2.17), (I-8) + (2.18), (I-8) + (2.19), (I-8) + (2.20), (I-8) + (2.21), (I-8) + (2.22), (I-8) + (2.23), (I-8) + (2.24), (I-8) + (2.25), (I-8) + (2.26), (I-8) + (2.27), (I-8) + (2.28), (I-8) + (2.29), (I-8) + (3.1), (I-8) + (3.2), (I-8) + (3.3), (I-8) + (3.4), (I-8) + (3.5), (I-8) + (3.6), (I-8) + (3.7), (I-8) + (3.8), (I-8) + (3.9), (I-8) + (3.10), (I-8) + (3.11), (I-8) + (3.12), (I-8) + (3.13), (I-8) + (3.14), (I-8) + (3.15), (I-8) + (3.16), (I-8) + (3.17), (I-8) + (3.18), (I-8) + (3.19), (I-8) + (3.20), (I-8) + (3.21), (I-8) + (3.22), (I-8) + (3.23), (I-8) + (3.24), (I-8) + (3.25), (I-8) + (3.26), (I-8) + (3.27), (I-8) + (3.28), (I-8) + (3.29), (I-8) + (3.30), (I-8) + (3.31), (I-8) + (3.32), (I-8) + (3.33), (I-8) + (4.1), (I-8) + (4.2), (I-8) + (4.3), (I-8) + (4.4), (I-8) + (4.5), (I-8) + (4.6), (I-8) + (4.7), (I-8) + (4.8), (I-8) + (4.9), (I-8) + (4.10), (I-8) + (4.11), (I-8) + (4.12), (I-8) + (4.13), (I-8) + (4.14), (I-8) + (5.1), (I-8) + (5.2), (I-8) + (5.3), (I-8) + (5.4), (I-8) + (5.5), (I-8) + (5.6), (I-8) + (5.7), (I-8) + (5.8), (I-8) + (5.9), (I-8) + (5.10), (I-8) + (5.11), (I-8) + (5.12), (I-8) + (5.13), (I-8) + (5.14), (I-8) + (5.15), (I-8) + (5.16), (I-8) + (5.17), (I-8) + (5.18), (I-8) + (5.19), (I-8) + (5.20), (I-8) + (5.21), (I-8) + (5.22), (I-8) + (5.23), (I-8) + (5.24), (I-8) + (5.25), (I-8) + (5.26), (I-

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8) + (5.27), (l-8) + (5.28), (l-8) + (5.29), (l-8) + (5.30), (l-8) + (5.31), (l-8) + (5.32), (l-8) + (5.33), (l-8) + (5.34), (l-8) + (6.1), (l-8) + (6.2), (l-8) + (6.3), (l-8) + (6.4), (l-8) + (7.1), (l-8) + (7.2), (l-8) + (7.3), (l-8) + (7.4), (l-8) + (7.5), (l-8) + (7.6), (l-8) + (7.7), (l-8) + (7.8), (l-8) + (8.1), (l-8) + (8.2), (l-8) + (8.3), (l-8) + (8.4), (l-8) + (9.1), (l-8) + (9.2), (l-8) + (9.3),
5 (l-8) + (9.4), (l-8) + (9.5), (l-8) + (9.6), (l-8) + (9.7), (l-8) + (9.8), (l-8) + (9.9), (l-8) + (10.1), (l-8) + (10.2), (l-8) + (10.3), (l-8) + (10.4), (l-8) + (10.5), (l-8) + (10.6), (l-8) + (10.7), (l-8) + (10.8), (l-8) + (10.9), (l-8) + (10.10), (l-8) + (10.11), (l-8) + (10.12), (l-8) + (10.13), (l-8) + (10.14), (l-8) + (10.15), (l-8) + (11.1), (l-8) + (11.2), (l-8) + (11.3), (l-8) + (11.4), (l-8) + (11.5), (l-8) + (11.6), (l-8) + (11.7), (l-8) + (12.1), (l-8) + (12.2), (l-8) + (12.3), (l-8) + (12.4), (l-8) + (12.5), (l-8) + (12.6), (l-8) + (12.7), (l-8) + (12.8), (l-8) + (12.9), (l-8) + (12.10), (l-8) + (12.11), (l-8) + (12.12), (l-8) + (12.13), (l-8) + (13.1), (l-8) + (13.2), (l-8) + (13.3), (l-8) + (13.4), (l-8) + (13.5), (l-8) + (13.6), (l-8) + (13.7), (l-8) + (14.1), (l-8) + (14.2), (l-8) + (14.3), (l-8) + (14.4), (l-8) + (14.5), (l-8) + (15.1), (l-8) + (15.2), (l-8) + (15.3), (l-8) + (15.4), (l-8) + (15.5), (l-8) + (15.6), (l-8) + (15.7), (l-8) + (15.8), (l-8) + (15.9), (l-8) + (15.10), (l-8) + (15.11), (l-8) + (15.12), (l-8) + (15.13), (l-8) + (15.14), (l-8) + (15.15), (l-8) + (15.16), (l-8) + (15.17), (l-8) + (15.18), (l-8) + (15.19), (l-8) + (15.20), (l-8) + (15.21), (l-8) + (15.22), (l-8) + (15.23), (l-8) + (15.24), (l-8) + (15.25), (l-8) + (15.26), (l-8) + (15.27), (l-8) + (15.28), (l-8) + (15.29), (l-8) + (15.30), (l-8) + (15.31), (l-8) + (15.32), (l-8) + (15.33), (l-8) + (15.34), (l-8) + (15.35), (l-8) + (15.36), (l-8) + (15.37), (l-8) + (15.38), (l-8) + (15.39), (l-8) + (15.41), (l-8) + (15.42), (l-8) + (15.43), (l-8) + (15.44), (l-8) + (15.45), (l-8) + (15.46), (l-8) + (15.47), (l-8) + (15.48), (l-8) + (15.49), (l-8) + (15.50), (l-8) + (15.51), (l-8) + (15.52), (l-8) + (15.53), (l-8) + (15.54), (l-8) + (15.55), (l-8) + (15.56), (l-8) + (15.57), (l-8) + (15.58), (l-8) + (15.59), (l-8) + (15.60), (l-8) + (15.61), (l-8) + (15.62), (l-8) + (15.63), (l-8) + (15.64), (l-8) + (15.65),
25 (l-8) + (15.66), (l-8) + (15.67), (l-8) + (15.68), (l-8) + (15.69), (l-8) + (15.70), (l-8) + (15.71), (l-8) + (15.72), (l-8) + (15.73), (l-8) + (15.74), (l-8) + (15.75), (l-8) + (15.76), (l-8) + (15.77), (l-8) + (15.78), (l-8) + (15.79), (l-8) + (15.80), (l-8) + (15.81), (l-8) + (15.82), (l-8) + (15.83), (l-8) + (15.84), (l-8) + (15.85), (l-8) + (15.86), (l-8) + (15.87),

(I-8) + (15.88), (I-8) + (15.89), (I-8) + (15.90), (I-8) + (15.91), (I-8) + (15.92), (I-8) + (15.93), (I-8) + (15.94).

En otra realización particularmente preferida la presente invención se refiere a mezclas que comprenden el compuesto (I-8) como compuesto de fórmula (I) y un componente

5 (B), en particular las mezclas (I-8) + (2.1), (I-8) + (2.2), (I-8) + (2.6), (I-8) + (2.8), (I-8) + (2.11), (I-8) + (2.12), (I-8) + (2.13), (I-8) + (2.14), (I-8) + (2.15), (I-8) + (2.16), (I-8) + (2.17), (I-8) + (2.29), (I-8) + (3.1), (I-8) + (3.2), (I-8) + (3.3), (I-8) + (3.4), (I-8) + (3.9), (I-8) + (3.10), (I-8) + (3.12), (I-8) + (3.16), (I-8) + (3.17), (I-8) + (3.22), (I-8) + (4.6), (I-8) + (5.1), (I-8) + (5.4), (I-8) + (5.5), (I-8) + (5.7), (I-8) + (5.8), (I-8) + (5.9), (I-8) + (5.16), (I-8) + (5.23), (I-8) + (5.25), (I-8) + (5.26), (I-8) + (5.29), (I-8) + (5.30), (I-8) + (7.7), (I-8) + (9.2), (I-8) + (9.4), (I-8) + (9.5), (I-8) + (10.9), (I-8) + (10.10), (I-8) + (12.9), (I-8) + (12.10), (I-8) + (14.4), (I-8) + (15.9), (I-8) + (15.24), (I-8) + (15.25), (I-8) + (15.26), (I-8) + (15.41), (I-8) + (15.42), (I-8) + (15.54), (I-8) + (15.55), (I-8) + (15.56), (I-8) + (15.60), (I-8) + (15.90).

15 Si los compuestos activos en las combinaciones de compuestos activos de acuerdo con la invención están presentes en determinadas relaciones en peso, el efecto sinérgico es particularmente pronunciado. Sin embargo, las relaciones en peso de los compuestos activos en las combinaciones de compuestos activos pueden variar dentro de un intervalo relativamente amplio.

20 En las combinaciones de acuerdo con la invención los compuestos (A) y (B) están presentes en una relación en peso sinérgicamente eficaz de A:B en un intervalo de 500:1 a 1:5000, preferentemente en una relación en peso de 300:1 a 1:2000, con máxima preferencia en una relación en peso de 200:1 a 1:1000. Otras relaciones de A:B que se pueden usar de acuerdo con la presente invención dadas en orden de
25 preferencia creciente son: 250:1 a 1:250, 220:1 a 1:220, 200:1 a 1:200, 170:1 a 1:170, 140:1 a 1:140, 120:1 a 1:120, 100:1 a 1:100, 95:1 a 1:95, 90:1 a 1:90, 85:1 a 1:85, 80:1 a 1:80, 75:1 a 1:75, 70:1 a 1:70, 65:1 a 1:65, 60:1 a 1:60, 55:1 a 1:55, 45:1 a 1:45, 40:1 a 1:40, 35:1 a 1:35, 30:1 a 1:30, 25:1 a 1:25, 15:1 a 1:15, 10:1 a 1:10, 5:1 a 1:5, 4:1 a 1:4, 3:1 a 1:3, 2:1 a 1:2.

Otras relaciones preferidas de A:B que se pueden usar de acuerdo con la presente invención son: 1:1 a 1:5000, 1:1 a 1:2000, 1:1 a 1:1000, 1:10 a 1:5000, 1:10 a 1:2000, 1:10 a 1:1000, 1:20 a 1:5000, 1:20 a 1:2000, 1:20 a 1:1000, 1:100 a 1:5000, 1:100 a 1:2000, 1:100 a 1:1000, 1:200 a 1:5000, 1:200 a 1:2000, 1:200 a 1:1000, 1:500 a 1:5000, 1:500 a 1:2000, 1:500 a 1:1000.

Otras relaciones preferidas de A:B que se pueden usar de acuerdo con la presente invención son: 500:1 a 1:50, 500:1 a 1:2, 500:1 a 10:1, 500:1 a 20:1, 500:1 a 100:1, 300:1 a 1:50, 300:1 a 1:2, 300:1 a 10:1, 300:1 a 20:1, 300:1 a 100:1, 250:1 a 1:50, 250:1 a 1:2, 250:1 a 10:1, 250:1 a 20:1, 250:1 a 100:1, 200:1 a 1:50, 200:1 a 1:2, 200:1 a 10:1, 200:1 a 20:1, 200:1 a 100:1.

En las que un compuesto (A) o un compuesto (B) puede estar presente como mezclas de varias formas isoméricas posibles, en particular de estereoisómeros, tales como, por ejemplo, E y Z, treo y eritro y también isómeros ópticos, y, si es apropiado, también de tautómeros. Lo que se reivindica son los isómeros E y Z y los treo y eritro y también los isómeros ópticos (R y S), cualquier mezcla de estos isómeros y también las posibles formas tautoméricas.

Los compuestos (A) o compuestos (B) que tienen al menos un centro básico son capaces de formar, por ejemplo, sales de adición de ácidos, por ejemplo, con ácidos inorgánicos fuertes, tales como ácidos minerales, por ejemplo ácido perclórico, ácido sulfúrico, ácido nítrico, ácido nitroso, un ácido fosfórico o un haloácido, con ácidos carboxílicos orgánicos fuertes, tales como ácidos alcano C₁-C₄ carboxílicos, no sustituidos o sustituidos, por ejemplo halo-sustituidos, por ejemplo, ácido acético, ácidos dicarboxílicos saturados o insaturados, por ejemplo, ácido oxálico, malónico, succínico, maleico, fumárico y ftálico, ácidos hidroxicarboxílicos, por ejemplo, ácido ascórbico, láctico, málico, tartárico y cítrico, o ácido benzoico, o con ácidos sulfónicos fuertes, tales como ácidos alcano C₁-C₄ o aril-sulfónico, no sustituidos o sustituidos, por ejemplo halo-sustituidos, por ejemplo ácido metano o p-tolueno-sulfónico. Los compuestos (A) o compuestos (B) que tienen al menos un grupo ácido son capaces de formar, por ejemplo, sales con bases, por ejemplo sales metálicas, tales como sales de

metal alcalino o metal alcalinotérreo, por ejemplo sales de sodio, potasio o magnesio o sales con amoníaco o una amina orgánica, tal como morfolina, piperidina, pirrolidina, una mono-, di- o tri-alquilamina inferior, por ejemplo etil-, dietil-, trietil- o dimetil-propil-amina, o una mono-, di- o tri-hidroxi-alquilamina inferior, por ejemplo mono-, di- o tri-etanolamina. Además, se pueden formar opcionalmente las correspondientes sales internas. En el contexto de la invención, se da preferencia a las sales ventajosas para uso agroquímico. En vista de la estrecha relación entre los compuestos (A) o los compuestos (B) en forma libre y en forma de sus sales, anteriormente y a continuación en el presente documento cualquier referencia a los compuestos libres (A) o compuestos libres (B) o a sus sales se debe entender como que también incluye las sales correspondientes o los compuestos libres (A) o compuestos libres (B), respectivamente, cuando sea apropiado y conveniente. El equivalente también se aplica a los tautómeros de los compuestos (A) o compuestos (B) y a sus sales.

De acuerdo con la invención la expresión "combinación" significa las diversas combinaciones de los compuestos (A) y (B), por ejemplo en una forma "lista para mezclar" única, en una mezcla para pulverizar combinada compuesta por formulaciones separadas de los compuestos activos individuales, tal como una "mezcla en tanque", y en un uso combinado de los ingredientes activos individuales cuando se aplica de una manera secuencial, es decir, uno después del otro con un período razonablemente corto, tales como unas pocas horas o días. Preferentemente el orden de aplicación de los compuestos (A) y (B) no es esencial para el funcionamiento de la presente invención.

Composición / Formulación

La presente invención también se refiere a composiciones para combatir/controlar los microorganismos no deseados que comprenden las combinaciones de compuestos activos de acuerdo con la invención. Preferentemente, las composiciones son composiciones fungicidas que comprenden coadyuvantes, disolventes, vehículos, tensioactivos o diluyentes adecuados para uso agrícola.

En el contexto de la presente invención, "control de microorganismos dañinos" significa una reducción de una infestación por microorganismos dañinos, en comparación con la planta no tratada medida como eficacia fungicida, preferentemente una reducción del 25-50 %, en comparación con la planta no tratada (100 %), con más
5 preferencia una reducción del 40-79%, en comparación con la planta no tratada (100 %); aun con más preferencia, la infección con microorganismos dañinos está completamente suprimida (en el 70-100 %). El control puede ser curativo, es decir, para el tratamiento de plantas ya infectadas, o protector, para la protección de plantas que aún no han sido infectadas.

10 Una "cantidad eficaz pero no fitotóxica" significa una cantidad de la composición de la invención que es suficiente para controlar la enfermedad fúngica de la planta de una manera satisfactoria o para erradicar la enfermedad fúngica por completo, y que, al mismo tiempo, no causa ningún síntoma significativo de fitotoxicidad. En general, esta
15 tasa de aplicación puede variar dentro de un intervalo relativamente grande. Depende de varios factores, por ejemplo, en el hongo que se va a controlar, la planta, las condiciones climáticas y los ingredientes de las composiciones de la invención.

Los disolventes orgánicos adecuados incluyen todos los disolventes orgánicos polares y no polares usados habitualmente para fines de formulación. Los disolventes preferibles se seleccionan de cetonas, por ejemplo metil-isobutil-cetona y ciclohexanona, amidas,
20 por ejemplo dimetil-formamida y amidas de ácido alcanocarboxílico, por ejemplo N,N-dimetil-decanamida y N,N-dimetil-octanamida, además disolventes cíclicos, por ejemplo N-metil-pirrolidona, N-octil-pirrolidona, N-dodecil-pirrolidona, N-octil-caprolactama, N-dodecil-caprolactama y butirolactona, además disolventes muy polares, por ejemplo dimetilsulfóxido, e hidrocarburos aromáticos, por ejemplo xilol, Solvesso™, aceites
25 minerales, por ejemplo gasolina blanca, petróleo, alquilbencenos y aceite de huso, también ésteres, por ejemplo acetato de propilenglicol-monometiléter, éster dibutílico del ácido adípico, éster hexílico del ácido acético, éster heptílico del ácido acético, éster tri-*n*-butílico del ácido cítrico y éster di-*n*-butílico del ácido ftálico, y también alcoholes, por ejemplo alcohol bencílico y 1-metoxi-2-propanol.

20

Además la invención se refiere a un procedimiento de combatir microorganismos indeseables, caracterizado porque las combinaciones de compuestos activos de acuerdo con la invención se aplican a los hongos fitopatogénicos y/o su hábitat.

De acuerdo con la invención, vehículo se entiende que significa una sustancia natural o sintética, orgánica o inorgánica que se mezcla o combina con los compuestos activos para una mejor aplicabilidad, en particular para la aplicación a plantas o partes de planta o semillas. El vehículo, que puede ser sólido o líquido, es generalmente inerte y debe ser adecuado para uso agrícola.

De acuerdo con la invención, un vehículo es una sustancia natural o sintética, orgánica o inorgánica con la que se mezclan o combinan los ingredientes activos para una mejor aplicabilidad, en particular para la aplicación a plantas o partes de planta o semillas. El vehículo, que puede ser sólido o líquido, es generalmente inerte y debe ser adecuado para uso en agricultura.

Los vehículos sólidos o líquidos adecuados son: por ejemplo sales de amonio y minerales molidos naturales, tales como caolines, arcillas, talco, creta, cuarzo, atapulgita, montmorillonita o tierra de diatomeas, y minerales sintéticos molidos, tal como sílice finalmente dividida, alúmina y silicatos naturales o sintéticos, resinas, ceras, fertilizantes sólidos, agua, alcoholes, en especial butanol, disolventes orgánicos, aceites minerales y aceites vegetales, y también sus derivados. También es posible usar mezclas de tales vehículos.

La carga y el vehículo sólidos incluyen partículas inorgánicas, por ejemplo carbonatos, silicatos, sulfatos y óxidos con un tamaño de partícula promedio entre 0,005 y 20 μm , preferentemente entre 0,02 a 10 μm , por ejemplo sulfato de amonio, fosfato de amonio, urea, carbonato de calcio, sulfato de calcio, sulfato de magnesio, óxido de magnesio, óxido de aluminio, dióxido de silicio, también llamado sílice de partícula fina, geles de sílice, silicatos naturales o sintéticos y aluminosilicatos y productos vegetales como harina de cereal, polvo/serrín de madera y celulosa en polvo.

Los vehículos sólidos útiles para los gránulos incluyen: por ejemplo, minerales naturales triturados y fraccionados, tales como calcita, mármol, piedra pómez,

sepiolita, dolomita, y también gránulos sintéticos de harinas inorgánicas y orgánicas y también gránulos de material orgánico tal como serrín, cáscaras de coco, mazorcas de maíz y tallos de tabaco.

Los diluyentes o vehículos gaseosos licuados útiles son líquidos adecuados que son
5 gaseosos a temperatura ambiente y a presión atmosférica, por ejemplo, propulsores de aerosol, tales como butano, propano, nitrógeno y dióxido de carbono.

En las formulaciones, es posible usar adherentes, tales como carboximetilcelulosa y polímeros naturales y sintéticos en la forma de polvos, gránulos y látex, tales como goma arábica, alcohol polivinílico, acetato de polivinilo, o también se pueden usar
10 fosfolípidos naturales, tales como cefalinas y lecitinas y fosfolípidos sintéticos. Otros aditivos pueden ser aceites minerales y vegetales.

Si el diluyente usado es agua, también es posible por ejemplo, usar disolventes orgánicos como disolventes auxiliares. Los disolventes líquidos adecuados son esencialmente: compuestos aromáticos, tales como xileno, tolueno o alquilnaftalenos,
15 compuestos aromáticos clorados o hidrocarburos alifáticos clorados, tales como clorobencenos, cloroetilenos o cloruro de metileno, hidrocarburos alifáticos, tal como ciclohexano o parafinas, por ejemplo fracciones de aceite mineral, aceites minerales y vegetales, alcoholes, tales como butanol o glicol, y también éteres y ésteres de los mismos, cetonas, tal como acetona, metiletilcetona, metilisobutilcetona o
20 ciclohexanona, disolventes muy polares, tales como dimetilformamida y dimetilsulfóxido, y también agua.

Las composiciones de acuerdo con la invención también pueden comprender otros componentes, tales como, por ejemplo, tensioactivos. Los tensioactivos adecuados son emulsionantes, dispersantes o agentes humectantes que tienen propiedades iónicas o
25 no iónicas, o mezclas de estos tensioactivos. Los ejemplos de los mismos son sales de ácido poliacrílico, sales de ácido lignosulfónico, sales de ácido fenolsulfónico o ácido naftalensulfónico, policondensados de óxido de etileno con alcoholes grasos o con ácidos grasos o con aminas grasas, fenoles sustituidos (preferentemente alquilfenoles o arilfenoles), sales de ésteres sulfosuccínicos, derivados de taurina (preferentemente

tauratos de alquilo), ésteres fosfóricos de alcoholes polietoxilados o fenoles, ésteres grasos de polioles, y derivados de los compuestos que contienen sulfatos, sulfonatos y fosfatos. La presencia de un tensioactivo se requiere si uno de los compuestos activos y/o uno de los vehículos inertes es insoluble en agua y cuando la aplicación tiene lugar en el agua. La proporción de tensioactivos se encuentra entre el 5 y el 40 por ciento en peso de la composición de acuerdo con la invención.

Los tensioactivos adecuados (coadyuvantes, emulsionantes, dispersantes, coloides protectores, agentes humectantes y adhesivos) incluyen todas las sustancias iónicas y no iónicas comunes, por ejemplo, nonilfenoles etoxilados, polialquilenglicoléter de alcoholes lineales o ramificados, productos de reacción de alquilfenoles con óxido de etileno y/o óxido de propileno, productos de reacción de aminas de ácido grasos con óxido de etileno y/o óxido de propileno, además los ésteres de ácido graso, sulfonatos de alquilo, sulfatos de alquilo, étersulfatos de alquilo, éterfosfatos de alquilo, sulfato de arilo, arilalquilfenoles etoxilados, por ejemplo etoxilatos de tristiril-fenol, además arilalquilfenoles etoxilados y propoxilados como etoxilatos y -etoxi- y -propoxilatos de arilalquilfenol sulfatados o fosfatados. Otros ejemplos son polímeros hidrosolubles, naturales y sintéticos, por ejemplo lignosulfonatos, gelatina, goma arábiga, fosfolípidos, almidón, almidón modificado hidrofóbico y derivados de celulosa, en particular éster de celulosa y éter de celulosa, también poli(alcohol vinílico), poli(acetato de vinilo), polivinilpirrolidona, poli(ácido acrílico), poli(ácido metacrílico) y co-polimerizados de ácido (met)acrílico y ésteres de ácido (met)acrílico, y además coplimerizados de ácido metacrílico y ácido metacrílico que se neutralizan con hidróxido de metal alcalino y también productos de condensación de sales de ácido naftalenosulfónico opcionalmente sustituido con formaldehído.

Es posible usar colorantes tales como pigmentos inorgánicos, por ejemplo óxido de hierro, óxido de titanio, azul de Prusia y colorantes orgánicos, tales como colorantes de alizarina, colorantes azoicos y colorantes de ftalocianinas metálicas, y oligonutrientes, tales como sales de hierro, manganeso, boro, cobre, cobalto, molibdeno y zinc.

Los antiespumantes que pueden estar presentes en las formulaciones incluyen por ejemplo emulsiones de silicona, alcoholes de cadena larga, ácidos grasos y sus sales y también compuestos organofluorados y mezclas de los mismos.

Los ejemplos de espesantes son polisacáridos, por ejemplo goma de xantano o
5 Veegum, arcillas modificadas, silicatos por ejemplo atapulgita y bentonita, y también ácidos silícicos finamente divididos.

Si es apropiado, también pueden estar presentes otros componentes adicionales, por ejemplo coloides protectores, aglutinantes, adhesivos, espesantes, sustancias tixotrópicas, penetrantes, estabilizantes, agentes secuestrantes, formadores de
10 complejos. En general, los compuestos activos se pueden combinar con cualquier aditivo sólido o líquido usado habitualmente con fines de formulación.

Las combinaciones de la invención se pueden usar como tales o, de acuerdo con sus respectivas propiedades físicas o químicas, en la forma de sus formulaciones o formas de uso preparadas a partir de estas, tales como aerosoles, suspensiones de cápsula,
15 concentrados de nebulización fría, concentrados de nebulización caliente, gránulos encapsulados, gránulos finos, concentrados fluidos para el tratamiento de semillas, soluciones listas para usar, polvos espolvoreables, concentrados emulsionables, emulsiones de aceite en agua, emulsiones de agua en aceite, macrogránulos, microgránulos, polvos dispersables en aceite, concentrados fluidos miscibles en aceite,
20 líquidos miscibles en aceite, gas (a presión), productos generadores de gas, espumas, pastas, semillas recubiertas con plaguicida, concentrados en suspensión, concentrados en suspoemulsión, concentrados solubles, suspensiones, polvos humectables, polvos solubles, polvos y gránulos, gránulos solubles en agua o comprimidos, polvos hidrosolubles para el tratamiento de semillas, polvos
25 humectables, productos naturales y sustancias sintéticas impregnadas con combinaciones de compuestos activos, y también microencapsulaciones en sustancias poliméricas y en materiales de recubrimiento para semilla, y también formulaciones de nebulización fría y nebulización caliente ULV.

Las composiciones de la invención incluyen no solo formulaciones que ya están listas para usar y se pueden aplicar con un aparato adecuado a la planta o la semilla, sino también concentrados comerciales que se deben diluir con agua antes de usar. Las aplicaciones habituales son por ejemplo dilución en agua y posterior pulverizado del
5 licor de pulverización resultante, aplicación después de la dilución en aceite, aplicación directa sin dilución, tratamiento de semilla o aplicación en el suelo de gránulos.

En general, las composiciones de acuerdo con la invención comprenden entre el 0,05 y el 99 por ciento en peso, el 0,01 y el 98 por ciento en peso, preferiblemente entre el 0,1 y el 95 por ciento en peso, de forma particularmente preferida entre el 0,5 y el 90 por
10 ciento en peso de la combinación del compuesto activo de acuerdo con la invención, de modo muy particularmente preferible entre el 10 y el 70 por ciento en peso.

El contenido de ingrediente activo en las formas de aplicación preparadas a partir de las formulaciones comerciales puede variar en un intervalo amplio. La concentración de los ingredientes activos en las formas de aplicación es generalmente de entre el
15 0,000001 al 95 % en peso, preferentemente de entre el 0,0001 y el 2 % en peso.

Las formulaciones mencionadas se pueden preparar de una manera conocida *per se*, por ejemplo, mediante el mezclado de los compuestos activos o las combinaciones de compuestos activos con al menos un extensor, disolvente o diluyente, coadyuvante, emulsionante, dispersante y/o aglutinante o fijador, agente humectante, repelente de
20 agua, si es apropiado secantes y estabilizantes de UV, y si es apropiado colorantes y pigmentos, antiespumantes, conservantes, espesantes inorgánicos y orgánicos, adhesivos, giberelinas y también otros coadyuvantes de procesamiento y agua. De acuerdo con el tipo de formulación que se va a preparar en cada caso, se pueden requerir otras etapas de procesamiento tales como por ejemplo, molienda húmeda,
25 molienda seca o granulación.

Las combinaciones de de la invención pueden estar presentes en formulaciones (comerciales) y en las formas de uso preparadas a partir de estas formulaciones como una mezcla con otros compuestos activos (conocidos), tal como insecticidas, atrayentes,

esterilizantes, bactericidas, acaricidas, nematocidas, fungicidas, reguladores de del crecimiento, herbicidas, fertilizantes, antídotos y semioquímicos.

Las composiciones de acuerdo con la invención no solo comprenden formulaciones listas para usar que se pueden aplicar con aparatos adecuados a la planta o la semilla,

5 sino también concentrados comerciales que se deben diluir con agua antes de usar.

El tratamiento de acuerdo con la invención de las plantas y partes de plantas con los compuestos activos o composiciones se lleva a cabo directamente o por acción en sus alrededores, hábitat o espacio de almacenamiento usando procedimientos de tratamiento habituales, por ejemplo por inmersión, pulverizado, atomizado, irrigación,

10 evaporación, espolvoreado, nebulización, dispersión, espumación, unción, esparcido, empapamiento (remojo), riego por goteo y en el caso del material de propagación, en particular en el caso de las semillas, también como polvo para el tratamiento de semillas en seco, una solución para el tratamiento de semilla, un polvo hidrosoluble para tratamiento en emulsión, por incrustación, por recubrimiento con una o más capas, etc.

15 También es posible aplicar los compuestos activos mediante el procedimiento de volumen ultrabajo, o inyectar la preparación de compuestos activos o el compuesto mismo en el suelo.

Protección de plantas/cultivos

20 Los ingredientes activos o composiciones de la invención tienen una potente actividad microbiciada y se pueden usar para el control de microorganismos no deseados, tales como hongos y bacterias, en protección del cultivo y en la protección de los materiales.

La invención también se refiere a un procedimiento para controlar microorganismos no deseados, caracterizado porque los ingredientes activos de la invención se aplican a los hongos fitopatogénicos, bacterias fitopatogénicas y/o su hábitat.

25 Los fungicidas se pueden usar en la protección de cultivos para el control de hongos fitopatogénicos. Estos se caracterizan por una eficacia sobresaliente contra un amplio espectro de hongos fitopatogénicos, que incluyen patógenos del suelo, que en particular son miembros de las clases *Plasmodiophoromycetes*, *Peronosporomycetes* (Sin. *Oomycetes*), *Chytridiomycetes*, *Zygomycetes*, *Ascomycetes*, *Basidiomycetes* y

Deuteromycetes (Sin. *Fungi imperfecti*). Algunos fungicidas son sistémicamente activos y se pueden usar en la protección de plantas como fungicida foliar, envoltura de semilla o del suelo. Además, son adecuados para combatir los hongos, que entre otras cosas infestan madera o raíces de plantas.

- 5 Se pueden usar bactericidas en la protección de cultivos para el control de *Pseudomonadaceae*, *Rhizobiaceae*, *Enterobacteriaceae*, *Corynebacteriaceae* y *Streptomyetaceae*.

Los ejemplos no limitantes de patógenos de enfermedades fúngicas que se pueden tratar de acuerdo con la invención incluyen:

- 10 enfermedades provocadas por patógenos de oídio, por ejemplo especies de *Blumeria*, por ejemplo *Blumeria graminis*; especies de *Podosphaera*, por ejemplo *Podosphaera leucotricha*; especies de *Sphaerotheca*, por ejemplo *Sphaerotheca fuliginea*; especies de *Uncinula*, por ejemplo *Uncinula necator*;

- enfermedades provocadas por patógeno de la enfermedad de la roya, por ejemplo especies de *Gymnosporangium*, por ejemplo *Gymnosporangium sabinae*; especies de *Hemileia*, por ejemplo *Hemileia vastatrix*; especies de *Phakopsora*, por ejemplo *Phakopsora pachyrhizi* y *Phakopsora meibomiaae*; especies de *Puccinia*, por ejemplo *Puccinia recondite*, *P. triticina*, *P. graminis* o *P. striiformis*; especies de *Uromyces*, por ejemplo *Uromyces appendiculatus*;

- 20 enfermedades provocadas por patógenos del grupos de los Oomycetes, por ejemplo especies de *Albugo*, por ejemplo *Albugo candida*; especies de *Bremia*, por ejemplo *Bremia lactucae*; especies de *Peronospora*, por ejemplo *Peronospora pisi* o *P. brassicae*; especies de *Phytophthora*, por ejemplo *Phytophthora infestans*; especies de *Plasmopara*, por ejemplo *Plasmopara viticola*; especies de *Pseudoperonospora*, por ejemplo *Pseudoperonospora humuli* o *Pseudoperonospora cubensis*; especies de *Pythium*, por ejemplo *Pythium ultimum*;

enfermedades de mancha foliar y marchitamiento foliar provocadas por ejemplo, por especies de *Alternaria*, por ejemplo *Alternaria solani*; especies de *Cercospora*, por ejemplo *Cercospora beticola*; especies de *Cladosporium*, por ejemplo *Cladosporium*

cucumerinum; *Cochliobolus*, por ejemplo *Cochliobolus sativus* (forma de conidios: Drechslera, Sín: Helminthosporium), *Cochliobolus miyabeanus*; especies de *Colletotrichum*, por ejemplo *Colletotrichum lindemuthianum*; especies de *Cycloconium*, por ejemplo *Cycloconium oleaginum*; especies de *Diaporthe*, por ejemplo *Diaporthe citri*; especies de *Elsinoe*, por ejemplo *Elsinoe fawcettii*; especies de *Gloeosporium*, por ejemplo *Gloeosporium laeticolor*, especies de *Glomerella*, por ejemplo *Glomerella cingulata*; especies de *Guignardia*, por ejemplo *Guignardia bidwelli*; especies de *Leptosphaeria*, por ejemplo *Leptosphaeria maculans*, *Leptosphaeria nodorum*; especies de *Magnaporthe*, por ejemplo *Magnaporthe grisea*; especies de *Microdochium*, por ejemplo *Microdochium nivale*; especies de *Mycosphaerella*, por ejemplo *Mycosphaerella graminicola*, *M. arachidicola* y *M. fijiensis*; especies de *Phaeosphaeria*, por ejemplo *Phaeosphaeria nodorum*; especies de *Pyrenophora*, por ejemplo *Pyrenophora teres*, *Pyrenophora tritici repentis*; especies de *Ramularia*, por ejemplo *Ramularia collo-cygni*, *Ramularia areola*; especies de *Rhynchosporium*, por ejemplo *Rhynchosporium secalis*; especies de *Septoria*, por ejemplo *Septoria apii*, *Septoria lycopersii*; especies de *Typhula*, por ejemplo *Typhula incarnata*; especies de *Venturia*, por ejemplo *Venturia inaequalis*;

enfermedades de la raíz y el tallo provocadas, por ejemplo por especies de *Corticium*, por ejemplo *Corticium graminearum*; especies de *Fusarium*, por ejemplo *Fusarium oxysporum*; especies de *Gaeumannomyces*, por ejemplo *Gaeumannomyces graminis*; especies de *Rhizoctonia* species, tales como, por ejemplo *Rhizoctonia solani*; enfermedades de *Sarocladium* provocadas por ejemplo, por *Sarocladium oryzae*; enfermedades de *Sclerotium* provocadas por ejemplo, por *Sclerotium oryzae*; especies de *Tapesia*, por ejemplo *Tapesia acuformis*; especies de *Thielaviopsis*, por ejemplo *Thielaviopsis basicola*;

enfermedades de la espiga y la panoja (que incluye las mazorcas de maíz) provocadas, por ejemplo por especies de *Alternaria*, por ejemplo *Alternaria* spp.; especies de *Aspergillus*, por ejemplo *Aspergillus flavus*; especies de *Cladosporium*, por ejemplo *Cladosporium cladosporioides*; especies de *Claviceps*, por ejemplo *Claviceps*

purpurea; especies de *Fusarium*, por ejemplo *Fusarium culmorum*; especies de *Gibberella*, por ejemplo *Gibberella zeae*; especies de *Monographella*, por ejemplo *Monographella nivalis*; especies de *Septoria*, por ejemplo *Septoria nodorum*;

enfermedades provocadas por hongos del tizón, por ejemplo especies de

5 *Sphacelotheca*, por ejemplo *Sphacelotheca reiliana*; especies de *Tilletia*, por ejemplo *Tilletia caries*, *T. controversa*; especies de *Urocystis*, por ejemplo *Urocystis occulta*; especies de *Ustilago*, por ejemplo *Ustilago nuda*, *U. nuda tritici*;

podredumbre de la fruta provocada, por ejemplo por especies de *Aspergillus*, por ejemplo *Aspergillus flavus*; especies de *Botrytis*, por ejemplo *Botrytis cinerea*; especies

10 de *Penicillium*, por ejemplo *Penicillium expansum* y *P. purpurogenum*; especies de *Sclerotinia*, por ejemplo *Sclerotinia sclerotiorum*; especies de *Verticillium*, por ejemplo *Verticillium alboatrum*;

enfermedades de descomposición, mohos, marchitamiento, podredumbre y caída de plántulas transmitidas por las semillas y el suelo provocadas, por ejemplo por especies

15 de *Alternaria*, provocadas por ejemplo por *Alternaria brassicicola*; especies de *Aphanomyces*, provocadas por ejemplo por *Aphanomyces euteiches*; especies de *Ascochyta*, provocadas por ejemplo por *Ascochyta lentis*; especies de *Aspergillus*, provocadas por ejemplo por *Aspergillus flavus*; especies de *Cladosporium*, provocadas por ejemplo por *Cladosporium herbarum*; especies de *Cochliobolus*, provocadas por

20 ejemplo por *Cochliobolus sativus*; (Conidiaformo: *Drechslera*, *Bipolaris* Sin: *Helminthosporium*); especies de *Colletotrichum*, provocadas por ejemplo por *Colletotrichum coccodes*; especies de *Fusarium*, provocadas por ejemplo por *Fusarium culmorum*; especies de *Gibberella*, provocadas por ejemplo por *Gibberella zeae*; especies de *Macrophomina*, provocadas por ejemplo por *Macrophomina phaseolina*;

25 especies de *Monographella*, provocadas por ejemplo por *Monographella nivalis*; especies de *Penicillium*, provocadas por ejemplo por *Penicillium expansum*; especies de *Phoma*, provocadas por ejemplo por *Phoma lingam*; especies de *Phomopsis*, provocadas por ejemplo por *Phomopsis sojae*; especies de *Phytophthora*, provocadas por ejemplo por *Phytophthora cactorum*; especies de *Pyrenophora*, provocadas por

ejemplo por *Pyrenophora graminea*; especies de *Pyricularia*, provocadas por ejemplo por *Pyricularia oryzae*; especies de *Pythium*, provocadas por ejemplo por *Pythium ultimum*; especies de *Rhizoctonia*, provocadas por ejemplo por *Rhizoctonia solani*; especies de *Rhizopus*, provocadas por ejemplo por *Rhizopus oryzae*; especies de
5 *Sclerotium*, provocadas por ejemplo por *Sclerotium rolfsii*; especies de *Septoria*, provocadas por ejemplo por *Septoria nodorum*; especies de *Typhula*, provocadas por ejemplo por *Typhula incarnata*; especies de *Verticillium*, provocadas por ejemplo por *Verticillium dahliae*;

cancro, agallas y escoba de bruja provocadas, por ejemplo por especies de *Nectria*,
10 por ejemplo *Nectria galligena*;

enfermedades de marchitamiento provocadas, por ejemplo por especies de *Monilinia*, por ejemplo *Monilinia laxa*;

enfermedades de ampollado foliar o rizado foliar provocadas, por ejemplo por especies de *Exobasidium*, por ejemplo *Exobasidium vexans*;

15 especies de *Taphrina*, por ejemplo *Taphrina deformans*;

enfermedades de declive en plantas leñosas provocadas, por ejemplo por especies de Esca, provocadas, por ejemplo por *Phaemoniella clamydospora*, *Phaeoacremonium aleophilum* y *Fomitiporia mediterranea*; muerte regresiva de *Eutypa*, provocadas, por ejemplo por *Eutypa lata*; enfermedades de Ganoderma provocadas, por ejemplo por

20 *Ganoderma boninense*; enfermedades de *Rigidoporus* provocadas, por ejemplo por *Rigidoporus lignosus*;

enfermedades de flores y semillas provocadas, por ejemplo por especies de *Botrytis*, por ejemplo *Botrytis cinerea*;

enfermedades de tubérculos de planta provocadas, por ejemplo por especies de
25 *Rhizoctonia*, por ejemplo *Rhizoctonia solani*; especies de *Helminthosporium*, por ejemplo *Helminthosporium solani*;

hernia de raíz provocada, por ejemplo por especies de *Plasmodiophora*, por ejemplo *Plasmodiophora brassicae*;

enfermedades provocadas por patógenos bacterianos, por ejemplo especies de *Xanthomonas*, por ejemplo *Xanthomonas campestris* pv. *oryzae*; especies de *Pseudomonas*, por ejemplo *Pseudomonas syringae* pv. *lachrymans*; especies de *Erwinia*, por ejemplo *Erwinia amylovora*.

- 5 Las siguientes enfermedades de las alubias de soja se pueden controlar con preferencia:

Las enfermedades fúngicas en hojas, tallos, vainas y semillas provocadas, por ejemplo, por mancha foliar por *Alternaria* (*Alternaria spec. atrans tenuissima*), antracnosis (*Colletotrichum gloeosporoides dematium* var. *truncatum*), mancha marrón

10 (*Septoria glycines*), mancha y tizón foliar por cercospora (*Cercospora kikuchii*), tizón foliar por choanephora (*Choanephora infundibulifera trispora* (Sin.)), mancha foliar por dactuliophora (*Dactuliophora glycines*), oídio (*Peronospora manshurica*), tizón por drechslera (*Drechslera glycini*), mancha foliar de ojo de rana *Cercospora sojina*), mancha foliar por *leptosphaerulina* (*Leptosphaerulina trifolii*), mancha foliar por

15 *phyllosticta* (*Phyllosticta sojaecola*), tizón de vaina y tallo (*Phomopsis sojae*), oídio (*Microsphaera diffusa*), mancha foliar por pyrenochaeta (*Pyrenochaeta glycines*), tizón aéreo, de follaje y de red por *rhizoctonia* (*Rhizoctonia solani*), roya (*Phakopsora pachyrhizi*, *Phakopsora meibomiaae*), sarna (*Sphaceloma glycines*), tizón foliar por stemphylium (*Stemphylium botryosum*), mancha anillada (*Corynespora cassiicola*).

- 20 enfermedades fúngicas en raíces y la base del tallo provocadas por ejemplo, por podredumbre de raíz negra (*Calonectria crotalariae*), podredumbre de carbón (*Macrophomina phaseolina*), tizón o marchitamiento por *fusarium*, podredumbre de raíz, y podredumbre de vaina y cuello (*Fusarium oxysporum*, *Fusarium orthoceras*, *Fusarium semitectum*, *Fusarium equiseti*), podredumbre de raíz por mycoleptodiscus
- 25 (*Mycoleptodiscus terrestris*), neocosmospora (*Neocosmospora vasinfecta*), tizón de vaina y tallo (*Diaporthe phaseolorum*), cancro de tallo (*Diaporthe phaseolorum* var. *caulivora*), podredumbre *Phytophthora* (*Phytophthora megasperma*), podredumbre de tallo marrón (*Phialophora gregata*), podredumbre por *pythium* (*Pythium aphanidermatum*, *Pythium irregulare*, *Pythium debaryanum*, *Pythium myriotilum*,

Pythium ultimum), podredumbre de raíz, descomposición de tallo y caída de plántulas por *rhizoctonia* (*Rhizoctonia solani*), descomposición del tallo por *sclerotinia* (*Sclerotinia sclerotiorum*), tizón sureño por *sclerotinia* (*Sclerotinia rolfsii*), podredumbre de raíz por *thielaviopsis* (*Thielaviopsis basicola*)

- 5 Las composiciones fungicidas de la invención se pueden usar para el control curativo o protector/preventivo de los hongos fitopatogénicos. En consecuencia la invención también se refiere a procedimientos curativos y protectores para controlar hongos fitopatogénicos mediante el uso de los ingredientes activos o composiciones de la invención, que se aplican a la semilla, la planta o partes de planta, la fruta o el suelo en
- 10 que crecen las plantas.

El hecho de que los ingredientes activos son bien tolerados por las plantas en las concentraciones requeridas para controlar las enfermedades permite el tratamiento de las partes aéreas de las plantas, material de propagación y semillas, y del suelo.

De acuerdo con la invención todas las plantas y partes de plantas se pueden tratar.

- 15 Por plantas se entiende todas las plantas y poblaciones de plantas, tales como plantas silvestres deseadas y no deseadas, cultivares y variedades de plantas (que pueden o no ser protegidas por los derechos de las variedades de planta o del cultivador). Los cultivares y las variedades de planta pueden ser plantas obtenidas por procedimientos de propagación y reproducción convencionales que pueden estar asistidos o
- 20 complementados por uno o más procedimientos biotecnológicos tales como por el uso de haploides dobles, fusión de protoplastos, mutagénesis aleatoria y dirigida, marcadores moleculares o genéticos o por procedimientos de bioingeniería e ingeniería genética . Por partes de planta se entiende todas las partes y órganos aéreos y subterráneos de las plantas, tales como brote, hoja, flor y raíz, los ejemplos
- 25 que se pueden mencionar son hojas, agujas, tallos, vástagos, flores, cuerpos fructíferos, frutas y semillas, y también raíces, tubérculos y rizomas. Los cultivos y material de propagación vegetativa y generativa, por ejemplo esquejes, bulbos, rizomas, estolones y semillas también pertenecen a las partes de planta.

Las composiciones activas de la invención, cuando son bien toleradas por las plantas, tienen toxicidad homeotérmica favorable y son bien tolerados por el medioambiente, son adecuados para proteger plantas y órganos de plantas, para aumentar los rendimientos de cosecha, para mejorar la calidad del material cosechado. Con preferencia se pueden
5 usar como composiciones de protección de cultivos. Son activos contra especies normalmente sensibles y resistentes y contra todos o algunos estadios del desarrollo.

Las plantas que se pueden tratar de acuerdo con la invención incluyen las siguientes plantas de cultivo principales: maíz, alubia de soja, alfalfa, algodón, girasol, semillas oleaginosas de *Brassica* tales como *Brassica napus* (por ejemplo canola, colza),
10 *Brassica rapa*, *B. juncea* (por ejemplo mostaza (de campo)) y *Brassica carinata*, *Arecaceae* sp. (por ejemplo palma oleaginosa, coco), arroz, trigo, remolacha azucarera, caña de azúcar, avena, centeno, cebada, mijo y sorgo, tritical, lino, nueces, uvas y vid y varias frutas y hortalizas de varios taxones botánicos, por ejemplo *Rosaceae* sp. (por ejemplo, frutas de pepita tales como manzanas y peras, pero
15 también algunas frutas de hueso tales como albaricoques, cerezas, almendras, ciruelas y melocotones, y frutas de baya tales como fresas, frambuesas, mora roja y negra y grosella), *Ribesioideae* sp., *Juglandaceae* sp., *Betulaceae* sp., *Anacardiaceae* sp., *Fagaceae* sp., *Moraceae* sp., *Oleaceae* sp. (por ejemplo, olivo), *Actinidaceae* sp., *Lauraceae* sp. (por ejemplo, aguacate, canela, alcanfor), *Musaceae* sp. (por ejemplo,
20 árboles y plantaciones de bananas), *Rubiaceae* sp. (por ejemplo, café), *Theaceae* sp. (por ejemplo, té), *Sterculiaceae* sp., *Rutaceae* sp. (por ejemplo, limones, naranjas, mandarinas y pomelo); *Solanaceae* sp. (por ejemplo, tomates, patatas, pimienta, pimientos, berenjenas, tabaco), *Liliaceae* sp., *Compositae* sp. (por ejemplo, lechuga, alcachofas y achicorias, que incluyen raíz de achicoria, endivia o achicoria común),
25 *Umbelliferae* sp. (por ejemplo, zanahorias, perejil, apio y nabo), *Cucurbitaceae* sp. (por ejemplo, pepinos, que incluyen pepinillos, zapallos, sandías, calabazas y melones), *Alliaceae* sp. (por ejemplo, puerros y cebollas), *Cruciferae* sp. (por ejemplo, repollo blanco, repollo colorado, brócoli, coliflores, coles de Bruselas, col china, colinabo, rábano, rábano picante, berro y repollo chino), *Leguminosae* sp. (por ejemplo,

cacahuetes, guisantes, lentejas y alubias, por ejemplo, alubias comunes y habas), *Chenopodiaceae* sp. (por ejemplo, acelga, remolacha azucarera, remolacha forrajera, espinaca, remolacha), *Linaceae* sp. (por ejemplo, cáñamo), *Cannabeacea* sp. (por ejemplo, cannabis), *Malvaceae* sp. (por ejemplo, okra, cacao), *Papaveraceae* (por ejemplo, amapola), *Asparagaceae* (por ejemplo, espárrago); plantas útiles y plantas ornamentales en el jardín y bosque, que incluyen césped, hierba, pasto y *Stevia rebaudiana*; y en cada caso tipos modificados genéticamente de estas plantas.

En particular, las mezclas y composiciones de acuerdo con la invención son adecuadas para controlar las siguientes enfermedades de plantas:

- 10 *Albugo* spp. (roya blanca) en plantas ornamentales, cultivos de hortalizas (por ejemplo *A. candida*) y girasoles (por ejemplo *A. tragopogonis*); *Alternaria* spp. (enfermedad de la mancha negra, tizón negro) en las hortalizas, colza oleaginosa (por ejemplo *A. brassicola* o *A. brassicae*), remolacha azucarera (por ejemplo *A. tenuis*), fruta, arroz, sojas y también en patatas (por ejemplo *A. solani* o *A. alternata*) y tomates (por
- 15 ejemplo *A. solani* o *A. alternata*) y *Alternaria* spp. (cabeza negra) en trigo; *Aphanomyces* spp. En remolacha azucarera y hortalizas; *Ascochyta* spp. En cereales y hortalizas, por ejemplo *A. tritici* (tizón foliar de *Ascochyta*) en trigo *A. hordei* en cebada; *Bipolaris* y *Drechslera* spp. (teleomorfo: *Cochliobolus* spp.), por ejemplo enfermedades de la mancha de hoja (*D. maydis* y *B. zeicola*) en maíz, por ejemplo mancha de la
- 20 gluma (*B. sorokiniana*) en cereales y por ejemplo *B. oryzae* en arroz y en césped; *Blumeria* (nombre antiguo: *Erysiphe*) *graminis* (oídio) en cereales (por ejemplo, trigo o cebada); *Botryosphaeria* spp. ('enfermedad del brazo negro muerto') en las vides (por ejemplo *B. obtusa*); *Botrytis cinerea* (teleomorfo: *Botryotinia fuckeliana*: moho gris, podredumbre gris) en fruta blanda y fruta pomáceas (entre otros, fresas), hortalizas
- 25 (entre otros, lechuga, zanahorias, apio y repollo), colza oleaginosa, flores, vides, cultivos forrajeros y trigo (moho de la espiga); *Bremia lactucae* (oídio) en lechuga; *Ceratocystis* (Sin. *Ophiostoma*) spp. (hongo de manch azul) e árboles caducos y árboles coníferos, por ejemplo *C. ulmi* (enfermedad del olmo holandés) en los olmos; *Cercospora* spp. (mancha foliar por *Cereospora*) en maíz (por ejemplo *C. zae-*

- maydis*), arroz, remolacha azucarera (por ejemplo *C. beticola*), caña de azúcar, hortalizas, café, sojas (por ejemplo *C. sojina* o *C. kikuchii*) y arroz; *Cladosporium* spp. en tomate (por ejemplo *C. fulvum*: moho de hoja de tomate) y cereales, por ejemplo *C. herbarum* (podredumbre de espiga) en trigo; *Claviceps purpurea* (ergot) en cereales;
- 5 *Cochliobolus* (anamorfo: *Helminthosporium* o *Bipolaris*) spp. (mancha foliar) en maíz (por ejemplo *C. carbonum*), cereales (por ejemplo *C. sativus*, anamorfo: *B. sorokiniana*: mancha de la gluma) y arroz (por ejemplo, *C. miyabeanus*, anamorfo: *H. oryzae*); *Colletotrichum* (teleomorfo: *Glomerella*) spp. (antracnosis) en algodón (por ejemplo *C. gossypii*), maíz (por ejemplo *C. graminicola*: podredumbre del tallo y antracnosis),
- 10 frutas blandas, patatas (por ejemplo *C. coccodes*: enfermedad de marchitamiento), alubias (por ejemplo *C. lindemuthianum*) y alubias de soja (por ejemplo *C. truncatum*); *Corticium* spp., por ejemplo *C. sasakii* (tizón de vaina) en arroz; *Corynespora cassicola* (mancha foliar) en alubias de soja y plantas ornamentales; *Cycloconium* spp., por ejemplo *C. oleaginum* en olivos; *Cylindrocarpon* spp. (por ejemplo, cáncer de
- 15 árbol frutal o enfermedad del pie negro de vid, teleomorfo: *Nectria* o *Neonectria* spp.) en árboles frutales, vides (por ejemplo *C. liriodendri*; teleomorfo: *Neonectria liriodendri*, enfermedad del pie negro) y muchas plantas ornamentales; *Dematophora* (teleomorfo: *Rosellinia*) *necatrix* (podredumbre de raíz/tallo) en las alubias de soja; *Diaporthe* spp. por ejemplo *D. phaseolorum* (enfermedad del tallo) en alubias de soja; *Drechslera* (Sin.
- 20 *Helminthosporio*, teleomorfo: *Pyrenophora*) spp. en maíz, cereales, tales como cebada (por ejemplo *D. teres*, mancha de red) y en trigo (por ejemplo *D. tritici-repentis*: DTR mancha foliar), arroz y césped; enfermedad Esca (muerte regresiva de vid, apoplejía) en vides, provocada por *Formitiporia* (Sin. *Phellinus*) *punctata*, *F. mediterranea*. *Phaeomoniella chlamydospora* (nombre antiguo *Phaeoacremonium chlamydosporum*,
- 25 *Phaeoacremonium aleophilum* y/o *Botryosphaeria obtusa*; *Elsinoe* spp. en fruta de pepita (*E. pyri*) y frutas blandas (*E. veneta*: antracnosis) y también vides (*E. ampelina*: antracnosis); *Entyloma oryzae* (tizón de hoja) en arroz; *Epicoccum* spp. (cabeza negra) en trigo; *Erysiphe* spp. (oídio) en remolacha azucarera (*E. betae*), hortalizas (por ejemplo *E. pisi*), tales como especies de pepino (por ejemplo *E. cichoracearum*) y

especies de repollo, tales como colza oleaginosa (por ejemplo *E. cruciferarum*); *Eutypa fata* (cancro o muerte regresiva de Eutypa, anamorfo: *Cytosporina lata*, Sin. *Libertella blepharis*) en árboles frutales, vides y muchas plantas ornamentales; *Exserohilum* (Sin. *Helminthosporium*) spp. en maíz (por ejemplo *E. turcicum*); *Fusarium* (teleomorfo: *Gibberella*) spp. (enfermedad de marchitamiento, podredumbre de raíz y tallo) en
5 varias plantas, tales como por ejemplo *F. graminearum* o *F. culmorum* (podredumbre de raíz y silver-top) en cereales (por ejemplo trigo o cebada), *F. oxysporum* en tomates, *F. solani* en alubias de soja y *F. verticillioides* en maíz; *Gaeumannomyces graminis* (mal del pie) en cereales (por ejemplo trigo o cebada) y maíz; *Gibberella* spp.
10 en cereales (por ejemplo *G. zeae*) y arroz (por ejemplo *G. fujikuroi*: enfermedades bakanae); *Glomerella cingulata* en vides, frutas pomáceas y otras plantas y *G. gossypii* en algodón; *grainstaining complex* en arroz; *Guignardia bidwellii* (podredumbre negra) en vides; *Gymnosporangium* spp. en Rosaceae y enebro, por ejemplo *G. sabinae* (roya de pera) en peras; *Helminthosporium* spp. (Sin. *Drechslera*, teleomorfo: *Cochliobolus*) en maíz, cereales y arroz; *Hemileia* spp., por ejemplo *H. vastatrix* (roya de la hoja de café) en café; *Isariopsis clavispora* (Sin. *Cladosporium vitis*) en vides; *Macrophomina phaseolina* (Sin. *phaseoli*) (podredumbre de raíz/tallo en alubias de soja y algodón; *Microdochium* (Sin. *Fusarium*) *nivale* (moho de nieve rosada) en cereales (por ejemplo trigo o cebada); *Microsphaera diffusa* (oidio en alubias de soja;
20 *Monilinia* spp., por ejemplo *M. laxa*, *M. fructicola* y *M. fructigena* (tizón de flor y ramita en frutas de hueso y otras Rosaceae; *Mycosphaerella* spp. en cereales, bananas, frutas blandas y cacahuets, tales como por ejemplo *M. graminicola* (anamorfo: *Septoria tritici*, tizón foliar *Septoria* en trigo o *M. fijiensis* (enfermedad de Sigatoka en bananas; *Peronospora* spp. (oidio en repollo (por ejemplo *P. brassicae*), colza oleaginosa (por ejemplo *P. parasitica*), plantas bulbosas (por ejemplo *P. destructor*),
25 tabaco (*P. tabacina*) y alubias de soja (por ejemplo *P. manshurica*); *Phakopsora pachyrhizi* y *P. meibomiaae* (roya de soja en alubias de soja; *Phialophora* spp. por ejemplo en vides (por ejemplo *P. tracheiphila* y *P. tetraspora*) y alubias de soja (por ejemplo *P. gregata*: enfermedad del tallo); *Phoma lingam* (podredumbre de raíz y tallo

en colza oleaginosa y repollo y *P. betae* (mancha foliar en remolacha azucarera; *Phomopsis* spp. en girasoles, vides (por ejemplo *P. viticola*: enfermedad del brazo muerto) y alubias de soja (por ejemplo cancro de tallo/tizón de tallo: *P. phaseoli*, teleomorfo: *Diaporthe phaseolorum*); *Physoderma maydis* (mancha marrón) en maíz;

5 *Phytophthora* spp. (enfermedad de marchitamiento, podredumbre de raíz, hoja, tallo y fruta en varias plantas, tales como en pimientos y especies de pepino (por ejemplo *P. capsici*), alubias de soja (por ejemplo *P. megasperma*, Sin. *P. sojae*), patatas y tomates (por ejemplo *P. infestans*. tizón tardío y podredumbre marrón) y árboles de hoja caduca (por ejemplo *P. ramorum* muerte súbita del roble); *Plasmodiophora*

10 *brassicae* (hernia de raíz en repollo, colza oleaginosa, rábano y otras plantas; *Plasmopara* spp., por ejemplo *P. viticola* (peronospora de vides, oídio en vides y *P. halstedii* en girasoles; *Podosphaera* spp. (oídio en Rosaceae, lúpulos, frutas pomáceas y frutas blandas, por ejemplo *P. leucotricha* en manzana; *Polymyxa* spp., por ejemplo en cereales, tales como cebada y trigo (*P. graminis*) y remolacha azucarera (*P. betae*)

15 y las enfermedades víricas transmitidas por las mismas; *Pseudocercospora herpotrichoides* (ruptura mancha ocular/tallo, teleomorfo: *Tapesia yallundae*) en cereales. por ejemplo trigo o cebada; *Pseudoperonospora* (oídio en varias plantas, por ejemplo *P. cubensis* en especies de pepino o *P. humili* en lúpulos; *Pseudopezizicola tracheiphila* (quemadura foliar angular, anamorfo *Phialophora* en vides; *Puccinia* spp.

20 (enfermedad de roya en varias plantas, por ejemplo *P. triticina* (roya marrón del trigo), *P. striiformis* (roya amarilla). *P. hordei* (roya de la hoja enana), *P. graminis* (roya negra) o *P. recondita* (roya marrón del centeno) en cereales, tales como por ejemplo trigo, cebada o centeno *P. kuehnii* on caña de azúcar y, por ejemplo, en espárrago (por ejemplo *P. asparagi*); *Pyrenophora* (anamorfo: *Drechslera*) *tritici-repentis* (tizón foliar moteado en trigo o *P. teres* (mancha de red en cebada; *Pyricularia* spp., por ejemplo *P. oryzae* (teleomorfo: *Magnaporthe grisea*. Quemado del arroz en arroz y *P. grisea* en césped y cereales; *Pythium* spp. (caída de plántulas en césped, arroz, maíz, trigo, algodón, colza oleaginosa, girasoles, remolacha azucarera, hortalizas y otras plantas (por ejemplo *P. ultimum* o *P. aphanidermatum*); *Ramularia* spp., por ejemplo *R. collo-*

cygni (*Ramularia* mancha foliar de césped/mancha foliar fisiológica en cebada y *R. beticola* en remolacha azucarera; *Rhizoctonia* spp. en algodón, arroz, patatas, césped, maíz, colza oleaginosa, patatas, remolacha azucarera, hortalizas y en varias otras plantas, por ejemplo, *R. solani* (podredumbre de raíz y tallo en alubias de soja, *R. solani* (tizón de vaina en arroz o *R. cerealis* (mancha ocular aguda en trigo o cebada; 5 *Rhizopus stolonifer* (podredumbre blanda en fresas, zanahorias, repollos, vides y tomate; *Rhynchosporium secalis* (mancha foliar en cebada, centeno y tritical; *Sarocladium oryzae* y *S. attenuatum* (podredumbre de vaina en arroz; *Sclerotinia* spp. (podredumbre de tallo o blanca en cultivos de hortalizas y campo, tales como colza 10 oleaginosa, girasoles (por ejemplo *Sclerotinia sclerotiorum*) y alubias de soja (por ejemplo *S. rolfii*), *Septoria* spp. en varias plantas, por ejemplo *S. glycines* (mancha foliar en alubias de soja, *S. tritici* (*Septoria* tizón foliar en trigo y *S.* (Sin. *Stagonospora*) *nodorum* (tizón foliar y mancha de la gluma) en cereales; *Uncinula* (Sin. *Erysiphe*) *necator* (oídio, anamorfo: *Oidium tuckeri* en vides; *Setosphaeria* spp. (mancha foliar) en 15 maíz (por ejemplo *S. turcicum*, Sin. *Helminthosporium turcicum*) y césped; *Sphacelotheca* spp. (tizón de la espiga) en maíz, (por ejemplo *S. reiliana*: tizón del grano), mijo y caña de azúcar; *Sphaerotheca fuliginea* (oídio en especies de pepino; *Spongospora subterranea* (sarna pulverulenta en patatas y las enfermedades víricas transmitidas de este modo; *Stagonospora* spp. en cereales, por ejemplo *S. nodorum* 20 (tizón foliar y mancha de la gluma, teleomorfo: *Leptosphaeria* [Sin. *Phaeosphaeria*] *nodorum* en trigo; *Synchytrium endobioticum* en patatas (verruca negra de la patata); *Taphrina* spp., por ejemplo *T. deformans* (enfermedad de la hoja rizada en melocotón y *T. pruni* (lepra del ciruelo en ciruelas; *Thielaviopsis* spp. (podredumbre negra de raíz en tabaco, fruta de pepita, cultivos hortícolas, alubias de soja y algodón, por ejemplo *T. basicola* (Sin. *Chalara elegans*); *Tilletia* spp. (caries o tizón) en cereales, tales como 25 por ejemplo *T. tritici* (Sin. *T. caries*, caries del trigo) y *T. controversa* (caries enana en trigo; *Typhula incarnata* (moho de nieve gris en cebada o trigo; *Urocystis* spp., por ejemplo *U. occulta* (tizón de bandera en centeno; *Uromyces* spp. (roya en plantas hortícolas, tales como alubias (por ejemplo *U. appendiculatus*, Sin. *U. phaseoli*) y

5 remolacha azucarera (por ejemplo *U. betae*); *Ustilago* spp. (tizón suelto) en cereales (por ejemplo *U. nuda* y *U. avenae*), maíz (por ejemplo *U. maydis*: tizón de maíz) y caña de azúcar; *Venturia* spp. (sarna en manzanas (por ejemplo *V. inaequalis*) y peras y *Verticillium* spp. (marchitamiento de hoja y brote) en varias plantas, tales como

árboles frutales y plantas ornamentales, vides, frutas blandas, cultivos hortícolas y de campo, tales como por ejemplo *V. dahliae* en fresas, colza oleaginosa, patatas y tomates.

Regulación del crecimiento de plantas

En algunos casos, las composiciones de la invención, en concentraciones o tasas de aplicación particulares, también se pueden usar como herbicidas, antídotos, reguladores del crecimiento o agentes para mejorar las propiedades de plantas o como microbicidas, por ejemplo como fungicidas, antimicóticos, bactericidas, viricidas (que incluyen composiciones contra viroides) o como composiciones contra MLO (organismos tipo micoplasma) y RLO (organismos tipo Rickettsia). Si es apropiado,

15 también se pueden usar como intermedios o precursores para la síntesis de otros ingredientes activos.

Las combinaciones activas de la invención intervienen en el metabolismo de las plantas y en consecuencia también se pueden usar como reguladores del crecimiento.

Los reguladores del crecimiento de plantas pueden ejercer diversos efectos sobre las plantas. El efecto de las sustancias depende esencialmente del tiempo de aplicación con respecto a la etapa de desarrollo de la planta y también de las cantidades del ingrediente activo aplicadas en las plantas o su ambiente y del tipo de aplicación. En tal caso, los reguladores de crecimiento deben tener un efecto deseado particular sobre las plantas de cultivo.

25 Los compuestos reguladores del crecimiento de plantas se pueden usar, por ejemplo, para inhibir el crecimiento vegetativo de las plantas. Tal inhibición de crecimiento es de interés económico, por ejemplo, en el caso de los pastos, debido a que de este modo es posible reducir la frecuencia del corte de césped en los jardines ornamentales, parques e instalaciones deportivas, en los bordes de las carreteras, en aeropuertos o

en cultivos frutales. También es de importancia la inhibición del crecimiento de plantas herbáceas y leñosas y en la vecindad de las cañerías o cables aéreos, o de forma relativamente general en zonas donde no se desea un crecimiento vigoroso de plantas.

- 5 También es importante el uso de reguladores del crecimiento para la inhibición del crecimiento longitudinal del cereal. Esto reduce o elimina completamente el riesgo de encamado de las plantas antes de la cosecha. Además, los reguladores del crecimiento en el caso de los cereales pueden fortalecer la caña, lo que también contrarresta el encamado. El empleo de reguladores del crecimiento para acortar y
- 10 fortalecer las cañas permite la implementación de mayores volúmenes de fertilizante para aumentar el rendimiento, sin ningún riesgo de encamado en las gramíneas.

En muchas plantas de cultivo, la inhibición del crecimiento vegetativo permite una plantación más densa, y por lo tanto es posible obtener rendimientos más altos sobre la base de superficie del suelo. Otra ventaja de las plantas más pequeñas obtenidas

15 de esta manera es que el cultivo es más fácil de cultivar y cosechar.

La inhibición del crecimiento vegetativo de las plantas también puede llevar a mejores rendimientos debido a que los nutrientes y los productos asimilados tienen un mayor beneficio para la formación de flores y frutos que para las partes vegetativas de las plantas.

- 20 Con frecuencia, los reguladores del crecimiento también se pueden usar para promover el crecimiento vegetativo. Esto presenta un gran beneficio cuando se recolectan las partes de planta vegetativas. Sin embargo, la promoción de crecimiento vegetativo también puede promover el crecimiento vegetativo ya que se forman más productos asimilados, que producen más frutas o más grandes.

- 25 En algunos casos, los aumentos de rendimiento se pueden obtener mediante la manipulación del metabolismo de la planta, sin ningún cambio detectable en el crecimiento vegetativo. Además, los reguladores del crecimiento se pueden usar para alterar la composición de las plantas, que a su vez puede producir una mejora en la calidad de los productos cosechados. Por ejemplo, es posible aumentar el contenido

de azúcar en la remolacha azucarera, caña de azúcar, piñas y en frutas de cítricos, o para aumentar el contenido de proteína en la soja o cereales. También es posible, por ejemplo, usar los reguladores del crecimiento para inhibir la degradación de los ingredientes no deseados, por ejemplo, azúcar en remolacha azucarera o caña de
5 azúcar, antes o después de la recolección. También es posible influir positivamente en la producción o la eliminación de los ingredientes de plantas secundarios. Un ejemplo es la estimulación del flujo de látex en árboles de caucho.

Con la influencia de los reguladores del crecimiento, se pueden formar frutos partenocárpicos. Además, es posible influir en el sexo de las flores. También es
10 posible producir polen estéril, que es de gran importancia en la reproducción y producción de semillas híbridas.

El uso de reguladores del crecimiento puede controlar la ramificación de las plantas. Por una parte, mediante la ruptura de la dominancia apical, es posible promover el desarrollo de los brotes laterales, que puede ser particularmente muy conveniente en
15 el cultivo de las plantas ornamentales, también en combinación con una inhibición del crecimiento. A la inversa, sin embargo, también es posible inhibir el crecimiento de los brotes laterales. Este efecto es de interés particular, por ejemplo, en el cultivo del tabaco o en el cultivo de los tomates.

Con la influencia de los reguladores del crecimiento, se puede controlar la cantidad de
20 hojas en las plantas de modo que se logre la defoliación de las plantas en un tiempo deseado. Tal defoliación cumple un papel importante en la recolección mecánica del algodón, pero también es de interés para facilitar la recolección en otros cultivos, por ejemplo en viticultura. La defoliación de las plantas también puede llevarse a cabo para reducir la transpiración de las plantas antes de que se trasplanten.

25 Los reguladores del crecimiento también se pueden usar para regular la dehiscencia de frutos. Por una parte, es posible evitar la dehiscencia de frutas prematura. Por otra parte, también es posible promover la dehiscencia de frutas o incluso la destrucción de flores para obtener una masa deseada ("afinamiento"), a fin de eliminar la alternancia. Se entiende que la alternancia significa la característica de algunas especies de frutas,

por motivos endógenos, para proporcionar rendimientos muy diferentes de año a año. Finalmente, es posible usar los reguladores del crecimiento en el momento de recolección para reducir las fuerzas requeridas para desprender las frutas, a fin de permitir la recolección mecánica o para facilitar la recolección manual.

- 5 Los reguladores del crecimiento también se pueden usar para obtener maduración más rápida o más retardada del material recolectado antes o después de la recolección. Esto es particularmente ventajoso ya que permite el ajuste óptimo a los requerimientos del mercado. Además, los reguladores del crecimiento en algunos casos pueden mejorar el color de la fruta. Además, los reguladores del crecimiento
- 10 también se pueden usar para concentrar la maduración dentro de un período determinado de tiempo. Esto establece los requisitos previos para la recolección mecánica o manual completa en una sola operación, por ejemplo en el caso de tabaco, tomates o café.

- Mediante el uso de reguladores del crecimiento, es adicionalmente posible influir en el
- 15 reposo de la semilla o brotes de las plantas, de modo que las plantas tales como piña o plantas ornamentales de los viveros, por ejemplo, germinen, broten o florezcan en un momento en que normalmente no tienden a hacerlo. En áreas donde existe un riesgo de heladas, puede ser conveniente retrasar la brotación o germinación de las semillas con la ayuda de los reguladores del crecimiento, a fin de evitar el daño resultante de
- 20 heladas tardías.

Finalmente, los reguladores del crecimiento pueden inducir la resistencia de las plantas a heladas, sequía o alta salinidad del suelo. Esto permite el cultivo de plantas en las regiones que no son normalmente adecuadas para este fin.

Inducción de resistencia / Salud de planta y otros efectos

- 25 Las combinaciones activas de acuerdo con la invención también exhiben un efecto fortalecedor potente en las plantas. Por consiguiente, se pueden usar para movilizar las defensas de la planta contra el ataque con microorganismos inconvenientes.

Las sustancias fortalecedoras de plantas (inductoras de resistencia) se entiende que significan, en el contexto presente, las sustancias que son capaces de estimular el

sistema de defensa de las plantas de manera tal que las plantas tratadas, cuando se inoculan posteriormente con microorganismos no deseados, desarrollan un alto grado de resistencia a estos microorganismos.

Las combinaciones activas de acuerdo con la invención también son adecuadas para
5 aumentar el rendimiento de los cultivos. Además, muestran toxicidad reducida y son bien toleradas por las plantas.

Además, en el contexto de la presente invención los efectos fisiológicos vegetales comprenden los siguientes:

Tolerancia al estrés abiótico, que comprende tolerancia a la temperatura, tolerancia a
10 la sequía y recuperación después de la sequía, eficiencia en el uso de agua (que se correlaciona con el consumo reducido de agua), tolerancia a la inundación, estrés por ozono y tolerancia a UV, tolerancia a los productos químicos como metales pesados, sales, plaguicidas (antídotos) etc.

Tolerancia al estrés biótico, que comprende aumento de resistencia fúngica y aumento
15 de resistencia contra nematodos, virus y bacterias. En el contexto de la presente invención, la tolerancia al estrés biótico comprende preferentemente aumento de resistencia fúngica y aumento de resistencia contra nematodos.

Aumento del vigor de la planta, que comprende salud de la planta/calidad de la planta
y vigor de la semilla, reducción en el fallo de posición, mejora del aspecto, aumento de
20 la recuperación, efecto de verdor aumentado y mejora de la eficacia de la fotosíntesis.

Efectos sobre las hormonas y/o enzimas funcionales de las plantas.

Efectos sobre reguladores del crecimiento (promotores), que comprenden germinación
más temprana, mejor emergencia, sistema de raíces más desarrollado y/o mejor
crecimiento de raíces, aumento de la capacidad de retoñar, retoños más productivos,
25 floración más temprana, aumento de la altura y/o biomasa de la planta, acortamiento de los tallos, mejoras en el crecimiento de los brotes, número de granos/espiga, número de espigas/m², número de estolones y/o número de flores, mejor índice de cosecha, hojas más grandes, menos hojas basales muertas, mejor filotaxis, maduración más temprana / finalización de fructificación más temprana, maduración

homogénea, aumento de la duración del llenado del grano, mejor finalización de fructificación, mayor tamaño de fruto/hortaliza, resistencia al brote y reducción del encamado.

Aumento de rendimiento, con referencia a la biomasa total por hectárea, rendimiento
5 por hectárea, peso de grano/fruta, tamaño de semilla y/o peso de hectolitro así como al aumento de la calidad del producto, que comprende:

mejor capacidad de procesamiento con respecto a la distribución de tamaño (grano, fruto, etc.), maduración homogénea, humedad del grano, mejor molienda, mejor vinificación, mejor fabricación de cerveza, aumento de rendimiento de jugo, capacidad
10 de cosecha, digestibilidad, valor de sedimentación, índice de caída, estabilidad de la vaina, estabilidad del almacenamiento, mejor longitud/resistencia/uniformidad de la fibra, aumento de la calidad de la leche y/o carne de los animales alimentados con ensilaje, adaptación a la cocción y fritura;

que también comprende mejor comerciabilidad en relación con mejor calidad de
15 fruto/grano, distribución de tamaño (grano, fruto, etc.), aumento de almacenamiento / vida útil, firmeza / blandura, sabor (aroma, textura, etc.), grado (tamaño, forma, número de bayas, etc.), número de bayas/frutos por racimo, carácter crocante, fresca, cobertura con cera, frecuencia de trastornos fisiológicos, color, etc.

que también comprende aumento de los ingredientes deseados tales como por
20 ejemplo, contenido de proteína, ácidos grasos, contenido de aceite, calidad del aceite, composición de aminoácidos, contenido de azúcar, contenido de ácido (pH), relación azúcar/ácido (Brix), polifenoles, contenido de almidón, calidad nutricional, contenido/índice de gluten, contenido de energía, sabor, etc.;

y que además comprende disminución de los ingredientes no deseados tales como por
25 ejemplo, menos micotoxinas, menos aflatoxinas, nivel de geosmina, aromas fenólicos, lacasa, oxidasas y peroxidasas de polifenol, contenido de nitrato, etc

La agricultura sostenible, que comprende eficiencia en el uso de nutrientes, especialmente eficiencia en el uso de nitrógeno (N), eficiencia en el uso de fósforo (P),

eficiencia en el uso de agua, aumento de transpiración, respiración y/o tasa de asimilación de CO₂, mejor nodulación, mejor metabolismo de Ca etc.

Retardo de la senescencia, que comprende la mejora de la fisiología vegetal que se manifiesta, por ejemplo, en una fase de llenado de grano más larga, que lleva a un
5 rendimiento más alto, una mayor duración de la coloración verde de la hoja de la planta y en consecuencia que comprende color (verdor), contenido de agua, sequedad etc. Por consiguiente, en el contexto de la presente invención, se ha hallado que la aplicación específica de la invención de la combinación de compuestos activos hace posible prolongar la duración del área de la hoja verde, que retrasa la maduración
10 (senescencia) de la planta. La principal ventaja para el agricultor es una fase de llenado de grano más larga, que lleva a un rendimiento más alto. También es una ventaja para el agricultor sobre la base de mayor flexibilidad en el tiempo de cosecha.

En la presente "valor de sedimentación" es una medida de calidad de la proteína y se describe de acuerdo con Zeleny (valor Zeleny) como el grado de sedimentación de la
15 harina suspendida en una solución de ácido láctico durante un intervalo de tiempo estándar. Esto se toma como una medida de la calidad del horneado. El hinchamiento de la fracción de gluten de la harina en la solución de ácido láctico afecta la velocidad de sedimentación de una suspensión de harina. Tanto un contenido de gluten más alto como mejor una calidad de gluten dan origen a una sedimentación más lenta y valores
20 de la prueba de Zeleny más altos. El valor de sedimentación de la harina depende de la composición de proteína del trigo y se correlaciona principalmente con el contenido de proteína, la dureza del trigo y el volumen del pan y las barras de pan del hogar. Una correlación más fuerte entre el volumen del pan y el volumen de sedimentación de Zeleny en comparación con el volumen de SDS se puede deber al contenido de
25 proteína que influye tanto en el volumen como en el valor de Zeleny (*Czech J. Food Sci. Vol. 21, N°. 3: 91–96, 2000*).

Además el "índice de caída" mencionado en la presente es una medida para calidad de horneado de los cereales, en especial del trigo. La prueba de índice de caída indica que se puede haber producido el daño de brotación. Esto significa que los cambios de

las propiedades físicas de la porción del almidón del grano de trigo ya se producido. En la presente, el instrumento de índice de caída analiza la viscosidad mediante la medición de la resistencia de una pasta de harina y agua a un émbolo en caída. El tiempo (en segundos) para que esto ocurra se conoce como el índice de caída. Los resultados del índice de caída se registran como un índice de la actividad enzimática en una muestra de trigo o harina y los resultados se expresan en tiempo como segundos. Un alto índice de caída (por ejemplo, superior a 300 segundos) indica actividad enzimática mínima y buena calidad de trigo o harina. Un índice de caída bajo (por ejemplo, inferior a 250 segundos) indica sustancial actividad enzimática y trigo o harina dañado por brotes,

La expresión "sistemas de raíz más desarrollado" / "mejor crecimiento de raíces" se refiere a un sistema de raíces más largo, crecimiento de raíces más profundo, crecimiento de raíces más rápido, peso de raíz/peso fresco más alto, volumen de raíz superior, área superficial de raíz más grande, diámetro de raíz más grande, estabilidad de raíz más alta, más ramificación de raíz, mayor número de pelos radiculares, y/o más puntas de raíz y se puede medir mediante el análisis de la arquitectura de raíz con metodologías adecuadas y programas de análisis de imagen (por ejemplo, WinRhizo).

La expresión "eficiencia en el uso de agua del cultivo" se refiere técnicamente a la masa de producto agrícola por unidad de agua consumida y económicamente al valor del producto producido por unidad de agua consumida y se puede medir por ejemplo, en términos de rendimiento por ha, biomasa de las plantas, masa de miles de granos, y el número de espigas por m².

La expresión "eficiencia en el uso del nitrógeno" se refiere técnicamente a la masa de producto agrícola por unidad de nitrógeno consumido y económicamente al valor del producto producido por unidad de nitrógeno consumido, lo que refleja la eficiencia de absorción y utilización.

La mejora del verdor / mejor color y mejor eficiencia de fotosíntesis así como el retraso de la senescencia se pueden medir con técnicas bien conocidas tales como un

sistema HandyPea (Hansatech). Fv/Fm es un parámetro ampliamente usado para indicar la máxima eficiencia cuántica del fotosistema II (PSII). Este parámetro está ampliamente considerado como una indicación selectiva del rendimiento fotosintético del sistema con muestras saludables que típicamente alcanzan un valor de Fv/Fm máximo de aproximadamente 0,85. Se observarán valores más bajos que este si una muestra se ha expuesto a algún tipo de factor de estrés biótico o abiótico que ha reducido la capacidad de inactivación fotoquímica de la energía dentro del PSII. Fv/Fm se presenta como una relación de fluorescencia variable (Fv) respecto de la fluorescencia máxima (Fm). El índice de realización es esencialmente un indicador de la vitalidad de la muestra (Veáse por ejemplo *Advanced Techniques in Soil Microbiology*, 2007, 11, 319-341; *Applied Soil Ecology*, 2000, 15, 169-182.)

La mejora del verdor / mejor color y mejor eficiencia de fotosíntesis así como el retraso de la senescencia también se pueden evaluar por la medición de la tasa de fotosíntesis neta (Pn), medición del contenido de clorofila, por ejemplo, por el procedimiento de extracción de pigmentos de Ziegler y Ehle, medición de la eficiencia fotoquímica (relación de Fv/Fm), determinación de crecimiento de brotes y biomasa de raíces o follaje final, determinación de la densidad de retoños así como la mortalidad de la raíz.

En el contexto de la presente invención se da preferencia a la mejora de los efectos sobre la fisiología vegetal que se seleccionan del grupo que comprende: aumento del crecimiento de raíces/sistema de raíces más desarrollado, aumento del verdor, mejora de la eficiencia del uso de agua (que se correlaciona con el consumo de agua reducido), mejora de la eficiencia en el uso de nutrientes, que comprende especialmente mejora de la eficiencia en el uso de nitrógeno (N), retardo de la senescencia y aumento de rendimiento.

Dentro del aumento del rendimiento, se da preferencia al aumento en el valor de sedimentación y el índice de caída así como al aumento del contenido de proteína y azúcar, especialmente con plantas seleccionadas del grupo de cereales (preferentemente trigo).

67

Preferentemente el nuevo uso de las composiciones fungicidas de la presente invención se refiere a un uso combinado de a) control en forma preventiva y/o curativa de hongos y/o nematodos fitopatogénicos, y b) al menos uno de aumento del crecimiento de raíces, aumento del verdor, mejora de la eficiencia en el uso de agua, 5 retardo de la senescencia y aumento de rendimiento. Del grupo se prefieren particularmente b) aumento del sistema de raíces, eficiencia en el uso de agua y eficiencia en el uso de N.

Tratamiento de semillas

La invención también comprende un procedimiento para tratar la semilla.

10 La invención también se refiere a las semillas que se han tratado con uno de los procedimientos descritos en el párrafo anterior. Las semillas de la invención se usan en procedimientos para la protección de las semillas de los microorganismos no deseados. En estos procedimientos, se usa la semilla tratada con al menos un ingrediente activo de la invención.

15 Las composiciones de la invención también son adecuadas para tratar las semillas. Una gran parte del daño a las plantas de cultivo provocado por los organismos dañinos viene desencadenado por una infección de la semilla durante el almacenamiento o después de la siembra, así como durante y después de la germinación de la planta. Esta fase es particularmente crítica debido a que las raíces y brotes de la planta en 20 crecimiento son particularmente sensibles, e incluso el menor daño puede producir la muerte de la planta. En consecuencia, existe un gran interés en proteger la semilla y la planta germinante usando composiciones apropiadas.

El control de los hongos fitopatogénicos mediante el tratamiento de las semillas de plantas es conocido desde hace largo tiempo y es objeto de continuas mejoras. Sin 25 embargo, el tratamiento de semillas implica una serie de problemas que no siempre se puede resolver de una manera satisfactoria. Por ejemplo, es conveniente desarrollar procedimientos para proteger semillas y la planta germinante que prescindan, o al menos reduzcan significativamente la aplicación adicional de los agentes de protección de las composiciones de cultivo después de la siembra o después de la emergencia de

las plantas. Además es conveniente optimizar la cantidad de ingrediente activo empleado de manera tal que proporcione la mejor protección posible a la semilla y a la planta germinante frente al ataque por parte de los hongos fitopatogénicos, pero sin dañar la planta misma mediante el ingrediente activo usado. En particular, los
5 procedimientos para el tratamiento de semillas deben tomar en consideración las propiedades fungicidas intrínsecas de las plantas transgénicas a fin de obtener la protección óptima de la semilla y la planta en germinación usando una cantidad mínima de composiciones para la protección de cultivos.

En consecuencia la presente invención también se refiere a un procedimiento para
10 proteger semillas y plantas en germinación contra el ataque de hongos fitopatogénicos mediante el tratamiento de la semilla con una composición de la invención. La invención también se refiere al uso de las composiciones de la invención para el tratamiento de semillas para proteger la semilla y a la planta en germinación de los hongos fitopatogénicos. Además, la invención se refiere a las semillas tratadas con una
15 composición de la invención para la protección contra hongos fitopatogénicos.

El control de hongos fitopatogénicos que dañan plantas después de la emergencia se lleva a cabo principalmente por tratamiento del suelo y las partes aéreas de las plantas con composiciones para la protección de cultivos. Debido a los problemas con respecto a una posible influencia de la composición de protección de cultivos en el ambiente y la
20 salud de los seres humanos y animales, se están realizando esfuerzos para reducir la cantidad de combinaciones de ingredientes activos aplicada.

Una de las ventajas de la presente invención es que, debido a las propiedades sistémicas particulares de los ingredientes activos y composiciones de la invención, es que el tratamiento de la semilla con estas composiciones no solo protege la semilla
25 misma, sino también las plantas resultantes después de la emergencia, de hongos fitopatogénicos. De esta manera, se puede prescindir del tratamiento inmediato del cultivo en el momento de la siembra inmediatamente después.

También se considera ventajoso que las composiciones de la invención se pueden usar en particular también para semillas transgénicas, en tal caso la planta que crece de

estas semillas es capaz de expresar una proteína que actúa contra las plagas. En virtud del tratamiento de tales semillas con los ingredientes activos y composiciones de la invención, simplemente mediante la expresión de la proteína, por ejemplo, una proteína insecticida, se pueden controlar ciertas plagas. De modo sorprendente, se puede
5 observar un efecto sinérgico adicional en este caso, que aumenta adicionalmente la efectividad de la protección contra el ataque por las plagas.

Las composiciones de la invención son adecuadas para proteger las semillas de cualquier variedad de planta empleada en agricultura, en el invernadero, en bosques o en horticultura o vinicultura. En particular, esta es una semilla de cereales (tal como
10 trigo, cebada, centeno, tritical, sorgo/mijo, avenas), maíz, algodón, soja, arroz, patatas, girasoles, alubias, café, remolachas (por ejemplo remolachas azucareras y remolachas forrajeras), cacahuetes, colza oleaginosa, amapolas, olivas, cocos, cacao, caña de azúcar, tabaco, hortalizas (tales como tomates, pepinos, cebollas y lechuga), césped y plantas ornamentales (también, véase a continuación). El tratamiento de la semilla de
15 cereales (tales como trigo, cebada, centeno, tritical y avena), maíz y arroz es de significación particular.

Como también se describe a continuación, el tratamiento de semillas transgénicas con los ingredientes activos y composiciones de la invención es de particular importancia. Esto se refiere a la semilla de plantas que contienen al menos un gen heterólogo que
20 permite la expresión de un polipéptido o proteína que tienen propiedades insecticidas. El gen heterólogo en la semilla transgénica puede originarse, por ejemplo, de microorganismos de las especies *Bacillus*, *Rhizobio*, *Pseudomonas*, *Serratia*, *Trichoderma*, *Clavibacter*, *Glomus* o *Gliocladium*. Preferentemente, este gen heterólogo se origina de *Bacillus* sp., en cuyo caso el producto del gen es efectivo
25 contra el barrenador de maíz europeo y/o el gusano de la raíz de maíz occidental. El gen heterólogo se origina más preferentemente a partir de *Bacillus thuringiensis*.

En el contexto de la presente invención, la composición de la invención se aplica a la semilla sola o en una formulación adecuada. Preferentemente, la semilla se trata en un estado que sea suficientemente estable para que no se produzca daño durante el

tratamiento. En general, la semilla se puede tratar en cualquier momento entre la cosecha y la siembra. Es habitual usar la semilla que se ha separado de la planta y se ha liberado de las mazorcas, cáscaras, tallos, cubiertas, pelos o la carne de las frutas. Por ejemplo, es posible usar, por ejemplo, las semillas que se han cosechado, 5 limpiado y secado con un contenido de humedad inferior al 15 % en peso. Alternativamente, también es posible usar semillas que, después del secado, se han tratado, por ejemplo, con agua y luego se han secado de nuevo.

Cuando se trata la semilla, en general se debe tener cuidado de que la composición de la invención se aplique a la semilla o la cantidad de otros aditivos se elige de manera 10 que la germinación de la semilla no se vea afectada o que la planta resultante no sea dañada. Esto debe tenerse en cuenta particularmente en el caso de los compuestos activos que pueden tener efectos fitotóxicos a ciertas tasas de aplicación.

Las composiciones de la invención se pueden aplicar directamente, es decir sin que contengan componentes adicionales y sin haberse diluido. En general, es preferible 15 aplicar las composiciones a la semilla en forma de una formulación adecuada. Las formulaciones y los procedimientos adecuados para el tratamiento de semilla son conocidos por los expertos en la técnica y se describen, por ejemplo, en los siguientes documentos: US 4.272.417, US 4.245.432, US 4.808.430, US 5.876.739, US 2003/0176428 A1, WO 2002/080675, WO 2002/028186.

20 Los ingredientes activos que se pueden usar de acuerdo con la invención se pueden convertir en formulaciones de envoltura de semilla habituales, tal como soluciones, emulsiones, suspensiones, polvos, espumas, suspensiones u otros materiales de recubrimiento para semillas, y también formulaciones ULV.

Estas formulaciones se preparan de una manera conocida mezclando los ingredientes 25 activos con aditivos habituales, tal como, por ejemplo, extensores habituales y también disolventes o diluyentes, colorantes, agentes humectantes, dispersantes, emulsionantes, antiespumantes, conservantes, espesantes secundarios, adhesivos, giberelinas y también agua.

Los colorantes útiles que pueden estar presentes en las formulaciones de envoltura de semilla que se pueden usar de acuerdo con la invención incluyen todos los colorantes habituales para tales fines. Es posible usar pigmentos, que sean escasamente solubles en agua o colorantes, que sean solubles en agua. Los ejemplos incluyen los
 5 colorantes conocidos bajos las denominaciones rodamina B, pigmento rojo C.I. 112 y disolvente rojo C.I. 1.

Los agentes humectantes útiles que pueden estar presentes en las formulaciones de envoltura de semilla que se pueden usar de acuerdo con la invención son todas las sustancias que promueven la humectación y son habituales en la formulación de
 10 ingredientes activos agroquímicos. Se da preferencia al uso de naftalen-sulfonatos de alquilo, tales como naftalen-sulfonatos de diisopropilo o de diisobutilo.

Los dispersantes y/o emulsionantes útiles que pueden estar presentes en las formulaciones de envoltura de semilla que se pueden usar de acuerdo con la invención son todos los dispersantes no iónicos, aniónicos y catiónicos que se usan
 15 convencionalmente en la formulación de ingredientes activos agroquímicos. Con preferencia, es posible usar dispersantes no iónicos o aniónicos o mezclas de dispersantes no iónicos o aniónicos. Los dispersantes no iónicos adecuados incluyen en especial polímeros de bloque de óxido de etileno-óxido de propileno, alquilfenilpoliglicoléteres y tristirilfenolpoliglicoléteres y sus derivados fosfatados o
 20 sulfatados. Los dispersantes aniónicos particularmente adecuados son lignosulfonatos, sales poliacrílicas, y condensados de arilsulfonato-formaldehído.

Los antiespumantes que pueden estar presentes en las formulaciones de envoltura de semilla que se pueden usar de acuerdo con la invención son todos los compuestos inhibidores de espuma que se usan convencionalmente en la formulación de
 25 ingredientes activos agroquímicos. Se puede usar con preferencia antiespumantes de silicona y estearato de magnesio.

Los conservantes que pueden estar presentes en las formulaciones de envoltura de semilla que se pueden usar de acuerdo con la invención son todos los compuestos que

se pueden usar para tales propósitos en composiciones agroquímicas. Los ejemplos incluyen diclorofeno y alcohol bencílico hemiformal.

Los espesantes secundarios que pueden estar presentes en las formulaciones de envoltura de semilla que se pueden usar de acuerdo con la invención son todas las
5 sustancias que se pueden usar para tales propósitos en las composiciones agroquímicas. Los ejemplos preferidos incluyen derivados de celulosa, derivados de ácido acrílico, xantano, arcillas modificadas, sílice finamente dividida.

Los adhesivos adecuados que pueden estar presentes en las formulaciones de desinfectante de semilla que se pueden usar de acuerdo con la invención son todos
10 los aglutinantes habituales que se pueden usar en los productos de envolturas de semilla. Los ejemplos preferidos incluyen polivinilpirrolidona, acetato de polivinilo, poli(alcohol vinílico) y tilosa.

Las giberelinas adecuadas que pueden estar presentes en la formulaciones de envoltura de semilla que se pueden usar de acuerdo con la invención son
15 preferentemente las giberelinas A1, A3 (= ácido giberélico), A4 y A7; se da particular preferencia al uso de ácido giberélico. Las giberelinas son conocidas (cf. R. Wegler "Chemie der Pflanzenschutz- und Schädlingsbekämpfungsmittel" [Chemistry de Crop Protection Agents and Pesticides], Vol. 2, Springer Verlag, 1970, pp. 401-412).

Las formulaciones de envoltura de semilla que se pueden usar de acuerdo con la
20 invención se pueden usar directamente o después de haber sido diluidos con agua, para el tratamiento de una amplia variedad de diferentes semillas, que incluyen, las semillas de plantas transgénicas. En este caso, los efectos sinérgicos también pueden surgir en interacción con las sustancias formadas por expresión.

Para el tratamiento de la semilla con las formulaciones de envoltura de semilla que se
25 pueden usar de acuerdo con la invención, o las preparaciones preparadas partir de las mismas mediante la adición de agua, todas las unidades de mezclado que se pueden usar comúnmente para la envoltura de semilla. De forma específica, el procedimiento de envoltura de semilla es colocar la semilla en un mezclador, añadir la cantidad deseada particular de formulación de envoltura de semilla, bien como tal o bien

después de una dilución previa con agua y realizar el mezclado hasta que la formulación se distribuya uniformemente en la semilla. Si es apropiado, esto viene seguido por un proceso de secado.

Micotoxinas

- 5 Además, el tratamiento de la invención puede reducir el contenido de micotoxina en el material recolectado y los alimentos y piensos preparados a partir del mismo. Las micotoxinas incluyen en particular, pero no exclusivamente, las siguientes: deoxinivalenol (DON), nivalenol, 15-Ac-DON, 3-Ac-DON, T2- y HT2-toxin, fumonisinas, zearalenona, moniliformina, fusarina, diacetoxiscirpenol (DAS), beauvericina,
- 10 enniatina, fusaroproliferina, fusarenol, ocratoxinas, patulina, alcaloides del cornezuelo y aflatoxinas que se pueden producir, por ejemplo, por los siguientes hongos: *Fusarium* spec., tales como *F. acuminatum*, *F. asiaticum*, *F. avenaceum*, *F. crookwellense*, *F. culmorum*, *F. graminearum* (*Gibberella zeae*), *F. equiseti*, *F. fujikoro*i, *F. musarum*, *F. oxysporum*, *F. proliferatum*, *F. poae*, *F. pseudograminearum*, *F. sambucinum*,
- 15 *F. scirpi*, *F. semitectum*, *F. solani*, *F. sporotrichoides*, *F. langsethiae*, *F. subglutinans*, *F. tricinctum*, *F. verticillioides* etc., y también por *Aspergillus* spec., tales como *A. flavus*, *A. parasiticus*, *A. nomius*, *A. ochraceus*, *A. clavatus*, *A. terreus*, *A. versicolor*, *Penicillium* spec., tales como *P. verrucosum*, *P. viridicatum*, *P. citrinum*, *P. expansum*, *P. claviforme*, *P. roqueforti*, *Claviceps* spec., tales como *C. purpurea*, *C. fusiformis*, *C. paspali*, *C. africana*, *Stachybotrys* spec. y otros.
- 20

Protección de materiales

Las composiciones de la invención también se pueden usar en la protección de los materiales, para la protección de materiales industriales contra el ataque y destrucción por los microorganismos no deseados, por ejemplo hongos e insectos.

- 25 Además, las combinaciones de la invención se pueden usar como composiciones antiincrustantes, solas o en combinaciones con otros ingredientes activos.

En el presente contexto se entiende que los materiales industriales significan materiales inanimados que se han preparado para usar en la industria. Por ejemplo, los materiales industriales que se pueden proteger mediante los ingredientes activos

de la invención contra la alteración o destrucción microbiana pueden ser adhesivos, pegamentos, papel, papel de empapelar y cartón/cartulina, telas, alfombras, cuero, madera, fibras y tejidos, artículos de pintura y plástico, lubricantes refrigerantes y otros materiales, que pueden estar infectados o ser destruidos por los microorganismos. Las partes de las plantas y edificios de producción, por ejemplo circuitos de agua de refrigeración, sistemas de refrigeración y calefacción y unidades de aire acondicionado, que pueden estar alterados por la proliferación de microorganismos también se pueden mencionar dentro del alcance de los materiales que se pueden proteger. Los materiales industriales dentro del alcance de la presente invención preferentemente incluyen adhesivos, colas, papel y cartón, cuero, madera, pinturas, lubricantes refrigerantes y fluidos de transferencia térmica, más preferentemente madera.

Las combinaciones activas de la invención pueden evitar efectos adversos, tales como putrefacción, descomposición, cambio de coloración, decoloración o formación de moho.

En el caso de tratamiento de la madera las composiciones de acuerdo con la invención también se pueden usar contra enfermedades fúngicas responsables de propagarse sobre o dentro de la madera. El término "madera" significa todos los tipos de especies de madera, y todos los tipos de trabajo de esta madera destinada para la construcción, por ejemplo madera sólida, madera de densidad alta, madera laminada y madera contrachapada. El procedimiento para tratar la madera de acuerdo con la invención consiste principalmente en poner en contacto uno o más compuestos de acuerdo con la invención o una composición de acuerdo con la invención; esto incluye por ejemplo aplicación directa, pulverizado, inmersión, inyección o cualquier otro medio adecuado.

Además, las combinaciones de la invención se pueden usar para proteger objetos que están en contacto con agua salada o agua salobre, en especial cascos, filtros, redes, edificios, amarres y sistemas de señalización, de incrustaciones.

El procedimiento de la invención para controlar los hongos no deseados también se pueden usar para proteger géneros de almacén. Se entienden que los géneros de

almacén significan sustancias naturales de origen vegetal o animal o productos procesados de las mismas que son de origen natural, y para los que se desea protección a largo plazo. Los géneros de almacén de origen vegetal, por ejemplo plantas o partes de planta, tales como tallos, hojas, tubérculos, semillas, frutas, granos, pueden protegerse recién recolectados o después del procesamiento por (pre)secado, humectado, triturado, molienda, presión o asado. Los géneros de almacén también incluyen madera, tanto no procesada, tal como madera de construcción, postes y barreras de electricidad, o en forma de productos terminados, tales como muebles. Los géneros de almacén de origen animal son, por ejemplo, piel sin curtir, cuero, pieles y pelajes. Los ingredientes activos de la invención pueden evitar efectos adversos, tales como putrefacción, descomposición, cambio de coloración, decoloración o formación del moho.

Los microorganismos capaces de degradar o alterar los materiales industriales incluyen, por ejemplo, bacterias, hongos, levaduras, algas y organismos mucilaginosos. Los ingredientes activos de la invención preferentemente actúan contra hongos, en especial mohos, hongos que decoloran la madera y destruyen la madera (*Ascomycetes*, *Basidiomycetes*, *Deuteromycetes* y *Zygomycetes*), y contra mixomicetos y algas. Los ejemplos incluyen microorganismos de los siguientes géneros: *Alternaria*, tales como *Alternaria tenuis*; *Aspergillus*, tales como *Aspergillus niger*; *Chaetomium*, tales como *Chaetomium globosum*; *Coniophora*, tales como *Coniophora puetana*; *Lentinus*, tales como *Lentinus tigrinus*; *Penicillium*, tales como *Penicillium glaucum*; *Polyporus*, tales como *Polyporus versicolor*; *Aureobasidium*, tales como *Aureobasidium pullulans*; *Sclerophoma*, tales como *Sclerophoma pityophila*; *Trichoderma*, tales como *Trichoderma viride*; *Ophiostoma* spp., *Ceratocystis* spp., *Humicola* spp., *Petriella* spp., *Trichurus* spp., *Coriolus* spp., *Gloeophyllum* spp., *Pleurotus* spp., *Poria* spp., *Serpula* spp. y *Tyromyces* spp., *Cladosporium* spp., *Paecilomyces* spp., *Mucor* spp., *Escherichia*, tales como *Escherichia coli*; *Pseudomonas*, tales como *Pseudomonas aeruginosa*; *Staphylococcus*, tales como *Staphylococcus aureus*, *Candida* spp. y *Saccharomyces* spp., tales como *Saccharomyces cerevisiae*.

Actividad antimicótica

Además, las combinaciones de la invención también tienen muy buena actividad antimicótica. Tienen un espectro de actividad antimicótico muy amplio en particular contra dermatofitos y levaduras, mohos y hongos difásicos (por ejemplo contra especies de *Candida*, tales como *C. albicans*, *C. glabrata*), y *Epidermophyton floccosum*, especies de *Aspergillus*, tales como *A. niger* y *A. fumigatus*, *albicans*, *C. glabrata*), y *Epidermophyton floccosum*, especies *Trichophyton*, tales como *T. mentagrophytes*, *albicans*, *C. glabrata*), y *Epidermophyton floccosum*, especies *Microsporon* tales como *M. canis* y *M. audouinii*. La lista de estos hongos no constituye de ningún modo una restricción del espectro micótico cubierto y es meramente de carácter ilustrativo.

Las combinaciones de la invención, en consecuencia, se pueden usar tanto en aplicaciones médicas como no médicas.

GMO

Como ya se ha mencionado anteriormente, es posible tratar todas las plantas y sus partes de acuerdo con la invención. En una realización preferida, se tratan especies de plantas y cultivares de planta o aquellas que se han obtenido por procedimientos de reproducción biológica convencional tal como cruzamiento o fusión de protoplastos y sus partes. En una realización preferida adicional, se tratan plantas transgénicas y cultivares de plantas obtenidas por procedimientos de ingeniería genética, si es apropiado en combinación con procedimientos tradicionales (organismos modificados genéticamente), y sus partes. Los términos “partes” o “partes de plantas” o “parte de planta” se han explicado en el presente documento anteriormente. Más preferentemente se tratan de acuerdo con la invención las plantas de los cultivares de plantas que están disponibles en el comercio o en uso. Se entiende que cultivares de planta significa las plantas que tienen nuevas propiedades (“rasgos”) y se han obtenido por reproducción convencional, por mutagénesis o por técnicas de ADN recombinante. Estas pueden ser cultivares, variedades, bio- o genotipos.

El procedimiento de tratamiento de acuerdo con la invención se puede usar en el tratamiento de organismos genéticamente modificados (GMO), por ejemplo, plantas o

semillas. Las plantas modificadas genéticamente (o plantas transgénicas) son plantas en las que se ha integrado en forma estable un gen heterólogo en el genoma. La expresión "gen heterólogo" significa esencialmente un gen que se proporciona o se ensambla fuera de la planta y cuando se introduce en el genoma nuclear, cloroplástico o mitocondrial proporciona a la planta nuevas o mejores propiedades agronómicas u otras mediante una proteína o polipéptido de interés o por regulación por disminución o silenciamiento de otros genes que están presentes en la planta (usando por ejemplo, tecnología antisentido, tecnología de co-supresión o tecnología de interferencia de ARN – ARNi, tecnología de microARN – ARNmi). Un gen heterólogo que se localiza en el genoma también se llama un transgén. Un transgén que está definido por su localización particular en el genoma de la planta se llama un evento de transformación o transgénico.

Dependiendo de las especies de planta o cultivares de la planta, su localización y condiciones de crecimiento (suelos, clima, período de vegetación, dieta), el tratamiento de acuerdo con la invención también puede producir efectos sobreaditivos ("sinérgicos"). En consecuencia, por ejemplo, mediante la reducción de las tasas de aplicación, o una ampliación del espectro de actividad o un aumento de la actividad de los compuestos activos y composiciones que se pueden usar de acuerdo con la invención, mejor crecimiento de la planta, aumento de tolerancia a las temperaturas alta o baja, aumento de tolerancia a la sequía o al agua o al contenido salino del suelo, aumento del rendimiento de la floración, cosecha más sencilla, maduración acelerada, mayores rendimientos de la cosecha, frutos más grandes, mayor altura de la planta, color de hoja más verde, floración temprana, calidad más alta y/o un valor nutricional más alto de los productos cosechados, concentración de azúcar mayor dentro de las frutas, mejor estabilidad de almacenamiento y/o capacidad de procesamiento de los productos cosechados, que exceden los efectos que eran de esperar realmente. A ciertas tasas de aplicación, las combinaciones de acuerdo con la invención también pueden tener un efecto fortalecedor en las plantas. Por consiguiente también son adecuados para movilizar el sistema de defensa de la contra el ataque de los

microorganismos no deseados. Esto puede ser una de las razones, si es apropiado, de la actividad aumentada de las combinaciones de acuerdo con la invención, por ejemplo, contra hongos. Se entiende que las sustancias de fortalecimiento de las plantas (inductoras de resistencia) significan, en el presente contexto, las sustancias o combinaciones de sustancias que son capaces de estimular el sistema de defensa de las plantas de manera tal que, cuando se inoculan posteriormente microorganismos no deseados, las plantas tratadas exhiben un grado sustancial de resistencia a microorganismos. En el caso presente, se entiende que microorganismos no deseados significan hongos, bacterias y virus fitopatogénicos. En consecuencia, se pueden usar las sustancias de acuerdo con la invención para proteger las plantas contra el ataque por los patógenos mencionados anteriormente dentro de un período de tiempo después del tratamiento. El período de tiempo dentro del que se efectúa la protección generalmente se extiende de 1 a 10 días, con preferencia 1 a 7 días, después del tratamiento de las plantas con los compuestos activos.

Las plantas y cultivares de plantas que se pueden tratar preferentemente de acuerdo con la invención incluyen todas las plantas que tienen material genético que imparte rasgos útiles particularmente ventajosos a estas plantas (obtenidos por medios de reproducción y/o biotecnológicos).

Las plantas y cultivares de plantas que también se pueden tratar preferentemente de acuerdo con las combinaciones son resistentes contra uno o más estreses bióticos, es decir, dichas plantas muestran una mejor defensa contra plagas animales y microbianas, tales como contra nematodos, insectos, ácaros, hongos fitopatógenos, bacterias, virus y/o viroides.

Los ejemplos de plantas resistentes a nematodos o infectos se describen por ejemplo en las solicitudes de patente de Estados Unidos 11/765.491, 11/765.494, 10/926.819, 10/782.020, 12/032.479, 10/783.417, 10/782.096, 11/657.964, 12/192.904, 11/396.808, 12/166.253, 12/166.239, 12/166.124, 12/166.209, 11/762.886, 12/364.335, 11/763.947, 12/252.453, 12/209.354, 12/491.396, 12/497.221, 12/644.632, 12/646.004, 12/701.058, 12/718.059, 12/721.595, 12/638.591.

Las plantas y cultivares de plantas que también se pueden tratar de acuerdo con la invención son plantas que son resistentes a uno o más estreses abióticos. Las condiciones de estrés abiótico pueden incluir, por ejemplo, sequía, exposición temperatura fría, exposición al calor, estrés osmótico, inundación, aumento de salinidad del suelo, aumento de exposición mineral, exposición a ozono, exposición a alta luminosidad, disponibilidad limitada de nutrientes de nitrógeno disponibilidad limitada de nutrientes de fósforo, falta de sombra.

Las plantas y cultivares de plantas que también se pueden tratar de acuerdo con la invención, son las plantas caracterizadas por las características de aumento de rendimiento. El aumento de rendimiento en dichas plantas puede ser el resultado, por ejemplo, de mejora de la fisiología, crecimiento y desarrollo de las plantas, tal como eficiencia de uso de agua, eficiencia de retención de agua, mejor uso de nitrógeno, aumento de la asimilación de carbono, aumento de fotosíntesis, aumento de la eficiencia de germinación y maduración acelerada. El rendimiento además puede verse afectado por la mejor arquitectura de la planta (en condiciones de estrés y no estrés), que incluye, pero sin limitación, floración temprana, control de la floración para la producción de semillas híbridas, vigor de plántulas, tamaño de la planta, número y distancia de internodos, crecimiento de raíces, tamaño de semilla, tamaño de fruta, tamaño de vaina o número de espigas, número de semilla por vaina o espiga, masa de semilla, aumento de llenado de semilla, reducción de la dispersión de semillas, reducción de la dehiscencia de la vaina y resistencia al encamado. Otros rasgos de rendimiento incluyen composición de semilla, tal como contenido de carbohidratos, contenido de proteínas, contenido de aceites y composición, valor nutricional, reducción de los compuestos antinutricionales, mejor capacidad de procesamiento y mejor estabilidad de almacenamiento

Las plantas que se pueden tratar de acuerdo con la invención son plantas híbridas que expresan ya la característica de heterosis o vigor híbrido que produce generalmente mayor rendimiento, vigor, salud y resistencia a los factores de estrés biótico y abiótico). Tales plantas se obtienen normalmente por el cruce de una línea progenitora estéril

masculina endogámica (la progenitora femenina) con otra línea progenitora estéril masculina endogámica (la progenitora masculina). La semilla híbrida se recolecta normalmente de las plantas estériles masculinas y se vende a los agricultores. Las plantas masculinas estériles algunas veces se pueden producir (por ejemplo en el maíz) por el despenechado, es decir, la extracción mecánica de los órganos reproductivos masculinos (o flores masculinas) pero más normalmente, la esterilidad masculina es el resultado de los determinantes genéticos en el genoma de la planta. En este caso y en especial cuando la semilla es el producto que se desea cosechar de las plantas híbridas, normalmente es útil para asegurar la fertilidad masculina de las plantas híbridas se restaure completamente. Esto se puede lograr asegurando que los progenitores masculinos tengan genes restauradores de la fertilidad apropiados que sean capaces de restaurar la fertilidad masculina en las plantas híbridas que contienen los determinantes genéticos responsables de la esterilidad masculina. Los determinantes genéticos para la esterilidad masculina se pueden localizar en el citoplasma. Los ejemplos de esterilidad masculina citoplásmica (BMS) por ejemplo se han descrito en especies de Brassica (documentos WO 92/05251, WO 95/09910, WO 98/27806, WO 05/002324, WO 06/021972 y US 6.229.072). Sin embargo, los determinantes genéticos para esterilidad masculina también se pueden localizar en el citoplasma. Los ejemplos de plantas estériles masculinas también se pueden obtener por procedimientos de biotecnología de plantas tales como ingeniería genética. Un medio particularmente útil de obtener plantas estériles masculinas se describe en el documento WO 89/10396 en que, por ejemplo, una ribonucleasa tal como barnasa se expresa selectivamente en las células del tapete en los estambres. La fertilidad luego se puede restaurar por la expresión en las células del tapete de un inhibidor de ribonucleasa tal como barstar (por ejemplo, WO 91/02069).

Las plantas o cultivares de plantas (obtenidas por procedimientos de biotecnología de plantas tales como ingeniería genética) que se pueden tratar de acuerdo con la invención son plantas tolerantes a herbicidas, es decir, plantas que se han vuelto tolerantes a uno o más herbicidas determinados. Tales plantas se pueden obtener por

medio de transformación genética, o por selección de las plantas que contienen una mutación que imparte tal tolerancia a los herbicidas.

Las plantas tolerantes a herbicidas son por ejemplo plantas tolerantes a glifosato, es decir, plantas que se hecho tolerantes al herbicida glifosato o sus sales. Las plantas se pueden volver tolerantes al glifosato a través de diferentes medios. Por ejemplo, las plantas tolerantes a glifosatos se pueden obtener por la transformación de la planta con un gen que codifica la enzima 5-enolpiruvilshikimato-3-fosfato sintasa (EPSPS). Los ejemplos de tales genes de EPSPS son el gen AroA (mutante CT7) de la bacteria *Salmonella typhimurium*, (*Science* **1983**, 221, 370-371), el gen CP4 de la bacteria *Agrobacterium* sp (*Curr. Topics Plant Physiol.* **1992**, 7, 139-145), los genes que codifican un EPSPS de petunia x, (*Science* **1986**, 233, 478-481), una EPSPS de tomate (*J. Biol. Chem.* **1988**, 263, 4280-4289), o una EPSPS de Eleusina (WO 01/66704). También puede ser un EPSPS mutado como se describe en, por ejemplo, los documentos EP 0837944, WO 00/66746, WO 00/66747 o WO 02/26995. Las plantas tolerantes a glifosato también se pueden obtener por la expresión de un gen que codifica una enzima glifosato oxido-reductasa, como se describe en los documentos US 5.776.760 y US 5.463.175. Las plantas tolerantes a glifosato también se pueden obtener por la expresión de un gen que codifica una enzima glifosato acetil transferasa, como se describe en, por ejemplo, los documentos WO 02/036782, WO 03/092360, WO 2005/012515 y WO 2007/024782. Las plantas tolerantes a glifosato también se pueden obtener por selección de plantas que contienen mutaciones naturales de los genes mencionados anteriormente, como se describen en, por ejemplo, los documentos WO 01/024615 o WO 03/013226. Las plantas que expresan genes EPSPS que confieren tolerancia a glifosato se describen, por ejemplo las solicitudes de patente de Estados Unidos 11/517.991, 10/739.610, 12/139.408, 12/352.532, 11/312.866, 11/315.678, 12/421.292, 11/400.598, 11/651.752, 11/681.285, 11/605.824, 12/468.205, 11/760.570, 11/762.526, 11/769.327, 11/769.255, 11/943801 o 12/362.774. Las plantas que comprenden otros genes que confieren tolerancia a glifosato, tal como genes de descarboxilasa, se describen en, por ejemplo, las

solicitudes de patente de Estados Unidos 11/588.811, 11/185.342, 12/364.724, 11/185.560 o 12/423.926.

Otras plantas resistentes a herbicidas son, por ejemplo, plantas que se han hecho tolerantes a herbicidas que inhiben la enzima glutamina sintasa, tal como bialafós, fosfinotricina o glufosinato. Tales plantas se pueden obtener por la expresión de una enzima que destoxifica el herbicida o una enzima glutamina sintasa mutante que es resistente a la inhibición, por ejemplo se describe en la solicitud de patente de Estados Unidos 11/760.602. Una de estas enzimas destoxificante eficaz es una enzima que codifica una fosfinotricina acetiltransferasa (tal como la proteína bar o pat de la especie *Streptomyces*). Las plantas que expresan una fosfinotricina acetiltransferasa exógena se describen, por ejemplo en las patentes de Estados Unidos 5.561.236; 5.648.477; 5.646.024; 5.273.894; 5.637.489; 5.276.268; 5.739.082; 5.908.810 y 7.112.665.

Otras plantas tolerantes a herbicidas son también plantas que se han hecho tolerantes a los herbicidas que inhiben la enzima hidroxifenilpiruvatodioxigenasa (HPPD). Las hidroxifenilpiruvatodioxigenasas son enzimas que catalizan la reacción en que el para-hidroxifenilpiruvato (HPP) se transforma en homogentisato. Las plantas tolerantes a los inhibidores de HPPD se pueden transformar con un gen que codifica una enzima de HPPD resistente natural, o un gen que codifica una enzima de HPPD mutada o quimérica (como se describe en los documentos WO 96/38567, WO 99/24585, WO 99/24586, WO 09/144079, WO 02/046387, o US 6.768.044. La tolerancia a los inhibidores de HPPD también se puede obtener por la transformación de las plantas con genes que codifican ciertas enzimas que permiten la formación de homogentisato a pesar de la inhibición de la enzima HPPD nativa por el inhibidor de HPPD. Tales plantas y genes se describen en los documentos WO 99/34008 y WO 02/36787. La tolerancia de las plantas a los inhibidores de HPPD también se pueden mejorar por la transformación de plantas con un gen que codifica una enzima que tiene actividad de pefenato deshidrogenasa (PDH) además de un gen que codifica una enzima tolerante a HPPD, como se describe en el documento WO 04/024928. Además, las plantas se pueden hacer más tolerantes a los herbicidas inhibidores de HPPD mediante la adición

en su genoma a un gen que codifica una enzima capaz de metabolizar o degradar los inhibidores de HPPD, tales como las enzimas CYP450 mostradas en los documentos WO 2007/103567 y WO 2008/150473.

Aún otras plantas resistentes a herbicidas son plantas que se vuelven tolerantes a los inhibidores de acetolactato sintasa (ALS). Los inhibidores de ALS conocidos incluyen, por ejemplo, herbicidas de sulfonilurea, imidazolinona, triazolopirimidinas, pirimidiniloxi(tio)benzoatos, y/o sulfonilaminocarboniltriaolinona. Se conocen diferentes mutaciones en la enzima ALS (también conocido como acetohidroxiácido sintasa, AHAS) para conferir tolerancia para diferentes herbicidas y grupos de herbicidas, como se describe por ejemplo en Tranel y Wright (*Weed Science* **2002**, 50, 700-712), pero también en las patentes de Estados Unidos 5.605.011, 5.378.824, 5.141.870 y 5.013.659. La producción de plantas tolerantes a sulfonilurea y plantas tolerantes a imidazolinona se describe en las patentes de Estados Unidos 5.605.011; 5.013.659; 5.141.870; 5.767.361; 5.731.180; 5.304.732; 4.761.373; 5.331.107; 5.928.937 y 5.378.824 y el documento WO 96/33270. Otras plantas tolerantes a imidazolinona también se describen en, por ejemplo, los documentos WO 2004/040012, WO 2004/106529, WO 2005/020673, WO 2005/093093, WO 2006/007373, WO 2006/015376, WO 2006/024351 y WO 2006/060634. Otras plantas tolerantes a sulfonilurea e imidazolinona también se describen en por ejemplo el documento WO 2007/024782 y la solicitud de patente de Estados Unidos 61/288958.

Otras plantas tolerantes a imidazolinona y sulfonilurea se pueden obtener por mutagénesis inducida, selección en cultivos celulares en presencia del herbicida o mejoramiento genético por mutación como se describe por ejemplo para alubias de soja en el documento US 5.084.082, para arroz en el documento WO 97/41218, para remolacha azucarera en el documento US 5.773.702 y WO 99/057965, para lechuga en el documento US 5.198.599 o para girasol en el documento WO 01/065922.

Las plantas o cultivares de plantas (obtenidas por procedimientos de biotecnología de plantas tal como ingeniería genética) que también se pueden tratar de acuerdo con la

invención son plantas transgénicas resistentes a insectos, es decir, plantas resistentes al ataque por ciertos insectos diana. Tales plantas se pueden obtener por transformación genética o por selección de plantas que contienen una mutación que imparte tal resistencia a insectos.

5 Una "planta transgénica resistente a insectos", tal como se usa en el presente documento, incluye cualquier planta que contenga al menos un transgén que comprenda una secuencia codificadora que codifica:

1) una proteína cristalina insecticida de *Bacillus thuringiensis* o una porción insecticida de la misma, tal como las proteínas cristalinas insecticidas enumeradas por
 10 Crickmore y col. (1998, Microbiology y Molecular Biology Reviews, 62: 807-813), actualizado por Crickmore y col. (2005) en la nomenclatura de la toxina *Bacillus thuringiensis*, en línea en el sitio de Internet: http://www.lifesci.sussex.ac.uk/Home/Neil_Crickmore/Bt/), o porciones insecticidas de las mismas, por ejemplo, proteínas de la clase de proteína Cry, Cry1Ab, Cry1Ac,
 15 Cry1F, Cry2Ab, Cry3Aa, o Cry3Bb o porciones insecticidas de las mismas (por ejemplo, documentos EP-A 1 999 141 y WO 2007/107302), o proteínas codificada por los genes sintéticos tales como se describen por ejemplo en la solicitud de patente de Estados Unidos 12/249,016 ; o

2) una proteína cristalina de *Bacillus thuringiensis* o una porción de la misma que
 20 es insecticida en presencia de una segunda proteína cristalina diferente de *Bacillus thuringiensis* o una porción de la misma, tal como la toxina binaria compuesta de las proteínas cristalinas Cry34 y Cry35 (*Nat. Biotechnol.* **2001**, *19*, 668-72; *Applied Environm. Microbiol.* **2006**, *71*, 1765-1774) o la toxina binaria compuesta por las proteínas Cry1A o Cry1F y las proteínas Cry2Aa o Cry2Ab o Cry2Ae (solicitud de
 25 patente de Estados Unidos 12/214.022 y documento EP-A 2 300 618); o

3) una proteína insecticida híbrida que comprende partes de diferentes proteínas cristalinas insecticidas de *Bacillus thuringiensis*, tal como un híbrido de las proteínas de 1) anteriores o un híbrido de las proteínas de 2) anteriores, por ejemplo, la proteína Cry1A producida por el evento de maíz MON89034 (documento WO 2007/027777); o

- 4) una proteína de alguna de 1) a 3) anteriores donde algunos, particularmente 1 a 10, aminoácidos se han reemplazado por otro aminoácido para obtener una actividad insecticida mayor a especies de insecto diana, o expandir el intervalo de especies de insectos diana afectadas, y/o debido a los cambios introducidos en el ADN codificante durante la clonación o transformación, tal como la proteína Cry3Bb1 en los eventos de maíz MON863 o MON88017, o la proteína de Cry3A en el evento de maíz MIR604; o
- 5) una proteína secretada insecticida de *Bacillus thuringiensis* o *Bacillus cereus*, o una porción insecticida de la misma, tal como las proteínas insecticidas vegetativas (VIP) enumeradas en:
- 10 http://www.lifesci.sussex.ac.uk/home/Neil_Crickmore/Bt/vip.html, por ejemplo, proteínas de la clase de proteína VIP3Aa; o
- 6) proteína secretada de *Bacillus thuringiensis* o *Bacillus cereus* que es insecticida en presencia de una segunda proteína secretada de *Bacillus thuringiensis* o *B. cereus*, tal como la toxina binaria compuesta de las proteínas de VIP1A y VIP2A (WO 94/21795);
- 15 o
- 7) una proteína insecticida híbrida que comprende partes de las proteínas secretadas diferentes de *Bacillus thuringiensis* o *Bacillus cereus*, tal como un híbrido de las proteínas en 1) anteriores o un híbrido de las proteínas en 2) anteriores; o
- 8) una proteína de alguna de 5) a 7) anteriores donde algunos, en particular 1 a 10, aminoácidos se han reemplazado por otro aminoácido para obtener una actividad insecticida mayor frente a especies de insecto diana y/o expandir la gama de especies de insectos diana afectadas, y/o debido a los cambios introducidos en el ADN codificante durante la clonación o transformación, (mientras que aún codifica una proteína insecticida), tal como la proteína de VIP3Aa en el evento de algodón COT102;
- 20 o
- 9) una proteína secretada de *Bacillus thuringiensis* o *Bacillus cereus* que es insecticida en presencia de una proteína cristalina de *Bacillus thuringiensis*, tal como la toxina binaria compuesta de VIP3 y Cry1A o Cry1F (solicitudes de patente de Estados Unidos 61/126083 y 61/195019), o la toxina binaria compuesta por la proteína VIP3 y

las proteínas Cry2Aa o Cry2Ab o Cry2Ae (solicitud de patente de Estados Unidos 12/214,022 y documento EP-A 2 300 618).

10) una proteína de 9) anterior donde algunos, en particular 1 a 10, aminoácidos se han reemplazado por otro aminoácido para obtener una actividad insecticida mayor
5 frente a una especie de insecto diana y/o expandir la gama de especies de insectos diana afectadas, y/o debido a los cambios introducidos en el ADN codificante durante la clonación o transformación, (mientras que aún codifica una proteína insecticida).

Obviamente, una planta transgénica resistente a insectos, tal como se usa en el presente documento, también incluye cualquier planta que comprenda una
10 combinación de genes que codifiquen las proteínas de algunas de las clases anteriores 1 a 10. En una forma de realización, una planta resistente a un insecto contiene más de un transgén que codifica una proteína de alguna de las clases 1 a 10 anteriores, para expandir el intervalo de especies de insecto diana afectadas cuando se usan diferentes proteínas dirigidas a especies de insecto diana diferentes o para
15 retrasar el desarrollo de resistencia a insectos en las plantas mediante el uso de diferentes proteínas insecticidas para las mismas especies de insecto diana pero que tienen un modo de acción diferente, tal como la unión a diferentes sitios de unión al receptor en el insecto.

Una "planta transgénica resistente a insectos", tal como se usa en el presente
20 documento, también incluye cualquier planta que contenga al menos un transgén que comprenda una secuencia que produce después la expresión un ARN de cadena doble que después de la ingestión por una plaga de insectos de plantas inhibe el crecimiento de esta plaga de insectos, como se describe por ejemplo en los documentos WO 2007/080126, WO 2006/129204, WO 2007/074405, WO
25 2007/080127 y WO 2007/035650.

Plantas o cultivares de plantas (obtenidas por procedimientos de biotecnología de plantas tal como ingeniería genética) que también se pueden tratar de acuerdo con la invención son las tolerantes a estreses abióticos. Tales plantas se pueden obtener por transformación genética, o por selección de plantas que contienen una mutación que

imparte tal resistencia al estrés. Las plantas con tolerancia al estrés particularmente útiles incluyen:

- 1) plantas que contienen un transgén capaz de reducir la expresión o la actividad del gen de poli(ADP-ribosa)polimerasa (PARP) en las células de plantas o en plantas tal como se describe en los documentos WO 00/04173, WO 2006/045633, EP-A 1 807 519 o EP-A 2 018 431.
- 2) plantas que contienen un transgén potenciador de la tolerancia al estrés capaz de reducir la expresión y/o la actividad de los genes codificadores de PARP de las plantas o células de plantas, tal como se describe, por ejemplo, en el documento WO 2004/090140.
- 3) plantas que contienen un transgén potenciador de la tolerancia al estrés que codifica una enzima funcional para la planta de la ruta de síntesis de rescate de nicotinamida adenina dinucleótido que incluye nicotinamidasas, nicotinato fosforribosiltransferasa, ácido nicotínico mononucleótido adenil transferasa, nicotinamida adenina dinucleótido sintetasa o nicotina amida fosforribosiltransferasa como se describe, por ejemplo, en los documentos EP-A 1 794 306, WO 2006/133827, WO 2007/107326, EP-A 1 999 263, o WO 2007/107326.

Plantas o cultivares de plantas (obtenidas por los procedimientos de biotecnología de plantas tal como ingeniería genética) que también se pueden tratar de acuerdo con la invención muestran cantidad, calidad o estabilidad de almacenamiento alterados del producto cosechado y/o propiedades alteradas de ingredientes específicos del producto cosechado tal como:

- 1) plantas transgénicas que sintetizan un almidón modificado, que en sus características fisicoquímicas, en particular el contenido de amilosa o la relación de amilosa/amilpectina, el grado de ramificación, la longitud de cadena promedio, la distribución de la cadena lateral, el comportamiento de viscosidad, la resistencia a la gelificación, el tamaño del grano de almidón o la morfología del grano de almidón, está modificado en comparación con el almidón sintetizado en las células de plantas o en plantas de tipo natural, de modo que es más adecuado para aplicaciones especiales.

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Dichas plantas transgénicas que sintetizan un almidón modificado se divulgan, por ejemplo, en los documentos EP-A 0 571 427, WO 95/04826, EP-A 0 719 338, WO 96/15248, WO 96/19581, WO 96/27674, WO 97/11188, WO 97/26362, WO 97/32985, WO 97/42328, WO 97/44472, WO 97/45545, WO 98/27212, WO 98/40503, 5 WO 99/58688, WO 99/58690, WO 99/58654, WO 00/08184, WO 00/08185, WO 00/08175, WO 00/28052, WO 00/77229, WO 01/12782, WO 01/12826, WO 02/101059, WO 03/071860, WO 04/056999, WO 05/030942, WO 2005/030941, WO 2005/095632, WO 2005/095617, WO 2005/095619, WO 2005/095618, WO 2005/123927, WO 2006/018319, WO 2006/103107, WO 2006/108702, 10 WO 2007/009823, WO 00/22140, WO 2006/063862, WO 2006/072603, WO 02/034923, WO 2008/017518, WO 2008/080630, WO 2008/080631, EP 07090007.1, WO 2008/090008, WO 01/14569, WO 02/79410, WO 03/33540, WO 2004/078983, WO 01/19975, WO 95/26407, WO 96/34968, WO 98/20145, WO 99/12950, WO 99/66050, WO 99/53072, US 6,734,341, WO 00/11192, WO 98/22604, WO 98/32326, 15 WO 01/98509, WO 01/98509, WO 2005/002359, US 5.824.790, US 6.013.861, WO 94/04693, WO 94/09144, WO 94/11520, WO 95/35026, WO 97/20936, WO 2010/012796, WO 2010/003701,

2) plantas transgénicas que sintetizan polímeros de carbohidrato que no son almidón o que sintetizan polímeros de carbohidrato que no son almidón con 20 propiedades alteradas en comparación con las plantas de tipo natural sin modificación genética. Los ejemplos son plantas que producen polifruktosa, en especial de tipo inulina y levano, tal como se divulga en los documentos EP-A 0 663 956, WO 96/01904, WO 96/21023, WO 98/39460, y WO 99/24593, plantas productoras de alfa-1,4-glucanos tal como se divulga en los documentos WO 95/31553, US 25 2002031826, US 6.284.479, US 5.712.107, WO 97/47806, WO 97/47807, WO 97/47808 y WO 00/14249, plantas productoras de alfa 1,4 glucanos ramificados en alfa-1,6, como se divulga en el documento WO 00/73422, plantas productoras de alternano, como se divulga en, por ejemplo, los documentos WO 00/47727, WO 00/73422, EP 06077301.7, US 5.908.975 y EP-A 0 728 213,

3) planta transgénicas que producen hialuronano, por ejemplo como se divulga en los documentos WO 2006/032538, WO 2007/039314, WO 2007/039315, WO 2007/039316, JP-A 2006-304779 y WO 2005/012529.

4) plantas transgénicas o plantas híbridas, tales como cebollas con características
5 tales como 'alto contenido de sólidos solubles', 'pungencia baja' (LP) y/o 'almacenamiento prolongado' (LS), como se describe en las solicitudes de patente de Estados Unidos 12/020.360 y 61/054.026.

Plantas o cultivares de plantas (que se pueden obtener por procedimientos de biotecnología de plantas tales como ingeniería genética) que también se pueden tratar
10 de acuerdo con la invención son plantas, tales como plantas de algodón, con características de fibra alteradas. Tales plantas se pueden obtener por transformación genética o por selección de plantas que contienen una mutación que imparte tales características de fibra alteradas e incluyen:

a) Plantas, tales como plantas de algodón, que contienen una forma alterada de
15 los genes de celulosa sintasa genes como se describe en el documento WO 98/00549.

b) Plantas, tales como plantas de algodón, que contienen una forma alterada de ácidos nucleicos homólogos rsw2 o rsw3 como se describe en el documento WO 2004/053219.

c) Plantas, tales como plantas de algodón, con aumento de la expresión de
20 sacarosa fosfato sintasa como se describe en el documento WO 01/17333.

d) Plantas, tales como plantas de algodón, con aumento de la expresión de sacarosa sintasa como se describe en el documento WO 02/45485.

e) Plantas, tales como plantas de algodón, en las que el tiempo de la activación del plasmodesmo en la base de la célula de fibra está alterada, por ejemplo a través
25 de la regulación por disminución de la β 1,3-glucanasa selectiva de fibra como se describe en el documento WO 2005/017157, o como se describe en el documento WO 2009/143995.

f) Plantas, tales como plantas de algodón, que tienen fibras con reactividad alterada, por ejemplo a través de la expresión del gen de N-

acetilglucosaminotransferasa que incluye los genes de nodC y quitina sintasa, en el documento WO 2006/136351.

Plantas o cultivares de plantas (que se pueden obtener por procedimientos de biotecnología de plantas tal como ingeniería genética) que también se pueden tratar de acuerdo con la invención son plantas tales como plantas de colza oleaginosa o relacionadas con Brassica, con características del perfil de aceite alterado. Tales plantas se pueden obtener por transformación genética o por selección de plantas que contienen una mutación que imparte tales características del perfil de aceite alteradas e incluyen:

- 10 a) Plantas, tales como plantas de colza oleaginosa, productoras de aceite que tiene un alto contenido de ácido oleico como se describe por ejemplo en los documentos US 5.969.169, US 5.840.946 o US 6.323.392 o US 6.063.947
- b) Plantas, tales como plantas de colza oleaginosa, productoras de aceite que tiene un contenido bajo de ácido linolénico como se describe en los documentos US
15 6.270.828, US 6.169.190, o US 5.965.755
- c) Plantas, tales como plantas de colza oleaginosa, productoras de aceite que tiene un nivel bajo de ácidos grasos saturados como se describe por ejemplo en el documento US 5.434.283 o la solicitud de patente de Estados Unidos 12/668303

Plantas o cultivares de plantas (que se pueden obtener por procedimientos de biotecnología de plantas tal como ingeniería genética) que también se pueden tratar de acuerdo con la invención son plantas tales como plantas de colza oleaginosa o relacionadas con Brassica, con características de dehiscencia de semillas alteradas. Tales plantas se pueden obtener por transformación genética o por selección de plantas que contienen una mutación que imparte tales características de dehiscencia
25 de semillas alteradas del perfil de aceite e incluyen plantas tales como plantas de colza oleaginosa con dehiscencia de semilla retardada o reducida como se describe en la solicitud de patente de Estados Unidos 61/135,230, el documento WO 2009/068313 y el documento WO 2010/006732.

Plantas o variedades de plantas (que se pueden obtener por procedimientos de biotecnología de plantas tal como ingeniería genética) que también se pueden tratar de acuerdo con la invención son plantas tales como plantas de tabaco, con patrones de modificación de proteína postraduccionales alterados, por ejemplo como se describe
5 en los documentos WO 2010/121818 y WO 2010/145846.

Las plantas transgénicas particularmente útiles que se pueden tratar de acuerdo con la invención son plantas que contienen eventos de transformación, o combinación de eventos de transformación, que son objeto de peticiones para estado no regulado, en los Estados Unidos de América, al Animal and Plant Health Inspection Service (AFIS)
10 del Departamento de Agricultura de Estados Unidos (USDA) bien si estas peticiones están concedidas o bien si están aún en trámite. En todo momento esta información está fácilmente disponible en AFIS (4700 River Road, Riverdale, MD 20737, Estados Unidos), por ejemplo en su sitio de Internet (URL http://www.afis.usda.gov/brs/not_reg.html). En la fecha de presentación de esta
15 solicitud, las peticiones para estado no regulado que estaban pendientes en AFIS o concedidas por AFIS fueron las que contienen la siguiente información:

- Petición: el número de identificación de la petición. Las descripciones técnicas de los eventos de transformación se pueden hallar en los documentos de petición individuales que se pueden obtener de AFIS, por ejemplo en el sitio de Internet de
20 AFIS, con referencia a este número de petición. Estas descripciones se incorporan al presente documento por referencia.
- Extensión de petición: referencia a la petición previa para la que se solicita la extensión.
- Institución: el nombre de la entidad que presentan la petición.
- 25 - Artículo regulado: las especies de plantas interesadas.
- Fenotipo transgénico: el rasgo conferido a las plantas por el evento de transformación.
- Evento o línea de transformación: el nombre del evento o eventos (algunas veces denominado líneas o líneas) para el que se solicita el estado no regulado.

– Documentos de AFIS: varios documentos publicados por la AFIS en relación con la petición y que pueden ser solicitados con AFIS.

Las plantas particularmente útiles adicionales que contienen eventos de transformación únicos o combinaciones de eventos de transformación se enumeran por ejemplo en las bases de datos de varias agencias reguladoras nacionales o regionales (véase por ejemplo http://gmoinfo.jrc.it/gmp_browse.aspx y <http://www.agbios.com/dbase.fp>).

Las plantas transgénicas particularmente útiles se pueden tratar de acuerdo con la invención son las plantas que contienen eventos de transformación o una combinación de eventos de transformación, y que están enumeradas, por ejemplo, en las bases de datos de varias agencias reguladoras nacionales o regionales que incluyen Evento 1143-14A (algodón, control de insectos, no depositado, que se describe en el documento WO 2006/128569); Evento 1143-51B (algodón, control de insectos, no depositado, que se describe en el documento WO 2006/128570); Evento 1445 (algodón, tolerancia a herbicidas, no depositado, que se describe en el documento US-A 2002-120964 o WO 02/034946); Evento 17053 (arroz, tolerancia a herbicidas, depositado como PTA-9843, que se describe en el documento WO 2010/117737); Evento 17314 (arroz, tolerancia a herbicidas, depositado como PTA-9844, que se describe en el documento WO 2010/117735); Evento 281-24-236 (algodón, control de insectos - tolerancia a herbicidas, depositado como PTA-6233, que se describe en el documento WO 2005/103266 o US-A 2005-216969); Evento 3006-210-23 (algodón, control de insectos - tolerancia a herbicidas, depositado como PTA-6233, que se describe en el documento US-A 2007-143876 o en el documento WO 2005/103266); Evento 3272 (maíz, rasgo de calidad, depositado como PTA-9972, que se describe en el documento WO 2006/098952 o en el documento US-A 2006-230473); Evento 40416 (maíz, control de insectos - tolerancia a herbicidas, depositado como ATCC PTA-11508, que se describe en el documento WO 2011/075593); Evento 43A47 (maíz, control de insectos - tolerancia a herbicidas, depositado como ATCC PTA-11509, que se describe en el documento WO 2011/075595); Evento 5307 (maíz, control de

insectos, depositado como ATCC PTA-9561, que se describe en el documento WO 2010/077816); Evento ASR-368 (agrostis, tolerancia a herbicidas, depositado como ATCC PTA-4816, que se describe en el documento US-A 2006-162007 o WO 2004/053062); Evento B16 (maíz, tolerancia a herbicidas, no depositado, que se describe en el documento US-A 2003-126634); Evento BPS-CV127-9 (soja, tolerancia a herbicidas, depositado como NCIMB N° 41603, que se describe en el documento WO 2010/080829); Evento CE43-67B (algodón, control de insectos, depositado como DSM ACC2724, que se describe en el documento US-A 2009-217423 o en el documento WO2006/128573); Evento CE44-69D (algodón, control de insectos, no depositado, que se describe en el documento US-A 2010-0024077); Evento CE44-69D (algodón, control de insectos, no depositado, que se describe en el documento WO 2006/128571); Evento CE46-02A (algodón, control de insectos, no depositado, que se describe en el documento WO 2006/128572); Evento COT102 (algodón, control de insectos, no depositado, que se describe en el documento US-A 2006-130175 o en el documento WO 2004/039986); Evento COT202 (algodón, control de insectos, no depositado, que se describe en el documento US-A 2007-067868 o en el documento WO 2005/054479); Evento COT203 (algodón, control de insectos, no depositado, que se describe en el documento WO 2005/054480); Evento DAS40278 (maíz, tolerancia a herbicidas, depositado como ATCC PTA-10244, que se describe en el documento WO 2011/022469); Evento DAS-59122-7 (maíz, control de insectos - tolerancia a herbicidas, depositado como ATCC PTA 11384, que se describe en el documento US-A 2006-070139); Evento DAS-59132 (maíz, control de insectos - tolerancia a herbicidas, no depositado, que se describe en el documento WO 2009/100188); Evento DAS68416 (soja, tolerancia a herbicidas, depositado como ATCC PTA-10442, que se describe en el documento WO 2011/066384 o en el documento WO 2011/066360); Evento DP-098140-6 (maíz, tolerancia a herbicidas, depositado como ATCC PTA-8296, que se describe en el documento US-A 2009-137395 o en el documento WO 2008/112019); Evento DP-305423-1 (soja, rasgo de calidad, no depositado, que se describe en el documento US-A 2008-312082 o en el documento

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WO 2008/054747); Evento DP-32138-1 (maíz, sistema de hibridación, depositado como ATCC PTA-9158, que se describe en el documento US-A 2009-0210970 o en el documento WO 2009/103049); Evento DP-356043-5 (soja, tolerancia a herbicidas, depositado como ATCC PTA-8287, que se describe en el documento US-A 2010-0184079 o en el documento WO 2008/002872); Evento EE-1 (brinjal, control de insectos, no depositado, que se describe en el documento WO 2007/091277); Evento FI117 (maíz, tolerancia a herbicidas, depositado como ATCC 209031, que se describe en el documento US-A 2006-059581 o en el documento WO 98/044140); Evento GA21 (maíz, tolerancia a herbicidas, depositado como ATCC 209033, que se describe en el documento US-A 2005-086719 o en el documento WO 98/044140); Evento GG25 (maíz, tolerancia a herbicidas, depositado como ATCC 209032, que se describe en el documento US-A 2005-188434 o en el documento WO 98/044140); Evento GHB119 (algodón, control de insectos - tolerancia a herbicidas, depositado como ATCC PTA-8398, que se describe en el documento WO 2008/151780); Evento GHB614 (algodón, tolerancia a herbicidas, depositado como ATCC PTA-6878, que se describe en el documento US-A 2010-050282 o en el documento WO 2007/017186); Evento GJ11 (maíz, tolerancia a herbicidas, depositado como ATCC 209030, que se describe en el documento US-A 2005-188434 o en el documento WO 98/044140); Evento GM RZ13 (remolacha azucarera, resistencia al virus, depositado como NCIMB-41601, que se describe en el documento WO 2010/076212); Evento H7-1 (remolacha azucarera, tolerancia a herbicidas, depositado como NCIMB 41158 o NCIMB 41159, que se describe en el documento US-A 2004-172669 o en el documento WO 2004/074492); Evento JOPLIN1 (trigo, tolerancia a la enfermedad, no depositado, que se describe en el documento US-A 2008-064032); Evento LL27 (soja, tolerancia a herbicidas, depositado como NCIMB41658, que se describe en el documento WO 2006/108674 o en el documento US-A 2008-320616); Evento LL55 (soja, tolerancia a herbicidas, depositado como NCIMB 41660, que se describe en el documento WO 2006/108675 o US-A 2008-196127); Evento LLcotton25 (algodón, tolerancia a herbicidas, depositado como ATCC PTA-3343, que se describe en el documento WO 03/013224 o en el

documento US-A 2003-097687); Evento LLRICE06 (arroz, tolerancia a herbicidas, depositado como ATCC-23352, que se describe en el documento US 6.468.747 o en el documento WO 00/026345); Evento LLRICE601 (arroz, tolerancia a herbicidas, depositado como ATCC PTA-2600, que se describe en el documento US-A 2008-2289060 o en el documento WO 00/026356); Evento LY038 (maíz, rasgo de calidad, depositado como ATCC PTA-5623, que se describe en el documento US-A 2007-028322 o en el documento WO 2005/061720); Evento MIR162 (maíz, control de insectos, depositado como PTA-8166, que se describe en el documento US-A 2009-300784 o en el documento WO 2007/142840); Evento MIR604 (maíz, control de insectos, no depositado, que se describe en el documento US-A 2008-167456 o en el documento WO 2005/103301); Evento MON15985 (algodón, control de insectos, depositado como ATCC PTA-2516, que se describe en el documento US-A 2004-250317 o en el documento WO 02/100163); Evento MON810 (maíz, control de insectos, no depositado, que se describe en el documento US-A 2002-102582); Evento MON863 (maíz, control de insectos, depositado como ATCC PTA-2605, que se describe en el documento WO 2004/011601 o en el documento US-A 2006-095986); Evento MON87427 (maíz, control de polinización, depositado como ATCC PTA-7899, que se describe en el documento WO 2011/062904); Evento MON87460 (maíz, tolerancia al estrés, depositado como ATCC PTA-8910, que se describe en el documento WO 2009/111263 o en el documento US-A 2011-0138504); Evento MON87701 (soja, control de insectos, depositado como ATCC PTA-8194, que se describe en el documento US-A 2009-130071 o en el documento WO 2009/064652); Evento MON87705 (soja, rasgo de calidad - tolerancia a herbicidas, depositado como ATCC PTA-9241, que se describe en el documento US-A 2010-0080887 o en el documento WO 2010/037016); Evento MON87708 (soja, tolerancia a herbicidas, depositado como ATCC PTA9670, que se describe en el documento WO 2011/034704); Evento MON87754 (soja, rasgo de calidad, depositado como ATCC PTA-9385, que se describe en el documento WO 2010/024976); Evento MON87769 (soja, rasgo de calidad, depositado como ATCC PTA-8911, que se describe en el

documento US-A 2011-0067141 o en el documento WO 2009/102873); Evento MON88017 (maíz, control de insectos - tolerancia a herbicidas, depositado como ATCC PTA-5582, que se describe en el documento US-A 2008-028482 o en el documento WO 2005/059103); Evento MON88913 (algodón, tolerancia a herbicidas, depositado como ATCC PTA-4854, que se describe en el documento WO 2004/072235 o en el documento US-A 2006-059590); Evento MON89034 (maíz, control de insectos, depositado como ATCC PTA-7455, que se describe en el documento WO 2007/140256 o en el documento US-A 2008-260932); Evento MON89788 (soja, tolerancia a herbicidas, depositado como ATCC PTA-6708, que se describe en el documento US-A 2006-282915 o en el documento WO 2006/130436); Evento MS11 (colza oleaginosa, control de polinización - tolerancia a herbicidas, depositado como ATCC PTA-850 o PTA-2485, que se describe en el documento WO 01/031042); Evento MS8 (colza oleaginosa, control de polinización - tolerancia a herbicidas, depositado como ATCC PTA-730, que se describe en el documento WO 01/041558 o en el documento US-A 2003-188347); Evento NK603 (maíz, tolerancia a herbicidas, depositado como ATCC PTA-2478, que se describe en el documento US-A 2007-292854); Evento PE-7 (arroz, control de insectos, no depositado, que se describe en el documento WO 2008/114282); Evento RF3 (colza oleaginosa, control de polinización - tolerancia a herbicidas, depositado como ATCC PTA-730, que se describe en el documento WO 01/041558 o en el documento US-A 2003-188347); Evento RT73 (colza oleaginosa, tolerancia a herbicidas, no depositado, que se describe en el documento WO 02/036831 o en el documento US-A 2008-070260); Evento T227-1 (remolacha azucarera, tolerancia a herbicidas, no depositado, que se describe en el documento WO 02/44407 o en el documento US-A 2009-265817); Evento T25 (maíz, tolerancia a herbicidas, no depositado, que se describe en el documento US-A 2001-029014 o en el documento WO 01/051654); Evento T304-40 (algodón, control de insectos - tolerancia a herbicidas, depositado como ATCC PTA-8171, que se describe en el documento US-A 2010-077501 o en el documento WO 2008/122406); Evento T342-142 (algodón, control de insectos, no depositado, que se

describe en el documento WO 2006/128568); Evento TC1507 (maíz, control de insectos - tolerancia a herbicidas, no depositado, que se describe en el documento US-A 2005-039226 o en el documento WO 2004/099447); Evento VIP1034 (maíz, control de insectos - tolerancia a herbicidas, depositado como ATCC PTA-3925., que se describe en el documento WO 03/052073), Evento 32316 (maíz, control de insectos-tolerancia a herbicidas, depositado como PTA-11507, que se describe en el documento WO 2011/084632), Evento 4114 (maíz, control de insectos-tolerancia a herbicidas, depositado como PTA-11506, que se describe en el documento WO 2011/084621).

10 Tasas y tiempo de aplicación

Cuando se aplican las combinaciones de compuestos activos de acuerdo con la invención las tasas de aplicación pueden variar dentro de un intervalo amplio, que depende del tipo de aplicación. La tasa de aplicación de los ingredientes activos de la invención es

- 15 • en el caso del tratamiento de las partes de planta, por ejemplo hojas: de 0,1 a 10.000 g/ha, 10 a 1000 g/ha, más preferentemente de 10 a 800 g/ha, aun más preferentemente de 50 a 300 g/ha (en caso de aplicación por irrigación o irrigación por goteo, la dosis incluso se puede reducir, en especial cuando se usan sustratos inertes como lana mineral o perlita);
- 20 • en el caso del tratamiento de semillas: de 2 a 200 g por 100 kg de semillas, preferentemente de 3 a 150 g por 100 kg de semillas, más preferentemente de 2,5 a 25 g por 100 kg de semillas, aun más preferentemente de 2,5 a 12,5 g por 100 kg de semillas;
- 25 • en el caso del tratamiento del suelo: de 0,1 a 10 000 g/ha, preferentemente de 1 a 5000 g/ha.

Estas tasas de aplicación se dan solo a modo de ejemplo y no son limitantes de los fines de la invención.

Las composiciones de la invención pueden usarse, por lo tanto, para proteger plantas del ataque por los patógenos mencionados durante un determinado período de tiempo

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después del tratamiento. El período durante el que se proporciona la protección se extiende en general durante 1 a 28 días, preferentemente de 1 a 14 días, más preferentemente de 1 a 10 días, con máxima preferencia de 1 a 7 días después del
5 tratamiento de semillas.

El procedimiento del tratamiento de acuerdo con la invención también proporciona el uso o la aplicación de los compuestos (A) y (B) y/o (C) de una manera simultánea, separada o secuencial. Si los ingredientes activos únicos se aplican de una manera
10 secuencia, es decir, en tiempos diferentes, se aplican uno después del otro en un período razonablemente corto, tales como algunas horas o días. Preferentemente el orden de aplicación de los compuestos (A) y (B) no es esencial para el funcionamiento de la presente invención.

Las plantas enumeradas se pueden tratar ventajosamente de acuerdo con la invención con los compuestos de la fórmula general (I) y las composiciones de la invención. Los
15 intervalos preferidos indicados anteriormente para los ingredientes activos o composiciones también se aplican al tratamiento de estas plantas. Se da particular énfasis al tratamiento de las plantas con los compuestos o composiciones mencionados específicamente en el presente texto.

La buena actividad fungicida de las combinaciones de compuestos activos de acuerdo
20 con la invención es evidente a partir de los siguientes ejemplos. Si bien los compuestos activos individuales exhiben debilidad con respecto a la actividad fungicida, las combinaciones tienen una actividad que excede una simple adición de actividades.

Un efecto sinérgico de los fungicidas está siempre presente cuando la actividad fungicida de las combinaciones del compuesto activo excede el total de las actividades
25 de los compuestos activos cuando se aplican en forma individual. La actividad esperada para una combinación dada de dos compuestos activos (composición binaria) se puede calcular de la siguiente manera (cf. Colby, S.R., "Calculating Synergistic and Antagonistic Responses of Herbicide Combinations", *Weeds* **1967**, *15*, 20-22):

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Si

X es la eficacia cuando se aplica el compuesto activo A a una tasa de aplicación de $\underline{m}$ ppm (o g/ha),

Y es la eficacia cuando se aplica el compuesto activo B a una tasa de aplicación de $\underline{n}$ ppm (o g/ha),

E es la eficacia cuando se aplican los compuestos activos A y B a tasas de aplicación de m y n ppm (o g/ha), respectivamente, y

entonces

$$E = X + Y - \frac{X \cdot Y}{100}$$

10 Se indica el grado de eficacia, expresado en %. El 0 % significa una eficacia que corresponde a la del control mientras que una eficacia del 100 % significa que no se observa enfermedad.

Si la actividad fungicida real excede el valor calculado, entonces la actividad de la combinación es superaditiva, es decir, existe un efecto sinérgico. En este caso, la
15 eficacia que se observa realmente debe ser mayor que el valor para la eficacia esperada (E) calculada a partir de la fórmula mencionada anteriormente.

Otra manera de demostrar un efecto sinérgico es el procedimiento de Tammes (cf. "Isoboles, a graphic representation of synergism in pesticides" en *Neth. J. Plant Path.*, **1964**, 70, 73-80).

20 La invención se ilustra con los siguientes ejemplos. Sin embargo, la invención no se limita a los ejemplos.

Ejemplo 1

Prueba de Alternaria (tomates) / preventiva

Disolvente: 24,5 partes en peso de acetona
 24,5 partes en peso de dimetilacetamida

5 Emulsionante: 1 parte en peso de alquilarilpoliglicoléter

Para producir una preparación adecuada de compuesto activo, 1 parte en peso de compuesto activo se mezcla con las cantidades indicadas de disolvente y emulsionante, y el concentrado se diluye con agua a la concentración deseada.

10 Para analizar la actividad preventiva, se rocían plantas jóvenes con la preparación de compuesto activo a la tasa de aplicación indicada. Después de que se ha secado el revestimiento por pulverización, se inocula a las plantas una suspensión acuosa de esporas de *Alternaria solani*. Las plantas se disponen después en un armario de incubación a aproximadamente 20 °C y una humedad atmosférica relativa del 100 %.

15 La prueba se evalúa 3 días después de la inoculación. El 0 % significa una eficacia que corresponde a la de un control no tratado mientras que una eficacia del 100 % significa que no se observa enfermedad.

La siguiente tabla muestra claramente que la actividad observada de la combinación de compuestos activos de acuerdo con la invención es superior a la actividad calculada, es decir, hay presencia de un efecto sinérgico.

Tabla 1

Prueba de Alternaria (tomates) / preventiva

Compuestos activos	Tasa de aplicación del compuesto activo en ppm de i.a.	Eficacia en %	
		hallada*	calc.**
(I-1) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}fenilo	25	20	
(I-3) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}-3-clorofenilo	25	0	
2.6 fluopiram	1	48	
2.21 pentiopirad	0,5	39	
(I-1) + 2.6 25:1	25 + 1	70	58
(I-3) + 2.6 25:1	25 + 1	53	48
(I-1) + 2.21 50:1	25 + 0,5	78	51
(I-3) + 2.21 50:1	25 + 0,5	60	39

* hallada: actividad hallada

** calc. = actividad calculada usando la fórmula de Colby

Tabla 2

Prueba de alternaria (tomates) / preventiva

Compuestos activos	Tasa de aplicación del compuesto activo en ppm de i.a.	Eficacia en %	
		hallada*	calc.**
(I-1) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}fenilo	100	34	
(I-3) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}-3-clorofenilo	100 25	36 30	
15.60 2,6-dimetil-1H,5H-[1,4]ditiino[2,3- c:5,6-c']dipirrol-1,3,5,7(2H,6H)-tetrona	50	32	
5.4 clorotalonilo	20	5	
5.16 folpet	10	0	
5.29 propineb	5	0	
7.7 pirimetanilo	20	32	
(I-1) + 15.60 2:1	100 + 50	65	55
(I-1) + 5.4 5:1	100 + 20	61	37
(I-3) + 5.4 5:1	100 + 20	71	39
(I-1) + 5.16 10:1	100 + 10	41	34
(I-3) + 5.16 10:1	100 + 10	64	36
(I-3) + 5.29 5:1	25 + 5	45	30
(I-3) + 7.7 5:1	100 + 20	63	56

* hallada: actividad hallada

** calc. = actividad calculada usando la fórmula de Colby

Ejemplo 2

Prueba de Phytophthora (tomates) / preventiva

Disolvente: 24,5 partes en peso de acetona

24,5 partes en peso de dimetilacetamida

5 Emulsionante: 1 parte en peso de alquilarilpoliglicoléter

Para producir una preparación adecuada de compuesto activo, 1 parte en peso de compuesto activo se mezcla con las cantidades indicadas de disolvente y emulsionante, y el concentrado se diluye con agua a la concentración deseada.

10 Para analizar la actividad preventiva, plantas jóvenes se rocían con la preparación de compuestos activos a la tasa de aplicación indicada. Después de que se ha secado el revestimiento por pulverización, se inocula a las plantas una suspensión acuosa de esporas de *Phytophthora infestans*. Las plantas se disponen después en un armario de incubación a aproximadamente 20 °C y una humedad atmosférica relativa del 100 %.

15 La prueba se evalúa 3 días después de la inoculación. El 0 % significa una eficacia que corresponde a la de un control no tratado, mientras que una eficacia del 100 % significa que no se observa enfermedad.

20 La siguiente tabla muestra claramente que la actividad observada de la combinación de compuestos activos de acuerdo con la invención es superior a la actividad calculada, es decir, hay presencia de un efecto sinérgico.

Tabla 3

Prueba de Phytophthora (tomates) / protectora

Compuestos activos	Tasa de aplicación del compuesto activo en ppm de i.a.	Eficacia en %	
		hallada*	calc.**
(I-1) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}fenilo	0,005	82	
(I-3) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}-3-clorofenilo	0,0025	65	
3.1 ametoctradina	2,5 1,25	22 15	
15.9 cimoxanilo	5 2,5	0 0	
14.4 fluazinam	2,5	0	
15.24 fosetilo-Al	5 2,5	0 0	
12.10 mefenoxam	2,5 1,25	36 10	
15.41 ácido fosforoso	5 2,5	13 0	
(I-1) + 3.1 1:500	0,005 + 2,5	99	86
(I-3) + 3.1 1:500	0,0025 + 1,25	94	70
(I-1) + 15.9 1:1000	0,005 + 5	89	82
(I-3) + 15.9 1:1000	0,0025 + 2,5	80	65
(I-3) + 14.4 1:1000	0,0025 + 2,5	84	65
(I-1) + 15.24 1:1000	0,005 + 5	93	82
(I-3) + 15.24 1:1000	0,0025 + 2,5	93	65
(I-1) + 12.10 1:500	0,005 + 2,5	98	88
(I-3) + 12.10 1:500	0,0025 + 1,25	83	69
(I-1) + 15.41 1:1000	0,005 + 5	94	84
(I-3) + 15.41 1:1000	0,0025 + 2,5	74	65

* hallada: actividad hallada
** calc. = actividad calculada usando la fórmula de Colby

Tabla 4

Prueba de Phytophthora (tomates) / protectora

Compuestos activos	Tasa de aplicación del compuesto activo en ppm de i.a.	Eficacia en %	
		hallada*	calc.**
(I-1) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il}acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}fenilo	0,01 0,005	77 67	
(I-3) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il}acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}-3-clorofenilo	0,01 0,005	28 5	
3.2 amisulbrom	1	19	
9.1 bentiavalicarb	0,5	52	
3.4 ciazofamida	0,2	8	
9.2 dimetomorf	1	20	
3.10 fenamidona	0,5	3	
9.4 iprovalicarb	2	9	
15.90 {6-[[[(1-metil-1H-tetrazol-5- il)(fenil)metiliden]amino]oxi]metil]piridin- 2-il}carbamato de pentilo	0,2	10	
(I-1) + 3.2 1:100	0,01 + 1	97	87
(I-1) + 9.1 1:100	0,005 + 0,5	91	84
(I-3) + 9.1 1:100	0,005 + 0,5	81	54
(I-3) + 3.4 1:40	0,005 + 0,2	62	13
(I-3) + 9.2 1:100	0,01 + 1	64	42
(I-3) + 3.10 1:100	0,005 + 0,5	94	8
(I-3) + 9.4 1:200	0,01 + 2	83	34
(I-1) + 15.90 1:40	0,005 + 0,2	83	70
(I-3) + 15.90 1:40	0,005 + 0,2	50	15

* hallada: actividad hallada
** calc. = actividad calculada usando la fórmula de Colby

Tabla 5

Prueba de Phytophthora (tomates) / protectora

Compuestos activos	Tasa de aplicación del compuesto activo en ppm de i.a.	Eficacia en %	
		hallada*	calc.**
(I-1) metanosulfonato de 2-{3-[2-(1- [[3,5-bis(difluorometil)-1H-pirazol-1- il]acetil]piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}fenilo	0,0025	52	
(I-3) metanosulfonato de 2-{3-[2-(1- [[3,5-bis(difluorometil)-1H-pirazol-1- il]acetil]piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}-3-clorofenilo	0,01 0,0025	87 59	
2.29 benzovindiflupir	2,5	0	
2.27 N-[1-(2,4-diclorofenil)-1- metoxipropan-2-il]-3-(difluorometil)-1- metil-1H-pirazol-4-carboxamida	10	8	
	2,5	0	
2.8 fluxapiroxad	2,5	0	
2.12 isopirazam	2,5	0	
2.21 pentiopirad	2,5	0	
(I-1) + 2.29 1:1000	0,0025 + 2,5	60	52
(I-1) + 2.27 1:1000	0,0025 + 2,5	67	52
(I-3) + 2.27 1:1000	0,01 + 10	93	88
(I-3) + 2.8 1:1000	0,0025 + 2,5	77	59
(I-1) + 2.12 1:1000	0,0025 + 2,5	62	52
(I-1) + 2.21 1:1000	0,0025 + 2,5	63	52

* hallada: actividad hallada

** calc. = actividad calculada usando la fórmula de Colby

Tabla 6

Prueba de Phytophthora (tomates) / protectora

Compuestos activos	Tasa de aplicación del compuesto activo en ppm de i.a.	Eficacia en %	
		hallada*	calc.**
(I-1) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}fenilo	0,0025	48	
(I-3) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}-3-clorofenilo	0,0025	79	
5.5 hidróxido de cobre	2,5	18	
5.8 oxiclورو de cobre	2,5	0	
5.25 metiram	2,5	15	
10.10 propamocarb-HCl	2,5	0	
(I-1) + 5.5 1:1000	0,0025 + 2,5	92	57
(I-3) + 5.5 1:1000	0,0025 + 2,5	93	83
(I-1) + 5.8 1:1000	0,0025 + 2,5	75	48
(I-1) + 5.25 1:1000	0,0025 + 2,5	93	56
(I-1) + 10.10 1:1000	0,0025 + 2,5	67	48

* hallada: actividad hallada

** calc. = actividad calculada usando la fórmula de Colby

Ejemplo 3

Prueba de *Sphaerotheca* (pepinos) / preventiva

Disolvente: 24,5 partes en peso de acetona
 24,5 partes en peso de dimetilacetamida

5 Emulsionante: 1 parte en peso de alquilarilpoliglicoléter

Para producir una preparación adecuada de compuesto activo, 1 parte en peso de compuesto activo se mezcla con las cantidades indicadas de disolvente y emulsionante, y el concentrado se diluye con agua a la concentración deseada.

10 Para analizar la actividad preventiva, plantas jóvenes se rocían con la preparación de compuestos activos a la tasa de aplicación indicada. Después de que se ha secado el revestimiento por pulverización, se inocula a las plantas una suspensión acuosa de esporas de *Sphaerotheca fuliginea*. Las plantas se disponen después en un invernadero a aproximadamente 23 °C y una humedad atmosférica relativa de aproximadamente el 70 %.

15 La prueba se evalúa 7 días después de la inoculación. El 0 % significa una eficacia que corresponde a la de un control no tratado, mientras que una eficacia del 100 % significa que no se observa enfermedad.

20 La siguiente tabla muestra claramente que la actividad observada de la combinación de compuestos activos de acuerdo con la invención es superior a la actividad calculada, es decir, hay presencia de un efecto sinérgico.

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Tabla 7

Prueba de Sphaerotheca (pepinos) / preventiva

Compuestos activos	Tasa de aplicación del compuesto activo en ppm de i.a.	Eficacia en %	
		hallada*	calc.**
(I-1) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}fenilo	100	19	
(I-3) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}-3-clorofenilo	100	43	
2.29 benzovindiflupir	0,5	0	
2.1 bixafeno	1	10	
2.27 N-[1-(2,4-diclorofenil)-1- metoxipropan-2-il]-3-(difluorometil)-1- metil-1H-pirazol-4-carboxamida	4	81	
2.6 fluopiram	4	19	
2.8 fluxapiroxad	1	38	
2.12 isopirazam	1	19	
2.12 pentiopirad	2	57	
(I-1) + 2.29 200:1	100 + 0,5	57	19
(I-3) + 2.29 200:1	100 + 0,5	48	43
(I-1) + 2.1 100:1	100 + 1	62	27
(I-3) + 2.1 100:1	100 + 1	88	49
(I-1) + 2.27 25:1	100 + 4	98	85
(I-3) + 2.27 25:1	100 + 4	98	89
(I-1) + 2.6 25:1	100 + 4	57	34
(I-1) + 2.8 100:1	100 + 1	81	50
(I-3) + 2.8 100:1	100 + 1	86	65
(I-1) + 2.12 100:1	100 + 1	88	34
(I-3) + 2.12 100:1	100 + 1	79	54
(I-1) + 2.21 50:1	100 + 2	93	65
(I-3) + 2.21 50:1	100 + 2	81	75

* hallada: actividad hallada
** calc. = actividad calculada usando la fórmula de Colby

Tabla 8

5 Prueba de Sphaerotheca (pepinos) / preventiva

Compuestos activos	Tasa de aplicación del compuesto activo en ppm de i.a.	Eficacia en %
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		hallada*	calc.**
(I-1) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}fenilo	100	0	
(I-3) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}-3-clorofenilo	50	19	
2.2 boscalida	40	86	
	20	62	
1.41 protioconazol	2	19	
(I-1) + 2.2 2,5:1	100 + 40	93	86
(I-3) + 2.2 2,5:1	50 + 20	76	69
(I-1) + 1.41 50:1	100 + 2	64	19

* hallada: actividad hallada
** calc. = actividad calculada usando la fórmula de Colby

Tabla 9

Prueba de *Sphaerotheca* (pepinos) / preventiva

Compuestos activos	Tasa de aplicación del compuesto activo en ppm de i.a.	Eficacia en %	
		hallada*	calc.**
(I-1) metanosulfonato 2-{3-[2-(1-[[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil]piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}fenilo	100	38	
(I-3) metanosulfonato de 2-{3-[2-(1-[[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil]piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}-3-clorofenilo	50	29	
5.5 hidróxido de cobre	10	29	
5.8 oxiclورو de cobre	50	10	
5.25 metiram	50	29	
10.10 propamocarb HCl	400	0	
	200	0	
5.30 azufre	200	19	
(I-3) + 5.5 5:1	50 + 10	57	50
(I-1) + 5.8 2:1	100 + 50	76	44
(I-3) + 5.25 1:1	50 + 50	57	50
(I-1) + 10.10 1:4	100 + 400	57	38
(I-3) + 10.10 1:4	50 + 200	62	29
(I-3) + 5.30 1:4	50 + 200	57	42

* hallada: actividad hallada

** calc. = actividad calculada usando la fórmula de Colby

Ejemplo 4

Prueba de Venturia (manzanas) / preventivo

Disolvente: 24,5 partes en peso de acetona

24,5 partes en peso de dimetilacetamida

- 5 Emulsionante: 1 parte en peso de alquilarilpoliglicoléter

Para producir una preparación adecuada de compuesto activo, 1 parte en peso de compuesto activo se mezcla con las cantidades indicadas de disolvente y emulsionante, y el concentrado se diluye con agua a la concentración deseada.

- 10 Para analizar la actividad preventiva, plantas jóvenes se rocían con la preparación de compuestos activos a la tasa de aplicación indicada. Después de que se ha secado el revestimiento por pulverización, se inocula a las plantas una suspensión acuosa de conidios del agente causante de la sarna de la manzana (*Venturia inaequalis*) y luego permanece durante 1 día en un armario de incubación a aproximadamente 20 °C y una humedad atmosférica relativa de 100 %.

- 15 Las plantas se disponen después en un invernadero a aproximadamente 21 °C y una humedad atmosférica relativa de aproximadamente el 90 %.

La prueba se evalúa 10 días después de la inoculación. El 0 % significa una eficacia que corresponde a la de un control no tratado, mientras que una eficacia del 100 % significa que no se observa enfermedad.

- 20 La siguiente tabla muestra claramente que la actividad observada de la combinación de compuestos activos de acuerdo con la invención es superior a la actividad calculada, es decir, hay presencia de un efecto sinérgico.

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Tabla 10

Prueba de Venturia (manzanas) / preventiva

Compuestos activos	Tasa de aplicación del compuesto activo en ppm de i.a.	Eficacia en %	
		hallada*	calc.**
(I-1) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}fenilo	100 50	0 0	
(I-3) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}-3-clorofenilo	100 50	0 0	
2.1 bixafeno	1	84	
2.27 N-[1-(2,4-diclorofenil)-1- metoxipropan-2-il]-3-(difluorometil)-1- metil-1H-pirazol-4-carboxamida	4 2	93 31	
2.6 fluopiram	4	21	
2.8 fluxapiroxad	0,5	25	
2.21 pentiopirad	2	8	
(I-3) + 2.1 100:1	100 + 1	90	84
(I-1) + 2.27 25:1	100 + 4	99	93
(I-3) + 2.27 25:1	50 + 2	83	31
(I-1) + 2.6 25:1	100 + 4	56	21
(I-1) + 2.8 100:1	50 + 0,5	84	25
(I-3) + 2.8 100:1	50 + 0,5	90	25
(I-1) + 2.21 50:1	100 + 2	100	8
(I-3) + 2.21 50:1	100 + 2	68	8

* hallada: actividad hallada

** calc. = actividad calculada usando la fórmula de Colby

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Tabla 11

Prueba de Venturia (manzanas) / preventiva

Compuestos activos	Tasa de aplicación del compuesto activo en ppm de i.a.	Eficacia en %	
		hallada*	calc.**
(I-1) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}fenilo	100 50	13 4	
(I-3) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il]acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}-3-clorofenilo	100 50	15 0	
3.3 azoxistrobina	0,25	38	
2.2 boscalid	20	85	
3.12 fluoxastrobina	0,5	44	
3.17 piraclostrobina	0,5	19	
1.47 tebuconazol	2	11	
3.22 trifloxistrobina	0,5	77	
(I-1) + 3.3 200:1	50 + 0,25	64	40
(I-3) + 3.3 200:1	50 + 0,25	46	38
(I-1) + 2.2 2,5:1	50 + 20	95	86
(I-1) + 3.12 200:1	100 + 0,5	59	51
(I-3) + 3.12 200:1	100 + 0,5	84	52
(I-1) + 3.17 200:1	100 + 0,5	54	30
(I-3) + 3.17 200:1	100 + 0,5	89	31
(I-3) + 1.47 50:1	100 + 2	44	24
(I-1) + 3.22 200:1	100 + 0,5	100	80
(I-3) + 3.22 200:1	100 + 0,5	100	80

* hallada: actividad hallada

** calc. = actividad calculada usando la fórmula de Colby

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Tabla 12

Prueba de Venturia (manzanas) / preventiva

Compuestos activos	Tasa de aplicación del compuesto activo en ppm de i.a.	Eficacia en %	
		hallada*	calc.**
(I-1) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il}acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}fenilo	100	21	
(I-3) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il}acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}-3-clorofenilo	100	0	
15.60 2,6-dimetil-1H,5H-[1,4]ditiino[2,3- c:5,6-c']dipirrol-1,3,5,7(2H,6H)-tetrona	50	24	
5.4 clorotalonilo	20	14	
(I-1) + 15.60 2:1	100 + 50	66	40
(I-3) + 15.60 2:1	100 + 50	56	24
(I-1) + 5.4 5:1	100 + 20	74	32
(I-3) + 5.4 5:1	100 + 20	91	14

* hallada: actividad hallada
** calc. = actividad calculada usando la fórmula de Colby

Tabla 13

Prueba de Venturia (manzanas) / preventiva

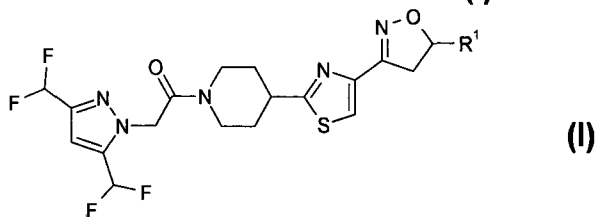
Compuestos activos	Tasa de aplicación del compuesto activo en ppm de i.a.	Eficacia en %	
		hallada*	calc.**
(I-1) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il}acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}fenilo	100	0	
(I-3) metanosulfonato de 2-{3-[2-(1- {{3,5-bis(difluorometil)-1H-pirazol-1- il}acetil}piperidin-4-il)-1,3-tiazol-4-il]-4,5- dihidro-1,2-oxazol-5-il}-3-clorofenilo	100	0	
5.5 hidróxido de cobre	20	25	
5.8 oxiclورو de cobre	50	8	
5.25 metiram	100	55	
5.30 azufre	400	11	
(I-1) + 5.5 5:1	100 + 20	56	25
(I-3) + 5.5 5:1	100 + 20	50	25
(I-1) + 5.8 2:1	100 + 50	50	8
(I-3) + 5.8 2:1	100 + 50	60	8
(I-1) + 5.25 1:1	100 + 100	82	55
(I-3) + 5.25 1:1	100 + 100	73	55
(I-1) + 5.30 1:4	100 + 400	99	11
(I-3) + 5.30 1:4	100 + 400	98	11

* hallada: actividad hallada

** calc. = actividad calculada usando la fórmula de Colby

REIVINDICACIONES

1. Combinación que comprende:
 (A) al menos un tiazolilisoxazolina de fórmula (I)



- 5 en la que
 R¹ representa fenilo, que está al menos sustituido con un metilsulfoniloxi y
 opcionalmente está adicionalmente sustituido con un sustituyentes seleccionado del
 grupo que consiste en metilo, metoxi, flúor o cloro,
 o una sal del mismo aceptable para uso agroquímico,
- 10 y
- (B) al menos un compuesto activo adicional seleccionado de los siguientes grupos
- (1) inhibidores de la síntesis de ergosterol,
 - (2) inhibidores de la cadena respiratoria en el complejo I o II,
 - (3) inhibidores de la cadena respiratoria en el complejo III,
 - 15 (4) inhibidores de la mitosis y la división celular,
 - (5) compuestos capaces de tener una acción en varios sitios,
 - (6) compuestos capaces de inducir defensa en el huésped,
 - (7) inhibidores de la biosíntesis de aminoácidos y/o proteínas,
 - (8) inhibidores de la producción de ATP,
 - 20 (9) inhibidores de la síntesis de pared celular,
 - (10) inhibidores de la síntesis de lípidos y membrana,
 - (11) inhibidores de la biosíntesis de melanina,
 - (12) inhibidores de la síntesis de ácidos nucleicos,
 - (13) inhibidores de la transducción de señales,
 - 25 (14) compuestos capaces de actuar como desacoplante,
 - (15) otros fungicidas.

2. Combinaciones de acuerdo con la reivindicación 1 que comprende al menos un compuesto de la fórmula (I) seleccionado del grupo que consiste en

(I-1) metanosulfonato de 2-{3-[2-(1-[[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil]piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}fenilo,

5 (I-2) metanosulfonato de 2-{3-[2-(1-[[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil]piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}-6-fluorofenilo,

(I-3) metanosulfonato de 2-{3-[2-(1-[[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil]piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}-3-clorofenilo,

10 (I-4) metanosulfonato de 2-{3-[2-(1-[[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil]piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}-5-metilfenilo,

(I-5) metanosulfonato de 2-{3-[2-(1-[[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil]piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}-5-clorofenilo,

(I-6) metanosulfonato de 2-{3-[2-(1-[[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil]piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}-4-metilfenilo,

15 (I-7) metanosulfonato de 2-{3-[2-(1-[[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil]piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}-4-clorofenilo,

(I-8) metanosulfonato de 2-{3-[2-(1-[[3,5-bis(difluorometil)-1H-pirazol-1-il]acetil]piperidin-4-il)-1,3-tiazol-4-il]-4,5-dihidro-1,2-oxazol-5-il}-6-clorofenilo.

3. Procedimiento para controlar hongos dañinos fitopatogénicos, caracterizado
20 porque las mezclas de acuerdo con la reivindicación 1 o 2 se aplican a los hongos dañinos fitopatogénicos y/o su hábitat.

4. Composición para controlar hongos dañinos fitopatogénicos, caracterizada por un contenido de al menos una mezcla de acuerdo con la reivindicación 1 o 2, además de diluyentes y/o tensioactivos.

25 5. Composición de acuerdo con la reivindicación 4 que comprende al menos un ingrediente activo adicional seleccionado del grupo de los insecticidas, atrayentes, esterilizantes, bactericidas, acaricidas, nematocidas, fungicidas, reguladores del crecimiento, herbicidas, fertilizantes, antídotos y sustancias semioquímicas.

6. Uso de mezclas de acuerdo con la reivindicación 1 o 2 para el control de hongos dañinos fitopatogénicos.
7. Uso de mezclas de acuerdo con la reivindicación 1 o 2 como reguladores del crecimiento de las plantas.
- 5 8. Procedimiento para producir composiciones para controlar hongos dañinos fitopatogénicos, caracterizado porque las mezclas de acuerdo con la reivindicación 1 o 2 se mezclan con diluyentes y/o tensioactivos.
9. Uso de compuestos de las mezclas de acuerdo con la reivindicación 1 para el tratamiento de plantas transgénicas.
- 10 10. Uso de compuestos de las mezclas de acuerdo con la reivindicación 1 para el tratamiento de semillas y de semillas de plantas transgénicas.

Combinaciones de compuestos activos

RESUMEN

La presente invención se refiere a combinaciones de compuestos activos, en particular en una composición fungicida, que comprende (A) una tiazolilisoaxazolina de fórmula (I) y un compuesto activo como fungicida adicional (B). Además, la invención se refiere a un procedimiento para controlar en forma curativa o preventiva los hongos fitopatogénicos de plantas o cultivos, al uso de una combinación de acuerdo con la invención para el tratamiento de semillas, a un procedimiento para proteger semillas y también a semillas tratadas.

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(54) Title: ACTIVE COMPOUND COMBINATIONS CONTAINING A THIAZOYLISOXAZOLINE AND A FUNGICIDE

(57) Abstract: The present invention relates to active compound combinations, in particular within a fungicide composition, which comprises (A) a thiazolyloxazoline of formula (I) and a further fungicidally active compound (B). Moreover, the invention relates to a method for curatively or preventively controlling the phytopathogenic fungi of plants or crops, to the use of a combination according to the invention for the treatment of seed, to a method for protecting a seed and not at least to the treated seed.

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ACTIVE COMPOUND COMBINATIONS CONTAINING A THIAZOYLISOXAZOLINE AND A FUNGICIDE

The present invention relates to active compound combinations, in particular within a fungicide composition, which comprises (A) a thiazolylisoxazoline of formula (I) and a further fungicidally active compound (B). Moreover, the invention relates to a method for curatively or preventively controlling the phytopathogenic fungi of plants or crops, to the use of a combination according to the invention for the treatment of seed, to a method for protecting a seed and not at least to the treated seed.

It is already known that certain thiazolylisoxazolines can be used as fungicides (see WO2008/013925, WO2008/013622, WO2009/094407, WO2009/094445, WO2009/055514, WO2010/065579, WO2011/85170, and WO 2011/076699).

10 Since the ecological and economic demands made on modern active ingredients, for example fungicides, are increasing constantly, for example with respect to activity spectrum, toxicity, selectivity, application rate, formation of residues and favourable manufacture, and there can also be problems, for example, with resistances, there is a constant need to develop novel fungicidal compositions which have advantages over the known compositions at least in some areas.

15 The present invention provides active compound combinations/compositions which in some aspects at least achieve the stated objective.

It has now been found, surprisingly, that the combinations according to the invention not only bring about the additive enhancement of the spectrum of action with respect to the phytopathogen to be controlled that was in principle to be expected but achieves a synergistic effect which extends the range of action of the component (A) and of the component (B) in two ways. Firstly, the rates of application of the component (A) and of the component (B) are lowered whilst the action remains equally good. Secondly, the combination still achieves a high degree of phytopathogen control even where the two individual compounds have become totally ineffective in such a low application rate range. This allows, on the one hand, a substantial broadening of the spectrum of phytopathogens that can be controlled and, on the other hand, increased safety in use.

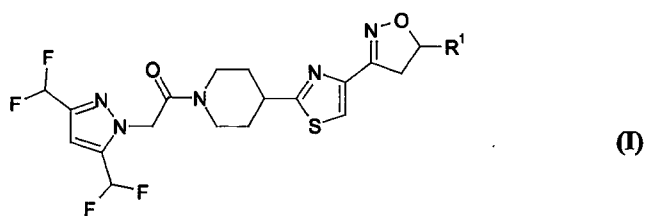
25 In addition to the fungicidal synergistic activity, the active compound combinations according to the invention have further surprising properties which, in a wider sense, may also be called synergistic, such as, for example: broadening of the activity spectrum to other phytopathogens, for example to resistant strains of plant diseases; lower application rates of the active compounds; sufficient control of pests with the aid of the active compound combinations according to the invention even at application rates where the individual compounds show no or virtually no activity; advantageous behaviour during formulation or during use, for example during grinding, sieving, emulsifying, dissolving or dispensing; improved storage stability and light stability; advantageous residue formation; improved toxicological or ecotoxicological behaviour; improved properties of the plant, for example better growth, increased harvest yields, a better developed root system, a larger leaf area, greener leaves, stronger shoots, less seed required, lower phytotoxicity, mobilization of the defence system of the plant, good compatibility with plants. Thus, the use of the active compound combina-

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tions or compositions according to the invention contributes considerably to keeping young cereal stands healthy, which increases, for example, the winter survival of the cereal seed treated, and also safeguards quality and yield. Moreover, the active compound combinations according to the invention may contribute to enhanced systemic action. Even if the individual compounds of the combination have no sufficient systemic properties, the active compound combinations according to the invention may still have this property. In a similar manner, the active compound combinations according to the invention may result in higher persistency of the fungicidal action.

Accordingly, the present invention provides a combination comprising:

(A) at least one thiazolyloxazoline of formula (I)



in which

R¹ represents phenyl, which is at least substituted with one methylsulfonyloxy and optionally be additionally substituted by one substituents selected from the group consisting of methyl, methoxy, fluoro or chloro,

or an agrochemically acceptable salt thereof,

and

(B) at least one further active compound selected from the following groups

- (1) inhibitors of the ergosterol synthesis,
- (2) inhibitors of the respiratory chain at complex I or II,
- (3) inhibitors of the respiratory chain at complex III,
- (4) inhibitors of the mitosis and cell division,
- (5) compounds capable of having a multisite action,
- (6) compounds capable of inducing a host defense,
- (7) inhibitors of the amino acid and/or protein biosynthesis,
- (8) inhibitors of the ATP production,

- 3 -

- (9) inhibitors of the cell wall synthesis,
- (10) inhibitors of the lipid and membrane synthesis,
- (11) inhibitors of the melanine biosynthesis,
- (12) inhibitors of the nucleic acid synthesis,
- 5 (13) inhibitors of the signal transduction,
- (14) compounds capable of acting as uncoupler,
- (15) other fungicides.

Preference is given to combinations comprising at least one compound of the formula (I) selected from the group consisting of

- 10 (I-1) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methanesulfonate,
- (I-2) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-6-fluorophenyl methanesulfonate,
- (I-3) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-15 4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate,
- (I-4) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-5-methylphenyl methanesulfonate,
- (I-5) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-5-chlorophenyl methanesulfonate,
- 20 (I-6) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-4-methylphenyl methanesulfonate,
- (I-7) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-4-chlorophenyl methanesulfonate,
- (I-8) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-25 4,5-dihydro-1,2-oxazol-5-yl}-6-chlorophenyl methanesulfonate.

In the description below numbers in parenthesis behind a compound name represent the CAS Registry No. of said compound.

Preference is further given to combinations comprising at least one further active compound (B) selected from the following groups:

- (1) Inhibitors of the ergosterol biosynthesis, for example (1.1) aldimorph (1704-28-5), (1.2) azaconazole (60207-31-0), (1.3) bitertanol (55179-31-2), (1.4) bromuconazole (116255-48-2), (1.5) cyproconazole (113096-99-4), (1.6) diclobutrazole (75736-33-3), (1.7) difenoconazole (119446-68-3), (1.8) diniconazole (83657-24-3), (1.9) diniconazole-M (83657-18-5), (1.10) dodemorph (1593-77-7), (1.11) dodemorph acetate (31717-87-0), (1.12) epoxiconazole (106325-08-0), (1.13) etaconazole (60207-93-4), (1.14) fenarimol (60168-88-9), (1.15) fenbuconazole (114369-43-6), (1.16) fenhexamid (126833-17-8), (1.17) fenpropidin (67306-00-7), (1.18) fenpropimorph (67306-03-0), (1.19) fluquinconazole (136426-54-5), (1.20) flurprimidol (56425-91-3), (1.21) flusilazole (85509-19-9), (1.22) flutriafol (76674-21-0), (1.23) furconazole (112839-33-5), (1.24) furconazole-cis (112839-32-4), (1.25) hexaconazole (79983-71-4), (1.26) imazalil (60534-80-7), (1.27) imazalil sulfate (58594-72-2), (1.28) imibenconazole (86598-92-7), (1.29) ipconazole (125225-28-7), (1.30) metconazole (125116-23-6), (1.31) myclobutanil (88671-89-0), (1.32) naftifine (65472-88-0), (1.33) nuarimol (63284-71-9), (1.34) oxpoconazole (174212-12-5), (1.35) paclobutrazol (76738-62-0), (1.36) pefurazoate (101903-30-4), (1.37) penconazole (66246-88-6), (1.38) piperalin (3478-94-2), (1.39) prochloraz (67747-09-5), (1.40) propiconazole (60207-90-1), (1.41) prothioconazole (178928-70-6), (1.42) pyributicarb (88678-67-5), (1.43) pyrifenoxy (88283-41-4), (1.44) quinconazole (103970-75-8), (1.45) simeconazole (149508-90-7), (1.46) spiroxamine (118134-30-8), (1.47) tebuconazole (107534-96-3), (1.48) terbinafine (91161-71-6), (1.49) tetraconazole (112281-77-3), (1.50) triadimefon (43121-43-3), (1.51) triadimenol (89482-17-7), (1.52) tridemorph (81412-43-3), (1.53) triflumizole (68694-11-1), (1.54) triforine (26644-46-2), (1.55) triticonazole (131983-72-7), (1.56) uniconazole (83657-22-1), (1.57) uniconazole-p (83657-17-4), (1.58) viniconazole (77174-66-4), (1.59) voriconazole (137234-62-9), (1.60) 1-(4-chlorophenyl)-2-(1H-1,2,4-triazol-1-yl)cycloheptanol (129586-32-9), (1.61) methyl 1-(2,2-dimethyl-2,3-dihydro-1H-inden-1-yl)-1H-imidazole-5-carboxylate (110323-95-0), (1.62) N'-{5-(difluoromethyl)-2-methyl-4-[3-(trimethylsilyl)propoxy]phenyl}-N-ethyl-N-methylimidoformamide, (1.63) N-ethyl-N-methyl-N'-{2-methyl-5-(trifluoromethyl)-4-[3-(trimethylsilyl)propoxy]phenyl}imidoformamide, (1.64) O-[1-(4-methoxyphenoxy)-3,3-dimethylbutan-2-yl] 1H-imidazole-1-carbothioate (111226-71-2).
- (2) inhibitors of the respiratory chain at complex I or II, for example (2.1) bixafen (581809-46-3), (2.2) boscalid (188425-85-6), (2.3) carboxin (5234-68-4), (2.4) diflumetorim (130339-07-0), (2.5) fenfuram (24691-80-3), (2.6) fluopyram (658066-35-4), (2.7) flutolanil (66332-96-5), (2.8) fluxapyroxad (907204-31-3), (2.9) furametpyr (123572-88-3), (2.10) furmecyclox (60568-05-0), (2.11) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate 1RS,4SR,9SR) (881685-58-1), (2.12) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.13) isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.14) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.15) isopyrazam (syn epimeric racemate 1RS,4SR,9RS), (2.16) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.17) isopyrazam (syn-

- epimeric enantiomer 1S,4R,9S), (2.18) mepronil (55814-41-0), (2.19) oxycarboxin (5259-88-1), (2.20) penflufen (494793-67-8), (2.21) penthiopyrad (183675-82-3), (2.22) sedaxane (874967-67-6), (2.23) thifluzamide (130000-40-7), (2.24) 1-methyl-N-[2-(1,1,2,2-tetrafluoroethoxy)phenyl]-3-(trifluoromethyl)-1H-pyrazole-4-carboxamide, (2.25) 3-(difluoromethyl)-1-methyl-N-[2-(1,1,2,2-tetrafluoroethoxy)phenyl]-1H-pyrazole-4-carboxamide, (2.26) 3-(difluoromethyl)-N-[4-fluoro-2-(1,1,2,3,3,3-hexafluoropropoxy)phenyl]-1-methyl-1H-pyrazole-4-carboxamide, (2.27) N-[1-(2,4-dichlorophenyl)-1-methoxypropan-2-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide (1092400-95-7), (2.28) 5,8-difluoro-N-[2-(2-fluoro-4-[[4-(trifluoromethyl)pyridin-2-yl]oxy]phenyl)ethyl]quinazolin-4-amine (1210070-84-0), (2.29) benzovindiflupyr, (2.30) N-[(1S,4R)-9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.31) N-[(1R,4S)-9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.32) 3-(Difluormethyl)-1-methyl-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)-1H-pyrazol-4-carboxamid, (2.33) 1,3,5-Trimethyl-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)-1H-pyrazol-4-carboxamid, (2.34) 1-Methyl-3-(trifluormethyl)-N-(1,3,3-trimethyl-2,3-dihydro-1H-inden-4-yl)-1H-pyrazol-4-carboxamid, (2.35) 1-Methyl-3-(trifluormethyl)-N-[(1S)-1,3,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazol-4-carboxamid, (2.36) 1-Methyl-3-(trifluormethyl)-N-[(1R)-1,3,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazol-4-carboxamid, (2.37) 3-(Difluormethyl)-1-methyl-N-[(3S)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazol-4-carboxamid, (2.38) 3-(Difluormethyl)-1-methyl-N-[(3R)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazol-4-carboxamid, (2.39) 1,3,5-Trimethyl-N-[(3R)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazol-4-carboxamid, (2.40) 1,3,5-Trimethyl-N-[(3S)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazol-4-carboxamid.
- (3) inhibitors of the respiratory chain at complex III, for example (3.1) ametocetradin (865318-97-4), (3.2) amisulbrom (348635-87-0), (3.3) azoxystrobin (131860-33-8), (3.4) cyazofamid (120116-88-3), (3.5) coumethoxystrobin (850881-30-0), (3.6) coumoxystrobin (850881-70-8), (3.7) dimoxystrobin (141600-52-4), (3.8) enestroburin (238410-11-2), (3.9) famoxadone (131807-57-3), (3.10) fenamidone (161326-34-7), (3.11) fenoxystrobin (918162-02-4), (3.12) fluoxastrobin (361377-29-9), (3.13) kresoxim-methyl (143390-89-0), (3.14) metominostrobin (133408-50-1), (3.15) orysastrobin (189892-69-1), (3.16) picoxystrobin (117428-22-5), (3.17) pyraclostrobin (175013-18-0), (3.18) pyrametostrobin (915410-70-7), (3.19) pyraoxystrobin (862588-11-2), (3.20) pyribencarb (799247-52-2), (3.21) triclopyricarb (902760-40-1), (3.22) trifloxystrobin (141517-21-7), (3.23) (2E)-2-(2-[[6-(3-chloro-2-methylphenoxy)-5-fluoropyrimidin-4-yl]oxy]phenyl)-2-(methoxyimino)-N-methylethanamide, (3.24) (2E)-2-(methoxyimino)-N-methyl-2-(2-[[[(1E)-1-[3-(trifluoromethyl)phenyl]ethylidene]amino]oxy]methyl]phenyl)ethanamide, (3.25) (2E)-2-(methoxyimino)-N-methyl-2-[2-[(E)-{1-[3-(trifluoromethyl)phenyl]ethoxy}imino]methyl]phenyl]ethanamide (158169-73-4), (3.26) (2E)-2-[2-[[[(1E)-1-[3-[(E)-1-fluoro-2-phenylethenyl]oxy]phenyl]ethylidene]amino]oxy]methyl]phenyl]-2-(methoxyimino)-N-methylethanamide (326896-28-0), (3.27) (2E)-2-[2-[[[(2E,3E)-4-(2,6-dichlorophenyl)but-3-en-2-ylidene]amino]oxy]methyl]phenyl]-2-(methoxyimino)-N-methylethanamide, (3.28) 2-chloro-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)pyridine-3-carboxamide (119899-14-8), (3.29) 5-methoxy-2-methyl-4-(2-[[[(1E)-1-[3-

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- (trifluoromethyl)phenyl]ethylidene}amino)oxy]methyl}phenyl)-2,4-dihydro-3H-1,2,4-triazol-3-one, (3.30) methyl (2E)-2-{2-[(cyclopropyl[(4-methoxyphenyl)imino]methyl)sulfanyl)methyl]phenyl}-3-methoxyprop-2-enoate (149601-03-6), (3.31) N-(3-ethyl-3,5,5-trimethylcyclohexyl)-3-(formylamino)-2-hydroxybenzamide (226551-21-9), (3.32) 2-{2-[(2,5-dimethylphenoxy)methyl]phenyl}-2-methoxy-N-methylacetamide (173662-97-0), (3.33) (2R)-2-{2-[(2,5-dimethylphenoxy)methyl]phenyl}-2-methoxy-N-methylacetamide (394657-24-0).
- (4) Inhibitors of the mitosis and cell division, for example (4.1) benomyl (17804-35-2), (4.2) carbendazim (10605-21-7), (4.3) chlorfenazole (3574-96-7), (4.4) diethofencarb (87130-20-9), (4.5) ethaboxam (162650-77-3), (4.6) fluopicolide (239110-15-7), (4.7) fuberidazole (3878-19-1), (4.8) pencycuron (66063-05-6), (4.9) thiabendazole (148-79-8), (4.10) thiophanate-methyl (23564-05-8), (4.11) thiophanate (23564-06-9), (4.12) zoxamide (156052-68-5), (4.13) 5-chloro-7-(4-methylpiperidin-1-yl)-6-(2,4,6-trifluorophenyl)[1,2,4]triazolo[1,5-a]pyrimidine (214706-53-3), (4.14) 3-chloro-5-(6-chloropyridin-3-yl)-6-methyl-4-(2,4,6-trifluorophenyl)pyridazine (1002756-87-7).
- (5) Compounds capable to have a multisite action, like for example (5.1) bordeaux mixture (8011-63-0), (5.2) captafol (2425-06-1), (5.3) captan (133-06-2), (5.4) chlorothalonil (1897-45-6), (5.5) copper hydroxide (20427-59-2), (5.6) copper naphthenate (1338-02-9), (5.7) copper oxide (1317-39-1), (5.8) copper oxychloride (1332-40-7), (5.9) copper(2+) sulfate (7758-98-7), (5.10) dichlofluanid (1085-98-9), (5.11) dithianon (3347-22-6), (5.12) dodine (2439-10-3), (5.13) dodine free base, (5.14) ferbam (14484-64-1), (5.15) fluorofolpet (719-96-0), (5.16) folpet (133-07-3), (5.17) guazatine (108173-90-6), (5.18) guazatine acetate, (5.19) iminocadine (13516-27-3), (5.20) iminocadine albesilate (169202-06-6), (5.21) iminocadine triacetate (57520-17-9), (5.22) mancozeb (53988-93-5), (5.23) mancozeb (8018-01-7), (5.24) maneb (12427-38-2), (5.25) metiram (9006-42-2), (5.26) metiram zinc (9006-42-2), (5.27) oxine-copper (10380-28-6), (5.28) propamidine (104-32-5), (5.29) propineb (12071-83-9), (5.30) sulphur and sulphur preparations including calcium polysulphide (7704-34-9), (5.31) thiram (137-26-8), (5.32) tolylfluanid (731-27-1), (5.33) zineb (12122-67-7), (5.34) ziram (137-30-4).
- (6) Compounds capable to induce a host defence, like for example (6.1) acibenzolar-S-methyl (135158-54-2), (6.2) isotianil (224049-04-1), (6.3) probenazole (27605-76-1), (6.4) tiadinil (223580-51-6).
- (7) Inhibitors of the amino acid and/or protein biosynthesis, for example (7.1) andoprim (23951-85-1), (7.2) blastocidin-S (2079-00-7), (7.3) cyprodinil (121552-61-2), (7.4) kasugamycin (6980-18-3), (7.5) kasugamycin hydrochloride hydrate (19408-46-9), (7.6) mepanipyrim (110235-47-7), (7.7) pyrimethanil (53112-28-0), (7.8) 3-(5-fluoro-3,3,4,4-tetramethyl-3,4-dihydroisoquinolin-1-yl)quinoline (861647-32-7).
- (8) Inhibitors of the ATP production, for example (8.1) fentin acetate (900-95-8), (8.2) fentin chloride (639-58-7), (8.3) fentin hydroxide (76-87-9), (8.4) silthiofam (175217-20-6).
- (9) Inhibitors of the cell wall synthesis, for example (9.1) benthiavalicarb (177406-68-7), (9.2) dimethomorph (110488-70-5), (9.3) flumorph (211867-47-9), (9.4) iprovalicarb (140923-17-7), (9.5) mandipro-

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- pamid (374726-62-2), (9.6) polyoxins (11113-80-7), (9.7) polyoxorim (22976-86-9), (9.8) validamycin A (37248-47-8), (9.9) valifenalate (283159-94-4; 283159-90-0).
- (10) Inhibitors of the lipid and membrane synthesis, for example (10.1) biphenyl (92-52-4), (10.2) chloroneb (2675-77-6), (10.3) dicloran (99-30-9), (10.4) edifenphos (17109-49-8), (10.5) etridiazole (2593-15-9), (10.6) iodocarb (55406-53-6), (10.7) iprobenfos (26087-47-8), (10.8) isoprothiolane (50512-35-1), (10.9) propamocarb (25606-41-1), (10.10) propamocarb hydrochloride (25606-41-1), (10.11) prothiocarb (19622-08-3), (10.12) pyrazophos (13457-18-6), (10.13) quintozone (82-68-8), (10.14) tecnazene (117-18-0), (10.15) tolclofos-methyl (57018-04-9).
- (11) Inhibitors of the melanine biosynthesis, for example (11.1) carpropamid (104030-54-8), (11.2) diclocymet (139920-32-4), (11.3) fenoxanil (115852-48-7), (11.4) phthalide (27355-22-2), (11.5) pyroquilon (57369-32-1), (11.6) tricyclazole (41814-78-2), (11.7) 2,2,2-trifluoroethyl {3-methyl-1-[(4-methylbenzoyl)amino]butan-2-yl} carbamate (851524-22-6).
- (12) Inhibitors of the nucleic acid synthesis, for example (12.1) benalaxyl (71626-11-4), (12.2) benalaxyl-M (kiralaxyl) (98243-83-5), (12.3) bupirimate (41483-43-6), (12.4) clozylacon (67932-85-8), (12.5) dime-
thirimol (5221-53-4), (12.6) ethirimol (23947-60-6), (12.7) furalaxyl (57646-30-7), (12.8) hymexazol (10004-44-1), (12.9) metalaxyl (57837-19-1), (12.10) metalaxyl-M (mefenoxam) (70630-17-0), (12.11) ofurace (58810-48-3), (12.12) oxadixyl (77732-09-3), (12.13) oxolinic acid (14698-29-4).
- (13) Inhibitors of the signal transduction, for example (13.1) chlozolate (84332-86-5), (13.2) fenpiclonil (74738-17-3), (13.3) fludioxonil (131341-86-1), (13.4) iprodione (36734-19-7), (13.5) procymidone (32809-16-8), (13.6) quinoxifen (124495-18-7), (13.7) vinclozolin (50471-44-8).
- (14) Compounds capable to act as an uncoupler, like for example (14.1) binapacryl (485-31-4), (14.2) dinocap (131-72-6), (14.3) ferimzone (89269-64-7), (14.4) fluazinam (79622-59-6), (14.5) meptyldinocap (131-72-6).
- (15) Further compounds, like for example (15.1) benthiazole (21564-17-0), (15.2) bethoxazin (163269-30-5), (15.3) capsimycin (70694-08-5), (15.4) carvone (99-49-0), (15.5) chinomethionat (2439-01-2), (15.6) pyriofenone (chlazafenone) (688046-61-9), (15.7) cufraneb (11096-18-7), (15.8) cyflufenamid (180409-60-3), (15.9) cymoxanil (57966-95-7), (15.10) cyprosulfamide (221667-31-8), (15.11) dazomet (533-74-4), (15.12) debacarb (62732-91-6), (15.13) dichlorophen (97-23-4), (15.14) diclomezine (62865-36-5), (15.15) difenzoquat (49866-87-7), (15.16) difenzoquat methylsulphate (43222-48-6), (15.17) diphenylamine (122-39-4), (15.18) ecomate, (15.19) fenpyrazamine (473798-59-3), (15.20) flumetover (154025-04-4), (15.21) fluoroimide (41205-21-4), (15.22) flusulfamide (106917-52-6), (15.23) flutianil (304900-25-2), (15.24) fosetyl-aluminium (39148-24-8), (15.25) fosetyl-calcium, (15.26) fosetyl-sodium (39148-16-8), (15.27) hexachlorobenzene (118-74-1), (15.28) irumamycin (81604-73-1), (15.29) methasulfocarb (66952-49-6), (15.30) methyl isothiocyanate (556-61-6), (15.31) metrafenone (220899-03-6), (15.32) mildiomycin (67527-71-3), (15.33) natamycin (7681-93-8), (15.34) nickel dimethyldithiocarbamate (15521-65-0),

- (15.35) nitrothal-isopropyl (10552-74-6), (15.36) octhilinone (26530-20-1), (15.37) oxamocarb (917242-12-7), (15.38) oxyfenthin (34407-87-9), (15.39) pentachlorophenol and salts (87-86-5), (15.40) phenothrin, (15.41) phosphorous acid and its salts (13598-36-2), (15.42) propamocarb-fosetyl, (15.43) propanosine-sodium (88498-02-6), (15.44) proquinazid (189278-12-4), (15.45) pyrimorph (868390-90-3),
- 5 (15.45e) (2E)-3-(4-tert-butylphenyl)-3-(2-chloropyridin-4-yl)-1-(morpholin-4-yl)prop-2-en-1-one (1231776-28-5), (15.45z) (2Z)-3-(4-tert-butylphenyl)-3-(2-chloropyridin-4-yl)-1-(morpholin-4-yl)prop-2-en-1-one (1231776-29-6), (15.46) pyrrolnitrine (1018-71-9), (15.47) tebufloquin (376645-78-2), (15.48) tecloftalam (76280-91-6), (15.49) tolifenide (304911-98-6), (15.50) triazoxide (72459-58-6), (15.51) trichlamide (70193-21-4), (15.52) zarilamid (84527-51-5), (15.53) (3S,6S,7R,8R)-8-benzyl-3-[(3-[(isobutyryloxy)methoxy]-4-methoxypyridin-2-yl)carbonyl]amino]-6-methyl-4,9-dioxo-1,5-dioxonan-7-yl
- 10 2-methylpropanoate (517875-34-2), (15.54) 1-(4-{4-[(5R)-5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone (1003319-79-6), (15.55) 1-(4-{4-[(5S)-5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone (1003319-80-9), (15.56) 1-
- 15 (4-{4-[5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone (1003318-67-9), (15.57) 1-(4-methoxyphenoxy)-3,3-dimethylbutan-2-yl 1H-imidazole-1-carboxylate (111227-17-9), (15.58) 2,3,5,6-tetrachloro-4-(methylsulfonyl)pyridine (13108-52-6), (15.59) 2,3-dibutyl-6-chlorothieno[2,3-d]pyrimidin-4(3H)-one (221451-58-7), (15.60) 2,6-dimethyl-1H,5H-[1,4]dithiino[2,3-c:5,6-c']dipyrrole-1,3,5,7(2H,6H)-tetrone,
- 20 (15.61) 2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]-1-(4-{4-[(5R)-5-phenyl-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)ethanone (1003316-53-7), (15.62) 2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]-1-(4-{4-[(5S)-5-phenyl-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)ethanone (1003316-54-8), (15.63) 2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]-1-(4-{4-(5-phenyl-4,5-dihydro-1,2-oxazol-3-yl)-1,3-thiazol-2-yl}piperidin-1-yl)ethanone (1003316-51-5), (15.64) 2-butoxy-
- 25 6-iodo-3-propyl-4H-chromen-4-one, (15.65) 2-chloro-5-[2-chloro-1-(2,6-difluoro-4-methoxyphenyl)-4-methyl-1H-imidazol-5-yl]pyridine, (15.66) 2-phenylphenol and salts (90-43-7), (15.67) 3-(4,4,5-trifluoro-3,3-dimethyl-3,4-dihydroisoquinolin-1-yl)quinoline (861647-85-0), (15.68) 3,4,5-trichloropyridine-2,6-dicarbonitrile (17824-85-0), (15.69) 3-[5-(4-chlorophenyl)-2,3-dimethyl-1,2-oxazolidin-3-yl]pyridine, (15.70) 3-chloro-5-(4-chlorophenyl)-4-(2,6-difluorophenyl)-6-methylpyridazine, (15.71) 4-(4-chlorophenyl)-5-(2,6-difluorophenyl)-3,6-dimethylpyridazine, (15.72) 5-amino-1,3,4-thiadiazole-2-thiol,
- 30 (15.73) 5-chloro-N'-phenyl-N'-(prop-2-yn-1-yl)thiophene-2-sulfonohydrazide (134-31-6), (15.74) 5-fluoro-2-[(4-fluorobenzyl)oxy]pyrimidin-4-amine (1174376-11-4), (15.75) 5-fluoro-2-[(4-methylbenzyl)oxy]pyrimidin-4-amine (1174376-25-0), (15.76) 5-methyl-6-octyl[1,2,4]triazolo[1,5-a]pyrimidin-7-amine, (15.77) ethyl (2Z)-3-amino-2-cyano-3-phenylprop-2-enoate, (15.78) N'-(4-{[3-(4-chlorobenzyl)-1,2,4-thiadiazol-5-yl]oxy}-2,5-dimethylphenyl)-N-ethyl-N-methylimidofornamide, (15.79) N-(4-chlorobenzyl)-3-[3-methoxy-4-(prop-2-yn-1-yloxy)phenyl]propanamide, (15.80) N-[(4-chlorophenyl)(cyano)methyl]-3-[3-methoxy-4-(prop-2-yn-1-yloxy)phenyl]propanamide, (15.81) N-[(5-bromo-3-chloropyridin-2-yl)methyl]-2,4-dichloropyridine-3-carboxamide, (15.82) N-[1-(5-bromo-3-chloropyridin-2-yl)ethyl]-2,4-dichloropyridine-3-carboxamide, (15.83) N-[1-(5-bromo-3-chloropyridin-2-

- yl)ethyl]-2-fluoro-4-iodopyridine-3-carboxamide, (15.84) N-{(E)-[(cyclopropylmethoxy)imino][6-(difluoromethoxy)-2,3-difluorophenyl]methyl}-2-phenylacetamide (221201-92-9), (15.85) N-{(Z)-[(cyclopropylmethoxy)imino][6-(difluoromethoxy)-2,3-difluorophenyl]methyl}-2-phenylacetamide (221201-92-9), (15.86) N'-{4-[(3-tert-butyl-4-cyano-1,2-thiazol-5-yl)oxy]-2-chloro-5-methylphenyl}-N-ethyl-N-methylimidiformamide, (15.87) N-methyl-2-(1-{[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-N-(1,2,3,4-tetrahydronaphthalen-1-yl)-1,3-thiazole-4-carboxamide (922514-49-6), (15.88) N-methyl-2-(1-{[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-N-[(1R)-1,2,3,4-tetrahydronaphthalen-1-yl]-1,3-thiazole-4-carboxamide (922514-07-6), (15.89) N-methyl-2-(1-{[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-N-[(1S)-1,2,3,4-tetrahydronaphthalen-1-yl]-1,3-thiazole-4-carboxamide (922514-48-5), (15.90) pentyl {6-[[[(1-methyl-1H-tetrazol-5-yl)(phenyl)methylidene]amino]oxy)methyl]pyridin-2-yl}carbamate, (15.91) phenazine-1-carboxylic acid, (15.92) quinolin-8-ol (134-31-6), (15.93) quinolin-8-ol sulfate (2:1) (134-31-6), (15.94) tert-butyl {6-[[[(1-methyl-1H-tetrazol-5-yl)(phenyl)methylene]amino]oxy)methyl]pyridin-2-yl}carbamate.
- (16) Further compounds, like for example (16.1) 1-methyl-3-(trifluoromethyl)-N-[2'-(trifluoromethyl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide, (16.2) N-(4'-chlorobiphenyl-2-yl)-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (16.3) N-(2',4'-dichlorobiphenyl-2-yl)-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (16.4) 3-(difluoromethyl)-1-methyl-N-[4'-(trifluoromethyl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide, (16.5) N-(2',5'-difluorobiphenyl-2-yl)-1-methyl-3-(trifluoromethyl)-1H-pyrazole-4-carboxamide, (16.6) 3-(difluoromethyl)-1-methyl-N-[4'-(prop-1-yn-1-yl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide, (16.7) 5-fluoro-1,3-dimethyl-N-[4'-(prop-1-yn-1-yl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide, (16.8) 2-chloro-N-[4'-(prop-1-yn-1-yl)biphenyl-2-yl]pyridine-3-carboxamide, (16.9) 3-(difluoromethyl)-N-[4'-(3,3-dimethylbut-1-yn-1-yl)biphenyl-2-yl]-1-methyl-1H-pyrazole-4-carboxamide, (16.10) N-[4'-(3,3-dimethylbut-1-yn-1-yl)biphenyl-2-yl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide, (16.11) 3-(difluoromethyl)-N-(4'-ethynylbiphenyl-2-yl)-1-methyl-1H-pyrazole-4-carboxamide, (16.12) N-(4'-ethynylbiphenyl-2-yl)-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide, (16.13) 2-chloro-N-(4'-ethynylbiphenyl-2-yl)pyridine-3-carboxamide, (16.14) 2-chloro-N-[4'-(3,3-dimethylbut-1-yn-1-yl)biphenyl-2-yl]pyridine-3-carboxamide, (16.15) 4-(difluoromethyl)-2-methyl-N-[4'-(trifluoromethyl)biphenyl-2-yl]-1,3-thiazole-5-carboxamide, (16.16) 5-fluoro-N-[4'-(3-hydroxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]-1,3-dimethyl-1H-pyrazole-4-carboxamide, (16.17) 2-chloro-N-[4'-(3-hydroxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]pyridine-3-carboxamide, (16.18) 3-(difluoromethyl)-N-[4'-(3-methoxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]-1-methyl-1H-pyrazole-4-carboxamide, (16.19) 5-fluoro-N-[4'-(3-methoxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]-1,3-dimethyl-1H-pyrazole-4-carboxamide, (16.20) 2-chloro-N-[4'-(3-methoxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]pyridine-3-carboxamide, (16.21) (5-bromo-2-methoxy-4-methylpyridin-3-yl)(2,3,4-trimethoxy-6-methylphenyl)methanone, (16.22) N-[2-(4-{[3-(4-chlorophenyl)prop-2-yn-1-yl]oxy}-3-methoxyphenyl)ethyl]-N2-(methylsulfonyl)valinamide (220706-93-4), (16.23) 4-oxo-4-[(2-phenylethyl)amino]butanoic acid, (16.24) but-3-yn-1-yl {6-[[[(Z)-(1-methyl-1H-tetrazol-5-yl)(phenyl)methylene]amino]oxy)methyl]pyridin-2-yl}carbamate, (16.25) 4-Amino-5-fluoropyrimidin-2-ol (mesomere Form: 6-Amino-5-fluoropyrimidin-2(1H)-on), (16.26) propyl 3,4,5-trihydroxybenzoate.

All named mixing partners of the classes (1) to (16) can, if their functional groups enable this, optionally form salts with suitable bases or acids.

Particular preference is further given to combinations comprising at least one further active compound (B) selected from the following groups:

- 5 (2.1) bixafen, (2.2) boscalid, (2.6) fluopyram, (2.8) fluxapyroxad, (2.11) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate 1RS,4SR,9SR), (2.12) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.13) isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.14) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.15) isopyrazam (syn epimeric racemate 1RS,4SR,9RS), (2.16) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.17) isopyrazam (syn-epimeric enantiomer
- 10 1S,4R,9S), (2.27) N-[1-(2,4-dichlorophenyl)-1-methoxypropan-2-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.29) N-[9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (3.1) ametoctradin, (3.2) amisulbrom, (3.3) azoxystrobin, (3.4) cyazofamid, (3.9) famoxadone, (3.10) fenamidone, (3.12) fluoxastrobin, (3.16) picoxystrobin, (3.17) pyraclostrobin, (3.22) trifloxystrobin, (4.6) fluopicolide, (5.1) bordeaux mixture,
- 15 (5.4) chlorothalonil, (5.5) copper hydroxide, (5.7) copper oxide, (5.8) copper oxychloride, (5.9) copper(2+) sulfate, (5.16) folpet, (5.23) mancozeb, (5.25) metiram, (5.26) metiram zinc, (5.29) propineb, (5.30) sulphur and sulphur preparations including calcium polysulphide, (7.7) pyrimethanil, (9.2) dimethomorph, (9.4) iprovalicarb, (9.5) mandipropamid, (10.9) propamocarb, (10.10) propamocarb hydrochloride, (12.9) metalaxyl, (12.10) metalaxyl-M (mefenoxam), (14.4) fluazinam, (15.9) cymoxanil, (15.24) fosetyl-
- 20 aluminium, (15.25) fosetyl-calcium, (15.26) fosetyl-sodium, (15.41) phosphorous acid and its salts, (15.42) propamocarb-fosetate, (15.54) 1-(4-{4-[(5R)-5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone, (15.55) 1-(4-{4-[(5S)-5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-
- 25 methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone, (15.56) 1-(4-{4-[5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone, (15.60) 2,6-dimethyl-1H,5H-[1,4]dithiino[2,3-c:5,6-c']dipyrrole-1,3,5,7(2H,6H)-tetrone, (15.90) pentyl {6-[[[(1-methyl-1H-tetrazol-5-yl)(phenyl)methylidene]amino]oxy)methyl]pyridin-2-yl}carbamate.

- 30 All named mixing partners of the classes (1) to (15) can, if their functional groups enable this, optionally form salts with suitable bases or acids.

- In a preferred embodiment this invention is directed to mixtures comprising the compound (I-1) as compound of formula (I) and one component (B), in particular the mixtures (I-1) + (1.1), (I-1) + (1.2), (I-1) + (1.3), (I-1) + (1.4), (I-1) + (1.5), (I-1) + (1.6), (I-1) + (1.7), (I-1) + (1.8), (I-1) + (1.9), (I-1) + (1.10), (I-1) + (1.11), (I-1) + (1.12), (I-1) + (1.13), (I-1) + (1.14), (I-1) + (1.15), (I-1) + (1.16), (I-1) + (1.17),
- 35 (I-1) + (1.18), (I-1) + (1.19), (I-1) + (1.20), (I-1) + (1.21), (I-1) + (1.22), (I-1) + (1.23), (I-1) + (1.24), (I-1) + (1.25), (I-1) + (1.26), (I-1) + (1.27), (I-1) + (1.28), (I-1) + (1.29), (I-1) + (1.30), (I-1) + (1.31), (I-1) + (1.32), (I-1) + (1.33), (I-1) + (1.34), (I-1) + (1.35), (I-1) + (1.36), (I-1) + (1.37), (I-1) + (1.38),

- (I-1) + (1.39), (I-1) + (1.40), (I-1) + (1.41), (I-1) + (1.42), (I-1) + (1.43), (I-1) + (1.44), (I-1) + (1.45),
(I-1) + (1.46), (I-1) + (1.47), (I-1) + (1.48), (I-1) + (1.49), (I-1) + (1.50), (I-1) + (1.51), (I-1) + (1.52),
(I-1) + (1.53), (I-1) + (1.54), (I-1) + (1.55), (I-1) + (1.56), (I-1) + (1.57), (I-1) + (1.58), (I-1) + (1.59),
(I-1) + (1.60), (I-1) + (1.61), (I-1) + (1.62), (I-1) + (1.63), (I-1) + (1.64), (I-1) + (2.1), (I-1) + (2.2),
5 (I-1) + (2.3), (I-1) + (2.4), (I-1) + (2.5), (I-1) + (2.6), (I-1) + (2.7), (I-1) + (2.8), (I-1) + (2.9), (I-1) + (2.10),
(I-1) + (2.11), (I-1) + (2.12), (I-1) + (2.13), (I-1) + (2.14), (I-1) + (2.15), (I-1) + (2.16), (I-1) + (2.17),
(I-1) + (2.18), (I-1) + (2.19), (I-1) + (2.20), (I-1) + (2.21), (I-1) + (2.22), (I-1) + (2.23), (I-1) + (2.24),
(I-1) + (2.25), (I-1) + (2.26), (I-1) + (2.27), (I-1) + (2.28), (I-1) + (2.29), (I-1) + (3.1), (I-1) + (3.2),
(I-1) + (3.3), (I-1) + (3.4), (I-1) + (3.5), (I-1) + (3.6), (I-1) + (3.7), (I-1) + (3.8), (I-1) + (3.9), (I-1) + (3.10),
10 (I-1) + (3.11), (I-1) + (3.12), (I-1) + (3.13), (I-1) + (3.14), (I-1) + (3.15), (I-1) + (3.16), (I-1) + (3.17),
(I-1) + (3.18), (I-1) + (3.19), (I-1) + (3.20), (I-1) + (3.21), (I-1) + (3.22), (I-1) + (3.23), (I-1) + (3.24),
(I-1) + (3.25), (I-1) + (3.26), (I-1) + (3.27), (I-1) + (3.28), (I-1) + (3.29), (I-1) + (3.30), (I-1) + (3.31),
(I-1) + (3.32), (I-1) + (3.33), (I-1) + (4.1), (I-1) + (4.2), (I-1) + (4.3), (I-1) + (4.4), (I-1) + (4.5), (I-1) + (4.6),
(I-1) + (4.7), (I-1) + (4.8), (I-1) + (4.9), (I-1) + (4.10), (I-1) + (4.11), (I-1) + (4.12), (I-1) + (4.13),
15 (I-1) + (4.14), (I-1) + (5.1), (I-1) + (5.2), (I-1) + (5.3), (I-1) + (5.4), (I-1) + (5.5), (I-1) + (5.6), (I-1) + (5.7),
(I-1) + (5.8), (I-1) + (5.9), (I-1) + (5.10), (I-1) + (5.11), (I-1) + (5.12), (I-1) + (5.13), (I-1) + (5.14),
(I-1) + (5.15), (I-1) + (5.16), (I-1) + (5.17), (I-1) + (5.18), (I-1) + (5.19), (I-1) + (5.20), (I-1) + (5.21),
(I-1) + (5.22), (I-1) + (5.23), (I-1) + (5.24), (I-1) + (5.25), (I-1) + (5.26), (I-1) + (5.27), (I-1) + (5.28),
(I-1) + (5.29), (I-1) + (5.30), (I-1) + (5.31), (I-1) + (5.32), (I-1) + (5.33), (I-1) + (5.34), (I-1) + (6.1),
20 (I-1) + (6.2), (I-1) + (6.3), (I-1) + (6.4), (I-1) + (7.1), (I-1) + (7.2), (I-1) + (7.3), (I-1) + (7.4), (I-1) + (7.5),
(I-1) + (7.6), (I-1) + (7.7), (I-1) + (7.8), (I-1) + (8.1), (I-1) + (8.2), (I-1) + (8.3), (I-1) + (8.4), (I-1) + (9.1),
(I-1) + (9.2), (I-1) + (9.3), (I-1) + (9.4), (I-1) + (9.5), (I-1) + (9.6), (I-1) + (9.7), (I-1) + (9.8), (I-1) + (9.9),
(I-1) + (10.1), (I-1) + (10.2), (I-1) + (10.3), (I-1) + (10.4), (I-1) + (10.5), (I-1) + (10.6), (I-1) + (10.7),
(I-1) + (10.8), (I-1) + (10.9), (I-1) + (10.10), (I-1) + (10.11), (I-1) + (10.12), (I-1) + (10.13), (I-1) + (10.14),
25 (I-1) + (10.15), (I-1) + (11.1), (I-1) + (11.2), (I-1) + (11.3), (I-1) + (11.4), (I-1) + (11.5), (I-1) + (11.6),
(I-1) + (11.7), (I-1) + (12.1), (I-1) + (12.2), (I-1) + (12.3), (I-1) + (12.4), (I-1) + (12.5), (I-1) + (12.6),
(I-1) + (12.7), (I-1) + (12.8), (I-1) + (12.9), (I-1) + (12.10), (I-1) + (12.11), (I-1) + (12.12), (I-1) + (12.13),
(I-1) + (13.1), (I-1) + (13.2), (I-1) + (13.3), (I-1) + (13.4), (I-1) + (13.5), (I-1) + (13.6), (I-1) + (13.7),
(I-1) + (14.1), (I-1) + (14.2), (I-1) + (14.3), (I-1) + (14.4), (I-1) + (14.5), (I-1) + (15.1), (I-1) + (15.2),
30 (I-1) + (15.3), (I-1) + (15.4), (I-1) + (15.5), (I-1) + (15.6), (I-1) + (15.7), (I-1) + (15.8), (I-1) + (15.9),
(I-1) + (15.10), (I-1) + (15.11), (I-1) + (15.12), (I-1) + (15.13), (I-1) + (15.14), (I-1) + (15.15), (I-1) + (15.16),
(I-1) + (15.17), (I-1) + (15.18), (I-1) + (15.19), (I-1) + (15.20), (I-1) + (15.21), (I-1) + (15.22), (I-1) + (15.23),
(I-1) + (15.24), (I-1) + (15.25), (I-1) + (15.26), (I-1) + (15.27), (I-1) + (15.28), (I-1) + (15.29), (I-1) + (15.30),
(I-1) + (15.31), (I-1) + (15.32), (I-1) + (15.33), (I-1) + (15.34), (I-1) + (15.35), (I-1) + (15.36), (I-1) + (15.37),
35 (I-1) + (15.38), (I-1) + (15.39), (I-1) + (15.41), (I-1) + (15.42), (I-1) + (15.43), (I-1) + (15.44), (I-1) + (15.45),
(I-1) + (15.46), (I-1) + (15.47), (I-1) + (15.48), (I-1) + (15.49), (I-1) + (15.50), (I-1) + (15.51), (I-1) + (15.52),
(I-1) + (15.53), (I-1) + (15.54), (I-1) + (15.55), (I-1) + (15.56), (I-1) + (15.57), (I-1) + (15.58), (I-1) + (15.59),
(I-1) + (15.60), (I-1) + (15.61), (I-1) + (15.62), (I-1) + (15.63), (I-1) + (15.64), (I-1) + (15.65), (I-1) + (15.66),
(I-1) + (15.67), (I-1) + (15.68), (I-1) + (15.69), (I-1) + (15.70), (I-1) + (15.71), (I-1) + (15.72), (I-1) + (15.73),

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(I-1) + (15.74), (I-1) + (15.75), (I-1) + (15.76), (I-1) + (15.77), (I-1) + (15.78), (I-1) + (15.79), (I-1) + (15.80), (I-1) + (15.81), (I-1) + (15.82), (I-1) + (15.83), (I-1) + (15.84), (I-1) + (15.85), (I-1) + (15.86), (I-1) + (15.87), (I-1) + (15.88), (I-1) + (15.89), (I-1) + (15.90), (I-1) + (15.91), (I-1) + (15.92), (I-1) + (15.93), (I-1) + (15.94).

In a further particularly preferred embodiment this invention is directed to mixtures comprising the compound (I-1) as compound of formula (I) and one component (B), in particular the mixtures (I-1) + (2.1), (I-1) + (2.2), (I-1) + (2.6), (I-1) + (2.8), (I-1) + (2.11), (I-1) + (2.12), (I-1) + (2.13), (I-1) + (2.14), (I-1) + (2.15), (I-1) + (2.16), (I-1) + (2.17), (I-1) + (2.29), (I-1) + (3.1), (I-1) + (3.2), (I-1) + (3.3), (I-1) + (3.4), (I-1) + (3.9), (I-1) + (3.10), (I-1) + (3.12), (I-1) + (3.16), (I-1) + (3.17), (I-1) + (3.22), (I-1) + (4.6), (I-1) + (5.1), (I-1) + (5.4), (I-1) + (5.5), (I-1) + (5.7), (I-1) + (5.8), (I-1) + (5.9), (I-1) + (5.16), (I-1) + (5.23), (I-1) + (5.25), (I-1) + (5.26), (I-1) + (5.29), (I-1) + (5.30), (I-1) + (7.7), (I-1) + (9.2), (I-1) + (9.4), (I-1) + (9.5), (I-1) + (10.9), (I-1) + (10.10), (I-1) + (12.9), (I-1) + (12.10), (I-1) + (14.4), (I-1) + (15.9), (I-1) + (15.24), (I-1) + (15.25), (I-1) + (15.26), (I-1) + (15.41), (I-1) + (15.42), (I-1) + (15.54), (I-1) + (15.55), (I-1) + (15.56), (I-1) + (15.60), (I-1) + (15.90).

In a preferred embodiment this invention is directed to mixtures comprising the compound (I-2) as compound of formula (I) and one component (B), in particular the mixtures (I-2) + (1.1), (I-2) + (1.2), (I-2) + (1.3), (I-2) + (1.4), (I-2) + (1.5), (I-2) + (1.6), (I-2) + (1.7), (I-2) + (1.8), (I-2) + (1.9), (I-2) + (1.10), (I-2) + (1.11), (I-2) + (1.12), (I-2) + (1.13), (I-2) + (1.14), (I-2) + (1.15), (I-2) + (1.16), (I-2) + (1.17), (I-2) + (1.18), (I-2) + (1.19), (I-2) + (1.20), (I-2) + (1.21), (I-2) + (1.22), (I-2) + (1.23), (I-2) + (1.24), (I-2) + (1.25), (I-2) + (1.26), (I-2) + (1.27), (I-2) + (1.28), (I-2) + (1.29), (I-2) + (1.30), (I-2) + (1.31), (I-2) + (1.32), (I-2) + (1.33), (I-2) + (1.34), (I-2) + (1.35), (I-2) + (1.36), (I-2) + (1.37), (I-2) + (1.38), (I-2) + (1.39), (I-2) + (1.40), (I-2) + (1.41), (I-2) + (1.42), (I-2) + (1.43), (I-2) + (1.44), (I-2) + (1.45), (I-2) + (1.46), (I-2) + (1.47), (I-2) + (1.48), (I-2) + (1.49), (I-2) + (1.50), (I-2) + (1.51), (I-2) + (1.52), (I-2) + (1.53), (I-2) + (1.54), (I-2) + (1.55), (I-2) + (1.56), (I-2) + (1.57), (I-2) + (1.58), (I-2) + (1.59), (I-2) + (1.60), (I-2) + (1.61), (I-2) + (1.62), (I-2) + (1.63), (I-2) + (1.64), (I-2) + (2.1), (I-2) + (2.2), (I-2) + (2.3), (I-2) + (2.4), (I-2) + (2.5), (I-2) + (2.6), (I-2) + (2.7), (I-2) + (2.8), (I-2) + (2.9), (I-2) + (2.10), (I-2) + (2.11), (I-2) + (2.12), (I-2) + (2.13), (I-2) + (2.14), (I-2) + (2.15), (I-2) + (2.16), (I-2) + (2.17), (I-2) + (2.18), (I-2) + (2.19), (I-2) + (2.20), (I-2) + (2.21), (I-2) + (2.22), (I-2) + (2.23), (I-2) + (2.24), (I-2) + (2.25), (I-2) + (2.26), (I-2) + (2.27), (I-2) + (2.28), (I-2) + (2.29), (I-2) + (3.1), (I-2) + (3.2), (I-2) + (3.3), (I-2) + (3.4), (I-2) + (3.5), (I-2) + (3.6), (I-2) + (3.7), (I-2) + (3.8), (I-2) + (3.9), (I-2) + (3.10), (I-2) + (3.11), (I-2) + (3.12), (I-2) + (3.13), (I-2) + (3.14), (I-2) + (3.15), (I-2) + (3.16), (I-2) + (3.17), (I-2) + (3.18), (I-2) + (3.19), (I-2) + (3.20), (I-2) + (3.21), (I-2) + (3.22), (I-2) + (3.23), (I-2) + (3.24), (I-2) + (3.25), (I-2) + (3.26), (I-2) + (3.27), (I-2) + (3.28), (I-2) + (3.29), (I-2) + (3.30), (I-2) + (3.31), (I-2) + (3.32), (I-2) + (3.33), (I-2) + (4.1), (I-2) + (4.2), (I-2) + (4.3), (I-2) + (4.4), (I-2) + (4.5), (I-2) + (4.6), (I-2) + (4.7), (I-2) + (4.8), (I-2) + (4.9), (I-2) + (4.10), (I-2) + (4.11), (I-2) + (4.12), (I-2) + (4.13), (I-2) + (4.14), (I-2) + (5.1), (I-2) + (5.2), (I-2) + (5.3), (I-2) + (5.4), (I-2) + (5.5), (I-2) + (5.6), (I-2) + (5.7), (I-2) + (5.8), (I-2) + (5.9), (I-2) + (5.10), (I-2) + (5.11), (I-2) + (5.12), (I-2) + (5.13), (I-2) + (5.14), (I-2) + (5.15), (I-2) + (5.16), (I-2) + (5.17), (I-2) + (5.18), (I-2) + (5.19), (I-2) + (5.20), (I-2) + (5.21), (I-2) + (5.22), (I-2) + (5.23), (I-2) + (5.24), (I-2) + (5.25), (I-2) + (5.26), (I-2) + (5.27), (I-2) + (5.28), (I-2) + (5.29), (I-2) + (5.30), (I-2) + (5.31), (I-

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- 2) + (5.32), (I-2) + (5.33), (I-2) + (5.34), (I-2) + (6.1), (I-2) + (6.2), (I-2) + (6.3), (I-2) + (6.4), (I-2) + (7.1), (I-2) + (7.2), (I-2) + (7.3), (I-2) + (7.4), (I-2) + (7.5), (I-2) + (7.6), (I-2) + (7.7), (I-2) + (7.8), (I-2) + (8.1), (I-2) + (8.2), (I-2) + (8.3), (I-2) + (8.4), (I-2) + (9.1), (I-2) + (9.2), (I-2) + (9.3), (I-2) + (9.4), (I-2) + (9.5), (I-2) + (9.6), (I-2) + (9.7), (I-2) + (9.8), (I-2) + (9.9), (I-2) + (10.1), (I-2) + (10.2), (I-2) + (10.3), (I-2) + (10.4),
- 5 (I-2) + (10.5), (I-2) + (10.6), (I-2) + (10.7), (I-2) + (10.8), (I-2) + (10.9), (I-2) + (10.10), (I-2) + (10.11), (I-2) + (10.12), (I-2) + (10.13), (I-2) + (10.14), (I-2) + (10.15), (I-2) + (11.1), (I-2) + (11.2), (I-2) + (11.3), (I-2) + (11.4), (I-2) + (11.5), (I-2) + (11.6), (I-2) + (11.7), (I-2) + (12.1), (I-2) + (12.2), (I-2) + (12.3), (I-2) + (12.4), (I-2) + (12.5), (I-2) + (12.6), (I-2) + (12.7), (I-2) + (12.8), (I-2) + (12.9), (I-2) + (12.10), (I-2) + (12.11), (I-2) + (12.12), (I-2) + (12.13), (I-2) + (13.1), (I-2) + (13.2), (I-2) + (13.3), (I-2) + (13.4), (I-2) + (13.5), (I-2) + (13.6), (I-2) + (13.7), (I-2) + (14.1), (I-2) + (14.2), (I-2) + (14.3), (I-2) + (14.4), (I-2) + (14.5), (I-2) + (15.1), (I-2) + (15.2), (I-2) + (15.3), (I-2) + (15.4), (I-2) + (15.5), (I-2) + (15.6), (I-2) + (15.7), (I-2) + (15.8), (I-2) + (15.9), (I-2) + (15.10), (I-2) + (15.11), (I-2) + (15.12), (I-2) + (15.13), (I-2) + (15.14), (I-2) + (15.15), (I-2) + (15.16), (I-2) + (15.17), (I-2) + (15.18), (I-2) + (15.19), (I-2) + (15.20), (I-2) + (15.21), (I-2) + (15.22), (I-2) + (15.23), (I-2) + (15.24), (I-2) + (15.25), (I-2) + (15.26), (I-2) + (15.27),
- 15 (I-2) + (15.28), (I-2) + (15.29), (I-2) + (15.30), (I-2) + (15.31), (I-2) + (15.32), (I-2) + (15.33), (I-2) + (15.34), (I-2) + (15.35), (I-2) + (15.36), (I-2) + (15.37), (I-2) + (15.38), (I-2) + (15.39), (I-2) + (15.41), (I-2) + (15.42), (I-2) + (15.43), (I-2) + (15.44), (I-2) + (15.45), (I-2) + (15.46), (I-2) + (15.47), (I-2) + (15.48), (I-2) + (15.49), (I-2) + (15.50), (I-2) + (15.51), (I-2) + (15.52), (I-2) + (15.53), (I-2) + (15.54), (I-2) + (15.55), (I-2) + (15.56), (I-2) + (15.57), (I-2) + (15.58), (I-2) + (15.59), (I-2) + (15.60), (I-2) + (15.61), (I-2) + (15.62), (I-2) + (15.63),
- 20 (I-2) + (15.64), (I-2) + (15.65), (I-2) + (15.66), (I-2) + (15.67), (I-2) + (15.68), (I-2) + (15.69), (I-2) + (15.70), (I-2) + (15.71), (I-2) + (15.72), (I-2) + (15.73), (I-2) + (15.74), (I-2) + (15.75), (I-2) + (15.76), (I-2) + (15.77), (I-2) + (15.78), (I-2) + (15.79), (I-2) + (15.80), (I-2) + (15.81), (I-2) + (15.82), (I-2) + (15.83), (I-2) + (15.84), (I-2) + (15.85), (I-2) + (15.86), (I-2) + (15.87), (I-2) + (15.88), (I-2) + (15.89), (I-2) + (15.90), (I-2) + (15.91), (I-2) + (15.92), (I-2) + (15.93), (I-2) + (15.94).
- 25 In a further particularly preferred embodiment this invention is directed to mixtures comprising the compound (I-2) as compound of formula (I) and one component (B), in particular the mixtures (I-2) + (2.1), (I-2) + (2.2), (I-2) + (2.6), (I-2) + (2.8), (I-2) + (2.11), (I-2) + (2.12), (I-2) + (2.13), (I-2) + (2.14), (I-2) + (2.15), (I-2) + (2.16), (I-2) + (2.17), (I-2) + (2.29), (I-2) + (3.1), (I-2) + (3.2), (I-2) + (3.3), (I-2) + (3.4), (I-2) + (3.9), (I-2) + (3.10), (I-2) + (3.12), (I-2) + (3.16), (I-2) + (3.17), (I-2) + (3.22), (I-2) + (4.6), (I-2) + (5.1), (I-2) + (5.4), (I-2) + (5.5), (I-2) + (5.7), (I-2) + (5.8), (I-2) + (5.9), (I-2) + (5.16), (I-2) + (5.23), (I-2) + (5.25), (I-2) + (5.26), (I-2) + (5.29), (I-2) + (5.30), (I-2) + (7.7), (I-2) + (9.2), (I-2) + (9.4), (I-2) + (9.5), (I-2) + (10.9), (I-2) + (10.10), (I-2) + (12.9), (I-2) + (12.10), (I-2) + (14.4), (I-2) + (15.9), (I-2) + (15.24), (I-2) + (15.25), (I-2) + (15.26), (I-2) + (15.41), (I-2) + (15.42), (I-2) + (15.54), (I-2) + (15.55), (I-2) + (15.56), (I-2) + (15.60), (I-2) + (15.90).
- 30 In a preferred embodiment this invention is directed to mixtures comprising the compound (I-3) as compound of formula (I) and one component (B), in particular the mixtures (I-3) + (1.1), (I-3) + (1.2), (I-3) + (1.3), (I-3) + (1.4), (I-3) + (1.5), (I-3) + (1.6), (I-3) + (1.7), (I-3) + (1.8), (I-3) + (1.9), (I-3) + (1.10), (I-3) + (1.11), (I-3) + (1.12), (I-3) + (1.13), (I-3) + (1.14), (I-3) + (1.15), (I-3) + (1.16), (I-3) + (1.17), (I-3) + (1.18), (I-3) + (1.19), (I-3) + (1.20), (I-3) + (1.21), (I-3) + (1.22), (I-3) + (1.23), (I-3) + (1.24), (I-3) + (1.25), (I-3) + (1.26), (I-3) + (1.27), (I-3) + (1.28), (I-3) + (1.29), (I-3) + (1.30), (I-3) + (1.31), (I-3) + (1.32), (I-3) + (1.33), (I-3) + (1.34), (I-3) + (1.35), (I-3) + (1.36), (I-3) + (1.37), (I-3) + (1.38), (I-3) + (1.39), (I-3) + (1.40), (I-3) + (1.41), (I-3) + (1.42), (I-3) + (1.43), (I-3) + (1.44), (I-3) + (1.45), (I-3) + (1.46), (I-3) + (1.47), (I-3) + (1.48), (I-3) + (1.49), (I-3) + (1.50), (I-3) + (1.51), (I-3) + (1.52), (I-3) + (1.53), (I-3) + (1.54), (I-3) + (1.55), (I-3) + (1.56), (I-3) + (1.57), (I-3) + (1.58), (I-3) + (1.59), (I-3) + (1.60), (I-3) + (1.61), (I-3) + (1.62), (I-3) + (1.63), (I-3) + (1.64), (I-3) + (1.65), (I-3) + (1.66), (I-3) + (1.67), (I-3) + (1.68), (I-3) + (1.69), (I-3) + (1.70), (I-3) + (1.71), (I-3) + (1.72), (I-3) + (1.73), (I-3) + (1.74), (I-3) + (1.75), (I-3) + (1.76), (I-3) + (1.77), (I-3) + (1.78), (I-3) + (1.79), (I-3) + (1.80), (I-3) + (1.81), (I-3) + (1.82), (I-3) + (1.83), (I-3) + (1.84), (I-3) + (1.85), (I-3) + (1.86), (I-3) + (1.87), (I-3) + (1.88), (I-3) + (1.89), (I-3) + (1.90), (I-3) + (1.91), (I-3) + (1.92), (I-3) + (1.93), (I-3) + (1.94), (I-3) + (1.95), (I-3) + (1.96), (I-3) + (1.97), (I-3) + (1.98), (I-3) + (1.99), (I-3) + (2.00).

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- 3)+(1.18), (I-3)+(1.19), (I-3)+(1.20), (I-3)+(1.21), (I-3)+(1.22), (I-3)+(1.23), (I-3)+(1.24), (I-3)+(1.25), (I-3)+(1.26), (I-3)+(1.27), (I-3)+(1.28), (I-3)+(1.29), (I-3)+(1.30), (I-3)+(1.31), (I-3)+(1.32), (I-3)+(1.33), (I-3)+(1.34), (I-3)+(1.35), (I-3)+(1.36), (I-3)+(1.37), (I-3)+(1.38), (I-3)+(1.39), (I-3)+(1.40), (I-3)+(1.41), (I-3)+(1.42), (I-3)+(1.43), (I-3)+(1.44), (I-3)+(1.45), (I-3)+(1.46), (I-3)+(1.47), (I-3)+(1.48), (I-3)+(1.49), (I-3)+(1.50), (I-3)+(1.51), (I-3)+(1.52), (I-3)+(1.53), (I-3)+(1.54), (I-3)+(1.55), (I-3)+(1.56), (I-3)+(1.57), (I-3)+(1.58), (I-3)+(1.59), (I-3)+(1.60), (I-3)+(1.61), (I-3)+(1.62), (I-3)+(1.63), (I-3)+(1.64), (I-3)+(2.1), (I-3)+(2.2), (I-3)+(2.3), (I-3)+(2.4), (I-3)+(2.5), (I-3)+(2.6), (I-3)+(2.7), (I-3)+(2.8), (I-3)+(2.9), (I-3)+(2.10), (I-3)+(2.11), (I-3)+(2.12), (I-3)+(2.13), (I-3)+(2.14), (I-3)+(2.15), (I-3)+(2.16), (I-3)+(2.17), (I-3)+(2.18), (I-3)+(2.19), (I-3)+(2.20), (I-3)+(2.21), (I-3)+(2.22), (I-3)+(2.23), (I-3)+(2.24), (I-3)+(2.25), (I-3)+(2.26), (I-3)+(2.27), (I-3)+(2.28), (I-3)+(2.29), (I-3)+(3.1), (I-3)+(3.2), (I-3)+(3.3), (I-3)+(3.4), (I-3)+(3.5), (I-3)+(3.6), (I-3)+(3.7), (I-3)+(3.8), (I-3)+(3.9), (I-3)+(3.10), (I-3)+(3.11), (I-3)+(3.12), (I-3)+(3.13), (I-3)+(3.14), (I-3)+(3.15), (I-3)+(3.16), (I-3)+(3.17), (I-3)+(3.18), (I-3)+(3.19), (I-3)+(3.20), (I-3)+(3.21), (I-3)+(3.22), (I-3)+(3.23), (I-3)+(3.24), (I-3)+(3.25), (I-3)+(3.26), (I-3)+(3.27), (I-3)+(3.28), (I-3)+(3.29), (I-3)+(3.30), (I-3)+(3.31), (I-3)+(3.32), (I-3)+(3.33), (I-3)+(4.1), (I-3)+(4.2), (I-3)+(4.3), (I-3)+(4.4), (I-3)+(4.5), (I-3)+(4.6), (I-3)+(4.7), (I-3)+(4.8), (I-3)+(4.9), (I-3)+(4.10), (I-3)+(4.11), (I-3)+(4.12), (I-3)+(4.13), (I-3)+(4.14), (I-3)+(5.1), (I-3)+(5.2), (I-3)+(5.3), (I-3)+(5.4), (I-3)+(5.5), (I-3)+(5.6), (I-3)+(5.7), (I-3)+(5.8), (I-3)+(5.9), (I-3)+(5.10), (I-3)+(5.11), (I-3)+(5.12), (I-3)+(5.13), (I-3)+(5.14), (I-3)+(5.15), (I-3)+(5.16), (I-3)+(5.17), (I-3)+(5.18), (I-3)+(5.19), (I-3)+(5.20), (I-3)+(5.21), (I-3)+(5.22), (I-3)+(5.23), (I-3)+(5.24), (I-3)+(5.25), (I-3)+(5.26), (I-3)+(5.27), (I-3)+(5.28), (I-3)+(5.29), (I-3)+(5.30), (I-3)+(5.31), (I-3)+(5.32), (I-3)+(5.33), (I-3)+(5.34), (I-3)+(6.1), (I-3)+(6.2), (I-3)+(6.3), (I-3)+(6.4), (I-3)+(7.1), (I-3)+(7.2), (I-3)+(7.3), (I-3)+(7.4), (I-3)+(7.5), (I-3)+(7.6), (I-3)+(7.7), (I-3)+(7.8), (I-3)+(8.1), (I-3)+(8.2), (I-3)+(8.3), (I-3)+(8.4), (I-3)+(9.1), (I-3)+(9.2), (I-3)+(9.3), (I-3)+(9.4), (I-3)+(9.5), (I-3)+(9.6), (I-3)+(9.7), (I-3)+(9.8), (I-3)+(9.9), (I-3)+(10.1), (I-3)+(10.2), (I-3)+(10.3), (I-3)+(10.4), (I-3)+(10.5), (I-3)+(10.6), (I-3)+(10.7), (I-3)+(10.8), (I-3)+(10.9), (I-3)+(10.10), (I-3)+(10.11), (I-3)+(10.12), (I-3)+(10.13), (I-3)+(10.14), (I-3)+(10.15), (I-3)+(11.1), (I-3)+(11.2), (I-3)+(11.3), (I-3)+(11.4), (I-3)+(11.5), (I-3)+(11.6), (I-3)+(11.7), (I-3)+(12.1), (I-3)+(12.2), (I-3)+(12.3), (I-3)+(12.4), (I-3)+(12.5), (I-3)+(12.6), (I-3)+(12.7), (I-3)+(12.8), (I-3)+(12.9), (I-3)+(12.10), (I-3)+(12.11), (I-3)+(12.12), (I-3)+(12.13), (I-3)+(13.1), (I-3)+(13.2), (I-3)+(13.3), (I-3)+(13.4), (I-3)+(13.5), (I-3)+(13.6), (I-3)+(13.7), (I-3)+(14.1), (I-3)+(14.2), (I-3)+(14.3), (I-3)+(14.4), (I-3)+(14.5), (I-3)+(15.1), (I-3)+(15.2), (I-3)+(15.3), (I-3)+(15.4), (I-3)+(15.5), (I-3)+(15.6), (I-3)+(15.7), (I-3)+(15.8), (I-3)+(15.9), (I-3)+(15.10), (I-3)+(15.11), (I-3)+(15.12), (I-3)+(15.13), (I-3)+(15.14), (I-3)+(15.15), (I-3)+(15.16), (I-3)+(15.17), (I-3)+(15.18), (I-3)+(15.19), (I-3)+(15.20), (I-3)+(15.21), (I-3)+(15.22), (I-3)+(15.23), (I-3)+(15.24), (I-3)+(15.25), (I-3)+(15.26), (I-3)+(15.27), (I-3)+(15.28), (I-3)+(15.29), (I-3)+(15.30), (I-3)+(15.31), (I-3)+(15.32), (I-3)+(15.33), (I-3)+(15.34), (I-3)+(15.35), (I-3)+(15.36), (I-3)+(15.37), (I-3)+(15.38), (I-3)+(15.39), (I-3)+(15.41), (I-3)+(15.42), (I-3)+(15.43), (I-3)+(15.44), (I-3)+(15.45), (I-3)+(15.46), (I-3)+(15.47), (I-3)+(15.48), (I-3)+(15.49), (I-3)+(15.50), (I-3)+(15.51), (I-3)+(15.52), (I-3)+(15.53), (I-3)+(15.54), (I-3)+(15.55), (I-3)+(15.56),

In a preferred embodiment this invention is directed to mixtures comprising the compound (I-4) as compound of formula (I) and one component (B), in particular the mixtures (I-4) + (1.1), (I-4) + (1.2), (I-4) + (1.3), (I-4) + (1.4), (I-4) + (1.5), (I-4) + (1.6), (I-4) + (1.7), (I-4) + (1.8), (I-4) + (1.9), (I-4) + (1.10), (I-4) + (1.11), (I-4) + (1.12), (I-4) + (1.13), (I-4) + (1.14), (I-4) + (1.15), (I-4) + (1.16), (I-4) + (1.17), (I-4) + (1.18), (I-4) + (1.19), (I-4) + (1.20), (I-4) + (1.21), (I-4) + (1.22), (I-4) + (1.23), (I-4) + (1.24), (I-4) + (1.25), (I-4) + (1.26), (I-4) + (1.27), (I-4) + (1.28), (I-4) + (1.29), (I-4) + (1.30), (I-4) + (1.31), (I-4) + (1.32), (I-4) + (1.33), (I-4) + (1.34), (I-4) + (1.35), (I-4) + (1.36), (I-4) + (1.37), (I-4) + (1.38), (I-4) + (1.39), (I-4) + (1.40), (I-4) + (1.41), (I-4) + (1.42), (I-4) + (1.43), (I-4) + (1.44), (I-4) + (1.45), (I-4) + (1.46), (I-4) + (1.47), (I-4) + (1.48), (I-4) + (1.49), (I-4) + (1.50), (I-4) + (1.51), (I-4) + (1.52), (I-4) + (1.53), (I-4) + (1.54), (I-4) + (1.55), (I-4) + (1.56), (I-4) + (1.57), (I-4) + (1.58), (I-4) + (1.59), (I-4) + (1.60), (I-4) + (1.61), (I-4) + (1.62), (I-4) + (1.63), (I-4) + (1.64), (I-4) + (2.1), (I-4) + (2.2), (I-4) + (2.3), (I-4) + (2.4), (I-4) + (2.5), (I-4) + (2.6), (I-4) + (2.7), (I-4) + (2.8), (I-4) + (2.9), (I-4) + (2.10), (I-4) + (2.11), (I-4) + (2.12), (I-4) + (2.13), (I-4) + (2.14), (I-4) + (2.15), (I-4) + (2.16), (I-4) + (2.17), (I-4) + (2.18), (I-4) + (2.19), (I-4) + (2.20), (I-4) + (2.21), (I-4) + (2.22), (I-4) + (2.23), (I-4) + (2.24), (I-4) + (2.25), (I-4) + (2.26), (I-4) + (2.27), (I-4) + (2.28), (I-4) + (2.29), (I-4) + (3.1), (I-4) + (3.2), (I-4) + (3.3), (I-4) + (3.4), (I-4) + (3.5), (I-4) + (3.6), (I-4) + (3.7), (I-4) + (3.8), (I-4) + (3.9), (I-4) + (3.10), (I-4) + (3.11), (I-4) + (3.12), (I-4) + (3.13), (I-4) + (3.14), (I-4) + (3.15), (I-4) + (3.16), (I-4) + (3.17), (I-4) + (3.18), (I-4) + (3.19), (I-4) + (3.20), (I-4) + (3.21), (I-4) + (3.22), (I-4) + (3.23), (I-4) + (3.24), (I-4) + (3.25), (I-4) + (3.26), (I-4) + (3.27), (I-4) + (3.28), (I-4) + (3.29), (I-4) + (3.30), (I-4) + (3.31), (I-4) + (3.32), (I-4) + (3.33), (I-4) + (4.1), (I-4) + (4.2), (I-4) + (4.3), (I-4) + (4.4), (I-4) + (4.5), (I-4) + (4.6), (I-4) + (4.7), (I-4) + (4.8), (I-4) + (4.9), (I-4) + (4.10), (I-4) + (4.11), (I-4) + (4.12), (I-4) + (4.13), (I-4) + (4.14), (I-4) + (5.1), (I-4) + (5.2), (I-4) + (5.3), (I-4) + (5.4), (I-4) + (5.5), (I-4) + (5.6), (I-4) + (5.7), (I-4) + (5.8), (I-4) + (5.9), (I-4) + (5.10), (I-

- 4) + (5.11), (I-4) + (5.12), (I-4) + (5.13), (I-4) + (5.14), (I-4) + (5.15), (I-4) + (5.16), (I-4) + (5.17), (I-4) + (5.18), (I-4) + (5.19), (I-4) + (5.20), (I-4) + (5.21), (I-4) + (5.22), (I-4) + (5.23), (I-4) + (5.24), (I-4) + (5.25), (I-4) + (5.26), (I-4) + (5.27), (I-4) + (5.28), (I-4) + (5.29), (I-4) + (5.30), (I-4) + (5.31), (I-4) + (5.32), (I-4) + (5.33), (I-4) + (5.34), (I-4) + (6.1), (I-4) + (6.2), (I-4) + (6.3), (I-4) + (6.4), (I-4) + (7.1), (I-4) + (7.2), (I-4) + (7.3), (I-4) + (7.4), (I-4) + (7.5), (I-4) + (7.6), (I-4) + (7.7), (I-4) + (7.8), (I-4) + (8.1), (I-4) + (8.2), (I-4) + (8.3), (I-4) + (8.4), (I-4) + (9.1), (I-4) + (9.2), (I-4) + (9.3), (I-4) + (9.4), (I-4) + (9.5), (I-4) + (9.6), (I-4) + (9.7), (I-4) + (9.8), (I-4) + (9.9), (I-4) + (10.1), (I-4) + (10.2), (I-4) + (10.3), (I-4) + (10.4), (I-4) + (10.5), (I-4) + (10.6), (I-4) + (10.7), (I-4) + (10.8), (I-4) + (10.9), (I-4) + (10.10), (I-4) + (10.11), (I-4) + (10.12), (I-4) + (10.13), (I-4) + (10.14), (I-4) + (10.15), (I-4) + (11.1), (I-4) + (11.2), (I-4) + (11.3), (I-4) + (11.4), (I-4) + (11.5), (I-4) + (11.6), (I-4) + (11.7), (I-4) + (12.1), (I-4) + (12.2), (I-4) + (12.3), (I-4) + (12.4), (I-4) + (12.5), (I-4) + (12.6), (I-4) + (12.7), (I-4) + (12.8), (I-4) + (12.9), (I-4) + (12.10), (I-4) + (12.11), (I-4) + (12.12), (I-4) + (12.13), (I-4) + (13.1), (I-4) + (13.2), (I-4) + (13.3), (I-4) + (13.4), (I-4) + (13.5), (I-4) + (13.6), (I-4) + (13.7), (I-4) + (14.1), (I-4) + (14.2), (I-4) + (14.3), (I-4) + (14.4), (I-4) + (14.5), (I-4) + (15.1), (I-4) + (15.2), (I-4) + (15.3), (I-4) + (15.4), (I-4) + (15.5), (I-4) + (15.6), (I-4) + (15.7), (I-4) + (15.8), (I-4) + (15.9), (I-4) + (15.10), (I-4) + (15.11), (I-4) + (15.12), (I-4) + (15.13), (I-4) + (15.14), (I-4) + (15.15), (I-4) + (15.16), (I-4) + (15.17), (I-4) + (15.18), (I-4) + (15.19), (I-4) + (15.20), (I-4) + (15.21), (I-4) + (15.22), (I-4) + (15.23), (I-4) + (15.24), (I-4) + (15.25), (I-4) + (15.26), (I-4) + (15.27), (I-4) + (15.28), (I-4) + (15.29), (I-4) + (15.30), (I-4) + (15.31), (I-4) + (15.32), (I-4) + (15.33), (I-4) + (15.34), (I-4) + (15.35), (I-4) + (15.36), (I-4) + (15.37), (I-4) + (15.38), (I-4) + (15.39), (I-4) + (15.41), (I-4) + (15.42), (I-4) + (15.43), (I-4) + (15.44), (I-4) + (15.45), (I-4) + (15.46), (I-4) + (15.47), (I-4) + (15.48), (I-4) + (15.49), (I-4) + (15.50), (I-4) + (15.51), (I-4) + (15.52), (I-4) + (15.53), (I-4) + (15.54), (I-4) + (15.55), (I-4) + (15.56), (I-4) + (15.57), (I-4) + (15.58), (I-4) + (15.59), (I-4) + (15.60), (I-4) + (15.61), (I-4) + (15.62), (I-4) + (15.63), (I-4) + (15.64), (I-4) + (15.65), (I-4) + (15.66), (I-4) + (15.67), (I-4) + (15.68), (I-4) + (15.69), (I-4) + (15.70), (I-4) + (15.71), (I-4) + (15.72), (I-4) + (15.73), (I-4) + (15.74), (I-4) + (15.75), (I-4) + (15.76), (I-4) + (15.77), (I-4) + (15.78), (I-4) + (15.79), (I-4) + (15.80), (I-4) + (15.81), (I-4) + (15.82), (I-4) + (15.83), (I-4) + (15.84), (I-4) + (15.85), (I-4) + (15.86), (I-4) + (15.87), (I-4) + (15.88), (I-4) + (15.89), (I-4) + (15.90), (I-4) + (15.91), (I-4) + (15.92), (I-4) + (15.93), (I-4) + (15.94).

- In a further particularly preferred embodiment this invention is directed to mixtures comprising the compound (I-4) as compound of formula (I) and one component (B), in particular the mixtures (I-4) + (2.1), (I-4) + (2.2), (I-4) + (2.6), (I-4) + (2.8), (I-4) + (2.11), (I-4) + (2.12), (I-4) + (2.13), (I-4) + (2.14), (I-4) + (2.15), (I-4) + (2.16), (I-4) + (2.17), (I-4) + (2.29), (I-4) + (3.1), (I-4) + (3.2), (I-4) + (3.3), (I-4) + (3.4), (I-4) + (3.9), (I-4) + (3.10), (I-4) + (3.12), (I-4) + (3.16), (I-4) + (3.17), (I-4) + (3.22), (I-4) + (4.6), (I-4) + (5.1), (I-4) + (5.4), (I-4) + (5.5), (I-4) + (5.7), (I-4) + (5.8), (I-4) + (5.9), (I-4) + (5.16), (I-4) + (5.23), (I-4) + (5.25), (I-4) + (5.26), (I-4) + (5.29), (I-4) + (5.30), (I-4) + (7.7), (I-4) + (9.2), (I-4) + (9.4), (I-4) + (9.5), (I-4) + (10.9), (I-4) + (10.10), (I-4) + (12.9), (I-4) + (12.10), (I-4) + (14.4), (I-4) + (15.9), (I-4) + (15.24), (I-4) + (15.25), (I-4) + (15.26), (I-4) + (15.41), (I-4) + (15.42), (I-4) + (15.54), (I-4) + (15.55), (I-4) + (15.56), (I-4) + (15.60), (I-4) + (15.90).

In a preferred embodiment this invention is directed to mixtures comprising the compound (I-5) as compound of formula (I) and one component (B), in particular the mixtures (I-5) + (1.1), (I-5) + (1.2), (I-5) + (1.3), (I-5) + (1.4), (I-5) + (1.5), (I-5) + (1.6), (I-5) + (1.7), (I-5) + (1.8), (I-5) + (1.9), (I-5) + (1.10), (I-5) + (1.11), (I-5) + (1.12), (I-5) + (1.13), (I-5) + (1.14), (I-5) + (1.15), (I-5) + (1.16), (I-5) + (1.17), (I-5) + (1.18), (I-5) + (1.19), (I-5) + (1.20), (I-5) + (1.21), (I-5) + (1.22), (I-5) + (1.23), (I-5) + (1.24), (I-5) + (1.25), (I-5) + (1.26), (I-5) + (1.27), (I-5) + (1.28), (I-5) + (1.29), (I-5) + (1.30), (I-5) + (1.31), (I-5) + (1.32), (I-5) + (1.33), (I-5) + (1.34), (I-5) + (1.35), (I-5) + (1.36), (I-5) + (1.37), (I-5) + (1.38), (I-5) + (1.39), (I-5) + (1.40), (I-5) + (1.41), (I-5) + (1.42), (I-5) + (1.43), (I-5) + (1.44), (I-5) + (1.45), (I-5) + (1.46), (I-5) + (1.47), (I-5) + (1.48), (I-5) + (1.49), (I-5) + (1.50), (I-5) + (1.51), (I-5) + (1.52), (I-5) + (1.53), (I-5) + (1.54), (I-5) + (1.55), (I-5) + (1.56), (I-5) + (1.57), (I-5) + (1.58), (I-5) + (1.59), (I-5) + (1.60), (I-5) + (1.61), (I-5) + (1.62), (I-5) + (1.63), (I-5) + (1.64), (I-5) + (2.1), (I-5) + (2.2), (I-5) + (2.3), (I-5) + (2.4), (I-5) + (2.5), (I-5) + (2.6), (I-5) + (2.7), (I-5) + (2.8), (I-5) + (2.9), (I-5) + (2.10), (I-5) + (2.11), (I-5) + (2.12), (I-5) + (2.13), (I-5) + (2.14), (I-5) + (2.15), (I-5) + (2.16), (I-5) + (2.17), (I-5) + (2.18), (I-5) + (2.19), (I-5) + (2.20), (I-5) + (2.21), (I-5) + (2.22), (I-5) + (2.23), (I-5) + (2.24), (I-5) + (2.25), (I-5) + (2.26), (I-5) + (2.27), (I-5) + (2.28), (I-5) + (2.29), (I-5) + (3.1), (I-5) + (3.2), (I-5) + (3.3), (I-5) + (3.4), (I-5) + (3.5), (I-5) + (3.6), (I-5) + (3.7), (I-5) + (3.8), (I-5) + (3.9), (I-5) + (3.10), (I-5) + (3.11), (I-5) + (3.12), (I-5) + (3.13), (I-5) + (3.14), (I-5) + (3.15), (I-5) + (3.16), (I-5) + (3.17), (I-5) + (3.18), (I-5) + (3.19), (I-5) + (3.20), (I-5) + (3.21), (I-5) + (3.22), (I-5) + (3.23), (I-5) + (3.24), (I-5) + (3.25), (I-5) + (3.26), (I-5) + (3.27), (I-5) + (3.28), (I-5) + (3.29), (I-5) + (3.30), (I-5) + (3.31), (I-5) + (3.32), (I-5) + (3.33), (I-5) + (4.1), (I-5) + (4.2), (I-5) + (4.3), (I-5) + (4.4), (I-5) + (4.5), (I-5) + (4.6), (I-5) + (4.7), (I-5) + (4.8), (I-5) + (4.9), (I-5) + (4.10), (I-5) + (4.11), (I-5) + (4.12), (I-5) + (4.13), (I-5) + (4.14), (I-5) + (5.1), (I-5) + (5.2), (I-5) + (5.3), (I-5) + (5.4), (I-5) + (5.5), (I-5) + (5.6), (I-5) + (5.7), (I-5) + (5.8), (I-5) + (5.9), (I-5) + (5.10), (I-5) + (5.11), (I-5) + (5.12), (I-5) + (5.13), (I-5) + (5.14), (I-5) + (5.15), (I-5) + (5.16), (I-5) + (5.17), (I-5) + (5.18), (I-5) + (5.19), (I-5) + (5.20), (I-5) + (5.21), (I-5) + (5.22), (I-5) + (5.23), (I-5) + (5.24), (I-5) + (5.25), (I-5) + (5.26), (I-5) + (5.27), (I-5) + (5.28), (I-5) + (5.29), (I-5) + (5.30), (I-5) + (5.31), (I-5) + (5.32), (I-5) + (5.33), (I-5) + (5.34), (I-5) + (6.1), (I-5) + (6.2), (I-5) + (6.3), (I-5) + (6.4), (I-5) + (7.1), (I-5) + (7.2), (I-5) + (7.3), (I-5) + (7.4), (I-5) + (7.5), (I-5) + (7.6), (I-5) + (7.7), (I-5) + (7.8), (I-5) + (8.1), (I-5) + (8.2), (I-5) + (8.3), (I-5) + (8.4), (I-5) + (9.1), (I-5) + (9.2), (I-5) + (9.3), (I-5) + (9.4), (I-5) + (9.5), (I-5) + (9.6), (I-5) + (9.7), (I-5) + (9.8), (I-5) + (9.9), (I-5) + (10.1), (I-5) + (10.2), (I-5) + (10.3), (I-5) + (10.4), (I-5) + (10.5), (I-5) + (10.6), (I-5) + (10.7), (I-5) + (10.8), (I-5) + (10.9), (I-5) + (10.10), (I-5) + (10.11), (I-5) + (10.12), (I-5) + (10.13), (I-5) + (10.14), (I-5) + (10.15), (I-5) + (11.1), (I-5) + (11.2), (I-5) + (11.3), (I-5) + (11.4), (I-5) + (11.5), (I-5) + (11.6), (I-5) + (11.7), (I-5) + (12.1), (I-5) + (12.2), (I-5) + (12.3), (I-5) + (12.4), (I-5) + (12.5), (I-5) + (12.6), (I-5) + (12.7), (I-5) + (12.8), (I-5) + (12.9), (I-5) + (12.10), (I-5) + (12.11), (I-5) + (12.12), (I-5) + (12.13), (I-5) + (13.1), (I-5) + (13.2), (I-5) + (13.3), (I-5) + (13.4), (I-5) + (13.5), (I-5) + (13.6), (I-5) + (13.7), (I-5) + (14.1), (I-5) + (14.2), (I-5) + (14.3), (I-5) + (14.4), (I-5) + (14.5), (I-5) + (15.1), (I-5) + (15.2), (I-5) + (15.3), (I-5) + (15.4), (I-5) + (15.5), (I-5) + (15.6), (I-5) + (15.7), (I-5) + (15.8), (I-5) + (15.9), (I-5) + (15.10), (I-5) + (15.11), (I-5) + (15.12), (I-5) + (15.13), (I-5) + (15.14), (I-5) + (15.15), (I-5) + (15.16), (I-5) + (15.17), (I-5) + (15.18), (I-5) + (15.19), (I-5) + (15.20), (I-5) + (15.21), (I-5) + (15.22), (I-5) + (15.23), (I-5) + (15.24), (I-5) + (15.25), (I-5) + (15.26), (I-5) + (15.27),

In a preferred embodiment this invention is directed to mixtures comprising the compound (I-6) as compound of formula (I) and one component (B), in particular the mixtures (I-6) + (1.1), (I-6) + (1.2), (I-6) + (1.3), (I-6) + (1.4), (I-6) + (1.5), (I-6) + (1.6), (I-6) + (1.7), (I-6) + (1.8), (I-6) + (1.9), (I-6) + (1.10), (I-6) + (1.11), (I-6) + (1.12), (I-6) + (1.13), (I-6) + (1.14), (I-6) + (1.15), (I-6) + (1.16), (I-6) + (1.17), (I-6) + (1.18), (I-6) + (1.19), (I-6) + (1.20), (I-6) + (1.21), (I-6) + (1.22), (I-6) + (1.23), (I-6) + (1.24), (I-6) + (1.25), (I-6) + (1.26), (I-6) + (1.27), (I-6) + (1.28), (I-6) + (1.29), (I-6) + (1.30), (I-6) + (1.31), (I-6) + (1.32), (I-6) + (1.33), (I-6) + (1.34), (I-6) + (1.35), (I-6) + (1.36), (I-6) + (1.37), (I-6) + (1.38), (I-6) + (1.39), (I-6) + (1.40), (I-6) + (1.41), (I-6) + (1.42), (I-6) + (1.43), (I-6) + (1.44), (I-6) + (1.45), (I-6) + (1.46), (I-6) + (1.47), (I-6) + (1.48), (I-6) + (1.49), (I-6) + (1.50), (I-6) + (1.51), (I-6) + (1.52), (I-6) + (1.53), (I-6) + (1.54), (I-6) + (1.55), (I-6) + (1.56), (I-6) + (1.57), (I-6) + (1.58), (I-6) + (1.59), (I-6) + (1.60), (I-6) + (1.61), (I-6) + (1.62), (I-6) + (1.63), (I-6) + (1.64), (I-6) + (2.1), (I-6) + (2.2), (I-6) + (2.3), (I-6) + (2.4), (I-6) + (2.5), (I-6) + (2.6), (I-6) + (2.7), (I-6) + (2.8), (I-6) + (2.9), (I-6) + (2.10), (I-6) + (2.11), (I-6) + (2.12), (I-6) + (2.13), (I-6) + (2.14), (I-6) + (2.15), (I-6) + (2.16), (I-6) + (2.17), (I-6) + (2.18), (I-6) + (2.19), (I-6) + (2.20), (I-6) + (2.21), (I-6) + (2.22), (I-6) + (2.23), (I-6) + (2.24), (I-6) + (2.25), (I-6) + (2.26), (I-6) + (2.27), (I-6) + (2.28), (I-6) + (2.29), (I-6) + (3.1), (I-6) + (3.2), (I-6) + (3.3), (I-6) + (3.4), (I-6) + (3.5), (I-6) + (3.6), (I-6) + (3.7), (I-6) + (3.8), (I-6) + (3.9), (I-6) + (3.10), (I-6) + (3.11), (I-6) + (3.12), (I-6) + (3.13), (I-6) + (3.14), (I-6) + (3.15), (I-6) + (3.16), (I-6) + (3.17), (I-6) + (3.18), (I-6) + (3.19), (I-6) + (3.20), (I-6) + (3.21), (I-6) + (3.22), (I-6) + (3.23), (I-6) + (3.24), (I-6) + (3.25), (I-6) + (3.26), (I-

6) + (3.27), (I-6) + (3.28), (I-6) + (3.29), (I-6) + (3.30), (I-6) + (3.31), (I-6) + (3.32), (I-6) + (3.33), (I-6) + (4.1), (I-6) + (4.2), (I-6) + (4.3), (I-6) + (4.4), (I-6) + (4.5), (I-6) + (4.6), (I-6) + (4.7), (I-6) + (4.8), (I-6) + (4.9), (I-6) + (4.10), (I-6) + (4.11), (I-6) + (4.12), (I-6) + (4.13), (I-6) + (4.14), (I-6) + (5.1), (I-6) + (5.2), (I-6) + (5.3), (I-6) + (5.4), (I-6) + (5.5), (I-6) + (5.6), (I-6) + (5.7), (I-6) + (5.8), (I-6) + (5.9), (I-6) + (5.10), (I-6) + (5.11), (I-6) + (5.12), (I-6) + (5.13), (I-6) + (5.14), (I-6) + (5.15), (I-6) + (5.16), (I-6) + (5.17), (I-6) + (5.18), (I-6) + (5.19), (I-6) + (5.20), (I-6) + (5.21), (I-6) + (5.22), (I-6) + (5.23), (I-6) + (5.24), (I-6) + (5.25), (I-6) + (5.26), (I-6) + (5.27), (I-6) + (5.28), (I-6) + (5.29), (I-6) + (5.30), (I-6) + (5.31), (I-6) + (5.32), (I-6) + (5.33), (I-6) + (5.34), (I-6) + (6.1), (I-6) + (6.2), (I-6) + (6.3), (I-6) + (6.4), (I-6) + (7.1), (I-6) + (7.2), (I-6) + (7.3), (I-6) + (7.4), (I-6) + (7.5), (I-6) + (7.6), (I-6) + (7.7), (I-6) + (7.8), (I-6) + (8.1), (I-6) + (8.2), (I-6) + (8.3), (I-6) + (8.4), (I-6) + (9.1), (I-6) + (9.2), (I-6) + (9.3), (I-6) + (9.4), (I-6) + (9.5), (I-6) + (9.6), (I-6) + (9.7), (I-6) + (9.8), (I-6) + (9.9), (I-6) + (10.1), (I-6) + (10.2), (I-6) + (10.3), (I-6) + (10.4), (I-6) + (10.5), (I-6) + (10.6), (I-6) + (10.7), (I-6) + (10.8), (I-6) + (10.9), (I-6) + (10.10), (I-6) + (10.11), (I-6) + (10.12), (I-6) + (10.13), (I-6) + (10.14), (I-6) + (10.15), (I-6) + (11.1), (I-6) + (11.2), (I-6) + (11.3), (I-6) + (11.4), (I-6) + (11.5), (I-6) + (11.6), (I-6) + (11.7), (I-6) + (12.1), (I-6) + (12.2), (I-6) + (12.3), (I-6) + (12.4), (I-6) + (12.5), (I-6) + (12.6), (I-6) + (12.7), (I-6) + (12.8), (I-6) + (12.9), (I-6) + (12.10), (I-6) + (12.11), (I-6) + (12.12), (I-6) + (12.13), (I-6) + (13.1), (I-6) + (13.2), (I-6) + (13.3), (I-6) + (13.4), (I-6) + (13.5), (I-6) + (13.6), (I-6) + (13.7), (I-6) + (14.1), (I-6) + (14.2), (I-6) + (14.3), (I-6) + (14.4), (I-6) + (14.5), (I-6) + (15.1), (I-6) + (15.2), (I-6) + (15.3), (I-6) + (15.4), (I-6) + (15.5), (I-6) + (15.6), (I-6) + (15.7), (I-6) + (15.8), (I-6) + (15.9), (I-6) + (15.10), (I-6) + (15.11), (I-6) + (15.12), (I-6) + (15.13), (I-6) + (15.14), (I-6) + (15.15), (I-6) + (15.16), (I-6) + (15.17), (I-6) + (15.18), (I-6) + (15.19), (I-6) + (15.20), (I-6) + (15.21), (I-6) + (15.22), (I-6) + (15.23), (I-6) + (15.24), (I-6) + (15.25), (I-6) + (15.26), (I-6) + (15.27), (I-6) + (15.28), (I-6) + (15.29), (I-6) + (15.30), (I-6) + (15.31), (I-6) + (15.32), (I-6) + (15.33), (I-6) + (15.34), (I-6) + (15.35), (I-6) + (15.36), (I-6) + (15.37), (I-6) + (15.38), (I-6) + (15.39), (I-6) + (15.41), (I-6) + (15.42), (I-6) + (15.43), (I-6) + (15.44), (I-6) + (15.45), (I-6) + (15.46), (I-6) + (15.47), (I-6) + (15.48), (I-6) + (15.49), (I-6) + (15.50), (I-6) + (15.51), (I-6) + (15.52), (I-6) + (15.53), (I-6) + (15.54), (I-6) + (15.55), (I-6) + (15.56), (I-6) + (15.57), (I-6) + (15.58), (I-6) + (15.59), (I-6) + (15.60), (I-6) + (15.61), (I-6) + (15.62), (I-6) + (15.63), (I-6) + (15.64), (I-6) + (15.65), (I-6) + (15.66), (I-6) + (15.67), (I-6) + (15.68), (I-6) + (15.69), (I-6) + (15.70), (I-6) + (15.71), (I-6) + (15.72), (I-6) + (15.73), (I-6) + (15.74), (I-6) + (15.75), (I-6) + (15.76), (I-6) + (15.77), (I-6) + (15.78), (I-6) + (15.79), (I-6) + (15.80), (I-6) + (15.81), (I-6) + (15.82), (I-6) + (15.83), (I-6) + (15.84), (I-6) + (15.85), (I-6) + (15.86), (I-6) + (15.87), (I-6) + (15.88), (I-6) + (15.89), (I-6) + (15.90), (I-6) + (15.91), (I-6) + (15.92), (I-6) + (15.93), (I-6) + (15.94).

In a further particularly preferred embodiment this invention is directed to mixtures comprising the compound (I-6) as compound of formula (I) and one component (B), in particular the mixtures (I-6) + (2.1), (I-6) + (2.2), (I-6) + (2.6), (I-6) + (2.8), (I-6) + (2.11), (I-6) + (2.12), (I-6) + (2.13), (I-6) + (2.14), (I-6) + (2.15), (I-6) + (2.16), (I-6) + (2.17), (I-6) + (2.29), (I-6) + (3.1), (I-6) + (3.2), (I-6) + (3.3), (I-6) + (3.4), (I-6) + (3.9), (I-6) + (3.10), (I-6) + (3.12), (I-6) + (3.16), (I-6) + (3.17), (I-6) + (3.22), (I-6) + (4.6), (I-6) + (5.1), (I-6) + (5.4), (I-6) + (5.5), (I-6) + (5.7), (I-6) + (5.8), (I-6) + (5.9), (I-6) + (5.16), (I-6) + (5.23), (I-6) + (5.25), (I-6) + (5.26), (I-6) + (5.29), (I-6) + (5.30), (I-6) + (7.7), (I-6) + (9.2), (I-6) + (9.4), (I-6) + (9.5), (I-6) + (10.9), (I-6) + (10.10), (I-6) + (12.9), (I-6) + (12.10), (I-6) + (14.4), (I-6) + (15.9), (I-6) + (15.24), (I-6) + (15.25), (I-

6) + (15.26), (I-6) + (15.41), (I-6) + (15.42), (I-6) + (15.54), (I-6) + (15.55), (I-6) + (15.56), (I-6) + (15.60), (I-6) + (15.90).

In a preferred embodiment this invention is directed to mixtures comprising the compound (I-7) as compound of formula (I) and one component (B), in particular the mixtures (I-7) + (1.1), (I-7) + (1.2), (I-7) + (1.3), (I-7) + (1.4), (I-7) + (1.5), (I-7) + (1.6), (I-7) + (1.7), (I-7) + (1.8), (I-7) + (1.9), (I-7) + (1.10), (I-7) + (1.11), (I-7) + (1.12), (I-7) + (1.13), (I-7) + (1.14), (I-7) + (1.15), (I-7) + (1.16), (I-7) + (1.17), (I-7) + (1.18), (I-7) + (1.19), (I-7) + (1.20), (I-7) + (1.21), (I-7) + (1.22), (I-7) + (1.23), (I-7) + (1.24), (I-7) + (1.25), (I-7) + (1.26), (I-7) + (1.27), (I-7) + (1.28), (I-7) + (1.29), (I-7) + (1.30), (I-7) + (1.31), (I-7) + (1.32), (I-7) + (1.33), (I-7) + (1.34), (I-7) + (1.35), (I-7) + (1.36), (I-7) + (1.37), (I-7) + (1.38), (I-7) + (1.39), (I-7) + (1.40), (I-7) + (1.41), (I-7) + (1.42), (I-7) + (1.43), (I-7) + (1.44), (I-7) + (1.45), (I-7) + (1.46), (I-7) + (1.47), (I-7) + (1.48), (I-7) + (1.49), (I-7) + (1.50), (I-7) + (1.51), (I-7) + (1.52), (I-7) + (1.53), (I-7) + (1.54), (I-7) + (1.55), (I-7) + (1.56), (I-7) + (1.57), (I-7) + (1.58), (I-7) + (1.59), (I-7) + (1.60), (I-7) + (1.61), (I-7) + (1.62), (I-7) + (1.63), (I-7) + (1.64), (I-7) + (2.1), (I-7) + (2.2), (I-7) + (2.3), (I-7) + (2.4), (I-7) + (2.5), (I-7) + (2.6), (I-7) + (2.7), (I-7) + (2.8), (I-7) + (2.9), (I-7) + (2.10), (I-7) + (2.11), (I-7) + (2.12), (I-7) + (2.13), (I-7) + (2.14), (I-7) + (2.15), (I-7) + (2.16), (I-7) + (2.17), (I-7) + (2.18), (I-7) + (2.19), (I-7) + (2.20), (I-7) + (2.21), (I-7) + (2.22), (I-7) + (2.23), (I-7) + (2.24), (I-7) + (2.25), (I-7) + (2.26), (I-7) + (2.27), (I-7) + (2.28), (I-7) + (2.29), (I-7) + (3.1), (I-7) + (3.2), (I-7) + (3.3), (I-7) + (3.4), (I-7) + (3.5), (I-7) + (3.6), (I-7) + (3.7), (I-7) + (3.8), (I-7) + (3.9), (I-7) + (3.10), (I-7) + (3.11), (I-7) + (3.12), (I-7) + (3.13), (I-7) + (3.14), (I-7) + (3.15), (I-7) + (3.16), (I-7) + (3.17), (I-7) + (3.18), (I-7) + (3.19), (I-7) + (3.20), (I-7) + (3.21), (I-7) + (3.22), (I-7) + (3.23), (I-7) + (3.24), (I-7) + (3.25), (I-7) + (3.26), (I-7) + (3.27), (I-7) + (3.28), (I-7) + (3.29), (I-7) + (3.30), (I-7) + (3.31), (I-7) + (3.32), (I-7) + (3.33), (I-7) + (4.1), (I-7) + (4.2), (I-7) + (4.3), (I-7) + (4.4), (I-7) + (4.5), (I-7) + (4.6), (I-7) + (4.7), (I-7) + (4.8), (I-7) + (4.9), (I-7) + (4.10), (I-7) + (4.11), (I-7) + (4.12), (I-7) + (4.13), (I-7) + (4.14), (I-7) + (5.1), (I-7) + (5.2), (I-7) + (5.3), (I-7) + (5.4), (I-7) + (5.5), (I-7) + (5.6), (I-7) + (5.7), (I-7) + (5.8), (I-7) + (5.9), (I-7) + (5.10), (I-7) + (5.11), (I-7) + (5.12), (I-7) + (5.13), (I-7) + (5.14), (I-7) + (5.15), (I-7) + (5.16), (I-7) + (5.17), (I-7) + (5.18), (I-7) + (5.19), (I-7) + (5.20), (I-7) + (5.21), (I-7) + (5.22), (I-7) + (5.23), (I-7) + (5.24), (I-7) + (5.25), (I-7) + (5.26), (I-7) + (5.27), (I-7) + (5.28), (I-7) + (5.29), (I-7) + (5.30), (I-7) + (5.31), (I-7) + (5.32), (I-7) + (5.33), (I-7) + (5.34), (I-7) + (6.1), (I-7) + (6.2), (I-7) + (6.3), (I-7) + (6.4), (I-7) + (7.1), (I-7) + (7.2), (I-7) + (7.3), (I-7) + (7.4), (I-7) + (7.5), (I-7) + (7.6), (I-7) + (7.7), (I-7) + (7.8), (I-7) + (8.1), (I-7) + (8.2), (I-7) + (8.3), (I-7) + (8.4), (I-7) + (9.1), (I-7) + (9.2), (I-7) + (9.3), (I-7) + (9.4), (I-7) + (9.5), (I-7) + (9.6), (I-7) + (9.7), (I-7) + (9.8), (I-7) + (9.9), (I-7) + (10.1), (I-7) + (10.2), (I-7) + (10.3), (I-7) + (10.4), (I-7) + (10.5), (I-7) + (10.6), (I-7) + (10.7), (I-7) + (10.8), (I-7) + (10.9), (I-7) + (10.10), (I-7) + (10.11), (I-7) + (10.12), (I-7) + (10.13), (I-7) + (10.14), (I-7) + (10.15), (I-7) + (11.1), (I-7) + (11.2), (I-7) + (11.3), (I-7) + (11.4), (I-7) + (11.5), (I-7) + (11.6), (I-7) + (11.7), (I-7) + (12.1), (I-7) + (12.2), (I-7) + (12.3), (I-7) + (12.4), (I-7) + (12.5), (I-7) + (12.6), (I-7) + (12.7), (I-7) + (12.8), (I-7) + (12.9), (I-7) + (12.10), (I-7) + (12.11), (I-7) + (12.12), (I-7) + (12.13), (I-7) + (13.1), (I-7) + (13.2), (I-7) + (13.3), (I-7) + (13.4), (I-7) + (13.5), (I-7) + (13.6), (I-7) + (13.7), (I-7) + (14.1), (I-7) + (14.2), (I-7) + (14.3), (I-7) + (14.4), (I-7) + (14.5), (I-7) + (15.1), (I-7) + (15.2), (I-7) + (15.3), (I-7) + (15.4), (I-7) + (15.5), (I-7) + (15.6), (I-7) + (15.7), (I-7) + (15.8), (I-7) + (15.9), (I-7) + (15.10), (I-7) + (15.11), (I-7) + (15.12), (I-7) + (15.13), (I-

In a further particularly preferred embodiment this invention is directed to mixtures comprising the compound (I-7) as compound of formula (I) and one component (B), in particular the mixtures (I-7) + (2.1), (I-7) + (2.2), (I-7) + (2.6), (I-7) + (2.8), (I-7) + (2.11), (I-7) + (2.12), (I-7) + (2.13), (I-7) + (2.14), (I-7) + (2.15), (I-7) + (2.16), (I-7) + (2.17), (I-7) + (2.29), (I-7) + (3.1), (I-7) + (3.2), (I-7) + (3.3), (I-7) + (3.4), (I-7) + (3.9), (I-7) + (3.10), (I-7) + (3.12), (I-7) + (3.16), (I-7) + (3.17), (I-7) + (3.22), (I-7) + (4.6), (I-7) + (5.1), (I-7) + (5.4), (I-7) + (5.5), (I-7) + (5.7), (I-7) + (5.8), (I-7) + (5.9), (I-7) + (5.16), (I-7) + (5.23), (I-7) + (5.25), (I-7) + (5.26), (I-7) + (5.29), (I-7) + (5.30), (I-7) + (7.7), (I-7) + (9.2), (I-7) + (9.4), (I-7) + (9.5), (I-7) + (10.9), (I-7) + (10.10), (I-7) + (12.9), (I-7) + (12.10), (I-7) + (14.4), (I-7) + (15.9), (I-7) + (15.24), (I-7) + (15.25), (I-7) + (15.26), (I-7) + (15.41), (I-7) + (15.42), (I-7) + (15.54), (I-7) + (15.55), (I-7) + (15.56), (I-7) + (15.60), (I-7) + (15.90).

In a preferred embodiment this invention is directed to mixtures comprising the compound (I-8) as compound of formula (I) and one component (B), in particular the mixtures (I-8) + (1.1), (I-8) + (1.2), (I-8) + (1.3), (I-8) + (1.4), (I-8) + (1.5), (I-8) + (1.6), (I-8) + (1.7), (I-8) + (1.8), (I-8) + (1.9), (I-8) + (1.10), (I-8) + (1.11), (I-8) + (1.12), (I-8) + (1.13), (I-8) + (1.14), (I-8) + (1.15), (I-8) + (1.16), (I-8) + (1.17), (I-8) + (1.18), (I-8) + (1.19), (I-8) + (1.20), (I-8) + (1.21), (I-8) + (1.22), (I-8) + (1.23), (I-8) + (1.24), (I-8) + (1.25), (I-8) + (1.26), (I-8) + (1.27), (I-8) + (1.28), (I-8) + (1.29), (I-8) + (1.30), (I-8) + (1.31), (I-8) + (1.32), (I-8) + (1.33), (I-8) + (1.34), (I-8) + (1.35), (I-8) + (1.36), (I-8) + (1.37), (I-8) + (1.38), (I-8) + (1.39), (I-8) + (1.40), (I-8) + (1.41), (I-8) + (1.42), (I-8) + (1.43), (I-8) + (1.44), (I-8) + (1.45), (I-8) + (1.46), (I-8) + (1.47), (I-8) + (1.48), (I-8) + (1.49), (I-8) + (1.50), (I-8) + (1.51), (I-8) + (1.52), (I-8) + (1.53), (I-8) + (1.54), (I-8) + (1.55), (I-8) + (1.56), (I-8) + (1.57), (I-8) + (1.58), (I-8) + (1.59), (I-8) + (1.60), (I-8) + (1.61), (I-8) + (1.62), (I-8) + (1.63), (I-8) + (1.64), (I-8) + (2.1), (I-8) + (2.2), (I-8) + (2.3), (I-8) + (2.4), (I-8) + (2.5), (I-8) + (2.6), (I-8) + (2.7), (I-8) + (2.8), (I-8) + (2.9), (I-8) + (2.10), (I-8) + (2.11), (I-8) + (2.12), (I-8) + (2.13), (I-8) + (2.14), (I-8) + (2.15), (I-8) + (2.16), (I-8) + (2.17), (I-8) + (2.18), (I-8) + (2.19), (I-8) + (2.20), (I-8) + (2.21), (I-8) + (2.22), (I-8) + (2.23), (I-8) + (2.24), (I-8) + (2.25), (I-8) + (2.26), (I-8) + (2.27), (I-8) + (2.28), (I-8) + (2.29), (I-8) + (3.1), (I-8) + (3.2), (I-8) + (3.3), (I-8) + (3.4), (I-8) + (3.5), (I-8) + (3.6), (I-8) + (3.7), (I-8) + (3.8), (I-8) + (3.9), (I-8) + (3.10), (I-8) + (3.11), (I-8) + (3.12),

(I-8) + (3.13), (I-8) + (3.14), (I-8) + (3.15), (I-8) + (3.16), (I-8) + (3.17), (I-8) + (3.18), (I-8) + (3.19), (I-8) + (3.20), (I-8) + (3.21), (I-8) + (3.22), (I-8) + (3.23), (I-8) + (3.24), (I-8) + (3.25), (I-8) + (3.26), (I-8) + (3.27), (I-8) + (3.28), (I-8) + (3.29), (I-8) + (3.30), (I-8) + (3.31), (I-8) + (3.32), (I-8) + (3.33), (I-8) + (4.1), (I-8) + (4.2), (I-8) + (4.3), (I-8) + (4.4), (I-8) + (4.5), (I-8) + (4.6), (I-8) + (4.7), (I-8) + (4.8), (I-8) + (4.9), (I-8) + (4.10), (I-8) + (4.11), (I-8) + (4.12), (I-8) + (4.13), (I-8) + (4.14), (I-8) + (5.1), (I-8) + (5.2), (I-8) + (5.3), (I-8) + (5.4), (I-8) + (5.5), (I-8) + (5.6), (I-8) + (5.7), (I-8) + (5.8), (I-8) + (5.9), (I-8) + (5.10), (I-8) + (5.11), (I-8) + (5.12), (I-8) + (5.13), (I-8) + (5.14), (I-8) + (5.15), (I-8) + (5.16), (I-8) + (5.17), (I-8) + (5.18), (I-8) + (5.19), (I-8) + (5.20), (I-8) + (5.21), (I-8) + (5.22), (I-8) + (5.23), (I-8) + (5.24), (I-8) + (5.25), (I-8) + (5.26), (I-8) + (5.27), (I-8) + (5.28), (I-8) + (5.29), (I-8) + (5.30), (I-8) + (5.31), (I-8) + (5.32), (I-8) + (5.33), (I-8) + (5.34), (I-8) + (6.1), (I-8) + (6.2), (I-8) + (6.3), (I-8) + (6.4), (I-8) + (7.1), (I-8) + (7.2), (I-8) + (7.3), (I-8) + (7.4), (I-8) + (7.5), (I-8) + (7.6), (I-8) + (7.7), (I-8) + (7.8), (I-8) + (8.1), (I-8) + (8.2), (I-8) + (8.3), (I-8) + (8.4), (I-8) + (9.1), (I-8) + (9.2), (I-8) + (9.3), (I-8) + (9.4), (I-8) + (9.5), (I-8) + (9.6), (I-8) + (9.7), (I-8) + (9.8), (I-8) + (9.9), (I-8) + (10.1), (I-8) + (10.2), (I-8) + (10.3), (I-8) + (10.4), (I-8) + (10.5), (I-8) + (10.6), (I-8) + (10.7), (I-8) + (10.8), (I-8) + (10.9), (I-8) + (10.10), (I-8) + (10.11), (I-8) + (10.12), (I-8) + (10.13), (I-8) + (10.14), (I-8) + (10.15), (I-8) + (11.1), (I-8) + (11.2), (I-8) + (11.3), (I-8) + (11.4), (I-8) + (11.5), (I-8) + (11.6), (I-8) + (11.7), (I-8) + (12.1), (I-8) + (12.2), (I-8) + (12.3), (I-8) + (12.4), (I-8) + (12.5), (I-8) + (12.6), (I-8) + (12.7), (I-8) + (12.8), (I-8) + (12.9), (I-8) + (12.10), (I-8) + (12.11), (I-8) + (12.12), (I-8) + (12.13), (I-8) + (13.1), (I-8) + (13.2), (I-8) + (13.3), (I-8) + (13.4), (I-8) + (13.5), (I-8) + (13.6), (I-8) + (13.7), (I-8) + (14.1), (I-8) + (14.2), (I-8) + (14.3), (I-8) + (14.4), (I-8) + (14.5), (I-8) + (15.1), (I-8) + (15.2), (I-8) + (15.3), (I-8) + (15.4), (I-8) + (15.5), (I-8) + (15.6), (I-8) + (15.7), (I-8) + (15.8), (I-8) + (15.9), (I-8) + (15.10), (I-8) + (15.11), (I-8) + (15.12), (I-8) + (15.13), (I-8) + (15.14), (I-8) + (15.15), (I-8) + (15.16), (I-8) + (15.17), (I-8) + (15.18), (I-8) + (15.19), (I-8) + (15.20), (I-8) + (15.21), (I-8) + (15.22), (I-8) + (15.23), (I-8) + (15.24), (I-8) + (15.25), (I-8) + (15.26), (I-8) + (15.27), (I-8) + (15.28), (I-8) + (15.29), (I-8) + (15.30), (I-8) + (15.31), (I-8) + (15.32), (I-8) + (15.33), (I-8) + (15.34), (I-8) + (15.35), (I-8) + (15.36), (I-8) + (15.37), (I-8) + (15.38), (I-8) + (15.39), (I-8) + (15.41), (I-8) + (15.42), (I-8) + (15.43), (I-8) + (15.44), (I-8) + (15.45), (I-8) + (15.46), (I-8) + (15.47), (I-8) + (15.48), (I-8) + (15.49), (I-8) + (15.50), (I-8) + (15.51), (I-8) + (15.52), (I-8) + (15.53), (I-8) + (15.54), (I-8) + (15.55), (I-8) + (15.56), (I-8) + (15.57), (I-8) + (15.58), (I-8) + (15.59), (I-8) + (15.60), (I-8) + (15.61), (I-8) + (15.62), (I-8) + (15.63), (I-8) + (15.64), (I-8) + (15.65), (I-8) + (15.66), (I-8) + (15.67), (I-8) + (15.68), (I-8) + (15.69), (I-8) + (15.70), (I-8) + (15.71), (I-8) + (15.72), (I-8) + (15.73), (I-8) + (15.74), (I-8) + (15.75), (I-8) + (15.76), (I-8) + (15.77), (I-8) + (15.78), (I-8) + (15.79), (I-8) + (15.80), (I-8) + (15.81), (I-8) + (15.82), (I-8) + (15.83), (I-8) + (15.84), (I-8) + (15.85), (I-8) + (15.86), (I-8) + (15.87), (I-8) + (15.88), (I-8) + (15.89), (I-8) + (15.90), (I-8) + (15.91), (I-8) + (15.92), (I-8) + (15.93), (I-8) + (15.94).

In a further particularly preferred embodiment this invention is directed to mixtures comprising the compound (I-8) as compound of formula (I) and one component (B), in particular the mixtures (I-8) + (2.1), (I-8) + (2.2), (I-8) + (2.6), (I-8) + (2.8), (I-8) + (2.11), (I-8) + (2.12), (I-8) + (2.13), (I-8) + (2.14), (I-8) + (2.15), (I-8) + (2.16), (I-8) + (2.17), (I-8) + (2.29), (I-8) + (3.1), (I-8) + (3.2), (I-8) + (3.3), (I-8) + (3.4), (I-8) + (3.9), (I-8) + (3.10), (I-8) + (3.12), (I-8) + (3.16), (I-8) + (3.17), (I-8) + (3.22), (I-8) + (4.6), (I-8) + (5.1), (I-8) + (5.4), (I-8) + (5.5), (I-8) + (5.7), (I-8) + (5.8), (I-8) + (5.9), (I-8) + (5.16), (I-8) + (5.23), (I-8) + (5.25), (I-

8) + (5.26), (I-8) + (5.29), (I-8) + (5.30), (I-8) + (7.7), (I-8) + (9.2), (I-8) + (9.4), (I-8) + (9.5), (I-8) + (10.9), (I-8) + (10.10), (I-8) + (12.9), (I-8) + (12.10), (I-8) + (14.4), (I-8) + (15.9), (I-8) + (15.24), (I-8) + (15.25), (I-8) + (15.26), (I-8) + (15.41), (I-8) + (15.42), (I-8) + (15.54), (I-8) + (15.55), (I-8) + (15.56), (I-8) + (15.60), (I-8) + (15.90).

- 5 If the active compounds in the active compound combinations according to the invention are present in certain weight ratios, the synergistic effect is particularly pronounced. However, the weight ratios of the active compounds in the active compound combinations can be varied within a relatively wide range.

In the combinations according to the invention the compounds (A) and (B) are present in a synergistically effective weight ratio of A:B in a range of 500:1 to 1:5000, preferably in a weight ratio of 300:1 to 1:2000, most preferably in a weight ratio of 200:1 to 1:1000. Further ratios of A:B which can be used according to the present invention with increasing preference in the order given are: 250:1 to 1:250, 220:1 to 1:220, 200:1 to 1:200, 170:1 to 1:170, 140:1 to 1:140, 120:1 to 1:120, 100:1 to 1:100, 95:1 to 1:95, 90:1 to 1:90, 85:1 to 1:85, 80:1 to 1:80, 75:1 to 1:75, 70:1 to 1:70, 65:1 to 1:65, 60:1 to 1:60, 55:1 to 1:55, 45:1 to 1:45, 40:1 to 1:40, 35:1 to 1:35, 30:1 to 1:30, 25:1 to 1:25, 15:1 to 1:15, 10:1 to 1:10, 5:1 to 1:5, 4:1 to 1:4, 3:1 to 1:3, 2:1 to 1:2.

Further preferred ratios of A:B which can be used according to the present invention are: 1:1 to 1:5000, 1:1 to 1:2000, 1:1 to 1:1000, 1:10 to 1:5000, 1:10 to 1:2000, 1:10 to 1:1000, 1:20 to 1:5000, 1:20 to 1:2000, 1:20 to 1:1000, 1:100 to 1:5000, 1:100 to 1:2000, 1:100 to 1:1000, 1:200 to 1:5000, 1:200 to 1:2000, 1:200 to 1:1000, 1:500 to 1:5000, 1:500 to 1:2000, 1:500 to 1:1000.

- 20 Further preferred ratios of A:B which can be used according to the present invention are: 500:1 to 1:50, 500:1 to 1:2, 500:1 to 10:1, 500:1 to 20:1, 500:1 to 100:1, 300:1 to 1:50, 300:1 to 1:2, 300:1 to 10:1, 300:1 to 20:1, 300:1 to 100:1, 250:1 to 1:50, 250:1 to 1:2, 250:1 to 10:1, 250:1 to 20:1, 250:1 to 100:1, 200:1 to 1:50, 200:1 to 1:2, 200:1 to 10:1, 200:1 to 20:1, 200:1 to 100:1.

25 Where a compound (A) or a compound (B) can be present as mixtures of various possible isomeric forms, in particular of stereoisomers, such as, for example, E and Z, threo and erythro, and also optical isomers, and, if appropriate, also of tautomers. What is claimed are both the E and the Z isomers and the threo and erythro and also the optical isomers (R and S), any mixtures of these isomers, and also the possible tautomeric forms.

Compounds (A) or compounds (B) having at least one basic centre are capable of forming, for example, acid addition salts, e.g. with strong inorganic acids, such as mineral acids, e.g. perchloric acid, sulfuric acid, nitric acid, nitrous acid, a phosphoric acid or a hydrohalic acid, with strong organic carboxylic acids, such as unsubstituted substituted, e.g. halo-substituted, C₁-C₄ alkanecarboxylic acids, e.g. acetic acid, saturated or unsaturated dicarboxylic acids, e.g. oxalic, malonic, succinic, maleic, fumaric and phthalic acid, hydroxycarboxylic acids, e.g. ascorbic, lactic, malic, tartaric and citric acid, or benzoic acid, or with organic sulfonic acids, such as unsubstituted or substituted, e.g. halo-substituted, C₁-C₄alkane- or aryl-sulfonic acids, e.g. methane- or p-toluene-sulfonic acid. Compounds (A) or compounds (B) having at least one acid

group are capable of forming, for example, salts with bases, e.g. metal salts, such as alkali metal or alkaline earth metal salts, e.g. sodium, potassium or magnesium salts, or salts with ammonia or an organic amine, such as morpholine, piperidine, pyrrolidine, a mono-, di- or tri-lower alkylamine, e.g. ethyl-, diethyl-, triethyl- or dimethyl-propyl-amine, or a mono-, di- or tri-hydroxy-lower alkylamine, e.g. mono-, di- or tri-ethanolamine. In addition, corresponding internal salts may optionally be formed. In the context of the invention, preference is given to agrochemically advantageous salts. In view of the close relationship between the compounds (A) or the compounds (B) in free form and in the form of their salts, hereinabove and herein below any reference to the free compounds (A) or free compounds (B) or to their salts should be understood as including also the corresponding salts or the free compounds (A) or free compounds (B), respectively, where appropriate and expedient. The equivalent also applies to tautomers of compounds (A) or compounds (B) and to their salts.

According to the invention the expression "combination" stands for the various combinations of compounds (A) and (B), for example in a single "ready-mix" form, in a combined spray mixture composed from separate formulations of the single active compounds, such as a "tank-mix", and in a combined use of the single active ingredients when applied in a sequential manner, i.e. one after the other with a reasonably short period, such as a few hours or days. Preferably the order of applying the compounds (A) and (B) is not essential for working the present invention.

Composition / Formulation

The present invention furthermore relates to compositions for combating/controlling undesirable microorganisms comprising the active compound combinations according to the invention. Preferably, the compositions are fungicidal compositions comprising agriculturally suitable auxiliaries, solvents, carriers, surfactants or extenders.

In the context of the present invention, "control of harmful microorganisms" means a reduction in infestation by harmful microorganisms, compared with the untreated plant measured as fungicidal efficacy, preferably a reduction by 25-50 %, compared with the untreated plant (100 %), more preferably a reduction by 40-79 %, compared with the untreated plant (100 %); even more preferably, the infection by harmful microorganisms is entirely suppressed (by 70-100 %). The control may be curative, i.e. for treatment of already infected plants, or protective, for protection of plants which have not yet been infected.

An "effective but non-phytotoxic amount" means an amount of the inventive composition which is sufficient to control the fungal disease of the plant in a satisfactory manner or to eradicate the fungal disease completely, and which, at the same time, does not cause any significant symptoms of phytotoxicity. In general, this application rate may vary within a relatively wide range. It depends on several factors, for example on the fungus to be controlled, the plant, the climatic conditions and the ingredients of the inventive compositions.

Suitable organic solvents include all polar and non-polar organic solvents usually employed for formulation purposes. Preferable the solvents are selected from ketones, e.g. methyl-isobutyl-ketone and cyclohexanone,

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amides, e.g. dimethyl formamide and alkanecarboxylic acid amides, e.g. N,N-dimethyl decanamide and N,N-dimethyl octanamide, furthermore cyclic solvents, e.g. N-methyl-pyrrolidone, N-octyl-pyrrolidone, N-dodecyl-pyrrolidone, N-octyl-caprolactame, N-dodecyl-caprolactame and butyrolactone, furthermore strong polar solvents, e.g. dimethylsulfoxide, and aromatic hydrocarbons, e.g. xylol, Solvesso™, mineral oils, e.g. white spirit, petroleum, alkyl benzenes and spindle oil, also esters, e.g. propyleneglycol-monomethylether acetate, adipic acid dibutylester, acetic acid hexylester, acetic acid heptylester, citric acid tri-*n*-butylester and phthalic acid di-*n*-butylester, and also alcohols, e.g. benzyl alcohol and 1-methoxy-2-propanol.

Furthermore the invention relates to a method of combating undesirable microorganisms, characterized in that the active compound combinations according to the invention are applied to the phytopathogenic fungi and/or their habitat.

According to the invention, carrier is to be understood as meaning a natural or synthetic, organic or inorganic substance which is mixed or combined with the active compounds for better applicability, in particular for application to plants or plant parts or seeds. The carrier, which may be solid or liquid, is generally inert and should be suitable for use in agriculture.

According to the invention, a carrier is a natural or synthetic, organic or inorganic substance with which the active ingredients are mixed or combined for better applicability, in particular for application to plants or plant parts or seed. The carrier, which may be solid or liquid, is generally inert and should be suitable for use in agriculture.

Useful solid or liquid carriers include: for example ammonium salts and natural rock dusts, such as kaolins, clays, talc, chalk, quartz, attapulgit, montmorillonite or diatomaceous earth, and synthetic rock dusts, such as finely divided silica, alumina and natural or synthetic silicates, resins, waxes, solid fertilizers, water, alcohols, especially butanol, organic solvents, mineral and vegetable oils, and derivatives thereof. Mixtures of such carriers can likewise be used.

Suitable solid filler and carrier include inorganic particles, e.g. carbonates, silicates, sulphates and oxides with an average particle size of between 0.005 and 20 µm, preferably of between 0.02 to 10 µm, for example ammonium sulphate, ammonium phosphate, urea, calcium carbonate, calcium sulphate, magnesium sulphate, magnesium oxide, aluminium oxide, silicon dioxide, so-called fine-particle silica, silica gels, natural or synthetic silicates, and aluminosilicates and plant products like cereal flour, wood powder/sawdust and cellulose powder.

Useful solid carriers for granules include: for example crushed and fractionated natural rocks such as calcite, marble, pumice, sepiolite, dolomite, and synthetic granules of inorganic and organic meals, and also granules of organic material such as sawdust, coconut shells, maize cobs and tobacco stalks.

Useful liquefied gaseous extenders or carriers are those liquids which are gaseous at standard temperature and under standard pressure, for example aerosol propellants such as halohydrocarbons, and also butane, propane, nitrogen and carbon dioxide.

In the formulations, it is possible to use tackifiers such as carboxymethylcellulose, and natural and synthetic polymers in the form of powders, granules or latices, such as gum arabic, polyvinyl alcohol and polyvinyl acetate, or else natural phospholipids, such as cephalins and lecithins, and synthetic phospholipids. Further additives may be mineral and vegetable oils.

- 5 If the extender used is water, it is also possible for example, to use organic solvents as auxiliary solvents. Suitable liquid solvents are essentially: aromatic compounds, such as xylene, toluene or alkyl naphthalenes, chlorinated aromatic compounds or chlorinated aliphatic hydrocarbons, such as chlorobenzenes, chloroethylenes or methylene chloride, aliphatic hydrocarbons, such as cyclohexane or paraffins, for example mineral oil fractions, mineral and vegetable oils, alcohols, such as butanol or glycol, and also ethers and
- 10 esters thereof, ketones, such as acetone, methyl ethyl ketone, methyl isobutyl ketone or cyclohexanone, strongly polar solvents, such as dimethylformamide and dimethyl sulphoxide, and also water.

- The compositions according to the invention may comprise additional further components, such as, for example, surfactants. Suitable surfactants are emulsifiers, dispersants or wetting agents having ionic or nonionic properties, or mixtures of these surfactants. Examples of these are salts of polyacrylic acid, salts
- 15 of lignosulphonic acid, salts of phenolsulphonic acid or naphthalenesulphonic acid, polycondensates of ethylene oxide with fatty alcohols or with fatty acids or with fatty amines, substituted phenols (preferably alkylphenols or arylphenols), salts of sulposuccinic esters, taurine derivatives (preferably alkyl taurates), phosphoric esters of polyethoxylated alcohols or phenols, fatty esters of polyols, and derivatives of the compounds containing sulphates, sulphonates and phosphates. The presence of a surfactant is required if
- 20 one of the active compounds and/or one of the inert carriers is insoluble in water and when the application takes place in water. The proportion of surfactants is between 5 and 40 per cent by weight of the composition according to the invention.

- Suitable surfactants (adjuvants, emulsifiers, dispersants, protective colloids, wetting agent and adhesive) include all common ionic and non-ionic substances, for example ethoxylated nonylphenols, polyalkylene
- 25 glycoether of linear or branched alcohols, reaction products of alkyl phenols with ethylene oxide and/or propylene oxide, reaction products of fatty acid amines with ethylene oxide and/or propylene oxide, furthermore fatty acid esters, alkyl sulfonates, alkyl sulphates, alkyl ethersulphates, alkyl etherphosphates, arylsulphate, ethoxylated arylalkylphenols, e.g. tristyril-phenol-ethoxylates, furthermore ethoxylated and propoxylated arylalkylphenols like sulphated or phosphated arylalkylphenol-ethoxylates and -ethoxy-
- 30 and -propoxylates. Further examples are natural and synthetic, water soluble polymers, e.g. lignosulphonates, gelatine, gum arabic, phospholipides, starch, hydrophobic modified starch and cellulose derivatives, in particular cellulose ester and cellulose ether, further polyvinyl alcohol, polyvinyl acetate, polyvinyl pyrrolidone, polyacrylic acid, polymethacrylic acid and co-polymerisates of (meth)acrylic acid and (meth)acrylic acid esters, and further co-polymerisates of methacrylic acid and methacrylic acid esters
- 35 which are neutralized with alkalimetal hydroxide and also condensation products of optionally substituted naphthalene sulfonic acid salts with formaldehyde.

It is possible to use colorants such as inorganic pigments, for example iron oxide, titanium oxide, Prussian blue, and organic dyes, such as alizarin dyes, azo dyes and metal phthalocyanine dyes, and trace nutrients, such as salts of iron, manganese, boron, copper, cobalt, molybdenum and zinc.

Antifoams which may be present in the formulations include e.g. silicone emulsions, longchain alcohols, fatty acids and their salts as well as fluoroorganic substances and mixtures thereof.

Examples of thickeners are polysaccharides, e.g. xanthan gum or veegum, silicates, e.g. attapulgite, bentonite as well as fine-particle silica.

If appropriate, other additional components may also be present, for example protective colloids, binders, adhesives, thickeners, thixotropic substances, penetrants, stabilizers, sequestering agents, complex formers. In general, the active compounds can be combined with any solid or liquid additive customarily used for formulation purposes.

The inventive compositions can be used as such or, depending on their particular physical and/or chemical properties, in the form of their formulations or the use forms prepared therefrom, such as aerosols, capsule suspensions, cold-fogging concentrates, warm-fogging concentrates, encapsulated granules, fine granules, flowable concentrates for the treatment of seed, ready-to-use solutions, dustable powders, emulsifiable concentrates, oil-in-water emulsions, water-in-oil emulsions, macrogranules, microgranules, oil-dispersible powders, oil-miscible flowable concentrates, oil-miscible liquids, gas (under pressure), gas generating product, foams, pastes, pesticide coated seed, suspension concentrates, suspoemulsion concentrates, soluble concentrates, suspensions, wettable powders, soluble powders, dusts and granules, water-soluble and water-dispersible granules or tablets, water-soluble and water-dispersible powders for the treatment of seed, wettable powders, natural products and synthetic substances impregnated with active ingredient, and also microencapsulations in polymeric substances and in coating materials for seed, and also ULV cold-fogging and warm-fogging formulations.

The inventive compositions include not only formulations which are already ready for use and can be applied with a suitable apparatus to the plant or the seed, but also commercial concentrates which have to be diluted with water prior to use. Customary applications are for example dilution in water and subsequent spraying of the resulting spray liquor, application after dilution in oil, direct application without dilution, seed treatment or soil application of granules.

In general, the compositions according to the invention comprise between 0.05 and 99 per cent by weight, 0.01 and 98 per cent by weight, preferable between 0.1 and 95 per cent by weight, particularly preferred between 0.5 and 90 per cent by weight of the active compound combination according to the invention, very particularly preferable between 10 and 70 per cent by weight.

The contents of active ingredient in the application forms prepared from the commercial formulations may vary in a broad range. The concentration of the active ingredients in the application forms is generally between 0.000001 to 95 % by weight, preferably between 0.0001 and 2 % by weight.

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The formulations mentioned can be prepared in a manner known per se, for example by mixing the active ingredients with at least one customary extender, solvent or diluent, adjuvant, emulsifier, dispersant, and/or binder or fixative, wetting agent, water repellent, if appropriate desiccants and UV stabilizers and, if appropriate, dyes and pigments, antifoams, preservatives, inorganic and organic thickeners, adhesives, gibberellins and also further processing auxiliaries and also water. Depending on the formulation type to be prepared further processing steps are necessary, e.g. wet grinding, dry grinding and granulation.

The inventive composition may be present as such or in their (commercial) formulations and in the use forms prepared from these formulations as a mixture with other (known) active ingredients, such as insecticides, attractants, sterilants, bactericides, acaricides, nematocides, fungicides, growth regulators, herbicides, fertilizers, safeners and/or semiochemicals.

The compositions according to the invention do not only comprise ready-to-use compositions which can be applied with suitable apparatus to the plant or the seed, but also commercial concentrates which have to be diluted with water prior to use.

The treatment according to the invention of the plants and plant parts with the active compounds or compositions is carried out directly or by action on their surroundings, habitat or storage space using customary treatment methods, for example by dipping, spraying, atomizing, irrigating, evaporating, dusting, fogging, broadcasting, foaming, painting, spreading-on, watering (drenching), drip irrigating and, in the case of propagation material, in particular in the case of seeds, furthermore as a powder for dry seed treatment, a solution for seed treatment, a water-soluble powder for slurry treatment, by incrusting, by coating with one or more layers, etc. It is furthermore possible to apply the active compounds by the ultra-low volume method, or to inject the active compound preparation or the active compound itself into the soil.

Plant/Crop Protection

The inventive active ingredients or compositions have potent microbicidal activity and can be used for control of unwanted microorganisms, such as fungi and bacteria, in crop protection and in the protection of materials.

The invention also relates to a method for controlling unwanted microorganisms, characterized in that the inventive active ingredients are applied to the phytopathogenic fungi, phytopathogenic bacteria and/or their habitat.

Fungicides can be used in crop protection for control of phytopathogenic fungi. They are characterized by an outstanding efficacy against a broad spectrum of phytopathogenic fungi, including soilborne pathogens, which are in particular members of the classes *Plasmodiophoromycetes*, *Peronosporomycetes* (Syn. *Oomycetes*), *Chytridiomycetes*, *Zygomycetes*, *Ascomycetes*, *Basidiomycetes* and *Deuteromycetes* (Syn. *Fungi imperfecti*). Some fungicides are systemically active and can be used in plant protection as foliar, seed dressing or soil fungicide. Furthermore, they are suitable for combating fungi, which inter alia infest wood or roots of plant.

Bactericides can be used in crop protection for control of *Pseudomonadaceae*, *Rhizobiaceae*, *Enterobacteriaceae*, *Corynebacteriaceae* and *Streptomycetaceae*.

Non-limiting examples of pathogens of fungal diseases which can be treated in accordance with the invention include:

- 5 diseases caused by powdery mildew pathogens, for example *Blumeria* species, for example *Blumeria graminis*; *Podosphaera* species, for example *Podosphaera leucotricha*; *Sphaerotheca* species, for example *Sphaerotheca fuliginea*; *Uncinula* species, for example *Uncinula necator*;

- diseases caused by rust disease pathogens, for example *Gymnosporangium* species, for example *Gymnosporangium sabinae*; *Hemileia* species, for example *Hemileia vastatrix*; *Phakopsora* species, for example
10 *Phakopsora pachyrhizi* and *Phakopsora meibomia*; *Puccinia* species, for example *Puccinia recondite*, *P. trititica*, *P. graminis* or *P. striiformis*; *Uromyces* species, for example *Uromyces appendiculatus*;

- diseases caused by pathogens from the group of the *Oomycetes*, for example *Albugo* species, for example *Albugo candida*; *Bremia* species, for example *Bremia lactucae*; *Peronospora* species, for example
15 *Peronospora pisi* or *P. brassicae*; *Phytophthora* species, for example *Phytophthora infestans*; *Plasmopara* species, for example *Plasmopara viticola*; *Pseudoperonospora* species, for example *Pseudoperonospora humuli* or *Pseudoperonospora cubensis*; *Pythium* species, for example *Pythium ultimum*;

- leaf blotch diseases and leaf wilt diseases caused, for example, by *Alternaria* species, for example *Alternaria solani*; *Cercospora* species, for example *Cercospora beticola*; *Cladosporium* species, for example
20 *Cladosporium cucumerinum*; *Cochliobolus* species, for example *Cochliobolus sativus* (conidia form: *Drechslera*, Syn: *Helminthosporium*), *Cochliobolus miyabeanus*; *Colletotrichum* species, for example *Colletotrichum lindemuthianum*; *Cycloconium* species, for example *Cycloconium oleaginum*; *Diaporthe* species, for example *Diaporthe citri*; *Elsinoe* species, for example *Elsinoe fawcettii*; *Gloeosporium* species, for example *Gloeosporium laeticolor*; *Glomerella* species, for example *Glomerella cingulata*; *Guignardia* species, for example *Guignardia bidwelli*; *Leptosphaeria* species, for example *Leptosphaeria maculans*,
25 *Leptosphaeria nodorum*; *Magnaporthe* species, for example *Magnaporthe grisea*; *Microdochium* species, for example *Microdochium nivale*; *Mycosphaerella* species, for example *Mycosphaerella graminicola*, *M. arachidicola* and *M. fijiensis*; *Phaeosphaeria* species, for example *Phaeosphaeria nodorum*; *Pyrenophora* species, for example *Pyrenophora teres*, *Pyrenophora tritici repentis*; *Ramularia* species, for example *Ramularia collo-cygni*, *Ramularia areola*; *Rhynchosporium* species, for example
30 *Rhynchosporium secalis*; *Septoria* species, for example *Septoria apii*, *Septoria lycopersii*; *Typhula* species, for example *Typhula incarnata*; *Venturia* species, for example *Venturia inaequalis*;

- root and stem diseases caused, for example, by *Corticium* species, for example *Corticium graminearum*; *Fusarium* species, for example *Fusarium oxysporum*; *Gaeumannomyces* species, for example *Gaeumannomyces graminis*; *Rhizoctonia* species, such as, for example *Rhizoctonia solani*; *Sarocladium* diseases
35 caused for example by *Sarocladium oryzae*; *Sclerotium* diseases caused for example by *Sclerotium oryzae*;

Tapesia species, for example *Tapesia acuformis*; *Thielaviopsis* species, for example *Thielaviopsis basicola*;

ear and panicle diseases (including corn cobs) caused, for example, by *Alternaria* species, for example *Alternaria* spp.; *Aspergillus* species, for example *Aspergillus flavus*; *Cladosporium* species, for example
 5 *Cladosporium cladosporioides*; *Claviceps* species, for example *Claviceps purpurea*; *Fusarium* species, for example *Fusarium culmorum*; *Gibberella* species, for example *Gibberella zeae*; *Monographella* species, for example *Monographella nivalis*; *Septoria* species, for example *Septoria nodorum*;

diseases caused by smut fungi, for example *Sphacelotheca* species, for example *Sphacelotheca reiliana*; *Tilletia* species, for example *Tilletia caries*, *T. controversa*; *Urocystis* species, for example *Urocystis oc-*
 10 *culta*; *Ustilago* species, for example *Ustilago nuda*, *U. nuda tritici*;

fruit rot caused, for example, by *Aspergillus* species, for example *Aspergillus flavus*; *Botrytis* species, for example *Botrytis cinerea*; *Penicillium* species, for example *Penicillium expansum* and *P. purpurogenum*; *Sclerotinia* species, for example *Sclerotinia sclerotiorum*; *Verticillium* species, for example *Verticillium al-*
boatrum;

15 seed and soilborne decay, mould, wilt, rot and damping-off diseases caused, for example, by *Alternaria* species, caused for example by *Alternaria brassicicola*; *Aphanomyces* species, caused for example by *Aphanomyces euteiches*; *Ascochyta* species, caused for example by *Ascochyta lentis*; *Aspergillus* species, caused for example by *Aspergillus flavus*; *Cladosporium* species, caused for example by *Cladosporium herbarum*; *Cochliobolus* species, caused for example by *Cochliobolus sativus*; (Conidiaform: Drechslera,
 20 *Bipolaris* Syn: *Helminthosporium*); *Colletotrichum* species, caused for example by *Colletotrichum coc-*
codes; *Fusarium* species, caused for example by *Fusarium culmorum*; *Gibberella* species, caused for ex-
 ample by *Gibberella zeae*; *Macrophomina* species, caused for example by *Macrophomina phaseolina*; *Monographella* species, caused for example by *Monographella nivalis*; *Penicillium* species, caused for ex-
 ample by *Penicillium expansum*; *Phoma* species, caused for example by *Phoma lingam*; *Phomopsis* spe-
 25 cies, caused for example by *Phomopsis sojae*; *Phytophthora* species, caused for example by *Phytophthora*
cactorum; *Pyrenophora* species, caused for example by *Pyrenophora graminea*; *Pyricularia* species,
 caused for example by *Pyricularia oryzae*; *Pythium* species, caused for example by *Pythium ultimum*; *Rhi-*
zoctonia species, caused for example by *Rhizoctonia solani*; *Rhizopus* species, caused for example by *Rhi-*
zopus oryzae; *Sclerotium* species, caused for example by *Sclerotium rolfsii*; *Septoria* species, caused for
 30 example by *Septoria nodorum*; *Typhula* species, caused for example by *Typhula incarnata*; *Verticillium*
 species, caused for example by *Verticillium dahliae*;

cancers, galls and witches' broom caused, for example, by *Nectria* species, for example *Nectria galligena*;

wilt diseases caused, for example, by *Monilinia* species, for example *Monilinia laxa*;

leaf blister or leaf curl diseases caused, for example, by *Exobasidium* species, for example *Exobasidium*
 35 *vexans*;

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Taphrina species, for example *Taphrina deformans*;

decline diseases of wooden plants caused, for example, by Esca disease, caused for example by *Phaeo-*
niella clamydospora, *Phaeoacremonium aleophilum* and *Fomitiporia mediterranea*; Eutypa dyeback,
caused for example by *Eutypa lata* ; Ganoderma diseases caused for example by *Ganoderma boninense*;

5 Rigidoporus diseases caused for example by *Rigidoporus lignosus*;

diseases of flowers and seeds caused, for example, by *Botrytis* species, for example *Botrytis cinerea*;

diseases of plant tubers caused, for example, by *Rhizoctonia* species, for example *Rhizoctonia solani*;
Helminthosporium species, for example *Helminthosporium solani*;

Club root caused, for example, by *Plasmodiophora* species, for example *Plasmodiophora brassicae*;

10 diseases caused by bacterial pathogens, for example *Xanthomonas* species, for example *Xanthomonas*
campestris pv. *oryzae*; *Pseudomonas* species, for example *Pseudomonas syringae* pv. *lachrymans*; *Erwin-*
ia species, for example *Erwinia amylovora*.

The following diseases of soya beans can be controlled with preference:

Fungal diseases on leaves, stems, pods and seeds caused, for example, by *Alternaria* leaf spot (*Alternaria*
15 *spec. atrans tenuissima*), Anthracnose (*Colletotrichum gloeosporoides dematium* var. *truncatum*), brown
spot (*Septoria glycines*), cercospora leaf spot and blight (*Cercospora kikuchii*), choanephora leaf blight
(*Choanephora infundibulifera trispora* (Syn.)), dactuliophora leaf spot (*Dactuliophora glycines*), downy
mildew (*Peronospora manshurica*), drechslera blight (*Drechslera glycini*), frog-eye leaf spot (*Cercospora*
sojina), leptosphaerulina leaf spot (*Leptosphaerulina trifolii*), phyllosticta leaf spot (*Phyllosticta sojaecola*),
20 pod and stem blight (*Phomopsis sojae*), powdery mildew (*Microsphaera diffusa*), pyrenochaeta leaf spot
(*Pyrenochaeta glycines*), rhizoctonia aerial, foliage, and web blight (*Rhizoctonia solani*), rust (*Phakopsora*
pachyrhizi, *Phakopsora meibomiae*), scab (*Sphaceloma glycines*), stemphylium leaf blight (*Stemphylium*
botryosum), target spot (*Corynespora cassiicola*).

Fungal diseases on roots and the stem base caused, for example, by black root rot (*Calonectria crotalari-*
25 *ae*), charcoal rot (*Macrophomina phaseolina*), fusarium blight or wilt, root rot, and pod and collar rot
(*Fusarium oxysporum*, *Fusarium orthoceras*, *Fusarium semitectum*, *Fusarium equiseti*), mycoleptodiscus
root rot (*Mycoleptodiscus terrestris*), neocosmospora (*Neocosmospora vasinfecta*), pod and stem blight
(*Diaporthe phaseolorum*), stem canker (*Diaporthe phaseolorum* var. *caulivora*), phytophthora rot (*Phy-*
tophthora megasperma), brown stem rot (*Phialophora gregata*), pythium rot (*Pythium aphanidermatum*,
30 *Pythium irregulare*, *Pythium debaryanum*, *Pythium myriotylum*, *Pythium ultimum*), rhizoctonia root rot,
stem decay, and damping-off (*Rhizoctonia solani*), sclerotinia stem decay (*Sclerotinia sclerotiorum*), scle-
rotinia southern blight (*Sclerotinia rolfii*), thielaviopsis root rot (*Thielaviopsis basicola*).

The inventive fungicidal compositions can be used for curative or protective/preventive control of phytopathogenic fungi. The invention therefore also relates to curative and protective methods for controlling phytopathogenic fungi by the use of the inventive active ingredients or compositions, which are applied to the seed, the plant or plant parts, the fruit or the soil in which the plants grow.

- 5 The fact that the active ingredients are well tolerated by plants at the concentrations required for controlling plant diseases allows the treatment of above-ground parts of plants, of propagation stock and seeds, and of the soil.

According to the invention all plants and plant parts can be treated. By plants is meant all plants and plant populations such as desirable and undesirable wild plants, cultivars and plant varieties (whether or not protectable by plant variety or plant breeder's rights). Cultivars and plant varieties can be plants obtained by
 10 conventional propagation and breeding methods which can be assisted or supplemented by one or more biotechnological methods such as by use of double haploids, protoplast fusion, random and directed mutagenesis, molecular or genetic markers or by bioengineering and genetic engineering methods. By plant parts is meant all above ground and below ground parts and organs of plants such as shoot, leaf, blossom
 15 and root, whereby for example leaves, needles, stems, branches, blossoms, fruiting bodies, fruits and seed as well as roots, corms and rhizomes are listed. Crops and vegetative and generative propagating material, for example cuttings, corms, rhizomes, runners and seeds also belong to plant parts.

The inventive active compositions, when they are well tolerated by plants, have favourable homeotherm toxicity and are well tolerated by the environment, are suitable for protecting plants and plant organs, for
 20 enhancing harvest yields, for improving the quality of the harvested material. They can preferably be used as crop protection compositions. They are active against normally sensitive and resistant species and against all or some stages of development.

Plants which can be treated in accordance with the invention include the following main crop plants: maize, soya bean, alfalfa, cotton, sunflower, *Brassica* oil seeds such as *Brassica napus* (e.g. canola, rape-seed), *Brassica rapa*, *B. juncea* (e.g. (field) mustard) and *Brassica carinata*, *Arecaceae sp.* (e.g. oilpalm, coconut), rice, wheat, sugar beet, sugar cane, oats, rye, barley, millet and sorghum, triticale, flax, nuts, grapes and vine and various fruit and vegetables from various botanic taxa, e.g. *Rosaceae sp.* (e.g. pome fruits such as apples and pears, but also stone fruits such as apricots, cherries, almonds, plums and peaches, and berry fruits such as strawberries, raspberries, red and black currant and gooseberry), *Ribesioideae*
 25 *sp.*, *Juglandaceae sp.*, *Betulaceae sp.*, *Anacardiaceae sp.*, *Fagaceae sp.*, *Moraceae sp.*, *Oleaceae sp.* (e.g. olive tree), *Actinidaceae sp.*, *Lauraceae sp.* (e.g. avocado, cinnamon, camphor), *Musaceae sp.* (e.g. banana trees and plantations), *Rubiaceae sp.* (e.g. coffee), *Theaceae sp.* (e.g. tea), *Sterculiaceae sp.*, *Rutaceae sp.* (e.g. lemons, oranges, mandarins and grapefruit); *Solanaceae sp.* (e.g. tomatoes, potatoes, peppers, capsicum, aubergines, tobacco), *Liliaceae sp.*, *Compositae sp.* (e.g. lettuce, artichokes and chicory – including
 30 root chicory, endive or common chicory), *Umbelliferae sp.* (e.g. carrots, parsley, celery and celeriac), *Cucurbitaceae sp.* (e.g. cucumbers – including gherkins, pumpkins, watermelons, calabashes and melons), *Alliaceae sp.* (e.g. leeks and onions), *Cruciferae sp.* (e.g. white cabbage, red cabbage, broccoli, cauliflow-

er, Brussels sprouts, pak choi, kohlrabi, radishes, horseradish, cress and chinese cabbage), *Leguminosae* sp. (e.g. peanuts, peas, lentils and beans – e.g. common beans and broad beans), *Chenopodiaceae* sp. (e.g. Swiss chard, fodder beet, spinach, beetroot), *Linaceae* sp. (e.g. hemp), *Cannabaceae* sp. (e.g. cannabis), *Malvaceae* sp. (e.g. okra, cocoa), *Papaveraceae* (e.g. poppy), *Asparagaceae* (e.g. asparagus); useful plants and ornamental plants in the garden and woods including turf, lawn, grass and *Stevia rebaudiana*; and in each case genetically modified types of these plants.

In particular, the mixtures and compositions according to the invention are suitable for controlling the following plant diseases:

- Albugo* spp. (white rust) on ornamental plants, vegetable crops (e.g. *A. candida*) and sunflowers (e.g. *A. tragopogonis*); *Alternaria* spp. (black spot disease, black blotch) on vegetables, oilseed rape (e.g. *A. brassicola* or *A. brassicae*), sugar beet (e.g. *A. tenuis*), fruit, rice, soybeans and also on potatoes (e.g. *A. solani* or *A. alternata*) and tomatoes (e.g. *A. solani* or *A. alternata*) and *Alternaria* spp. (black head) on wheat; *Aphanomyces* spp. on sugar beet and vegetables; *Ascochyta* spp. on cereals and vegetables, e.g. *A. tritici* (*Ascochyta* leaf blight) on wheat and *A. hordei* on barley; *Bipolaris* and *Drechslera* spp. (teleomorph: *Cochliobolus* spp.), e.g. leaf spot diseases (*D. maydis* and *B. zeicola*) on corn, e.g. glume blotch (*B. sorokiniana*) on cereals and e.g. *B. oryzae* on rice and on lawn; *Blumeria* (old name: *Erysiphe*) *graminis* (powdery mildew) on cereals (e.g. wheat or barley); *Botryosphaeria* spp. ('Slack Dead Arm Disease') on grapevines (e.g. *B. obtusa*); *Botrytis cinerea* (teleomorph: *Botryotinia fuckeliana*: gray mold, gray rot) on soft fruit and pomaceous fruit (inter alia strawberries), vegetables (inter alia lettuce, carrots, celeriac and cabbage), oilseed rape, flowers, grapevines, forest crops and wheat (ear mold); *Bremia lactucae* (downy mildew) on lettuce; *Ceratocystis* (syn. *Ophiostoma*) spp. (blue stain fungus) on deciduous trees and coniferous trees, e.g. *C. ulmi* (Dutch elm disease) on elms; *Cercospora* spp. (*Cereospora* leaf spot) on corn (e.g. *C. zea-maydis*), rice, sugar beet (e.g. *C. beticola*), sugar cane, vegetables, coffee, soybeans (e.g. *C. sojae* or *C. kikuchii*) and rice; *Cladosporium* spp. on tomato (e.g. *C. fulvum*: tomato leaf mold) and cereals, e.g. *C. herbarum* (ear rot) on wheat; *Claviceps purpurea* (ergot) on cereals; *Cochliobolus* (anamorph: *Helminthosporium* or *Bipolaris*) spp. (leaf spot) on corn (e.g. *C. carbonum*), cereals (e.g. *C. sativus*, anamorph: *B. sorokiniana*: glume blotch) and rice (for example *C. miyabeanus*, anamorph: *H. oryzae*); *Colletotrichum* (teleomorph: *Glomerella*) spp. (anthracnosis) on cotton (e.g. *C. gossypii*), corn (e.g. *C. graminicola*: stem rot and anthracnosis), soft fruit, potatoes (e.g. *C. coccodes*: wilt disease), beans (e.g. *C. lindemuthianum*) and soybeans (e.g. *C. truncatum*); *Corticium* spp., e.g. *C. sasakii* (sheath blight) on rice; *Corynespora cassiicola* (leaf spot) on soybeans and ornamental plants; *Cycloconium* spp., e.g. *C. oleaginum* on olives; *Cylindrocarpum* spp. (e.g. fruit tree cancer or black foot disease of grapevine, teleomorph: *Nectria* or *Neonectria* spp.) on fruit trees, grapevines (e.g. *C. liriodendri*; teleomorph: *Neonectria liriodendri*, black foot disease) and many ornamental trees; *Dematophora* (teleomorph: *Rosellinia*) *necatrix* (root/stem rot) on soybeans; *Diaporthe* spp. e.g. *D. phaseolorum* (stem disease) on soybeans; *Drechslera* (syn. *Helminthosporium*, teleomorph: *Pyrenophora*) spp. on corn, cereals, such as barley (e.g. *D. teres*, net blotch) and on wheat (e.g. *D. tritici-repentis*: DTR leaf spot), rice and lawn; Esca disease (dieback of grapevine, apoplexia) on grapevines, caused by *Formitiporia* (syn. *Phellinus*) *punctata*, *F. mediterranea*.

Phaeomoniella chlamydospora (old name *Phaeoacremonium chlamydosporum*) , *Phaeoacremonium aleophilum* and/or *Botryosphaeria obtusa*; *Elsinoe* spp. on pome fruit (*E. pyri*) and soft fruit (*E. veneta*: anthracnosis) and also grapevines (*E. ampelina*: anthracnosis); *Entyloma oryzae* (leaf smut) on rice; *Epicoccum* spp. (black head) on wheat; *Erysiphe* spp. (powdery mildew) on sugar beet (*E. betae*), vegetables (e.g. *E. pisi*), such as cucumber species (e.g. *E. cichoracearum*) and cabbage species, such as oilseed rape (e.g. *E. cruciferarum*); *Eutypa fata* (*Eutypa* cancer or dieback, anamorph: *Cytosporina lata*, syn. *Libertella blepharis*) on fruit trees, grapevines and many ornamental trees; *Exserohilum* (syn. *Helminthosporium*) spp. on corn (e.g. *E. turcicum*); *Fusarium* (teleomorph: *Gibberella*) spp. (wilt disease, root and stem rot) on various plants, such as e.g. *F. graminearum* or *F. culmorum* (root rot and silver-top) on cereals (e.g. wheat or barley), *F. oxysporum* on tomatoes, *F. solani* on soybeans and *F. verticillioides* on corn; *Gaeumannomyces graminis* (takeall) on cereals (e.g. wheat or barley) and corn; *Gibberella* spp. on cereals (e.g. *G. zeae*) and rice (e.g. *G. fujikuroi*: bakanae disease); *Glomerella cingulata* on grapevines, pomaceous fruit and other plants and *G. gossypii* on cotton; *grainstaining complex* on rice; *Guignardia bidwellii* (black rot) on grapevines; *Gymnosporangium* spp. on Rosaceae and juniper, e.g. *G. sabinae* (pear rust) on pears; *Helminthosporium* spp. (syn. *Drechslera*, teleomorph: *Cochliobolus*) on corn, cereals and rice; *Hemileia* spp., e.g. *H. vastatrix* (coffee leaf rust) on coffee; *Isariopsis clavispora* (syn. *Cladosporium vitis*) on grapevines; *Macrophomina phaseolina* (syn. *phaseoli*) (root/stem rot) on soybeans and cotton; *Microdochium* (syn. *Fusarium*) *nivale* (pink snow mold) on cereals (e.g. wheat or barley); *Microsphaera diffusa* (powdery mildew) on soybeans; *Monilinia* spp., e.g. *M. laxa*, *M. fructicola* and *M. fructigena* (blossom and twig blight) on stone fruit and other Rosaceae; *Mycosphaerella* spp. on cereals, bananas, soft fruit and peanuts, such as e.g. *M. graminicola* (anamorph: *Septoria tritici*, *Septoria* leaf blotch) on wheat or *M. fi-jiensis* (Sigatoka disease) on bananas; *Peronospora* spp. (downy mildew) on cabbage (e.g. *P. brassicae*), oilseed rape (e.g. *P. parasitica*), bulbous plants (e.g. *P. destructor*), tobacco (*P. tabacina*) and soybeans (e.g. *P. manshurica*); *Phakopsora pachyrhizi* and *P. meibomia* (soybean rust) on soybeans; *Phialophora* spp. e.g. on grapevines (e.g. *P. tracheiphila* and *P. tetraspora*) and soybeans (e.g. *P. gregata*: stem disease); *Phoma lingam* (root and stem rot) on oilseed rape and cabbage and *P. betae* (leaf spot) on sugar beet; *Phomopsis* spp. on sunflowers, grapevines (e.g. *P. viticola*: dead-arm disease) and soybeans (e.g. stem canker/stem blight: *P. phaseoli*, teleomorph: *Diaporthe phaseolorum*); *Physoderma maydis* (brown spot) on corn; *Phytophthora* spp. (wilt disease, root, leaf, stem and fruit rot) on various plants, such as on bell peppers and cucumber species (e.g. *P. capsici*), soybeans (e.g. *P. megasperma*, syn. *P. sojae*), potatoes and tomatoes (e.g. *P. infestans*: late blight and brown rot) and deciduous trees (e.g. *P. ramorum* sudden oak death); *Plasmidiophora brassicae* (club-root) on cabbage, oilseed rape, radish and other plants; *Plasmopara* spp., e.g. *P. viticola* (peronospora of grapevines, downy mildew) on grapevines and *P. halstedii* on sunflowers; *Podosphaera* spp. (powdery mildew) on Rosaceae, hops, pomaceous fruit and soft fruit, e.g. *P. leucotricha* on apple; *Polymyxa* spp., e.g. on cereals, such as barley and wheat (*P. graminis*) and sugar beet (*P. betae*) and the viral diseases transmitted thereby; *Pseudocercospora herpotrichoides* (eyespot/stem break, teleomorph: *Tapesia yallundae*) on cereals. e.g. wheat or barley; *Pseudoperonospora* (downy mildew) on various plants, e.g. *P. cubensis* on cucumber species or *P. humili* on hops; *Pseudopezizicola tracheiphila* (angular leaf scorch, anamorph *Phialophora*) on grapevines; *Puccinia* spp. (rust dis-

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ease) on various plants, e.g. *P. triticina* (brown rust of wheat), *P. striiformis* (yellow rust), *P. hordei* (dwarf leaf rust), *P. graminis* (black rust) or *P. recondita* (brown rust of rye) on cereals, such as e.g. wheat, barley or rye. *P. kuehnii* on sugar cane and, e.g., on asparagus (e.g. *P. asparagi*); *Pyrenophora* (anamorph: *Drechslera*) *tritici-repentis* (speckled leaf blotch) on wheat or *P. teres* (net blotch) on barley; *Pyricularia* spp., e.g. *P. oryzae* (teleomorph: *Magnaporthe grisea*, rice blast) on rice and *P. grisea* on lawn and cereals; *Pythium* spp. (damping-off disease) on lawn, rice, corn, wheat, cotton, oilseed rape, sunflowers, sugar beet, vegetables and other plants (e.g. *P. ultimum* or *P. aphanidermatum*); *Ramularia* spp., e.g. *R. collo-cygni* (*Ramularia* leaf and lawn spot/physiological leaf spot) on barley and *R. beticola* on sugar beet; *Rhizoctonia* spp. on cotton, rice, potatoes, lawn, corn, oilseed rape, potatoes, sugar beet, vegetables and on various other plants, for example *R. solani* (root and stem rot) on soybeans, *R. solani* (sheath blight) on rice or *R. cerealis* (sharp eyespot) on wheat or barley; *Rhizopus stolonifer* (soft rot) on strawberries, carrots, cabbage, grapevines and tomato; *Rhynchosporium secalis* (leaf spot) on barley, rye and triticale; *Sarocladium oryzae* and *S. attenuatum* (sheath rot) on rice; *Sclerotinia* spp. (stem or white rot) on vegetable and field crops, such as oilseed rape, sunflowers (e.g. *Sclerotinia sclerotiorum*) and soybeans (e.g. *S. rolfsii*); *Septoria* spp. on various plants, e.g. *S. glycines* (leaf spot) on soybeans, *S. tritici* (*Septoria* leaf blotch) on wheat and *S.* (syn. *Stagonospora*) *nodorum* (leaf blotch and glume blotch) on cereals; *Ucinula* (syn. *Erysiphe*) *necator* (powdery mildew, anamorph: *Oidium tuckeri*) on grapevines; *Setosphaeria* spp. (leaf spot) on corn (e.g. *S. turcicum*, syn. *Helminthosporium turcicum*) and lawn; *Sphaelotheca* spp. (head smut) on corn, (e.g. *S. reiliana*: kernel smut), millet and sugar cane; *Sphaerotheca fuliginea* (powdery mildew) on cucumber species; *Spongospora subterranea* (powdery scab) on potatoes and the viral diseases transmitted thereby; *Stagonospora* spp. on cereals, e.g. *S. nodorum* (leaf blotch and glume blotch, teleomorph: *Leptosphaeria* [syn. *Phaeosphaeria*] *nodorum*) on wheat; *Synchytrium endobioticum* on potatoes (potato wart disease); *Taphrina* spp., e.g. *T. deformans* (curly-leaf disease) on peach and *T. pruni* (plum-pocket disease) on plums; *Thielaviopsis* spp. (black root rot) on tobacco, pome fruit, vegetable crops, soybeans and cotton, e.g. *T. basicola* (syn. *Chalara elegans*); *Tilletia* spp. (bunt or stinking smut) on cereals, such as e.g. *T. tritici* (syn. *T. caries*, wheat bunt) and *T. controversa* (dwarf bunt) on wheat; *Typhula incarnata* (gray snow mold) on barley or wheat; *Urocystis* spp., e.g. *U. occulta* (flag smut) on rye; *Uromyces* spp. (rust) on vegetable plants, such as beans (e.g. *U. appendiculatus*, syn. *U. phaseoli*) and sugar beet (e.g. *U. betae*); *Ustilago* spp. (loose smut) on cereals (e.g. *U. nuda* and *U. avenae*), corn (e.g. *U. maydis*: corn smut) and sugar cane; *Venturia* spp. (scab) on apples (e.g. *V. inaequalis*) and pears and *Verticillium* spp. (leaf and shoot wilt) on various plants, such as fruit trees and ornamental trees, grapevines, soft fruit, vegetable and field crops, such as e.g. *V. dahliae* on strawberries, oilseed rape, potatoes and tomatoes.

Plant Growth Regulation

In some cases, the inventive compositions can, at particular concentrations or application rates, also be used as herbicides, safeners, growth regulators or agents to improve plant properties, or as microbicides, for example as fungicides, antimycotics, bactericides, viricides (including compositions against viroids) or as compositions against MLO (Mycoplasma-like organisms) and RLO (Rickettsia-like organisms). If appropriate, they can also be used as intermediates or precursors for the synthesis of other active ingredients.

The inventive active combinations intervene in the metabolism of the plants and can therefore also be used as growth regulators.

Plant growth regulators may exert various effects on plants. The effect of the substances depends essentially on the time of application in relation to the developmental stage of the plant, and also on the amounts of active ingredient applied to the plants or their environment and on the type of application. In each case, growth regulators should have a particular desired effect on the crop plants.

Plant growth-regulating compounds can be used, for example, to inhibit the vegetative growth of the plants. Such inhibition of growth is of economic interest, for example, in the case of grasses, since it is thus possible to reduce the frequency of grass cutting in ornamental gardens, parks and sport facilities, on roadsides, at airports or in fruit crops. Also of significance is the inhibition of the growth of herbaceous and woody plants on roadsides and in the vicinity of pipelines or overhead cables, or quite generally in areas where vigorous plant growth is unwanted.

Also important is the use of growth regulators for inhibition of the longitudinal growth of cereal. This reduces or completely eliminates the risk of lodging of the plants prior to harvest. In addition, growth regulators in the case of cereals can strengthen the culm, which also counteracts lodging. The employment of growth regulators for shortening and strengthening culms allows the deployment of higher fertilizer volumes to increase the yield, without any risk of lodging of the cereal crop.

In many crop plants, inhibition of vegetative growth allows denser planting, and it is thus possible to achieve higher yields based on the soil surface. Another advantage of the smaller plants obtained in this way is that the crop is easier to cultivate and harvest.

Inhibition of the vegetative plant growth may also lead to enhanced yields because the nutrients and assimilates are of more benefit to flower and fruit formation than to the vegetative parts of the plants.

Frequently, growth regulators can also be used to promote vegetative growth. This is of great benefit when harvesting the vegetative plant parts. However, promoting vegetative growth may also promote generative growth in that more assimilates are formed, resulting in more or larger fruits.

In some cases, yield increases may be achieved by manipulating the metabolism of the plant, without any detectable changes in vegetative growth. In addition, growth regulators can be used to alter the composition of the plants, which in turn may result in an improvement in quality of the harvested products. For example, it is possible to increase the sugar content in sugar beet, sugar cane, pineapples and in citrus fruit, or to increase the protein content in soya or cereals. It is also possible, for example, to use growth regulators to inhibit the degradation of desirable ingredients, for example sugar in sugar beet or sugar cane, before or after harvest. It is also possible to positively influence the production or the elimination of secondary plant ingredients. One example is the stimulation of the flow of latex in rubber trees.

Under the influence of growth regulators, parthenocarpic fruits may be formed. In addition, it is possible to influence the sex of the flowers. It is also possible to produce sterile pollen, which is of great importance in the breeding and production of hybrid seed.

5 Use of growth regulators can control the branching of the plants. On the one hand, by breaking apical dominance, it is possible to promote the development of side shoots, which may be highly desirable particularly in the cultivation of ornamental plants, also in combination with an inhibition of growth. On the other hand, however, it is also possible to inhibit the growth of the side shoots. This effect is of particular interest, for example, in the cultivation of tobacco or in the cultivation of tomatoes.

10 Under the influence of growth regulators, the amount of leaves on the plants can be controlled such that defoliation of the plants is achieved at a desired time. Such defoliation plays a major role in the mechanical harvesting of cotton, but is also of interest for facilitating harvesting in other crops, for example in viticulture. Defoliation of the plants can also be undertaken to lower the transpiration of the plants before they are transplanted.

15 Growth regulators can likewise be used to regulate fruit dehiscence. On the one hand, it is possible to prevent premature fruit dehiscence. On the other hand, it is also possible to promote fruit dehiscence or even flower abortion to achieve a desired mass ("thinning"), in order to eliminate alternation. Alternation is understood to mean the characteristic of some fruit species, for endogenous reasons, to deliver very different yields from year to year. Finally, it is possible to use growth regulators at the time of harvest to reduce the forces required to detach the fruits, in order to allow mechanical harvesting or to facilitate manual harvesting.
20 ing.

Growth regulators can also be used to achieve faster or else delayed ripening of the harvested material before or after harvest. This is particularly advantageous as it allows optimal adjustment to the requirements of the market. Moreover, growth regulators in some cases can improve the fruit colour. In addition, growth regulators can also be used to concentrate maturation within a certain period of time. This establishes the prerequisites for complete mechanical or manual harvesting in a single operation, for example in the case of tobacco, tomatoes or coffee.
25

By using growth regulators, it is additionally possible to influence the resting of seed or buds of the plants, such that plants such as pineapple or ornamental plants in nurseries, for example, germinate, sprout or flower at a time when they are normally not inclined to do so. In areas where there is a risk of frost, it may be desirable to delay budding or germination of seeds with the aid of growth regulators, in order to avoid damage resulting from late frosts.
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Finally, growth regulators can induce resistance of the plants to frost, drought or high salinity of the soil. This allows the cultivation of plants in regions which are normally unsuitable for this purpose.

Resistance Induction / Plant Health and other effects

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The active combinations according to the invention also exhibit a potent strengthening effect in plants. Accordingly, they can be used for mobilizing the defences of the plant against attack by undesirable microorganisms.

5 Plant-strengthening (resistance-inducing) substances are to be understood as meaning, in the present context, those substances which are capable of stimulating the defence system of plants in such a way that the treated plants, when subsequently inoculated with undesirable microorganisms, develop a high degree of resistance to these microorganisms.

The active combinations according to the invention are also suitable for increasing the yield of crops. In addition, they show reduced toxicity and are well tolerated by plants.

10 Further, in context with the present invention plant physiology effects comprise the following:

Abiotic stress tolerance, comprising temperature tolerance, drought tolerance and recovery after drought stress, water use efficiency (correlating to reduced water consumption), flood tolerance, ozone stress and UV tolerance, tolerance towards chemicals like heavy metals, salts, pesticides (safener) etc..

15 Biotic stress tolerance, comprising increased fungal resistance and increased resistance against nematodes, viruses and bacteria. In context with the present invention, biotic stress tolerance preferably comprises increased fungal resistance and increased resistance against nematodes

Increased plant vigor, comprising plant health / plant quality and seed vigor, reduced stand failure, improved appearance, increased recovery, improved greening effect and improved photosynthetic efficiency.

Effects on plant hormones and/or functional enzymes.

20 Effects on growth regulators (promoters), comprising earlier germination, better emergence, more developed root system and/or improved root growth, increased ability of tillering, more productive tillers, earlier flowering, increased plant height and/or biomass, shorting of stems, improvements in shoot growth, number of kernels/ear, number of ears/m², number of stolons and/or number of flowers, enhanced harvest index, bigger leaves, less dead basal leaves, improved phyllotaxy, earlier maturation / earlier fruit finish,
25 homogenous riping, increased duration of grain filling, better fruit finish, bigger fruit/vegetable size, sprouting resistance and reduced lodging.

Increased yield, referring to total biomass per hectare, yield per hectare, kernel/fruit weight, seed size and/or hectolitre weight as well as to increased product quality, comprising:

30 improved processability relating to size distribution (kernel, fruit, etc.), homogenous riping, grain moisture, better milling, better vinification, better brewing, increased juice yield, harvestability, digestibility, sedimentation value, falling number, pod stability, storage stability, improved fiber length/strength/uniformity, increase of milk and/or meat quality of silage fed animals, adaption to cooking and frying;

further comprising improved marketability relating to improved fruit/grain quality, size distribution (kernel, fruit, etc.), increased storage / shelf-life, firmness / softness, taste (aroma, texture, etc.), grade (size, shape, number of berries, etc.), number of berries/fruits per bunch, crispness, freshness, coverage with wax, frequency of physiological disorders, colour, etc.;

- 5 further comprising increased desired ingredients such as e.g. protein content, fatty acids, oil content, oil quality, aminoacid composition, sugar content, acid content (pH), sugar/acid ratio (Brix), polyphenols, starch content, nutritional quality, gluten content/index, energy content, taste, etc.;

and further comprising decreased undesired ingredients such as e.g. less mycotoxines, less aflatoxines, geosmin level, phenolic aromas, lacchase, polyphenol oxidases and peroxidases, nitrate content etc.

- 10 Sustainable agriculture, comprising nutrient use efficiency, especially nitrogen (N)-use efficiency, phosphorus (P)-use efficiency, water use efficiency, improved transpiration, respiration and/or CO₂ assimilation rate, better nodulation, improved Ca-metabolism etc..

- 15 Delayed senescence, comprising improvement of plant physiology which is manifested, for example, in a longer grain filling phase, leading to higher yield, a longer duration of green leaf colouration of the plant and thus comprising colour (greening), water content, dryness etc.. Accordingly, in the context of the present invention, it has been found that the specific inventive application of the active compound combination makes it possible to prolong the green leaf area duration, which delays the maturation (senescence) of the plant. The main advantage to the farmer is a longer grain filling phase leading to higher yield. There is also an advantage to the farmer on the basis of greater flexibility in the harvesting time.

- 20 Therein "sedimentation value" is a measure for protein quality and describes according to Zeleny (Zeleny value) the degree of sedimentation of flour suspended in a lactic acid solution during a standard time interval. This is taken as a measure of the baking quality. Swelling of the gluten fraction of flour in lactic acid solution affects the rate of sedimentation of a flour suspension. Both a higher gluten content and a better gluten quality give rise to slower sedimentation and higher Zeleny test values. The sedimentation value of
25 flour depends on the wheat protein composition and is mostly correlated to the protein content, the wheat hardness, and the volume of pan and hearth loaves. A stronger correlation between loaf volume and Zeleny sedimentation volume compared to SDS sedimentation volume could be due to the protein content influencing both the volume and Zeleny value (*Czech J. Food Sci. Vol. 21, No. 3: 91-96, 2000*).

- Further the "falling number" as mentioned herein is a measure for the baking quality of cereals, especially
30 of wheat. The falling number test indicates that sprout damage may have occurred. It means that changes to the physical properties of the starch portion of the wheat kernel has already happened. Therein, the falling number instrument analyzes viscosity by measuring the resistance of a flour and water paste to a falling plunger. The time (in seconds) for this to happen is known as the falling number. The falling number results are recorded as an index of enzyme activity in a wheat or flour sample and results are expressed in
35 time as seconds. A high falling number (for example, above 300 seconds) indicates minimal enzyme activ-

ity and sound quality wheat or flour. A low falling number (for example, below 250 seconds) indicates substantial enzyme activity and sprout-damaged wheat or flour.

The term “more developed root system” / “improved root growth” refers to longer root system, deeper root growth, faster root growth, higher root dry/fresh weight, higher root volume, larger root surface area, bigger root diameter, higher root stability, more root branching, higher number of root hairs, and/or more root tips and can be measured by analyzing the root architecture with suitable methodologies and Image analysis programmes (e.g. WinRhizo).

The term “crop water use efficiency” refers technically to the mass of agriculture produce per unit water consumed and economically to the value of product(s) produced per unit water volume consumed and can e.g. be measured in terms of yield per ha, biomass of the plants, thousand-kernel mass, and the number of ears per m².

The term “nitrogen-use efficiency” refers technically to the mass of agriculture produce per unit nitrogen consumed and economically to the value of product(s) produced per unit nitrogen consumed, reflecting uptake and utilization efficiency.

Improvement in greening / improved colour and improved photosynthetic efficiency as well as the delay of senescence can be measured with well-known techniques such as a HandyPea system (Hansatech). Fv/Fm is a parameter widely used to indicate the maximum quantum efficiency of photosystem II (PSII). This parameter is widely considered to be a selective indication of plant photosynthetic performance with healthy samples typically achieving a maximum Fv/Fm value of approx. 0.85. Values lower than this will be observed if a sample has been exposed to some type of biotic or abiotic stress factor which has reduced the capacity for photochemical quenching of energy within PSII. Fv/Fm is presented as a ratio of variable fluorescence (Fv) over the maximum fluorescence value (Fm). The Performance Index is essentially an indicator of sample vitality. (See e.g. *Advanced Techniques in Soil Microbiology*, 2007, 11, 319-341; *Applied Soil Ecology*, 2000, 15, 169-182.)

The improvement in greening / improved colour and improved photosynthetic efficiency as well as the delay of senescence can also be assessed by measurement of the net photosynthetic rate (Pn), measurement of the chlorophyll content, e.g. by the pigment extraction method of Ziegler and Ehle, measurement of the photochemical efficiency (Fv/Fm ratio), determination of shoot growth and final root and/or canopy biomass, determination of tiller density as well as of root mortality.

Within the context of the present invention preference is given to improving plant physiology effects which are selected from the group comprising: enhanced root growth / more developed root system, improved greening, improved water use efficiency (correlating to reduced water consumption), improved nutrient use efficiency, comprising especially improved nitrogen (N)-use efficiency, delayed senescence and enhanced yield.

Within the enhancement of yield preference is given as to an improvement in the sedimentation value and the falling number as well as to the improvement of the protein and sugar content – especially with plants selected from the group of cereals (preferably wheat).

- Preferably the novel use of the fungicidal compositions of the present invention relates to a combined use of a) preventively and/or curatively controlling pathogenic fungi and/or nematodes, with or without resistance management, and b) at least one of enhanced root growth, improved greening, improved water use efficiency, delayed senescence and enhanced yield. From group b) enhancement of root system, water use efficiency and N-use efficiency is particularly preferred.

Seed Treatment

- 10 The invention further comprises a method for treating seed.

The invention further relates to seed which has been treated by one of the methods described in the previous paragraph. The inventive seeds are employed in methods for the protection of seed from unwanted microorganisms. In these methods, seed treated with at least one inventive active ingredient is used.

- 15 The inventive compositions are also suitable for treating seed. A large part of the damage to crop plants caused by harmful organisms is triggered by the infection of the seed during storage or after sowing, and also during and after germination of the plant. This phase is particularly critical since the roots and shoots of the growing plant are particularly sensitive, and even minor damage may result in the death of the plant. There is therefore a great interest in protecting the seed and the germinating plant by using appropriate compositions.

- 20 The control of phytopathogenic fungi by treating the seed of plants has been known for a long time and is the subject of constant improvements. However, the treatment of seed entails a series of problems which cannot always be solved in a satisfactory manner. For instance, it is desirable to develop methods for protecting the seed and the germinating plant, which dispense with, or at least significantly reduce, the additional deployment of crop protection compositions after planting or after emergence of the plants. It is also desirable to optimize the amount of the active ingredient used so as to provide the best possible protection for the seed and the germinating plant from attack by phytopathogenic fungi, but without damaging the plant itself by the active ingredient employed. In particular, methods for the treatment of seed should also take account of the intrinsic fungicidal properties of transgenic plants in order to achieve optimal protection of the seed and the germinating plant with a minimum expenditure of crop protection compositions.

- 30 The present invention therefore also relates to a method for protection of seed and germinating plants from attack by phytopathogenic fungi, by treating the seed with an inventive composition. The invention likewise relates to the use of the inventive compositions for treatment of seed to protect the seed and the germinating plant from phytopathogenic fungi. The invention further relates to seed which has been treated with an inventive composition for protection from phytopathogenic fungi.

The control of phytopathogenic fungi which damage plants post-emergence is effected primarily by treating the soil and the above-ground parts of plants with crop protection compositions. Owing to the concerns regarding a possible influence of the crop protection compositions on the environment and the health of humans and animals, there are efforts to reduce the amount of active ingredients deployed.

- 5 One of the advantages of the present invention is that the particular systemic properties of the inventive active ingredients and compositions mean that treatment of the seed with these active ingredients and compositions not only protects the seed itself, but also the resulting plants after emergence, from phytopathogenic fungi. In this way, the immediate treatment of the crop at the time of sowing or shortly thereafter can be dispensed with.
- 10 It is likewise considered to be advantageous that the inventive compositions can especially also be used with transgenic seed, in which case the plant growing from this seed is capable of expressing a protein which acts against pests. By virtue of the treatment of such seed with the inventive active ingredients or compositions, merely the expression of the protein, for example an insecticidal protein, can control certain pests. Surprisingly, a further synergistic effect can be observed in this case, which additionally increases
- 15 the effectiveness for protection against attack by pests.

The inventive compositions are suitable for protecting seed of any plant variety which is used in agriculture, in greenhouses, in forests or in horticulture and viticulture. In particular, this is the seed of cereals (such as wheat, barley, rye, triticale, sorghum/millet and oats), maize, cotton, soya beans, rice, potatoes, sunflower, bean, coffee, beet (for example sugar beet and fodder beet), peanut, oilseed rape, poppy, olive,

20 coconut, cocoa, sugar cane, tobacco, vegetables (such as tomato, cucumbers, onions and lettuce), turf and ornamentals (see also below). The treatment of the seed of cereals (such as wheat, barley, rye, triticale and oats), maize and rice is of particular significance.

- 25 As also described below, the treatment of transgenic seed with the inventive active ingredients or compositions is of particular significance. This relates to the seed of plants containing at least one heterologous gene which enables the expression of a polypeptide or protein having insecticidal properties. The heterologous gene in transgenic seed can originate, for example, from microorganisms of the species *Bacillus*, *Rhizobium*, *Pseudomonas*, *Serratia*, *Trichoderma*, *Clavibacter*, *Glomus* or *Gliocladium*. This heterologous gene preferably originates from *Bacillus* sp., in which case the gene product is effective against the European maize borer and/or the Western maize rootworm. The heterologous gene more preferably originates
- 30 from *Bacillus thuringiensis*.

In the context of the present invention, the inventive composition is applied to the seed alone or in a suitable formulation. Preferably, the seed is treated in a state in which it is sufficiently stable for no damage to occur in the course of treatment. In general, the seed can be treated at any time between harvest and sowing. It is customary to use seed which has been separated from the plant and freed from cobs, shells, stalks,

35 coats, hairs or the flesh of the fruits. For example, it is possible to use seed which has been harvested,

cleaned and dried down to a moisture content of less than 15 % by weight. Alternatively, it is also possible to use seed which, after drying, for example, has been treated with water and then dried again.

When treating the seed, care must generally be taken that the amount of the inventive composition applied to the seed and/or the amount of further additives is selected such that the germination of the seed is not impaired, or that the resulting plant is not damaged. This has to be borne in mind in particular in the case of active ingredients which can have phytotoxic effects at certain application rates.

The inventive compositions can be applied directly, i.e. without containing any other components and without having been diluted. In general, it is preferable to apply the compositions to the seed in the form of a suitable formulation. Suitable formulations and methods for seed treatment are known to those skilled in the art and are described, for example, in the following documents: US 4,272,417, US 4,245,432, US 4,808,430, US 5,876,739, US 2003/0176428 A1, WO 2002/080675, WO 2002/028186.

The active ingredients usable in accordance with the invention can be converted to the customary seed dressing formulations, such as solutions, emulsions, suspensions, powders, foams, slurries or other coating compositions for seed, and also ULV formulations.

These formulations are prepared in a known manner, by mixing the active ingredients with customary additives, for example customary extenders and also solvents or diluents, dyes, wetting agents, dispersants, emulsifiers, antifoams, preservatives, secondary thickeners, adhesives, gibberellins and also water.

Useful dyes which may be present in the seed dressing formulations usable in accordance with the invention are all dyes which are customary for such purposes. It is possible to use either pigments, which are sparingly soluble in water, or dyes, which are soluble in water. Examples include the dyes known by the names Rhodamine B, C.I. Pigment Red 112 and C.I. Solvent Red 1.

Useful wetting agents which may be present in the seed dressing formulations usable in accordance with the invention are all substances which promote wetting and which are conventionally used for the formulation of active agrochemical ingredients. Preference is given to using alkyl naphthalenesulphonates, such as diisopropyl or diisobutyl naphthalenesulphonates.

Useful dispersants and/or emulsifiers which may be present in the seed dressing formulations usable in accordance with the invention are all nonionic, anionic and cationic dispersants conventionally used for the formulation of active agrochemical ingredients. Usable with preference are nonionic or anionic dispersants or mixtures of nonionic or anionic dispersants. Suitable nonionic dispersants include especially ethylene oxide/propylene oxide block polymers, alkylphenol polyglycol ethers and tristyrylphenol polyglycol ether, and the phosphated or sulphated derivatives thereof. Suitable anionic dispersants are especially lignosulphonates, polyacrylic acid salts and arylsulphonate/formaldehyde condensates.

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Antifoams which may be present in the seed dressing formulations usable in accordance with the invention are all foam-inhibiting substances conventionally used for the formulation of active agrochemical ingredients. Silicone antifoams and magnesium stearate can be used with preference.

Preservatives which may be present in the seed dressing formulations usable in accordance with the invention are all substances usable for such purposes in agrochemical compositions. Examples include dichlorophene and benzyl alcohol hemiformal.

Secondary thickeners which may be present in the seed dressing formulations usable in accordance with the invention are all substances usable for such purposes in agrochemical compositions. Preferred examples include cellulose derivatives, acrylic acid derivatives, xanthan, modified clays and finely divided silica.

Adhesives which may be present in the seed dressing formulations usable in accordance with the invention are all customary binders usable in seed dressing products. Preferred examples include polyvinylpyrrolidone, polyvinyl acetate, polyvinyl alcohol and tylose.

The gibberellins which may be present in the seed dressing formulations usable in accordance with the invention may preferably be gibberellins A1, A3 (= gibberellic acid), A4 and A7; particular preference is given to using gibberellic acid. The gibberellins are known (cf. R. Wegler "Chemie der Pflanzenschutz- und Schädlingsbekämpfungsmittel" [Chemistry of the Crop Protection Compositions and Pesticides], vol. 2, Springer Verlag, 1970, p. 401-412).

The seed dressing formulations usable in accordance with the invention can be used, either directly or after previously having been diluted with water, for the treatment of a wide range of different seed, including the seed of transgenic plants. In this case, additional synergistic effects may also occur in interaction with the substances formed by expression.

For treatment of seed with the seed dressing formulations usable in accordance with the invention, or the preparations prepared therefrom by adding water, all mixing units usable customarily for the seed dressing are useful. Specifically, the procedure in the seed dressing is to place the seed into a mixer, to add the particular desired amount of seed dressing formulations, either as such or after prior dilution with water, and to mix everything until the formulation is distributed homogeneously on the seed. If appropriate, this is followed by a drying process.

Mycotoxins

In addition, the inventive treatment can reduce the mycotoxin content in the harvested material and the foods and feeds prepared therefrom. Mycotoxins include particularly, but not exclusively, the following: deoxynivalenol (DON), nivalenol, 15-Ac-DON, 3-Ac-DON, T2- and HT2-toxin, fumonisins, zearalenon, moniliformin, fusarin, diacetoxyscirpenol (DAS), beauvericin, enniatin, fusaroproliferin, fusarenol, ochratoxins, patulin, ergot alkaloids and aflatoxins which can be produced, for example, by the following

fungi: *Fusarium* spec., such as *F. acuminatum*, *F. asiaticum*, *F. avenaceum*, *F. crookwellense*, *F. culmorum*, *F. graminearum* (*Gibberella zeae*), *F. equiseti*, *F. fujikuroi*, *F. musarum*, *F. oxysporum*, *F. proliferatum*, *F. poae*, *F. pseudograminearum*, *F. sambucinum*, *F. scirpi*, *F. semitectum*, *F. solani*, *F. sporotrichoides*, *F. langsethiae*, *F. subglutinans*, *F. tricinctum*, *F. verticillioides* etc., and also by *Aspergillus* spec., such as *A. flavus*, *A. parasiticus*, *A. nomius*, *A. ochraceus*, *A. clavatus*, *A. terreus*, *A. versicolor*, *Penicillium* spec., such as *P. verrucosum*, *P. viridicatum*, *P. citrinum*, *P. expansum*, *P. claviforme*, *P. roqueforti*, *Claviceps* spec., such as *C. purpurea*, *C. fusiformis*, *C. paspali*, *C. africana*, *Stachybotrys* spec. and others.

Material Protection

- 10 The inventive compositions can also be used in the protection of materials, for protection of industrial materials against attack and destruction by unwanted microorganisms, for example fungi and insects.

In addition, the inventive combinations can be used as antifouling compositions, alone or in combinations with other active ingredients.

- 15 Industrial materials in the present context are understood to mean inanimate materials which have been prepared for use in industry. For example, industrial materials which are to be protected by inventive active ingredients from microbial alteration or destruction may be adhesives, glues, paper, wallpaper and board/cardboard, textiles, carpets, leather, wood, fibers and tissues, paints and plastic articles, cooling lubricants and other materials which can be infected with or destroyed by microorganisms. Parts of production plants and buildings, for example cooling-water circuits, cooling and heating systems and ventilation and air-conditioning units, which may be impaired by the proliferation of microorganisms may also be mentioned within the scope of the materials to be protected. Industrial materials within the scope of the present invention preferably include adhesives, sizes, paper and card, leather, wood, paints, cooling lubricants and heat transfer fluids, more preferably wood.

- 25 The inventive active combinations may prevent adverse effects, such as rotting, decay, discoloration, decoloration or formation of mould.

- 30 In the case of treatment of wood the compositions according to the invention may also be used against fungal diseases liable to grow on or inside timber. The term "timber" means all types of species of wood, and all types of working of this wood intended for construction, for example solid wood, high-density wood, laminated wood, and plywood. The method for treating timber according to the invention mainly consists in contacting one or more compounds according to the invention or a composition according to the invention; this includes for example direct application, spraying, dipping, injection or any other suitable means.

- 35 In addition, the inventive combinations can be used to protect objects which come into contact with salt-water or brackish water, especially hulls, screens, nets, buildings, moorings and signalling systems, from fouling.

- The inventive method for controlling unwanted fungi can also be employed for protecting storage goods. Storage goods are understood to mean natural substances of vegetable or animal origin or processed products thereof which are of natural origin, and for which long-term protection is desired. Storage goods of vegetable origin, for example plants or plant parts, such as stems, leaves, tubers, seeds, fruits, grains, can be protected freshly harvested or after processing by (pre)drying, moistening, comminuting, grinding, pressing or roasting. Storage goods also include timber, both unprocessed, such as construction timber, electricity poles and barriers, or in the form of finished products, such as furniture. Storage goods of animal origin are, for example, hides, leather, furs and hairs. The inventive active ingredients may prevent adverse effects, such as rotting, decay, discoloration, decoloration or formation of mould.
- Microorganisms capable of degrading or altering the industrial materials include, for example, bacteria, fungi, yeasts, algae and slime organisms. The inventive active ingredients preferably act against fungi, especially moulds, wood-discoloring and wood-destroying fungi (*Ascomycetes*, *Basidiomycetes*, *Deuteromycetes* and *Zygomycetes*), and against slime organisms and algae. Examples include microorganisms of the following genera: *Alternaria*, such as *Alternaria tenuis*; *Aspergillus*, such as *Aspergillus niger*, *Chaetomium*, such as *Chaetomium globosum*; *Coniophora*, such as *Coniophora puetana*; *Lentinus*, such as *Lentinus tigrinus*; *Penicillium*, such as *Penicillium glaucum*; *Polyporus*, such as *Polyporus versicolor*; *Aureobasidium*, such as *Aureobasidium pullulans*; *Sclerophoma*, such as *Sclerophoma pityophila*; *Trichoderma*, such as *Trichoderma viride*; *Ophiostoma* spp., *Ceratocystis* spp., *Humicola* spp., *Petriella* spp., *Trichurus* spp., *Coriolus* spp., *Gloeophyllum* spp., *Pleurotus* spp., *Poria* spp., *Serpula* spp. and *Tyromyces* spp., *Cladosporium* spp., *Paecilomyces* spp., *Mucor* spp., *Escherichia*, such as *Escherichia coli*; *Pseudomonas*, such as *Pseudomonas aeruginosa*; *Staphylococcus*, such as *Staphylococcus aureus*, *Candida* spp. and *Saccharomyces* spp., such as *Saccharomyces cerevisiae*.

Antimycotic Activity

- In addition, the inventive combinations also have very good antimycotic activity. They have a very broad antimycotic activity spectrum, especially against dermatophytes and yeasts, moulds and diphasic fungi (for example against *Candida* species, such as *C. albicans*, *C. glabrata*), and *Epidermophyton floccosum*, *Aspergillus* species, such as *A. niger* and *A. fumigatus*, *Trichophyton* species, such as *T. mentagrophytes*, *Microsporon* species such as *M. canis* and *M. audouinii*. The list of these fungi by no means constitutes a restriction of the mycotic spectrum covered, and is merely of illustrative character.
- The inventive combinations can therefore be used both in medical and in non-medical applications.

GMO

- As already mentioned above, it is possible to treat all plants and their parts in accordance with the invention. In a preferred embodiment, wild plant species and plant cultivars, or those obtained by conventional biological breeding methods, such as crossing or protoplast fusion, and also parts thereof, are treated. In a further preferred embodiment, transgenic plants and plant cultivars obtained by genetic engineering meth-

ods, if appropriate in combination with conventional methods (Genetically Modified Organisms), and parts thereof are treated. The terms "parts" or "parts of plants" or "plant parts" have been explained above. More preferably, plants of the plant cultivars which are commercially available or are in use are treated in accordance with the invention. Plant cultivars are understood to mean plants which have new properties ("traits") and have been obtained by conventional breeding, by mutagenesis or by recombinant DNA techniques. They can be cultivars, varieties, bio- or genotypes.

The method of treatment according to the invention can be used in the treatment of genetically modified organisms (GMOs), e.g. plants or seeds. Genetically modified plants (or transgenic plants) are plants of which a heterologous gene has been stably integrated into genome. The expression "heterologous gene" essentially means a gene which is provided or assembled outside the plant and when introduced in the nuclear, chloroplastic or mitochondrial genome gives the transformed plant new or improved agronomic or other properties by expressing a protein or polypeptide of interest or by downregulating or silencing other gene(s) which are present in the plant (using for example, antisense technology, cosuppression technology, RNA interference – RNAi – technology or microRNA – miRNA - technology). A heterologous gene that is located in the genome is also called a transgene. A transgene that is defined by its particular location in the plant genome is called a transformation or transgenic event.

Depending on the plant species or plant cultivars, their location and growth conditions (soils, climate, vegetation period, diet), the treatment according to the invention may also result in superadditive ("synergistic") effects. Thus, for example, reduced application rates and/or a widening of the activity spectrum and/or an increase in the activity of the active compounds and compositions which can be used according to the invention, better plant growth, increased tolerance to high or low temperatures, increased tolerance to drought or to water or soil salt content, increased flowering performance, easier harvesting, accelerated maturation, higher harvest yields, bigger fruits, larger plant height, greener leaf color, earlier flowering, higher quality and/or a higher nutritional value of the harvested products, higher sugar concentration within the fruits, better storage stability and/or processability of the harvested products are possible, which exceed the effects which were actually to be expected.

At certain application rates, the combinations according to the invention may also have a strengthening effect in plants. Accordingly, they are also suitable for mobilizing the defense system of the plant against attack by unwanted microorganisms. This may, if appropriate, be one of the reasons of the enhanced activity of the combinations according to the invention, for example against fungi. Plant-strengthening (resistance-inducing) substances are to be understood as meaning, in the present context, those substances or combinations of substances which are capable of stimulating the defense system of plants in such a way that, when subsequently inoculated with unwanted microorganisms, the treated plants display a substantial degree of resistance to these microorganisms. In the present case, unwanted microorganisms are to be understood as meaning phytopathogenic fungi, bacteria and viruses. Thus, the substances according to the invention can be employed for protecting plants against attack by the abovementioned pathogens within a certain period of time after the treatment. The period of time within which protection is effected generally

extends from 1 to 10 days, preferably 1 to 7 days, after the treatment of the plants with the active compounds.

Plants and plant cultivars which are preferably to be treated according to the invention include all plants which have genetic material which impart particularly advantageous, useful traits to these plants (whether
5 obtained by breeding and/or biotechnological means).

Plants and plant cultivars which are also preferably to be treated according to the combinations are resistant against one or more biotic stresses, i.e. said plants show a better defense against animal and microbial pests, such as against nematodes, insects, mites, phytopathogenic fungi, bacteria, viruses and/or viroids.

10 Examples of nematode or insect resistant plants are described in e.g. U.S. Patent Applications 11/765,491, 11/765,494, 10/926,819, 10/782,020, 12/032,479, 10/783,417, 10/782,096, 11/657,964, 12/192,904, 11/396,808, 12/166,253, 12/166,239, 12/166,124, 12/166,209, 11/762,886, 12/364,335, 11/763,947, 12/252,453, 12/209,354, 12/491,396, 12/497,221, 12/644,632, 12/646,004, 12/701,058, 12/718,059, 12/721,595, 12/638,591.

15 Plants and plant cultivars which may also be treated according to the invention are those plants which are resistant to one or more abiotic stresses. Abiotic stress conditions may include, for example, drought, cold temperature exposure, heat exposure, osmotic stress, flooding, increased soil salinity, increased mineral exposure, ozone exposure, high light exposure, limited availability of nitrogen nutrients, limited availability of phosphorus nutrients, shade avoidance.

20 Plants and plant cultivars which may also be treated according to the invention, are those plants characterized by enhanced yield characteristics. Increased yield in said plants can be the result of, for example, improved plant physiology, growth and development, such as water use efficiency, water retention efficiency, improved nitrogen use, enhanced carbon assimilation, improved photosynthesis, increased germination efficiency and accelerated maturation. Yield can furthermore be affected by improved plant architecture
25 (under stress and non-stress conditions), including but not limited to, early flowering, flowering control for hybrid seed production, seedling vigor, plant size, internode number and distance, root growth, seed size, fruit size, pod size, pod or ear number, seed number per pod or ear, seed mass, enhanced seed filling, reduced seed dispersal, reduced pod dehiscence and lodging resistance. Further yield traits include seed composition, such as carbohydrate content, protein content, oil content and composition, nutritional value,
30 reduction in anti-nutritional compounds, improved processability and better storage stability.

Plants that may be treated according to the invention are hybrid plants that already express the characteristic of heterosis or hybrid vigor which results in generally higher yield, vigor, health and resistance towards biotic and abiotic stresses). Such plants are typically made by crossing an inbred male-sterile parent line (the female parent) with another inbred male-fertile parent line (the male parent). Hybrid seed is typically
35 harvested from the male sterile plants and sold to growers. Male sterile plants can sometimes (e.g. in corn)

- be produced by detasseling, i.e. the mechanical removal of the male reproductive organs (or males flowers) but, more typically, male sterility is the result of genetic determinants in the plant genome. In that case, and especially when seed is the desired product to be harvested from the hybrid plants it is typically useful to ensure that male fertility in the hybrid plants is fully restored. This can be accomplished by ensuring that the male parents have appropriate fertility restorer genes which are capable of restoring the male fertility in hybrid plants that contain the genetic determinants responsible for male-sterility. Genetic determinants for male sterility may be located in the cytoplasm. Examples of cytoplasmic male sterility (CMS) were for instance described in *Brassica* species (WO 92/05251, WO 95/09910, WO 98/27806, WO 05/002324, WO 06/021972 and US 6,229,072). However, genetic determinants for male sterility can also be located in the nuclear genome. Male sterile plants can also be obtained by plant biotechnology methods such as genetic engineering. A particularly useful means of obtaining male-sterile plants is described in WO 89/10396 in which, for example, a ribonuclease such as barnase is selectively expressed in the tapetum cells in the stamens. Fertility can then be restored by expression in the tapetum cells of a ribonuclease inhibitor such as barstar (e.g. WO 91/02069).
- 15 Plants or plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may be treated according to the invention are herbicide-tolerant plants, i.e. plants made tolerant to one or more given herbicides. Such plants can be obtained either by genetic transformation, or by selection of plants containing a mutation imparting such herbicide tolerance.

- Herbicide-resistant plants are for example glyphosate-tolerant plants, i.e. plants made tolerant to the herbicide glyphosate or salts thereof. Plants can be made tolerant to glyphosate through different means. For example, glyphosate-tolerant plants can be obtained by transforming the plant with a gene encoding the enzyme 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS). Examples of such EPSPS genes are the AroA gene (mutant CT7) of the bacterium *Salmonella typhimurium* (*Science* **1983**, 221, 370-371), the CP4 gene of the bacterium *Agrobacterium* sp. (*Curr. Topics Plant Physiol.* **1992**, 7, 139-145), the genes encoding a Petunia EPSPS (*Science* **1986**, 233, 478-481), a Tomato EPSPS (*J. Biol. Chem.* **1988**, 263, 4280-4289), or an Eleusine EPSPS (WO 01/66704). It can also be a mutated EPSPS as described in for example EP 0837944, WO 00/66746, WO 00/66747 or WO 02/26995. Glyphosate-tolerant plants can also be obtained by expressing a gene that encodes a glyphosate oxido-reductase enzyme as described in US 5,776,760 and US 5,463,175. Glyphosate-tolerant plants can also be obtained by expressing a gene that encodes a glyphosate acetyl transferase enzyme as described in for example WO 02/036782, WO 03/092360, WO 2005/012515 and WO 2007/024782. Glyphosate-tolerant plants can also be obtained by selecting plants containing naturally-occurring mutations of the above-mentioned genes, as described in for example WO 01/024615 or WO 03/013226. Plants expressing EPSPS genes that confer glyphosate tolerance are described in e.g. U.S. Patent Applications 11/517,991, 10/739,610, 12/139,408, 12/352,532, 11/312,866, 11/315,678, 12/421,292, 11/400,598, 11/651,752, 11/681,285, 11/605,824, 12/468,205, 11/760,570, 11/762,526, 11/769,327, 11/769,255, 11/943801 or 12/362,774. Plants comprising other genes that confer glyphosate tolerance, such as decarboxylase genes, are described in e.g. U.S. Patent Applications 11/588,811, 11/185,342, 12/364,724, 11/185,560 or 12/423,926.

Other herbicide resistant plants are for example plants that are made tolerant to herbicides inhibiting the enzyme glutamine synthase, such as bialaphos, phosphinothricin or glufosinate. Such plants can be obtained by expressing an enzyme detoxifying the herbicide or a mutant glutamine synthase enzyme that is resistant to inhibition, e.g. described in U.S. Patent Application 11/760,602. One such efficient detoxifying enzyme is an enzyme encoding a phosphinothricin acetyltransferase (such as the bar or pat protein from *Streptomyces* species). Plants expressing an exogenous phosphinothricin acetyltransferase are for example described in U.S. Patents 5,561,236; 5,648,477; 5,646,024; 5,273,894; 5,637,489; 5,276,268; 5,739,082; 5,908,810 and 7,112,665.

Further herbicide-tolerant plants are also plants that are made tolerant to the herbicides inhibiting the enzyme hydroxyphenylpyruvatedioxygenase (HPPD). HPPD is an enzyme that catalyze the reaction in which para-hydroxyphenylpyruvate (HPP) is transformed into homogentisate. Plants tolerant to HPPD-inhibitors can be transformed with a gene encoding a naturally-occurring resistant HPPD enzyme, or a gene encoding a mutated or chimeric HPPD enzyme as described in WO 96/38567, WO 99/24585, WO 99/24586, WO 09/144079, WO 02/046387, or US 6,768,044. Tolerance to HPPD-inhibitors can also be obtained by transforming plants with genes encoding certain enzymes enabling the formation of homogentisate despite the inhibition of the native HPPD enzyme by the HPPD-inhibitor. Such plants and genes are described in WO 99/34008 and WO 02/36787. Tolerance of plants to HPPD inhibitors can also be improved by transforming plants with a gene encoding an enzyme having prephenate deshydrogenase (PDH) activity in addition to a gene encoding an HPPD-tolerant enzyme, as described in WO 04/024928. Further, plants can be made more tolerant to HPPD-inhibitor herbicides by adding into their genome a gene encoding an enzyme capable of metabolizing or degrading HPPD inhibitors, such as the CYP450 enzymes shown in WO 2007/103567 and WO 2008/150473.

Still further herbicide resistant plants are plants that are made tolerant to acetolactate synthase (ALS) inhibitors. Known ALS-inhibitors include, for example, sulfonylurea, imidazolinone, triazolopyrimidines, pyrimidinyoxy(thio)benzoates, and/or sulfonylaminocarbonyltriazolinone herbicides. Different mutations in the ALS enzyme (also known as acetohydroxyacid synthase, AHAS) are known to confer tolerance to different herbicides and groups of herbicides, as described for example in Tranel and Wright (*Weed Science* **2002**, *50*, 700-712), but also, in U.S. Patents 5,605,011, 5,378,824, 5,141,870, and 5,013,659. The production of sulfonylurea-tolerant plants and imidazolinone-tolerant plants is described in U.S. Patents 5,605,011; 5,013,659; 5,141,870; 5,767,361; 5,731,180; 5,304,732; 4,761,373; 5,331,107; 5,928,937; and 5,378,824; and WO 96/33270. Other imidazolinone-tolerant plants are also described in for example WO 2004/040012, WO 2004/106529, WO 2005/020673, WO 2005/093093, WO 2006/007373, WO 2006/015376, WO 2006/024351, and WO 2006/060634. Further sulfonylurea- and imidazolinone-tolerant plants are also described in for example WO 2007/024782 and U.S. Patent Application 61/288958.

Other plants tolerant to imidazolinone and/or sulfonylurea can be obtained by induced mutagenesis, selection in cell cultures in the presence of the herbicide or mutation breeding as described for example for soy-

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beans in US 5,084,082, for rice in WO 97/41218, for sugar beet in US 5,773,702 and WO 99/057965, for lettuce in US 5,198,599, or for sunflower in WO 01/065922.

Plants or plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are insect-resistant transgenic plants, i.e. plants made resistant to attack by certain target insects. Such plants can be obtained by genetic transformation, or by selection of plants containing a mutation imparting such insect resistance.

An "insect-resistant transgenic plant", as used herein, includes any plant containing at least one transgene comprising a coding sequence encoding:

- 1) an insecticidal crystal protein from *Bacillus thuringiensis* or an insecticidal portion thereof, such as the insecticidal crystal proteins listed by Crickmore et al. (1998, Microbiology and Molecular Biology Reviews, 62: 807-813), updated by Crickmore et al. (2005) at the *Bacillus thuringiensis* toxin nomenclature, online at: http://www.lifesci.sussex.ac.uk/Home/Neil_Crickmore/Bt/), or insecticidal portions thereof, e.g., proteins of the Cry protein classes Cry1Ab, Cry1Ac, Cry1B, Cry1C, Cry1D, Cry1F, Cry2Ab, Cry3Aa, or Cry3Bb or insecticidal portions thereof (e.g. EP-A 1 999 141 and WO 2007/107302), or such proteins encoded by synthetic genes as e.g. described in and U.S. Patent Application 12/249,016 ; or
- 2) a crystal protein from *Bacillus thuringiensis* or a portion thereof which is insecticidal in the presence of a second other crystal protein from *Bacillus thuringiensis* or a portion thereof, such as the binary toxin made up of the Cry34 and Cry35 crystal proteins (*Nat. Biotechnol.* **2001**, *19*, 668-72; *Applied Environm. Microbiol.* **2006**, *71*, 1765-1774) or the binary toxin made up of the Cry1A or Cry1F proteins and the Cry2Aa or Cry2Ab or Cry2Ae proteins (U.S. Patent Application 12/214,022 and EP-A 2 300 618); or
- 3) a hybrid insecticidal protein comprising parts of different insecticidal crystal proteins from *Bacillus thuringiensis*, such as a hybrid of the proteins of 1) above or a hybrid of the proteins of 2) above, e.g., the Cry1A.105 protein produced by corn event MON89034 (WO 2007/027777); or
- 4) a protein of any one of 1) to 3) above wherein some, particularly 1 to 10, amino acids have been replaced by another amino acid to obtain a higher insecticidal activity to a target insect species, and/or to expand the range of target insect species affected, and/or because of changes introduced into the encoding DNA during cloning or transformation, such as the Cry3Bb1 protein in corn events MON863 or MON88017, or the Cry3A protein in corn event MIR604; or
- 5) an insecticidal secreted protein from *Bacillus thuringiensis* or *Bacillus cereus*, or an insecticidal portion thereof, such as the vegetative insecticidal (VIP) proteins listed at:

http://www.lifesci.sussex.ac.uk/home/Neil_Crickmore/Bt/vip.html, e.g., proteins from the VIP3Aa protein class; or

6) a secreted protein from *Bacillus thuringiensis* or *Bacillus cereus* which is insecticidal in the presence of a second secreted protein from *Bacillus thuringiensis* or *B. cereus*, such as the binary toxin made up of the VIP1A and VIP2A proteins (WO 94/21795); or

7) a hybrid insecticidal protein comprising parts from different secreted proteins from *Bacillus thuringiensis* or *Bacillus cereus*, such as a hybrid of the proteins in 1) above or a hybrid of the proteins in 2) above; or

8) a protein of any one of 5) to 7) above wherein some, particularly 1 to 10, amino acids have been replaced by another amino acid to obtain a higher insecticidal activity to a target insect species, and/or to expand the range of target insect species affected, and/or because of changes introduced into the encoding DNA during cloning or transformation (while still encoding an insecticidal protein), such as the VIP3Aa protein in cotton event COT102; or

9) a secreted protein from *Bacillus thuringiensis* or *Bacillus cereus* which is insecticidal in the presence of a crystal protein from *Bacillus thuringiensis*, such as the binary toxin made up of VIP3 and Cry1A or Cry1F (U.S. Patent Applications 61/126083 and 61/195019), or the binary toxin made up of the VIP3 protein and the Cry2Aa or Cry2Ab or Cry2Ae proteins (U.S. Patent Application 12/214,022 and EP-A 2 300 618).

10) a protein of 9) above wherein some, particularly 1 to 10, amino acids have been replaced by another amino acid to obtain a higher insecticidal activity to a target insect species, and/or to expand the range of target insect species affected, and/or because of changes introduced into the encoding DNA during cloning or transformation (while still encoding an insecticidal protein)

Of course, an insect-resistant transgenic plant, as used herein, also includes any plant comprising a combination of genes encoding the proteins of any one of the above classes 1 to 10. In one embodiment, an insect-resistant plant contains more than one transgene encoding a protein of any one of the above classes 1 to 10, to expand the range of target insect species affected when using different proteins directed at different target insect species, or to delay insect resistance development to the plants by using different proteins insecticidal to the same target insect species but having a different mode of action, such as binding to different receptor binding sites in the insect.

An "insect-resistant transgenic plant", as used herein, further includes any plant containing at least one transgene comprising a sequence producing upon expression a double-stranded RNA which upon ingestion by a plant insect pest inhibits the growth of this insect pest, as described e.g. in WO 2007/080126, WO 2006/129204, WO 2007/074405, WO 2007/080127 and WO 2007/035650.

Plants or plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are tolerant to abiotic stresses. Such plants can be obtained by genetic transformation, or by selection of plants containing a mutation imparting such stress resistance. Particularly useful stress tolerance plants include:

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- 1) plants which contain a transgene capable of reducing the expression and/or the activity of poly(ADP-ribose) polymerase (PARP) gene in the plant cells or plants as described in WO 00/04173, WO 2006/045633, EP-A 1 807 519, or EP-A 2 018 431.
- 2) plants which contain a stress tolerance enhancing transgene capable of reducing the expression and/or the activity of the PARP encoding genes of the plants or plants cells, as described e.g. in WO 2004/090140.
- 3) plants which contain a stress tolerance enhancing transgene coding for a plant-functional enzyme of the nicotinamide adenine dinucleotide salvage synthesis pathway including nicotinamidase, nicotinate phosphoribosyltransferase, nicotinic acid mononucleotide adenylyl transferase, nicotinamide adenine dinucleotide synthetase or nicotine amide phosphoribosyltransferase as described e.g. in EP-A 1 794 306, WO 2006/133827, WO 2007/107326, EP-A 1 999 263, or WO 2007/107326.

Plants or plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention show altered quantity, quality and/or storage-stability of the harvested product and/or altered properties of specific ingredients of the harvested product such as:

- 1) transgenic plants which synthesize a modified starch, which in its physical-chemical characteristics, in particular the amylose content or the amylose/amylopectin ratio, the degree of branching, the average chain length, the side chain distribution, the viscosity behaviour, the gelling strength, the starch grain size and/or the starch grain morphology, is changed in comparison with the synthesised starch in wild type plant cells or plants, so that this is better suited for special applications. Said transgenic plants synthesizing a modified starch are disclosed, for example, in EP-A 0 571 427, WO 95/04826, EP-A 0 719 338, WO 96/15248, WO 96/19581, WO 96/27674, WO 97/11188, WO 97/26362, WO 97/32985, WO 97/42328, WO 97/44472, WO 97/45545, WO 98/27212, WO 98/40503, WO 99/58688, WO 99/58690, WO 99/58654, WO 00/08184, WO 00/08185, WO 00/08175, WO 00/28052, WO 00/77229, WO 01/12782, WO 01/12826, WO 02/101059, WO 03/071860, WO 04/056999, WO 05/030942, WO 2005/030941, WO 2005/095632, WO 2005/095617, WO 2005/095619, WO 2005/095618, WO 2005/123927, WO 2006/018319, WO 2006/103107, WO 2006/108702, WO 2007/009823, WO 00/22140, WO 2006/063862, WO 2006/072603, WO 02/034923, WO 2008/017518, WO 2008/080630, WO 2008/080631, EP 07090007.1, WO 2008/090008, WO 01/14569, WO 02/79410, WO 03/33540, WO 2004/078983, WO 01/19975, WO 95/26407, WO 96/34968, WO 98/20145, WO 99/12950, WO 99/66050, WO 99/53072, US 6,734,341, WO 00/11192, WO 98/22604, WO 98/32326, WO 01/98509, WO 01/98509, WO 2005/002359, US 5,824,790, US 6,013,861, WO 94/04693, WO 94/09144, WO 94/11520, WO 95/35026, WO 97/20936, WO 2010/012796, WO 2010/003701,
- 2) transgenic plants which synthesize non starch carbohydrate polymers or which synthesize non starch carbohydrate polymers with altered properties in comparison to wild type plants without genetic modification. Examples are plants producing polyfructose, especially of the inulin and levan-type, as disclosed in EP-A 0 663 956, WO 96/01904, WO 96/21023, WO 98/39460, and WO 99/24593, plants pro-

- ducing alpha-1,4-glucans as disclosed in WO 95/31553, US 2002031826, US 6,284,479, US 5,712,107, WO 97/47806, WO 97/47807, WO 97/47808 and WO 00/14249, plants producing alpha-1,6 branched alpha-1,4-glucans, as disclosed in WO 00/73422, plants producing alternan, as disclosed in e.g. WO 00/47727, WO 00/73422, EP 06077301.7, US 5,908,975 and EP-A 0 728 213,
- 5 3) transgenic plants which produce hyaluronan, as for example disclosed in WO 2006/032538, WO 2007/039314, WO 2007/039315, WO 2007/039316, JP-A 2006-304779, and WO 2005/012529.
- 4) transgenic plants or hybrid plants, such as onions with characteristics such as 'high soluble solids content', 'low pungency' (LP) and/or 'long storage' (LS), as described in U.S. Patent Applications 12/020,360 and 61/054,026.
- 10 Plants or plant cultivars (that can be obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are plants, such as cotton plants, with altered fiber characteristics. Such plants can be obtained by genetic transformation, or by selection of plants contain a mutation imparting such altered fiber characteristics and include:
- a) Plants, such as cotton plants, containing an altered form of cellulose synthase genes as described
15 in WO 98/00549.
- b) Plants, such as cotton plants, containing an altered form of rsw2 or rsw3 homologous nucleic acids as described in WO 2004/053219.
- c) Plants, such as cotton plants, with increased expression of sucrose phosphate synthase as described in WO 01/17333.
- 20 d) Plants, such as cotton plants, with increased expression of sucrose synthase as described in WO 02/45485.
- e) Plants, such as cotton plants, wherein the timing of the plasmodesmatal gating at the basis of the fiber cell is altered, e.g. through downregulation of fiber-selective β -1,3-glucanase as described in WO 2005/017157, or as described in WO 2009/143995.
- 25 f) Plants, such as cotton plants, having fibers with altered reactivity, e.g. through the expression of N-acetylglucosaminetransferase gene including nodC and chitin synthase genes as described in WO 2006/136351.
- Plants or plant cultivars (that can be obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are plants, such as oilseed rape or related Brassica
30 plants, with altered oil profile characteristics. Such plants can be obtained by genetic transformation, or by selection of plants contain a mutation imparting such altered oil profile characteristics and include:

- a) Plants, such as oilseed rape plants, producing oil having a high oleic acid content as described e.g. in US 5,969,169, US 5,840,946 or US 6,323,392 or US 6,063,947
- b) Plants such as oilseed rape plants, producing oil having a low linolenic acid content as described in US 6,270,828, US 6,169,190, or US 5,965,755
- 5 c) Plant such as oilseed rape plants, producing oil having a low level of saturated fatty acids as described e.g. in US 5,434,283 or U.S. Patent Application 12/668303

Plants or plant cultivars (that can be obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are plants, such as oilseed rape or related Brassica plants, with altered seed shattering characteristics. Such plants can be obtained by genetic transformation,
 10 or by selection of plants contain a mutation imparting such altered seed shattering characteristics and include plants such as oilseed rape plants with delayed or reduced seed shattering as described in U.S. Patent Application 61/135,230, WO 2009/068313 and WO 2010/006732.

Plants or plant cultivars (that can be obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are plants, such as Tobacco plants, with altered post-
 15 translational protein modification patterns, for example as described in WO 2010/121818 and WO 2010/145846.

Particularly useful transgenic plants which may be treated according to the invention are plants containing transformation events, or combination of transformation events, that are the subject of petitions for non-regulated status, in the United States of America, to the Animal and Plant Health Inspection Service
 20 (APHIS) of the United States Department of Agriculture (USDA) whether such petitions are granted or are still pending. At any time this information is readily available from APHIS (4700 River Road, Riverdale, MD 20737, USA), for instance on its internet site (URL http://www.aphis.usda.gov/brs/not_reg.html). On the filing date of this application the petitions for nonregulated status that were pending with APHIS or granted by APHIS were those which contains the following information:

- 25 – Petition: the identification number of the petition. Technical descriptions of the transformation events can be found in the individual petition documents which are obtainable from APHIS, for example on the APHIS website, by reference to this petition number. These descriptions are herein incorporated by reference.
- Extension of Petition: reference to a previous petition for which an extension is requested.
- 30 – Institution: the name of the entity submitting the petition.
- Regulated article: the plant species concerned.
- Transgenic phenotype: the trait conferred to the plants by the transformation event.

- Transformation event or line: the name of the event or events (sometimes also designated as lines or lines) for which nonregulated status is requested.
 - APHIS documents: various documents published by APHIS in relation to the Petition and which can be requested with APHIS.
- 5 Additional particularly useful plants containing single transformation events or combinations of transformation events are listed for example in the databases from various national or regional regulatory agencies (see for example http://gmoinfo.jrc.it/gmp_browse.aspx and <http://www.agbios.com/dbase.php>).
- Particularly useful transgenic plants which may be treated according to the invention are plants containing transformation events, or a combination of transformation events, and that are listed for example in the da-
- 10 tabases for various national or regional regulatory agencies including Event 1143-14A (cotton, insect control, not deposited, described in WO 2006/128569); Event 1143-51B (cotton, insect control, not deposited, described in WO 2006/128570); Event 1445 (cotton, herbicide tolerance, not deposited, described in US-A 2002-120964 or WO 02/034946); Event 17053 (rice, herbicide tolerance, deposited as PTA-9843, described in WO 2010/117737); Event 17314 (rice, herbicide tolerance, deposited as PTA-9844, described in
- 15 WO 2010/117735); Event 281-24-236 (cotton, insect control - herbicide tolerance, deposited as PTA-6233, described in WO 2005/103266 or US-A 2005-216969); Event 3006-210-23 (cotton, insect control - herbicide tolerance, deposited as PTA-6233, described in US-A 2007-143876 or WO 2005/103266); Event 3272 (corn, quality trait, deposited as PTA-9972, described in WO 2006/098952 or US-A 2006-230473); Event 40416 (corn, insect control - herbicide tolerance, deposited as ATCC PTA-11508, described in WO
- 20 2011/075593); Event 43A47 (corn, insect control - herbicide tolerance, deposited as ATCC PTA-11509, described in WO 2011/075595); Event 5307 (corn, insect control, deposited as ATCC PTA-9561, described in WO 2010/077816); Event ASR-368 (bent grass, herbicide tolerance, deposited as ATCC PTA-4816, described in US-A 2006-162007 or WO 2004/053062); Event B16 (corn, herbicide tolerance, not deposited, described in US-A 2003-126634); Event BPS-CV127-9 (soybean, herbicide tolerance, deposited as NCIMB No. 41603, described in WO 2010/080829); Event CE43-67B (cotton, insect control, deposited as DSM ACC2724, described in US-A 2009-217423 or WO2006/128573); Event CE44-69D (cotton, insect control, not deposited, described in US-A 2010-0024077); Event CE44-69D (cotton, insect control, not deposited, described in WO 2006/128571); Event CE46-02A (cotton, insect control, not deposited, described in WO 2006/128572); Event COT102 (cotton, insect control, not deposited, described in US-A
- 25 2006-130175 or WO 2004/039986); Event COT202 (cotton, insect control, not deposited, described in US-A 2007-067868 or WO 2005/054479); Event COT203 (cotton, insect control, not deposited, described in WO 2005/054480); Event DAS40278 (corn, herbicide tolerance, deposited as ATCC PTA-10244, described in WO 2011/022469); Event DAS-59122-7 (corn, insect control - herbicide tolerance, deposited as ATCC PTA 11384 , described in US-A 2006-070139); Event DAS-59132 (corn, insect control - herbicide
- 30 tolerance, not deposited, described in WO 2009/100188); Event DAS68416 (soybean, herbicide tolerance, deposited as ATCC PTA-10442, described in WO 2011/066384 or WO 2011/066360); Event DP-098140-6 (corn, herbicide tolerance, deposited as ATCC PTA-8296, described in US-A 2009-137395 or WO

2008/112019); Event DP-305423-1 (soybean, quality trait, not deposited, described in US-A 2008-312082 or WO 2008/054747); Event DP-32138-1 (corn, hybridization system, deposited as ATCC PTA-9158, described in US-A 2009-0210970 or WO 2009/103049); Event DP-356043-5 (soybean, herbicide tolerance, deposited as ATCC PTA-8287, described in US-A 2010-0184079 or WO 2008/002872); Event EE-1
5 (brinjal, insect control, not deposited, described in WO 2007/091277); Event FI117 (corn, herbicide tolerance, deposited as ATCC 209031, described in US-A 2006-059581 or WO 98/044140); Event GA21 (corn, herbicide tolerance, deposited as ATCC 209033, described in US-A 2005-086719 or WO 98/044140); Event GG25 (corn, herbicide tolerance, deposited as ATCC 209032, described in US-A 2005-188434 or WO 98/044140); Event GHB119 (cotton, insect control - herbicide tolerance, deposited as
10 ATCC PTA-8398, described in WO 2008/151780); Event GHB614 (cotton, herbicide tolerance, deposited as ATCC PTA-6878, described in US-A 2010-050282 or WO 2007/017186); Event GJ11 (corn, herbicide tolerance, deposited as ATCC 209030, described in US-A 2005-188434 or WO 98/044140); Event GM RZ13 (sugar beet, virus resistance, deposited as NCIMB-41601, described in WO 2010/076212); Event H7-1 (sugar beet, herbicide tolerance, deposited as NCIMB 41158 or NCIMB 41159, described in US-A
15 2004-172669 or WO 2004/074492); Event JOPLIN1 (wheat, disease tolerance, not deposited, described in US-A 2008-064032); Event LL27 (soybean, herbicide tolerance, deposited as NCIMB41658, described in WO 2006/108674 or US-A 2008-320616); Event LL55 (soybean, herbicide tolerance, deposited as NCIMB 41660, described in WO 2006/108675 or US-A 2008-196127); Event LLcotton25 (cotton, herbicide tolerance, deposited as ATCC PTA-3343, described in WO 03/013224 or US-A 2003-097687); Event
20 LLRICE06 (rice, herbicide tolerance, deposited as ATCC-23352, described in US 6,468,747 or WO 00/026345); Event LLRICE601 (rice, herbicide tolerance, deposited as ATCC PTA-2600, described in US-A 2008-2289060 or WO 00/026356); Event LY038 (corn, quality trait, deposited as ATCC PTA-5623, described in US-A 2007-028322 or WO 2005/061720); Event MIR162 (corn, insect control, deposited as PTA-8166, described in US-A 2009-300784 or WO 2007/142840); Event MIR604 (corn, insect control, not deposited, described in US-A 2008-167456 or WO 2005/103301); Event MON15985 (cotton, insect control, deposited as ATCC PTA-2516, described in US-A 2004-250317 or WO 02/100163); Event
25 MON810 (corn, insect control, not deposited, described in US-A 2002-102582); Event MON863 (corn, insect control, deposited as ATCC PTA-2605, described in WO 2004/011601 or US-A 2006-095986); Event MON87427 (corn, pollination control, deposited as ATCC PTA-7899, described in WO 2011/062904); Event MON87460 (corn, stress tolerance, deposited as ATCC PTA-8910, described in WO 2009/111263 or US-A 2011-0138504); Event MON87701 (soybean, insect control, deposited as ATCC PTA-8194, described in US-A 2009-130071 or WO 2009/064652); Event MON87705 (soybean, quality trait - herbicide tolerance, deposited as ATCC PTA-9241, described in US-A 2010-0080887 or WO 2010/037016); Event MON87708 (soybean, herbicide tolerance, deposited as ATCC PTA9670, described
30 in WO 2011/034704); Event MON87754 (soybean, quality trait, deposited as ATCC PTA-9385, described in WO 2010/024976); Event MON87769 (soybean, quality trait, deposited as ATCC PTA-8911, described in US-A 2011-0067141 or WO 2009/102873); Event MON88017 (corn, insect control - herbicide tolerance, deposited as ATCC PTA-5582, described in US-A 2008-028482 or WO 2005/059103); Event MON88913 (cotton, herbicide tolerance, deposited as ATCC PTA-4854, described in WO 2004/072235 or

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US-A 2006-059590); Event MON89034 (corn, insect control, deposited as ATCC PTA-7455, described in WO 2007/140256 or US-A 2008-260932); Event MON89788 (soybean, herbicide tolerance, deposited as ATCC PTA-6708, described in US-A 2006-282915 or WO 2006/130436); Event MS11 (oilseed rape, pol-
lination control - herbicide tolerance, deposited as ATCC PTA-850 or PTA-2485, described in WO
5 01/031042); Event MS8 (oilseed rape, pollination control - herbicide tolerance, deposited as ATCC PTA-
730, described in WO 01/041558 or US-A 2003-188347); Event NK603 (corn, herbicide tolerance, depos-
ited as ATCC PTA-2478, described in US-A 2007-292854); Event PE-7 (rice, insect control, not deposit-
ed, described in WO 2008/114282); Event RF3 (oilseed rape, pollination control - herbicide tolerance, de-
posited as ATCC PTA-730, described in WO 01/041558 or US-A 2003-188347); Event RT73 (oilseed
10 rape, herbicide tolerance, not deposited, described in WO 02/036831 or US-A 2008-070260); Event T227-
1 (sugar beet, herbicide tolerance, not deposited, described in WO 02/44407 or US-A 2009-265817);
Event T25 (corn, herbicide tolerance, not deposited, described in US-A 2001-029014 or WO 01/051654);
Event T304-40 (cotton, insect control - herbicide tolerance, deposited as ATCC PTA-8171, described in
US-A 2010-077501 or WO 2008/122406); Event T342-142 (cotton, insect control, not deposited, de-
15 scribed in WO 2006/128568); Event TC1507 (corn, insect control - herbicide tolerance, not deposited, de-
scribed in US-A 2005-039226 or WO 2004/099447); Event VIP1034 (corn, insect control - herbicide tol-
erance, deposited as ATCC PTA-3925., described in WO 03/052073), Event 32316 (corn,insect control-
herbicide tolerance,deposited as PTA-11507, described in WO 2011/084632), Event 4114 (corn,insect
control-herbicide tolerance,deposited as PTA-11506, described in WO 2011/084621).

20 Application Rates and Timing

When using the inventive combinations as fungicides, the application rates can be varied within a relative-
ly wide range, depending on the kind of application. The application rate of the inventive active ingredi-
ents is

- in the case of treatment of plant parts, for example leaves: from 0.1 to 10 000 g/ha, preferably
25 from 10 to 1000 g/ha, more preferably from 10 to 800 g/ha, even more preferably from 50 to 300
g/ha (in the case of application by watering or dripping, it is even possible to reduce the applica-
tion rate, especially when inert substrates such as rockwool or perlite are used);
- in the case of seed treatment: from 2 to 200 g per 100 kg of seed, preferably from 3 to 150 g per
100 kg of seed, more preferably from 2.5 to 25 g per 100 kg of seed, even more preferably from
30 2.5 to 12.5 g per 100 kg of seed;
- in the case of soil treatment: from 0.1 to 10 000 g/ha, preferably from 1 to 5000 g/ha.

These application rates are merely by way of example and are not limiting for the purposes of the inven-
tion.

The inventive compositions can thus be used to protect plants from attack by the pathogens mentioned for
35 a certain period of time after treatment. The period for which protection is provided extends generally for 1

to 28 days, preferably for 1 to 14 days, more preferably for 1 to 10 days, most preferably for 1 to 7 days, after the treatment of the plants with the active ingredients, or for up to 200 days after a seed treatment.

The method of treatment according to the invention also provides the use or application of compounds (A) and (B) and/or (C) in a simultaneous, separate or sequential manner. If the single active ingredients are applied in a sequential manner, i.e. at different times, they are applied one after the other within a reasonably short period, such as a few hours or days. Preferably the order of applying the compounds (A) and (B) and/or (C) is not essential for working the present invention.

The plants listed can particularly advantageously be treated in accordance with the invention with the compounds of the general formula (I) and the inventive compositions. The preferred ranges stated above for the active ingredients or compositions also apply to the treatment of these plants. Particular emphasis is given to the treatment of plants with the compounds or compositions specifically mentioned in the present text.

The advanced fungicidal activity of the active compound combinations according to the invention is evident from the example below. While the individual active compounds exhibit weaknesses with regard to the fungicidal activity, the combinations have an activity which exceeds a simple addition of activities.

A synergistic effect of fungicides is always present when the fungicidal activity of the active compound combinations exceeds the total of the activities of the active compounds when applied individually. The expected activity for a given combination of two active compounds can be calculated as follows (cf. Colby, S.R., "Calculating Synergistic and Antagonistic Responses of Herbicide Combinations", *Weeds* 1967, 15, 20-22):

If

X is the efficacy when active compound A is applied at an application rate of m ppm (or g/ha),

Y is the efficacy when active compound B is applied at an application rate of n ppm (or g/ha),

E is the efficacy when the active compounds A and B are applied at application rates of m and n ppm (or g/ha), respectively, and

then

$$E = X + Y - \frac{X \cdot Y}{100}$$

The degree of efficacy, expressed in % is denoted. 0 % means an efficacy which corresponds to that of the control while an efficacy of 100 % means that no disease is observed.

If the actual fungicidal activity exceeds the calculated value, then the activity of the combination is superadditive, i.e. a synergistic effect exists. In this case, the efficacy which was actually observed must be greater than the value for the expected efficacy (E) calculated from the abovementioned formula.

- 5 A further way of demonstrating a synergistic effect is the method of Tammes (cf. "Isoboles, a graphic representation of synergism in pesticides" in *Neth. J. Plant Path.*, 1964, 70, 73-80).

The invention is illustrated by the following examples. However the invention is not limited to the examples.

Example 1

Alternaria test (tomatoes) / preventive

Solvent: 24.5 parts by weight of acetone
 24.5 parts by weight of dimethylacetamide

5 Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

10 To test for preventive activity, young plants are sprayed with the preparation of active compound at the stated rate of application. After the spray coating has dried on, the plants are inoculated with an aqueous spore suspension of *Alternaria solani*. The plants are then placed in an incubation cabinet at approximately 20 °C and a relative atmospheric humidity of 100%.

The test is evaluated 3 days after the inoculation. 0% means an efficacy which corresponds to that of the untreated control while an efficacy of 100% means that no disease is observed.

15 the untreated control, while an efficacy of 100% means that no disease is observed.

The table below clearly shows that the observed activity of the active compound combination according to the invention is greater than the calculated activity, i.e. a synergistic effect is present.

Table 1

Alternaria test (tomatoes) / preventive

Active compounds	Application rate of active compound in ppm a.i.	Efficacy in %	
		found*	calc.**
(I-1) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methane-sulfonate	25	20	
(I-3) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate	25	0	
2.6 fluopyram	1	48	
2.21 penthiopyrad	0,5	39	
(I-1) + 2.6 25:1	25 + 1	70	58
(I-3) + 2.6 25:1	25 + 1	53	48
(I-1) + 2.21 50:1	25 + 0,5	78	51
(I-3) + 2.21 50:1	25 + 0,5	60	39

* found = activity found
 ** calc. = activity calculated using Colby's formula

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Table 2

Alternaria test (tomatoes) / preventive

Active compounds	Application rate of active compound in ppm a.i.	Efficacy in %	
		found*	calc.**
(I-1) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methane-sulfonate	100	34	
(I-3) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate	100	36	
	25	30	
15.60 2,6-dimethyl-1H,5H-[1,4]dithiino[2,3-c:5,6-c']dipyrrole-1,3,5,7(2H,6H)-tetrone	50	32	
5.4 chlorothalonil	20	5	
5.16 folpet	10	0	
5.29 propineb	5	0	
7.7 pyrimethanil	20	32	
(I-1) + 15.60 2:1	100 + 50	65	55
(I-1) + 5.4 5:1	100 + 20	61	37
(I-3) + 5.4 5:1	100 + 20	71	39
(I-1) + 5.16 10:1	100 + 10	41	34
(I-3) + 5.16 10:1	100 + 10	64	36
(I-3) + 5.29 5:1	25 + 5	45	30
(I-3) + 7.7 5:1	100 + 20	63	56

* found = activity found
 ** calc. = activity calculated using Colby's formula

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Example 2

Phytophthora test (tomatoes) / preventive

Solvent: 24.5 parts by weight of acetone

24.5 parts by weight of dimethylacetamide

5 Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

10 To test for preventive activity, young plants are sprayed with the preparation of active compound at the stated rate of application. After the spray coating has dried on, the plants are inoculated with an aqueous spore suspension of *Phytophthora infestans*. The plants are then placed in an incubation cabinet at approximately 20 °C and a relative atmospheric humidity of 100%.

The test is evaluated 3 days after the inoculation. 0% means an efficacy which corresponds to that of the untreated control, while an efficacy of 100% means that no disease is observed.

15 The table below clearly shows that the observed activity of the active compound combination according to the invention is greater than the calculated activity, i.e. a synergistic effect is present.

Table 3

Phytophthora test (tomatoes) / protective

Active compounds		Application rate of active compound in ppm a.i.	Efficacy in %	
			found*	calc.**
(I-1)	2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methanesulfonate	0,005	82	
(I-3)	2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate	0,0025	65	
3.1	ametoctradin	2,5 1,25	22 15	
15.9	cymoxanil	5 2,5	0 0	
14.4	fluazinam	2,5	0	
15.24	fosetyl-Al	5 2,5	0 0	
12.10	mefenoxam	2,5 1,25	36 10	
15.41	phosphorous acid	5 2,5	13 0	
(I-1) + 3.1	1:500	0,005 + 2,5	99	86
(I-3) + 3.1	1:500	0,0025 + 1,25	94	70
(I-1) + 15.9	1:1000	0,005 + 5	89	82
(I-3) + 15.9	1:1000	0,0025 + 2,5	80	65
(I-3) + 14.4	1:1000	0,0025 + 2,5	84	65
(I-1) + 15.24	1:1000	0,005 + 5	93	82
(I-3) + 15.24	1:1000	0,0025 + 2,5	93	65
(I-1) + 12.10	1:500	0,005 + 2,5	98	88
(I-3) + 12.10	1:500	0,0025 + 1,25	83	69
(I-1) + 15.41	1:1000	0,005 + 5	94	84
(I-3) + 15.41	1:1000	0,0025 + 2,5	74	65

* found = activity found
** calc. = activity calculated using Colby's formula

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Table 4

Phytophthora test (tomatoes) / protective

Active compounds	Application rate of active compound in ppm a.i.	Efficacy in %	
		found*	calc.**
(I-1) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methanesulfonate	0,01 0,005	77 67	
(I-3) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate	0,01 0,005	28 5	
3.2 amisulbrom	1	19	
9.1 benthiavalicarb	0,5	52	
3.4 cyazofamid	0,2	8	
9.2 dimethomorph	1	20	
3.10 fenamidone	0,5	3	
9.4 iprovalicarb	2	9	
15.90 pentyl{6-[[[(1-methyl-1H-tetrazol-5-yl)(phenyl)methylidene]amino]oxy)methyl]pyridin-2-yl} carbamate	0,2	10	
(I-1) + 3.2 1:100	0,01 + 1	97	87
(I-1) + 9.1 1:100	0,005 + 0,5	91	84
(I-3) + 9.1 1:100	0,005 + 0,5	81	54
(I-3) + 3.4 1:40	0,005 + 0,2	62	13
(I-3) + 9.2 1:100	0,01 + 1	64	42
(I-3) + 3.10 1:100	0,005 + 0,5	94	8
(I-3) + 9.4 1:200	0,01 + 2	83	34
(I-1) + 15.90 1:40	0,005 + 0,2	83	70
(I-3) + 15.90 1:40	0,005 + 0,2	50	15

* found = activity found
 ** calc. = activity calculated using Colby's formula

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Table 5

Phytophthora test (tomatoes) / protective

Active compounds	Application rate of active compound in ppm a.i.	Efficacy in %	
		found*	calc.**
(I-1) 2-{3-[2-(1-[[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl)piperidin-4-yl]-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methane-sulfonate	0,0025	52	
(I-3) 2-{3-[2-(1-[[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl)piperidin-4-yl]-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate	0,01 0,0025	87 59	
2.29 benzovindiflupyr	2,5	0	
2.27 N-[1-(2,4-dichlorophenyl)-1-methoxypropan-2-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide	10 2,5	8 0	
2.8 fluxapyroxad	2,5	0	
2.12 isopyrazam	2,5	0	
2.21 penthiopyrad	2,5	0	
(I-1) + 2.29 1:1000	0,0025 + 2,5	60	52
(I-1) + 2.27 1:1000	0,0025 + 2,5	67	52
(I-3) + 2.27 1:1000	0,01 + 10	93	88
(I-3) + 2.8 1:1000	0,0025 + 2,5	77	59
(I-1) + 2.12 1:1000	0,0025 + 2,5	62	52
(I-1) + 2.21 1:1000	0,0025 + 2,5	63	52

* found = activity found
** calc. = activity calculated using Colby's formula

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Table 6

Phytophthora test (tomatoes) / protective

Active compounds	Application rate of active compound in ppm a.i.	Efficacy in %	
		found*	calc.**
(I-1) 2-{3-[2-(1-[[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl)piperidin-4-yl]-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methane-sulfonate	0,0025	48	
(I-3) 2-{3-[2-(1-[[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl)piperidin-4-yl]-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate	0,0025	79	
5.5 copper hydroxide	2,5	18	
5.8 copper oxychloride	2,5	0	
5.25 metiram	2,5	15	
10.10 propamocarb-HCl	2,5	0	
(I-1) + 5.5 1:1000	0,0025 + 2,5	92	57
(I-3) + 5.5 1:1000	0,0025 + 2,5	93	83
(I-1) + 5.8 1:1000	0,0025 + 2,5	75	48
(I-1) + 5.25 1:1000	0,0025 + 2,5	93	56
(I-1) + 10.10 1:1000	0,0025 + 2,5	67	48

* found = activity found
** calc. = activity calculated using Colby's formula

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Example 3

Sphaerotheca test (cucumbers) / preventive

- Solvent: 24.5 parts by weight of acetone
- 24.5 parts by weight of dimethylacetamide
- 5 Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

- 10 To test for preventive activity, young plants are sprayed with the preparation of active compound at the stated rate of application. After the spray coating has dried on, the plants are inoculated with an aqueous spore suspension of *Sphaerotheca fuliginea*. The plants are then placed in a greenhouse at approximately 23 °C and a relative atmospheric humidity of approximately 70%.

The test is evaluated 7 days after the inoculation. 0% means an efficacy which corresponds to that of the untreated control, while an efficacy of 100% means that no disease is observed.

- 15 The table below clearly shows that the observed activity of the active compound combination according to the invention is greater than the calculated activity, i.e. a synergistic effect is present.

Table 7

Sphaerotheca test (cucumbers) / preventive

Active compounds	Application rate of active compound in ppm a.i.	Efficacy in %	
		found*	calc.**
(I-1) 2-{3-[2-(1-{{3,5-bis(difluoromethyl)-1H-pyrazol-1-yl}acetyl)piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methane-sulfonate	100	19	
(I-3) 2-{3-[2-(1-{{3,5-bis(difluoromethyl)-1H-pyrazol-1-yl}acetyl)piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate	100	43	
2.29 benzovindiflupyr	0,5	0	
2.1 bixafen	1	10	
2.27 N-[1-(2,4-dichlorophenyl)-1-methoxypropan-2-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide	4	81	
2.6 fluopyram	4	19	
2.8 fluxapyroxad	1	38	
2.12 isopyrazam	1	19	
2.12 penthiopyrad	2	57	
(I-1) + 2.29 200:1	100 + 0,5	57	19
(I-3) + 2.29 200:1	100 + 0,5	48	43
(I-1) + 2.1 100:1	100 + 1	62	27
(I-3) + 2.1 100:1	100 + 1	88	49
(I-1) + 2.27 25:1	100 + 4	98	85
(I-3) + 2.27 25:1	100 + 4	98	89
(I-1) + 2.6 25:1	100 + 4	57	34
(I-1) + 2.8 100:1	100 + 1	81	50
(I-3) + 2.8 100:1	100 + 1	86	65
(I-1) + 2.12 100:1	100 + 1	88	34
(I-3) + 2.12 100:1	100 + 1	79	54
(I-1) + 2.21 50:1	100 + 2	93	65
(I-3) + 2.21 50:1	100 + 2	81	75

* found = activity found

** calc. = activity calculated using Colby's formula

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Table 8

Sphaerotheca test (cucumbers) / preventive

Active compounds	Application rate of ac- tive compound in ppm a.i.	Efficacy in %	
		found*	calc.**
(I-1) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methane-sulfonate	100	0	
(I-3) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate	50	19	
2.2 boscalid	40	86	
	20	62	
1.41 prothioconazole	2	19	
(I-1) + 2.2 2,5:1	100 + 40	93	86
(I-3) + 2.2 2,5:1	50 + 20	76	69
(I-1) + 1.41 50:1	100 + 2	64	19

* found = activity found
** calc. = activity calculated using Colby's formula

pa3

Table 9

Sphaerotheca test (cucumbers) / preventive

Active compounds	Application rate of active compound in ppm a.i.	Efficacy in %	
		found*	calc.**
(I-1) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methane-sulfonate	100	38	
(I-3) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate	50	29	
5.5 copper hydroxide	10	29	
5.8 copper oxychloride	50	10	
5.25 metiram	50	29	
10.10 propamocarb HCl	400 200	0 0	
5.30 sulphur	200	19	
(I-3) + 5.5 5:1	50 + 10	57	50
(I-1) + 5.8 2:1	100 + 50	76	44
(I-3) + 5.25 1:1	50 + 50	57	50
(I-1) + 10.10 1:4	100 + 400	57	38
(I-3) + 10.10 1:4	50 + 200	62	29
(I-3) + 5.30 1:4	50 + 200	57	42

* found = activity found
 ** calc. = activity calculated using Colby's formula

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Example 4

Venturia test (apples) / preventive

Solvent: 24.5 parts by weight of acetone
 24.5 parts by weight of dimethylacetamide

5 Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

10 To test for preventive activity, young plants are sprayed with the preparation of active compound at the stated rate of application. After the spray coating has dried on, the plants are inoculated with an aqueous conidia suspension of the causal agent of apple scab (*Venturia inaequalis*) and then remain for 1 day in an incubation cabinet at approximately 20 °C and a relative atmospheric humidity of 100%.

15 The plants are then placed in a greenhouse at approximately 21 °C and a relative atmospheric humidity of approximately 90%.

The test is evaluated 10 days after the inoculation. 0% means an efficacy which corresponds to that of the untreated control, while an efficacy of 100% means that no disease is observed.

The table below clearly shows that the observed activity of the active compound combination according to the invention is greater than the calculated activity, i.e. a synergistic effect is present.

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Table 10

Venturia test (apples) / preventive

Active compounds	Application rate of active compound in ppm a.i.	Efficacy in %	
		found*	calc.**
(I-1) 2-{3-[2-(1-{{3,5-bis(difluoromethyl)-1H-pyrazol-1-yl}acetyl)piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methanesulfonate	100 50	0 0	
(I-3) 2-{3-[2-(1-{{3,5-bis(difluoromethyl)-1H-pyrazol-1-yl}acetyl)piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate	100 50	0 0	
2.1 bixafen	1	84	
2.27 N-[1-(2,4-dichlorophenyl)-1-methoxypropan-2-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide	4 2	93 31	
2.6 fluopyram	4	21	
2.8 fluxapyroxad	0,5	25	
2.21 penthiopyrad	2	8	
(I-3) + 2.1 100:1	100 + 1	90	84
(I-1) + 2.27 25:1	100 + 4	99	93
(I-3) + 2.27 25:1	50 + 2	83	31
(I-1) + 2.6 25:1	100 + 4	56	21
(I-1) + 2.8 100:1	50 + 0,5	84	25
(I-3) + 2.8 100:1	50 + 0,5	90	25
(I-1) + 2.21 50:1	100 + 2	100	8
(I-3) + 2.21 50:1	100 + 2	68	8

* found = activity found
 ** calc. = activity calculated using Colby's formula

Table 11

Venturia test (apples) / preventive

Active compounds	Application rate of active compound in ppm a.i.	Efficacy in %	
		found*	calc.**
(I-1) 2-{3-[2-(1-{{3,5-bis(difluoromethyl)-1H-pyrazol-1-yl}acetyl)piperidin-4-yl}-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methane-sulfonate	100 50	13 4	
(I-3) 2-{3-[2-(1-{{3,5-bis(difluoromethyl)-1H-pyrazol-1-yl}acetyl)piperidin-4-yl}-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate	100 50	15 0	
3.3 azoxystrobin	0,25	38	
2.2 boscalid	20	85	
3.12 fluoxastrobin	0,5	44	
3.17 pyraclostrobin	0,5	19	
1.47 tebuconazole	2	11	
3.22 trifloxystrobin	0,5	77	
(I-1) + 3.3 200:1	50 + 0,25	64	40
(I-3) + 3.3 200:1	50 + 0,25	46	38
(I-1) + 2.2 2,5:1	50 + 20	95	86
(I-1) + 3.12 200:1	100 + 0,5	59	51
(I-3) + 3.12 200:1	100 + 0,5	84	52
(I-1) + 3.17 200:1	100 + 0,5	54	30
(I-3) + 3.17 200:1	100 + 0,5	89	31
(I-3) + 1.47 50:1	100 + 2	44	24
(I-1) + 3.22 200:1	100 + 0,5	100	80
(I-3) + 3.22 200:1	100 + 0,5	100	80

* found = activity found
 ** calc. = activity calculated using Colby's formula

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Table 12

Venturia test (apples) / preventive

Active compounds	Application rate of active compound in ppm a.i.	Efficacy in %	
		found*	calc.**
(I-1) 2-{3-[2-(1-{{3,5-bis(difluoromethyl)-1H-pyrazol-1-yl}acetyl)piperidin-4-yl}-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methane-sulfonate	100	21	
(I-3) 2-{3-[2-(1-{{3,5-bis(difluoromethyl)-1H-pyrazol-1-yl}acetyl)piperidin-4-yl}-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate	100	0	
15.60 2,6-dimethyl-1H,5H-[1,4]dithiino[2,3-c:5,6-c']dipyrrole-1,3,5,7(2H,6H)-tetrone	50	24	
5.4 chlorothalonil	20	14	
(I-1) + 15.60 2:1	100 + 50	66	40
(I-3) + 15.60 2:1	100 + 50	56	24
(I-1) + 5.4 5:1	100 + 20	74	32
(I-3) + 5.4 5:1	100 + 20	91	14

* found = activity found
** calc. = activity calculated using Colby's formula

Table 13

Venturia test (apples) / preventive

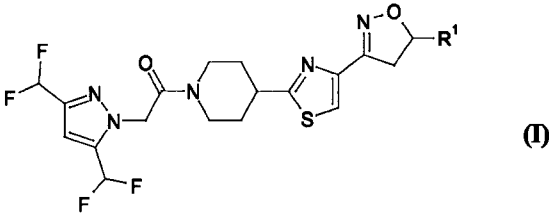
Active compounds	Application rate of ac- tive compound in ppm a.i.	Efficacy in %	
		found*	calc.**
(I-1) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methane-sulfonate	100	0	
(I-3) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate	100	0	
5.5 copper hydroxide	20	25	
5.8 copper oxychloride	50	8	
5.25 metiram	100	55	
5.30 sulphur	400	11	
(I-1) + 5.5 5:1	100 + 20	56	25
(I-3) + 5.5 5:1	100 + 20	50	25
(I-1) + 5.8 2:1	100 + 50	50	8
(I-3) + 5.8 2:1	100 + 50	60	8
(I-1) + 5.25 1:1	100 + 100	82	55
(I-3) + 5.25 1:1	100 + 100	73	55
(I-1) + 5.30 1:4	100 + 400	99	11
(I-3) + 5.30 1:4	100 + 400	98	11

* found = activity found
** calc. = activity calculated using Colby's formula

Patent Claims

1. Combination comprising:

(A) at least one thiazolyloxazoline of formula (I)



5 in which

R¹ represents phenyl, which is at least substituted with one methylsulfonyloxy and optionally be additionally substituted by one substituents selected from the group consisting of methyl, methoxy, fluoro or chloro,

or an agrochemically acceptable salt thereof,

10 and

(B) at least one further active compound selected from the following groups

- (1) inhibitors of the ergosterol synthesis,
- (2) inhibitors of the respiratory chain at complex I or II,
- (3) inhibitors of the respiratory chain at complex III,
- 15 (4) inhibitors of the mitosis and cell division,
- (5) compounds capable of having a multisite action,
- (6) compounds capable of inducing a host defense,
- (7) inhibitors of the amino acid and/or protein biosynthesis,
- (8) inhibitors of the ATP production,
- 20 (9) inhibitors of the cell wall synthesis,
- (10) inhibitors of the lipid and membrane synthesis,
- (11) inhibitors of the melanine biosynthesis,

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- (12) inhibitors of the nucleic acid synthesis,
- (13) inhibitors of the signal transduction,
- (14) compounds capable of acting as uncoupler,
- (15) other fungicides.

- 5 2. Combinations according to claim 1 comprising at least one compound of the formula (I) selected from the group consisting of
 - (I-1) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methanesulfonate,
 - 10 (I-2) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-6-fluorophenyl methanesulfonate,
 - (I-3) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate,
 - (I-4) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-5-methylphenyl methanesulfonate,
 - 15 (I-5) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-5-chlorophenyl methanesulfonate,
 - (I-6) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-4-methylphenyl methanesulfonate,
 - (I-7) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-4-chlorophenyl methanesulfonate,
 - 20 (I-8) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-6-chlorophenyl methanesulfonate.
3. Method for controlling phytopathogenic harmful fungi, characterized in that mixtures according to Claim 1 or 2 are applied to the phytopathogenic harmful fungi and/or their habitat.
- 25 4. Composition for controlling phytopathogenic harmful fungi, characterized by a content of at least one mixture according to Claim 1 or 2, in addition to extenders and/or surfactants.
5. Composition according to Claim 4 comprising at least one further active ingredient selected from the group of the insecticides, attractants, sterilants, bactericides, acaricides, nematocides, fungicides, growth regulators, herbicides, fertilizers, safeners and semiochemicals.
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- 6. Use of mixtures according to Claim 1 or 2 for control of phytopathogenic harmful fungi.
- 7. Use of mixtures according to Claim 1 or 2 as plant growth regulators.
- 8. Process for producing compositions for controlling phytopathogenic harmful fungi, characterized in that mixtures according to Claim 1 or 2 are mixed with extenders and/or surfactants.
- 5 9. Use of compounds of the mixtures according to Claim 1 for treatment of transgenic plants.
- 10. Use of compounds of mixtures according to Claim 1 for treatment of seed and of seed of transgenic plants.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/053578

A. CLASSIFICATION OF SUBJECT MATTER

INV. A01N43/80 A01P3/00 A01P21/00 A01N43/40 A01N43/50
A01N43/54 A01N43/56 A01N43/653 A01N37/34 A01N37/38
A01N37/46 A01N37/50 A01N45/02 A01N47/12 A01N47/14

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010/240619 A1 (GREGORY VANN [US] ET AL) 23 September 2010 (2010-09-23) cited in the application pages 1-5 paragraphs [0122] - [0168]; claim 61 paragraph [0942]; tables A-P -----	1-10

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Date of the actual completion of the international search

27 May 2013

Date of mailing of the international search report

06/06/2013

Name and mailing address of the ISA/
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Sawicki, Marcin

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2013/053578

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		AR 069368 A1	20-01-2010
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		WO 2009055514 A2	30-04-2009

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**DOCUMENT MADE AVAILABLE UNDER THE
PATENT COOPERATION TREATY (PCT)**

International application number:	PCT/EP2013/053578
International filing date:	22 February 2013 (22.02.2013)
Document type:	Certified copy of priority document
Document details:	Country/Office: EP
	Number: 12157090.7
	Filing date: 27 February 2012 (27.02.2012)
Date of receipt at the International Bureau:	25 March 2013 (25.03.2013)

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a),(b) or (b-bis)

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Bescheinigung

Die angehefteten
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Patentanmeldung Nr.

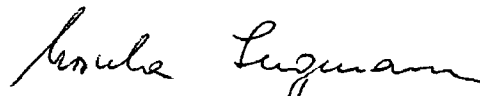
Patent application No.

Demande de brevet n°

12157090.7 / EP12157090

The organization code and number of your priority application, to be used for filing abroad under the Paris Convention, is EP12157090.

Der Präsident des Europäischen Patentamts;
Im Auftrag
For the President of the European Patent Office
Le Président de l'Office européen des brevets
p.o.


U. Ingmann

06

Anmeldung Nr:
Application no.: 12157090.7
Demande no.:

Anmeldetag:
Date of filing: 27.02.12
Date de dépôt:

Anmelder / Applicant(s) / Demandeur(s):

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Bezeichnung der Erfindung / Title of the invention / Titre de l'invention:
(Falls die Bezeichnung der Erfindung nicht angegeben ist, siehe Beschreibung.
If no title is shown please refer to the description.
Si aucun titre n'est indiqué se référer à la description.)

Active compound combinations

In Anspruch genommene Priorität(en) / Priority(Priorities) claimed / Priorité(s) revendiquée(s)
Staat/Tag/Aktenzeichen / State/Date/File no. / Pays/Date/Numéro de dépôt:

Internationale Patentklassifikation / International Patent Classification / Classification internationale de brevets:

A01N

Am Anmeldetag benannte Vertragsstaaten / Contracting States designated at date of filing / Etats contractants désignées lors du dépôt:

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL
PT RO RS SE SI SK SM TR

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Active compound combinations

The present invention relates to active compound combinations, in particular within a fungicide composition, which comprises (A) a thiazolyloxazoline of formula (I) and a further fungicidally active compound (B). Moreover, the invention relates to a method for curatively or preventively
5 controlling the phytopathogenic fungi of plants or crops, to the use of a combination according to the invention for the treatment of seed, to a method for protecting a seed and not at least to the treated seed.

It is already known that certain thiazolyloxazolines can be used as fungicides (see
10 WO2008/013925, WO2008/013622, WO2009/094407, WO2009/094445, WO2009/055514, WO2010/065579, WO2011/85170, and WO 2011/076699).

Since the ecological and economic demands made on modern active ingredients, for example fungicides, are increasing constantly, for example with respect to activity spectrum, toxicity, selectivity, application rate, formation of residues and favourable manufacture, and there can also be problems, for example, with resistances, there is a constant need to develop novel fungicidal compositions
15 which have advantages over the known compositions at least in some areas.

The present invention provides active compound combinations/compositions which in some aspects at least achieve the stated objective.

It has now been found, surprisingly, that the combinations according to the invention not only bring about the additive enhancement of the spectrum of action with respect to the phytopathogen to be
20 controlled that was in principle to be expected but achieves a synergistic effect which extends the range of action of the component (A) and of the component (B) in two ways. Firstly, the rates of application of the component (A) and of the component (B) are lowered whilst the action remains equally good. Secondly, the combination still achieves a high degree of phytopathogen control even where the two individual compounds have become totally ineffective in such a low application rate
25 range. This allows, on the one hand, a substantial broadening of the spectrum of phytopathogens that can be controlled and, on the other hand, increased safety in use.

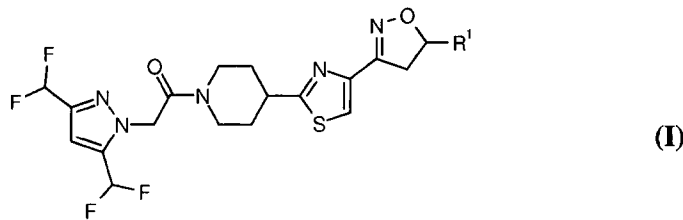
In addition to the fungicidal synergistic activity, the active compound combinations according to the invention have further surprising properties which, in a wider sense, may also be called synergistic, such as, for example: broadening of the activity spectrum to other phytopathogens, for example to
30 resistant strains of plant diseases; lower application rates of the active compounds; sufficient control of pests with the aid of the active compound combinations according to the invention even at application rates where the individual compounds show no or virtually no activity; advantageous behaviour during formulation or during use, for example during grinding, sieving, emulsifying, dissolving

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or dispensing; improved storage stability and light stability; advantageous residue formation; improved toxicological or ecotoxicological behaviour; improved properties of the plant, for example better growth, increased harvest yields, a better developed root system, a larger leaf area, greener leaves, stronger shoots, less seed required, lower phytotoxicity, mobilization of the defence system of the plant, good compatibility with plants. Thus, the use of the active compound combinations or compositions according to the invention contributes considerably to keeping young cereal stands healthy, which increases, for example, the winter survival of the cereal seed treated, and also safeguards quality and yield. Moreover, the active compound combinations according to the invention may contribute to enhanced systemic action. Even if the individual compounds of the combination have no sufficient systemic properties, the active compound combinations according to the invention may still have this property. In a similar manner, the active compound combinations according to the invention may result in higher persistency of the fungicidal action.

Accordingly, the present invention provides a combination comprising:

(A) at least one thiazolyloxazoline of formula (I)



in which

R¹ represents phenyl, which is at least substituted with one methylsulfonyloxy and optionally be additionally substituted by one substituents selected from the group consisting of methyl, methoxy, fluoro or chloro,

or an agrochemically acceptable salt thereof,

and

(B) at least one further active compound selected from the following groups

- (1) inhibitors of the ergosterol synthesis,
- (2) inhibitors of the respiratory chain at complex I or II,
- (3) inhibitors of the respiratory chain at complex III,
- (4) inhibitors of the mitosis and cell division,

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- (5) compounds capable of having a multisite action,
- (6) compounds capable of inducing a host defense,
- (7) inhibitors of the amino acid and/or protein biosynthesis,
- (8) inhibitors of the ATP production,
- 5 (9) inhibitors of the cell wall synthesis,
- (10) inhibitors of the lipid and membrane synthesis,
- (11) inhibitors of the melanine biosynthesis,
- (12) inhibitors of the nucleic acid synthesis,
- (13) inhibitors of the signal transduction,
- 10 (14) compounds capable of acting as uncoupler,
- (15) other fungicides.

Preference is given to combinations comprising at least one compound of the formula (I) selected from the group consisting of

- (I-1) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-
15 4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methanesulfonate,
- (I-2) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-
4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-6-fluorophenyl methanesulfonate,
- (I-3) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-
4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate,
- 20 (I-4) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-
4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-5-methylphenyl methanesulfonate,
- (I-5) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-
4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-5-chlorophenyl methanesulfonate,
- (I-6) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-
25 4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-4-methylphenyl methanesulfonate,

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(I-7) 2-{3-[2-(1-[[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl]piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-4-chlorophenyl methanesulfonate,

(I-8) 2-{3-[2-(1-[[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl]piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-6-chlorophenyl methanesulfonate.

- 5 In the description below numbers in parenthesis behind a compound name represent the CAS Registry No. of said compound.

Preference is further given to combinations comprising at least one further active compound (B) selected from the following groups:

- (1) Inhibitors of the ergosterol biosynthesis, for example (1.1) aldimorph (1704-28-5), (1.2) 10 azaconazole (60207-31-0), (1.3) bitertanol (55179-31-2), (1.4) bromuconazole (116255-48-2), (1.5) cyproconazole (113096-99-4), (1.6) diclobutrazole (75736-33-3), (1.7) difenoconazole (119446-68-3), (1.8) diniconazole (83657-24-3), (1.9) diniconazole-M (83657-18-5), (1.10) dodemorph (1593-77-7), (1.11) dodemorph acetate (31717-87-0), (1.12) epoxiconazole (106325-08-0), (1.13) etaconazole (60207-93-4), (1.14) fenarimol (60168-88-9), (1.15) fenbuconazole 15 (114369-43-6), (1.16) fenhexamid (126833-17-8), (1.17) fenpropidin (67306-00-7), (1.18) fenpropimorph (67306-03-0), (1.19) fluquinconazole (136426-54-5), (1.20) flurprimidol (56425-91-3), (1.21) flusilazole (85509-19-9), (1.22) flutriafol (76674-21-0), (1.23) furconazole (112839-33-5), (1.24) furconazole-cis (112839-32-4), (1.25) hexaconazole (79983-71-4), (1.26) imazalil (60534-80-7), (1.27) imazalil sulfate (58594-72-2), (1.28) imibenconazole (86598-92-7), (1.29) 20 ipconazole (125225-28-7), (1.30) metconazole (125116-23-6), (1.31) myclobutanil (88671-89-0), (1.32) naftifine (65472-88-0), (1.33) nuarimol (63284-71-9), (1.34) oxpoconazole (174212-12-5), (1.35) paclobutrazol (76738-62-0), (1.36) pefurazoate (101903-30-4), (1.37) penconazole (66246-88-6), (1.38) piperalin (3478-94-2), (1.39) prochloraz (67747-09-5), (1.40) propiconazole (60207-90-1), (1.41) prothioconazole (178928-70-6), (1.42) pyributicarb (88678-67-5), (1.43) pyrifeno 25 (88283-41-4), (1.44) quinconazole (103970-75-8), (1.45) simeconazole (149508-90-7), (1.46) spiroxamine (118134-30-8), (1.47) tebuconazole (107534-96-3), (1.48) terbinafine (91161-71-6), (1.49) tetraconazole (112281-77-3), (1.50) triadimefon (43121-43-3), (1.51) triadimenol (89482-17-7), (1.52) tridemorph (81412-43-3), (1.53) triflumizole (68694-11-1), (1.54) triforine (26644-46-2), (1.55) triticonazole (131983-72-7), (1.56) uniconazole (83657-22-1), (1.57) uniconazole-p 30 (83657-17-4), (1.58) viniconazole (77174-66-4), (1.59) voriconazole (137234-62-9), (1.60) 1-(4-chlorophenyl)-2-(1H-1,2,4-triazol-1-yl)cycloheptanol (129586-32-9), (1.61) methyl 1-(2,2-dimethyl-2,3-dihydro-1H-inden-1-yl)-1H-imidazole-5-carboxylate (110323-95-0), (1.62) N'-{5-(difluoromethyl)-2-methyl-4-[3-(trimethylsilyl)propoxy]phenyl}-N-ethyl-N-methylimidoforamide, (1.63) N-ethyl-N-methyl-N'-{2-methyl-5-(trifluoromethyl)-4-[3-

(trimethylsilyl)propoxy]phenyl]imidoformamide, (1.64) O-[1-(4-methoxyphenoxy)-3,3-dimethylbutan-2-yl] 1H-imidazole-1-carbothioate (111226-71-2).

- (2) inhibitors of the respiratory chain at complex I or II, for example (2.1) bixafen (581809-46-3),
 5 (2.2) boscalid (188425-85-6), (2.3) carboxin (5234-68-4), (2.4) diflumetorim (130339-07-0), (2.5) fenfuram (24691-80-3), (2.6) fluopyram (658066-35-4), (2.7) flutolanil (66332-96-5), (2.8) fluxapyroxad (907204-31-3), (2.9) furametpyr (123572-88-3), (2.10) furmecyclox (60568-05-0),
 (2.11) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate 1RS,4SR,9SR) (881685-58-1), (2.12) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.13)
 10 isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.14) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.15) isopyrazam (syn epimeric racemate 1RS,4SR,9RS), (2.16) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.17) isopyrazam (syn-epimeric enantiomer 1S,4R,9S), (2.18) mepronil (55814-41-0), (2.19) oxycarboxin (5259-88-1), (2.20) penflufen (494793-67-8), (2.21) penthiopyrad (183675-82-3), (2.22) sedaxane (874967-67-6), (2.23) thifluzamide (130000-40-7),
 15 (2.24) 1-methyl-N-[2-(1,1,2,2-tetrafluoroethoxy)phenyl]-3-(trifluoromethyl)-1H-pyrazole-4-carboxamide, (2.25) 3-(difluoromethyl)-1-methyl-N-[2-(1,1,2,2-tetrafluoroethoxy)phenyl]-1H-pyrazole-4-carboxamide, (2.26) 3-(difluoromethyl)-N-[4-fluoro-2-(1,1,2,3,3,3-hexafluoropropoxy)phenyl]-1-methyl-1H-pyrazole-4-carboxamide, (2.27) N-[1-(2,4-dichlorophenyl)-1-methoxypropan-2-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-
 20 carboxamide (1092400-95-7), (2.28) 5,8-difluoro-N-[2-(2-fluoro-4-{[4-(trifluoromethyl)pyridin-2-yl]oxy}phenyl)ethyl]quinazolin-4-amine (1210070-84-0), (2.29) benzovindiflupyr, (2.30) N-[(1S,4R)-9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.31) N-[(1R,4S)-9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-
 25 methyl-1H-pyrazole-4-carboxamide, (2.32) 3-(Difluoromethyl)-1-methyl-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)-1H-pyrazol-4-carboxamid, (2.33) 1,3,5-Trimethyl-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)-1H-pyrazol-4-carboxamid, (2.34) 1-Methyl-3-(trifluoromethyl)-N-(1,3,3-trimethyl-2,3-dihydro-1H-inden-4-yl)-1H-pyrazol-4-carboxamid, (2.35) 1-Methyl-3-(trifluoromethyl)-N-[(1S)-1,3,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazol-4-carboxamid,
 30 (2.36) 1-Methyl-3-(trifluoromethyl)-N-[(1R)-1,3,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazol-4-carboxamid, (2.37) 3-(Difluoromethyl)-1-methyl-N-[(3S)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazol-4-carboxamid, (2.38) 3-(Difluoromethyl)-1-methyl-N-[(3R)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazol-4-carboxamid, (2.39) 1,3,5-Trimethyl-N-[(3R)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazol-4-carboxamid, (2.40) 1,3,5-Trimethyl-N-
 35 [(3S)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazol-4-carboxamid.

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(3) inhibitors of the respiratory chain at complex III, for example (3.1) ametoctradin (865318-97-4), (3.2) amisulbrom (348635-87-0), (3.3) azoxystrobin (131860-33-8), (3.4) cyazofamid (120116-88-3), (3.5) coumethoxystrobin (850881-30-0), (3.6) coumoxystrobin (850881-70-8), (3.7) dimoxystrobin (141600-52-4), (3.8) enestroburin (238410-11-2), (3.9) famoxadone (131807-57-3), (3.10) fenamidone (161326-34-7), (3.11) fenoxystrobin (918162-02-4), (3.12) fluoxastrobin (361377-29-9), (3.13) kresoxim-methyl (143390-89-0), (3.14) metominostrobin (133408-50-1), (3.15) orysastrobin (189892-69-1), (3.16) picoxystrobin (117428-22-5), (3.17) pyraclostrobin (175013-18-0), (3.18) pyrametostrobin (915410-70-7), (3.19) pyraoxystrobin (862588-11-2), (3.20) pyribencarb (799247-52-2), (3.21) triclopyricarb (902760-40-1), (3.22) trifloxystrobin (141517-21-7), (3.23) (2E)-2-(2-{{6-(3-chloro-2-methylphenoxy)-5-fluoropyrimidin-4-yl}oxy}phenyl)-2-(methoxyimino)-N-methylethanamide, (3.24) (2E)-2-(methoxyimino)-N-methyl-2-(2-{{((1E)-1-[3-(trifluoromethyl)phenyl]ethylidene}amino)oxy}methyl}phenyl)ethanamide, (3.25) (2E)-2-(methoxyimino)-N-methyl-2-[2-{{(E)-1-[3-(trifluoromethyl)phenyl]ethoxy}imino}methyl}phenyl)ethanamide (158169-73-4), (3.26) (2E)-2-[2-{{((1E)-1-(3-{{(E)-1-fluoro-2-phenylethenyl}oxy}phenyl)ethylidene}amino)oxy}methyl}phenyl]-2-(methoxyimino)-N-methylethanamide (326896-28-0), (3.27) (2E)-2-[2-{{((2E,3E)-4-(2,6-dichlorophenyl)but-3-en-2-ylidene}amino)oxy}methyl}phenyl]-2-(methoxyimino)-N-methylethanamide, (3.28) 2-chloro-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)pyridine-3-carboxamide (119899-14-8), (3.29) 5-methoxy-2-methyl-4-(2-{{((1E)-1-[3-(trifluoromethyl)phenyl]ethylidene}amino)oxy}methyl}phenyl)-2,4-dihydro-3H-1,2,4-triazol-3-one, (3.30) methyl (2E)-2-[2-{{cyclopropyl[(4-methoxyphenyl)imino]methyl}sulfanyl}methyl}phenyl]-3-methoxyprop-2-enoate (149601-03-6), (3.31) N-(3-ethyl-3,5,5-trimethylcyclohexyl)-3-(formylamino)-2-hydroxybenzamide (226551-21-9), (3.32) 2-[2-{{(2,5-dimethylphenoxy)methyl}phenyl}-2-methoxy-N-methylacetamide (173662-97-0), (3.33) (2R)-2-[2-{{(2,5-dimethylphenoxy)methyl}phenyl}-2-methoxy-N-methylacetamide (394657-24-0).

(4) Inhibitors of the mitosis and cell division, for example (4.1) benomyl (17804-35-2), (4.2) carbendazim (10605-21-7), (4.3) chlorfenazole (3574-96-7), (4.4) diethofencarb (87130-20-9), (4.5) ethaboxam (162650-77-3), (4.6) fluopicolide (239110-15-7), (4.7) fuberidazole (3878-19-1), (4.8) pencycuron (66063-05-6), (4.9) thiabendazole (148-79-8), (4.10) thiophanate-methyl (23564-05-8), (4.11) thiophanate (23564-06-9), (4.12) zoxamide (156052-68-5), (4.13) 5-chloro-7-(4-methylpiperidin-1-yl)-6-(2,4,6-trifluorophenyl)[1,2,4]triazolo[1,5-a]pyrimidine (214706-53-3), (4.14) 3-chloro-5-(6-chloropyridin-3-yl)-6-methyl-4-(2,4,6-trifluorophenyl)pyridazine (1002756-87-7).

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(5) Compounds capable to have a multisite action, like for example (5.1) bordeaux mixture (8011-63-0), (5.2) captafol (2425-06-1), (5.3) captan (133-06-2), (5.4) chlorothalonil (1897-45-6), (5.5) copper hydroxide (20427-59-2), (5.6) copper naphthenate (1338-02-9), (5.7) copper oxide (1317-39-1), (5.8) copper oxychloride (1332-40-7), (5.9) copper(2+) sulfate (7758-98-7), (5.10) dichlofluanid (1085-98-9), (5.11) dithianon (3347-22-6), (5.12) dodine (2439-10-3), (5.13) dodine free base, (5.14) ferbam (14484-64-1), (5.15) fluorofolpet (719-96-0), (5.16) folpet (133-07-3), (5.17) guazatine (108173-90-6), (5.18) guazatine acetate, (5.19) iminoctadine (13516-27-3), (5.20) iminoctadine albesilate (169202-06-6), (5.21) iminoctadine triacetate (57520-17-9), (5.22) man-copper (53988-93-5), (5.23) mancozeb (8018-01-7), (5.24) maneb (12427-38-2), (5.25) metiram (9006-42-2), (5.26) metiram zinc (9006-42-2), (5.27) oxine-copper (10380-28-6), (5.28) propa-midine (104-32-5), (5.29) propineb (12071-83-9), (5.30) sulphur and sulphur preparations includ-
10 ing calcium polysulphide (7704-34-9), (5.31) thiram (137-26-8), (5.32) tolylfluanid (731-27-1), (5.33) zineb (12122-67-7), (5.34) ziram (137-30-4).

(6) Compounds capable to induce a host defence, like for example (6.1) acibenzolar-S-methyl
15 (135158-54-2), (6.2) isotianil (224049-04-1), (6.3) probenazole (27605-76-1), (6.4) tiadinil (223580-51-6).

(7) Inhibitors of the amino acid and/or protein biosynthesis, for example (7.1) andoprim (23951-85-1), (7.2) blasticidin-S (2079-00-7), (7.3) cyprodinil (121552-61-2), (7.4) kasugamycin (6980-18-3), (7.5) kasugamycin hydrochloride hydrate (19408-46-9), (7.6) mepanipyrim (110235-47-7),
20 (7.7) pyrimethanil (53112-28-0), (7.8) 3-(5-fluoro-3,3,4,4-tetramethyl-3,4-dihydroisoquinolin-1-yl)quinoline (861647-32-7).

(8) Inhibitors of the ATP production, for example (8.1) fentin acetate (900-95-8), (8.2) fentin chloride (639-58-7), (8.3) fentin hydroxide (76-87-9), (8.4) silthiofam (175217-20-6).

(9) Inhibitors of the cell wall synthesis, for example (9.1) benthiavalicarb (177406-68-7), (9.2)
25 dimethomorph (110488-70-5), (9.3) flumorph (211867-47-9), (9.4) iprovalicarb (140923-17-7), (9.5) mandipropamid (374726-62-2), (9.6) polyoxins (11113-80-7), (9.7) polyoxorim (22976-86-9), (9.8) validamycin A (37248-47-8), (9.9) valifenalate (283159-94-4; 283159-90-0).

(10) Inhibitors of the lipid and membrane synthesis, for example (10.1) biphenyl (92-52-4), (10.2) chloroneb (2675-77-6), (10.3) dicloran (99-30-9), (10.4) edifenphos (17109-49-8), (10.5) etridia-
30 zole (2593-15-9), (10.6) iodocarb (55406-53-6), (10.7) iprobenfos (26087-47-8), (10.8) iso-prothiolane (50512-35-1), (10.9) propamocarb (25606-41-1), (10.10) propamocarb hydrochloride (25606-41-1), (10.11) prothiocarb (19622-08-3), (10.12) pyrazophos (13457-18-6), (10.13) quin-tozene (82-68-8), (10.14) tecnazene (117-18-0), (10.15) tolclofos-methyl (57018-04-9).

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- (11) Inhibitors of the melanine biosynthesis, for example (11.1) carpropamid (104030-54-8), (11.2) diclocymet (139920-32-4), (11.3) fenoxanil (115852-48-7), (11.4) phthalide (27355-22-2), (11.5) pyroquilon (57369-32-1), (11.6) tricyclazole (41814-78-2), (11.7) 2,2,2-trifluoroethyl {3-methyl-1-[(4-methylbenzoyl)amino]butan-2-yl}carbamate (851524-22-6).
- 5 (12) Inhibitors of the nucleic acid synthesis, for example (12.1) benalaxyl (71626-11-4), (12.2) benalaxyl-M (kiralaxyl) (98243-83-5), (12.3) bupirimate (41483-43-6), (12.4) clozylacon (67932-85-8), (12.5) dimethirimol (5221-53-4), (12.6) ethirimol (23947-60-6), (12.7) furalaxyl (57646-30-7), (12.8) hymexazol (10004-44-1), (12.9) metalaxyl (57837-19-1), (12.10) metalaxyl-M (mefenoxam) (70630-17-0), (12.11) ofurace (58810-48-3), (12.12) oxadixyl (77732-09-3), (12.13)
- 10 oxolinic acid (14698-29-4).
- (13) Inhibitors of the signal transduction, for example (13.1) chlozolate (84332-86-5), (13.2) fenpiclonil (74738-17-3), (13.3) fludioxonil (131341-86-1), (13.4) iprodione (36734-19-7), (13.5) procymidone (32809-16-8), (13.6) quinoxifen (124495-18-7), (13.7) vinclozolin (50471-44-8).
- (14) Compounds capable to act as an uncoupler, like for example (14.1) binapacryl (485-31-4),
- 15 (14.2) dinocap (131-72-6), (14.3) ferimzone (89269-64-7), (14.4) fluazinam (79622-59-6), (14.5) meptyldinocap (131-72-6).
- (15) Further compounds, like for example (15.1) benthiazole (21564-17-0), (15.2) bethoxazin (163269-30-5), (15.3) capsimycin (70694-08-5), (15.4) carvone (99-49-0), (15.5) chinomethionat (2439-01-2), (15.6) pyriofenone (chlazafenone) (688046-61-9), (15.7) cufraneb (11096-18-7),
- 20 (15.8) cyflufenamid (180409-60-3), (15.9) cymoxanil (57966-95-7), (15.10) cyprosulfamide (221667-31-8), (15.11) dazomet (533-74-4), (15.12) debacarb (62732-91-6), (15.13) dichlorophen (97-23-4), (15.14) diclomezine (62865-36-5), (15.15) difenzoquat (49866-87-7), (15.16) difenzoquat methylsulphate (43222-48-6), (15.17) diphenylamine (122-39-4), (15.18) ecomate, (15.19) fenpyrazamine (473798-59-3), (15.20) flumetover (154025-04-4), (15.21) fluoroimide (41205-21-
- 25 4), (15.22) flusulfamide (106917-52-6), (15.23) flutianil (304900-25-2), (15.24) fosetyl-aluminium (39148-24-8), (15.25) fosetyl-calcium, (15.26) fosetyl-sodium (39148-16-8), (15.27) hexachlorobenzene (118-74-1), (15.28) irumamycin (81604-73-1), (15.29) methasulfocarb (66952-49-6), (15.30) methyl isothiocyanate (556-61-6), (15.31) metrafenone (220899-03-6), (15.32) mildiomyacin (67527-71-3), (15.33) natamycin (7681-93-8), (15.34) nickel dimethyldithiocarbamate (15521-65-0), (15.35) nitrothal-isopropyl (10552-74-6), (15.36) octhilinone (26530-20-
- 30 1), (15.37) oxamocarb (917242-12-7), (15.38) oxyfenthiin (34407-87-9), (15.39) pentachlorophenol and salts (87-86-5), (15.40) phenothrin, (15.41) phosphorous acid and its salts (13598-36-2), (15.42) propamocarb-fosetilate, (15.43) propanosine-sodium (88498-02-6), (15.44) proquinazid (189278-12-4), (15.45) pyrimorph (868390-90-3), (15.45e) (2E)-3-(4-tert-butylphenyl)-3-(2-chloropyridin-4-yl)-1-(morpholin-4-yl)prop-2-en-1-one (1231776-28-5), (15.45z) (2Z)-3-(4-tert-
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butylphenyl)-3-(2-chloropyridin-4-yl)-1-(morpholin-4-yl)prop-2-en-1-one (1231776-29-6),
 (15.46) pyrrolnitrine (1018-71-9), (15.47) tebufloquin (376645-78-2), (15.48) tecloftalam (76280-
 91-6), (15.49) tolifenide (304911-98-6), (15.50) triazoxide (72459-58-6), (15.51) trichlamide
 (70193-21-4), (15.52) zarilamid (84527-51-5), (15.53) (3S,6S,7R,8R)-8-benzyl-3-[(3-
 5 [(isobutyryloxy)methoxy]-4-methoxypyridin-2-yl)carbonyl)amino]-6-methyl-4,9-dioxo-1,5-
 dioxonan-7-yl 2-methylpropanoate (517875-34-2), (15.54) 1-(4-{4-[(5R)-5-(2,6-difluorophenyl)-
 4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-
 pyrazol-1-yl]ethanone (1003319-79-6), (15.55) 1-(4-{4-[(5S)-5-(2,6-difluorophenyl)-4,5-dihydro-
 1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-
 10 yl]ethanone (1003319-80-9), (15.56) 1-(4-{4-[5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-
 yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone
 (1003318-67-9), (15.57) 1-(4-methoxyphenoxy)-3,3-dimethylbutan-2-yl 1H-imidazole-1-
 carboxylate (111227-17-9), (15.58) 2,3,5,6-tetrachloro-4-(methylsulfonyl)pyridine (13108-52-6),
 (15.59) 2,3-dibutyl-6-chlorothieno[2,3-d]pyrimidin-4(3H)-one (221451-58-7), (15.60) 2,6-
 15 dimethyl-1H,5H-[1,4]dithiino[2,3-c:5,6-c']dipyrrole-1,3,5,7(2H,6H)-tetrone, (15.61) 2-[5-methyl-
 3-(trifluoromethyl)-1H-pyrazol-1-yl]-1-(4-{4-[(5R)-5-phenyl-4,5-dihydro-1,2-oxazol-3-yl]-1,3-
 thiazol-2-yl}piperidin-1-yl)ethanone (1003316-53-7), (15.62) 2-[5-methyl-3-(trifluoromethyl)-
 1H-pyrazol-1-yl]-1-(4-{4-[(5S)-5-phenyl-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-
 1-yl)ethanone (1003316-54-8), (15.63) 2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]-1-{4-[4-
 20 (5-phenyl-4,5-dihydro-1,2-oxazol-3-yl)-1,3-thiazol-2-yl]piperidin-1-yl}ethanone (1003316-51-5),
 (15.64) 2-butoxy-6-iodo-3-propyl-4H-chromen-4-one, (15.65) 2-chloro-5-[2-chloro-1-(2,6-
 difluoro-4-methoxyphenyl)-4-methyl-1H-imidazol-5-yl]pyridine, (15.66) 2-phenylphenol and
 salts (90-43-7), (15.67) 3-(4,4,5-trifluoro-3,3-dimethyl-3,4-dihydroisoquinolin-1-yl)quinoline
 (861647-85-0), (15.68) 3,4,5-trichloropyridine-2,6-dicarbonitrile (17824-85-0), (15.69) 3-[5-(4-
 25 chlorophenyl)-2,3-dimethyl-1,2-oxazolidin-3-yl]pyridine, (15.70) 3-chloro-5-(4-chlorophenyl)-4-
 (2,6-difluorophenyl)-6-methylpyridazine, (15.71) 4-(4-chlorophenyl)-5-(2,6-difluorophenyl)-3,6-
 dimethylpyridazine, (15.72) 5-amino-1,3,4-thiadiazole-2-thiol, (15.73) 5-chloro-N'-phenyl-N'-
 (prop-2-yn-1-yl)thiophene-2-sulfonohydrazide (134-31-6), (15.74) 5-fluoro-2-[(4-
 fluorobenzyl)oxy]pyrimidin-4-amine (1174376-11-4), (15.75) 5-fluoro-2-[(4-
 30 methylbenzyl)oxy]pyrimidin-4-amine (1174376-25-0), (15.76) 5-methyl-6-
 octyl[1,2,4]triazolo[1,5-a]pyrimidin-7-amine, (15.77) ethyl (2Z)-3-amino-2-cyano-3-phenylprop-
 2-enoate, (15.78) N'-(4-{[3-(4-chlorobenzyl)-1,2,4-thiadiazol-5-yl]oxy})-2,5-dimethylphenyl)-N-
 ethyl-N-methylimidofornamide, (15.79) N-(4-chlorobenzyl)-3-[3-methoxy-4-(prop-2-yn-1-
 yloxy)phenyl]propanamide, (15.80) N-[(4-chlorophenyl)(cyano)methyl]-3-[3-methoxy-4-(prop-2-
 35 yn-1-yloxy)phenyl]propanamide, (15.81) N-[(5-bromo-3-chloropyridin-2-yl)methyl]-2,4-
 dichloropyridine-3-carboxamide, (15.82) N-[1-(5-bromo-3-chloropyridin-2-yl)ethyl]-2,4-
 dichloropyridine-3-carboxamide, (15.83) N-[1-(5-bromo-3-chloropyridin-2-yl)ethyl]-2-fluoro-4-
 iodopyridine-3-carboxamide, (15.84) N-{(E)-[(cyclopropylmethoxy)imino][6-(difluoromethoxy)-

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- 2,3-difluorophenyl)methyl}-2-phenylacetamide (221201-92-9), (15.85) N-{(Z)-
 [(cyclopropylmethoxy)imino][6-(difluoromethoxy)-2,3-difluorophenyl)methyl]-2-
 phenylacetamide (221201-92-9), (15.86) N'-{4-[(3-tert-butyl-4-cyano-1,2-thiazol-5-yl)oxy]-2-
 chloro-5-methylphenyl}-N-ethyl-N-methylimidofornamide, (15.87) N-methyl-2-(1-{[5-methyl-3-
 5 (trifluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-N-(1,2,3,4-tetrahydronaphthalen-1-yl)-
 1,3-thiazole-4-carboxamide (922514-49-6), (15.88) N-methyl-2-(1-{[5-methyl-3-
 (trifluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-N-[(1R)-1,2,3,4-tetrahydronaphthalen-1-
 yl]-1,3-thiazole-4-carboxamide (922514-07-6), (15.89) N-methyl-2-(1-{[5-methyl-3-
 (trifluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-N-[(1S)-1,2,3,4-tetrahydronaphthalen-1-
 10 yl]-1,3-thiazole-4-carboxamide (922514-48-5), (15.90) pentyl {6-[[[(1-methyl-1H-tetrazol-5-
 yl)(phenyl)methylidene]amino]oxy)methyl]pyridin-2-yl}carbamate, (15.91) phenazine-1-
 carboxylic acid, (15.92) quinolin-8-ol (134-31-6), (15.93) quinolin-8-ol sulfate (2:1) (134-31-6),
 (15.94) tert-butyl {6-[[[(1-methyl-1H-tetrazol-5-
 yl)(phenyl)methylene]amino]oxy)methyl]pyridin-2-yl}carbamate.
- 15 (16) Further compounds, like for example (16.1) 1-methyl-3-(trifluoromethyl)-N-[2'-
 (trifluoromethyl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide, (16.2) N-(4'-chlorobiphenyl-2-yl)-3-
 (difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (16.3) N-(2',4'-dichlorobiphenyl-2-yl)-3-
 (difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (16.4) 3-(difluoromethyl)-1-methyl-N-
 [4'-(trifluoromethyl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide, (16.5) N-(2',5'-difluorobiphenyl-
 20 2-yl)-1-methyl-3-(trifluoromethyl)-1H-pyrazole-4-carboxamide, (16.6) 3-(difluoromethyl)-1-
 methyl-N-[4'-(prop-1-yn-1-yl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide, (16.7) 5-fluoro-1,3-
 dimethyl-N-[4'-(prop-1-yn-1-yl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide, (16.8) 2-chloro-N-
 [4'-(prop-1-yn-1-yl)biphenyl-2-yl]pyridine-3-carboxamide, (16.9) 3-(difluoromethyl)-N-[4'-(3,3-
 dimethylbut-1-yn-1-yl)biphenyl-2-yl]-1-methyl-1H-pyrazole-4-carboxamide, (16.10) N-[4'-(3,3-
 25 dimethylbut-1-yn-1-yl)biphenyl-2-yl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide, (16.11)
 3-(difluoromethyl)-N-(4'-ethynylbiphenyl-2-yl)-1-methyl-1H-pyrazole-4-carboxamide, (16.12) N-
 (4'-ethynylbiphenyl-2-yl)-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide, (16.13) 2-chloro-N-
 (4'-ethynylbiphenyl-2-yl)pyridine-3-carboxamide, (16.14) 2-chloro-N-[4'-(3,3-dimethylbut-1-yn-
 1-yl)biphenyl-2-yl]pyridine-3-carboxamide, (16.15) 4-(difluoromethyl)-2-methyl-N-[4'-
 30 (trifluoromethyl)biphenyl-2-yl]-1,3-thiazole-5-carboxamide, (16.16) 5-fluoro-N-[4'-(3-hydroxy-3-
 methylbut-1-yn-1-yl)biphenyl-2-yl]-1,3-dimethyl-1H-pyrazole-4-carboxamide, (16.17) 2-chloro-
 N-[4'-(3-hydroxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]pyridine-3-carboxamide, (16.18) 3-
 (difluoromethyl)-N-[4'-(3-methoxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]-1-methyl-1H-pyrazole-
 4-carboxamide, (16.19) 5-fluoro-N-[4'-(3-methoxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]-1,3-
 35 dimethyl-1H-pyrazole-4-carboxamide, (16.20) 2-chloro-N-[4'-(3-methoxy-3-methylbut-1-yn-1-
 yl)biphenyl-2-yl]pyridine-3-carboxamide, (16.21) (5-bromo-2-methoxy-4-methylpyridin-3-
 yl)(2,3,4-trimethoxy-6-methylphenyl)methanone, (16.22) N-[2-(4-{[3-(4-chlorophenyl)prop-2-yn-

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1-yl]oxy]-3-methoxyphenyl)ethyl]-N2-(methylsulfonyl)valinamide (220706-93-4), (16.23) 4-oxo-4-[(2-phenylethyl)amino]butanoic acid, (16.24) but-3-yn-1-yl {6-[[[(Z)-(1-methyl-1H-tetrazol-5-yl)(phenyl)methylene]amino]oxy)methyl]pyridin-2-yl}carbamate, (16.25) 4-Amino-5-fluorpyrimidin-2-ol (mesomere Form: 6-Amino-5-fluorpyrimidin-2(1H)-on), (16.26) propyl 3,4,5-trihydroxybenzoate.

All named mixing partners of the classes (1) to (16) can, if their functional groups enable this, optionally form salts with suitable bases or acids.

Particular preference is further given to combinations comprising at least one further active compound (B) selected from the following groups:

- 10 (2.1) bixafen, (2.2) boscalid, (2.6) fluopyram, (2.8) fluxapyroxad, (2.11) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate 1RS,4SR,9SR), (2.12) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.13) isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.14) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.15) isopyrazam (syn epimeric racemate 1RS,4SR,9RS), (2.16) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.17) 15 isopyrazam (syn-epimeric enantiomer 1S,4R,9S), (2.27) N-[1-(2,4-dichlorophenyl)-1-methoxypropan-2-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.29) N-[9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (3.1) ametocradin, (3.2) amisulbrom, (3.3) azoxystrobin, (3.4) cyazofamid, (3.9) famoxadone, (3.10) fenamidone, (3.12) fluoxastrobin, (3.16) picoxystrobin, (3.17) pyraclostrobin, (3.22) trifloxystrobin, (4.6) fluopicolide, (5.1) bordeaux mixture, 20 (5.4) chlorothalonil, (5.5) copper hydroxide, (5.7) copper oxide, (5.8) copper oxychloride, (5.9) copper(2+) sulfate, (5.16) folpet, (5.23) mancozeb, (5.25) metiram, (5.26) metiram zinc, (5.29) propineb, (5.30) sulphur and sulphur preparations including calcium polysulphide, (7.7) pyrimethanil, (9.2) dimethomorph, (9.4) iprovalicarb, (9.5) mandipropamid, (10.9) propamocarb, 25 (10.10) propamocarb hydrochloride, (12.9) metalaxyl, (12.10) metalaxyl-M (mefenoxam), (14.4) fluazinam, (15.9) cymoxanil, (15.24) fosetyl-aluminium, (15.25) fosetyl-calcium, (15.26) fosetyl-sodium, (15.41) phosphorous acid and its salts, (15.42) propamocarb-fosetyl, (15.54) 1-(4-{4-[(5R)-5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone, (15.55) 1-(4-{4-[(5S)-5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone, (15.56) 1-(4-{4-[5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone, (15.60) 2,6-dimethyl-1H,5H-[1,4]dithiino[2,3-c:5,6-c']dipyrrole-1,3,5,7(2H,6H)-tetrone, (15.90) pentyl {6-[[[(1-methyl-1H-tetrazol-5-yl)(phenyl)methylene]amino]oxy)methyl]pyridin-2-yl}carbamate.
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All named mixing partners of the classes (1) to (15) can, if their functional groups enable this, optionally form salts with suitable bases or acids.

In a preferred embodiment this invention is directed to mixtures comprising the compound (I-1) as compound of formula (I) and one component (B), in particular the mixtures (I-1) + (1.1),
5 (I-1) + (1.2), (I-1) + (1.3), (I-1) + (1.4), (I-1) + (1.5), (I-1) + (1.6), (I-1) + (1.7), (I-1) + (1.8),
(I-1) + (1.9), (I-1) + (1.10), (I-1) + (1.11), (I-1) + (1.12), (I-1) + (1.13), (I-1) + (1.14), (I-1) + (1.15),
(I-1) + (1.16), (I-1) + (1.17), (I-1) + (1.18), (I-1) + (1.19), (I-1) + (1.20), (I-1) + (1.21), (I-1) + (1.22),
(I-1) + (1.23), (I-1) + (1.24), (I-1) + (1.25), (I-1) + (1.26), (I-1) + (1.27), (I-1) + (1.28), (I-1) + (1.29),
(I-1) + (1.30), (I-1) + (1.31), (I-1) + (1.32), (I-1) + (1.33), (I-1) + (1.34), (I-1) + (1.35), (I-1) + (1.36),
10 (I-1) + (1.37), (I-1) + (1.38), (I-1) + (1.39), (I-1) + (1.40), (I-1) + (1.41), (I-1) + (1.42), (I-1) + (1.43),
(I-1) + (1.44), (I-1) + (1.45), (I-1) + (1.46), (I-1) + (1.47), (I-1) + (1.48), (I-1) + (1.49), (I-1) + (1.50),
(I-1) + (1.51), (I-1) + (1.52), (I-1) + (1.53), (I-1) + (1.54), (I-1) + (1.55), (I-1) + (1.56), (I-1) + (1.57),
(I-1) + (1.58), (I-1) + (1.59), (I-1) + (1.60), (I-1) + (1.61), (I-1) + (1.62), (I-1) + (1.63), (I-1) + (1.64),
(I-1) + (2.1), (I-1) + (2.2), (I-1) + (2.3), (I-1) + (2.4), (I-1) + (2.5), (I-1) + (2.6), (I-1) + (2.7),
15 (I-1) + (2.8), (I-1) + (2.9), (I-1) + (2.10), (I-1) + (2.11), (I-1) + (2.12), (I-1) + (2.13), (I-1) + (2.14),
(I-1) + (2.15), (I-1) + (2.16), (I-1) + (2.17), (I-1) + (2.18), (I-1) + (2.19), (I-1) + (2.20), (I-1) + (2.21),
(I-1) + (2.22), (I-1) + (2.23), (I-1) + (2.24), (I-1) + (2.25), (I-1) + (2.26), (I-1) + (2.27), (I-1) + (2.28),
(I-1) + (2.29), (I-1) + (3.1), (I-1) + (3.2), (I-1) + (3.3), (I-1) + (3.4), (I-1) + (3.5), (I-1) + (3.6),
(I-1) + (3.7), (I-1) + (3.8), (I-1) + (3.9), (I-1) + (3.10), (I-1) + (3.11), (I-1) + (3.12), (I-1) + (3.13),
20 (I-1) + (3.14), (I-1) + (3.15), (I-1) + (3.16), (I-1) + (3.17), (I-1) + (3.18), (I-1) + (3.19), (I-1) + (3.20),
(I-1) + (3.21), (I-1) + (3.22), (I-1) + (3.23), (I-1) + (3.24), (I-1) + (3.25), (I-1) + (3.26), (I-1) + (3.27),
(I-1) + (3.28), (I-1) + (3.29), (I-1) + (3.30), (I-1) + (3.31), (I-1) + (3.32), (I-1) + (3.33), (I-1) + (4.1),
(I-1) + (4.2), (I-1) + (4.3), (I-1) + (4.4), (I-1) + (4.5), (I-1) + (4.6), (I-1) + (4.7), (I-1) + (4.8),
(I-1) + (4.9), (I-1) + (4.10), (I-1) + (4.11), (I-1) + (4.12), (I-1) + (4.13), (I-1) + (4.14), (I-1) + (5.1),
25 (I-1) + (5.2), (I-1) + (5.3), (I-1) + (5.4), (I-1) + (5.5), (I-1) + (5.6), (I-1) + (5.7), (I-1) + (5.8),
(I-1) + (5.9), (I-1) + (5.10), (I-1) + (5.11), (I-1) + (5.12), (I-1) + (5.13), (I-1) + (5.14), (I-1) + (5.15),
(I-1) + (5.16), (I-1) + (5.17), (I-1) + (5.18), (I-1) + (5.19), (I-1) + (5.20), (I-1) + (5.21), (I-1) + (5.22),
(I-1) + (5.23), (I-1) + (5.24), (I-1) + (5.25), (I-1) + (5.26), (I-1) + (5.27), (I-1) + (5.28), (I-1) + (5.29),
(I-1) + (5.30), (I-1) + (5.31), (I-1) + (5.32), (I-1) + (5.33), (I-1) + (5.34), (I-1) + (6.1), (I-1) + (6.2),
30 (I-1) + (6.3), (I-1) + (6.4), (I-1) + (7.1), (I-1) + (7.2), (I-1) + (7.3), (I-1) + (7.4), (I-1) + (7.5),
(I-1) + (7.6), (I-1) + (7.7), (I-1) + (7.8), (I-1) + (8.1), (I-1) + (8.2), (I-1) + (8.3), (I-1) + (8.4),
(I-1) + (9.1), (I-1) + (9.2), (I-1) + (9.3), (I-1) + (9.4), (I-1) + (9.5), (I-1) + (9.6), (I-1) + (9.7),
(I-1) + (9.8), (I-1) + (9.9), (I-1) + (10.1), (I-1) + (10.2), (I-1) + (10.3), (I-1) + (10.4), (I-1) + (10.5),
(I-1) + (10.6), (I-1) + (10.7), (I-1) + (10.8), (I-1) + (10.9), (I-1) + (10.10), (I-1) + (10.11),
35 (I-1) + (10.12), (I-1) + (10.13), (I-1) + (10.14), (I-1) + (10.15), (I-1) + (11.1), (I-1) + (11.2),
(I-1) + (11.3), (I-1) + (11.4), (I-1) + (11.5), (I-1) + (11.6), (I-1) + (11.7), (I-1) + (12.1), (I-1) + (12.2),
(I-1) + (12.3), (I-1) + (12.4), (I-1) + (12.5), (I-1) + (12.6), (I-1) + (12.7), (I-1) + (12.8), (I-1) + (12.9),

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(I-1) + (12.10), (I-1) + (12.11), (I-1) + (12.12), (I-1) + (12.13), (I-1) + (13.1), (I-1) + (13.2),
(I-1) + (13.3), (I-1) + (13.4), (I-1) + (13.5), (I-1) + (13.6), (I-1) + (13.7), (I-1) + (14.1), (I-1) + (14.2),
(I-1) + (14.3), (I-1) + (14.4), (I-1) + (14.5), (I-1) + (15.1), (I-1) + (15.2), (I-1) + (15.3), (I-1) + (15.4),
(I-1) + (15.5), (I-1) + (15.6), (I-1) + (15.7), (I-1) + (15.8), (I-1) + (15.9), (I-1) + (15.10),
5 (I-1) + (15.11), (I-1) + (15.12), (I-1) + (15.13), (I-1) + (15.14), (I-1) + (15.15), (I-1) + (15.16),
(I-1) + (15.17), (I-1) + (15.18), (I-1) + (15.19), (I-1) + (15.20), (I-1) + (15.21), (I-1) + (15.22),
(I-1) + (15.23), (I-1) + (15.24), (I-1) + (15.25), (I-1) + (15.26), (I-1) + (15.27), (I-1) + (15.28),
(I-1) + (15.29), (I-1) + (15.30), (I-1) + (15.31), (I-1) + (15.32), (I-1) + (15.33), (I-1) + (15.34),
(I-1) + (15.35), (I-1) + (15.36), (I-1) + (15.37), (I-1) + (15.38), (I-1) + (15.39), (I-1) + (15.41),
10 (I-1) + (15.42), (I-1) + (15.43), (I-1) + (15.44), (I-1) + (15.45), (I-1) + (15.46), (I-1) + (15.47),
(I-1) + (15.48), (I-1) + (15.49), (I-1) + (15.50), (I-1) + (15.51), (I-1) + (15.52), (I-1) + (15.53),
(I-1) + (15.54), (I-1) + (15.55), (I-1) + (15.56), (I-1) + (15.57), (I-1) + (15.58), (I-1) + (15.59),
(I-1) + (15.60), (I-1) + (15.61), (I-1) + (15.62), (I-1) + (15.63), (I-1) + (15.64), (I-1) + (15.65),
(I-1) + (15.66), (I-1) + (15.67), (I-1) + (15.68), (I-1) + (15.69), (I-1) + (15.70), (I-1) + (15.71),
15 (I-1) + (15.72), (I-1) + (15.73), (I-1) + (15.74), (I-1) + (15.75), (I-1) + (15.76), (I-1) + (15.77),
(I-1) + (15.78), (I-1) + (15.79), (I-1) + (15.80), (I-1) + (15.81), (I-1) + (15.82), (I-1) + (15.83),
(I-1) + (15.84), (I-1) + (15.85), (I-1) + (15.86), (I-1) + (15.87), (I-1) + (15.88), (I-1) + (15.89),
(I-1) + (15.90), (I-1) + (15.91), (I-1) + (15.92), (I-1) + (15.93), (I-1) + (15.94).

In a further particularly preferred embodiment this invention is directed to mixtures comprising the
20 compound (I-1) as compound of formula (I) and one component (B), in particular the mixtures
(I-1) + (2.1), (I-1) + (2.2), (I-1) + (2.6), (I-1) + (2.8), (I-1) + (2.11), (I-1) + (2.12), (I-1) + (2.13),
(I-1) + (2.14), (I-1) + (2.15), (I-1) + (2.16), (I-1) + (2.17), (I-1) + (2.29), (I-1) + (3.1), (I-1) + (3.2),
(I-1) + (3.3), (I-1) + (3.4), (I-1) + (3.9), (I-1) + (3.10), (I-1) + (3.12), (I-1) + (3.16), (I-1) + (3.17),
(I-1) + (3.22), (I-1) + (4.6), (I-1) + (5.1), (I-1) + (5.4), (I-1) + (5.5), (I-1) + (5.7), (I-1) + (5.8),
25 (I-1) + (5.9), (I-1) + (5.16), (I-1) + (5.23), (I-1) + (5.25), (I-1) + (5.26), (I-1) + (5.29), (I-1) + (5.30),
(I-1) + (7.7), (I-1) + (9.2), (I-1) + (9.4), (I-1) + (9.5), (I-1) + (10.9), (I-1) + (10.10), (I-1) + (12.9),
(I-1) + (12.10), (I-1) + (14.4), (I-1) + (15.9), (I-1) + (15.24), (I-1) + (15.25), (I-1) + (15.26),
(I-1) + (15.41), (I-1) + (15.42), (I-1) + (15.54), (I-1) + (15.55), (I-1) + (15.56), (I-1) + (15.60),
(I-1) + (15.90).

30 In a preferred embodiment this invention is directed to mixtures comprising the compound (I-2) as
compound of formula (I) and one component (B), in particular the mixtures (I-2) + (1.1), (I-
2) + (1.2), (I-2) + (1.3), (I-2) + (1.4), (I-2) + (1.5), (I-2) + (1.6), (I-2) + (1.7), (I-2) + (1.8), (I-
2) + (1.9), (I-2) + (1.10), (I-2) + (1.11), (I-2) + (1.12), (I-2) + (1.13), (I-2) + (1.14), (I-2) + (1.15), (I-
2) + (1.16), (I-2) + (1.17), (I-2) + (1.18), (I-2) + (1.19), (I-2) + (1.20), (I-2) + (1.21), (I-2) + (1.22),
35 (I-2) + (1.23), (I-2) + (1.24), (I-2) + (1.25), (I-2) + (1.26), (I-2) + (1.27), (I-2) + (1.28), (I-2) + (1.29),
(I-2) + (1.30), (I-2) + (1.31), (I-2) + (1.32), (I-2) + (1.33), (I-2) + (1.34), (I-2) + (1.35), (I-2) + (1.36),

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(I-2) + (1.37), (I-2) + (1.38), (I-2) + (1.39), (I-2) + (1.40), (I-2) + (1.41), (I-2) + (1.42), (I-2) + (1.43),
(I-2) + (1.44), (I-2) + (1.45), (I-2) + (1.46), (I-2) + (1.47), (I-2) + (1.48), (I-2) + (1.49), (I-2) + (1.50),
(I-2) + (1.51), (I-2) + (1.52), (I-2) + (1.53), (I-2) + (1.54), (I-2) + (1.55), (I-2) + (1.56), (I-2) + (1.57),
(I-2) + (1.58), (I-2) + (1.59), (I-2) + (1.60), (I-2) + (1.61), (I-2) + (1.62), (I-2) + (1.63), (I-2) + (1.64),
5 (I-2) + (2.1), (I-2) + (2.2), (I-2) + (2.3), (I-2) + (2.4), (I-2) + (2.5), (I-2) + (2.6), (I-2) + (2.7), (I-
2) + (2.8), (I-2) + (2.9), (I-2) + (2.10), (I-2) + (2.11), (I-2) + (2.12), (I-2) + (2.13), (I-2) + (2.14), (I-
2) + (2.15), (I-2) + (2.16), (I-2) + (2.17), (I-2) + (2.18), (I-2) + (2.19), (I-2) + (2.20), (I-2) + (2.21),
(I-2) + (2.22), (I-2) + (2.23), (I-2) + (2.24), (I-2) + (2.25), (I-2) + (2.26), (I-2) + (2.27), (I-2) + (2.28),
(I-2) + (2.29), (I-2) + (3.1), (I-2) + (3.2), (I-2) + (3.3), (I-2) + (3.4), (I-2) + (3.5), (I-2) + (3.6), (I-
10 2) + (3.7), (I-2) + (3.8), (I-2) + (3.9), (I-2) + (3.10), (I-2) + (3.11), (I-2) + (3.12), (I-2) + (3.13), (I-
2) + (3.14), (I-2) + (3.15), (I-2) + (3.16), (I-2) + (3.17), (I-2) + (3.18), (I-2) + (3.19), (I-2) + (3.20),
(I-2) + (3.21), (I-2) + (3.22), (I-2) + (3.23), (I-2) + (3.24), (I-2) + (3.25), (I-2) + (3.26), (I-2) + (3.27),
(I-2) + (3.28), (I-2) + (3.29), (I-2) + (3.30), (I-2) + (3.31), (I-2) + (3.32), (I-2) + (3.33), (I-2) + (4.1),
(I-2) + (4.2), (I-2) + (4.3), (I-2) + (4.4), (I-2) + (4.5), (I-2) + (4.6), (I-2) + (4.7), (I-2) + (4.8), (I-
15 2) + (4.9), (I-2) + (4.10), (I-2) + (4.11), (I-2) + (4.12), (I-2) + (4.13), (I-2) + (4.14), (I-2) + (5.1), (I-
2) + (5.2), (I-2) + (5.3), (I-2) + (5.4), (I-2) + (5.5), (I-2) + (5.6), (I-2) + (5.7), (I-2) + (5.8), (I-
2) + (5.9), (I-2) + (5.10), (I-2) + (5.11), (I-2) + (5.12), (I-2) + (5.13), (I-2) + (5.14), (I-2) + (5.15), (I-
2) + (5.16), (I-2) + (5.17), (I-2) + (5.18), (I-2) + (5.19), (I-2) + (5.20), (I-2) + (5.21), (I-2) + (5.22),
(I-2) + (5.23), (I-2) + (5.24), (I-2) + (5.25), (I-2) + (5.26), (I-2) + (5.27), (I-2) + (5.28), (I-2) + (5.29),
20 (I-2) + (5.30), (I-2) + (5.31), (I-2) + (5.32), (I-2) + (5.33), (I-2) + (5.34), (I-2) + (6.1), (I-2) + (6.2),
(I-2) + (6.3), (I-2) + (6.4), (I-2) + (7.1), (I-2) + (7.2), (I-2) + (7.3), (I-2) + (7.4), (I-2) + (7.5), (I-
2) + (7.6), (I-2) + (7.7), (I-2) + (7.8), (I-2) + (8.1), (I-2) + (8.2), (I-2) + (8.3), (I-2) + (8.4), (I-
2) + (9.1), (I-2) + (9.2), (I-2) + (9.3), (I-2) + (9.4), (I-2) + (9.5), (I-2) + (9.6), (I-2) + (9.7), (I-
2) + (9.8), (I-2) + (9.9), (I-2) + (10.1), (I-2) + (10.2), (I-2) + (10.3), (I-2) + (10.4), (I-2) + (10.5), (I-
25 2) + (10.6), (I-2) + (10.7), (I-2) + (10.8), (I-2) + (10.9), (I-2) + (10.10), (I-2) + (10.11), (I-
2) + (10.12), (I-2) + (10.13), (I-2) + (10.14), (I-2) + (10.15), (I-2) + (11.1), (I-2) + (11.2), (I-
2) + (11.3), (I-2) + (11.4), (I-2) + (11.5), (I-2) + (11.6), (I-2) + (11.7), (I-2) + (12.1), (I-2) + (12.2),
(I-2) + (12.3), (I-2) + (12.4), (I-2) + (12.5), (I-2) + (12.6), (I-2) + (12.7), (I-2) + (12.8), (I-2) + (12.9),
(I-2) + (12.10), (I-2) + (12.11), (I-2) + (12.12), (I-2) + (12.13), (I-2) + (13.1), (I-2) + (13.2), (I-
30 2) + (13.3), (I-2) + (13.4), (I-2) + (13.5), (I-2) + (13.6), (I-2) + (13.7), (I-2) + (14.1), (I-2) + (14.2),
(I-2) + (14.3), (I-2) + (14.4), (I-2) + (14.5), (I-2) + (15.1), (I-2) + (15.2), (I-2) + (15.3), (I-2) + (15.4),
(I-2) + (15.5), (I-2) + (15.6), (I-2) + (15.7), (I-2) + (15.8), (I-2) + (15.9), (I-2) + (15.10), (I-
2) + (15.11), (I-2) + (15.12), (I-2) + (15.13), (I-2) + (15.14), (I-2) + (15.15), (I-2) + (15.16), (I-
2) + (15.17), (I-2) + (15.18), (I-2) + (15.19), (I-2) + (15.20), (I-2) + (15.21), (I-2) + (15.22), (I-
35 2) + (15.23), (I-2) + (15.24), (I-2) + (15.25), (I-2) + (15.26), (I-2) + (15.27), (I-2) + (15.28), (I-
2) + (15.29), (I-2) + (15.30), (I-2) + (15.31), (I-2) + (15.32), (I-2) + (15.33), (I-2) + (15.34), (I-
2) + (15.35), (I-2) + (15.36), (I-2) + (15.37), (I-2) + (15.38), (I-2) + (15.39), (I-2) + (15.41), (I-
2) + (15.42), (I-2) + (15.43), (I-2) + (15.44), (I-2) + (15.45), (I-2) + (15.46), (I-2) + (15.47), (I-

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2) + (15.48), (I-2) + (15.49), (I-2) + (15.50), (I-2) + (15.51), (I-2) + (15.52), (I-2) + (15.53), (I-2) + (15.54), (I-2) + (15.55), (I-2) + (15.56), (I-2) + (15.57), (I-2) + (15.58), (I-2) + (15.59), (I-2) + (15.60), (I-2) + (15.61), (I-2) + (15.62), (I-2) + (15.63), (I-2) + (15.64), (I-2) + (15.65), (I-2) + (15.66), (I-2) + (15.67), (I-2) + (15.68), (I-2) + (15.69), (I-2) + (15.70), (I-2) + (15.71), (I-2) + (15.72), (I-2) + (15.73), (I-2) + (15.74), (I-2) + (15.75), (I-2) + (15.76), (I-2) + (15.77), (I-2) + (15.78), (I-2) + (15.79), (I-2) + (15.80), (I-2) + (15.81), (I-2) + (15.82), (I-2) + (15.83), (I-2) + (15.84), (I-2) + (15.85), (I-2) + (15.86), (I-2) + (15.87), (I-2) + (15.88), (I-2) + (15.89), (I-2) + (15.90), (I-2) + (15.91), (I-2) + (15.92), (I-2) + (15.93), (I-2) + (15.94).

In a further particularly preferred embodiment this invention is directed to mixtures comprising the compound (I-2) as compound of formula (I) and one component (B), in particular the mixtures (I-2) + (2.1), (I-2) + (2.2), (I-2) + (2.6), (I-2) + (2.8), (I-2) + (2.11), (I-2) + (2.12), (I-2) + (2.13), (I-2) + (2.14), (I-2) + (2.15), (I-2) + (2.16), (I-2) + (2.17), (I-2) + (2.29), (I-2) + (3.1), (I-2) + (3.2), (I-2) + (3.3), (I-2) + (3.4), (I-2) + (3.9), (I-2) + (3.10), (I-2) + (3.12), (I-2) + (3.16), (I-2) + (3.17), (I-2) + (3.22), (I-2) + (4.6), (I-2) + (5.1), (I-2) + (5.4), (I-2) + (5.5), (I-2) + (5.7), (I-2) + (5.8), (I-2) + (5.9), (I-2) + (5.16), (I-2) + (5.23), (I-2) + (5.25), (I-2) + (5.26), (I-2) + (5.29), (I-2) + (5.30), (I-2) + (7.7), (I-2) + (9.2), (I-2) + (9.4), (I-2) + (9.5), (I-2) + (10.9), (I-2) + (10.10), (I-2) + (12.9), (I-2) + (12.10), (I-2) + (14.4), (I-2) + (15.9), (I-2) + (15.24), (I-2) + (15.25), (I-2) + (15.26), (I-2) + (15.41), (I-2) + (15.42), (I-2) + (15.54), (I-2) + (15.55), (I-2) + (15.56), (I-2) + (15.60), (I-2) + (15.90).

In a preferred embodiment this invention is directed to mixtures comprising the compound (I-3) as compound of formula (I) and one component (B), in particular the mixtures (I-3) + (1.1), (I-3) + (1.2), (I-3) + (1.3), (I-3) + (1.4), (I-3) + (1.5), (I-3) + (1.6), (I-3) + (1.7), (I-3) + (1.8), (I-3) + (1.9), (I-3) + (1.10), (I-3) + (1.11), (I-3) + (1.12), (I-3) + (1.13), (I-3) + (1.14), (I-3) + (1.15), (I-3) + (1.16), (I-3) + (1.17), (I-3) + (1.18), (I-3) + (1.19), (I-3) + (1.20), (I-3) + (1.21), (I-3) + (1.22), (I-3) + (1.23), (I-3) + (1.24), (I-3) + (1.25), (I-3) + (1.26), (I-3) + (1.27), (I-3) + (1.28), (I-3) + (1.29), (I-3) + (1.30), (I-3) + (1.31), (I-3) + (1.32), (I-3) + (1.33), (I-3) + (1.34), (I-3) + (1.35), (I-3) + (1.36), (I-3) + (1.37), (I-3) + (1.38), (I-3) + (1.39), (I-3) + (1.40), (I-3) + (1.41), (I-3) + (1.42), (I-3) + (1.43), (I-3) + (1.44), (I-3) + (1.45), (I-3) + (1.46), (I-3) + (1.47), (I-3) + (1.48), (I-3) + (1.49), (I-3) + (1.50), (I-3) + (1.51), (I-3) + (1.52), (I-3) + (1.53), (I-3) + (1.54), (I-3) + (1.55), (I-3) + (1.56), (I-3) + (1.57), (I-3) + (1.58), (I-3) + (1.59), (I-3) + (1.60), (I-3) + (1.61), (I-3) + (1.62), (I-3) + (1.63), (I-3) + (1.64), (I-3) + (2.1), (I-3) + (2.2), (I-3) + (2.3), (I-3) + (2.4), (I-3) + (2.5), (I-3) + (2.6), (I-3) + (2.7), (I-3) + (2.8), (I-3) + (2.9), (I-3) + (2.10), (I-3) + (2.11), (I-3) + (2.12), (I-3) + (2.13), (I-3) + (2.14), (I-3) + (2.15), (I-3) + (2.16), (I-3) + (2.17), (I-3) + (2.18), (I-3) + (2.19), (I-3) + (2.20), (I-3) + (2.21), (I-3) + (2.22), (I-3) + (2.23), (I-3) + (2.24), (I-3) + (2.25), (I-3) + (2.26), (I-3) + (2.27), (I-3) + (2.28), (I-3) + (2.29), (I-3) + (3.1), (I-3) + (3.2), (I-3) + (3.3), (I-3) + (3.4), (I-3) + (3.5), (I-3) + (3.6), (I-3) + (3.7), (I-3) + (3.8), (I-3) + (3.9), (I-3) + (3.10), (I-3) + (3.11), (I-3) + (3.12), (I-3) + (3.13), (I-

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3) + (3.14), (I-3) + (3.15), (I-3) + (3.16), (I-3) + (3.17), (I-3) + (3.18), (I-3) + (3.19), (I-3) + (3.20),
(I-3) + (3.21), (I-3) + (3.22), (I-3) + (3.23), (I-3) + (3.24), (I-3) + (3.25), (I-3) + (3.26), (I-3) + (3.27),
(I-3) + (3.28), (I-3) + (3.29), (I-3) + (3.30), (I-3) + (3.31), (I-3) + (3.32), (I-3) + (3.33), (I-3) + (4.1),
(I-3) + (4.2), (I-3) + (4.3), (I-3) + (4.4), (I-3) + (4.5), (I-3) + (4.6), (I-3) + (4.7), (I-3) + (4.8), (I-
5 3) + (4.9), (I-3) + (4.10), (I-3) + (4.11), (I-3) + (4.12), (I-3) + (4.13), (I-3) + (4.14), (I-3) + (5.1), (I-
3) + (5.2), (I-3) + (5.3), (I-3) + (5.4), (I-3) + (5.5), (I-3) + (5.6), (I-3) + (5.7), (I-3) + (5.8), (I-
3) + (5.9), (I-3) + (5.10), (I-3) + (5.11), (I-3) + (5.12), (I-3) + (5.13), (I-3) + (5.14), (I-3) + (5.15), (I-
3) + (5.16), (I-3) + (5.17), (I-3) + (5.18), (I-3) + (5.19), (I-3) + (5.20), (I-3) + (5.21), (I-3) + (5.22),
(I-3) + (5.23), (I-3) + (5.24), (I-3) + (5.25), (I-3) + (5.26), (I-3) + (5.27), (I-3) + (5.28), (I-3) + (5.29),
10 (I-3) + (5.30), (I-3) + (5.31), (I-3) + (5.32), (I-3) + (5.33), (I-3) + (5.34), (I-3) + (6.1), (I-3) + (6.2),
(I-3) + (6.3), (I-3) + (6.4), (I-3) + (7.1), (I-3) + (7.2), (I-3) + (7.3), (I-3) + (7.4), (I-3) + (7.5), (I-
3) + (7.6), (I-3) + (7.7), (I-3) + (7.8), (I-3) + (8.1), (I-3) + (8.2), (I-3) + (8.3), (I-3) + (8.4), (I-
3) + (9.1), (I-3) + (9.2), (I-3) + (9.3), (I-3) + (9.4), (I-3) + (9.5), (I-3) + (9.6), (I-3) + (9.7), (I-
3) + (9.8), (I-3) + (9.9), (I-3) + (10.1), (I-3) + (10.2), (I-3) + (10.3), (I-3) + (10.4), (I-3) + (10.5), (I-
15 3) + (10.6), (I-3) + (10.7), (I-3) + (10.8), (I-3) + (10.9), (I-3) + (10.10), (I-3) + (10.11), (I-
3) + (10.12), (I-3) + (10.13), (I-3) + (10.14), (I-3) + (10.15), (I-3) + (11.1), (I-3) + (11.2), (I-
3) + (11.3), (I-3) + (11.4), (I-3) + (11.5), (I-3) + (11.6), (I-3) + (11.7), (I-3) + (12.1), (I-3) + (12.2),
(I-3) + (12.3), (I-3) + (12.4), (I-3) + (12.5), (I-3) + (12.6), (I-3) + (12.7), (I-3) + (12.8), (I-3) + (12.9),
(I-3) + (12.10), (I-3) + (12.11), (I-3) + (12.12), (I-3) + (12.13), (I-3) + (13.1), (I-3) + (13.2), (I-
20 3) + (13.3), (I-3) + (13.4), (I-3) + (13.5), (I-3) + (13.6), (I-3) + (13.7), (I-3) + (14.1), (I-3) + (14.2),
(I-3) + (14.3), (I-3) + (14.4), (I-3) + (14.5), (I-3) + (15.1), (I-3) + (15.2), (I-3) + (15.3), (I-3) + (15.4),
(I-3) + (15.5), (I-3) + (15.6), (I-3) + (15.7), (I-3) + (15.8), (I-3) + (15.9), (I-3) + (15.10), (I-
3) + (15.11), (I-3) + (15.12), (I-3) + (15.13), (I-3) + (15.14), (I-3) + (15.15), (I-3) + (15.16), (I-
3) + (15.17), (I-3) + (15.18), (I-3) + (15.19), (I-3) + (15.20), (I-3) + (15.21), (I-3) + (15.22), (I-
25 3) + (15.23), (I-3) + (15.24), (I-3) + (15.25), (I-3) + (15.26), (I-3) + (15.27), (I-3) + (15.28), (I-
3) + (15.29), (I-3) + (15.30), (I-3) + (15.31), (I-3) + (15.32), (I-3) + (15.33), (I-3) + (15.34), (I-
3) + (15.35), (I-3) + (15.36), (I-3) + (15.37), (I-3) + (15.38), (I-3) + (15.39), (I-3) + (15.41), (I-
3) + (15.42), (I-3) + (15.43), (I-3) + (15.44), (I-3) + (15.45), (I-3) + (15.46), (I-3) + (15.47), (I-
3) + (15.48), (I-3) + (15.49), (I-3) + (15.50), (I-3) + (15.51), (I-3) + (15.52), (I-3) + (15.53), (I-
30 3) + (15.54), (I-3) + (15.55), (I-3) + (15.56), (I-3) + (15.57), (I-3) + (15.58), (I-3) + (15.59), (I-
3) + (15.60), (I-3) + (15.61), (I-3) + (15.62), (I-3) + (15.63), (I-3) + (15.64), (I-3) + (15.65), (I-
3) + (15.66), (I-3) + (15.67), (I-3) + (15.68), (I-3) + (15.69), (I-3) + (15.70), (I-3) + (15.71), (I-
3) + (15.72), (I-3) + (15.73), (I-3) + (15.74), (I-3) + (15.75), (I-3) + (15.76), (I-3) + (15.77), (I-
3) + (15.78), (I-3) + (15.79), (I-3) + (15.80), (I-3) + (15.81), (I-3) + (15.82), (I-3) + (15.83), (I-
35 3) + (15.84), (I-3) + (15.85), (I-3) + (15.86), (I-3) + (15.87), (I-3) + (15.88), (I-3) + (15.89), (I-
3) + (15.90), (I-3) + (15.91), (I-3) + (15.92), (I-3) + (15.93), (I-3) + (15.94).

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In a further particularly preferred embodiment this invention is directed to mixtures comprising the compound (I-3) as compound of formula (I) and one component (B), in particular the mixtures (I-3) + (2.1), (I-3) + (2.2), (I-3) + (2.6), (I-3) + (2.8), (I-3) + (2.11), (I-3) + (2.12), (I-3) + (2.13), (I-3) + (2.14), (I-3) + (2.15), (I-3) + (2.16), (I-3) + (2.17), (I-3) + (2.29), (I-3) + (3.1), (I-3) + (3.2), (I-3) + (3.3), (I-3) + (3.4), (I-3) + (3.9), (I-3) + (3.10), (I-3) + (3.12), (I-3) + (3.16), (I-3) + (3.17), (I-3) + (3.22), (I-3) + (4.6), (I-3) + (5.1), (I-3) + (5.4), (I-3) + (5.5), (I-3) + (5.7), (I-3) + (5.8), (I-3) + (5.9), (I-3) + (5.16), (I-3) + (5.23), (I-3) + (5.25), (I-3) + (5.26), (I-3) + (5.29), (I-3) + (5.30), (I-3) + (7.7), (I-3) + (9.2), (I-3) + (9.4), (I-3) + (9.5), (I-3) + (10.9), (I-3) + (10.10), (I-3) + (12.9), (I-3) + (12.10), (I-3) + (14.4), (I-3) + (15.9), (I-3) + (15.24), (I-3) + (15.25), (I-3) + (15.26), (I-3) + (15.41), (I-3) + (15.42), (I-3) + (15.54), (I-3) + (15.55), (I-3) + (15.56), (I-3) + (15.60), (I-3) + (15.90).

In a preferred embodiment this invention is directed to mixtures comprising the compound (I-4) as compound of formula (I) and one component (B), in particular the mixtures (I-4) + (1.1), (I-4) + (1.2), (I-4) + (1.3), (I-4) + (1.4), (I-4) + (1.5), (I-4) + (1.6), (I-4) + (1.7), (I-4) + (1.8), (I-4) + (1.9), (I-4) + (1.10), (I-4) + (1.11), (I-4) + (1.12), (I-4) + (1.13), (I-4) + (1.14), (I-4) + (1.15), (I-4) + (1.16), (I-4) + (1.17), (I-4) + (1.18), (I-4) + (1.19), (I-4) + (1.20), (I-4) + (1.21), (I-4) + (1.22), (I-4) + (1.23), (I-4) + (1.24), (I-4) + (1.25), (I-4) + (1.26), (I-4) + (1.27), (I-4) + (1.28), (I-4) + (1.29), (I-4) + (1.30), (I-4) + (1.31), (I-4) + (1.32), (I-4) + (1.33), (I-4) + (1.34), (I-4) + (1.35), (I-4) + (1.36), (I-4) + (1.37), (I-4) + (1.38), (I-4) + (1.39), (I-4) + (1.40), (I-4) + (1.41), (I-4) + (1.42), (I-4) + (1.43), (I-4) + (1.44), (I-4) + (1.45), (I-4) + (1.46), (I-4) + (1.47), (I-4) + (1.48), (I-4) + (1.49), (I-4) + (1.50), (I-4) + (1.51), (I-4) + (1.52), (I-4) + (1.53), (I-4) + (1.54), (I-4) + (1.55), (I-4) + (1.56), (I-4) + (1.57), (I-4) + (1.58), (I-4) + (1.59), (I-4) + (1.60), (I-4) + (1.61), (I-4) + (1.62), (I-4) + (1.63), (I-4) + (1.64), (I-4) + (2.1), (I-4) + (2.2), (I-4) + (2.3), (I-4) + (2.4), (I-4) + (2.5), (I-4) + (2.6), (I-4) + (2.7), (I-4) + (2.8), (I-4) + (2.9), (I-4) + (2.10), (I-4) + (2.11), (I-4) + (2.12), (I-4) + (2.13), (I-4) + (2.14), (I-4) + (2.15), (I-4) + (2.16), (I-4) + (2.17), (I-4) + (2.18), (I-4) + (2.19), (I-4) + (2.20), (I-4) + (2.21), (I-4) + (2.22), (I-4) + (2.23), (I-4) + (2.24), (I-4) + (2.25), (I-4) + (2.26), (I-4) + (2.27), (I-4) + (2.28), (I-4) + (2.29), (I-4) + (3.1), (I-4) + (3.2), (I-4) + (3.3), (I-4) + (3.4), (I-4) + (3.5), (I-4) + (3.6), (I-4) + (3.7), (I-4) + (3.8), (I-4) + (3.9), (I-4) + (3.10), (I-4) + (3.11), (I-4) + (3.12), (I-4) + (3.13), (I-4) + (3.14), (I-4) + (3.15), (I-4) + (3.16), (I-4) + (3.17), (I-4) + (3.18), (I-4) + (3.19), (I-4) + (3.20), (I-4) + (3.21), (I-4) + (3.22), (I-4) + (3.23), (I-4) + (3.24), (I-4) + (3.25), (I-4) + (3.26), (I-4) + (3.27), (I-4) + (3.28), (I-4) + (3.29), (I-4) + (3.30), (I-4) + (3.31), (I-4) + (3.32), (I-4) + (3.33), (I-4) + (4.1), (I-4) + (4.2), (I-4) + (4.3), (I-4) + (4.4), (I-4) + (4.5), (I-4) + (4.6), (I-4) + (4.7), (I-4) + (4.8), (I-4) + (4.9), (I-4) + (4.10), (I-4) + (4.11), (I-4) + (4.12), (I-4) + (4.13), (I-4) + (4.14), (I-4) + (5.1), (I-4) + (5.2), (I-4) + (5.3), (I-4) + (5.4), (I-4) + (5.5), (I-4) + (5.6), (I-4) + (5.7), (I-4) + (5.8), (I-4) + (5.9), (I-4) + (5.10), (I-4) + (5.11), (I-4) + (5.12), (I-4) + (5.13), (I-4) + (5.14), (I-4) + (5.15), (I-4) + (5.16), (I-4) + (5.17), (I-4) + (5.18), (I-4) + (5.19), (I-4) + (5.20), (I-4) + (5.21), (I-4) + (5.22), (I-4) + (5.23), (I-4) + (5.24), (I-4) + (5.25), (I-4) + (5.26), (I-4) + (5.27), (I-4) + (5.28), (I-4) + (5.29),

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(I-4) + (5.30), (I-4) + (5.31), (I-4) + (5.32), (I-4) + (5.33), (I-4) + (5.34), (I-4) + (6.1), (I-4) + (6.2),
(I-4) + (6.3), (I-4) + (6.4), (I-4) + (7.1), (I-4) + (7.2), (I-4) + (7.3), (I-4) + (7.4), (I-4) + (7.5), (I-
4) + (7.6), (I-4) + (7.7), (I-4) + (7.8), (I-4) + (8.1), (I-4) + (8.2), (I-4) + (8.3), (I-4) + (8.4), (I-
4) + (9.1), (I-4) + (9.2), (I-4) + (9.3), (I-4) + (9.4), (I-4) + (9.5), (I-4) + (9.6), (I-4) + (9.7), (I-
5 4) + (9.8), (I-4) + (9.9), (I-4) + (10.1), (I-4) + (10.2), (I-4) + (10.3), (I-4) + (10.4), (I-4) + (10.5), (I-
4) + (10.6), (I-4) + (10.7), (I-4) + (10.8), (I-4) + (10.9), (I-4) + (10.10), (I-4) + (10.11), (I-
4) + (10.12), (I-4) + (10.13), (I-4) + (10.14), (I-4) + (10.15), (I-4) + (11.1), (I-4) + (11.2), (I-
4) + (11.3), (I-4) + (11.4), (I-4) + (11.5), (I-4) + (11.6), (I-4) + (11.7), (I-4) + (12.1), (I-4) + (12.2),
(I-4) + (12.3), (I-4) + (12.4), (I-4) + (12.5), (I-4) + (12.6), (I-4) + (12.7), (I-4) + (12.8), (I-4) + (12.9),
10 (I-4) + (12.10), (I-4) + (12.11), (I-4) + (12.12), (I-4) + (12.13), (I-4) + (13.1), (I-4) + (13.2), (I-
4) + (13.3), (I-4) + (13.4), (I-4) + (13.5), (I-4) + (13.6), (I-4) + (13.7), (I-4) + (14.1), (I-4) + (14.2),
(I-4) + (14.3), (I-4) + (14.4), (I-4) + (14.5), (I-4) + (15.1), (I-4) + (15.2), (I-4) + (15.3), (I-4) + (15.4),
(I-4) + (15.5), (I-4) + (15.6), (I-4) + (15.7), (I-4) + (15.8), (I-4) + (15.9), (I-4) + (15.10), (I-
4) + (15.11), (I-4) + (15.12), (I-4) + (15.13), (I-4) + (15.14), (I-4) + (15.15), (I-4) + (15.16), (I-
15 4) + (15.17), (I-4) + (15.18), (I-4) + (15.19), (I-4) + (15.20), (I-4) + (15.21), (I-4) + (15.22), (I-
4) + (15.23), (I-4) + (15.24), (I-4) + (15.25), (I-4) + (15.26), (I-4) + (15.27), (I-4) + (15.28), (I-
4) + (15.29), (I-4) + (15.30), (I-4) + (15.31), (I-4) + (15.32), (I-4) + (15.33), (I-4) + (15.34), (I-
4) + (15.35), (I-4) + (15.36), (I-4) + (15.37), (I-4) + (15.38), (I-4) + (15.39), (I-4) + (15.41), (I-
4) + (15.42), (I-4) + (15.43), (I-4) + (15.44), (I-4) + (15.45), (I-4) + (15.46), (I-4) + (15.47), (I-
20 4) + (15.48), (I-4) + (15.49), (I-4) + (15.50), (I-4) + (15.51), (I-4) + (15.52), (I-4) + (15.53), (I-
4) + (15.54), (I-4) + (15.55), (I-4) + (15.56), (I-4) + (15.57), (I-4) + (15.58), (I-4) + (15.59), (I-
4) + (15.60), (I-4) + (15.61), (I-4) + (15.62), (I-4) + (15.63), (I-4) + (15.64), (I-4) + (15.65), (I-
4) + (15.66), (I-4) + (15.67), (I-4) + (15.68), (I-4) + (15.69), (I-4) + (15.70), (I-4) + (15.71), (I-
4) + (15.72), (I-4) + (15.73), (I-4) + (15.74), (I-4) + (15.75), (I-4) + (15.76), (I-4) + (15.77), (I-
25 4) + (15.78), (I-4) + (15.79), (I-4) + (15.80), (I-4) + (15.81), (I-4) + (15.82), (I-4) + (15.83), (I-
4) + (15.84), (I-4) + (15.85), (I-4) + (15.86), (I-4) + (15.87), (I-4) + (15.88), (I-4) + (15.89), (I-
4) + (15.90), (I-4) + (15.91), (I-4) + (15.92), (I-4) + (15.93), (I-4) + (15.94).

In a further particularly preferred embodiment this invention is directed to mixtures comprising the
compound (I-4) as compound of formula (I) and one component (B), in particular the mixtures (I-
30 4) + (2.1), (I-4) + (2.2), (I-4) + (2.6), (I-4) + (2.8), (I-4) + (2.11), (I-4) + (2.12), (I-4) + (2.13), (I-
4) + (2.14), (I-4) + (2.15), (I-4) + (2.16), (I-4) + (2.17), (I-4) + (2.29), (I-4) + (3.1), (I-4) + (3.2), (I-
4) + (3.3), (I-4) + (3.4), (I-4) + (3.9), (I-4) + (3.10), (I-4) + (3.12), (I-4) + (3.16), (I-4) + (3.17), (I-
4) + (3.22), (I-4) + (4.6), (I-4) + (5.1), (I-4) + (5.4), (I-4) + (5.5), (I-4) + (5.7), (I-4) + (5.8), (I-
4) + (5.9), (I-4) + (5.16), (I-4) + (5.23), (I-4) + (5.25), (I-4) + (5.26), (I-4) + (5.29), (I-4) + (5.30), (I-
35 4) + (7.7), (I-4) + (9.2), (I-4) + (9.4), (I-4) + (9.5), (I-4) + (10.9), (I-4) + (10.10), (I-4) + (12.9), (I-
4) + (12.10), (I-4) + (14.4), (I-4) + (15.9), (I-4) + (15.24), (I-4) + (15.25), (I-4) + (15.26), (I-

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4) + (15.41), (I-4) + (15.42), (I-4) + (15.54), (I-4) + (15.55), (I-4) + (15.56), (I-4) + (15.60), (I-4) + (15.90).

In a preferred embodiment this invention is directed to mixtures comprising the compound (I-5) as compound of formula (I) and one component (B), in particular the mixtures (I-5) + (1.1), (I-5) + (1.2), (I-5) + (1.3), (I-5) + (1.4), (I-5) + (1.5), (I-5) + (1.6), (I-5) + (1.7), (I-5) + (1.8), (I-5) + (1.9), (I-5) + (1.10), (I-5) + (1.11), (I-5) + (1.12), (I-5) + (1.13), (I-5) + (1.14), (I-5) + (1.15), (I-5) + (1.16), (I-5) + (1.17), (I-5) + (1.18), (I-5) + (1.19), (I-5) + (1.20), (I-5) + (1.21), (I-5) + (1.22), (I-5) + (1.23), (I-5) + (1.24), (I-5) + (1.25), (I-5) + (1.26), (I-5) + (1.27), (I-5) + (1.28), (I-5) + (1.29), (I-5) + (1.30), (I-5) + (1.31), (I-5) + (1.32), (I-5) + (1.33), (I-5) + (1.34), (I-5) + (1.35), (I-5) + (1.36), (I-5) + (1.37), (I-5) + (1.38), (I-5) + (1.39), (I-5) + (1.40), (I-5) + (1.41), (I-5) + (1.42), (I-5) + (1.43), (I-5) + (1.44), (I-5) + (1.45), (I-5) + (1.46), (I-5) + (1.47), (I-5) + (1.48), (I-5) + (1.49), (I-5) + (1.50), (I-5) + (1.51), (I-5) + (1.52), (I-5) + (1.53), (I-5) + (1.54), (I-5) + (1.55), (I-5) + (1.56), (I-5) + (1.57), (I-5) + (1.58), (I-5) + (1.59), (I-5) + (1.60), (I-5) + (1.61), (I-5) + (1.62), (I-5) + (1.63), (I-5) + (1.64), (I-5) + (2.1), (I-5) + (2.2), (I-5) + (2.3), (I-5) + (2.4), (I-5) + (2.5), (I-5) + (2.6), (I-5) + (2.7), (I-5) + (2.8), (I-5) + (2.9), (I-5) + (2.10), (I-5) + (2.11), (I-5) + (2.12), (I-5) + (2.13), (I-5) + (2.14), (I-5) + (2.15), (I-5) + (2.16), (I-5) + (2.17), (I-5) + (2.18), (I-5) + (2.19), (I-5) + (2.20), (I-5) + (2.21), (I-5) + (2.22), (I-5) + (2.23), (I-5) + (2.24), (I-5) + (2.25), (I-5) + (2.26), (I-5) + (2.27), (I-5) + (2.28), (I-5) + (2.29), (I-5) + (3.1), (I-5) + (3.2), (I-5) + (3.3), (I-5) + (3.4), (I-5) + (3.5), (I-5) + (3.6), (I-5) + (3.7), (I-5) + (3.8), (I-5) + (3.9), (I-5) + (3.10), (I-5) + (3.11), (I-5) + (3.12), (I-5) + (3.13), (I-5) + (3.14), (I-5) + (3.15), (I-5) + (3.16), (I-5) + (3.17), (I-5) + (3.18), (I-5) + (3.19), (I-5) + (3.20), (I-5) + (3.21), (I-5) + (3.22), (I-5) + (3.23), (I-5) + (3.24), (I-5) + (3.25), (I-5) + (3.26), (I-5) + (3.27), (I-5) + (3.28), (I-5) + (3.29), (I-5) + (3.30), (I-5) + (3.31), (I-5) + (3.32), (I-5) + (3.33), (I-5) + (4.1), (I-5) + (4.2), (I-5) + (4.3), (I-5) + (4.4), (I-5) + (4.5), (I-5) + (4.6), (I-5) + (4.7), (I-5) + (4.8), (I-5) + (4.9), (I-5) + (4.10), (I-5) + (4.11), (I-5) + (4.12), (I-5) + (4.13), (I-5) + (4.14), (I-5) + (5.1), (I-5) + (5.2), (I-5) + (5.3), (I-5) + (5.4), (I-5) + (5.5), (I-5) + (5.6), (I-5) + (5.7), (I-5) + (5.8), (I-5) + (5.9), (I-5) + (5.10), (I-5) + (5.11), (I-5) + (5.12), (I-5) + (5.13), (I-5) + (5.14), (I-5) + (5.15), (I-5) + (5.16), (I-5) + (5.17), (I-5) + (5.18), (I-5) + (5.19), (I-5) + (5.20), (I-5) + (5.21), (I-5) + (5.22), (I-5) + (5.23), (I-5) + (5.24), (I-5) + (5.25), (I-5) + (5.26), (I-5) + (5.27), (I-5) + (5.28), (I-5) + (5.29), (I-5) + (5.30), (I-5) + (5.31), (I-5) + (5.32), (I-5) + (5.33), (I-5) + (5.34), (I-5) + (6.1), (I-5) + (6.2), (I-5) + (6.3), (I-5) + (6.4), (I-5) + (7.1), (I-5) + (7.2), (I-5) + (7.3), (I-5) + (7.4), (I-5) + (7.5), (I-5) + (7.6), (I-5) + (7.7), (I-5) + (7.8), (I-5) + (8.1), (I-5) + (8.2), (I-5) + (8.3), (I-5) + (8.4), (I-5) + (9.1), (I-5) + (9.2), (I-5) + (9.3), (I-5) + (9.4), (I-5) + (9.5), (I-5) + (9.6), (I-5) + (9.7), (I-5) + (9.8), (I-5) + (9.9), (I-5) + (10.1), (I-5) + (10.2), (I-5) + (10.3), (I-5) + (10.4), (I-5) + (10.5), (I-5) + (10.6), (I-5) + (10.7), (I-5) + (10.8), (I-5) + (10.9), (I-5) + (10.10), (I-5) + (10.11), (I-5) + (10.12), (I-5) + (10.13), (I-5) + (10.14), (I-5) + (10.15), (I-5) + (11.1), (I-5) + (11.2), (I-5) + (11.3), (I-5) + (11.4), (I-5) + (11.5), (I-5) + (11.6), (I-5) + (11.7), (I-5) + (12.1), (I-5) + (12.2), (I-5) + (12.3), (I-5) + (12.4), (I-5) + (12.5), (I-5) + (12.6), (I-5) + (12.7), (I-5) + (12.8), (I-5) + (12.9),

(I-5) + (12.10), (I-5) + (12.11), (I-5) + (12.12), (I-5) + (12.13), (I-5) + (13.1), (I-5) + (13.2), (I-5) + (13.3), (I-5) + (13.4), (I-5) + (13.5), (I-5) + (13.6), (I-5) + (13.7), (I-5) + (14.1), (I-5) + (14.2), (I-5) + (14.3), (I-5) + (14.4), (I-5) + (14.5), (I-5) + (15.1), (I-5) + (15.2), (I-5) + (15.3), (I-5) + (15.4), (I-5) + (15.5), (I-5) + (15.6), (I-5) + (15.7), (I-5) + (15.8), (I-5) + (15.9), (I-5) + (15.10), (I-5) + (15.11), (I-5) + (15.12), (I-5) + (15.13), (I-5) + (15.14), (I-5) + (15.15), (I-5) + (15.16), (I-5) + (15.17), (I-5) + (15.18), (I-5) + (15.19), (I-5) + (15.20), (I-5) + (15.21), (I-5) + (15.22), (I-5) + (15.23), (I-5) + (15.24), (I-5) + (15.25), (I-5) + (15.26), (I-5) + (15.27), (I-5) + (15.28), (I-5) + (15.29), (I-5) + (15.30), (I-5) + (15.31), (I-5) + (15.32), (I-5) + (15.33), (I-5) + (15.34), (I-5) + (15.35), (I-5) + (15.36), (I-5) + (15.37), (I-5) + (15.38), (I-5) + (15.39), (I-5) + (15.41), (I-5) + (15.42), (I-5) + (15.43), (I-5) + (15.44), (I-5) + (15.45), (I-5) + (15.46), (I-5) + (15.47), (I-5) + (15.48), (I-5) + (15.49), (I-5) + (15.50), (I-5) + (15.51), (I-5) + (15.52), (I-5) + (15.53), (I-5) + (15.54), (I-5) + (15.55), (I-5) + (15.56), (I-5) + (15.57), (I-5) + (15.58), (I-5) + (15.59), (I-5) + (15.60), (I-5) + (15.61), (I-5) + (15.62), (I-5) + (15.63), (I-5) + (15.64), (I-5) + (15.65), (I-5) + (15.66), (I-5) + (15.67), (I-5) + (15.68), (I-5) + (15.69), (I-5) + (15.70), (I-5) + (15.71), (I-5) + (15.72), (I-5) + (15.73), (I-5) + (15.74), (I-5) + (15.75), (I-5) + (15.76), (I-5) + (15.77), (I-5) + (15.78), (I-5) + (15.79), (I-5) + (15.80), (I-5) + (15.81), (I-5) + (15.82), (I-5) + (15.83), (I-5) + (15.84), (I-5) + (15.85), (I-5) + (15.86), (I-5) + (15.87), (I-5) + (15.88), (I-5) + (15.89), (I-5) + (15.90), (I-5) + (15.91), (I-5) + (15.92), (I-5) + (15.93), (I-5) + (15.94).

In a further particularly preferred embodiment this invention is directed to mixtures comprising the compound (I-5) as compound of formula (I) and one component (B), in particular the mixtures (I-5) + (2.1), (I-5) + (2.2), (I-5) + (2.6), (I-5) + (2.8), (I-5) + (2.11), (I-5) + (2.12), (I-5) + (2.13), (I-5) + (2.14), (I-5) + (2.15), (I-5) + (2.16), (I-5) + (2.17), (I-5) + (2.29), (I-5) + (3.1), (I-5) + (3.2), (I-5) + (3.3), (I-5) + (3.4), (I-5) + (3.9), (I-5) + (3.10), (I-5) + (3.12), (I-5) + (3.16), (I-5) + (3.17), (I-5) + (3.22), (I-5) + (4.6), (I-5) + (5.1), (I-5) + (5.4), (I-5) + (5.5), (I-5) + (5.7), (I-5) + (5.8), (I-5) + (5.9), (I-5) + (5.16), (I-5) + (5.23), (I-5) + (5.25), (I-5) + (5.26), (I-5) + (5.29), (I-5) + (5.30), (I-5) + (7.7), (I-5) + (9.2), (I-5) + (9.4), (I-5) + (9.5), (I-5) + (10.9), (I-5) + (10.10), (I-5) + (12.9), (I-5) + (12.10), (I-5) + (14.4), (I-5) + (15.9), (I-5) + (15.24), (I-5) + (15.25), (I-5) + (15.26), (I-5) + (15.41), (I-5) + (15.42), (I-5) + (15.54), (I-5) + (15.55), (I-5) + (15.56), (I-5) + (15.60), (I-5) + (15.90).

In a preferred embodiment this invention is directed to mixtures comprising the compound (I-6) as compound of formula (I) and one component (B), in particular the mixtures (I-6) + (1.1), (I-6) + (1.2), (I-6) + (1.3), (I-6) + (1.4), (I-6) + (1.5), (I-6) + (1.6), (I-6) + (1.7), (I-6) + (1.8), (I-6) + (1.9), (I-6) + (1.10), (I-6) + (1.11), (I-6) + (1.12), (I-6) + (1.13), (I-6) + (1.14), (I-6) + (1.15), (I-6) + (1.16), (I-6) + (1.17), (I-6) + (1.18), (I-6) + (1.19), (I-6) + (1.20), (I-6) + (1.21), (I-6) + (1.22), (I-6) + (1.23), (I-6) + (1.24), (I-6) + (1.25), (I-6) + (1.26), (I-6) + (1.27), (I-6) + (1.28), (I-6) + (1.29), (I-6) + (1.30), (I-6) + (1.31), (I-6) + (1.32), (I-6) + (1.33), (I-6) + (1.34), (I-6) + (1.35), (I-6) + (1.36),

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(I-6) + (1.37), (I-6) + (1.38), (I-6) + (1.39), (I-6) + (1.40), (I-6) + (1.41), (I-6) + (1.42), (I-6) + (1.43),
(I-6) + (1.44), (I-6) + (1.45), (I-6) + (1.46), (I-6) + (1.47), (I-6) + (1.48), (I-6) + (1.49), (I-6) + (1.50),
(I-6) + (1.51), (I-6) + (1.52), (I-6) + (1.53), (I-6) + (1.54), (I-6) + (1.55), (I-6) + (1.56), (I-6) + (1.57),
(I-6) + (1.58), (I-6) + (1.59), (I-6) + (1.60), (I-6) + (1.61), (I-6) + (1.62), (I-6) + (1.63), (I-6) + (1.64),
5 (I-6) + (2.1), (I-6) + (2.2), (I-6) + (2.3), (I-6) + (2.4), (I-6) + (2.5), (I-6) + (2.6), (I-6) + (2.7), (I-
6) + (2.8), (I-6) + (2.9), (I-6) + (2.10), (I-6) + (2.11), (I-6) + (2.12), (I-6) + (2.13), (I-6) + (2.14), (I-
6) + (2.15), (I-6) + (2.16), (I-6) + (2.17), (I-6) + (2.18), (I-6) + (2.19), (I-6) + (2.20), (I-6) + (2.21),
(I-6) + (2.22), (I-6) + (2.23), (I-6) + (2.24), (I-6) + (2.25), (I-6) + (2.26), (I-6) + (2.27), (I-6) + (2.28),
(I-6) + (2.29), (I-6) + (3.1), (I-6) + (3.2), (I-6) + (3.3), (I-6) + (3.4), (I-6) + (3.5), (I-6) + (3.6), (I-
10 6) + (3.7), (I-6) + (3.8), (I-6) + (3.9), (I-6) + (3.10), (I-6) + (3.11), (I-6) + (3.12), (I-6) + (3.13), (I-
6) + (3.14), (I-6) + (3.15), (I-6) + (3.16), (I-6) + (3.17), (I-6) + (3.18), (I-6) + (3.19), (I-6) + (3.20),
(I-6) + (3.21), (I-6) + (3.22), (I-6) + (3.23), (I-6) + (3.24), (I-6) + (3.25), (I-6) + (3.26), (I-6) + (3.27),
(I-6) + (3.28), (I-6) + (3.29), (I-6) + (3.30), (I-6) + (3.31), (I-6) + (3.32), (I-6) + (3.33), (I-6) + (4.1),
(I-6) + (4.2), (I-6) + (4.3), (I-6) + (4.4), (I-6) + (4.5), (I-6) + (4.6), (I-6) + (4.7), (I-6) + (4.8), (I-
15 6) + (4.9), (I-6) + (4.10), (I-6) + (4.11), (I-6) + (4.12), (I-6) + (4.13), (I-6) + (4.14), (I-6) + (5.1), (I-
6) + (5.2), (I-6) + (5.3), (I-6) + (5.4), (I-6) + (5.5), (I-6) + (5.6), (I-6) + (5.7), (I-6) + (5.8), (I-
6) + (5.9), (I-6) + (5.10), (I-6) + (5.11), (I-6) + (5.12), (I-6) + (5.13), (I-6) + (5.14), (I-6) + (5.15), (I-
6) + (5.16), (I-6) + (5.17), (I-6) + (5.18), (I-6) + (5.19), (I-6) + (5.20), (I-6) + (5.21), (I-6) + (5.22),
(I-6) + (5.23), (I-6) + (5.24), (I-6) + (5.25), (I-6) + (5.26), (I-6) + (5.27), (I-6) + (5.28), (I-6) + (5.29),
20 (I-6) + (5.30), (I-6) + (5.31), (I-6) + (5.32), (I-6) + (5.33), (I-6) + (5.34), (I-6) + (6.1), (I-6) + (6.2),
(I-6) + (6.3), (I-6) + (6.4), (I-6) + (7.1), (I-6) + (7.2), (I-6) + (7.3), (I-6) + (7.4), (I-6) + (7.5), (I-
6) + (7.6), (I-6) + (7.7), (I-6) + (7.8), (I-6) + (8.1), (I-6) + (8.2), (I-6) + (8.3), (I-6) + (8.4), (I-
6) + (9.1), (I-6) + (9.2), (I-6) + (9.3), (I-6) + (9.4), (I-6) + (9.5), (I-6) + (9.6), (I-6) + (9.7), (I-
6) + (9.8), (I-6) + (9.9), (I-6) + (10.1), (I-6) + (10.2), (I-6) + (10.3), (I-6) + (10.4), (I-6) + (10.5), (I-
25 6) + (10.6), (I-6) + (10.7), (I-6) + (10.8), (I-6) + (10.9), (I-6) + (10.10), (I-6) + (10.11), (I-
6) + (10.12), (I-6) + (10.13), (I-6) + (10.14), (I-6) + (10.15), (I-6) + (11.1), (I-6) + (11.2), (I-
6) + (11.3), (I-6) + (11.4), (I-6) + (11.5), (I-6) + (11.6), (I-6) + (11.7), (I-6) + (12.1), (I-6) + (12.2),
(I-6) + (12.3), (I-6) + (12.4), (I-6) + (12.5), (I-6) + (12.6), (I-6) + (12.7), (I-6) + (12.8), (I-6) + (12.9),
(I-6) + (12.10), (I-6) + (12.11), (I-6) + (12.12), (I-6) + (12.13), (I-6) + (13.1), (I-6) + (13.2), (I-
30 6) + (13.3), (I-6) + (13.4), (I-6) + (13.5), (I-6) + (13.6), (I-6) + (13.7), (I-6) + (14.1), (I-6) + (14.2),
(I-6) + (14.3), (I-6) + (14.4), (I-6) + (14.5), (I-6) + (15.1), (I-6) + (15.2), (I-6) + (15.3), (I-6) + (15.4),
(I-6) + (15.5), (I-6) + (15.6), (I-6) + (15.7), (I-6) + (15.8), (I-6) + (15.9), (I-6) + (15.10), (I-
6) + (15.11), (I-6) + (15.12), (I-6) + (15.13), (I-6) + (15.14), (I-6) + (15.15), (I-6) + (15.16), (I-
6) + (15.17), (I-6) + (15.18), (I-6) + (15.19), (I-6) + (15.20), (I-6) + (15.21), (I-6) + (15.22), (I-
35 6) + (15.23), (I-6) + (15.24), (I-6) + (15.25), (I-6) + (15.26), (I-6) + (15.27), (I-6) + (15.28), (I-
6) + (15.29), (I-6) + (15.30), (I-6) + (15.31), (I-6) + (15.32), (I-6) + (15.33), (I-6) + (15.34), (I-
6) + (15.35), (I-6) + (15.36), (I-6) + (15.37), (I-6) + (15.38), (I-6) + (15.39), (I-6) + (15.41), (I-
6) + (15.42), (I-6) + (15.43), (I-6) + (15.44), (I-6) + (15.45), (I-6) + (15.46), (I-6) + (15.47), (I-

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6) + (15.48), (I-6) + (15.49), (I-6) + (15.50), (I-6) + (15.51), (I-6) + (15.52), (I-6) + (15.53), (I-6) + (15.54), (I-6) + (15.55), (I-6) + (15.56), (I-6) + (15.57), (I-6) + (15.58), (I-6) + (15.59), (I-6) + (15.60), (I-6) + (15.61), (I-6) + (15.62), (I-6) + (15.63), (I-6) + (15.64), (I-6) + (15.65), (I-6) + (15.66), (I-6) + (15.67), (I-6) + (15.68), (I-6) + (15.69), (I-6) + (15.70), (I-6) + (15.71), (I-6) + (15.72), (I-6) + (15.73), (I-6) + (15.74), (I-6) + (15.75), (I-6) + (15.76), (I-6) + (15.77), (I-6) + (15.78), (I-6) + (15.79), (I-6) + (15.80), (I-6) + (15.81), (I-6) + (15.82), (I-6) + (15.83), (I-6) + (15.84), (I-6) + (15.85), (I-6) + (15.86), (I-6) + (15.87), (I-6) + (15.88), (I-6) + (15.89), (I-6) + (15.90), (I-6) + (15.91), (I-6) + (15.92), (I-6) + (15.93), (I-6) + (15.94).

In a further particularly preferred embodiment this invention is directed to mixtures comprising the compound (I-6) as compound of formula (I) and one component (B), in particular the mixtures (I-6) + (2.1), (I-6) + (2.2), (I-6) + (2.6), (I-6) + (2.8), (I-6) + (2.11), (I-6) + (2.12), (I-6) + (2.13), (I-6) + (2.14), (I-6) + (2.15), (I-6) + (2.16), (I-6) + (2.17), (I-6) + (2.29), (I-6) + (3.1), (I-6) + (3.2), (I-6) + (3.3), (I-6) + (3.4), (I-6) + (3.9), (I-6) + (3.10), (I-6) + (3.12), (I-6) + (3.16), (I-6) + (3.17), (I-6) + (3.22), (I-6) + (4.6), (I-6) + (5.1), (I-6) + (5.4), (I-6) + (5.5), (I-6) + (5.7), (I-6) + (5.8), (I-6) + (5.9), (I-6) + (5.16), (I-6) + (5.23), (I-6) + (5.25), (I-6) + (5.26), (I-6) + (5.29), (I-6) + (5.30), (I-6) + (7.7), (I-6) + (9.2), (I-6) + (9.4), (I-6) + (9.5), (I-6) + (10.9), (I-6) + (10.10), (I-6) + (12.9), (I-6) + (12.10), (I-6) + (14.4), (I-6) + (15.9), (I-6) + (15.24), (I-6) + (15.25), (I-6) + (15.26), (I-6) + (15.41), (I-6) + (15.42), (I-6) + (15.54), (I-6) + (15.55), (I-6) + (15.56), (I-6) + (15.60), (I-6) + (15.90).

In a preferred embodiment this invention is directed to mixtures comprising the compound (I-7) as compound of formula (I) and one component (B), in particular the mixtures (I-7) + (1.1), (I-7) + (1.2), (I-7) + (1.3), (I-7) + (1.4), (I-7) + (1.5), (I-7) + (1.6), (I-7) + (1.7), (I-7) + (1.8), (I-7) + (1.9), (I-7) + (1.10), (I-7) + (1.11), (I-7) + (1.12), (I-7) + (1.13), (I-7) + (1.14), (I-7) + (1.15), (I-7) + (1.16), (I-7) + (1.17), (I-7) + (1.18), (I-7) + (1.19), (I-7) + (1.20), (I-7) + (1.21), (I-7) + (1.22), (I-7) + (1.23), (I-7) + (1.24), (I-7) + (1.25), (I-7) + (1.26), (I-7) + (1.27), (I-7) + (1.28), (I-7) + (1.29), (I-7) + (1.30), (I-7) + (1.31), (I-7) + (1.32), (I-7) + (1.33), (I-7) + (1.34), (I-7) + (1.35), (I-7) + (1.36), (I-7) + (1.37), (I-7) + (1.38), (I-7) + (1.39), (I-7) + (1.40), (I-7) + (1.41), (I-7) + (1.42), (I-7) + (1.43), (I-7) + (1.44), (I-7) + (1.45), (I-7) + (1.46), (I-7) + (1.47), (I-7) + (1.48), (I-7) + (1.49), (I-7) + (1.50), (I-7) + (1.51), (I-7) + (1.52), (I-7) + (1.53), (I-7) + (1.54), (I-7) + (1.55), (I-7) + (1.56), (I-7) + (1.57), (I-7) + (1.58), (I-7) + (1.59), (I-7) + (1.60), (I-7) + (1.61), (I-7) + (1.62), (I-7) + (1.63), (I-7) + (1.64), (I-7) + (2.1), (I-7) + (2.2), (I-7) + (2.3), (I-7) + (2.4), (I-7) + (2.5), (I-7) + (2.6), (I-7) + (2.7), (I-7) + (2.8), (I-7) + (2.9), (I-7) + (2.10), (I-7) + (2.11), (I-7) + (2.12), (I-7) + (2.13), (I-7) + (2.14), (I-7) + (2.15), (I-7) + (2.16), (I-7) + (2.17), (I-7) + (2.18), (I-7) + (2.19), (I-7) + (2.20), (I-7) + (2.21), (I-7) + (2.22), (I-7) + (2.23), (I-7) + (2.24), (I-7) + (2.25), (I-7) + (2.26), (I-7) + (2.27), (I-7) + (2.28), (I-7) + (2.29), (I-7) + (3.1), (I-7) + (3.2), (I-7) + (3.3), (I-7) + (3.4), (I-7) + (3.5), (I-7) + (3.6), (I-7) + (3.7), (I-7) + (3.8), (I-7) + (3.9), (I-7) + (3.10), (I-7) + (3.11), (I-7) + (3.12), (I-7) + (3.13), (I-

7) + (3.14), (I-7) + (3.15), (I-7) + (3.16), (I-7) + (3.17), (I-7) + (3.18), (I-7) + (3.19), (I-7) + (3.20),
(I-7) + (3.21), (I-7) + (3.22), (I-7) + (3.23), (I-7) + (3.24), (I-7) + (3.25), (I-7) + (3.26), (I-7) + (3.27),
(I-7) + (3.28), (I-7) + (3.29), (I-7) + (3.30), (I-7) + (3.31), (I-7) + (3.32), (I-7) + (3.33), (I-7) + (4.1),
(I-7) + (4.2), (I-7) + (4.3), (I-7) + (4.4), (I-7) + (4.5), (I-7) + (4.6), (I-7) + (4.7), (I-7) + (4.8), (I-
5 7) + (4.9), (I-7) + (4.10), (I-7) + (4.11), (I-7) + (4.12), (I-7) + (4.13), (I-7) + (4.14), (I-7) + (5.1), (I-
7) + (5.2), (I-7) + (5.3), (I-7) + (5.4), (I-7) + (5.5), (I-7) + (5.6), (I-7) + (5.7), (I-7) + (5.8), (I-
7) + (5.9), (I-7) + (5.10), (I-7) + (5.11), (I-7) + (5.12), (I-7) + (5.13), (I-7) + (5.14), (I-7) + (5.15), (I-
7) + (5.16), (I-7) + (5.17), (I-7) + (5.18), (I-7) + (5.19), (I-7) + (5.20), (I-7) + (5.21), (I-7) + (5.22),
(I-7) + (5.23), (I-7) + (5.24), (I-7) + (5.25), (I-7) + (5.26), (I-7) + (5.27), (I-7) + (5.28), (I-7) + (5.29),
10 (I-7) + (5.30), (I-7) + (5.31), (I-7) + (5.32), (I-7) + (5.33), (I-7) + (5.34), (I-7) + (6.1), (I-7) + (6.2),
(I-7) + (6.3), (I-7) + (6.4), (I-7) + (7.1), (I-7) + (7.2), (I-7) + (7.3), (I-7) + (7.4), (I-7) + (7.5), (I-
7) + (7.6), (I-7) + (7.7), (I-7) + (7.8), (I-7) + (8.1), (I-7) + (8.2), (I-7) + (8.3), (I-7) + (8.4), (I-
7) + (9.1), (I-7) + (9.2), (I-7) + (9.3), (I-7) + (9.4), (I-7) + (9.5), (I-7) + (9.6), (I-7) + (9.7), (I-
7) + (9.8), (I-7) + (9.9), (I-7) + (10.1), (I-7) + (10.2), (I-7) + (10.3), (I-7) + (10.4), (I-7) + (10.5), (I-
15 7) + (10.6), (I-7) + (10.7), (I-7) + (10.8), (I-7) + (10.9), (I-7) + (10.10), (I-7) + (10.11), (I-
7) + (10.12), (I-7) + (10.13), (I-7) + (10.14), (I-7) + (10.15), (I-7) + (11.1), (I-7) + (11.2), (I-
7) + (11.3), (I-7) + (11.4), (I-7) + (11.5), (I-7) + (11.6), (I-7) + (11.7), (I-7) + (12.1), (I-7) + (12.2),
(I-7) + (12.3), (I-7) + (12.4), (I-7) + (12.5), (I-7) + (12.6), (I-7) + (12.7), (I-7) + (12.8), (I-7) + (12.9),
(I-7) + (12.10), (I-7) + (12.11), (I-7) + (12.12), (I-7) + (12.13), (I-7) + (13.1), (I-7) + (13.2), (I-
20 7) + (13.3), (I-7) + (13.4), (I-7) + (13.5), (I-7) + (13.6), (I-7) + (13.7), (I-7) + (14.1), (I-7) + (14.2),
(I-7) + (14.3), (I-7) + (14.4), (I-7) + (14.5), (I-7) + (15.1), (I-7) + (15.2), (I-7) + (15.3), (I-7) + (15.4),
(I-7) + (15.5), (I-7) + (15.6), (I-7) + (15.7), (I-7) + (15.8), (I-7) + (15.9), (I-7) + (15.10), (I-
7) + (15.11), (I-7) + (15.12), (I-7) + (15.13), (I-7) + (15.14), (I-7) + (15.15), (I-7) + (15.16), (I-
7) + (15.17), (I-7) + (15.18), (I-7) + (15.19), (I-7) + (15.20), (I-7) + (15.21), (I-7) + (15.22), (I-
25 7) + (15.23), (I-7) + (15.24), (I-7) + (15.25), (I-7) + (15.26), (I-7) + (15.27), (I-7) + (15.28), (I-
7) + (15.29), (I-7) + (15.30), (I-7) + (15.31), (I-7) + (15.32), (I-7) + (15.33), (I-7) + (15.34), (I-
7) + (15.35), (I-7) + (15.36), (I-7) + (15.37), (I-7) + (15.38), (I-7) + (15.39), (I-7) + (15.41), (I-
7) + (15.42), (I-7) + (15.43), (I-7) + (15.44), (I-7) + (15.45), (I-7) + (15.46), (I-7) + (15.47), (I-
7) + (15.48), (I-7) + (15.49), (I-7) + (15.50), (I-7) + (15.51), (I-7) + (15.52), (I-7) + (15.53), (I-
30 7) + (15.54), (I-7) + (15.55), (I-7) + (15.56), (I-7) + (15.57), (I-7) + (15.58), (I-7) + (15.59), (I-
7) + (15.60), (I-7) + (15.61), (I-7) + (15.62), (I-7) + (15.63), (I-7) + (15.64), (I-7) + (15.65), (I-
7) + (15.66), (I-7) + (15.67), (I-7) + (15.68), (I-7) + (15.69), (I-7) + (15.70), (I-7) + (15.71), (I-
7) + (15.72), (I-7) + (15.73), (I-7) + (15.74), (I-7) + (15.75), (I-7) + (15.76), (I-7) + (15.77), (I-
7) + (15.78), (I-7) + (15.79), (I-7) + (15.80), (I-7) + (15.81), (I-7) + (15.82), (I-7) + (15.83), (I-
35 7) + (15.84), (I-7) + (15.85), (I-7) + (15.86), (I-7) + (15.87), (I-7) + (15.88), (I-7) + (15.89), (I-
7) + (15.90), (I-7) + (15.91), (I-7) + (15.92), (I-7) + (15.93), (I-7) + (15.94).

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In a further particularly preferred embodiment this invention is directed to mixtures comprising the compound (I-7) as compound of formula (I) and one component (B), in particular the mixtures (I-7) + (2.1), (I-7) + (2.2), (I-7) + (2.6), (I-7) + (2.8), (I-7) + (2.11), (I-7) + (2.12), (I-7) + (2.13), (I-7) + (2.14), (I-7) + (2.15), (I-7) + (2.16), (I-7) + (2.17), (I-7) + (2.29), (I-7) + (3.1), (I-7) + (3.2), (I-7) + (3.3), (I-7) + (3.4), (I-7) + (3.9), (I-7) + (3.10), (I-7) + (3.12), (I-7) + (3.16), (I-7) + (3.17), (I-7) + (3.22), (I-7) + (4.6), (I-7) + (5.1), (I-7) + (5.4), (I-7) + (5.5), (I-7) + (5.7), (I-7) + (5.8), (I-7) + (5.9), (I-7) + (5.16), (I-7) + (5.23), (I-7) + (5.25), (I-7) + (5.26), (I-7) + (5.29), (I-7) + (5.30), (I-7) + (7.7), (I-7) + (9.2), (I-7) + (9.4), (I-7) + (9.5), (I-7) + (10.9), (I-7) + (10.10), (I-7) + (12.9), (I-7) + (12.10), (I-7) + (14.4), (I-7) + (15.9), (I-7) + (15.24), (I-7) + (15.25), (I-7) + (15.26), (I-7) + (15.41), (I-7) + (15.42), (I-7) + (15.54), (I-7) + (15.55), (I-7) + (15.56), (I-7) + (15.60), (I-7) + (15.90).

In a preferred embodiment this invention is directed to mixtures comprising the compound (I-8) as compound of formula (I) and one component (B), in particular the mixtures (I-8) + (1.1), (I-8) + (1.2), (I-8) + (1.3), (I-8) + (1.4), (I-8) + (1.5), (I-8) + (1.6), (I-8) + (1.7), (I-8) + (1.8), (I-8) + (1.9), (I-8) + (1.10), (I-8) + (1.11), (I-8) + (1.12), (I-8) + (1.13), (I-8) + (1.14), (I-8) + (1.15), (I-8) + (1.16), (I-8) + (1.17), (I-8) + (1.18), (I-8) + (1.19), (I-8) + (1.20), (I-8) + (1.21), (I-8) + (1.22), (I-8) + (1.23), (I-8) + (1.24), (I-8) + (1.25), (I-8) + (1.26), (I-8) + (1.27), (I-8) + (1.28), (I-8) + (1.29), (I-8) + (1.30), (I-8) + (1.31), (I-8) + (1.32), (I-8) + (1.33), (I-8) + (1.34), (I-8) + (1.35), (I-8) + (1.36), (I-8) + (1.37), (I-8) + (1.38), (I-8) + (1.39), (I-8) + (1.40), (I-8) + (1.41), (I-8) + (1.42), (I-8) + (1.43), (I-8) + (1.44), (I-8) + (1.45), (I-8) + (1.46), (I-8) + (1.47), (I-8) + (1.48), (I-8) + (1.49), (I-8) + (1.50), (I-8) + (1.51), (I-8) + (1.52), (I-8) + (1.53), (I-8) + (1.54), (I-8) + (1.55), (I-8) + (1.56), (I-8) + (1.57), (I-8) + (1.58), (I-8) + (1.59), (I-8) + (1.60), (I-8) + (1.61), (I-8) + (1.62), (I-8) + (1.63), (I-8) + (1.64), (I-8) + (2.1), (I-8) + (2.2), (I-8) + (2.3), (I-8) + (2.4), (I-8) + (2.5), (I-8) + (2.6), (I-8) + (2.7), (I-8) + (2.8), (I-8) + (2.9), (I-8) + (2.10), (I-8) + (2.11), (I-8) + (2.12), (I-8) + (2.13), (I-8) + (2.14), (I-8) + (2.15), (I-8) + (2.16), (I-8) + (2.17), (I-8) + (2.18), (I-8) + (2.19), (I-8) + (2.20), (I-8) + (2.21), (I-8) + (2.22), (I-8) + (2.23), (I-8) + (2.24), (I-8) + (2.25), (I-8) + (2.26), (I-8) + (2.27), (I-8) + (2.28), (I-8) + (2.29), (I-8) + (3.1), (I-8) + (3.2), (I-8) + (3.3), (I-8) + (3.4), (I-8) + (3.5), (I-8) + (3.6), (I-8) + (3.7), (I-8) + (3.8), (I-8) + (3.9), (I-8) + (3.10), (I-8) + (3.11), (I-8) + (3.12), (I-8) + (3.13), (I-8) + (3.14), (I-8) + (3.15), (I-8) + (3.16), (I-8) + (3.17), (I-8) + (3.18), (I-8) + (3.19), (I-8) + (3.20), (I-8) + (3.21), (I-8) + (3.22), (I-8) + (3.23), (I-8) + (3.24), (I-8) + (3.25), (I-8) + (3.26), (I-8) + (3.27), (I-8) + (3.28), (I-8) + (3.29), (I-8) + (3.30), (I-8) + (3.31), (I-8) + (3.32), (I-8) + (3.33), (I-8) + (4.1), (I-8) + (4.2), (I-8) + (4.3), (I-8) + (4.4), (I-8) + (4.5), (I-8) + (4.6), (I-8) + (4.7), (I-8) + (4.8), (I-8) + (4.9), (I-8) + (4.10), (I-8) + (4.11), (I-8) + (4.12), (I-8) + (4.13), (I-8) + (4.14), (I-8) + (5.1), (I-8) + (5.2), (I-8) + (5.3), (I-8) + (5.4), (I-8) + (5.5), (I-8) + (5.6), (I-8) + (5.7), (I-8) + (5.8), (I-8) + (5.9), (I-8) + (5.10), (I-8) + (5.11), (I-8) + (5.12), (I-8) + (5.13), (I-8) + (5.14), (I-8) + (5.15), (I-8) + (5.16), (I-8) + (5.17), (I-8) + (5.18), (I-8) + (5.19), (I-8) + (5.20), (I-8) + (5.21), (I-8) + (5.22), (I-8) + (5.23), (I-8) + (5.24), (I-8) + (5.25), (I-8) + (5.26), (I-8) + (5.27), (I-8) + (5.28), (I-8) + (5.29),

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(I-8) + (5.30), (I-8) + (5.31), (I-8) + (5.32), (I-8) + (5.33), (I-8) + (5.34), (I-8) + (6.1), (I-8) + (6.2),
(I-8) + (6.3), (I-8) + (6.4), (I-8) + (7.1), (I-8) + (7.2), (I-8) + (7.3), (I-8) + (7.4), (I-8) + (7.5), (I-
8) + (7.6), (I-8) + (7.7), (I-8) + (7.8), (I-8) + (8.1), (I-8) + (8.2), (I-8) + (8.3), (I-8) + (8.4), (I-
8) + (9.1), (I-8) + (9.2), (I-8) + (9.3), (I-8) + (9.4), (I-8) + (9.5), (I-8) + (9.6), (I-8) + (9.7), (I-
5 8) + (9.8), (I-8) + (9.9), (I-8) + (10.1), (I-8) + (10.2), (I-8) + (10.3), (I-8) + (10.4), (I-8) + (10.5), (I-
8) + (10.6), (I-8) + (10.7), (I-8) + (10.8), (I-8) + (10.9), (I-8) + (10.10), (I-8) + (10.11), (I-
8) + (10.12), (I-8) + (10.13), (I-8) + (10.14), (I-8) + (10.15), (I-8) + (11.1), (I-8) + (11.2), (I-
8) + (11.3), (I-8) + (11.4), (I-8) + (11.5), (I-8) + (11.6), (I-8) + (11.7), (I-8) + (12.1), (I-8) + (12.2),
(I-8) + (12.3), (I-8) + (12.4), (I-8) + (12.5), (I-8) + (12.6), (I-8) + (12.7), (I-8) + (12.8), (I-8) + (12.9),
10 (I-8) + (12.10), (I-8) + (12.11), (I-8) + (12.12), (I-8) + (12.13), (I-8) + (13.1), (I-8) + (13.2), (I-
8) + (13.3), (I-8) + (13.4), (I-8) + (13.5), (I-8) + (13.6), (I-8) + (13.7), (I-8) + (14.1), (I-8) + (14.2),
(I-8) + (14.3), (I-8) + (14.4), (I-8) + (14.5), (I-8) + (15.1), (I-8) + (15.2), (I-8) + (15.3), (I-8) + (15.4),
(I-8) + (15.5), (I-8) + (15.6), (I-8) + (15.7), (I-8) + (15.8), (I-8) + (15.9), (I-8) + (15.10), (I-
8) + (15.11), (I-8) + (15.12), (I-8) + (15.13), (I-8) + (15.14), (I-8) + (15.15), (I-8) + (15.16), (I-
15 8) + (15.17), (I-8) + (15.18), (I-8) + (15.19), (I-8) + (15.20), (I-8) + (15.21), (I-8) + (15.22), (I-
8) + (15.23), (I-8) + (15.24), (I-8) + (15.25), (I-8) + (15.26), (I-8) + (15.27), (I-8) + (15.28), (I-
8) + (15.29), (I-8) + (15.30), (I-8) + (15.31), (I-8) + (15.32), (I-8) + (15.33), (I-8) + (15.34), (I-
8) + (15.35), (I-8) + (15.36), (I-8) + (15.37), (I-8) + (15.38), (I-8) + (15.39), (I-8) + (15.41), (I-
8) + (15.42), (I-8) + (15.43), (I-8) + (15.44), (I-8) + (15.45), (I-8) + (15.46), (I-8) + (15.47), (I-
20 8) + (15.48), (I-8) + (15.49), (I-8) + (15.50), (I-8) + (15.51), (I-8) + (15.52), (I-8) + (15.53), (I-
8) + (15.54), (I-8) + (15.55), (I-8) + (15.56), (I-8) + (15.57), (I-8) + (15.58), (I-8) + (15.59), (I-
8) + (15.60), (I-8) + (15.61), (I-8) + (15.62), (I-8) + (15.63), (I-8) + (15.64), (I-8) + (15.65), (I-
8) + (15.66), (I-8) + (15.67), (I-8) + (15.68), (I-8) + (15.69), (I-8) + (15.70), (I-8) + (15.71), (I-
8) + (15.72), (I-8) + (15.73), (I-8) + (15.74), (I-8) + (15.75), (I-8) + (15.76), (I-8) + (15.77), (I-
25 8) + (15.78), (I-8) + (15.79), (I-8) + (15.80), (I-8) + (15.81), (I-8) + (15.82), (I-8) + (15.83), (I-
8) + (15.84), (I-8) + (15.85), (I-8) + (15.86), (I-8) + (15.87), (I-8) + (15.88), (I-8) + (15.89), (I-
8) + (15.90), (I-8) + (15.91), (I-8) + (15.92), (I-8) + (15.93), (I-8) + (15.94).

In a further particularly preferred embodiment this invention is directed to mixtures comprising the
compound (I-8) as compound of formula (I) and one component (B), in particular the mixtures (I-
30 8) + (2.1), (I-8) + (2.2), (I-8) + (2.6), (I-8) + (2.8), (I-8) + (2.11), (I-8) + (2.12), (I-8) + (2.13), (I-
8) + (2.14), (I-8) + (2.15), (I-8) + (2.16), (I-8) + (2.17), (I-8) + (2.29), (I-8) + (3.1), (I-8) + (3.2), (I-
8) + (3.3), (I-8) + (3.4), (I-8) + (3.9), (I-8) + (3.10), (I-8) + (3.12), (I-8) + (3.16), (I-8) + (3.17), (I-
8) + (3.22), (I-8) + (4.6), (I-8) + (5.1), (I-8) + (5.4), (I-8) + (5.5), (I-8) + (5.7), (I-8) + (5.8), (I-
8) + (5.9), (I-8) + (5.16), (I-8) + (5.23), (I-8) + (5.25), (I-8) + (5.26), (I-8) + (5.29), (I-8) + (5.30), (I-
35 8) + (7.7), (I-8) + (9.2), (I-8) + (9.4), (I-8) + (9.5), (I-8) + (10.9), (I-8) + (10.10), (I-8) + (12.9), (I-
8) + (12.10), (I-8) + (14.4), (I-8) + (15.9), (I-8) + (15.24), (I-8) + (15.25), (I-8) + (15.26), (I-

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8) + (15.41), (I-8) + (15.42), (I-8) + (15.54), (I-8) + (15.55), (I-8) + (15.56), (I-8) + (15.60), (I-8) + (15.90).

If the active compounds in the active compound combinations according to the invention are present in certain weight ratios, the synergistic effect is particularly pronounced. However, the weight ratios of the active compounds in the active compound combinations can be varied within a relatively wide range.

In the combinations according to the invention the compounds (A) and (B) are present in a synergistically effective weight ratio of A:B in a range of 300:1 to 1:300, preferably in a weight ratio of 100:1 to 1:100, most preferably in a weight ratio of 50:1 to 1:50. Further ratios of A:B which can be used according to the present invention with increasing preference in the order given are: 250:1 to 1:250, 220:1 to 1:220, 200:1 to 1:200, 170:1 to 1:170, 140:1 to 1:140, 120:1 to 1:120, 100:1 to 1:100, 95:1 to 1:95, 90:1 to 1:90, 85:1 to 1:85, 80:1 to 1:80, 75:1 to 1:75, 70:1 to 1:70, 65:1 to 1:65, 60:1 to 1:60, 55:1 to 1:55, 45:1 to 1:45, 40:1 to 1:40, 35:1 to 1:35, 30:1 to 1:30, 25:1 to 1:25, 15:1 to 1:15, 10:1 to 1:10, 5:1 to 1:5, 4:1 to 1:4, 3:1 to 1:3, 2:1 to 1:2.

Where a compound (A) or a compound (B) can be present as mixtures of various possible isomeric forms, in particular of stereoisomers, such as, for example, E and Z, threo and erythro, and also optical isomers, and, if appropriate, also of tautomers. What is claimed are both the E and the Z isomers and the threo and erythro and also the optical isomers (R and S), any mixtures of these isomers, and also the possible tautomeric forms.

Compounds (A) or compounds (B) having at least one basic centre are capable of forming, for example, acid addition salts, e.g. with strong inorganic acids, such as mineral acids, e.g. perchloric acid, sulfuric acid, nitric acid, nitrous acid, a phosphoric acid or a hydrohalic acid, with strong organic carboxylic acids, such as unsubstituted substituted, e.g. halo-substituted, C₁-C₄ alkanecarboxylic acids, e.g. acetic acid, saturated or unsaturated dicarboxylic acids, e.g. oxalic, malonic, succinic, maleic, fumaric and phthalic acid, hydroxycarboxylic acids, e.g. ascorbic, lactic, malic, tartaric and citric acid, or benzoic acid, or with organic sulfonic acids, such as unsubstituted or substituted, e.g. halo-substituted, C₁-C₄alkane- or aryl-sulfonic acids, e.g. methane- or p-toluene-sulfonic acid. Compounds (A) or compounds (B) having at least one acid group are capable of forming, for example, salts with bases, e.g. metal salts, such as alkali metal or alkaline earth metal salts, e.g. sodium, potassium or magnesium salts, or salts with ammonia or an organic amine, such as morpholine, piperidine, pyrrolidine, a mono-, di- or tri-lower alkylamine, e.g. ethyl-, diethyl-, triethyl- or dimethyl-propyl-amine, or a mono-, di- or tri-hydroxy-lower alkylamine, e.g. mono-, di- or tri-ethanolamine. In addition, corresponding internal salts may optionally be formed. In the context of the invention, preference is given to agrochemically advantageous salts. In view of the close relationship between the compounds (A) or the compounds (B) in free form and in the form

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of their salts, hereinabove and herein below any reference to the free compounds (A) or free compounds (B) or to their salts should be understood as including also the corresponding salts or the free compounds (A) or free compounds (B), respectively, where appropriate and expedient. The equivalent also applies to tautomers of compounds (A) or compounds (B) and to their salts.

- 5 According to the invention the expression "combination" stands for the various combinations of compounds (A) and (B), for example in a single "ready-mix" form, in a combined spray mixture composed from separate formulations of the single active compounds, such as a "tank-mix", and in a combined use of the single active ingredients when applied in a sequential manner, i.e. one after the other with a reasonably short period, such as a few hours or days. Preferably the order of
10 applying the compounds (A) and (B) is not essential for working the present invention.

Composition / Formulation

- The present invention furthermore relates to compositions for combating/controlling undesirable microorganisms comprising the active compound combinations according to the invention. Preferably, the compositions are fungicidal compositions comprising agriculturally suitable auxilia-
15 ries, solvents, carriers, surfactants or extenders.

- In the context of the present invention, "control of harmful microorganisms" means a reduction in infestation by harmful microorganisms, compared with the untreated plant measured as fungicidal efficacy, preferably a reduction by 25-50 %, compared with the untreated plant (100 %), more preferably a reduction by 40-79 %, compared with the untreated plant (100 %); even more pref-
20 erably, the infection by harmful microorganisms is entirely suppressed (by 70-100 %). The control may be curative, i.e. for treatment of already infected plants, or protective, for protection of plants which have not yet been infected.

- An "effective but non-phytotoxic amount" means an amount of the inventive composition which is sufficient to control the fungal disease of the plant in a satisfactory manner or to eradicate the fungal
25 disease completely, and which, at the same time, does not cause any significant symptoms of phytotoxicity. In general, this application rate may vary within a relatively wide range. It depends on several factors, for example on the fungus to be controlled, the plant, the climatic conditions and the ingredients of the inventive compositions.

- Suitable organic solvents include all polar and non-polar organic solvents usually employed for for-
30 mulation purposes. Preferable the solvents are selected from ketones, e.g. methyl-isobutyl-ketone and cyclohexanone, amides, e.g. dimethyl formamide and alkanecarboxylic acid amides, e.g. N,N-dimethyl decaneamide and N,N-dimethyl octanamide, furthermore cyclic solvents, e.g. N-methyl-pyrrolidone, N-octyl-pyrrolidone, N-dodecyl-pyrrolidone, N-octyl-caprolactame, N-dodecyl-caprolactame and butyrolactone, furthermore strong polar solvents, e.g. dimethylsulfoxide, and aro-

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matic hydrocarbons, e.g. xylol, Solvesso™, mineral oils, e.g. white spirit, petroleum, alkyl benzenes and spindle oil, also esters, e.g. propyleneglycol-monomethylether acetate, adipic acid dibutylester, acetic acid hexylester, acetic acid heptylester, citric acid tri-*n*-butylester and phthalic acid di-*n*-butylester, and also alcohols, e.g. benzyl alcohol and 1-methoxy-2-propanol.

- 5 Furthermore the invention relates to a method of combating undesirable microorganisms, characterized in that the active compound combinations according to the invention are applied to the phyto-pathogenic fungi and/or their habitat.

According to the invention, carrier is to be understood as meaning a natural or synthetic, organic or inorganic substance which is mixed or combined with the active compounds for better applica-
10 bility, in particular for application to plants or plant parts or seeds. The carrier, which may be solid or liquid, is generally inert and should be suitable for use in agriculture.

According to the invention, a carrier is a natural or synthetic, organic or inorganic substance with which the active ingredients are mixed or combined for better applicability, in particular for appli-
15 cation to plants or plant parts or seed. The carrier, which may be solid or liquid, is generally inert and should be suitable for use in agriculture.

Useful solid or liquid carriers include: for example ammonium salts and natural rock dusts, such as kaolins, clays, talc, chalk, quartz, attapulgit, montmorillonite or diatomaceous earth, and syn-
thetic rock dusts, such as finely divided silica, alumina and natural or synthetic silicates, resins, waxes, solid fertilizers, water, alcohols, especially butanol, organic solvents, mineral and vegeta-
20 ble oils, and derivatives thereof. Mixtures of such carriers can likewise be used.

Suitable solid filler and carrier include inorganic particles, e.g. carbonates, silicates, sulphates and oxides with an average particle size of between 0.005 and 20 µm, preferably of between 0.02 to 10 µm, for example ammonium sulphate, ammonium phosphate, urea, calcium carbonate, calcium sulphate, magnesium sulphate, magnesium oxide, aluminium oxide, silicon dioxide, so-called
25 fine-particle silica, silica gels, natural or synthetic silicates, and aluminosilicates and plant products like cereal flour, wood powder/sawdust and cellulose powder.

Useful solid carriers for granules include: for example crushed and fractionated natural rocks such as calcite, marble, pumice, sepiolite, dolomite, and synthetic granules of inorganic and organic meals, and also granules of organic material such as sawdust, coconut shells, maize cobs and to-
30 bacco stalks.

Useful liquefied gaseous extenders or carriers are those liquids which are gaseous at standard temperature and under standard pressure, for example aerosol propellants such as halohydrocarbons, and also butane, propane, nitrogen and carbon dioxide.

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In the formulations, it is possible to use tackifiers such as carboxymethylcellulose, and natural and synthetic polymers in the form of powders, granules or latices, such as gum arabic, polyvinyl alcohol and polyvinyl acetate, or else natural phospholipids, such as cephalins and lecithins, and synthetic phospholipids. Further additives may be mineral and vegetable oils.

- 5 If the extender used is water, it is also possible for example, to use organic solvents as auxiliary solvents. Suitable liquid solvents are essentially: aromatic compounds, such as xylene, toluene or alkyl naphthalenes, chlorinated aromatic compounds or chlorinated aliphatic hydrocarbons, such as chlorobenzenes, chloroethylenes or methylene chloride, aliphatic hydrocarbons, such as cyclohexane or paraffins, for example mineral oil fractions, mineral and vegetable oils, alcohols, such as butanol or glycol, and also ethers and esters thereof, ketones, such as acetone, methyl ethyl ketone, methyl isobutyl ketone or cyclohexanone, strongly polar solvents, such as dimethylformamide and dimethyl sulphoxide, and also water.

The compositions according to the invention may comprise additional further components, such as, for example, surfactants. Suitable surfactants are emulsifiers, dispersants or wetting agents
15 having ionic or nonionic properties, or mixtures of these surfactants. Examples of these are salts of polyacrylic acid, salts of lignosulphonic acid, salts of phenolsulphonic acid or naphthalenesulphonic acid, polycondensates of ethylene oxide with fatty alcohols or with fatty acids or with fatty amines, substituted phenols (preferably alkylphenols or arylphenols), salts of sulphosuccinic esters, taurine derivatives (preferably alkyl taurates), phosphoric esters of polyethoxylated alcohols
20 or phenols, fatty esters of polyols, and derivatives of the compounds containing sulphates, sulphonates and phosphates. The presence of a surfactant is required if one of the active compounds and/or one of the inert carriers is insoluble in water and when the application takes place in water. The proportion of surfactants is between 5 and 40 per cent by weight of the composition according to the invention.

- 25 Suitable surfactants (adjuvants, emulsifiers, dispersants, protective colloids, wetting agent and adhesive) include all common ionic and non-ionic substances, for example ethoxylated nonylphenols, polyalkylene glycolether of linear or branched alcohols, reaction products of alkyl phenols with ethylene oxide and/or propylene oxide, reaction products of fatty acid amines with ethylene oxide and/or propylene oxide, furthermore fatty acid esters, alkyl sulfonates, alkyl sulphates, alkyl ether sulphates, alkyl ether phosphates, arylsulphate, ethoxylated arylalkylphenols, e.g. tristyryl phenol-ethoxylates, furthermore ethoxylated and propoxylated arylalkylphenols like sulphated or phosphated arylalkylphenol-ethoxylates and -ethoxy- and -propoxylates. Further examples are natural and synthetic, water soluble polymers, e.g. lignosulphonates, gelatine, gum arabic, phospholipides, starch, hydrophobic modified starch and cellulose derivatives, in particular cellulose ester and cellulose ether, further polyvinyl alcohol, polyvinyl acetate, polyvinyl pyrrolidone,
35 polyacrylic acid, polymethacrylic acid and co-polymerisates of (meth)acrylic acid and

(meth)acrylic acid esters, and further co-polymerisates of methacrylic acid and methacrylic acid esters which are neutralized with alkalimetal hydroxide and also condensation products of optionally substituted naphthalene sulfonic acid salts with formaldehyde.

It is possible to use colorants such as inorganic pigments, for example iron oxide, titanium oxide,
5 Prussian blue, and organic dyes, such as alizarin dyes, azo dyes and metal phthalocyanine dyes, and trace nutrients, such as salts of iron, manganese, boron, copper, cobalt, molybdenum and zinc.

Antifoams which may be present in the formulations include e.g. silicone emulsions, longchain alcohols, fatty acids and their salts as well as fluoroorganic substances and mixtures thereof.

Examples of thickeners are polysaccharides, e.g. xanthan gum or veegum, silicates, e.g. attapul-
10 gite, bentonite as well as fine-particle silica.

If appropriate, other additional components may also be present, for example protective colloids, binders, adhesives, thickeners, thixotropic substances, penetrants, stabilizers, sequestering agents, complex formers. In general, the active compounds can be combined with any solid or liquid additive customarily used for formulation purposes.

15 The inventive compositions can be used as such or, depending on their particular physical and/or chemical properties, in the form of their formulations or the use forms prepared therefrom, such as aerosols, capsule suspensions, cold-fogging concentrates, warm-fogging concentrates, encapsulated granules, fine granules, flowable concentrates for the treatment of seed, ready-to-use solutions, dustable powders, emulsifiable concentrates, oil-in-water emulsions, water-in-oil emulsions,
20 macrogranules, microgranules, oil-dispersible powders, oil-miscible flowable concentrates, oil-miscible liquids, gas (under pressure), gas generating product, foams, pastes, pesticide coated seed, suspension concentrates, suspoemulsion concentrates, soluble concentrates, suspensions, wettable powders, soluble powders, dusts and granules, water-soluble and water-dispersible granules or tablets, water-soluble and water-dispersible powders for the treatment of seed, wettable
25 powders, natural products and synthetic substances impregnated with active ingredient, and also microencapsulations in polymeric substances and in coating materials for seed, and also ULV cold-fogging and warm-fogging formulations.

The inventive compositions include not only formulations which are already ready for use and can be applied with a suitable apparatus to the plant or the seed, but also commercial concentrates
30 which have to be diluted with water prior to use. Customary applications are for example dilution in water and subsequent spraying of the resulting spray liquor, application after dilution in oil, direct application without dilution, seed treatment or soil application of granules.

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In general, the compositions according to the invention comprise between 0.05 and 99 per cent by weight, 0.01 and 98 per cent by weight, preferable between 0.1 and 95 per cent by weight, particularly preferred between 0.5 and 90 per cent by weight of the active compound combination according to the invention, very particularly preferable between 10 and 70 per cent by weight.

- 5 The contents of active ingredient in the application forms prepared from the commercial formulations may vary in a broad range. The concentration of the active ingredients in the application forms is generally between 0.000001 to 95 % by weight, preferably between 0.0001 and 2 % by weight.

- 10 The formulations mentioned can be prepared in a manner known per se, for example by mixing the active ingredients with at least one customary extender, solvent or diluent, adjuvant, emulsifier, dispersant, and/or binder or fixative, wetting agent, water repellent, if appropriate desiccants and UV stabilizers and, if appropriate, dyes and pigments, antifoams, preservatives, inorganic and organic thickeners, adhesives, gibberellins and also further processing auxiliaries and also water. Depending on the formulation type to be prepared further processing steps are necessary, e.g. wet grinding, dry grinding and granulation.

The inventive composition may be present as such or in their (commercial) formulations and in the use forms prepared from these formulations as a mixture with other (known) active ingredients, such as insecticides, attractants, sterilants, bactericides, acaricides, nematocides, fungicides, growth regulators, herbicides, fertilizers, safeners and/or semiochemicals.

- 20 The compositions according to the invention do not only comprise ready-to-use compositions which can be applied with suitable apparatus to the plant or the seed, but also commercial concentrates which have to be diluted with water prior to use.

- 25 The treatment according to the invention of the plants and plant parts with the active compounds or compositions is carried out directly or by action on their surroundings, habitat or storage space using customary treatment methods, for example by dipping, spraying, atomizing, irrigating, evaporating, dusting, fogging, broadcasting, foaming, painting, spreading-on, watering (drenching), drip irrigating and, in the case of propagation material, in particular in the case of seeds, furthermore as a powder for dry seed treatment, a solution for seed treatment, a water-soluble powder for slurry treatment, by incrusting, by coating with one or more layers, etc. It is furthermore possible to apply the active compounds by the ultra-low volume method, or to inject the active compound preparation or the active compound itself into the soil.

Plant/Crop Protection

The inventive active ingredients or compositions have potent microbicidal activity and can be used for control of unwanted microorganisms, such as fungi and bacteria, in crop protection and in the protection of materials.

5 The invention also relates to a method for controlling unwanted microorganisms, characterized in that the inventive active ingredients are applied to the phytopathogenic fungi, phytopathogenic bacteria and/or their habitat.

Fungicides can be used in crop protection for control of phytopathogenic fungi. They are characterized by an outstanding efficacy against a broad spectrum of phytopathogenic fungi, including soilborne pathogens, which are in particular members of the classes *Plasmodiophoromycetes*,
10 *Peronosporomycetes* (Syn. *Oomycetes*), *Chytridiomycetes*, *Zygomycetes*, *Ascomycetes*, *Basidiomycetes* and *Deuteromycetes* (Syn. *Fungi imperfecti*). Some fungicides are systemically active and can be used in plant protection as foliar, seed dressing or soil fungicide. Furthermore, they are suitable for combating fungi, which inter alia infest wood or roots of plant.

Bactericides can be used in crop protection for control of *Pseudomonadaceae*, *Rhizobiaceae*, *Enterobacteriaceae*, *Corynebacteriaceae* and *Streptomycetaceae*.
15

Non-limiting examples of pathogens of fungal diseases which can be treated in accordance with the invention include:

diseases caused by powdery mildew pathogens, for example *Blumeria* species, for example *Blumeria graminis*; *Podosphaera* species, for example *Podosphaera leucotricha*; *Sphaerotheca*
20 species, for example *Sphaerotheca fuliginea*; *Uncinula* species, for example *Uncinula necator*;

diseases caused by rust disease pathogens, for example *Gymnosporangium* species, for example *Gymnosporangium sabinae*; *Hemileia* species, for example *Hemileia vastatrix*; *Phakopsora* species, for example *Phakopsora pachyrhizi* and *Phakopsora meibomia*; *Puccinia* species, for example *Puccinia recondite*, *P. tritici*, *P. graminis* or *P. striiformis*; *Uromyces* species, for example
25 *Uromyces appendiculatus*;

diseases caused by pathogens from the group of the *Oomycetes*, for example *Albugo* species, for example *Albugo candida*; *Bremia* species, for example *Bremia lactucae*; *Peronospora* species, for example *Peronospora pisi* or *P. brassicae*; *Phytophthora* species, for example *Phytophthora infestans*; *Plasmopara* species, for example *Plasmopara viticola*; *Pseudoperonospora* species, for example
30 *Pseudoperonospora humuli* or *Pseudoperonospora cubensis*; *Pythium* species, for example *Pythium ultimum*;

leaf blotch diseases and leaf wilt diseases caused, for example, by *Alternaria* species, for example *Alternaria solani*; *Cercospora* species, for example *Cercospora beticola*; *Cladosporium* species, for example *Cladosporium cucumerinum*; *Cochliobolus* species, for example *Cochliobolus sativus* (conidia form: Drechslera, Syn: Helminthosporium), *Cochliobolus miyabeanus*; *Colletotrichum* species, for example *Colletotrichum lindemuthianum*; *Cycloconium* species, for example *Cycloconium oleaginum*; *Diaporthe* species, for example *Diaporthe citri*; *Elsinoe* species, for example *Elsinoe fawcettii*; *Gloeosporium* species, for example *Gloeosporium laeticolor*; *Glomerella* species, for example *Glomerella cingulata*; *Guignardia* species, for example *Guignardia bidwelli*; *Leptosphaeria* species, for example *Leptosphaeria maculans*, *Leptosphaeria nodorum*; *Magnaporthe* species, for example *Magnaporthe grisea*; *Microdochium* species, for example *Microdochium nivale*; *Mycosphaerella* species, for example *Mycosphaerella graminicola*, *M. arachidicola* and *M. fijiensis*; *Phaeosphaeria* species, for example *Phaeosphaeria nodorum*; *Pyrenophora* species, for example *Pyrenophora teres*, *Pyrenophora tritici repentis*; *Ramularia* species, for example *Ramularia collo-cygni*, *Ramularia areola*; *Rhynchosporium* species, for example *Rhynchosporium secalis*; *Septoria* species, for example *Septoria apii*, *Septoria lycopersii*; *Typhula* species, for example *Typhula incarnata*; *Venturia* species, for example *Venturia inaequalis*;

root and stem diseases caused, for example, by *Corticium* species, for example *Corticium graminearum*; *Fusarium* species, for example *Fusarium oxysporum*; *Gaeumannomyces* species, for example *Gaeumannomyces graminis*; *Rhizoctonia* species, such as, for example *Rhizoctonia solani*; *Sarocladium* diseases caused for example by *Sarocladium oryzae*; *Sclerotium* diseases caused for example by *Sclerotium oryzae*; *Tapesia* species, for example *Tapesia acuformis*; *Thielaviopsis* species, for example *Thielaviopsis basicola*;

ear and panicle diseases (including corn cobs) caused, for example, by *Alternaria* species, for example *Alternaria* spp.; *Aspergillus* species, for example *Aspergillus flavus*; *Cladosporium* species, for example *Cladosporium cladosporioides*; *Claviceps* species, for example *Claviceps purpurea*; *Fusarium* species, for example *Fusarium culmorum*; *Gibberella* species, for example *Gibberella zeae*; *Monographella* species, for example *Monographella nivalis*; *Septoria* species, for example *Septoria nodorum*;

diseases caused by smut fungi, for example *Sphacelotheca* species, for example *Sphacelotheca reiliana*; *Tilletia* species, for example *Tilletia caries*, *T. controversa*; *Urocystis* species, for example *Urocystis occulta*; *Ustilago* species, for example *Ustilago nuda*, *U. nuda tritici*;

fruit rot caused, for example, by *Aspergillus* species, for example *Aspergillus flavus*; *Botrytis* species, for example *Botrytis cinerea*; *Penicillium* species, for example *Penicillium expansum* and *P. purpurogenum*; *Sclerotinia* species, for example *Sclerotinia sclerotiorum*; *Verticillium* species, for example *Verticillium alboatrum*;

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- seed and soilborne decay, mould, wilt, rot and damping-off diseases caused, for example, by *Alternaria* species, caused for example by *Alternaria brassicicola*; *Aphanomyces* species, caused for example by *Aphanomyces euteiches*; *Ascochyta* species, caused for example by *Ascochyta lentis*; *Aspergillus* species, caused for example by *Aspergillus flavus*; *Cladosporium* species, caused for example by *Cladosporium herbarum*; *Cochliobolus* species, caused for example by *Cochliobolus sativus*; (Conidiaform: Drechslera, Bipolaris Syn: Helminthosporium); *Colletotrichum* species, caused for example by *Colletotrichum coccodes*; *Fusarium* species, caused for example by *Fusarium culmorum*; *Gibberella* species, caused for example by *Gibberella zeae*; *Macrophomina* species, caused for example by *Macrophomina phaseolina*; *Monographella* species, caused for example by *Monographella nivalis*; *Penicillium* species, caused for example by *Penicillium expansum*; *Phoma* species, caused for example by *Phoma lingam*; *Phomopsis* species, caused for example by *Phomopsis sojae*; *Phytophthora* species, caused for example by *Phytophthora cactorum*; *Pyrenophora* species, caused for example by *Pyrenophora graminea*; *Pyricularia* species, caused for example by *Pyricularia oryzae*; *Pythium* species, caused for example by *Pythium ultimum*; *Rhizoctonia* species, caused for example by *Rhizoctonia solani*; *Rhizopus* species, caused for example by *Rhizopus oryzae*; *Sclerotium* species, caused for example by *Sclerotium rolfsii*; *Septoria* species, caused for example by *Septoria nodorum*; *Typhula* species, caused for example by *Typhula incarnata*; *Verticillium* species, caused for example by *Verticillium dahliae*;
- cancers, galls and witches' broom caused, for example, by *Nectria* species, for example *Nectria galligena*;
- wilt diseases caused, for example, by *Monilinia* species, for example *Monilinia laxa*;
- leaf blister or leaf curl diseases caused, for example, by *Exobasidium* species, for example *Exobasidium vexans*;
- Taphrina* species, for example *Taphrina deformans*;
- decline diseases of wooden plants caused, for example, by Esca disease, caused for example by *Phaemoniella clamydospora*, *Phaeoacremonium aleophilum* and *Fomitiporia mediterranea*; Eutypa dycback, caused for example by *Eutypa lata* ; Ganoderma diseases caused for example by *Ganoderma boninense*; Rigidoporus diseases caused for example by *Rigidoporus lignosus*;
- diseases of flowers and seeds caused, for example, by *Botrytis* species, for example *Botrytis cinerea*;
- diseases of plant tubers caused, for example, by *Rhizoctonia* species, for example *Rhizoctonia solani*; *Helminthosporium* species, for example *Helminthosporium solani*;

Club root caused, for example, by *Plasmodiophora* species, for example *Plasmodiophora brassicae*;

diseases caused by bacterial pathogens, for example *Xanthomonas* species, for example *Xanthomonas campestris* pv. *oryzae*; *Pseudomonas* species, for example *Pseudomonas syringae* pv. *lachrymans*; *Erwinia* species, for example *Erwinia amylovora*.

The following diseases of soya beans can be controlled with preference:

Fungal diseases on leaves, stems, pods and seeds caused, for example, by *Alternaria* leaf spot (*Alternaria spec. atrans tenuissima*), Anthracnose (*Colletotrichum gloeosporoides dematium* var. *truncatum*), brown spot (*Septoria glycines*), cercospora leaf spot and blight (*Cercospora kikuchii*),
10 choanephora leaf blight (*Choanephora infundibulifera trispora* (Syn.)), dactuliophora leaf spot (*Dactuliophora glycines*), downy mildew (*Peronospora manshurica*), drechslera blight (*Drechslera glycini*), frog-eye leaf spot (*Cercospora sojae*), leptosphaerulina leaf spot (*Leptosphaerulina trifolii*), phyllosticta leaf spot (*Phyllosticta sojaecola*), pod and stem blight (*Phomopsis sojae*), powdery mildew (*Microsphaera diffusa*), pyrenochaeta leaf spot (*Pyrenochaeta glycines*),
15 rhizoctonia aerial, foliage, and web blight (*Rhizoctonia solani*), rust (*Phakopsora pachyrhizi*, *Phakopsora meibomia*), scab (*Sphaceloma glycines*), stemphylium leaf blight (*Stemphylium botryosum*), target spot (*Corynespora cassicola*).

Fungal diseases on roots and the stem base caused, for example, by black root rot (*Calonectria crotalariae*), charcoal rot (*Macrophomina phaseolina*), fusarium blight or wilt, root rot, and pod
20 and collar rot (*Fusarium oxysporum*, *Fusarium orthoceras*, *Fusarium semitectum*, *Fusarium equiseti*), mycoleptodiscus root rot (*Mycoleptodiscus terrestris*), neocosmospora (*Neocosmospora vasinfecta*), pod and stem blight (*Diaporthe phaseolorum*), stem canker (*Diaporthe phaseolorum* var. *caulivora*), phytophthora rot (*Phytophthora megasperma*), brown stem rot (*Phialophora gregata*), pythium rot (*Pythium aphanidermatum*, *Pythium irregulare*, *Pythium debaryanum*, *Pythium myriotylum*, *Pythium ultimum*),
25 rhizoctonia root rot, stem decay, and damping-off (*Rhizoctonia solani*), sclerotinia stem decay (*Sclerotinia sclerotiorum*), sclerotinia southern blight (*Sclerotinia rolfii*), thielaviopsis root rot (*Thielaviopsis basicola*).

The inventive fungicidal compositions can be used for curative or protective/preventive control of phytopathogenic fungi. The invention therefore also relates to curative and protective methods for
30 controlling phytopathogenic fungi by the use of the inventive active ingredients or compositions, which are applied to the seed, the plant or plant parts, the fruit or the soil in which the plants grow.

The fact that the active ingredients are well tolerated by plants at the concentrations required for controlling plant diseases allows the treatment of above-ground parts of plants, of propagation stock and seeds, and of the soil.

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According to the invention all plants and plant parts can be treated. By plants is meant all plants and plant populations such as desirable and undesirable wild plants, cultivars and plant varieties (whether or not protectable by plant variety or plant breeder's rights). Cultivars and plant varieties can be plants obtained by conventional propagation and breeding methods which can be assisted or supplemented by one or more biotechnological methods such as by use of double haploids, protoplast fusion, random and directed mutagenesis, molecular or genetic markers or by bioengineering and genetic engineering methods. By plant parts is meant all above ground and below ground parts and organs of plants such as shoot, leaf, blossom and root, whereby for example leaves, needles, stems, branches, blossoms, fruiting bodies, fruits and seed as well as roots, corms and rhizomes are listed. Crops and vegetative and generative propagating material, for example cuttings, corms, rhizomes, runners and seeds also belong to plant parts.

The inventive active compositions, when they are well tolerated by plants, have favourable homeotherm toxicity and are well tolerated by the environment, are suitable for protecting plants and plant organs, for enhancing harvest yields, for improving the quality of the harvested material. They can preferably be used as crop protection compositions. They are active against normally sensitive and resistant species and against all or some stages of development.

Plants which can be treated in accordance with the invention include the following main crop plants: maize, soya bean, alfalfa, cotton, sunflower, *Brassica* oil seeds such as *Brassica napus* (e.g. canola, rapeseed), *Brassica rapa*, *B. juncea* (e.g. (field) mustard) and *Brassica carinata*, *Are- caceae* sp. (e.g. oilpalm, coconut), rice, wheat, sugar beet, sugar cane, oats, rye, barley, millet and sorghum, triticale, flax, nuts, grapes and vine and various fruit and vegetables from various botanic taxa, e.g. *Rosaceae* sp. (e.g. pome fruits such as apples and pears, but also stone fruits such as apricots, cherries, almonds, plums and peaches, and berry fruits such as strawberries, raspberries, red and black currant and gooseberry), *Ribesioideae* sp., *Juglandaceae* sp., *Betulaceae* sp., *Anacardiaceae* sp., *Fagaceae* sp., *Moraceae* sp., *Oleaceae* sp. (e.g. olive tree), *Actinidaceae* sp., *Lauraceae* sp. (e.g. avocado, cinnamon, camphor), *Musaceae* sp. (e.g. banana trees and plantations), *Rubiaceae* sp. (e.g. coffee), *Theaceae* sp. (e.g. tea), *Sterculiaceae* sp., *Rutaceae* sp. (e.g. lemons, oranges, mandarins and grapefruit); *Solanaceae* sp. (e.g. tomatoes, potatoes, peppers, capsicum, aubergines, tobacco), *Liliaceae* sp., *Compositae* sp. (e.g. lettuce, artichokes and chicory – including root chicory, endive or common chicory), *Umbelliferae* sp. (e.g. carrots, parsley, celery and celeriac), *Cucurbitaceae* sp. (e.g. cucumbers – including gherkins, pumpkins, watermelons, calabashes and melons), *Alliaceae* sp. (e.g. leeks and onions), *Cruciferae* sp. (e.g. white cabbage, red cabbage, broccoli, cauliflower, Brussels sprouts, pak choi, kohlrabi, radishes, horseradish, cress and chinese cabbage), *Leguminosae* sp. (e.g. peanuts, peas, lentils and beans – e.g. common beans and broad beans), *Chenopodiaceae* sp. (e.g. Swiss chard, fodder beet, spinach, beetroot), *Linaceae* sp. (e.g. hemp), *Cannabaceae* sp. (e.g. cannabis), *Malvaceae* sp. (e.g. okra,

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cocoa), *Papaveraceae* (e.g. poppy), *Asparagaceae* (e.g. asparagus); useful plants and ornamental plants in the garden and woods including turf, lawn, grass and *Stevia rebaudiana*; and in each case genetically modified types of these plants.

In particular, the mixtures and compositions according to the invention are suitable for controlling the following plant diseases:

Albugo spp. (white rust) on ornamental plants, vegetable crops (e.g. *A. candida*) and sunflowers (e.g. *A. tragopogonis*); *Alternaria* spp. (black spot disease, black blotch) on vegetables, oilseed rape (e.g. *A. brassicola* or *A. brassicae*), sugar beet (e.g. *A. tenuis*), fruit, rice, soybeans and also on potatoes (e.g. *A. solani* or *A. alternata*) and tomatoes (e.g. *A. solani* or *A. alternata*) and *Alternaria* spp. (black head) on wheat; *Aphanomyces* spp. on sugar beet and vegetables; *Ascochyta* spp. on cereals and vegetables, e.g. *A. tritici* (*Ascochyta* leaf blight) on wheat and *A. hordei* on barley; *Bipolaris* and *Drechslera* spp. (teleomorph: *Cochliobolus* spp.), e.g. leaf spot diseases (*D. maydis* and *B. zeicola*) on corn, e.g. glume blotch (*B. sorokiniana*) on cereals and e.g. *B. oryzae* on rice and on lawn; *Blumeria* (old name: *Erysiphe*) *graminis* (powdery mildew) on cereals (e.g. wheat or barley); *Botryosphaeria* spp. ('Slack Dead Arm Disease') on grapevines (e.g. *B. obtusa*); *Botrytis cinerea* (teleomorph: *Botryotinia fuckeliana*: gray mold, gray rot) on soft fruit and pomaceous fruit (inter alia strawberries), vegetables (inter alia lettuce, carrots, celeriac and cabbage), oilseed rape, flowers, grapevines, forest crops and wheat (ear mold); *Bremia lactucae* (downy mildew) on lettuce; *Ceratocystis* (syn. *Ophiostoma*) spp. (blue stain fungus) on deciduous trees and coniferous trees, e.g. *C. ulmi* (Dutch elm disease) on elms; *Cercospora* spp. (*Cereospora* leaf spot) on corn (e.g. *C. zea-maydis*), rice, sugar beet (e.g. *C. beticola*), sugar cane, vegetables, coffee, soybeans (e.g. *C. sojae* or *C. kikuchii*) and rice; *Cladosporium* spp. on tomato (e.g. *C. fulvum*: tomato leaf mold) and cereals, e.g. *C. herbarum* (ear rot) on wheat; *Claviceps purpurea* (ergot) on cereals; *Cochliobolus* (anamorph: *Helminthosporium* or *Bipolaris*) spp. (leaf spot) on corn (e.g. *C. carbonum*), cereals (e.g. *C. sativus*, anamorph: *B. sorokiniana*: glume blotch) and rice (for example *C. miyabeanus*, anamorph: *H. oryzae*); *Colletotrichum* (teleomorph: *Glomerella*) spp. (anthracnosis) on cotton (e.g. *C. gossypii*), corn (e.g. *C. graminicola*: stem rot and anthracnosis), soft fruit, potatoes (e.g. *C. coccoodes*: wilt disease), beans (e.g. *C. lindemuthianum*) and soybeans (e.g. *C. truncatum*); *Corticium* spp., e.g. *C. sasakii* (sheath blight) on rice; *Corynespora cassiicola* (leaf spot) on soybeans and ornamental plants; *Cycloconium* spp., e.g. *C. oleaginum* on olives; *Cylindrocarpum* spp. (e.g. fruit tree cancer or black foot disease of grapevine, teleomorph: *Nectria* or *Neonectria* spp.) on fruit trees, grapevines (e.g. *C. liriodendri*; teleomorph: *Neonectria liriodendri*, black foot disease) and many ornamental trees; *Dematophora* (teleomorph: *Rosellinia*) *necatrix* (root/stem rot) on soybeans; *Diaporthe* spp. e.g. *D. phaseolorum* (stem disease) on soybeans; *Drechslera* (syn. *Helminthosporium*, teleomorph: *Pyrenophora*) spp. on corn, cereals, such as barley (e.g. *D. teres*, net blotch) and on wheat (e.g. *D. tritici-repentis*: DTR leaf spot), rice and lawn; Esca dis-

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ease (dieback of grapevine, apoplexia) on grapevines, caused by *Formitiporia* (syn. *Phellinus*) *punctata*, *F. mediterranea*. *Phaeomoniella chlamydospora* (old name *Phaeoacremonium chlamydosporum*), *Phaeoacremonium aleophilum* and/or *Botryosphaeria obtusa*; *Elsinoe* spp. on pome fruit (*E. pyri*) and soft fruit (*E. veneta*: anthracnosis) and also grapevines (*E. ampelina*: anthracnosis); *Entyloma oryzae* (leaf smut) on rice; *Epicoccum* spp. (black head) on wheat; *Erysiphe* spp. (powdery mildew) on sugar beet (*E. betae*), vegetables (e.g. *E. pisi*), such as cucumber species (e.g. *E. cichoracearum*) and cabbage species, such as oilseed rape (e.g. *E. cruciferarum*); *Eutypa fata* (*Eutypa* cancer or dieback, anamorph: *Cytosporina lata*, syn. *Libertella blepharis*) on fruit trees, grapevines and many ornamental trees; *Exserohilum* (syn. *Helminthosporium*) spp. on corn (e.g. *E. turcicum*); *Fusarium* (teleomorph: *Gibberella*) spp. (wilt disease, root and stem rot) on various plants, such as e.g. *F. graminearum* or *F. culmorum* (root rot and silver-top) on cereals (e.g. wheat or barley), *F. oxysporum* on tomatoes, *F. solani* on soybeans and *F. verticillioides* on corn; *Gaeumannomyces graminis* (takeall) on cereals (e.g. wheat or barley) and corn; *Gibberella* spp. on cereals (e.g. *G. zeae*) and rice (e.g. *G. fujikuroi*: bakanae disease); *Glomerella cingulata* on grapevines, pomaceous fruit and other plants and *G. gossypii* on cotton; *grainstaining complex* on rice; *Guignardia bidwellii* (black rot) on grapevines; *Gymnosporangium* spp. on Rosaceae and juniper, e.g. *G. sabinae* (pear rust) on pears; *Helminthosporium* spp. (syn. *Drechslera*, teleomorph: *Cochliobolus*) on corn, cereals and rice; *Hemileia* spp., e.g. *H. vastatrix* (coffee leaf rust) on coffee; *Isariopsis clavispora* (syn. *Cladosporium vitis*) on grapevines; *Macrophomina phaseolina* (syn. *phaseoli*) (root/stem rot) on soybeans and cotton; *Microdochium* (syn. *Fusarium*) *nivale* (pink snow mold) on cereals (e.g. wheat or barley); *Microsphaera diffusa* (powdery mildew) on soybeans; *Monilinia* spp., e.g. *M. laxa*, *M. fructicola* and *M. fructigena* (blossom and twig blight) on stone fruit and other Rosaceae; *Mycosphaerella* spp. on cereals, bananas, soft fruit and peanuts, such as e.g. *M. graminicola* (anamorph: *Septoria tritici*, *Septoria* leaf blotch) on wheat or *M. fijiensis* (Sigatoka disease) on bananas; *Peronospora* spp. (downy mildew) on cabbage (e.g. *P. brassicae*), oilseed rape (e.g. *P. parasitica*), bulbous plants (e.g. *P. destructor*), tobacco (*P. tabacina*) and soybeans (e.g. *P. manshurica*); *Phakopsora pachyrhizi* and *P. meibomiae* (soybean rust) on soybeans; *Phialophora* spp. e.g. on grapevines (e.g. *P. tracheiphila* and *P. tetraspora*) and soybeans (e.g. *P. gregata*: stem disease); *Phoma lingam* (root and stem rot) on oilseed rape and cabbage and *P. betae* (leaf spot) on sugar beet; *Phomopsis* spp. on sunflowers, grapevines (e.g. *P. viticola*: dead-arm disease) and soybeans (e.g. stem canker/stem blight: *P. phaseoli*, teleomorph: *Diaporthe phaseolorum*); *Physoderma maydis* (brown spot) on corn; *Phytophthora* spp. (wilt disease, root, leaf, stem and fruit rot) on various plants, such as on bell peppers and cucumber species (e.g. *P. capsici*), soybeans (e.g. *P. megasperma*, syn. *P. sojae*), potatoes and tomatoes (e.g. *P. infestans*: late blight and brown rot) and deciduous trees (e.g. *P. ramorum* sudden oak death); *Plasmodiophora brassicae* (club-root) on cabbage, oilseed rape, radish and other plants; *Plasmopara* spp., e.g. *P. viticola* (peronospora of grapevines, downy mildew) on grapevines and *P. halstedii* on sunflowers; *Podosphaera* spp.

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(powdery mildew) on Rosaceae, hops, pomaceous fruit and soft fruit, e.g. *P. leucotricha* on apple; *Polymyxa* spp., e.g. on cereals, such as barley and wheat (*P. graminis*) and sugar beet (*P. betae*) and the viral diseases transmitted thereby; *Pseudocercospora herpotrichoides* (eyespot/stem break, teleomorph: *Tapesia yallundae*) on cereals, e.g. wheat or barley; *Pseudoperonospora* (downy mildew) on various plants, e.g. *P. cubensis* on cucumber species or *P. humili* on hops; *Pseudopezizicula tracheiphila* (angular leaf scorch, anamorph *Phialophora*) on grapevines; *Puccinia* spp. (rust disease) on various plants, e.g. *P. triticina* (brown rust of wheat), *P. striiformis* (yellow rust), *P. hordei* (dwarf leaf rust), *P. graminis* (black rust) or *P. recondita* (brown rust of rye) on cereals, such as e.g. wheat, barley or rye. *P. kuehnii* on sugar cane and, e.g., on asparagus (e.g. *P. asparagi*); *Pyrenophora* (anamorph: *Drechslera*) *tritici-repentis* (speckled leaf blotch) on wheat or *P. teres* (net blotch) on barley; *Pyricularia* spp., e.g. *P. oryzae* (teleomorph: *Magnaporthe grisea*, rice blast) on rice and *P. grisea* on lawn and cereals; *Pythium* spp. (damping-off disease) on lawn, rice, corn, wheat, cotton, oilseed rape, sunflowers, sugar beet, vegetables and other plants (e.g. *P. ultimum* or *P. aphanidermatum*); *Ramularia* spp., e.g. *R. collo-cygni* (*Ramularia* leaf and lawn spot/physiological leaf spot) on barley and *R. beticola* on sugar beet; *Rhizoctonia* spp. on cotton, rice, potatoes, lawn, corn, oilseed rape, potatoes, sugar beet, vegetables and on various other plants, for example *R. solani* (root and stem rot) on soybeans, *R. solani* (sheath blight) on rice or *R. cerealis* (sharp eyespot) on wheat or barley; *Rhizopus stolonifer* (soft rot) on strawberries, carrots, cabbage, grapevines and tomato; *Rhynchosporium secalis* (leaf spot) on barley, rye and triticale; *Sarocladium oryzae* and *S. attenuatum* (sheath rot) on rice; *Sclerotinia* spp. (stem or white rot) on vegetable and field crops, such as oilseed rape, sunflowers (e.g. *Sclerotinia sclerotiorum*) and soybeans (e.g. *S. rolfsii*); *Septoria* spp. on various plants, e.g. *S. glycines* (leaf spot) on soybeans, *S. tritici* (*Septoria* leaf blotch) on wheat and *S.* (syn. *Stagonospora*) *nodorum* (leaf blotch and glume blotch) on cereals; *Uncinula* (syn. *Erysiphe*) *necator* (powdery mildew, anamorph: *Oidium tuckeri*) on grapevines; *Setosphaeria* spp. (leaf spot) on corn (e.g. *S. turcicum*, syn. *Helminthosporium turcicum*) and lawn; *Sphacelotheca* spp. (head smut) on corn, (e.g. *S. reiliana*: kernel smut), millet and sugar cane; *Sphaerotheca fuliginea* (powdery mildew) on cucumber species; *Spongospora subterranea* (powdery scab) on potatoes and the viral diseases transmitted thereby; *Stagonospora* spp. on cereals, e.g. *S. nodorum* (leaf blotch and glume blotch, teleomorph: *Leptosphaeria* [syn. *Phaeosphaeria*] *nodorum*) on wheat; *Synchytrium endobioticum* on potatoes (potato wart disease); *Taphrina* spp., e.g. *T. deformans* (curly-leaf disease) on peach and *T. pruni* (plum-pocket disease) on plums; *Thielaviopsis* spp. (black root rot) on tobacco, pome fruit, vegetable crops, soybeans and cotton, e.g. *T. basicola* (syn. *Chalara elegans*); *Tilletia* spp. (bunt or stinking smut) on cereals, such as e.g. *T. tritici* (syn. *T. caries*, wheat bunt) and *T. controversa* (dwarf bunt) on wheat; *Typhula incarnata* (gray snow mold) on barley or wheat; *Urocystis* spp., e.g. *U. occulta* (flag smut) on rye; *Uromyces* spp. (rust) on vegetable plants, such as beans (e.g. *U. appendiculatus*, syn. *U. phaseoli*) and sugar beet (e.g. *U. betae*); *Ustilago* spp. (loose smut) on cereals (e.g. *U. nuda* and *U. avenae*), corn (e.g. *U. maydis*: corn

smut) and sugar cane; *Venturia* spp. (scab) on apples (e.g. *V. inaequalis*) and pears and *Verticillium* spp. (leaf and shoot wilt) on various plants, such as fruit trees and ornamental trees, grapevines, soft fruit, vegetable and field crops, such as e.g. *V. dahliae* on strawberries, oilseed rape, potatoes and tomatoes.

5 Plant Growth Regulation

In some cases, the inventive compositions can, at particular concentrations or application rates, also be used as herbicides, safeners, growth regulators or agents to improve plant properties, or as microbicides, for example as fungicides, antimycotics, bactericides, viricides (including compositions against viroids) or as compositions against MLO (Mycoplasma-like organisms) and RLO (Rickettsia-like organisms). If appropriate, they can also be used as intermediates or precursors for the synthesis of other active ingredients.

The inventive active combinations intervene in the metabolism of the plants and can therefore also be used as growth regulators.

Plant growth regulators may exert various effects on plants. The effect of the substances depends essentially on the time of application in relation to the developmental stage of the plant, and also on the amounts of active ingredient applied to the plants or their environment and on the type of application. In each case, growth regulators should have a particular desired effect on the crop plants.

Plant growth-regulating compounds can be used, for example, to inhibit the vegetative growth of the plants. Such inhibition of growth is of economic interest, for example, in the case of grasses, since it is thus possible to reduce the frequency of grass cutting in ornamental gardens, parks and sport facilities, on roadsides, at airports or in fruit crops. Also of significance is the inhibition of the growth of herbaceous and woody plants on roadsides and in the vicinity of pipelines or overhead cables, or quite generally in areas where vigorous plant growth is unwanted.

Also important is the use of growth regulators for inhibition of the longitudinal growth of cereal. This reduces or completely eliminates the risk of lodging of the plants prior to harvest. In addition, growth regulators in the case of cereals can strengthen the culm, which also counteracts lodging. The employment of growth regulators for shortening and strengthening culms allows the deployment of higher fertilizer volumes to increase the yield, without any risk of lodging of the cereal crop.

In many crop plants, inhibition of vegetative growth allows denser planting, and it is thus possible to achieve higher yields based on the soil surface. Another advantage of the smaller plants obtained in this way is that the crop is easier to cultivate and harvest.

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Inhibition of the vegetative plant growth may also lead to enhanced yields because the nutrients and assimilates are of more benefit to flower and fruit formation than to the vegetative parts of the plants.

5 Frequently, growth regulators can also be used to promote vegetative growth. This is of great benefit when harvesting the vegetative plant parts. However, promoting vegetative growth may also promote generative growth in that more assimilates are formed, resulting in more or larger fruits.

10 In some cases, yield increases may be achieved by manipulating the metabolism of the plant, without any detectable changes in vegetative growth. In addition, growth regulators can be used to alter the composition of the plants, which in turn may result in an improvement in quality of the harvested products. For example, it is possible to increase the sugar content in sugar beet, sugar cane, pineapples and in citrus fruit, or to increase the protein content in soya or cereals. It is also possible, for example, to use growth regulators to inhibit the degradation of desirable ingredients, for example sugar in sugar beet or sugar cane, before or after harvest. It is also possible to posi-
15 tively influence the production or the elimination of secondary plant ingredients. One example is the stimulation of the flow of latex in rubber trees.

Under the influence of growth regulators, parthenocarpic fruits may be formed. In addition, it is possible to influence the sex of the flowers. It is also possible to produce sterile pollen, which is of great importance in the breeding and production of hybrid seed.

20 Use of growth regulators can control the branching of the plants. On the one hand, by breaking apical dominance, it is possible to promote the development of side shoots, which may be highly desirable particularly in the cultivation of ornamental plants, also in combination with an inhibition of growth. On the other hand, however, it is also possible to inhibit the growth of the side shoots. This effect is of particular interest, for example, in the cultivation of tobacco or in the cul-
25 tivation of tomatoes.

Under the influence of growth regulators, the amount of leaves on the plants can be controlled such that defoliation of the plants is achieved at a desired time. Such defoliation plays a major role in the mechanical harvesting of cotton, but is also of interest for facilitating harvesting in other crops, for example in viticulture. Defoliation of the plants can also be undertaken to lower the
30 transpiration of the plants before they are transplanted.

Growth regulators can likewise be used to regulate fruit dehiscence. On the one hand, it is possible to prevent premature fruit dehiscence. On the other hand, it is also possible to promote fruit dehiscence or even flower abortion to achieve a desired mass ("thinning"), in order to eliminate alternation. Alternation is understood to mean the characteristic of some fruit species, for endogenous

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reasons, to deliver very different yields from year to year. Finally, it is possible to use growth regulators at the time of harvest to reduce the forces required to detach the fruits, in order to allow mechanical harvesting or to facilitate manual harvesting.

- Growth regulators can also be used to achieve faster or else delayed ripening of the harvested material before or after harvest. This is particularly advantageous as it allows optimal adjustment to the requirements of the market. Moreover, growth regulators in some cases can improve the fruit colour. In addition, growth regulators can also be used to concentrate maturation within a certain period of time. This establishes the prerequisites for complete mechanical or manual harvesting in a single operation, for example in the case of tobacco, tomatoes or coffee.
- By using growth regulators, it is additionally possible to influence the resting of seed or buds of the plants, such that plants such as pineapple or ornamental plants in nurseries, for example, germinate, sprout or flower at a time when they are normally not inclined to do so. In areas where there is a risk of frost, it may be desirable to delay budding or germination of seeds with the aid of growth regulators, in order to avoid damage resulting from late frosts.
- Finally, growth regulators can induce resistance of the plants to frost, drought or high salinity of the soil. This allows the cultivation of plants in regions which are normally unsuitable for this purpose.

Resistance Induction / Plant Health and other effects

- The active combinations according to the invention also exhibit a potent strengthening effect in plants. Accordingly, they can be used for mobilizing the defences of the plant against attack by undesirable microorganisms.

- Plant-strengthening (resistance-inducing) substances are to be understood as meaning, in the present context, those substances which are capable of stimulating the defence system of plants in such a way that the treated plants, when subsequently inoculated with undesirable microorganisms, develop a high degree of resistance to these microorganisms.

The active combinations according to the invention are also suitable for increasing the yield of crops. In addition, they show reduced toxicity and are well tolerated by plants.

Further, in context with the present invention plant physiology effects comprise the following:

- Abiotic stress tolerance, comprising temperature tolerance, drought tolerance and recovery after drought stress, water use efficiency (correlating to reduced water consumption), flood tolerance, ozone stress and UV tolerance, tolerance towards chemicals like heavy metals, salts, pesticides (safener) etc..

Biotic stress tolerance, comprising increased fungal resistance and increased resistance against nematodes, viruses and bacteria. In context with the present invention, biotic stress tolerance preferably comprises increased fungal resistance and increased resistance against nematodes

Increased plant vigor, comprising plant health / plant quality and seed vigor, reduced stand failure, improved appearance, increased recovery, improved greening effect and improved photosynthetic efficiency.

Effects on plant hormones and/or functional enzymes.

Effects on growth regulators (promoters), comprising earlier germination, better emergence, more developed root system and/or improved root growth, increased ability of tillering, more productive tillers, earlier flowering, increased plant height and/or biomass, shorting of stems, improvements in shoot growth, number of kernels/ear, number of ears/m², number of stolons and/or number of flowers, enhanced harvest index, bigger leaves, less dead basal leaves, improved phyllotaxy, earlier maturation / earlier fruit finish, homogenous riping, increased duration of grain filling, better fruit finish, bigger fruit/vegetable size, sprouting resistance and reduced lodging.

Increased yield, referring to total biomass per hectare, yield per hectare, kernel/fruit weight, seed size and/or hectolitre weight as well as to increased product quality, comprising:

improved processability relating to size distribution (kernel, fruit, etc.), homogenous riping, grain moisture, better milling, better vinification, better brewing, increased juice yield, harvestability, digestibility, sedimentation value, falling number, pod stability, storage stability, improved fiber length/strength/uniformity, increase of milk and/or meat quality of silage fed animals, adaption to cooking and frying;

further comprising improved marketability relating to improved fruit/grain quality, size distribution (kernel, fruit, etc.), increased storage / shelf-life, firmness / softness, taste (aroma, texture, etc.), grade (size, shape, number of berries, etc.), number of berries/fruits per bunch, crispness, freshness, coverage with wax, frequency of physiological disorders, colour, etc.;

further comprising increased desired ingredients such as e.g. protein content, fatty acids, oil content, oil quality, aminoacid composition, sugar content, acid content (pH), sugar/acid ratio (Brix), polyphenols, starch content, nutritional quality, gluten content/index, energy content, taste, etc.;

and further comprising decreased undesired ingredients such as e.g. less mycotoxines, less aflatoxines, geosmin level, phenolic aromas, lacchase, polyphenol oxidases and peroxidases, nitrate content etc.

Sustainable agriculture, comprising nutrient use efficiency, especially nitrogen (N)-use efficiency, phosphours (P)-use efficiency, water use efficiency, improved transpiration, respiration and/or CO₂ assimilation rate, better nodulation, improved Ca-metabolism etc..

Delayed senescence, comprising improvement of plant physiology which is manifested, for example, in a longer grain filling phase, leading to higher yield, a longer duration of green leaf colouration of the plant and thus comprising colour (greening), water content, dryness etc.. Accordingly, in the context of the present invention, it has been found that the specific inventive application of the active compound combination makes it possible to prolong the green leaf area duration, which delays the maturation (senescence) of the plant. The main advantage to the farmer is a longer grain filling phase leading to higher yield. There is also an advantage to the farmer on the basis of greater flexibility in the harvesting time.

Therein "sedimentation value" is a measure for protein quality and describes according to Zeleny (Zeleny value) the degree of sedimentation of flour suspended in a lactic acid solution during a standard time interval. This is taken as a measure of the baking quality. Swelling of the gluten fraction of flour in lactic acid solution affects the rate of sedimentation of a flour suspension. Both a higher gluten content and a better gluten quality give rise to slower sedimentation and higher Zeleny test values. The sedimentation value of flour depends on the wheat protein composition and is mostly correlated to the protein content, the wheat hardness, and the volume of pan and hearth loaves. A stronger correlation between loaf volume and Zeleny sedimentation volume compared to SDS sedimentation volume could be due to the protein content influencing both the volume and Zeleny value (*Czech J. Food Sci. Vol. 21, No. 3: 91-96, 2000*).

Further the "falling number" as mentioned herein is a measure for the baking quality of cereals, especially of wheat. The falling number test indicates that sprout damage may have occurred. It means that changes to the physical properties of the starch portion of the wheat kernel has already happened. Therein, the falling number instrument analyzes viscosity by measuring the resistance of a flour and water paste to a falling plunger. The time (in seconds) for this to happen is known as the falling number. The falling number results are recorded as an index of enzyme activity in a wheat or flour sample and results are expressed in time as seconds. A high falling number (for example, above 300 seconds) indicates minimal enzyme activity and sound quality wheat or flour. A low falling number (for example, below 250 seconds) indicates substantial enzyme activity and sprout-damaged wheat or flour.

The term "more developed root system" / "improved root growth" refers to longer root system, deeper root growth, faster root growth, higher root dry/fresh weight, higher root volume, larger root surface area, bigger root diameter, higher root stability, more root branching, higher number

of root hairs, and/or more root tips and can be measured by analyzing the root architecture with suitable methodologies and Image analysis programmes (e.g. WinRhizo).

The term "crop water use efficiency" refers technically to the mass of agriculture produce per unit water consumed and economically to the value of product(s) produced per unit water volume consumed and can e.g. be measured in terms of yield per ha, biomass of the plants, thousand-kernel mass, and the number of ears per m².

The term "nitrogen-use efficiency" refers technically to the mass of agriculture produce per unit nitrogen consumed and economically to the value of product(s) produced per unit nitrogen consumed, reflecting uptake and utilization efficiency.

10 Improvement in greening / improved colour and improved photosynthetic efficiency as well as the delay of senescence can be measured with well-known techniques such as a HandyPea system (Hansatech). Fv/Fm is a parameter widely used to indicate the maximum quantum efficiency of photosystem II (PSII). This parameter is widely considered to be a selective indication of plant photosynthetic performance with healthy samples typically achieving a maximum Fv/Fm value of
15 approx. 0.85. Values lower than this will be observed if a sample has been exposed to some type of biotic or abiotic stress factor which has reduced the capacity for photochemical quenching of energy within PSII. Fv/Fm is presented as a ratio of variable fluorescence (Fv) over the maximum fluorescence value (Fm). The Performance Index is essentially an indicator of sample vitality. (See e.g. *Advanced Techniques in Soil Microbiology*, 2007, 11, 319-341; *Applied Soil Ecology*,
20 2000, 15, 169-182.)

The improvement in greening / improved colour and improved photosynthetic efficiency as well as the delay of senescence can also be assessed by measurement of the net photosynthetic rate (Pn), measurement of the chlorophyll content, e.g. by the pigment extraction method of Ziegler and Ehle, measurement of the photochemical efficiency (Fv/Fm ratio), determination of shoot
25 growth and final root and/or canopy biomass, determination of tiller density as well as of root mortality.

Within the context of the present invention preference is given to improving plant physiology effects which are selected from the group comprising: enhanced root growth / more developed root system, improved greening, improved water use efficiency (correlating to reduced water consumption), improved nutrient use efficiency, comprising especially improved nitrogen (N)-use efficiency, delayed senescence and enhanced yield.

Within the enhancement of yield preference is given as to an improvement in the sedimentation value and the falling number as well as to the improvement of the protein and sugar content – especially with plants selected from the group of cereals (preferably wheat).

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Preferably the novel use of the fungicidal compositions of the present invention relates to a combined use of a) preventively and/or curatively controlling pathogenic fungi and/or nematodes, with or without resistance management, and b) at least one of enhanced root growth, improved green-
ing, improved water use efficiency, delayed senescence and enhanced yield. From group b) en-
5 hancement of root system, water use efficiency and N-use efficiency is particularly preferred.

Seed Treatment

The invention further comprises a method for treating seed.

The invention further relates to seed which has been treated by one of the methods described in the previous paragraph. The inventive seeds are employed in methods for the protection of seed
10 from unwanted microorganisms. In these methods, seed treated with at least one inventive active ingredient is used.

The inventive compositions are also suitable for treating seed. A large part of the damage to crop plants caused by harmful organisms is triggered by the infection of the seed during storage or after sowing, and also during and after germination of the plant. This phase is particularly critical since
15 the roots and shoots of the growing plant are particularly sensitive, and even minor damage may result in the death of the plant. There is therefore a great interest in protecting the seed and the germinating plant by using appropriate compositions.

The control of phytopathogenic fungi by treating the seed of plants has been known for a long time and is the subject of constant improvements. However, the treatment of seed entails a series
20 of problems which cannot always be solved in a satisfactory manner. For instance, it is desirable to develop methods for protecting the seed and the germinating plant, which dispense with, or at least significantly reduce, the additional deployment of crop protection compositions after plant-
ing or after emergence of the plants. It is also desirable to optimize the amount of the active ingre-
dient used so as to provide the best possible protection for the seed and the germinating plant from
25 attack by phytopathogenic fungi, but without damaging the plant itself by the active ingredient employed. In particular, methods for the treatment of seed should also take account of the intrinsic fungicidal properties of transgenic plants in order to achieve optimal protection of the seed and the germinating plant with a minimum expenditure of crop protection compositions.

The present invention therefore also relates to a method for protection of seed and germinating
30 plants from attack by phytopathogenic fungi, by treating the seed with an inventive composition. The invention likewise relates to the use of the inventive compositions for treatment of seed to protect the seed and the germinating plant from phytopathogenic fungi. The invention further re-
lates to seed which has been treated with an inventive composition for protection from phytopa-
thogenic fungi.

The control of phytopathogenic fungi which damage plants post-emergence is effected primarily by treating the soil and the above-ground parts of plants with crop protection compositions. Owing to the concerns regarding a possible influence of the crop protection compositions on the environment and the health of humans and animals, there are efforts to reduce the amount of active ingredients deployed.

One of the advantages of the present invention is that the particular systemic properties of the inventive active ingredients and compositions mean that treatment of the seed with these active ingredients and compositions not only protects the seed itself, but also the resulting plants after emergence, from phytopathogenic fungi. In this way, the immediate treatment of the crop at the time of sowing or shortly thereafter can be dispensed with.

It is likewise considered to be advantageous that the inventive compositions can especially also be used with transgenic seed, in which case the plant growing from this seed is capable of expressing a protein which acts against pests. By virtue of the treatment of such seed with the inventive active ingredients or compositions, merely the expression of the protein, for example an insecticidal protein, can control certain pests. Surprisingly, a further synergistic effect can be observed in this case, which additionally increases the effectiveness for protection against attack by pests.

The inventive compositions are suitable for protecting seed of any plant variety which is used in agriculture, in greenhouses, in forests or in horticulture and viticulture. In particular, this is the seed of cereals (such as wheat, barley, rye, triticale, sorghum/millet and oats), maize, cotton, soya beans, rice, potatoes, sunflower, bean, coffee, beet (for example sugar beet and fodder beet), peanut, oilseed rape, poppy, olive, coconut, cocoa, sugar cane, tobacco, vegetables (such as tomato, cucumbers, onions and lettuce), turf and ornamentals (see also below). The treatment of the seed of cereals (such as wheat, barley, rye, triticale and oats), maize and rice is of particular significance.

As also described below, the treatment of transgenic seed with the inventive active ingredients or compositions is of particular significance. This relates to the seed of plants containing at least one heterologous gene which enables the expression of a polypeptide or protein having insecticidal properties. The heterologous gene in transgenic seed can originate, for example, from microorganisms of the species *Bacillus*, *Rhizobium*, *Pseudomonas*, *Serratia*, *Trichoderma*, *Clavibacter*, *Glomus* or *Gliocladium*. This heterologous gene preferably originates from *Bacillus* sp., in which case the gene product is effective against the European maize borer and/or the Western maize rootworm. The heterologous gene more preferably originates from *Bacillus thuringiensis*.

In the context of the present invention, the inventive composition is applied to the seed alone or in a suitable formulation. Preferably, the seed is treated in a state in which it is sufficiently stable for

no damage to occur in the course of treatment. In general, the seed can be treated at any time between harvest and sowing. It is customary to use seed which has been separated from the plant and freed from cobs, shells, stalks, coats, hairs or the flesh of the fruits. For example, it is possible to use seed which has been harvested, cleaned and dried down to a moisture content of less than 15 % by weight. Alternatively, it is also possible to use seed which, after drying, for example, has been treated with water and then dried again.

When treating the seed, care must generally be taken that the amount of the inventive composition applied to the seed and/or the amount of further additives is selected such that the germination of the seed is not impaired, or that the resulting plant is not damaged. This has to be borne in mind in particular in the case of active ingredients which can have phytotoxic effects at certain application rates.

The inventive compositions can be applied directly, i.e. without containing any other components and without having been diluted. In general, it is preferable to apply the compositions to the seed in the form of a suitable formulation. Suitable formulations and methods for seed treatment are known to those skilled in the art and are described, for example, in the following documents: US 4,272,417, US 4,245,432, US 4,808,430, US 5,876,739, US 2003/0176428 A1, WO 2002/080675, WO 2002/028186.

The active ingredients usable in accordance with the invention can be converted to the customary seed dressing formulations, such as solutions, emulsions, suspensions, powders, foams, slurries or other coating compositions for seed, and also ULV formulations.

These formulations are prepared in a known manner, by mixing the active ingredients with customary additives, for example customary extenders and also solvents or diluents, dyes, wetting agents, dispersants, emulsifiers, antifoams, preservatives, secondary thickeners, adhesives, gibberellins and also water.

Useful dyes which may be present in the seed dressing formulations usable in accordance with the invention are all dyes which are customary for such purposes. It is possible to use either pigments, which are sparingly soluble in water, or dyes, which are soluble in water. Examples include the dyes known by the names Rhodamine B, C.I. Pigment Red 112 and C.I. Solvent Red 1.

Useful wetting agents which may be present in the seed dressing formulations usable in accordance with the invention are all substances which promote wetting and which are conventionally used for the formulation of active agrochemical ingredients. Preference is given to using alkyl naphthalenesulphonates, such as diisopropyl or diisobutyl naphthalenesulphonates.

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Useful dispersants and/or emulsifiers which may be present in the seed dressing formulations usable in accordance with the invention are all nonionic, anionic and cationic dispersants conventionally used for the formulation of active agrochemical ingredients. Usable with preference are nonionic or anionic dispersants or mixtures of nonionic or anionic dispersants. Suitable nonionic dispersants include especially ethylene oxide/propylene oxide block polymers, alkylphenol polyglycol ethers and tristyrylphenol polyglycol ether, and the phosphated or sulphated derivatives thereof. Suitable anionic dispersants are especially lignosulphonates, polyacrylic acid salts and arylsulphonate/formaldehyde condensates.

Antifoams which may be present in the seed dressing formulations usable in accordance with the invention are all foam-inhibiting substances conventionally used for the formulation of active agrochemical ingredients. Silicone antifoams and magnesium stearate can be used with preference.

Preservatives which may be present in the seed dressing formulations usable in accordance with the invention are all substances usable for such purposes in agrochemical compositions. Examples include dichlorophene and benzyl alcohol hemiformal.

Secondary thickeners which may be present in the seed dressing formulations usable in accordance with the invention are all substances usable for such purposes in agrochemical compositions. Preferred examples include cellulose derivatives, acrylic acid derivatives, xanthan, modified clays and finely divided silica.

Adhesives which may be present in the seed dressing formulations usable in accordance with the invention are all customary binders usable in seed dressing products. Preferred examples include polyvinylpyrrolidone, polyvinyl acetate, polyvinyl alcohol and tylose.

The gibberellins which may be present in the seed dressing formulations usable in accordance with the invention may preferably be gibberellins A1, A3 (= gibberellic acid), A4 and A7; particular preference is given to using gibberellic acid. The gibberellins are known (cf. R. Wegler "Chemie der Pflanzenschutz- und Schädlingsbekämpfungsmittel" [Chemistry of the Crop Protection Compositions and Pesticides], vol. 2, Springer Verlag, 1970, p. 401-412).

The seed dressing formulations usable in accordance with the invention can be used, either directly or after previously having been diluted with water, for the treatment of a wide range of different seed, including the seed of transgenic plants. In this case, additional synergistic effects may also occur in interaction with the substances formed by expression.

For treatment of seed with the seed dressing formulations usable in accordance with the invention, or the preparations prepared therefrom by adding water, all mixing units usable customarily for the seed dressing are useful. Specifically, the procedure in the seed dressing is to place the seed

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into a mixer, to add the particular desired amount of seed dressing formulations, either as such or after prior dilution with water, and to mix everything until the formulation is distributed homogeneously on the seed. If appropriate, this is followed by a drying process.

Mycotoxins

5 In addition, the inventive treatment can reduce the mycotoxin content in the harvested material and the foods and feeds prepared therefrom. Mycotoxins include particularly, but not exclusively, the following: deoxynivalenol (DON), nivalenol, 15-Ac-DON, 3-Ac-DON, T2- and HT2-toxin, fumonisins, zearalenon, moniliformin, fusarin, diacetoxyscirpenol (DAS), beauvericin, enniatin, fusaroproliferin, fusarenol, ochratoxins, patulin, ergot alkaloids and aflatoxins which can be produced, for example, by the following fungi: *Fusarium* spec., such as *F. acuminatum*, *F. asiaticum*,
10 *F. avenaceum*, *F. crookwellense*, *F. culmorum*, *F. graminearum* (*Gibberella zeae*), *F. equiseti*, *F. fujikuroi*, *F. musarum*, *F. oxysporum*, *F. proliferatum*, *F. poae*, *F. pseudograminearum*, *F. sambucinum*, *F. scirpi*, *F. semitectum*, *F. solani*, *F. sporotrichoides*, *F. langsethiae*, *F. subglutinans*, *F. tricinctum*, *F. verticillioides* etc., and also by *Aspergillus* spec., such as *A. flavus*, *A. parasiticus*, *A. nomius*, *A. ochraceus*, *A. clavatus*, *A. terreus*, *A. versicolor*, *Penicillium*
15 spec., such as *P. verrucosum*, *P. viridicatum*, *P. citrinum*, *P. expansum*, *P. claviforme*, *P. roqueforti*, *Claviceps* spec., such as *C. purpurea*, *C. fusiformis*, *C. paspali*, *C. africana*, *Stachybotrys* spec. and others.

Material Protection

20 The inventive compositions can also be used in the protection of materials, for protection of industrial materials against attack and destruction by unwanted microorganisms, for example fungi and insects.

In addition, the inventive combinations can be used as antifouling compositions, alone or in combinations with other active ingredients.

25 Industrial materials in the present context are understood to mean inanimate materials which have been prepared for use in industry. For example, industrial materials which are to be protected by inventive active ingredients from microbial alteration or destruction may be adhesives, glues, paper, wallpaper and board/cardboard, textiles, carpets, leather, wood, fibers and tissues, paints and plastic articles, cooling lubricants and other materials which can be infected with or destroyed by
30 microorganisms. Parts of production plants and buildings, for example cooling-water circuits, cooling and heating systems and ventilation and air-conditioning units, which may be impaired by the proliferation of microorganisms may also be mentioned within the scope of the materials to be protected. Industrial materials within the scope of the present invention preferably include adhe-

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sives, sizes, paper and card, leather, wood, paints, cooling lubricants and heat transfer fluids, more preferably wood.

The inventive active combinations may prevent adverse effects, such as rotting, decay, discoloration, decoloration or formation of mould.

- 5 In the case of treatment of wood the compositions according to the invention may also be used against fungal diseases liable to grow on or inside timber. The term "timber" means all types of species of wood, and all types of working of this wood intended for construction, for example solid wood, high-density wood, laminated wood, and plywood. The method for treating timber according to the invention mainly consists in contacting one or more compounds according to the invention or a composition according to the invention; this includes for example direct applica-
10 tion, spraying, dipping, injection or any other suitable means.

In addition, the inventive combinations can be used to protect objects which come into contact with saltwater or brackish water, especially hulls, screens, nets, buildings, moorings and signalling systems, from fouling.

- 15 The inventive method for controlling unwanted fungi can also be employed for protecting storage goods. Storage goods are understood to mean natural substances of vegetable or animal origin or processed products thereof which are of natural origin, and for which long-term protection is desired. Storage goods of vegetable origin, for example plants or plant parts, such as stems, leaves, tubers, seeds, fruits, grains, can be protected freshly harvested or after processing by (pre)drying,
20 moistening, comminuting, grinding, pressing or roasting. Storage goods also include timber, both unprocessed, such as construction timber, electricity poles and barriers, or in the form of finished products, such as furniture. Storage goods of animal origin are, for example, hides, leather, furs and hairs. The inventive active ingredients may prevent adverse effects, such as rotting, decay, discoloration, decoloration or formation of mould.

- 25 Microorganisms capable of degrading or altering the industrial materials include, for example, bacteria, fungi, yeasts, algae and slime organisms. The inventive active ingredients preferably act against fungi, especially moulds, wood-discoloring and wood-destroying fungi (*Ascomycetes*, *Basidiomycetes*, *Deuteromycetes* and *Zygomycetes*), and against slime organisms and algae. Examples include microorganisms of the following genera: *Alternaria*, such as *Alternaria tenuis*;
30 *Aspergillus*, such as *Aspergillus niger*; *Chaetomium*, such as *Chaetomium globosum*; *Coniophora*, such as *Coniophora puetana*; *Lentinus*, such as *Lentinus tigrinus*; *Penicillium*, such as *Penicillium glaucum*; *Polyporus*, such as *Polyporus versicolor*; *Aureobasidium*, such as *Aureobasidium pullulans*; *Sclerophoma*, such as *Sclerophoma pityophila*; *Trichoderma*, such as *Trichoderma viride*; *Ophiostoma* spp., *Ceratocystis* spp., *Humicola* spp., *Petriella* spp., *Trichurus* spp., *Coriolus* spp.,

Gloeophyllum spp., *Pleurotus* spp., *Poria* spp., *Serpula* spp. and *Tyromyces* spp., *Cladosporium* spp., *Paecilomyces* spp. *Mucor* spp., *Escherichia*, such as *Escherichia coli*; *Pseudomonas*, such as *Pseudomonas aeruginosa*; *Staphylococcus*, such as *Staphylococcus aureus*, *Candida* spp. and *Saccharomyces* spp., such as *Saccharomyces cerevisiae*.

5 Antimycotic Activity

In addition, the inventive combinations also have very good antimycotic activity. They have a very broad antimycotic activity spectrum, especially against dermatophytes and yeasts, moulds and diphasic fungi (for example against *Candida* species, such as *C. albicans*, *C. glabrata*), and *Epidermophyton floccosum*, *Aspergillus* species, such as *A. niger* and *A. fumigatus*, *Trichophyton* species, such as *T. mentagrophytes*, *Microsporon* species such as *M. canis* and *M. audouinii*. The list of these fungi by no means constitutes a restriction of the mycotic spectrum covered, and is merely of illustrative character.

The inventive combinations can therefore be used both in medical and in non-medical applications.

15 GMO

As already mentioned above, it is possible to treat all plants and their parts in accordance with the invention. In a preferred embodiment, wild plant species and plant cultivars, or those obtained by conventional biological breeding methods, such as crossing or protoplast fusion, and also parts thereof, are treated. In a further preferred embodiment, transgenic plants and plant cultivars obtained by genetic engineering methods, if appropriate in combination with conventional methods (Genetically Modified Organisms), and parts thereof are treated. The terms "parts" or "parts of plants" or "plant parts" have been explained above. More preferably, plants of the plant cultivars which are commercially available or are in use are treated in accordance with the invention. Plant cultivars are understood to mean plants which have new properties ("traits") and have been obtained by conventional breeding, by mutagenesis or by recombinant DNA techniques. They can be cultivars, varieties, bio- or genotypes.

The method of treatment according to the invention can be used in the treatment of genetically modified organisms (GMOs), e.g. plants or seeds. Genetically modified plants (or transgenic plants) are plants of which a heterologous gene has been stably integrated into genome. The expression "heterologous gene" essentially means a gene which is provided or assembled outside the plant and when introduced in the nuclear, chloroplastic or mitochondrial genome gives the transformed plant new or improved agronomic or other properties by expressing a protein or polypeptide of interest or by downregulating or silencing other gene(s) which are present in the plant (using for example, antisense technology, cosuppression technology, RNA interference – RNAi –

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technology or microRNA – miRNA - technology). A heterologous gene that is located in the genome is also called a transgene. A transgene that is defined by its particular location in the plant genome is called a transformation or transgenic event.

Depending on the plant species or plant cultivars, their location and growth conditions (soils, climate, vegetation period, diet), the treatment according to the invention may also result in superadditive (“synergistic”) effects. Thus, for example, reduced application rates and/or a widening of the activity spectrum and/or an increase in the activity of the active compounds and compositions which can be used according to the invention, better plant growth, increased tolerance to high or low temperatures, increased tolerance to drought or to water or soil salt content, increased flowering performance, easier harvesting, accelerated maturation, higher harvest yields, bigger fruits, larger plant height, greener leaf color, earlier flowering, higher quality and/or a higher nutritional value of the harvested products, higher sugar concentration within the fruits, better storage stability and/or processability of the harvested products are possible, which exceed the effects which were actually to be expected.

At certain application rates, the combinations according to the invention may also have a strengthening effect in plants. Accordingly, they are also suitable for mobilizing the defense system of the plant against attack by unwanted microorganisms. This may, if appropriate, be one of the reasons of the enhanced activity of the combinations according to the invention, for example against fungi. Plant-strengthening (resistance-inducing) substances are to be understood as meaning, in the present context, those substances or combinations of substances which are capable of stimulating the defense system of plants in such a way that, when subsequently inoculated with unwanted microorganisms, the treated plants display a substantial degree of resistance to these microorganisms. In the present case, unwanted microorganisms are to be understood as meaning phytopathogenic fungi, bacteria and viruses. Thus, the substances according to the invention can be employed for protecting plants against attack by the abovementioned pathogens within a certain period of time after the treatment. The period of time within which protection is effected generally extends from 1 to 10 days, preferably 1 to 7 days, after the treatment of the plants with the active compounds.

Plants and plant cultivars which are preferably to be treated according to the invention include all plants which have genetic material which impart particularly advantageous, useful traits to these plants (whether obtained by breeding and/or biotechnological means).

Plants and plant cultivars which are also preferably to be treated according to the combinations are resistant against one or more biotic stresses, i.e. said plants show a better defense against animal and microbial pests, such as against nematodes, insects, mites, phytopathogenic fungi, bacteria, viruses and/or viroids.

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Examples of nematode or insect resistant plants are described in e.g. U.S. Patent Applications 11/765,491, 11/765,494, 10/926,819, 10/782,020, 12/032,479, 10/783,417, 10/782,096, 11/657,964, 12/192,904, 11/396,808, 12/166,253, 12/166,239, 12/166,124, 12/166,209, 11/762,886, 12/364,335, 11/763,947, 12/252,453, 12/209,354, 12/491,396, 12/497,221,
5 12/644,632, 12/646,004, 12/701,058, 12/718,059, 12/721,595, 12/638,591.

Plants and plant cultivars which may also be treated according to the invention are those plants which are resistant to one or more abiotic stresses. Abiotic stress conditions may include, for example, drought, cold temperature exposure, heat exposure, osmotic stress, flooding, increased soil salinity, increased mineral exposure, ozone exposure, high light exposure, limited availability of
10 nitrogen nutrients, limited availability of phosphorus nutrients, shade avoidance.

Plants and plant cultivars which may also be treated according to the invention, are those plants characterized by enhanced yield characteristics. Increased yield in said plants can be the result of, for example, improved plant physiology, growth and development, such as water use efficiency, water retention efficiency, improved nitrogen use, enhanced carbon assimilation, improved photo-
15 synthesis, increased germination efficiency and accelerated maturation. Yield can furthermore be affected by improved plant architecture (under stress and non-stress conditions), including but not limited to, early flowering, flowering control for hybrid seed production, seedling vigor, plant size, internode number and distance, root growth, seed size, fruit size, pod size, pod or ear number, seed number per pod or ear, seed mass, enhanced seed filling, reduced seed dispersal, reduced
20 pod dehiscence and lodging resistance. Further yield traits include seed composition, such as carbohydrate content, protein content, oil content and composition, nutritional value, reduction in anti-nutritional compounds, improved processability and better storage stability.

Plants that may be treated according to the invention are hybrid plants that already express the characteristic of heterosis or hybrid vigor which results in generally higher yield, vigor, health and
25 resistance towards biotic and abiotic stresses). Such plants are typically made by crossing an inbred male-sterile parent line (the female parent) with another inbred male-fertile parent line (the male parent). Hybrid seed is typically harvested from the male sterile plants and sold to growers. Male sterile plants can sometimes (e.g. in corn) be produced by detasseling, i.e. the mechanical removal of the male reproductive organs (or males flowers) but, more typically, male sterility is
30 the result of genetic determinants in the plant genome. In that case, and especially when seed is the desired product to be harvested from the hybrid plants it is typically useful to ensure that male fertility in the hybrid plants is fully restored. This can be accomplished by ensuring that the male parents have appropriate fertility restorer genes which are capable of restoring the male fertility in hybrid plants that contain the genetic determinants responsible for male-sterility. Genetic determi-
35 nants for male sterility may be located in the cytoplasm. Examples of cytoplasmic male sterility (CMS) were for instance described in *Brassica* species (WO 92/05251, WO 95/09910, WO

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98/27806, WO 05/002324, WO 06/021972 and US 6,229,072). However, genetic determinants for male sterility can also be located in the nuclear genome. Male sterile plants can also be obtained by plant biotechnology methods such as genetic engineering. A particularly useful means of obtaining male-sterile plants is described in WO 89/10396 in which, for example, a ribonuclease
5 such as barnase is selectively expressed in the tapetum cells in the stamens. Fertility can then be restored by expression in the tapetum cells of a ribonuclease inhibitor such as barstar (e.g. WO 91/02069).

Plants or plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may be treated according to the invention are herbicide-tolerant plants, i.e. plants made tol-
10 erant to one or more given herbicides. Such plants can be obtained either by genetic transformation, or by selection of plants containing a mutation imparting such herbicide tolerance.

Herbicide-resistant plants are for example glyphosate-tolerant plants, i.e. plants made tolerant to the herbicide glyphosate or salts thereof. Plants can be made tolerant to glyphosate through different means. For example, glyphosate-tolerant plants can be obtained by transforming the plant with
15 a gene encoding the enzyme 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS). Examples of such EPSPS genes are the AroA gene (mutant CT7) of the bacterium *Salmonella typhimurium* (*Science* **1983**, 221, 370-371), the CP4 gene of the bacterium *Agrobacterium sp.* (*Curr. Topics Plant Physiol.* **1992**, 7, 139-145), the genes encoding a Petunia EPSPS (*Science* **1986**, 233, 478-481), a Tomato EPSPS (*J. Biol. Chem.* **1988**, 263, 4280-4289), or an Eleusine EPSPS (WO
20 01/66704). It can also be a mutated EPSPS as described in for example EP 0837944, WO 00/66746, WO 00/66747 or WO 02/26995. Glyphosate-tolerant plants can also be obtained by expressing a gene that encodes a glyphosate oxido-reductase enzyme as described in US 5,776,760 and US 5,463,175. Glyphosate-tolerant plants can also be obtained by expressing a gene that encodes a glyphosate acetyl transferase enzyme as described in for example WO
25 02/036782, WO 03/092360, WO 2005/012515 and WO 2007/024782. Glyphosate-tolerant plants can also be obtained by selecting plants containing naturally-occurring mutations of the above-mentioned genes, as described in for example WO 01/024615 or WO 03/013226. Plants expressing EPSPS genes that confer glyphosate tolerance are described in e.g. U.S. Patent Applications 11/517,991, 10/739,610, 12/139,408, 12/352,532, 11/312,866, 11/315,678, 12/421,292,
30 11/400,598, 11/651,752, 11/681,285, 11/605,824, 12/468,205, 11/760,570, 11/762,526, 11/769,327, 11/769,255, 11/943801 or 12/362,774. Plants comprising other genes that confer glyphosate tolerance, such as decarboxylase genes, are described in e.g. U.S. Patent Applications 11/588,811, 11/185,342, 12/364,724, 11/185,560 or 12/423,926.

Other herbicide resistant plants are for example plants that are made tolerant to herbicides inhibiting the enzyme glutamine synthase, such as bialaphos, phosphinothricin or glufosinate. Such
35 plants can be obtained by expressing an enzyme detoxifying the herbicide or a mutant glutamine

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synthase enzyme that is resistant to inhibition, e.g. described in U.S. Patent Application 11/760,602. One such efficient detoxifying enzyme is an enzyme encoding a phosphinothricin acetyltransferase (such as the bar or pat protein from *Streptomyces* species). Plants expressing an exogenous phosphinothricin acetyltransferase are for example described in U.S. Patents
5 5,561,236; 5,648,477; 5,646,024; 5,273,894; 5,637,489; 5,276,268; 5,739,082; 5,908,810 and 7,112,665.

Further herbicide-tolerant plants are also plants that are made tolerant to the herbicides inhibiting the enzyme hydroxyphenylpyruvate dioxygenase (HPPD). HPPD is an enzyme that catalyze the reaction in which para-hydroxyphenylpyruvate (HPP) is transformed into homogentisate. Plants
10 tolerant to HPPD-inhibitors can be transformed with a gene encoding a naturally-occurring resistant HPPD enzyme, or a gene encoding a mutated or chimeric HPPD enzyme as described in WO 96/38567, WO 99/24585, WO 99/24586, WO 09/144079, WO 02/046387, or US 6,768,044. Tolerance to HPPD-inhibitors can also be obtained by transforming plants with genes encoding certain enzymes enabling the formation of homogentisate despite the inhibition of the native HPPD
15 enzyme by the HPPD-inhibitor. Such plants and genes are described in WO 99/34008 and WO 02/36787. Tolerance of plants to HPPD inhibitors can also be improved by transforming plants with a gene encoding an enzyme having prephenate deshydrogenase (PDH) activity in addition to a gene encoding an HPPD-tolerant enzyme, as described in WO 04/024928. Further, plants can be made more tolerant to HPPD-inhibitor herbicides by adding into their genome a gene encoding an
20 enzyme capable of metabolizing or degrading HPPD inhibitors, such as the CYP450 enzymes shown in WO 2007/103567 and WO 2008/150473.

Still further herbicide resistant plants are plants that are made tolerant to acetolactate synthase (ALS) inhibitors. Known ALS-inhibitors include, for example, sulfonylurea, imidazolinone, triazolopyrimidines, pyrimidinyoxy(thio)benzoates, and/or sulfonylaminocarbonyltriazolinone herbicides. Different mutations in the ALS enzyme (also known as acetohydroxyacid synthase, AHAS)
25 are known to confer tolerance to different herbicides and groups of herbicides, as described for example in Tranel and Wright (*Weed Science* **2002**, 50, 700-712), but also, in U.S. Patents 5,605,011, 5,378,824, 5,141,870, and 5,013,659. The production of sulfonylurea-tolerant plants and imidazolinone-tolerant plants is described in U.S. Patents 5,605,011; 5,013,659; 5,141,870;
30 5,767,361; 5,731,180; 5,304,732; 4,761,373; 5,331,107; 5,928,937; and 5,378,824; and WO 96/33270. Other imidazolinone-tolerant plants are also described in for example WO 2004/040012, WO 2004/106529, WO 2005/020673, WO 2005/093093, WO 2006/007373, WO 2006/015376, WO 2006/024351, and WO 2006/060634. Further sulfonylurea- and imidazolinone-tolerant plants are also described in for example WO 2007/024782 and U.S. Patent Ap-
35 plication 61/288958.

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Other plants tolerant to imidazolinone and/or sulfonylurea can be obtained by induced mutagenesis, selection in cell cultures in the presence of the herbicide or mutation breeding as described for example for soybeans in US 5,084,082, for rice in WO 97/41218, for sugar beet in US 5,773,702 and WO 99/057965, for lettuce in US 5,198,599, or for sunflower in WO 01/065922.

- 5 Plants or plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are insect-resistant transgenic plants, i.e. plants made resistant to attack by certain target insects. Such plants can be obtained by genetic transformation, or by selection of plants containing a mutation imparting such insect resistance.

10 An "insect-resistant transgenic plant", as used herein, includes any plant containing at least one transgene comprising a coding sequence encoding:

- 1) an insecticidal crystal protein from *Bacillus thuringiensis* or an insecticidal portion thereof, such as the insecticidal crystal proteins listed by Crickmore et al. (1998, Microbiology and Molecular Biology Reviews, 62: 807-813), updated by Crickmore et al. (2005) at the *Bacillus thuringiensis* toxin nomenclature, online at:
15 http://www.lifesci.sussex.ac.uk/Home/Neil_Crickmore/Bt/), or insecticidal portions thereof, e.g., proteins of the Cry protein classes Cry1Ab, Cry1Ac, Cry1B, Cry1C, Cry1D, Cry1F, Cry2Ab, Cry3Aa, or Cry3Bb or insecticidal portions thereof (e.g. EP-A 1 999 141 and WO 2007/107302), or such proteins encoded by synthetic genes as e.g. described in and U.S. Patent Application 12/249,016 ; or
- 20 2) a crystal protein from *Bacillus thuringiensis* or a portion thereof which is insecticidal in the presence of a second other crystal protein from *Bacillus thuringiensis* or a portion thereof, such as the binary toxin made up of the Cry34 and Cry35 crystal proteins (*Nat. Biotechnol.* **2001**, *19*, 668-72; *Applied Environm. Microbiol.* **2006**, *71*, 1765-1774) or the binary toxin made up of the Cry1A or Cry1F proteins and the Cry2Aa or Cry2Ab or Cry2Ae proteins (U.S. Patent Appli-
25 cation 12/214,022 and EP-A 2 300 618); or
- 3) a hybrid insecticidal protein comprising parts of different insecticidal crystal proteins from *Bacillus thuringiensis*, such as a hybrid of the proteins of 1) above or a hybrid of the proteins of 2) above, e.g., the Cry1A.105 protein produced by corn event MON89034 (WO 2007/027777); or
- 30 4) a protein of any one of 1) to 3) above wherein some, particularly 1 to 10, amino acids have been replaced by another amino acid to obtain a higher insecticidal activity to a target insect species, and/or to expand the range of target insect species affected, and/or because of changes introduced into the encoding DNA during cloning or transformation, such as the Cry3Bb1 protein in corn events MON863 or MON88017, or the Cry3A protein in corn event MIR604; or

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5) an insecticidal secreted protein from *Bacillus thuringiensis* or *Bacillus cereus*, or an insecticidal portion thereof, such as the vegetative insecticidal (VIP) proteins listed at:

http://www.lifesci.sussex.ac.uk/home/Neil_Crickmore/Bt/vip.html, e.g., proteins from the VIP3Aa protein class; or

6) a secreted protein from *Bacillus thuringiensis* or *Bacillus cereus* which is insecticidal in the presence of a second secreted protein from *Bacillus thuringiensis* or *B. cereus*, such as the binary toxin made up of the VIP1A and VIP2A proteins (WO 94/21795); or

7) a hybrid insecticidal protein comprising parts from different secreted proteins from *Bacillus thuringiensis* or *Bacillus cereus*, such as a hybrid of the proteins in 1) above or a hybrid of the proteins in 2) above; or

8) a protein of any one of 5) to 7) above wherein some, particularly 1 to 10, amino acids have been replaced by another amino acid to obtain a higher insecticidal activity to a target insect species, and/or to expand the range of target insect species affected, and/or because of changes introduced into the encoding DNA during cloning or transformation (while still encoding an insecticidal protein), such as the VIP3Aa protein in cotton event COT102; or

9) a secreted protein from *Bacillus thuringiensis* or *Bacillus cereus* which is insecticidal in the presence of a crystal protein from *Bacillus thuringiensis*, such as the binary toxin made up of VIP3 and Cry1A or Cry1F (U.S. Patent Applications 61/126083 and 61/195019), or the binary toxin made up of the VIP3 protein and the Cry2Aa or Cry2Ab or Cry2Ae proteins (U.S. Patent Application 12/214,022 and EP-A 2 300 618).

10) a protein of 9) above wherein some, particularly 1 to 10, amino acids have been replaced by another amino acid to obtain a higher insecticidal activity to a target insect species, and/or to expand the range of target insect species affected, and/or because of changes introduced into the encoding DNA during cloning or transformation (while still encoding an insecticidal protein)

Of course, an insect-resistant transgenic plant, as used herein, also includes any plant comprising a combination of genes encoding the proteins of any one of the above classes 1 to 10. In one embodiment, an insect-resistant plant contains more than one transgene encoding a protein of any one of the above classes 1 to 10, to expand the range of target insect species affected when using different proteins directed at different target insect species, or to delay insect resistance development to the plants by using different proteins insecticidal to the same target insect species but having a different mode of action, such as binding to different receptor binding sites in the insect.

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An "insect-resistant transgenic plant", as used herein, further includes any plant containing at least one transgene comprising a sequence producing upon expression a double-stranded RNA which upon ingestion by a plant insect pest inhibits the growth of this insect pest, as described e.g. in WO 2007/080126, WO 2006/129204, WO 2007/074405, WO 2007/080127 and WO 2007/035650.

Plants or plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are tolerant to abiotic stresses. Such plants can be obtained by genetic transformation, or by selection of plants containing a mutation imparting such stress resistance. Particularly useful stress tolerance plants include:

- 1) plants which contain a transgene capable of reducing the expression and/or the activity of poly(ADP-ribose) polymerase (PARP) gene in the plant cells or plants as described in WO 00/04173, WO 2006/045633, EP-A 1 807 519, or EP-A 2 018 431.
- 2) plants which contain a stress tolerance enhancing transgene capable of reducing the expression and/or the activity of the PARG encoding genes of the plants or plants cells, as described e.g. in WO 2004/090140.
- 3) plants which contain a stress tolerance enhancing transgene coding for a plant-functional enzyme of the nicotineamide adenine dinucleotide salvage synthesis pathway including nicotinamidase, nicotinate phosphoribosyltransferase, nicotinic acid mononucleotide adenylyl transferase, nicotinamide adenine dinucleotide synthetase or nicotine amide phosphorybosyltransferase as described e.g. in EP-A 1 794 306, WO 2006/133827, WO 2007/107326, EP-A 1 999 263, or WO 2007/107326.

Plants or plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention show altered quantity, quality and/or storage-stability of the harvested product and/or altered properties of specific ingredients of the harvested product such as:

- 1) transgenic plants which synthesize a modified starch, which in its physical-chemical characteristics, in particular the amylose content or the amylose/amylopectin ratio, the degree of branching, the average chain length, the side chain distribution, the viscosity behaviour, the gelling strength, the starch grain size and/or the starch grain morphology, is changed in comparison with the synthesised starch in wild type plant cells or plants, so that this is better suited for special applications. Said transgenic plants synthesizing a modified starch are disclosed, for example, in EP-A 0 571 427, WO 95/04826, EP-A 0 719 338, WO 96/15248, WO 96/19581, WO 96/27674, WO 97/11188, WO 97/26362, WO 97/32985, WO 97/42328, WO 97/44472, WO 97/45545, WO 98/27212, WO 98/40503, WO 99/58688, WO 99/58690, WO 99/58654, WO 00/08184, WO

00/08185, WO 00/08175, WO 00/28052, WO 00/77229, WO 01/12782, WO 01/12826,
WO 02/101059, WO 03/071860, WO 04/056999, WO 05/030942, WO 2005/030941, WO
2005/095632, WO 2005/095617, WO 2005/095619, WO 2005/095618, WO 2005/123927, WO
2006/018319, WO 2006/103107, WO 2006/108702, WO 2007/009823, WO 00/22140, WO
5 2006/063862, WO 2006/072603, WO 02/034923, WO 2008/017518, WO 2008/080630, WO
2008/080631, EP 07090007.1, WO 2008/090008, WO 01/14569, WO 02/79410, WO 03/33540,
WO 2004/078983, WO 01/19975, WO 95/26407, WO 96/34968, WO 98/20145, WO 99/12950,
WO 99/66050, WO 99/53072, US 6,734,341, WO 00/11192, WO 98/22604, WO 98/32326, WO
01/98509, WO 01/98509, WO 2005/002359, US 5,824,790, US 6,013,861, WO 94/04693,
10 WO 94/09144, WO 94/11520, WO 95/35026, WO 97/20936, WO 2010/012796,
WO 2010/003701,

2) transgenic plants which synthesize non starch carbohydrate polymers or which synthesize
non starch carbohydrate polymers with altered properties in comparison to wild type plants with-
out genetic modification. Examples are plants producing polyfructose, especially of the inulin and
15 levan-type, as disclosed in EP-A 0 663 956, WO 96/01904, WO 96/21023, WO 98/39460, and
WO 99/24593, plants producing alpha-1,4-glucans as disclosed in WO 95/31553, US
2002031826, US 6,284,479, US 5,712,107, WO 97/47806, WO 97/47807, WO 97/47808 and WO
00/14249, plants producing alpha-1,6 branched alpha-1,4-glucans, as disclosed in WO 00/73422,
plants producing alternan, as disclosed in e.g. WO 00/47727, WO 00/73422, EP 06077301.7, US
20 5,908,975 and EP-A 0 728 213,

3) transgenic plants which produce hyaluronan, as for example disclosed in
WO 2006/032538, WO 2007/039314, WO 2007/039315, WO 2007/039316, JP-A 2006-304779,
and WO 2005/012529.

4) transgenic plants or hybrid plants, such as onions with characteristics such as 'high solu-
25 ble solids content', 'low pungency' (LP) and/or 'long storage' (LS), as described in U.S. Patent
Applications 12/020,360 and 61/054,026.

Plants or plant cultivars (that can be obtained by plant biotechnology methods such as genetic en-
gineering) which may also be treated according to the invention are plants, such as cotton plants,
with altered fiber characteristics. Such plants can be obtained by genetic transformation, or by se-
30 lection of plants contain a mutation imparting such altered fiber characteristics and include:

a) Plants, such as cotton plants, containing an altered form of cellulose synthase genes as de-
scribed in WO 98/00549.

b) Plants, such as cotton plants, containing an altered form of rsw2 or rsw3 homologous nu-
cleic acids as described in WO 2004/053219.

c) Plants, such as cotton plants, with increased expression of sucrose phosphate synthase as described in WO 01/17333.

d) Plants, such as cotton plants, with increased expression of sucrose synthase as described in WO 02/45485.

5 e) Plants, such as cotton plants, wherein the timing of the plasmodesmatal gating at the basis of the fiber cell is altered, e.g. through downregulation of fiber-selective β -1,3-glucanase as described in WO 2005/017157, or as described in WO 2009/143995.

f) Plants, such as cotton plants, having fibers with altered reactivity, e.g. through the expression of N-acetylglucosaminetransferase gene including nodC and chitin synthase genes as described in WO 2006/136351.

Plants or plant cultivars (that can be obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are plants, such as oilseed rape or related Brassica plants, with altered oil profile characteristics. Such plants can be obtained by genetic transformation, or by selection of plants contain a mutation imparting such altered oil profile characteristics and include:

a) Plants, such as oilseed rape plants, producing oil having a high oleic acid content as described e.g. in US 5,969,169, US 5,840,946 or US 6,323,392 or US 6,063,947

b) Plants, such as oilseed rape plants, producing oil having a low linolenic acid content as described in US 6,270,828, US 6,169,190, or US 5,965,755

20 c) Plant such as oilseed rape plants, producing oil having a low level of saturated fatty acids as described e.g. in US 5,434,283 or U.S. Patent Application 12/668303

Plants or plant cultivars (that can be obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are plants, such as oilseed rape or related Brassica plants, with altered seed shattering characteristics. Such plants can be obtained by genetic transformation, or by selection of plants contain a mutation imparting such altered seed shattering characteristics and include plants such as oilseed rape plants with delayed or reduced seed shattering as described in U.S. Patent Application 61/135,230, WO 2009/068313 and WO 2010/006732.

Plants or plant cultivars (that can be obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are plants, such as Tobacco plants, with altered post-translational protein modification patterns, for example as described in WO 2010/121818 and WO 2010/145846.

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Particularly useful transgenic plants which may be treated according to the invention are plants containing transformation events, or combination of transformation events, that are the subject of petitions for non-regulated status, in the United States of America, to the Animal and Plant Health Inspection Service (APHIS) of the United States Department of Agriculture (USDA) whether
5 such petitions are granted or are still pending. At any time this information is readily available from APHIS (4700 River Road, Riverdale, MD 20737, USA), for instance on its internet site (URL http://www.aphis.usda.gov/brs/not_reg.html). On the filing date of this application the petitions for nonregulated status that were pending with APHIS or granted by APHIS were those which contains the following information:

- 10 – Petition: the identification number of the petition. Technical descriptions of the transformation events can be found in the individual petition documents which are obtainable from APHIS, for example on the APHIS website, by reference to this petition number. These descriptions are herein incorporated by reference.
- Extension of Petition: reference to a previous petition for which an extension is requested.
- 15 – Institution: the name of the entity submitting the petition.
- Regulated article: the plant species concerned.
- Transgenic phenotype: the trait conferred to the plants by the transformation event.
- Transformation event or line: the name of the event or events (sometimes also designated as lines or lines) for which nonregulated status is requested.
- 20 – APHIS documents: various documents published by APHIS in relation to the Petition and which can be requested with APHIS.

Additional particularly useful plants containing single transformation events or combinations of transformation events are listed for example in the databases from various national or regional regulatory agencies (see for example http://gmoinfo.jrc.it/gmp_browse.aspx and
25 <http://www.agbios.com/dbase.php>).

Particularly useful transgenic plants which may be treated according to the invention are plants containing transformation events, or a combination of transformation events, and that are listed for example in the databases for various national or regional regulatory agencies including Event 1143-14A (cotton, insect control, not deposited, described in WO 2006/128569); Event 1143-51B
30 (cotton, insect control, not deposited, described in WO 2006/128570); Event 1445 (cotton, herbicide tolerance, not deposited, described in US-A 2002-120964 or WO 02/034946); Event 17053 (rice, herbicide tolerance, deposited as PTA-9843, described in WO 2010/117737); Event 17314

(rice, herbicide tolerance, deposited as PTA-9844, described in WO 2010/117735); Event 281-24-236 (cotton, insect control - herbicide tolerance, deposited as PTA-6233, described in WO 2005/103266 or US-A 2005-216969); Event 3006-210-23 (cotton, insect control - herbicide tolerance, deposited as PTA-6233, described in US-A 2007-143876 or WO 2005/103266); Event 3272
5 (corn, quality trait, deposited as PTA-9972, described in WO 2006/098952 or US-A 2006-230473); Event 40416 (corn, insect control - herbicide tolerance, deposited as ATCC PTA-11508, described in WO 2011/075593); Event 43A47 (corn, insect control - herbicide tolerance, deposited as ATCC PTA-11509, described in WO 2011/075595); Event 5307 (corn, insect control, deposited as ATCC PTA-9561, described in WO 2010/077816); Event ASR-368 (bent grass, herbicide tolerance, deposited as ATCC PTA-4816, described in US-A 2006-162007 or WO
10 2004/053062); Event B16 (corn, herbicide tolerance, not deposited, described in US-A 2003-126634); Event BPS-CV127-9 (soybean, herbicide tolerance, deposited as NCIMB No. 41603, described in WO 2010/080829); Event CE43-67B (cotton, insect control, deposited as DSM ACC2724, described in US-A 2009-217423 or WO2006/128573); Event CE44-69D (cotton, insect control, not deposited, described in US-A 2010-0024077); Event CE44-69D (cotton, insect control, not deposited, described in WO 2006/128571); Event CE46-02A (cotton, insect control, not deposited, described in WO 2006/128572); Event COT102 (cotton, insect control, not deposited, described in US-A 2006-130175 or WO 2004/039986); Event COT202 (cotton, insect control, not deposited, described in US-A 2007-067868 or WO 2005/054479); Event COT203 (cotton, insect control, not deposited, described in WO 2005/054480); Event DAS40278 (corn, herbicide tolerance, deposited as ATCC PTA-10244, described in WO 2011/022469); Event DAS-59122-7 (corn, insect control - herbicide tolerance, deposited as ATCC PTA 11384, described in US-A 2006-070139); Event DAS-59132 (corn, insect control - herbicide tolerance, not deposited, described in WO 2009/100188); Event DAS68416 (soybean, herbicide tolerance, deposited as
25 ATCC PTA-10442, described in WO 2011/066384 or WO 2011/066360); Event DP-098140-6 (corn, herbicide tolerance, deposited as ATCC PTA-8296, described in US-A 2009-137395 or WO 2008/112019); Event DP-305423-1 (soybean, quality trait, not deposited, described in US-A 2008-312082 or WO 2008/054747); Event DP-32138-1 (corn, hybridization system, deposited as ATCC PTA-9158, described in US-A 2009-0210970 or WO 2009/103049); Event DP-356043-5 (soybean, herbicide tolerance, deposited as ATCC PTA-8287, described in US-A 2010-0184079 or WO 2008/002872); Event EE-1 (brinjal, insect control, not deposited, described in WO 2007/091277); Event FI117 (corn, herbicide tolerance, deposited as ATCC 209031, described in US-A 2006-059581 or WO 98/044140); Event GA21 (corn, herbicide tolerance, deposited as ATCC 209033, described in US-A 2005-086719 or WO 98/044140); Event GG25 (corn, herbicide tolerance, deposited as ATCC 209032, described in US-A 2005-188434 or WO 98/044140);
35 Event GHB119 (cotton, insect control - herbicide tolerance, deposited as ATCC PTA-8398, described in WO 2008/151780); Event GHB614 (cotton, herbicide tolerance, deposited as ATCC PTA-6878, described in US-A 2010-050282 or WO 2007/017186); Event GJ11 (corn, herbicide

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tolerance, deposited as ATCC 209030, described in US-A 2005-188434 or WO 98/044140);
Event GM RZ13 (sugar beet, virus resistance, deposited as NCIMB-41601, described in WO
2010/076212); Event H7-1 (sugar beet, herbicide tolerance, deposited as NCIMB 41158 or
NCIMB 41159, described in US-A 2004-172669 or WO 2004/074492); Event JOPLIN1 (wheat,
5 disease tolerance, not deposited, described in US-A 2008-064032); Event LL27 (soybean, herbi-
cide tolerance, deposited as NCIMB41658, described in WO 2006/108674 or US-A 2008-
320616); Event LL55 (soybean, herbicide tolerance, deposited as NCIMB 41660, described in
WO 2006/108675 or US-A 2008-196127); Event LLCotton25 (cotton, herbicide tolerance, depos-
ited as ATCC PTA-3343, described in WO 03/013224 or US-A 2003-097687); Event LLRICE06
10 (rice, herbicide tolerance, deposited as ATCC-23352, described in US 6,468,747 or WO
00/026345); Event LLRICE601 (rice, herbicide tolerance, deposited as ATCC PTA-2600, de-
scribed in US-A 2008-2289060 or WO 00/026356); Event LY038 (corn, quality trait, deposited as
ATCC PTA-5623, described in US-A 2007-028322 or WO 2005/061720); Event MIR162 (corn,
insect control, deposited as PTA-8166, described in US-A 2009-300784 or WO 2007/142840);
15 Event MIR604 (corn, insect control, not deposited, described in US-A 2008-167456 or WO
2005/103301); Event MON15985 (cotton, insect control, deposited as ATCC PTA-2516, de-
scribed in US-A 2004-250317 or WO 02/100163); Event MON810 (corn, insect control, not de-
posited, described in US-A 2002-102582); Event MON863 (corn, insect control, deposited as
ATCC PTA-2605, described in WO 2004/011601 or US-A 2006-095986); Event MON87427
20 (corn, pollination control, deposited as ATCC PTA-7899, described in WO 2011/062904); Event
MON87460 (corn, stress tolerance, deposited as ATCC PTA-8910, described in WO
2009/111263 or US-A 2011-0138504); Event MON87701 (soybean, insect control, deposited as
ATCC PTA-8194, described in US-A 2009-130071 or WO 2009/064652); Event MON87705
(soybean, quality trait - herbicide tolerance, deposited as ATCC PTA-9241, described in US-A
25 2010-0080887 or WO 2010/037016); Event MON87708 (soybean, herbicide tolerance, deposited
as ATCC PTA9670, described in WO 2011/034704); Event MON87754 (soybean, quality trait,
deposited as ATCC PTA-9385, described in WO 2010/024976); Event MON87769 (soybean,
quality trait, deposited as ATCC PTA-8911, described in US-A 2011-0067141 or WO
2009/102873); Event MON88017 (corn, insect control - herbicide tolerance, deposited as ATCC
30 PTA-5582, described in US-A 2008-028482 or WO 2005/059103); Event MON88913 (cotton,
herbicide tolerance, deposited as ATCC PTA-4854, described in WO 2004/072235 or US-A
2006-059590); Event MON89034 (corn, insect control, deposited as ATCC PTA-7455, described
in WO 2007/140256 or US-A 2008-260932); Event MON89788 (soybean, herbicide tolerance,
deposited as ATCC PTA-6708, described in US-A 2006-282915 or WO 2006/130436); Event
35 MS11 (oilseed rape, pollination control - herbicide tolerance, deposited as ATCC PTA-850 or
PTA-2485, described in WO 01/031042); Event MS8 (oilseed rape, pollination control - herbicide
tolerance, deposited as ATCC PTA-730, described in WO 01/041558 or US-A 2003-188347);
Event NK603 (corn, herbicide tolerance, deposited as ATCC PTA-2478, described in US-A 2007-

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292854); Event PE-7 (rice, insect control, not deposited, described in WO 2008/114282); Event
RF3 (oilseed rape, pollination control - herbicide tolerance, deposited as ATCC PTA-730, de-
scribed in WO 01/041558 or US-A 2003-188347); Event RT73 (oilseed rape, herbicide tolerance,
not deposited, described in WO 02/036831 or US-A 2008-070260); Event T227-1 (sugar beet,
5 herbicide tolerance, not deposited, described in WO 02/44407 or US-A 2009-265817); Event T25
(corn, herbicide tolerance, not deposited, described in US-A 2001-029014 or WO 01/051654);
Event T304-40 (cotton, insect control - herbicide tolerance, deposited as ATCC PTA-8171, de-
scribed in US-A 2010-077501 or WO 2008/122406); Event T342-142 (cotton, insect control, not
deposited, described in WO 2006/128568); Event TC1507 (corn, insect control - herbicide toler-
10 ance, not deposited, described in US-A 2005-039226 or WO 2004/099447); Event VIP1034 (corn,
insect control - herbicide tolerance, deposited as ATCC PTA-3925., described in WO 03/052073),
Event 32316 (corn, insect control-herbicide tolerance, deposited as PTA-11507, described in WO
2011/084632), Event 4114 (corn, insect control-herbicide tolerance, deposited as PTA-11506, de-
scribed in WO 2011/084621).

15 Application Rates and Timing

When using the inventive combinations as fungicides, the application rates can be varied within a
relatively wide range, depending on the kind of application. The application rate of the inventive
active ingredients is

- in the case of treatment of plant parts, for example leaves: from 0.1 to 10 000 g/ha, pref-
20 erably from 10 to 1000 g/ha, more preferably from 10 to 800 g/ha, even more preferably from 50
to 300 g/ha (in the case of application by watering or dripping, it is even possible to reduce the
application rate, especially when inert substrates such as rockwool or perlite are used);
- in the case of seed treatment: from 2 to 200 g per 100 kg of seed, preferably from 3 to 150
g per 100 kg of seed, more preferably from 2.5 to 25 g per 100 kg of seed, even more preferably
25 from 2.5 to 12.5 g per 100 kg of seed;
- in the case of soil treatment: from 0.1 to 10 000 g/ha, preferably from 1 to 5000 g/ha.

These application rates are merely by way of example and are not limiting for the purposes of the
invention.

The inventive compositions can thus be used to protect plants from attack by the pathogens men-
30 tioned for a certain period of time after treatment. The period for which protection is provided ex-
tends generally for 1 to 28 days, preferably for 1 to 14 days, more preferably for 1 to 10 days,
most preferably for 1 to 7 days, after the treatment of the plants with the active ingredients, or for
up to 200 days after a seed treatment.

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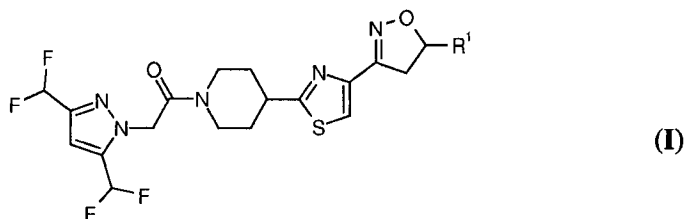
The method of treatment according to the invention also provides the use or application of compounds (A) and (B) and/or (C) in a simultaneous, separate or sequential manner. If the single active ingredients are applied in a sequential manner, i.e. at different times, they are applied one after the other within a reasonably short period, such as a few hours or days. Preferably the order of
5 applying the compounds (A) and (B) and/or (C) is not essential for working the present invention.

The plants listed can particularly advantageously be treated in accordance with the invention with the compounds of the general formula (I) and the inventive compositions. The preferred ranges stated above for the active ingredients or compositions also apply to the treatment of these plants. Particular emphasis is given to the treatment of plants with the compounds or compositions specifically
10 mentioned in the present text.

Patent Claims

1. Combination comprising:

(A) at least one thiazolyloxazoline of formula (I)



5 in which

R¹ represents phenyl, which is at least substituted with one methylsulfonyloxy and optionally be additionally substituted by one substituents selected from the group consist ing of methyl, methoxy, fluoro or chloro,

or an agrochemically acceptable salt thereof,

10 and

(B) at least one further active compound selected from the following groups

- (1) inhibitors of the ergosterol synthesis,
- (2) inhibitors of the respiratory chain at complex I or II,
- (3) inhibitors of the respiratory chain at complex III,
- (4) inhibitors of the mitosis and cell division,
- (5) compounds capable of having a multisite action,
- (6) compounds capable of inducing a host defense,
- (7) inhibitors of the amino acid and/or protein biosynthesis,
- (8) inhibitors of the ATP production,
- (9) inhibitors of the cell wall synthesis,
- (10) inhibitors of the lipid and membrane synthesis,
- (11) inhibitors of the melanine biosynthesis,

- (12) inhibitors of the nucleic acid synthesis,
 - (13) inhibitors of the signal transduction,
 - (14) compounds capable of acting as uncoupler,
 - (15) other fungicides.
- 5 2. Combinations according to claim 1 comprising at least one compound of the formula (I) selected from the group consisting of
- (I-1) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methanesulfonate,
- 10 (I-2) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-6-fluorophenyl methanesulfonate,
- (I-3) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate,
- (I-4) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-5-methylphenyl methanesulfonate,
- 15 (I-5) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-5-chlorophenyl methanesulfonate,
- (I-6) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-4-methylphenyl methanesulfonate,
- (I-7) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-4-chlorophenyl methanesulfonate,
- 20 (I-8) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-6-chlorophenyl methanesulfonate.
3. Method for controlling phytopathogenic harmful fungi, characterized in that mixtures according to Claim 1 or 2 are applied to the phytopathogenic harmful fungi and/or their habitat.
- 25 4. Composition for controlling phytopathogenic harmful fungi, characterized by a content of at least one mixture according to Claim 1 or 2, in addition to extenders and/or surfactants.

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5. Composition according to Claim 4 comprising at least one further active ingredient selected from the group of the insecticides, attractants, sterilants, bactericides, acaricides, nematocides, fungicides, growth regulators, herbicides, fertilizers, safeners and semiochemicals.
- 5 6. Use of mixtures according to Claim 1 or 2 for control of phytopathogenic harmful fungi.
7. Use of mixtures according to Claim 1 or 2 as plant growth regulators.
8. Process for producing compositions for controlling phytopathogenic harmful fungi, characterized in that mixtures according to Claim 1 or 2 are mixed with extenders and/or surfactants.
- 10 9. Use of compounds of the mixtures according to Claim 1 for treatment of transgenic plants.
10. Use of compounds of mixtures according to Claim 1 for treatment of seed and of seed of transgenic plants.

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Active compound combinations

A b s t r a c t

The present invention relates to active compound combinations, in particular within a fungicide composition, which comprises (A) a thiazolylisoxazoline of formula (I) and a further fungicidally active compound (B). Moreover, the invention relates to a method for curatively or preventively
5 controlling the phytopathogenic fungi of plants or crops, to the use of a combination according to the invention for the treatment of seed, to a method for protecting a seed and not at least to the treated seed.

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**DOCUMENT MADE AVAILABLE UNDER THE
PATENT COOPERATION TREATY (PCT)**

International application number:	PCT/EP2013/053578
International filing date:	22 February 2013 (22.02.2013)
Document type:	Certified copy of priority document
Document details:	Country/Office: EP
	Number: 12157090.7
	Filing date: 27 February 2012 (27.02.2012)
Date of receipt at the International Bureau:	25 March 2013 (25.03.2013)

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a),(b) or (b-bis)

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Bescheinigung

Certificate

Attestation

Die angehefteten
Unterlagen stimmen mit der
als ursprünglich eingereicht
geltenden Fassung der auf
dem nächsten Blatt
bezeichneten europäischen
Patentanmeldung überein.

The attached documents are
exact copies of the text in
which the European patent
application described on the
following page is deemed to
have been filed.

Les documents joints à la
présente attestation sont
conformes au texte,
considéré comme
initialement déposé, de la
demande de brevet
européen qui est spécifiée à
la page suivante.

Patentanmeldung Nr.

Patent application No.

Demande de brevet n°

12157090.7 / EP12157090

The organization code and number of your priority application, to be used for filing abroad under the Paris Convention, is EP12157090.

Der Präsident des Europäischen Patentamts;
Im Auftrag
For the President of the European Patent Office
Le Président de l'Office européen des brevets
p.o.


U. Ingmann

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Anmeldung Nr:
Application no.: 12157090.7
Demande no :

Anmeldetag:
Date of filing: 27.02.12
Date de dépôt :

Anmelder / Applicant(s) / Demandeur(s):

Bayer CropScience AG
BCS-BPA-LP-PL
Gebäude 6100
Alfred-Nobel-Straße 50
40789 Monheim/DE

Bezeichnung der Erfindung / Title of the invention / Titre de l'invention:
(Falls die Bezeichnung der Erfindung nicht angegeben ist, siehe Beschreibung.
If no title is shown please refer to the description.
Si aucun titre n'est indiqué se référer à la description.)

Active compound combinations

In Anspruch genommene Priorität(en) / Priority(Priorities) claimed / Priorité(s) revendiquée(s)
Staat/Tag/Aktenzeichen / State/Date/File no. / Pays/Date/Numéro de dépôt:

Internationale Patentklassifikation / International Patent Classification / Classification internationale de brevets:

A01N

Am Anmeldetag benannte Vertragsstaaten / Contracting States designated at date of filing / Etats contractants désignées lors du dépôt:

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL
PT RO RS SE SI SK SM TR

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PATENT COOPERATION TREATY

PCT/EP2013/053578

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION CONCERNING SUBMISSION,
OBTENTION OR TRANSMITTAL
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

BIP PATENTS
c/o Bayer Intellectual Property GmbH
Creative Campus Monheim
Alfred-Nobel-Str. 10
40789 Monheim
ALLEMAGNE

Date of mailing (day/month/year) 27 March 2013 (27.03.2013)	
Applicant's or agent's file reference BCS12-3011WO	IMPORTANT NOTIFICATION
International application No. PCT/EP2013/053578	International filing date (day/month/year) 22 February 2013 (22.02.2013)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 27 February 2012 (27.02.2012)
Applicant BAYER INTELLECTUAL PROPERTY GMBH	

The applicant is hereby notified of the date of receipt (or of obtaining by the International Bureau) of the priority document(s) relating to all earlier application(s) whose priority is claimed. Unless otherwise indicated by the letters "NR", in the right-hand column or by an asterisk appearing next to the date of receipt, **the priority document concerned was submitted or transmitted to or obtained by the International Bureau in compliance with Rule 17.1(a), (b) or (b-bis)**. This Form replaces any previously issued notification concerning submission, transmittal or obtaining of priority documents.

Priority date	Priority application No.	Country or regional Office or PCT receiving Office	Date of receipt of priority document
27 February 2012 (27.02.2012)	12157090.7	EP	25 March 2013 (25.03.2013)

The letters "NR" denote a priority document which, on the date of mailing of this Form, had not yet been received or obtained by the International Bureau in compliance with Rule 17.1(a), (b) or (b-bis). Where the applicant has failed to either submit, request to prepare and transmit, or to request the International Bureau to obtain the priority document within the applicable time limit under that Rule, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

An asterisk "*" next to a date of receipt, denotes a priority document submitted or transmitted to or obtained by the International Bureau but not in compliance with Rule 17.1(a), (b) or (b-bis) (the priority document was received after the time limit prescribed in Rule 17.1(a); the request to prepare and transmit the priority document was submitted to the receiving Office after the applicable time limit under Rule 17.1(b) or the request to the International Bureau to obtain the priority document was made after the applicable time limit under Rule 17.1(b-bis)). Even though the priority document was not furnished in compliance with Rule 17.1(a), (b) or (b-bis), the International Bureau will nevertheless transmit a copy of the document to the designated Offices, for their consideration. In case such a copy is not accepted by the designated Office as the priority document, Rule 17.1(c) provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Agnès Wittmann-Regis e-mail pt06.pct@wipo.int Telephone No. +41 22 338 74 06
Facsimile No. +41 22 338 89 70	

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From the INTERNATIONAL BUREAU

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NOTIFICATION OF THE RECORDING
OF A CHANGE

(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

BIP PATENTS
c/o Bayer Intellectual Property GmbH
Creative Campus Monheim
Alfred-Nobel-Str. 10
40789 Monheim
ALLEMAGNE

Date of mailing (day/month/year) 15 July 2014 (15.07.2014)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference BCS12-3011WO	
International application No. PCT/EP2013/053578	International filing date (day/month/year) 22 February 2013 (22.02.2013)

1. The following indications appeared on record concerning:

☐ the applicant

☒ the inventor

☐ the agent

☐ the common representative

Name and Address HOFFMANN, Sebastian Farnweg 7 41470 Neuss Germany	State of Nationality	State of Residence
	Telephone No.	
	Facsimile No.	
	E-mail address	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person

☐ the name

☒ the address

☐ the nationality

☐ the residence

Name and Address HOFFMANN, Sebastian Kypressenweg 12 41470 Neuss Germany	State of Nationality	State of Residence
	Telephone No.	
	Facsimile No.	
	E-mail address ☐ Notifications by e-mail authorized	

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒ the receiving Office

☐ the International Searching Authority

☐ the Authority(ies) specified for supplementary search

☐ the International Preliminary Examining Authority

☒ the designated Offices concerned

☐ the elected Offices concerned

☐ other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Hoehtker Christoph e-mail pt06.pct@wipo.int Telephone No. +41 22 338 74 06
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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800.176.089-2

- / -



Industria y Comercio

SUPERINTENDENCIA

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NI 830.022.196

*** Soporte del Pago ***

TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PAGO	VR PAGO
CONSIGNACION	BANCO DE BOGOTA	062754387	636832464	21/08/2014	6.196.000.00

*** Conceptos Pagados ***

CANT. RENTISTICO	CONCEPTO	Vr. UNDITARIO	Vr. CONCEPTO
1 50005-01-01 SOLICITUDES	1 TRAMITES DE SOL. DE PATENTE DE INVENCIÓN	515.000.00	515.000.00
			\$515.000.00

SON: **QUINIENTOSQUINCE MIL PESOS MONEDA CORRIENTE***

Responsable: _____

*****_

Recibo de Caja Aplicado al Expediente No. _____

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 14-185809-00000-0000

Fecha: 2014-08-25 15:15:34 Dep. 2020 DIR.NUEVASCR
Tra. 11 PATENTEIYII Eve: 378 FASENACIONALI
Act. 411 PRESENTACION Folios: 283

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283



SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



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Fecha: 2014-08-25 15:15:34 Dep. 2020 DIR.NUEVASCR
Tra. 11 PATENTEIYII Eve: 378 FASENACIONALI
Act. 411 PRESENTACION Folios: 283

PATENTE DE INVENCION ☐

MODELO DE UTILIDAD ☐

Art 33 Decisión 486/00

☐	Indicación que se solicita una patente.
☐	Datos de identificación del solicitante o de la persona que presenta la solicitud
☐	Descripción de la invención
☐	Dibujos de ser estos pertinentes
☐	Comprobante de pago de las tasas establecidas (De ser el caso formato de descuento)
Completa ☐ Incompleta ☐	

PATENTE DE INVENCION PCT ☐

MODELO DE UTILIDAD PCT ☐

Art.33 Decisión 486/00, Circular Única

☐	Indicación que se solicita una PCT
☐	Copia de la solicitud en español, tal como fue presentada inicialmente (capítulo descriptivo, reivindicatorio, resumen)
☐	Dibujos de ser estos pertinentes
☐	Comprobante de pago de las tasas establecidas (de ser el caso formato de descuento)
Completa ☐ Incompleta ☐	

DISEÑO INDUSTRIAL ☐

(Art. 119 Decisión 486/00)

☐	Indicación que se solicita Diseño industrial
☐	Datos de identificación del solicitante o de la persona que presenta la solicitud
☐	Representación gráfica y fotográfica del Diseño industrial o muestra del material que incorpora el diseño
☐	Comprobante de pago de las tasas establecidas
Completa ☐ Incompleta ☐	

ESQUEMA DE TRAZADO ☐

(Art. 92 Decisión 486/00)

☐	Indicación que se solicita un esquema de trazado
☐	Datos de identificación del solicitante o de la persona que presenta la solicitud
☐	Representación gráfica de un esquema de trazado
☐	Comprobante de pago de las tasas establecidas
Completa ☐ Incompleta ☐	