



No. 04-033908- -00006-0000

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Tra. 11 PATENTEIYII Eve: 379 FASENACIONALI
Act. 444 RESPUESTAREQUE Folios: 40

Señora

Alix Carmenza Céspedes de Vergel

Jefe de División de Nuevas Creaciones

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

E. _____ S. _____ D. _____

Referencia: Expediente No. 04.033.908

Solicitud de Patente de Invención titulada: "Composición fungicida basada en pirimetanilo e iprodiona y utilización de esta composición para la lucha contra enfermedades de plantas"

Solicitante: Bayer CropScience S.A.

RESPUESTA AL AUTO NOTIFICADO POR FIJACIÓN EN LISTA NO. 58

DEL 29 DE FEBRERO DE 2008, OFICIO NO. 3154 (EXAMEN DE FONDO)

ÁLVARO CORREA ORDÓÑEZ, mayor de edad y vecino de Bogotá D.C., identificado tal como aparece al pie de mi firma, en mi carácter de apoderado de la sociedad en referencia, doy respuesta al auto emanado por ese Despacho dentro del término legal:

1. Objeciones del Examinador

1.1. De la solicitud de patente.

1.1.1. Reivindicaciones.

Considera su Despacho que la reivindicación 2 es muy general porque no se especifican cuales pueden ser los agentes mencionados.

1.1.2. Unidad de Invención

Considera, además, su Despacho que no existe unidad de invención entre las

reivindicaciones 1 y 2 y las demás.

2. Análisis de patentabilidad

Su despacho menciona como documentos del estado de la técnica los siguientes: FR2692108 (D1) Y JP5112408.

Sostiene su despacho que la composición de la presente solicitud se derivaría de manera obvia de las enseñanzas de D1 y D2 puesto que se enseña la combinación específica de pirimetanilo e ipridiona, su efecto sinérgico y el método el cual correspondería a un método de aplicación conocido.

3. Argumentos a favor de la patentabilidad de la solicitud

3.1. De la solicitud de patente.

Como respuesta a sus objeciones a la reivindicación 2, a la unidad de invención y al método de la presente solicitud, el solicitante ha decidido presentar un nuevo capítulo reivindicatorio en el cual ha considerado todas las objeciones planteadas. El nuevo capítulo reivindicatorio sólo está dirigido a la composición fungicida. Aunque el solicitante considera que su objeción sobre el método no es correcta ha eliminado estas reivindicaciones para facilitar el otorgamiento de la patente de la misma. En cuanto a la reivindicación 2 y tal y como lo sugiere su Despacho se han definido cuales pueden ser el soporte, agente tensioactivo y los agentes auxiliares.

Para que la anterior modificación surta efecto, adjunto el formulario de modificación voluntaria a solicitud pendiente y la tarifa establecida por ese Despacho para este trámite.

3.2. Nivel inventivo

El nivel inventivo de una solicitud se encuentra definido en el Artículo 18 de la Decisión 486 y se establece cuando *“si para una persona del oficio normalmente versada en la materia técnica correspondiente, esa invención no hubiese resultado obvia ni se hubiese derivado de manera evidente del estado de la técnica”*.

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Contrario a lo que plantea el Examinador, el documento del arte previo citado no afecta el nivel inventivo de la presente solicitud por cuanto no es posible derivar la presente invención a partir de las enseñanzas presentadas en los documentos FR2692108 (D1) Y JP5112408.

Inicialmente el solicitante desea recordar el contenido de la reivindicación 1. La presente invención tal y como se reivindica allí se relaciona con una composición fungicida que comprende como ingredientes activos pirilmetanil e iprodiona en una proporción de 0,33 a 3. El problema técnico resuelto por esta invención es suministrar tal composición fungicida que permita controlar hongos fitopatógenos. En particular, es un objetivo de esta invención suministrar una composición fungicida que tenga propiedades sinérgicas inesperadas como se evidencia en los ejemplos presentados en la descripción. Estos ejemplos reflejan la eficacia de la composición de acuerdo con la invención en condiciones de campo.

Anexamos ejemplos adicionales que evidencian la eficacia de la composición de acuerdo con la invención en el documento titulado: "Patent support – Iprodiona + Pyrimethanil combinations. Examples of biological performance."

En cuanto a las anterioridades el solicitante desea hacer los siguientes comentarios:

El documento D1 se relaciona con composiciones germicidas basadas en derivados de pirimidina 2-anilino-4-metil-6- sustituidas en combinación con un compuesto germicida adicional. La iprodiona se menciona como un compañero potencial.

En este documento el pirimetanil corresponde al compuesto 1 y esta asociado con iprodiona en una mezcla. En esta composición la proporción relativa de pirimetanil e iprodiona es de 5/35, lo que es igual a 0,14.

El rango de proporciones de la invención tal como se reivindicó es 0,33 a 3, por lo tanto la invención reivindicada difiere de la descripción de D1.

Más aún, los ejemplos presentes en la descripción muestran que de acuerdo con la invención es posible lograr muy buenos resultados con tales proporciones que varían de 0,33 a 3, en

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particular estos ejemplos muestran que la composición reivindicada permite lograr tales resultados en condiciones de campo.

D1 sólo describe una prueba muy limitada y específica sobre *Bothrytis cinerea* en invernadero donde se diseñan unas condiciones de crecimiento específicas para encontrar los parámetros de las condiciones de campo.

De esta manera, no era obvio para una persona experta enfrentar el problema de encontrar composiciones fungicidas particularmente eficientes, muy principalmente en condiciones de campo, que comprendan pirimetanil e iprodiona en una proporción de 0,33 a 3 y partiendo de D1 para adaptar las enseñanzas de este documento con el fin de preparar la composición de acuerdo con la invención.

En relación con D2 este documento se relaciona con mezclas de pirimetanil con otros numerosos ingredientes fungicidas activos. Se listan once (11) familias de tales fungicidas de entre las cuales se describen más de 70 compuestos individualmente.

Sólo 23 mezclas se experimentaron pero solo en condiciones de laboratorio no de campo lo cual es de muy alta importancia en razón a que nunca es predecible para el experto que una actividad o propiedad presente en condiciones de laboratorio pueda ser igual a las condiciones de campo.

En consecuencia y aún si se describiera una proporción de 5 de pirimetanil a iprodiona en D2 en relación con una prueba conducida sobre cepas de hongos de *Bothrytis cinerea* en condiciones de laboratorio, no existe ningún resultado ni sugerencia en este documento para una mezcla con una proporción como la que aparece en la reivindicación 1 con eficiencia en condiciones de campo.

Aún con relación a D2, en la página 5, se menciona que a menudo se demuestra sinergismo. Esta es una prueba contundente de que dicho efecto sinérgico no se espera sistemáticamente cuando se utilizan las composiciones fungicidas tal como se describen de manera general en este documento.

Además, los únicos ejemplos que se describen en este documento se refieren a pruebas in

Vitro. Esto significa que estas pruebas se condujeron sobre material biológico que no son plantas ni aún partes de plantas. Este aspecto se subraya en la página 9 significando que es de primordial importancia notar que estos experimentos fueron conducidos en condiciones de laboratorio sobre organismos seleccionados. El experto en la técnica conoce perfectamente que los resultados que se pueden obtener con tales pruebas in vitro no son reproducibles cuando se realizan en ensayos de campo. Predecir los resultados de los ensayos en planta partiendo de los ensayos in Vitro de ninguna manera es posible.

Además, del ejemplo de D2 parece que la mezcla probada podría permitir una ganancia de eficacia del 51% al 76%. Esto podría representar una ganancia del 25% en términos de incremento en la eficacia, haciendo notar, de nuevo, que la ganancia se ha obtenido cuando se producen las condiciones in Vitro.

Los resultados obtenidos con la composición de acuerdo con la invención son mucho mejores. De hecho, el incremento promedio obtenido con la composición de acuerdo con la invención es de casi el 34%. La ganancia de la eficacia que se ha obtenido cuando se aplica la composición de acuerdo con la invención ha alcanzado un valor de hasta el 65,7%.

El efecto sinérgico es de hecho mucho mayor que la ganancia que se reporta en D2 pero, además, este efecto sinérgico mayor se ha obtenido en condiciones de campo para la composición de acuerdo con la invención.

Tan alto nivel de sinergia no era predecible para una persona experta que conociera D2.

Adicionalmente, en los ejemplos de la presente solicitud, en particular en los ejemplos 1, 2 y 4, se demuestra que la composición de acuerdo con la invención una muy alta y sorprendente persistencia de acción. De hecho, a lo largo de todos los períodos de tratamiento que se reportaron en estos ejemplos, se demuestra que la eficacia se incrementa.

Al experto no se le enseñó ni sugirió en D2 que la composición que comprende pirimetanil e iprodiona pudiera permitir tal persistencia de acción. Para más fácil entendimiento de las diferencias con la patente japonesa anexo versión en inglés de dicha patente.

Por lo tanto la presente invención es novedosa e inventiva sobre las enseñanzas de los

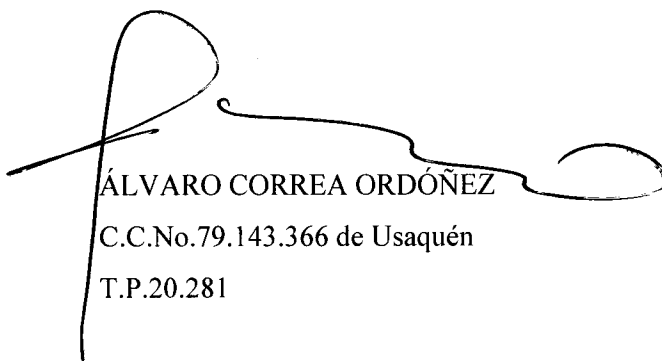
documentos D1 y D2 considerados separadamente o en conjunto.

4. Solicitudes concedidas en otros países para esta misma invención.

A manera informativa, pongo en conocimiento del Examinador las patentes que han sido concedidas para solicitudes paralelas en otras partes del mundo equivalentes a la presente solicitud colombiana. Para tal efecto anexo cuadro adjunto. Hasta este momento se le ha concedido privilegio de patente a la presente solicitud en 17 países del mundo. Aún cuando entiendo que estas decisiones de ninguna manera obligan al Despacho para decidir de igual forma, considero que por tratarse de una pregunta fáctica la determinación de la existencia de los requisitos de patentabilidad, las decisiones de otras oficinas de patentes constituyen un antecedente persuasivo en la materia.

En virtud de lo anterior, solicito que se acepten las razones expuestas en el presente documento y en consecuencia, se otorgue el privilegio de patente de invención para el invento que se tramita en este expediente.

Atentamente,



ÁLVARO CORREA ORDÓÑEZ
C.C.No.79.143.366 de Usaquén
T.P.20.281

Anexos: Ejemplos adicionales que evidencian la eficacia de la composición
Tabla con estado de otorgamiento de las solicitudes paralelas en otros países
Traducción al inglés de la anterioridad Japonesa
Copia de la patente Europea paralela tal como se otorgó
Capítulo reivindicatorio modificado
Formulario de modificación
Recibo

FORMULARIO UNICO DE CORRECCIONES Y MODIFICACIONES

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SOLICITUD DE

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Corrección de Error Material

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Modificación de una solicitud

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SOLICITANTE

Nombre: BAYER CROPSCIENCE S.A

Dirección: 55, avenue René Cassin, CP 106, F-69266 Lyon Cedex
09, Francia

Nacionalidad o Domicilio: Lyon, Francia

Lugar de Constitución: Francia

Teléfono:

Fax:

E-Mail

IDENTIFICACION

C.C.

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NIT

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C.E.

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Otro

☐

Cual

Número

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REPRESENTANTE
O APODERADO

Nombre: ALVARO CORREA ORDOÑEZ

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Teléfono: 634 1500

Fax: 376 2211

E-Mail: patents.bogota@bakernet.com

IDENTIFICACION

C.C.

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Otro

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Cual

Número

79.143.366

TP

20.281

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Numero de expediente

04.033.908

⑤

Descripción de la corrección o modificación solicitada

Se presenta nuevo capítulo reivindicatorio con el fin de subsanar

las objeciones del examen de fondo

⑥

Comprobante de Pago No.

08-40413

Fecha

21-MAY-08

⑦

Anexos

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Comprobante de pago de la tasa.

☐

Poderes, si fuere el caso.

☐

Documento que acredita la existencia y representación legal de las partes, cuando sean personas jurídicas.

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NOMBRE ALVARO CORREA ORDOÑEZ

FIRMA

C.C. 79.143.366

T.P. 20.281

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 08 - 40,413
: MAYO 21 DE 2008

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
BAKER & MCKENZIE	CONSIGNACION	BANCO DE BOGOTA	062754387	2293664	21/05/2008	57,023,600.00

***** CONCEPTO *****

CONCEPTO	TOTAL CONCEPTO
1 50005-01-03 CAMBIO DE MODALIDAD Y MODIFICA	
12 MARCAS Y LEMAS COMERCIALES	103,000.00
TOTAL :	\$ 103,000.00

SON: CIENTO TRES MIL PESOS

RESPONSABLE :

RECIBO DE CAJA APLICADO AL EXPEDIENTE No.

REIVINDICACIONES

1. Composición fungicida, que comprende pirimetanilo e ipridona en proporciones respectivas de 1/3 a 3, preferentemente de 1/2 a 2.
2. Composición según la reivindicación 1, que comprende un soporte, sólido o líquido tal como silicatos naturales o sintéticos, resinas, ceras, polvos finos o granulos de arcilla, particularmente de arcilla caolínica, tierra de diatomeas, bentonita o arcilla ácida, óxido de silicio hidratado sintético, talcos, cerámicas, otros minerales como cericita, cuarzo, azufre, carbón activo, carbonato de calcio, sílice hidratada o fertilizantes industriales como sulfato de amonio, nitrato de amonio, urea o cloruro de amonio, agua, alcoholes y particularmente metanol o etanol, cetonas y particularmente acetona, metiletilcetona o ciclohexanona, fracciones de petróleo, hidrocarburos aromáticos como benceno, tolueno, xileno, etilbenceno o metilnaftaleno, hidrocarburos no aromáticos como exano, ciclohexano, queroseno o gasóleo, gas licuado, ésteres como acetato de etilo y acetato de butilo, nitrilos como acetonitrilo e isobutironitrilo, éteres como diisopropiléter o dioxano, amidas como N,N-dimetilformamida o N,N-dimetilacetamida, hidrocarburos halogenados como diclorometano, tricloroetano, tetracloruro de carbono, dimetilsulfóxido, aceites vegetales como aceite de soja o aceite de algodón eventualmente al menos un agente tensioactivo tal como sales de poli(ácidos acrílicos), sales de ácidos lignosulfónicos, sales de ácidos fenolsulfónicos o naftalenosulfónicos, policondensados de óxido de etileno sobre alcoholes grasos o ácidos grasos o sobre aminas grasas, fenoles sustituidos, particularmente alquifenoles o arilfenoles, ésteres de ácidos sulfosuccínicos, derivados de taurina, particularmente alquiltauratos, ésteres fosfóricos de alcoholes o fenoles polioxietilados; particularmente sales de alquilsulfonatos, alquilarilsulfonatos, alquilariléteres, sus derivados polioxietilénicos, polietilenglicoléteres, ésteres de polialcoholes, derivados de azúcares y alcoholes y/o uno o varios agentes auxiliares tales como coloides protectores, adhesivos, agentes espesantes, agentes tixotrópicos, agentes de penetración, agentes estabilizantes como fosfato ácido de isopropilo, 2,6-di-terc-butil-4-metilfenol, aceites vegetales o minerales, ácidos grasos o sus ésteres, agentes secuestrantes, agentes dispersantes como caseína, gelatina, sacáridos y, particularmente, polvo de almidón, goma arábiga, ciertos derivados de celulosa o ácido algínico, derivados de lignina, bentonita, polpimeros sintéticos solubles en agua particularmente poli(alcohol vinílico), polivinilpirrolidona, poli(ácidos acrílicos).

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Patent support – Iprodione + Pyrimethanil combinations
Examples of biological performance

S. Tafforeau, 2006

Example n°	Disease	Crop	Trial reference
6	<i>Botrytis cinerea</i>	Field tomato	FD00ESP77XAM02
7	<i>Botrytis cinerea</i>	Bean	FD00FRAL52JAC1
8	<i>Botrytis cinerea</i>	Greenhouse tomato	FD00FRAL53LAU1
9	<i>Botrytis cinerea</i>	Bean	FD00FRAL59NIO1
10	<i>Botrytis cinerea</i>	Carnation	FD02COLA37L061
11	<i>Botrytis cinerea</i>	Grapes	FD02FRAV98LAU1
12	<i>Botrytis cinerea</i>	Grapes	FD02FRAV98MAR1

Example n°6: control of *Botrytis cinerea* in Tomato in field

This example illustrates the efficacy of a composition according to the invention which comprises pyrimethanil and iprodione as active ingredients for controlling *Botrytis cinerea* on field tomatoes.

The following fungicidal compounds are compared:

- iprodione at the dose of 750 g/ha
- pyrimethanil at the dose of 800 g/ha
- iprodione + pyrimethanil at the dose of 375 + 300 g /ha to be applied in the mixture volume of 2500 l/ha.

The products are applied 6 times at intervals of 8 to 11 days using a backpack sprayer. The variety of tomato was Genaro and was grown in field conditions. The results of this example are summarized in the table n° 6.

Table n°6: Efficacy against *Botrytis cinerea* in tomato (% Abbott, 6 days after the second application, 1,8 % damaged plants in the untreated control).

Products (dose rate in g active ingredient / ha)	% Efficacy
iprodione (750)	71,4
pyrimethanil (800)	71,4
Iprodione + pyrimethanil (375+300)	100,0

The composition according to the invention allows a perfect control of *Botrytis cinerea* on tomato plants after the second application. The efficacy provided by the mixture of the two compounds is better than each individual compound applied alone at higher dose rates than applied in the mixture.

Example n°7: Control of *Botrytis cinerea* on Beans

This example illustrates the efficacy of a composition according to the invention which comprises pyrimethanil and iprodione as active ingredients for controlling *Botrytis cinerea* on beans.

The following fungicidal compounds are compared:

- iprodione at the dose of 750 g/ha
- pyrimethanil at the dose of 800 g/ha
- iprodione + pyrimethanil at the dose of 500 + 600 g /ha to be applied in the mixture volume of 500 l/ha.

The products are applied 3 times at intervals of 7 days using a backpack sprayer. The variety of bean was Processor and was grown in field in spring time. The results of this example are summarized in the table n° 7.

Table n°7: Efficacy against *Botrytis cinerea* on Bean (% Abbott, 5 days after the third application).

Products (dose rate in g active ingredient / ha)	% Efficacy against <i>Botrytis cinerea</i> on stems *
iprodione (750)	7.6
pyrimethanil (800)	68.9
iprodione + pyrimethanil (500+600)	78.7

* 2.7 % infected stems in untreated control

Although iprodione and pyrimethanil are well known to control *Botrytis cinerea* when applied alone, the composition according to the invention allows a better control of *Botrytis cinerea* on tomato plants after the third application than each individual compound applied alone at higher dose rates than in the mixture.

Example n°8: control of *Botrytis cinerea* in Tomato under greenhouse

This example illustrates the efficacy of a composition according to the invention which comprises pyrimethanil and iprodione as active ingredients for controlling *Botrytis cinerea* on greenhouse tomatoes.

The following fungicidal compounds are compared:

- iprodione at the dose of 750 g/ha
- pyrimethanil at the dose of 800 g/ha
- iprodione + pyrimethanil at the dose of 375 + 300 g /ha to be applied in the mixture volume of 500 l/ha.

The products are applied 6 times at intervals of 9 to 11 days using a backpack sprayer. The variety of tomato was Marmande and was grown in greenhouse. The results of this example are summarized in the table n° 8.

Table n°8: Efficacy against *Botrytis cinerea* in tomato (% Abbott, 11 days after the sixth application, 49 % damaged fruits in the untreated control).

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Products (dose rate in g active ingredient / ha)	% Efficacy on fruits
iprodione (750)	41.5
pyrimethanil (600)	29.1
Iprodione + pyrimethanil (375+300)	63.4

The composition according to the invention allows a good protection of tomato fruits against *Botrytis cinerea*. The efficacy provided by the mixture of the two compounds is better than each individual compound applied alone at higher dose rates than applied in the mixture.

Example n°9: Control of *Botrytis cinerea* on Beans

This example illustrates the efficacy of a composition according to the invention which comprises pyrimethanil and iprodione as active ingredients for controlling *Botrytis cinerea* on beans.

The following fungicidal compounds are compared:

- iprodione at the dose of 750 g/ha
- pyrimethanil at the dose of 800 g/ha
- iprodione + pyrimethanil at the dose of 500 + 800 g /ha to be applied in the mixture volume of 500 l/ha.

The products are applied 3 times at intervals of 8-10 days using a backpack sprayer. The variety of bean was Contender and was grown in field in summer time. The results of this example are summarized in the table n° 9.

Table n°9: Efficacy against *Botrytis cinerea* on Bean (% Abbott, 16 days after the third application).

Products (dose rate in g active ingredient / ha)	% Efficacy against <i>Botrytis cinerea</i> on beans *
iprodione (750)	48.7
pyrimethanil (800)	51.0
iprodione + pyrimethanil (500+800)	61.2

* 44 fungal lesions per 10 plants in untreated control

Although iprodione and pyrimethanil are well known to control *Botrytis cinerea* when applied alone, the composition according to the invention allows a better control of *Botrytis cinerea* on tomato plants after the third application than each individual compound applied alone.

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Example n°10: control of *Botrytis cinerea* in carnation

This example illustrates the efficacy of a composition according to the invention which comprises pyrimethanil and iprodione as active ingredients for controlling *Botrytis cinerea* in carnation.

The following fungicidal compounds are compared:

- iprodione at the dose of 380 g/ha
- pyrimethanil at the dose of 750 g/ha
- iprodione + pyrimethanil at the dose of 380 + 750 g /ha to be applied in the mixture volume of 1500 l/ha.

The products are applied 2 times at intervals of 7 days using a high pressure sprayer. The variety of carnation was Dino color amarillo and was grown in greenhouse. The results of this example are summarized in the table n° 10.

Table n°10: Efficacy against *Botrytis cinerea* on carnation flowers (% Abbott, 20 days after the second application, 53 % damaged flowers in the untreated control).

Products (dose rate in g active ingredient / ha)	% Efficacy on flowers
iprodione (380)	56.3
pyrimethanil (750)	43.7
Iprodione + pyrimethanil (380+750)	75.0

The composition according to the invention allows a good protection of flowers of carnation against *Botrytis cinerea*. The efficacy provided by the mixture of the two compounds is clearly better than each individual compound applied at equivalent dose rates.

Example n°11: Control of *Botrytis cinerea* on grapes

This example illustrates the efficacy of a composition according to the invention which comprises pyrimethanil and iprodione as active ingredients for controlling *Botrytis cinerea* on grapes.

The following fungicidal compounds are compared:

- iprodione at the dose of 750 g/ha
- pyrimethanil at the dose of 800 g/ha
- iprodione + pyrimethanil at the dose of 400 + 400 g /ha to be applied in the mixture volume of 666 l/ha.

The products are applied one time at beginning of ripening using an atomizer. The grape cultivar was Gamay. The results of this example are summarized in the table n° 11.

Table n°11: Efficacy against *Botrytis cinerea* on grapes (% Abbott)

Products (dose rate in g active ingredient / ha)	% Efficacy based on disease incidence, 33 days after application *	% Efficacy based on disease severity, 37 days after application **
iprodione (750)	27.2	20.7
pyrimethanil (800)	19.7	18.0
iprodione + pyrimethanil (400+400)	43.1	45.1

* 88 % disease incidence in untreated control ; ** 25 % disease severity in untreated control

Although iprodione and pyrimethanil are well known to control *Botrytis cinerea* when applied alone, the composition according to the invention allows a better control of *Botrytis cinerea* on grapes than each individual compound applied alone, and even considering higher dose rates than in the mixture.

Example n°12: Control of *Botrytis cinerea* on grapes

This example illustrates the efficacy of a composition according to the invention which comprises pyrimethanil and iprodione as active ingredients for controlling *Botrytis cinerea* on grapes.

The following fungicidal compounds are compared:

- iprodione at the dose of 750 g/ha
- pyrimethanil at the dose of 800 g/ha
- iprodione + pyrimethanil at the dose of 400 + 400 g /ha and 500 + 500 g /ha to be applied in the mixture volume of 300 l/ha.

The products are applied one time at softening of the berries using an atomizer. The grape cultivar was Chenin. The results of this example are summarized in the table n° 12.

Table n°12: Efficacy against *Botrytis cinerea* on grapes (% Abbott)

Products (dose rate in g active ingredient / ha)	% Efficacy, 54 days after application *
iprodione (750)	9.4
pyrimethanil (800)	10.8
iprodione + pyrimethanil (400+400)	36.3
iprodione + pyrimethanil (500+500)	61.9

* 38 % disease incidence in untreated control

Although iprodione and pyrimethanil are well known to control *Botrytis cinerea* when applied alone, the composition according to the invention allows a better control of *Botrytis cinerea* on grapes than each individual compound applied alone, and even considering higher dose rates than in the mixture.

Country	Filing	Publicati	Grant	Status
AUSTRALIA	17-SEP-2002 2002337141		19-APR-2007 2002337141	GRANT 19-APR-2007
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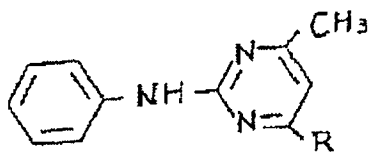
(54) [Title of the invention] Agricultural and horticultural fungicide composition

(57) [Abstract]

[Aim] The creation of a novel agricultural and horticultural fungicide composition which helps improve farming efficiency.

[Constitution] An agricultural and horticultural fungicide composition comprising as active components a pyrimidine derivative represented by the general formula

[Chemical 1]



(in the formula, R is a methyl group or the like) and at least 1 chosen from CNA, iprodione, procymidone, fosetyl and polyoxin.

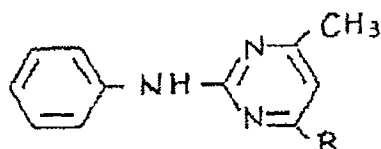
[Advantages] The agricultural and horticultural fungicide composition has a wide fungicidal spectrum and exhibits stable efficacy even when used in low doses, and its synergistic action results in extremely effective elimination even with low doses which would not be effective individually.

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(01)

[Scope of the patent claim]

[Claim 1] Agricultural and horticultural fungicide composition, characterized in that it comprises as active components a 2-anilino-4-methylpyrimidine derivative represented by the general formula

[Chemical 1]



(in the formula, R represents a methyl group, ethoxy group, halogen atom or 1-propynyl group) and at least 1 chosen from 2,6-dichloro-4-nitroaniline, 3-(3,5-dichlorophenyl)-N-isopropyl-2,4-dioxoimidazolidine-1-carboximide, N-(3,5-dichlorophenyl)-1,2-dimethylcyclopropane-1,2-dicarboximide, aluminium tris-ethylphosphonate and polyoxin.

[Detailed description of the invention]

[0001]

[Field of industrial use] The present invention relates to an agricultural and horticultural fungicide composition, characterized in that it comprises as active components a 2-anilino-4-methylpyrimidine derivative and at least 1 chosen from 2,6-dichloro-4-nitroaniline, 3-(3,5-dichlorophenyl)-N-isopropyl-2,4-dioxoimidazolidine-1-carboximide, N-(3,5-dichlorophenyl)-1,2-dimethylcyclopropane-1,2-dicarboximide, aluminium tris-ethylphosphonate and polyoxin.

[0002]

[Prior art] One of the active components in the inventive agricultural and horticultural fungicide composition is a 2-anilino-4-methylpyrimidine derivative, and said derivatives are widely known as agricultural and horticultural fungicides which are highly effective against rice blast, cucumber powdery mildew, grey mould of various plants, apple scab, spot-leaf drop and the like (Japanese Unexamined Patent Application Nos. S62-106084

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and S63-208581 and East German Patent No. 151404). Other active components include 2,6-dichloro-4-nitroaniline (common name CNA), 3-(3,5-dichlorophenyl)-N-isopropyl-2,4-dioxoimidazolidine-1-carboximide (common name iprodione), N-(3,5-dichlorophenyl)-1,2-dimethylcyclopropane-1,2-dicarboximide (common name procymidone), aluminium tris-ethylphosphonate (common name fosetyl) and polyoxin, and these too are known fungicides which are widely used as pest control agents for crops.

[0003]

[Problems to be overcome by the invention] In the cultivation of agricultural and horticultural crops, many elimination agents are used against crop diseases. However, as many diseases can develop at the same time, elimination efficacy is inadequate when there is only one active component, and sometimes the emergence of an agent-resistant fungus can limit the use of a particular agent. One of the active components in the inventive agricultural and horticultural fungicide composition is a 2-anilino-4-methylpyrimidine derivative, and although said derivatives effectively eliminate grey mould, they are insufficiently effective against sclerotinia disease, which develops at the same time. Furthermore, their efficacy against other diseases becomes unstable at low doses. As for the other active component(s), CNA is effective against sclerotinia disease but has low elimination efficacy at low concentrations, and iprodione and procymidone are ineffective against grey mould, which develops the same time, and at low concentrations they have low elimination efficacy against sclerotinia disease and unstable elimination efficacy against emerging agent-resistant strains of grey mould. Furthermore, fosetyl and polyoxin are effective against apple spot-leaf drop but ineffective against scab, which must be eliminated at the same time. Consequently, there is a demand for the development of a synergistic agent which comprises both types of agent, is stably effective and has a wide fungicidal spectrum.

[0004]

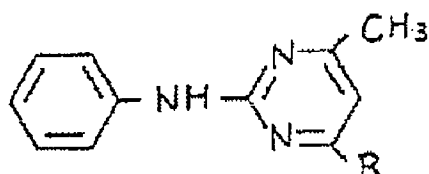
[Means of overcoming the problems] As a result of diligent research into overcoming these problems, the present inventors perfected the present invention upon discovering

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that the inventive agricultural and horticultural fungicide composition, which is obtained by compounding at least 1 active component chosen from CNA, iprodione, procymidone, fosetyl and polyoxin into a 2-anilino-4-methylpyrimidine derivative, has a wide fungicidal spectrum and exhibits stable efficacy even when used in low doses, and its synergistic action results in extremely effective elimination even with low doses which would not be effective individually. Specifically, the present invention provides an agricultural and horticultural fungicide composition, characterized in that it comprises as active components a compound chosen from 2-anilino-4-methylpyrimidine derivatives represented by the general formula

[0005]

[Chemical 2]



[0006] (in the formula, R represents a methyl group, ethoxy group, halogen atom or 1-propynyl group) and at least 1 chosen from 2,6-dichloro-4-nitroaniline, 3-(3,5-dichlorophenyl)-N-isopropyl-2,4-dioxoimidazolidine-1-carboximide, N-(3,5-dichlorophenyl)-1,2-dimethylcyclopropane-1,2-dicarboximide, aluminium tris-ethylphosphonate and polyoxin.

[0007] The polyoxin used as an active component in the inventive agricultural and horticultural fungicide composition is an antibiotic produced by *Streptomyces cacaoi* variant *asoensis* (Japanese Examined Patent No. S42-10941), and refers to polyoxin B, although it is also possible to use mixtures containing fractions other than polyoxin B, such as A, D, L, M and the like.

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[0008] Typical 2-anilino-4-methylpyrimidine derivatives are 2-anilino-4,6-dimethylpyrimidine (compound 1), 2-anilino-4-ethoxy-6-methylpyrimidine (compound 2), 2-anilino-4-iodo-6-methylpyrimidine (compound 3), 2-anilino-4-bromo-6-methylpyrimidine (compound 4) and 2-anilino-4-methyl-6-(1-propynyl)pyrimidine (compound 5). Note that hereinbelow these compounds are referred to by the compound numbers.

[0009] The inventive fungicide composition is of course effective against grey mould, and also against sclerotinia disease and powdery mildew, in various kinds of beans and vegetables. Furthermore, it exhibits good efficacy against apple spot-leaf drop, powdery mildew and scab, and against pear black spot and scab.

[0010] The inventive agricultural and horticultural fungicide composition may be used unaltered, without adding other components to the active components, although usually it is used as a hydrate, powder, aqueous suspension or the like obtained by compounding, according to common methods, a carrier, surfactant, dispersant, auxiliary agent or the like commonly used in agrochemical preparations. These preparations contain from 0.5% to 90.0%, preferably from 2.0% to 80.0%, of the active components. The weight ratio of the 2-anilino-4-methylpyrimidine derivative to the compound(s) chosen from CNA, iprodione, procymidone, fosetyl and polyoxin is from 1:0.05 to 1:100, preferably from 1:0.1 to 1:20.

[0011] Suitable carriers include solid carriers such as clay, talc, bentonite, kaolin, diatomaceous earth, white carbon, calcium carbonate, slaked lime, silica sand, ammonium sulphate, urea and vermiculite. Examples of surfactants and dispersants include diarylalkyl disulphonates, alcohol sulphate esters, alkylaryl sulphonates, lignin sulphonates, polyoxyethylene alkylaryl ether sulphates, polyoxyethylene glycol ether, polyoxyethylene alkylaryl ethers, polyoxyethylene sorbitan monoalkylates and the like. Examples of auxiliary agents include carboxymethyl cellulose, ethylene glycol and the like. These preparations may be used directly or dispersed by dilution to an appropriate concentration.

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(05)

[0012] The amount of inventive agricultural and horticultural fungicide used depends on the type of compounds used, the subject disease and its state of development, the extent of the damage, environmental conditions and the form in which the fungicide is used. When it is used without further modification, as a powder, an appropriate amount is from 0.1 g to 5 kg, preferably from 1 g to 1 kg, of active component per 10 are [1000 m²]. When it is ultimately used in liquid form, as a hydrate or suspension, an appropriate dispersed concentration is from 0.1 to 10,000 ppm, preferably from 10 to 3000 ppm.

[0013] The present invention will now be described specifically by means of working examples, although the proportions of active components and other components may be altered provided that this does not adversely affect the essence of the present invention. In the working examples, % indicates % by weight.

[0014] Working example 1

A powder was obtained by uniformly pulverising and mixing 2% of compound 1, 1% of polyoxin, 5% of diatomaceous earth and 92% of clay.

[0015] Working example 2

A hydrate was obtained by uniformly pulverising and mixing 10% of compound 2, 20% of procymidone, 4% of ammonium polyoxyethylene styrylphenyl ether sulphate, 1% of sodium naphthene sulphonate and 65% of clay.

[0016] Working example 3

A hydrate was obtained by uniformly pulverising and mixing 5% of compound 1, 50% of CNA, 5% of polyoxyethylene alkylaryl ether and 40% of clay.

[0017] Working example 4

A hydrate was obtained by uniformly pulverising and mixing 20% of compound 3, 8% of iprodione, 3% of polyoxyethylene nonylphenyl ether, 2% of sodium lignin sulphonate and 67% of clay.

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[0018] Working example 5

A hydrate was obtained by uniformly pulverising and mixing 5% of compound 5, 25% of fosetyl, 3% of polyoxyethylene nonylphenyl ether, 2% of sodium lignin sulphonate and 65% of clay.

[0019] Working example 6

A hydrate was obtained by uniformly pulverising and mixing 10% of compound 6, 40% of CNA, 3% of polyoxyethylene nonylphenyl ether, 2% of sodium lignin sulphonate and 45% of clay.

[0020] Working example 7

A suspension was obtained by wet-pulverising 20% of compound 5, 20% of polyoxin, 4% of polyoxyethylene alkylaryl ether sulphate, 10 % of ethylene glycol and 46% of water.

[0021] Working example 8

A suspension was obtained by wet-pulverising 5% of compound 1, 35% of iprodione, 10% of ethylene glycol and 50% of water.

[0022] Working example 9

5% of compound 2, 20% of iprodione, 2% of lauryl alcohol sulphate ester sodium salt, 5% of sodium lignin sulphonate, 2% of carboxymethyl cellulose and 66% of clay were uniformly mixed and pulverised. 20% of water was added to the mixture and the system was milled, processed to a 14 to 32 mesh powder using an extrusion-type granulator, then dried to yield a powder.

[0023] The efficacy of the inventive agricultural and horticultural fungicide composition is described specifically below by means of test examples.

Test example 1

Testing the kidney bean sclerotinia disease prevention efficacy

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Kidney bean seeds (seeds by Edogawa) were sown in 9 cm × 9 cm vinyl chloride bowls, 6 seeds per bowl, and grown in a greenhouse for 7 days. When the first leaves had developed, hydrates and sol prepared as in Working examples 4, 6 and 7 were diluted with water to the desired concentration and sprayed onto the kidney bean seedlings at 10 ml per bowl. The seedlings were air-dried, spray-inoculated with kidney bean sclerotinia disease (*Sclerotinia sclerotiorum*) hyphae milling solution, then left in a greenhouse at from 20 to 23°C. 5 days after inoculation, the extent of disease on the first leaves was investigated and a numerical index described below was assigned, then said index was used to find the extent of damage using Equation 1, and the elimination value using Equation 2. The results are shown in Table 1. It should be noted that the extent of damage on the untreated area was 70%.

[0024] Disease index 0: no disease seen

Disease index 1: less than 1/3 of area diseased

Disease index 2: from 1/3 to 2/3 of area diseased

Disease index 3: more than 2/3 of area diseased

[0025]

[Equation 1]

$$\text{Extent of damage (\%)} = \frac{\Sigma (\text{index} \times \text{number of affected leaves})}{\text{number of leaves investigated} \times 3} \times 100$$

[0026]

[Equation 2]

$$\text{Elimination value (\%)} = \left(1 - \frac{\text{Extent of damage in treated area}}{\text{Extent of damage in untreated area}} \right) \times 100$$

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[0027]

[Table 1]

Test compounds	Treatment concentration (ppm)	Elimination value (%)
Compound 1 + CNA	25 + 100	70
Compound 5 + CNA	25 + 100	74
Compound 3 + iprodione	25 + 10	85
Compound 5 + iprodione	25 + 10	85
Compound 5 + procymidone	25 + 10	87
Compound 5 + polyoxin	25 + 25	87
Compound 1 (comparison)	25	20
Compound 3 (comparison)	25	15
Compound 5 (comparison)	25	18
CNA (comparison)	100	0
Iprodione (comparison)	10	74
Procymidone (comparison)	10	70
Polyoxin (comparison)	25	56

[0028] Test example 2

Testing the cucumber powdery mildew prevention efficacy

Cucumber seeds (seeds by Sagami Nakashiro) were sown in 9 cm × 9 cm vinyl chloride bowls, 12 seeds per bowl, and grown in a greenhouse for 7 days. When the first sprouting leaves had developed, hydrates and sol prepared as in Working examples 2, 3 and 7 were diluted with water to the desired concentration and sprayed onto the cucumber seedlings at 10 ml per bowl. The seedlings were air-dried, inoculated with cucumber powdery mildew (*Sphaerotheca fuliginea*) spores, then left in a greenhouse at from 25 to 30°C. 10 days after inoculation, the extent of disease on the first sprouting leaves was investigated and a numerical index described below was assigned, then said index was used to find the extent of damage using Equation 3, and the elimination value using Equation 2. The results are shown in Table 2. It should be noted that the extent of damage on the untreated area was 98 to 100%.

[0029] Disease index 0: no disease seen

Disease index 1: a few (several) spots seen

Disease index 2: 1/4 of leaf area spotted

Disease index 3: 1/4 to 1/2 of leaf area spotted

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Disease index 4: more than 1/2 of leaf area spotted

Disease index 5: plant dead

[0030]

[Equation 3]

$$\text{Extent of damage (\%)} = \frac{\Sigma (\text{index} \times \text{number of affected leaves})}{\text{number of leaves investigated} \times 5} \times 100$$

[0031]

[Table 2]

Test compounds	Treatment concentration (ppm)	Elimination value (%)
Compound 2 + procymidone	50 + 100	75
Compound 2 (comparison)	50	59
Procymidone (comparison)	100	0
Compound 5 + iprodione	50 + 100	73
Compound 5 (comparison)	50	64
Iprodione (comparison)	100	3
Compound 5 + fosetyl	50 + 500	75
Compound 5 (comparison)	50	60
Fosetyl (comparison)	500	7
Compound 5 + polyoxin	25 + 25	70
Compound 5 (comparison)	25	15
Polyoxin (comparison)	25	19

[0032] Test example 3

Testing the cucumber grey mould prevention efficacy

Cucumber seeds (seeds by Sagami Nakashiro) were sown in 9 cm × 9 cm vinyl chloride bowls, 12 seeds per bowl, and grown in a greenhouse for 7 days. When the first sprouting leaves had developed, hydrate and sol prepared as in Working examples 3 and 8 were diluted with water to the desired concentration and sprayed onto the cucumber seedlings at 10 ml per bowl. The seedlings were air-dried, spray-inoculated with cucumber grey mould (*Botrytis cinerea*) hyphae milling solution, then left in a greenhouse at from 20 to 23°C. 3 days after inoculation, the extent of disease in the whole bowl was investigated

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and a numerical index described below was assigned, then said index was used to find the extent of damage using Equation 4, and the elimination value using Equation 2. The results are shown in Table 3. It should be noted that the extent of damage on the untreated area was 98 to 100%.

[0033] Disease index 0: no disease seen

Disease index 1: up to 25% of area diseased

Disease index 2: from 26 to 50% of area diseased

Disease index 3: from 51 to 75% of area diseased

Disease index 4: 76% or more of area diseased

[0034]

[Equation 4]

$$\text{Extent of damage (\%)} = \frac{\Sigma (\text{index} \times \text{number of affected leaves})}{\text{number of leaves investigated} \times 4} \times 100$$

[0035]

[Table 3]

Compounds used	Treatment concentration (ppm)	Elimination value (%)
Compound 1 + CNA	5 + 50	71
Compound 5 + CNA	5 + 50	70
Compound 1 + iprodione	5 + 35	90
Compound 5 + iprodione	5 + 35	91
Compound 4 + procymidone	5 + 35	93
Compound 5 + procymidone	5 + 35	95
Compound 5 + fosetyl	5 + 50	89
Compound 4 + polyoxin	5 + 50	84
Compound 5 + polyoxin	5 + 50	82
Compound 1 (comparison)	5	60
Compound 4 (comparison)	5	65
Compound 5 (comparison)	5	67
CNA (comparison)	50	9
Iprodione (comparison)	35	56
Procymidone (comparison)	35	60
Fosetyl (comparison)	50	53
Polyoxin (comparison)	50	22

[0036] Test example 4

Testing the pear black spot prevention efficacy

Pear saplings (seeds by Niju Seiki) that had been planted in a garden were pruned vigorously and selected for testing. Hydrate prepared as in Working example 5 was diluted with water to the desired concentration and sprayed onto the trees at 700 ml per tree. The trees were sprayed 4 times, at 7 day intervals, and 16 days after the final spraying, the extent of disease on 10 long branch leaves per tree was investigated and a numerical index described below was assigned, then said index was used to find the extent of damage using Equation 5, and the elimination value using Equation 2. The results are shown in Table 4. It should be noted that the extent of damage on the untreated area was 21%.

[0037] Disease index 0: no spots seen

Disease index 1: no more than 3 spots

Disease index 2: from 4 to 10 spots

Disease index 3: from 11 spots to up to 25% of area spotted

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Disease index 4: from 25% to 50% of area spotted

Disease index 5: 50% or more of area spotted

Disease index 6: leaf fell

[0038]

[Equation 5]

$$\text{Extent of damage (\%)} = \frac{\Sigma (\text{index} \times \text{number of affected leaves})}{\text{number of leaves investigated} \times 6} \times 100$$

[0039]

[Table 4]

Compounds used	Treatment concentration (ppm)	Elimination value (%)
Compound 5 + fosetyl	100 + 500	68
Compound 5 (comparison)	100	23
Fosetyl (comparison)	500	28

[0040]

[Advantages of the invention] The inventive fungicide composition contains a mixture of active components which act synergistically, with the result that highly effective elimination is achieved in practice even when the active components are used in low doses which would not be effective individually. It therefore allows the simultaneous elimination of grey mould and sclerotinia disease from various types of vegetables and beans. The inventive fungicide composition is also highly effective against powdery mildew of various vegetables, apple spot-leaf drop, powdery mildew and scab, and against pear black spot and scab.

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Translator's Report/Comments

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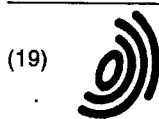
Your order of (date): 2/7/2002

In translating the above text we have noted the following apparent errors/unclear passages which we have corrected or amended:

	Comment
	Japanese proper nouns can have several possible readings: common readings have been chosen throughout. The term translated here as "fungicide" can also be translated as "microbicide", "bactericide", "sterilizer", "disinfectant" or "germicide", depending on the context.

* This identification refers to the source text. Please note that the first paragraph is taken to be, where relevant, the end portion of a paragraph starting on the preceding page. Where the paragraph is stated, the line number relates to the particular paragraph. Where no paragraph is stated, the line number refers to the page margin line number.

TRC1 1.7.92



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(11) **EP 1 427 288 B1**

(12)

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(54) FUNGICIDE COMPOSITION COMPRISING PYRIMETHANIL AND IPRODIONE

FUNGIZIDE ZUSAMMENSETZUNG ENTHALTEND PYRIMETHANIL UND IPRODIONE

COMPOSITION FONGICIDE COMPRENANT PYRIMETHANIL ET IPRODIONE

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- **DATABASE CA [Online] CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; MAENO, SHINICHIRO ET AL: "Synergistic agrochemical fungicides containing 2-anilino-4-methylpyrimidines." retrieved from STN Database accession no. 119:111281 XP002197609 & JP 05 112408 A (KUMIAI CHEMICAL INDUSTRY CO, JAPAN) 7 May 1993 (1993-05-07) cited in the application**

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Remarks:

The file contains technical information submitted after the application was filed and not included in this specification

EP 1 427 288 B1

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

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Description

[0001] The present invention relates to a novel fungicidal composition comprising pyrimethanil and iprodione in a ratio ranging from 1/3 to 3, and the use of such a composition for controlling particular plant diseases or for controlling specific phytopathogenic fungi present or capable of appearing on plants.

[0002] Pyrimethanil is described in the book entitled The Electronic Pesticide Manual version 1.1 (by British Crop Protection Council, published by Clive Tomlin); this book also describes iprodione for its fungicidal properties.

[0003] French Patent Application No. 2 692 108 which essentially relates to mixtures based on pyrimethanil and numerous other compounds gives a list of more than eleven types of families of fungicidal compounds and of more than 70 candidate compounds for the mixture; among this systematic list of compounds, only 23 mixtures have led to laboratory experimentation, none under open field conditions. Thus, even if the pyrimethanil and iprodione mixture in a ratio of 5 to 1 is given as an example for controlling *Botrytis cinerea* under laboratory conditions, no result under open field conditions is given.

[0004] Moreover, a summary of Japanese patent application JP-5 112 408 mentions fairly numerous compositions based on particular pyrimidine derivatives mixed with iprodione in particular. However, this document describes very broad ranges of ratios of active substances present and remains very general regarding the properties of these compositions without providing results.

[0005] However, it is still desirable to improve the products which can be used by the farmer for controlling fungicidal diseases of plants and in particular of crops.

[0006] It is also still desirable to improve the fungicidal products used for controlling plant diseases caused by fungi of the genera which are *Alternaria*, *Sclerotinia*, *Monilinia*, *Wilsonomyces*, *Ascochyta* and *Mycosphaerella*.

[0007] It is also still desirable to reduce the doses of chemical products applied to plants or fruits, in particular by reducing the applied doses of the products.

[0008] It is finally still desirable to increase the range of available antifungal products in order to find among them those best suited to specific uses.

[0009] It has also become essential to be able to have antifungal means of treatment which limit or avoid phenomena of resistance of phytopathogenic organisms, in particular the appearance or the spread of strains of the genus *Alternaria* which are resistant to iprodione.

[0010] It is also advantageous to have such products which have the broadest possible activity spectrum.

[0011] It is also very advantageous to be able to provide the user a solution in the form of an antifungal agent which makes it possible to offer better protection by redistribution through the treated plant, in particular the foliage.

[0012] To the numerous problems which have just been disclosed, there are added most often those linked to the protection of the environment, environmental problems to which the users of fungicidal active ingredients, as well as consumers of products obtained from these crops, are increasingly sensitive.

[0013] Another difficulty relating to the use of numerous fungicidal substances lies in the accumulation of several of the problems which have just been disclosed. It is indeed even more difficult to solve the problems posed when they accumulate because the solutions which can be envisaged are sometimes antinomial or even antagonistic.

[0014] A first object of the present invention consists in providing fungicidal compositions possessing a broad activity spectrum, that is to say possessing a substantial activity on a larger number of phytopathogenic fungi than the number of phytopathogenic fungi treated with known compositions.

[0015] A second object of the invention consists in providing fungicidal compositions possessing both a preventive effect and a curative effect, in particular an improved curative effect compared with known fungicidal compositions.

[0016] Another object of the present invention consists in providing fungicidal compositions which can effectively control fungal strains resistant to known fungicidal compositions, in particular to iprodione.

[0017] Another aim of the present invention is to provide fungicidal compositions which are effective at significantly lower doses compared with the doses currently applied.

[0018] Another object of the present invention consists in providing a fungicidal composition possessing preventive, curative, eradicant and antispore properties.

[0019] Other objects of the invention will appear in the disclosure of the invention which is presented in the remainder of the present description.

[0020] Surprisingly, it has been discovered that all of these objects may be achieved completely or in part using the fungicidal compositions which are the subject of the present invention.

[0021] The present invention also proposes achieving all or some of the objectives which have just been mentioned.

[0022] The present invention relates to a composition comprising pyrimethanil and iprodione in respective proportions ranging from 1/3 to 3, preferably ranging from 1/2 to 2.

[0023] References to methods for preparing pyrimethanil and iprodione will be found in the book cited above.

[0024] Usually, the compositions according to the invention comprise between 0.00001 and 100%, preferably between 0.001 and 80%, of active compounds, whether these compounds are combined, or whether they are in the form

of two active ingredients used separately.

[0025] Unless otherwise stated, the proportions and percentages used or described throughout the present description and in the claims which will follow are proportions or percentages by weight.

5 [0026] For their use in practice, the active substances of the composition according to the invention are rarely used alone.

[0027] Thus, for their use, these active ingredients are usually combined with a solid or liquid carrier which can be used in particular in the agricultural field, and optionally with at least one surfactant and/or one or more auxiliary agents.

10 [0028] In particular, as carriers, there may be used inert and customary carriers; likewise, as surfactant, there may be used the customary surfactants in the field of formulation of compositions, which are intended for agricultural use, in particular for the treatment or protection of crops such as those of the present invention.

[0029] According to another embodiment of the present invention, the various fungicidal compositions according to the invention which have been described up until now may also be in the form of tank mixes.

[0030] These fungicidal compositions in the form of tank mixes are usually in the form of dilute fungicidal compositions.

15 [0031] Most often, these so-called tank mix fungicidal compositions are mixed in the reservoir of the application device.

[0032] Usually, the fungicidal compounds used in the compositions according to the invention are therefore combined with one or more carriers and/or one or more substances useful for their formulation. Thus, where appropriate, the compositions according to the invention may comprise up to 99% of carrier and/or up to 25% of one or more surfactants and/or up to 25% of one or more formulating agents.

20 [0033] In the present disclosure, the term carrier designates a natural or synthetic, organic or inorganic material to which the active ingredient(s) are in the compositions according to the invention, in particular to facilitate their application to a plant, a fruit or alternatively to seeds or to the soil.

25 [0034] This carrier is therefore generally inert and should most often be acceptable in agriculture, in particular by the treated plant or by the fruits of this plant in the broad sense.

[0035] As examples of solid carriers which can be used, there may be mentioned natural or synthetic silicates, resins, waxes, fine powders or granules of clay, in particular kaolinic clay, diatomaceous earth, bentonite or acidic clay, synthetic silicon oxide hydrate, talcs, ceramics, other minerals including sericite, quartz, sulphur, activated charcoal, calcium carbonate, hydrated silica, or alternatively industrial fertilizers such as ammonium sulphate, ammonium phosphate, ammonium nitrate, urea or ammonium chloride.

30 [0036] As examples of liquid carriers which can be used, there may be mentioned water, alcohols and in particular methanol or ethanol, ketones and in particular acetone, methyl ethyl ketone or cyclohexanone, petroleum fractions, aromatic hydrocarbons including benzene, toluene, xylene, ethylbenzene or methyl-naphthalene, nonaromatic hydrocarbons including hexane, cyclohexane, kerosene or gas oil, liquefied gas, esters including ethyl acetate and butyl acetate, nitriles including acetonitrile and isobutyronitrile, ethers including diisopropyl ether or dioxane, amides including N,N-dimethylformamide or N,N-dimethylacetamide, halogenated hydrocarbons including dichloromethane, trichloroethane or carbon tetrachloride, dimethyl sulphoxide, vegetable oils including soybean oil or cottonseed oil.

35 [0037] The surfactant(s) may be emulsifying, dispersing or wetting agents of the ionic or nonionic type.

40 [0038] It is possible, for example, to mention salts of polyacrylic acids, salts of lignosulphonic acids, salts of phenol-sulphonic or naphthalenesulphonic acids, polycondensates of ethylene oxide with fatty alcohols or with fatty acids or with fatty amines, substituted phenols, in particular alkylphenols or arylphenols, salts of sulphosuccinic acid esters, derivatives of taurine, in particular alkyl taurates, phosphoric esters of polyoxyethylated alcohols or phenols; it is also possible to mention most particularly alkyl sulphonate salts, alkylaryl sulphonates, alkylaryl ethers, polyoxyethylenic derivatives thereof, polyethylene glycol ethers, polyalcohol esters, derivatives of sugars, alcohols and the like.

45 [0039] The presence of at least one surfactant is generally essential when at least one of the active ingredients and/or the inert carrier are not soluble, in particular in water, in the case where the carrier agent for the application is water.

50 [0040] In the compositions according to the invention, it is also possible to combine with the active compounds all sorts of other ingredients or agents such as, for example, protective colloids, adhesives, thickening agents, thixotropic agents, penetrating agents, stabilizing agents including isopropyl hydrogen phosphate, 2,6-di-tert-butyl-4-methylphenol, 2-tert-butyl-4-methoxyphenol and 3-tert-butyl-4-methoxyphenol, vegetable or mineral oils, fatty acids or esters thereof, sequestering agents, dispersing agents including casein, gelatin, saccharides and in particular starch powder, gum arabic, certain derivatives of cellulose or alginic acid, derivatives of lignin, bentonite, synthetic polymers soluble in water, in particular polyvinyl alcohol, polyvinylpyrrolidone, polyacrylic acids, and the like, as well as other active ingredients known for their pesticidal, in particular insecticidal or fungicidal, properties; or for their plant growth promoting properties, in particular fertilizers; or for their insect or plant growth regulating properties.

55 [0041] Thus, the fungicidal compositions according to the invention may take fairly diverse forms, in particular they may be in solid or liquid forms.

[0042] More generally, the compositions according to the invention may take numerous forms of formulations; thus,

these compositions comprising the active compounds may be used in the form of an aerosol dispenser; bait (ready-to-use); suspension of capsules; cold fogging concentrate; dustable powder; emulsifiable concentrate; aqueous/aqueous type emulsion; oil/inverse type emulsion; encapsulated granule; fine granule; suspension concentrate for seed treatment; compressed gas; gas generating product; granule; hot fogging concentrate; macrogranule; microgranule; oil-dispersible powder; oil miscible suspension concentrate; oil-miscible liquid; paste; plant rodlet; powder for dry seed treatment; seed coated with a pesticide; smoke candle; smoke cartridge; smoke generator; smoke pellet; smoke rodlet; smoke tablet; smoke tin; soluble concentrate; soluble powder; solution for seed treatment; suspension concentrate (= flowable concentrate); ultra low volume liquid; ultra low volume suspension; vapour releasing product; water-dispersible granules or tablets; water dispersible powder for slurry treatment; water-soluble granules or tablets; water-soluble powder for seed treatment; wettable powder; as well as possible mixtures, associations or combinations of these various forms.

[0043] In addition to pyrimethanil and iprodione, the composition according to the invention may also comprise other active compounds and in particular one or more active compounds useful for protecting plants against pests.

[0044] Such additions of additional active ingredients then make it possible to add to the novel properties of the compositions according to the invention, the known or unknown properties of such additional active ingredients.

[0045] Among such additional active compounds, the composition according to the invention may therefore comprise one or more insecticidal, herbicidal or fungicidal compounds or growth regulating compounds.

[0046] Among the additional fungicidal active ingredients which may be used alone or in combination with other active ingredients, in particular pesticides, in the composition according to the invention, there may be mentioned

2-phenylphenol; 8-hydroxyquinoline sulphate; ac 382042; ampelomyces quisqualis; azaconazole; azoxystrobin; *Bacillus subtilis*; benalaxyl; benomyl; biphenyl; biteranol; blastidicin-s; Bordeaux mixture; borax; bromuconazole; bupirimate; calboxin; calcium polysulphide; captafol; captan; carbendazim; carpropamid (ktu 3616); cga 279202; chinomethionat; chlorothalonil; chlozolinate; copper hydroxide; copper naphthenate; copper oxychloride; copper sulphate; copper oxide; cymoxanil; cyproconazole; dazomet; debacarb; dichlofluanid; dichlomezine; dichlorophen; diclocymet; dicloran; diethofencarb; difenoconazole; difenzoquat; difenzoquat metilsulphate; diflumetorim; dimethirimol; dimethomorph; diniconazole; diniconazole-m; dinobuton; dinocap; diphenylamine; dithianon; dodemorph; dodemorph acetate; dodine; dodine free base; edifenphos; epoxiconazole (bas 480f); ethasulfocarb; ethirimol; etridiazole; famoxadone; fenamidone; fenarimol; fenbuconazole; fenfin; fenfuram; fenhexamid; fenciclonil; fenpropidin; fenpropimorph; fentin acetate; fentin hydroxide; ferbam; ferimzone; fluazinam; fludioxonil; fluoroimide; fluquinconazole; flusilazole; flusulfamide; flutolanil; flutriafol; fluoxastrobil folpet; formaldehyde; fosetyl; fosetyl-aluminium; fuberidazole; furalaxyl; fusarium oxysporum; gliocladium virens; guazatine; guazatine acetates; gy-81; hexachlorobenzene; hexaconazole; hymexazol; icia 0858; ikf-916; imazalil; imazalil sulphate; imibenconazole; iminocadine; iminocadine triacetate; iminocadine tris[albesilate]; ipconazole; iprobenfos; iprodione; iprovalicarb; kasugamycin; kasugamycin hydrochloride hydrate; kresoxim-methyl; mancozeb; maneb; mepronil; mercury(II) chloride; mercury(II) oxide; mercury(I) chloride; metalaxyl; metalaxyl-m; metam; metam-sodium; metconazole; methasulfocarb; methyl isothiocyanate; metiram; metominostrobin (ssf-126); mon65500; myclotbutanil; nabam; naphthenic acid; natamycin; nickel bis(dimethyldithiocarbamate); nitrothal-isopropyl; nuarimol; octhilinone; ofurace; oleic acid (fatty acids); oxadixyl; oxine-copper; oxycarboxin; penconazole; pencycuron; pentachlorophenol; pentachlorophenyl laurate; perfurazolate; phenylmercury acetate; *Phlebiopsis gigantea*; phthalide; piperalin; polyoxine b; polyoxines; polyoxorim; potassium hydroxyquinoline sulphate; probenazole; prochloraz; procymidone; propamocarb; propamocarb hydrochloride; propiconazole; propineb; prothiiconazole; pyrazophos; pyributicarb; pyrifenoxy; pyroquilon; quinoxifen; quintozone; rh-7281; sec-butylamine; sodium 2-phenylphenoxide; sodium pentachlorophenoxide; spiroxamine (kgw 4168); streptomyces griseoviridis; sulphur; tar oils; tebuconazole; tecnazene; tetraconazole; thiabendazole; thifluzamide; thiophanate-methyl; thiram; tolclofos-methyl; tolylfluanid; triadimefon; triadimenol; triazoxide; trichoderma harzianum; tricyclazole; tridemorph; triflumizole; triforine; triticonazole; validamycin; vinclozolin; zinc naphthenate; zineb; ziram; the compounds having the chemical name (e,e)-2-(2-(1-(1-(2-pyridyl)propyloxyimino)-1-cyclopropylmethyloxymethyl)-phenyl)-3-methoxy-propenoate and 3-(3,5-dichlorophenyl)-4-chloropyrazole.

[0047] According to another equally advantageous aspect, the present invention also relates to a method for the curative or preventive control of phytopathogenic organisms of plants of the genera *Alternaria*, *Sclerotinia*, *Monilinia*, *Wilsonomyces*, *Ascochyta* and *Mycosphaerella*, such a method according to the invention is based on the use of pyrimethanil and iprodione.

[0048] Preferably, the method according to the invention uses a composition according to the invention as has just been described.

[0049] During their use in the method according to the invention, pyrimethanil is used in quantities ranging from 50 to 1 000 g/ha, preferably from 100 to 600 g/ha.

[0050] As for iprodione, it is advantageously used in quantities ranging from 50 to 1 000 g/ha, preferably from 100 to 600 g/ha.

[0051] Among the procedures or methods of treatment and/or protection according to the invention, those which are

used for the treatment and/or protection of crops are preferred, and among such methods or procedures, those for the protection of vegetable, fruit or oil-producing crops are most particularly preferred.

[0052] The said use of the methods according to the invention may be carried out according to various forms and in particular using a fairly large variety of modes of application, but also according to various techniques of application, or alternatively for the protection of various types, varieties or families of vegetables or plants, or alternatively for combating or controlling various types of phytopathogenic organisms.

[0053] As regards the various modes of application usefully employed during the methods according to the invention, simultaneous, separate, alternate or sequential modes of application are in particular possible.

[0054] Nevertheless, most often, the modes of application useful during the methods according to the invention and which are preferred consist of modes of simultaneously applying the active compounds.

[0055] However, a relatively advantageous variant of the method according to the invention uses an alternate mode of application of the active compounds.

[0056] In addition to the various embodiments of the methods according to the invention which have just been described, the said methods can also use a fairly large number of application techniques; thus, as said techniques, there may be mentioned in particular dusting, dipping, spraying, smoking or fogging, and the like.

[0057] Other variants of the modes of application useful for the methods according to the invention exist, particularly depending on the part(s) of the plant or vegetable which are treated or which are to be treated.

[0058] Thus, the methods according to the invention may be carried out for the treatment or protection of plant propagation material or seeds, in particular grain seeds, tubers or rhizomes; for the treatment of roots, or for the treatment of the stems or leaves of the plant; as well as for the treatment of the roots, or alternatively of the fruits or other parts of the plant which possess a substantial economic or agronomic value.

[0059] Furthermore, the said methods according to the invention may be carried out for the treatment of plants at numerous stages of their development, in particular for the treatment of the seeds, seedlings or seedlings for transplantation or plants for transplantation, or alternatively plants, fruits or harvests.

[0060] Among the phytopathogenic fungi of crops which may be advantageously controlled according to the present invention, there may be mentioned adelomycetes of the genera

- *Alternaria*, for example *Alternaria solani* (*Alternaria* disease of Solanaceae, and in particular of the tomato and the potato), *Alternaria dauci* (*Alternaria* disease of the carrot), *Alternaria porri* (*Alternaria* disease of the onion), *Alternaria kikuchiana* (*Alternaria* disease of the pear tree), *Alternaria mali* (*Alternaria* disease of the apple tree), *Alternaria brassicae* and *Alternaria brassicicola* (*Alternaria* disease of crucifers),
- *Sclerotinia*, for example *Sclerotinia minor*, *Sclerotinia sclerotiorum* (*Sclerotinia* diseases of the lettuce, of the haricot bean, and the like),
- *Monilinia*, for example *Monilinia fructicola*, *Monilinia fructigena* or *Monilinia laxa* (*Monilia* diseases of stone fruit trees),
- *Wilsonomyces*, for example *Wilsonomyces carpophila* (shot hole of stone fruit trees),
- of the genus *Ascochyta*, for example *Ascochyta pisi*,
- *Mycosphaerella*, for example *Mycosphaerella pinodes* (anthracnoses of protein-rich peas) .

[0061] An additional aspect of the present invention relates to a product for simultaneous, separate, alternate or sequential application of pyrimethanil and iprodione.

[0062] The examples which follow will allow better illustration of the various aspects of the present invention, in particular of the aspects relating to the compositions and to the methods according to the invention using the said fungicidal compositions. However, these examples do not in any way limit the scope of the present invention.

Example 1:

[0063] This example illustrates the efficacy of a composition according to the invention which comprises pyrimethanil and iprodione as active ingredients for controlling *Alternaria solani* on the potato.

It makes it possible in particular to demonstrate the very good persistence of action of the composition according to the invention.

The following fungicidal compounds are compared:

- iprodione at the dose of 750 g/ha,
- pyrimethanil at the dose of 600 g/ha,
- iprodione + pyrimethanil at the doses of 250+150, 300+180 and 375+225 g/ha to be applied in the mixture volume of 1 000 l/ha.

The products are applied to potato (Bintje variety) which is sensitive to *Alternaria solani*. The various products under study are sprayed every 12 days for a total of 3 applications in a treatment program during which mancozeb at 2 400 g/ha, applied every 13 days, is intercalated between each spraying according to the scheme:

mancozeb - product tested - mancozeb - product tested - mancozeb - product tested.
Scores for the disease (percentage of foliar surface area destroyed) are awarded 15 days after the second application of the experiment products (15 DAB), 8 days and 17 days after the third application of the experimental products (8 DAC and 17 DAC).
The results are presented in table 1.

Table 1

	15 DAB	8 DAC	17 DAC
control	20	43.75	57.50
iprodione (750)	1.75	4.38	10
pyrimethanil (600)	3.44	8.75	13.13
iprodione+pyrimethanil (250+150)	4.38	5.94	7.81
iprodione+pyrimethanil (300+180)	4.06	5.31	6.25
iprodione+pyrimethanil (375+225)	2.94	4.69	5.94

Example 2:

[0064] This example illustrates the efficacy of a composition according to the invention which comprises pyrimethanil and iprodione as active ingredients for controlling *alternaria dauci* on carrot. The following fungicidal compounds are compared:

- iprodione at the dose of 750 g/ha,
- pyrimethanil at the dose of 600 g/ha,
- iprodione + pyrimethanil at the doses of 300+180 and 375+225 g/ha to be applied in a mixture volume of 1 000 l/ha.

The products are applied to carrot (Nantes variety) which is sensitive to *Alternaria dauci*.

The various products to be studied are sprayed at the rate of 3 applications in total with intervals of 8 days between the 1st and 2nd applications and of 10 days between the 2nd and 3rd application.

Scores for the disease (percentage of foliar surface area destroyed) are awarded 7 days after the 1st and 2nd applications and then 3 days and 8 days after the 3rd application.

The results are presented in table 2

Table 2

	7 DAA	7 DAB	3 DAC	8 DAC
control	36.2	52.5	68.7	94.4
iprodione (750)	8.7	11.9	19.4	35
pyrimethanil (600)	11.9	21.9	31.2	57.5
iprodione+pyrimethanil (300+180)	6.6	9.4	15.6	32.5
iprodione+pyrimethanil (375+225)	6.9	9.7	18.1	28.7

Example 3:

[0065] This example illustrates the efficacy of a composition according to the invention which comprises pyrimethanil and iprodione as active ingredients for controlling *Alternaria porri* on onion.

The following fungicidal compounds are compared:

- iprodione at the dose of 750 g/ha,
- pyrimethanil at the dose of 600 g/ha,
- iprodione + pyrimethanil at the doses of 300+150 g/ha to be applied in a mixture volume of 1 000 l/ha.

A total of 5 successive preventive sprayings are carried out on onion plants which were initially 31 days old and at a rhythm of 13 days.

32 days after the last application, harvesting is carried out and the yield is calculated in terms of kg of bulbs/ha and the yield gain expressed by comparing with the untreated control.

The results are presented in table 3.

Table 3

	Yield (kg/ha)	Yield gain (%)
control	28 300	/
iprodione (750)	33 000	16.8
pyrimethanil (600)	31 500	11.5
iprodione+pyrimethanil (300+150)	33 400	18.1

Example 4:

[0066] This sample illustrates the efficacy of a composition according to the invention which comprises pyrimethanil and iprodione as active ingredients for controlling *Sclerotinia sclerotinium* on lettuce.

The following fungicidal compounds are compared:

- iprodione at the dose of 750 g/ha,
- pyrimethanil at the dose of 800 g/ha,
- iprodione + pyrimethanil at the doses of 375+400 g/ha.

All the products are applied in a mixture volume of 500 l/ha.

A total of 5 sprayings are carried out on lettuce plants (Manita variety).

An inoculation with *Sclerotinia* is carried out the next day after the first treatment by spreading contaminated rape plant stems on the soil.

11 countings of the lettuce plants attacked by *Sclerotinia* are carried out throughout the trial.

The results are presented in table 4.

Table 4

	1	2	3	4	5	6	7	8	9	10	11
control	4.8	7.8	9	17.8	23.3	29.5	31.5	36.8	38.9	43.1	47.3
iprodione (750)	1	2.5	3	4	4	4.8	5.5	5.9	6.7	7.4	7.9
pyrimethanil (800)	3.5	5.5	8	14.8	18	22.8	26	29.4	31.4	33.9	35.8
iprodione + pyrimethanil (375+400)	0.5	1.3	2	2.3	2.5	2.3	2.8	3	3	3.3	4.4

Example 5:

[0067] This example illustrates the efficacy of a composition according to the invention which comprises pyrimethanil and iprodione as active ingredients for controlling *Ascochyta pisi* on protein-rich peas.

The following fungicidal compounds are compared:

- iprodione at the dose of 500 g/ha,
- pyrimethanil at the dose of 600 g/ha,
- iprodione + pyrimethanil at the doses of 400+400 and 500+500 g/ha to be applied in a mixture volume of 300 l/ha.

Two successive sprayings are carried out on pea plants (Baccara variety) at the flowering stages and then two weeks after the first application. 23 days after the second application, the percentage of diseased leaves and pods is calculated; the results are presented in table 5.

Table 5

	Amount of diseased leaves (%)	Amount of diseased leaves (%)
control	51	45
iprodione (500)	46	34
pyrimethanil (600)	21	16
iprodione+pyrimethanil (400+400)	20	16
iprodione+pyrimethanil (500+500)	17	10

[0068] The composition according to the invention allows, particularly at the dose of 500+500 g/ha of active ingredients, a high protection of the leaves of the plants and especially of the pods which are the parts of the plant to be protected as a priority, in particular because of their importance from an agronomic point of view. All these examples show the superiority of the compositions according to the invention compared with known active ingredients used alone.

Claims

1. A fungicidal composition comprising pyrimethanil and iprodione in respective proportions ranging from 1/3 to 3, preferably ranging from 1/2 to 2.
2. The composition as claimed in claim 1, comprising a carrier, which is solid or liquid, which can be used in particular in the agricultural field, and optionally at least one surfactant and/or one or more auxiliary agents.
3. A method for the curative or preventive control of phytopathogenic organisms of plants of the genera *Alternaria*, *Sclerotinia*, *Monilinia*, *Wilsonomyces*, *Ascochyta* and *Mycosphaerella* characterized by the use of pyrimethanil and iprodione.
4. The method as claimed in claim 3, characterized in that the pyrimethanil is used in quantities ranging from 50 to 1 000 g/ha.
5. The method as claimed in claim 3, characterized in that the pyrimethanil is used in quantities ranging from 100 to 600 g/ha.
6. The method as claimed in any one of claims 3 to 5, characterized in that the iprodione is used in quantities ranging from 50 to 1 000 g/ha.
7. The method as claimed in any one of claims 3 to 6, characterized in that the iprodione is used in quantities ranging from 100 to 600 g/ha.
8. The method as claimed in any one of claims 3 to 7, for the treatment and/or protection of crops, preferably for the protection of vegetable, fruit or oil-producing crops.
9. The method as claimed in any one of claims 3 to 8, for the treatment and/or protection of vegetable, fruit or oil-producing crops.
10. The method as claimed in any one of claims 3 to 9, for controlling fungi of the genera

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- *Alternaria*, for example *Alternaria solani* (*Alternaria* disease of Solanaceae, and in particular of the tomato and the potato), *Alternaria dauci* (*Alternaria* disease of the carrot), *Alternaria porri* (*Alternaria* disease of the onion), *Alternaria kikuchiana* (*Alternaria* disease of the pear tree), *Alternaria mali* (*Alternaria* disease of the apple tree), *Alternaria brassicae* and *Alternaria brassicicola* (*Alternaria* disease of crucifers),
- *Sclerotinia*, for example *Sclerotinia minor*, *Sclerotinia sclerotiorum* (*Sclerotinia* diseases of the lettuce, of the haricot bean, and the like),
- *Monilinia*, for example *Monilinia fructicola*, *Monilinia fructigena* or *Monilinia laxa* (*Monilia* diseases of stone fruit trees),
- *Wilsonomyces*, for example *Wilsonomyces carpophila* (shot hole of stone fruit trees),
- of the genus *Ascochyta*, for example *Ascochyta pisi*,
- *Mycosphaerella*, for example *Mycosphaerella pinodes* (anthracnoses of protein-rich peas) .

Patentansprüche

1. Fungizide Zusammensetzung, die Pyrimethanil und Iprodione in entsprechenden Anteilen im Bereich von 1/3 bis 3, vorzugsweise im Bereich von 1/2 bis 2, enthält.
2. Zusammensetzung nach Anspruch 1, die einen Träger, der fest oder flüssig ist und insbesondere auf dem Gebiet der Landwirtschaft eingesetzt werden kann, sowie gegebenenfalls mindestens ein Tensid und/oder einen oder mehrere Hilfsstoffe enthält.
3. Verfahren für die kurative oder präventive Bekämpfung von phytopathogenen Organismen von Pflanzen der Gattungen *Alternaria*, *Sclerotinia*, *Monilinia*, *Wilsonomyces*, *Ascochyta* und *Mycosphaerella*, **dadurch gekennzeichnet, daß** man Pyrimethanil und Iprodione verwendet.
4. Verfahren nach Anspruch 3, **dadurch gekennzeichnet, daß** Pyrimethanil in Mengen im Bereich von 50 bis 1000 g/ha verwendet wird.
5. Verfahren nach Anspruch 3, **dadurch gekennzeichnet, daß** Pyrimethanil in Mengen im Bereich von 100 bis 600 g/ha verwendet wird.
6. Verfahren nach einem der Ansprüche 3 bis 5, **dadurch gekennzeichnet, daß** Iprodione in Mengen im Bereich von 50 bis 1000 g/ha verwendet wird.
7. Verfahren nach einem der Ansprüche 3 bis 6, **dadurch gekennzeichnet, daß** Iprodione in Mengen im Bereich von 100 bis 600 g/ha verwendet wird.
8. Verfahren nach einem der Ansprüche 3 bis 7 für die Behandlung und/oder den Schutz von Kulturen, vorzugsweise für den Schutz von Gemüse-, Obst- oder Ölkulturen.
9. Verfahren nach einem der Ansprüche 3 bis 8 für die Behandlung und/oder den Schutz von Gemüse-, Obst- oder Ölkulturen.
10. Verfahren nach einem der Ansprüche 3 bis 9 für die Bekämpfung von Pilzen der Gattungen
 - *Alternaria*, z.B. *Alternaria solani* (Solanaceen-*Alternaria*, insbesondere Blattfleckenkrankheit der Tomate und Dürffleckenkrankheit der Kartoffel), *Alternaria dauci* (Möhrenschwärze), *Alternaria porri* (Purpurfleckenkrankheit der Zwiebel), *Alternaria kikuchiana* (Birnenschwärze), *Alternaria mali* (Blattfleckenkrankheit des Apfels), *Alternaria brassicae* und *Alternaria brassicicola* (Dürffleckenkrankheit des Kohls),
 - *Sclerotinia*, z.B. *Sclerotinia minor*, *Sclerotinia sclerotiorum* (Sklerotinia-Fäule des Salats, der Bohne und dergleichen),

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- *Monilinia*, z.B. *Monilinia fructicola*, *Monilinia fructigena* oder *Monilinia laxa* (Braunfäule des Steinobsts),
- *Wilsonomyces*, z.B. *Wilsonomyces carpophila* (Schrotschußkrankheit des Steinobsts),
- 5 - der Gattung *Ascochyta*, z.B. *Ascochyta pisi*,
- *Mycosphaerella*, z.B. *Mycosphaerella pinodes* (Anthraknose-Krankheiten von proteinreichen Erbsen).

10 Revendications

1. Composition fongicide comprenant du pyriméthanil et de l'iprodione en des proportions respectives allant de 1/3 à 3, de préférence allant de 1/2 à 2.
- 15 2. Composition selon la revendication 1, comprenant un support, solide ou liquide, utilisable notamment dans le domaine de l'agriculture, et éventuellement au moins un agent tensioactif et/ou un ou plusieurs agents auxiliaires.
3. Méthode de lutte à titre curatif ou préventif contre les organismes phytopathogènes des plantes des genres *Alternaria*, *Sclerotinia*, *Monilinia*, *Wilsonomyces*, *Ascochyta* et *Mycosphaerella*, **caractérisée par** l'utilisation de pyriméthanil et d'iprodione.
- 20 4. Méthode selon la revendication 3, **caractérisée en ce que** le pyriméthanil est mis en oeuvre en des quantités allant de 50 à 1000 g/ha.
- 25 5. Méthode selon la revendication 3, **caractérisée en ce que** le pyriméthanil est mis en oeuvre en des quantités allant de 100 à 600 g/ha.
6. Méthode selon l'une quelconque des revendications 3 à 5, **caractérisée en ce que** l'iprodione est mise en oeuvre en des quantités allant de 50 à 1000 g/ha.
- 30 7. Méthode selon l'une quelconque des revendications 3 à 6, **caractérisée en ce que** l'iprodione est mise en oeuvre en des quantités allant de 100 à 600 g/ha.
8. Méthode selon l'une quelconque des revendications 3 à 7, pour le traitement et/ou la protection des cultures, préférablement pour la protection des cultures légumières, fruitières ou oléagineuses.
- 35 9. Méthode selon l'une quelconque des revendications 3 à 8, pour le traitement et/ou la protection des cultures légumières, fruitières ou oléagineuses.
- 40 10. Méthode selon l'une quelconque des revendications 3 à 9, pour lutter contre les champignons des genres
 - *Alternaria*, par exemple *Alternaria solani* (alternariose des solanées, et notamment de la tomate et de la pomme de terre), *Alternaria dauci* (alternariose de la carotte), *Alternaria porri* (alternariose de l'oignon), *Alternaria kikuchiana* (alternariose du poirier), *Alternaria mali* (alternariose du pommier), *Alternaria brassicae* et *Alternaria brassicicola* (alternariose des crucifères),
 - *Sclerotinia*, par exemple *Sclerotinia minor*, *Sclerotinia sclerotiorum* (sclérotinioses de la laitue, du haricot...),
 - *Monilinia*, par exemple *Monilinia fructicola*, *Monilinia fructigena* ou *Monilinia laxa* (monilioses des arbres fruitiers à noyaux),
 - *Wilsonomyces*, par exemple *Wilsonomyces carpophila* (shot-hole des arbres fruitiers à noyaux),
 - 50 - du genre *Ascochyta*, par exemple *Ascochyta pisi*,
 - *Mycosphaerella*, par exemple *Mycosphaerella pinodes* (anthracnoses du pois protéagineux).

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**SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISION DE NUEVAS CREACIONES**

Radicación No. 04-33908

Clasificación Internacional (IPC): A01N47/38

Concepto Técnico No. 2193

Patente de Invención



Patente de Modelo de Utilidad



Vía Nacional



Vía PCT (fase nacional)



Cap. I



Cap. II



No. Sol. Internacional

EP02/11125

Fecha de Presentación Internal.

2002-10-17

Como resultado del examen definitivo, realizado con fundamento en el artículo 48 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica:

1. Documentos estudiados

- 1.1. Descripción: Folios: 34 a 50 (como se radicó inicialmente)
- 1.2. Reivindicaciones: Folios: 51 a 52 (como se radicó inicialmente)
Folios: 92 (modificación)
- 1.3 Rta. del Solicitante: Folios: 84 a 89 y 93 a 123
- 1.4 Prioridad: 18-10-2001, FR01/12033

2. Análisis de la Prioridad

- La materia contenida en la solicitud corresponde a la materia que cobija la prioridad.

3. Objeto de la invención

- Título de la solicitud: "Composición fungicida basada en pirimetanilo e iprodiona y utilización de esta composición para la lucha contra enfermedades de plantas."
- El objeto de la solicitud (reivindicaciones 1 y 2) consiste de: "composición fungicida, que comprende pirimetanilo e iprodiona en proporciones respectivas de 1/3 a 3, preferentemente de 1/2 a 2."

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- El problema planteado en esta solicitud es la necesidad de mejorar los productos utilizables para la lucha contra enfermedades fúngicas, para lo cual la solicitud proporciona una composición fungicida que comprende pirimetanilo e iprodiona .
- Clasificación Internacional de Patentes (IPC.). A01N47/38

4 Determinación del Estado de la Técnica

- Para determinar el estado de la técnica teniendo en cuenta que se ha reclamado prioridad y esta ha sido aceptada, la fecha indicada será la de la prioridad.

Fecha de presentación de la solicitud prioritaria 2001-09-18

De acuerdo con la fecha indicada, se realizó la búsqueda en el estado de la técnica de documentos relacionados con el objeto de la solicitud encontrándose los siguientes documentos:

Nº	Documento	Título	Fecha de publicación*
D1	FR2692108	Mélanges fongicides	1993-12-17
D2	JP5112408	Germicide composition for agriculture and horticulture	1993-05-07

5. Respuesta a los argumentos del solicitante:

- El interesado expresa en su memorial con respecto al documento D1 que la proporción en la composición divulgada de pirimetanil e iprodiona es de " 5/35 lo que es igual a 0,14.

El rango de proporciones de la invención tal como se reivindicó es 0,33 a 3, por tanto la invención difiere de la descripción de D1"

Al respecto no es claro lo que se quiere significar, no obstante vale la pena anotar en primer lugar que la patentabilidad de la solicitud se afecto por falta de nivel inventivo y no por novedad; en segundo lugar la proporción que se muestra en el documento D1 específicamente en el ejemplo, corresponde realmente a una proporción de 1 a 5 de pirimetanil e iprodiona respectivamente. En tercer lugar resulta obvio que se trata de proporciones diferentes, pero lo que en ambos casos se muestra es una mayor efectividad de los compuestos cuando se encuentran en mezcla, respecto a los compuestos activos cuando actúan separadamente.

Ahora bien como lo indica el mismo interesado en su memorial "D1 describe una prueba muy limitada y específica sobre Bohrytis cinérea en invernadero donde se diseñan unas condiciones de crecimiento específicas para encontrar los parámetros de las condiciones de campo." Por tanto de hecho se puede derivar de éste documento la composición de la solicitud en estudio, dado que la combinación de los dos principios activos se conoce, se aplica para el mismo efecto y necesariamente se requiere de la etapa previa de laboratorio y de pruebas de invernadero para llegar a la formulación en campo, una vez se conoce la mezcla y sus propiedades, la formulación se desarrolla mediante ensayos rutinarios, lo cual no constituye una "invención".

De la misma forma el interesado expresa con respecto a D2 , que allí se relacionan mezclas de pirimetanil con otros numerosos ingredientes fungicidas activos; al respecto cabe anotar que no obstante existan numerosas mezclas, se muestra un ejemplo específico de la mezcla de pirimetanil e iprodiona contra botrytis cinérea, de donde se puede establecer claramente que es posible la combinación específica de dichos principios activos y que además se mejora la efectividad de los compuestos, de otra parte se indica en el documento que dicha composición es aplicable en campo y se enseñan dosis de aplicación para tal efecto, por tanto se deriva de lo divulgado en el documento la composición fungicida que se pretende proteger en la solicitud en estudio, de hecho se conoce la combinación de los compuestos específicos y su aplicación.

Con relación a que en: "D2 página 5 se menciona que a menudo se demuestra sinergismo." y que " Esta es una prueba contundente de que dicho efecto sinérgico no se espera sistemáticamente..." , realmente lo que allí se indica, es que dichas mezclas tienen un amplio espectro, exhiben una eficacia estable aun cuando se usen en dosis bajas, y esta acción sinérgica resulta en eliminación extremadamente efectiva aún con dosis bajas, las cuales podrían no ser efectivas individualmente. Por tanto en dicho documento se divulga el efecto sinérgico de la mezcla en referencia.

6. Análisis de patentabilidad (artículo 14 D486)

6.1 Nivel inventivo (artículo 18 D486)

- En la solicitud en estudio las (reivindicaciones 1 y 2) se refieren a una composición fungicida, que comprende pirimetanilo e iprodiona en proporciones respectivas de 1/3 a 3, preferentemente de 1/2 a 2. Y un soporte sólido o líquido.
- De manera que de acuerdo con lo divulgado en D1 se ve afectado el Nivel Inventivo de la solicitud en estudio, dado que en dicho documento se enseñan combinaciones sinérgicas que comprenden 2-anilino-4,6-dimetilpirimidina (pirimetanilo) y otro fungicida donde dicho fungicida puede ser entre otros iprodiona(ver pag 15 de D1). En este documento se enseña la mezcla específica y además se indica las dosis de aplicación en campo.
- De la misma forma D2 enseña combinaciones sinérgicas germicidas que comprenden pirimetanilo e iprodiona. Además se indica que es una composición fungicida útil en agricultura y horticultura, con un amplio espectro, presenta una eficacia estable aún cuando se use en dosis bajas y su acción sinérgica resulta extremadamente efectiva aún en dosis bajas, que podrían ser no efectivas individualmente.
- Por lo anterior se considera que la composición de la solicitud en estudio se deriva de lo divulgado en D1 y en D2, puesto que se enseña la combinación específica de pirimetanilo e iprodiona, su efecto sinérgico, donde obviamente las dosis son más bajas que las de los compuestos individuales e igualmente presentan actividad fungicida, la proporción de los componentes se deriva de lo divulgado, como se indico en el numeral anterior, las pruebas de laboratorio y de invernadero son el paso obligado

propiedades , efecto sinérgico, por tanto la determinación de las proporciones de mezcla corresponde a ensayos rutinarios.

7. Conclusión:

Los requisitos de patentabilidad de la presente solicitud se encuentran afectados así:

N°	Documento N°	Reivindicaciones afectadas	Requisito que afecta
D1	FR2692108	1-10	Nivel Inventivo
D2	JP5112408	1-10	Nivel Inventivo

7. Conclusión:

En consecuencia y por todo lo expuesto anteriormente, se recomienda **Negar** las reivindicaciones: 1 a 2 (folio:92)

Bogotá, D.C., 28-07-08

CONCEPTO TECNICO No.2193	EXAMINADOR TECNICO: Código No.202013
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