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DIVISION DE NUEVAS CREACIONES
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Solicitante : BASF AKTIENGESELLSCHAFT
Asunto : Solicitud de patente para: MEZCLAS FUNGICIDAS
Fecha de solicitud : 04 de julio de 2003.

Yo, Emilio FERRERO, obrando como apoderado del solicitante en el asunto antes identificado, atentamente presento junto con este escrito un nuevo texto descriptivo en idioma inglés, correspondiente a la solicitud de Fase Nacional de la referencia, pues el originalmente presentado no corresponde a la solicitud PCT en alemán.

Atentamente solicito que se continúe con la tramitación de la solicitud de patente.

Bogotá, 28 AGO. 2003
Señora Jefe,


EMILIO FERRERO
T.P.A. No. 31.929

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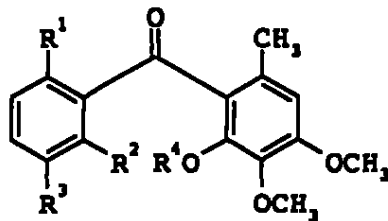
Fungicidal mixtures

The present invention relates to fungicidal mixtures, comprising

5

a) benzophenones of the formula I

10



I

in which

15 R^1 is chlorine, methyl, methoxy, acetoxy, pivaloyloxy or hydroxyl;

R^2 is chlorine or methyl;

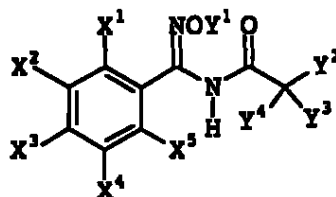
20 R^3 is hydrogen, halogen or methyl; and

R^4 is C_1 - C_6 -alkyl or benzyl, where the phenyl moiety of the benzyl radical may carry a halogen or methyl substituent, and

25

b) oxime ether derivatives of the formula II

30



II

where the substituents X^1 to X^5 and Y^1 to Y^4 are as defined below:

35

X^1 is halogen, C_1 - C_4 -haloalkyl or C_1 - C_4 -haloalkoxy;

X^2 to X^5 independently of one another are hydrogen, halogen, C_1 - C_4 -alkyl, C_1 - C_4 -haloalkyl, C_1 - C_4 -alkoxy or

40

C_1 - C_4 -haloalkoxy;

Y^1 is C_1 - C_4 -alkyl, C_2 - C_6 -alkenyl, C_2 - C_6 -alkynyl, C_1 - C_4 -alkyl- C_3 - C_7 -cycloalkyl, where these radicals may carry substituents selected from the group consisting of

45

halogen, cyano and C_1 - C_4 -alkoxy;

- 5** **y²** is a phenyl radical or a 5- or 6-membered saturated or unsaturated heterocyclyl radical having at least one heteroatom selected from the group consisting of N, O and S, where the cyclic radicals may have one to three substituents selected from the group consisting of halogen, C₁-C₄-alkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkyl, C₁-C₄-haloalkoxy, C₁-C₄-alkoxy-C₂-C₄-alkenyl, C₁-C₄-alkoxy-C₂-C₄-alkynyl; and
- 10** **y³, y⁴** independently of one another are hydrogen, C₁-C₄-alkyl, C₁-C₄-alkoxy, C₁-C₄-alkylthio, N-C₁-C₄-alkylamino, C₁-C₄-haloalkyl or C₁-C₄-haloalkoxy;

in a synergistically effective amount.

- 15** Moreover, the invention relates to methods for controlling harmful fungi using mixtures of the compounds I and II and to the compositions comprising the compounds I and II.

- 20** The compounds of the formula I, their preparation and their action against harmful fungi are known from the literature (EP-A 727 141; EP-A 897 904; EP-A 899 255; EP-A 967 196).

- Mixtures of benzophenones of the formula I with other
25 fungicidally active compounds are known from EP-A 1 023 834.

- The compounds of the formula II and processes for their preparation are described in WO-A 96/19442, EP-A 1 017 670 and EP-A 1 017 671.

- 30** DE-A 197 22 223 describes mixtures of compounds of the formula II and active compounds from the class of the Strobilurins.

- It is an object of the present invention to provide further
35 particularly effective mixtures for controlling harmful fungi and in particular for certain indications.

- It is an object of the present invention to provide mixtures which have an improved activity against harmful fungi, combined
40 with a reduced total amount of active compounds applied (synergistic mixtures), with a view to reducing the application rates and improving the activity spectrum of the known compounds I and II.

- 45** We have found that this object is achieved by the mixtures defined at the outset. Moreover, we have found that applying the compounds I and the compounds II simultaneously, i.e. together or

3

separately, or applying the compounds I and the compounds II successively provides better control of harmful fungi than is possible with the individual compounds alone.

5 The mixtures according to the invention act synergistically and are therefore particularly suitable for controlling harmful fungi and in particular powdery mildew fungi in cereals, vegetables, fruit, ornamental plants and grapevines.

10 The following compounds of the formula I are preferred mixing partners, the individual preferences applying on their own and in combination.

Preference is given to compounds I in which R^1 is chlorine, 15 methoxy, acetoxy or hydroxyl, and particular preference is given to compounds in which R^1 is methoxy, acetoxy or hydroxyl. Very particular preference is given to compounds in which R^1 is methoxy.

20 Mixtures comprising compounds I in which R^2 is chlorine or methyl are mixtures according to the invention. Preference is given to compounds I in which R^2 is methyl.

Moreover, preference is given to compounds I in which R^3 is 25 hydrogen, methyl, chlorine or bromine, and with particular preference hydrogen, chlorine or bromine.

In addition, preference is given to compounds I in which R^4 is C_1 - C_4 -alkyl or benzyl, where the phenyl moiety of the benzyl 30 radical may carry a halogen or methyl substituent. Particularly preferred are compounds of the formula I in which R^4 is C_1 - C_4 -alkyl, preferably methyl.

Furthermore preferred are compounds of the formula I in which the 35 substituents R^1 , R^2 , R^3 and R^4 are as defined below:

R^1 is methoxy, acetoxy or hydroxyl;

R^2 is methyl;

R^3 is hydrogen, chlorine or bromine; and

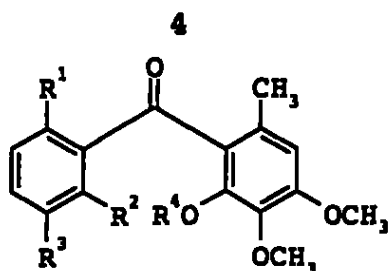
R^4 is C_1 - C_4 -alkyl.

40

In addition, particular preference is given to compounds of the formula I in which the substituents are as defined in Table 1 below:

45

5



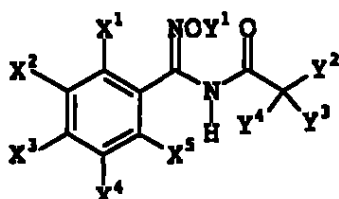
I

No.	R ¹	R ²	R ³	R ⁴
I-1	methoxy	Cl	H	methyl
I-2	methoxy	Cl	methyl	methyl
I-3	methoxy	Cl	H	n-propyl
I-4	methoxy	Cl	H	n-butyl
I-5	methoxy	Cl	H	benzyl
I-6	methoxy	Cl	H	2-fluorobenzyl
I-7	methoxy	Cl	H	3-fluorobenzyl
I-8	methoxy	Cl	H	4-fluorophenyl
I-9	methoxy	Cl	H	2-methylphenyl
I-10	methoxy	Cl	H	3-methylphenyl
I-11	methoxy	Cl	H	4-methylphenyl
I-12	methoxy	Cl	Br	methyl
I-13	methoxy	Cl	Br	n-propyl
I-14	methoxy	Cl	Br	n-butyl
I-15	methoxy	Cl	Br	benzyl
I-16	methoxy	Cl	Br	2-fluorobenzyl
I-17	methoxy	methyl	H	methyl
I-18	methoxy	methyl	Cl	methyl
I-19	methoxy	methyl	H	n-propyl
I-20	methoxy	methyl	H	n-butyl
I-21	methoxy	methyl	H	benzyl
I-22	methoxy	methyl	H	2-fluorobenzyl
I-23	methoxy	methyl	H	3-fluorobenzyl
I-24	methoxy	methyl	H	4-fluorophenyl
I-25	methoxy	methyl	H	2-methylphenyl
I-26	methoxy	methyl	H	3-methylphenyl
I-27	methoxy	methyl	H	4-methylphenyl
I-28	methoxy	methyl	Br	methyl
I-29	methoxy	methyl	Br	n-propyl
I-30	methoxy	methyl	Br	n-butyl
I-31	methoxy	methyl	Br	benzyl
I-32	methoxy	methyl	Br	2-fluorobenzyl
I-33	acetoxy	methyl	H	methyl
I-34	acetoxy	methyl	Cl	methyl

	No.	R ¹	R ²	R ³	R ⁴
5	I-35	acetoxy	methyl	Br	methyl
	I-36	hydroxy	methyl	H	methyl
	I-37	hydroxy	methyl	Cl	methyl
	I-38	hydroxy	methyl	Br	methyl
	I-39	pivaloyloxy	methyl	H	methyl
10	I-40	pivaloyloxy	methyl	Cl	methyl
	I-41	pivaloyloxy	methyl	Br	methyl
	I-42	Cl	Cl	H	methyl
	I-43	Cl	Cl	H	n-propyl
	I-44	Cl	Cl	H	n-butyl
15	I-45	Cl	Cl	H	benzyl
	I-46	Cl	Cl	H	2-fluorobenzyl
	I-47	Cl	Cl	H	3-fluorobenzyl
	I-48	Cl	Cl	H	4-fluorophenyl
	I-49	Cl	Cl	H	2-methylphenyl
20	I-50	Cl	Cl	H	3-methylphenyl
	I-51	Cl	Cl	H	4-methylphenyl
	I-52	Cl	Cl	Br	methyl
	I-53	Cl	Cl	Br	n-propyl
	I-54	Cl	Cl	Br	n-butyl
25	I-55	Cl	Cl	Br	benzyl
	I-56	Cl	Cl	Br	2-fluorobenzyl
	I-57	methyl	methyl	H	methyl
	I-58	methyl	methyl	H	n-propyl
	I-59	methyl	methyl	H	n-butyl
30	I-60	methyl	methyl	H	benzyl
	I-61	methyl	methyl	H	2-fluorobenzyl
	I-62	methyl	methyl	H	3-fluorobenzyl
	I-63	methyl	methyl	H	4-fluorophenyl
	I-64	methyl	methyl	H	2-methylphenyl
35	I-65	methyl	methyl	H	3-methylphenyl
	I-66	methyl	methyl	H	4-methylphenyl
	I-67	methyl	methyl	Br	methyl
	I-68	methyl	methyl	Br	n-propyl
	I-69	methyl	methyl	Br	n-butyl
40	I-70	methyl	methyl	Br	benzyl
	I-71	methyl	methyl	Br	2-fluorobenzyl

Mixing components b) are the oxime ether derivatives of the formula II

5



II

10 where the substituents X¹ to X⁵ and Y¹ to Y⁴ are as defined below:

X¹ is halogen, C₁-C₄-haloalkyl or C₁-C₄-haloalkoxy;

15 X² to X⁵ independently of one another are hydrogen, halogen, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

20 Y¹ is C₁-C₄-alkyl, C₂-C₆-alkenyl, C₂-C₆-alkynyl, C₁-C₄-alkyl-C₃-C₇-cycloalkyl, where these radicals may carry substituents selected from the group consisting of halogen, cyano and C₁-C₄-alkoxy;

25 Y² is a phenyl radical or a 5- or 6-membered saturated or unsaturated heterocyclyl radical having at least one heteroatom selected from the group consisting of N, O and S, where the cyclic radicals may have one to three substituents selected from the group consisting of halogen, C₁-C₄-alkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkyl, C₁-C₄-haloalkoxy, C₁-C₄-alkoxy-C₂-C₄-alkenyl, 30 C₁-C₄-alkoxy-C₂-C₄-alkynyl; and

35 Y³, Y⁴ independently of one another are hydrogen, C₁-C₄-alkyl, C₁-C₄-alkoxy, C₁-C₄-alkylthio, N-C₁-C₄-alkylamino, C₁-C₄-haloalkyl or C₁-C₄-haloalkoxy.

Among the compounds II, preference is given to those in which

X¹ is chlorine, difluoromethoxy or trifluoromethyl;

X² and X³ are hydrogen;

40 X⁴ is hydrogen or fluorine;

X⁵ is chlorine, fluorine, trifluoromethyl or difluoromethoxy;

Y¹ is methylenecyclopropyl;

45 Y² is unsubstituted or substituted phenyl, thienyl, pyrazolyl, pyrrolyl, imidazolyl, thiazolyl, furyl, pyridazinyl or pyrimidinyl. Preferred substituents on these ring systems are halogen (in particular F and Cl),

C₁-C₄-alkoxy (in particular methoxy) and C₁-C₄-alkyl (in particular methyl). The number of ring substituents may be from 1 to 3, in particular 1 or 2. Unsubstituted phenyl or phenyl which is substituted in the 4-position by fluorine, methyl, trifluoromethyl or methoxy are particularly preferred;
y³ and y⁴ are hydrogen.

Preferred compounds of the formula II are compiled in Table 2 below.

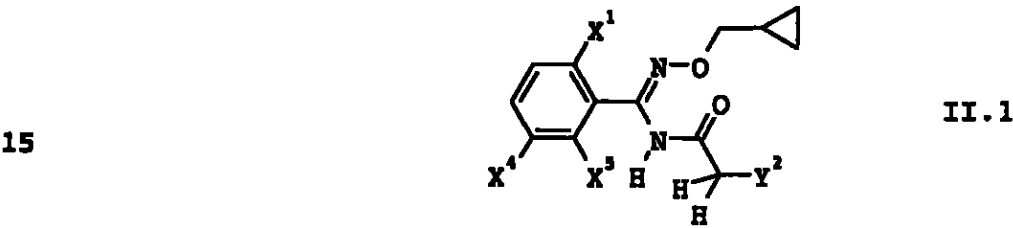


Table 2:

	No.	X ¹	X ⁴	X ⁵	Y ²
20	II-1	Cl	H	F	Ph
	II-2	Cl	H	F	Ph-2-F
	II-3	Cl	H	F	Ph-2,4-F ₂
	II-4	Cl	H	F	Ph-2-F-3-Me
25	II-5	Cl	H	F	Ph-2-F-4-OMe
	II-6	Cl	H	F	Ph-3,5-Me ₂
	II-7	Cl	H	F	3-methylpyrazol-1-yl
	II-8	Cl	H	F	3-methyl-2-thienyl
30	II-9	Cl	H	F	2-thienyl
	II-10	Cl	H	Cl	Ph
	II-11	Cl	H	Cl	Ph-2,4-F ₂
	II-12	Cl	H	CF ₃	2-thienyl
35	II-13	Cl	H	CF ₃	Ph-4-Me
	II-14	Cl	H	CF ₃	Ph-4-OMe
	II-15	Cl	H	CF ₃	Ph
	II-16	OCHF ₂	H	F	Ph
	II-17	OCHF ₂	H	F	Ph-2-F
40	II-18	OCHF ₂	H	F	Ph-4-F
	II-19	OCHF ₂	H	F	Ph-4-CF ₃
	II-20	OCHF ₂	H	F	Ph-4-OMe
	II-21	OCHF ₂	H	F	Ph-4-Me
45	II-22	OCHF ₂	H	F	3-methylpyrazol-1-yl
	II-23	OCHF ₂	H	F	3-methyl-2-thienyl
	II-24	OCHF ₂	H	F	2-thienyl

	No.	X ¹	X ⁴	X ⁵	Y ²
5	II-25	OCHF ₂	H	Cl	Ph
	II-26	OCHF ₂	H	Cl	Ph-2,4-F ₂
	II-27	OCHF ₂	H	CF ₃	2-thienyl
	II-28	OCHF ₂	H	CF ₃	Ph-4-Me
	II-29	OCHF ₂	H	CF ₃	Ph-4-OMe
10	II-30	OCHF ₂	H	CF ₃	Ph
	II-31	OCHF ₂	H	OCHF ₂	Ph-4-OMe
	II-32	OCHF ₂	H	OCHF ₂	Ph
	II-33	OCHF ₂	H	OCHF ₂	Ph-4-Me
	II-34	OCHF ₂	H	OCHF ₂	Ph-4-Cl
15	II-35	CF ₃	H	F	Ph
	II-36	CF ₃	H	F	Ph-2-F
	II-37	CF ₃	H	F	Ph-4-F
	II-38	CF ₃	H	F	Ph-4-Me
	II-39	CF ₃	H	F	Ph-4-OMe
20	II-40	CF ₃	H	F	Ph-4-CF ₃
	II-41	CF ₃	H	F	3-methylpyrazol-1-yl
	II-42	CF ₃	H	F	3-methyl-2-thienyl
	II-43	CF ₃	H	F	2-thienyl
	II-44	CF ₃	H	Cl	Ph
25	II-45	CF ₃	H	Cl	Ph-2,4-F ₂
	II-46	CF ₃	H	CF ₃	2-thienyl
	II-47	CF ₃	H	CF ₃	Ph-4-Me
	II-48	CF ₃	H	CF ₃	Ph-4-OMe
	II-49	CF ₃	H	CF ₃	Ph
30	II-50	CF ₃	H	OCHF ₂	Ph-4-OMe
	II-51	CF ₃	H	OCHF ₂	Ph
	II-52	CF ₃	H	OCHF ₂	Ph-4-Me
	II-53	CF ₃	H	OCHF ₂	Ph-4-Cl
	II-54	CF ₃	Cl	F	2-thienyl
35	II-55	CF ₃	Cl	F	Ph-2-F
	II-56	CF ₃	Cl	F	Ph
	II-57	CF ₃	Cl	F	Ph-2-F-5-Me
	II-58	CF ₃	Cl	Cl	Ph-3,5-Me ₂
	II-59	OCHF ₂	F	F	Ph
40	II-60	OCHF ₂	F	F	3-methylpyrazol-1-yl
	II-61	OCHF ₂	F	F	3-methyl-2-thienyl
	II-62	OCHF ₂	F	F	Ph-4-Me
	II-63	OCHF ₂	F	F	Ph-2-F-4-OMe

	No.	X ¹	X ⁴	X ⁵	Y ²
	II-64	OCHF ₂	F	F	Ph-2-F-5-Me
	II-65	OCHF ₂	F	F	Ph-4-F
5	II-66	OCHF ₂	F	F	Ph-4-CF ₃
	II-67	OCHF ₂	F	F	Ph-4-OMe
	II-68	OCHF ₂	F	F	Ph-4-Cl
	II-69	CF ₃	F	F	Ph
10	II-70	CF ₃	F	F	3-methylpyrazol-1-yl
	II-71	CF ₃	F	F	3-methyl-2-thienyl
	II-72	CF ₃	F	F	Ph-4-Me
	II-73	CF ₃	F	F	Ph-2-F-4-OMe
	II-74	CF ₃	F	F	Ph-2-F-5-Me
15	II-75	CF ₃	F	F	Ph-4-F
	II-76	CF ₃	F	F	Ph-4-CF ₃
	II-77	CF ₃	F	F	Ph-4-OMe
	II-78	CF ₃	F	F	Ph-4-Cl

20 Preference is given to fungicidal mixtures, which comprise, as component a), one of the compounds: I-33, I-35, I-42, I-44, I-46, I-60, or preferably I-18, I-28, I-37, and, as component b), one of the compounds: II-15, II-32, II-62, II-68, or preferably II-59, II-69.

25

The quantitative ratio of the compounds I and II can be varied within wide ranges; the active compounds are preferably employed in a weight ratio in the range from 100:1 to 0.1:1, preferably from 50:1 to 1:1, with particular preference from 20:1 to 1:1.

30

When preparing the mixtures, it is preferred to employ the pure active compounds I and II, to which further active compounds against harmful fungi or other pests, such as insects, arachnids or nematodes, or else herbicidal or growth-regulating active ingredients or fertilizers can be admixed.

35

The mixtures of the compounds I and II, or the compounds I and II used simultaneously, jointly or separately, exhibit outstanding activity against a wide range of phytopathogenic fungi, in particular from the classes of the Ascomycetes, Basidiomycetes, Phycomycetes and Deuteromycetes. Some of them act systemically and can therefore be employed as foliar- and soil-acting fungicides.

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They are especially important for controlling a large number of fungi in a variety of crop plants, such as cotton, vegetable species (e.g. cucumbers, beans, tomatoes, potatoes and cucurbits), barley, grass, oats, bananas, coffee, maize, fruit
5 species, rice, rye, soya, grapevine, wheat, ornamentals, sugar cane, and a variety of seeds.

They are particularly suitable for controlling the following phytopathogenic fungi: *Erysiphe graminis* (powdery mildew) in
10 cereals, *Erysiphe cichoracearum* and *Sphaerotheca fuliginea* in cucurbits, *Podosphaera leucotricha* in apples, *Uncinula necator* in grapevines, *Puccinia* species in cereals, *Rhizoctonia* species in cotton, rice and lawns, *Ustilago* species in cereals and sugar cane, *Venturia inaequalis* (scab) in apples, *Helminthosporium*
15 species in cereals, *Septoria nodorum* in wheat, *Botrytis cinerea* (gray mold) in strawberries, vegetables, ornamentals and grapevines, *Cercospora arachidicola* in groundnuts, *Pseudocercospora herpotrichoides* in wheat and barley, *Pyricularia oryzae* in rice, *Phytophthora infestans* in potatoes
20 and tomatoes, *Plasmopara viticola* in grapevines, *Pseudoperonospora* species in hops and cucumbers, *Alternaria* species in vegetables and fruit, *Mycosphaerella* species in bananas and *Fusarium* and *Verticillium* species.

25 They can furthermore be employed in the protection of materials (for example the protection of wood), for example against *Paecilomyces variotii*.

The compounds I and II can be applied simultaneously, that is
30 either together or separately, or successively, the sequence, in the case of separate application, generally not having any effect on the result of the control measures.

Depending on the kind of effect desired, the application rates of
35 the mixtures according to the invention are, in particular in agricultural crop areas, from 0.01 to 10 kg/ha, preferably 0.1 to 5 kg/ha, in particular 0.2 to 3.0 kg/ha.

The application rates of the compounds I are from 0.005 to
40 6.0 kg/ha, preferably 0.08 to 3.0 kg/ha, in particular 0.12 to 2.0 kg/ha.

Correspondingly, in the case of the compounds II, the application rates are from 0.005 to 4.0 kg/ha, preferably 0.02 to 2.0 kg/ha,
45 in particular 0.08 to 1.0 kg/ha.

For seed treatment, the application rates of the mixture are generally from 0.001 to 250 g/kg of seed, preferably 0.01 to 100 g/kg, in particular 0.01 to 50 g/kg.

5 If phytopathogenic harmful fungi are to be controlled, the separate or joint application of the compounds I and II or of the mixtures of the compounds I and II is effected by spraying or dusting the seeds, the plants or the soils before or after sowing of the plants, or before or after plant emergence.

10

The fungicidal synergistic mixtures according to the invention or the compounds I and II can be formulated for example in the form of ready-to-spray solutions, powder and suspensions or in the form of highly concentrated aqueous, oily or other suspensions,

15 dispersions, emulsions, oil dispersions, pastes, dusts, materials for broadcasting or granules, and applied by spraying, atomizing, dusting, broadcasting or watering. The use form depends on the intended purpose; in any case, it should ensure as fine and uniform as possible a distribution of the mixture according to
20 the invention.

The formulations are prepared in a known manner, e.g. by extending the active compound with solvents and/or carriers, if desired using emulsifiers and dispersants, it being possible also
25 to use other organic solvents as auxiliary solvents if water is used as the diluent. Suitable auxiliaries for this purpose are essentially: solvents such as aromatics (e.g. xylene), chlorinated aromatics (e.g. chlorobenzenes), paraffins (e.g. mineral oil fractions), alcohols (e.g. methanol, butanol),
30 ketones (e.g. cyclohexanone), amines (e.g. ethanolamine, dimethylformamide) and water; carriers such as ground natural minerals (e.g. kaolins, clays, talc, chalk) and ground synthetic minerals (e.g. finely divided silica, silicates); emulsifiers such as nonionic and anionic emulsifiers (e.g. polyoxyethylene
35 fatty alcohol ethers, alkylsulfonates and arylsulfonates) and dispersants such as lignosulfite waste liquors and methylcellulose.

Suitable surfactants are the alkali metal salts, alkaline earth
40 metal salts and ammonium salts of aromatic sulfonic acids, e.g. ligno-, phenol-, naphthalene- and dibutylnaphthalenesulfonic acid, and of fatty acids, alkyl- and alkylarylsulfonates, alkyl, lauryl ether and fatty alcohol sulfates, and salts of sulfated hexa-, hepta- and octadecanols, or of fatty alcohol glycol
45 ethers, condensates of sulfonated naphthalene and its derivatives with formaldehyde, condensates of naphthalene or of the naphthalenesulfonic acids with phenol and formaldehyde,



polyoxyethylene octylphenol ether, ethoxylated isooctyl-, octyl-
or nonylphenol, alkylphenyl or tributylphenyl polyglycol ethers,
alkylaryl polyether alcohols, isotridecyl alcohol, fatty
alcohol/ethylene oxide condensates, ethoxylated castor oil,
5 polyoxyethylene alkyl ethers or polyoxypropylene, lauryl alcohol
polyglycol ether acetate, sorbitol esters, lignosulfite waste
liquors or methylcellulose.

Powders, materials for broadcasting and dusts can be prepared by
10 mixing or jointly grinding the compounds I or II or the mixture
of the compounds I and II with a solid carrier.

Granules (e.g. coated granules, impregnated granules or
homogeneous granules) are usually prepared by binding the active
15 compound, or active compounds, to a solid carrier.

Fillers or solid carriers are, for example, mineral earths, such
as silicas, silica gels, silicates, talc, kaolin, limestone,
lime, chalk, bole, loess, clay, dolomite, diatomaceous earth,
20 calcium sulfate, magnesium sulfate, magnesium oxide, ground
synthetic materials and fertilizers, such as ammonium sulfate,
ammonium phosphate, ammonium nitrate, ureas, and products of
vegetable origin, such as cereal meal, tree bark meal, wood meal
and nutshell meal, cellulose powders or other solid carriers.

25 The formulations generally comprise from 0.1 to 95% by weight,
preferably 0.5 to 90% by weight, of one of the compounds I and II
or of the mixture of the compounds I and II. The active compounds
are employed in a purity of from 90% to 100%, preferably 95% to
30 100% (according to NMR or HPLC spectrum).

The compounds I or II, the mixtures, or the corresponding
formulations, are applied by treating the harmful fungi, their
habitat, or the plants, seeds, soils, areas, materials or spaces
35 to be kept free from them with a fungicidally effective amount of
the mixture, or of the compounds I and II in the case of separate
application.

Application can be effected before or after infection by the
40 harmful fungi.

Use Example

The synergistic activity of the mixtures according to the
45 invention can be demonstrated by the following experiments:

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The active compounds, separately or together, are formulated as a 10% emulsion in a mixture of 63% by weight of cyclohexanone and 27% by weight of emulsifier, and diluted with water to the desired concentration.

5

Evaluation is carried out by determining the infected leaf areas in percent. These percentages are converted into efficacies. The efficacy (W) is calculated as follows using Abbot's formula:

10

$$W = (1 - \alpha) \cdot 100 / \beta$$

α corresponds to the fungal infection of the treated plants in % and

β corresponds to the fungal infection of the untreated (control) plants in %

An efficacy of 0 means that the infection level of the treated plants corresponds to that of the untreated control plants; an efficacy of 100 means that the treated plants were not infected.

20

The expected efficacies of the mixtures of the active compounds were determined using Colby's formula [R.S. Colby, Weeds 15, 20-22 (1967)] and compared with the observed efficacies.

25

$$\text{Colby's formula: } E = x + y - x \cdot y / 100$$

E expected efficacy, expressed in % of the untreated control, when using the mixture of the active compounds A and B at the concentrations a and b

30 x efficacy, expressed in % of the untreated control, when using active compound A at a concentration of a

y efficacy, expressed in % of the untreated control, when using active compound B at a concentration of b.

35

Use example 1: Protective activity against mildew of cucumber caused by *Sphaerotheca fuliginea*

40 Leaves of cucumber seedlings of the cultivar "Chinese snake" which had been grown in pots were, at the cotyledon stage, sprayed to runoff point with an aqueous preparation of active compound which had been prepared from a stock solution comprising 10% of active compound, 85% of cyclohexanone and 5% of emulsifier. 20 hours after the spray coating had dried on, the plants were inoculated with an aqueous spore suspension of mildew of cucumber (*Sphaerotheca fuliginea*). The plants were then

45 cultivated in a greenhouse at 20-24°C and 60-80% relative

atmospheric humidity for 7 days. The extent of the mildew development was then determined visually in % infection of the cotyledon surface.

5 The visually determined values for the percentage of infected leaf areas were converted into efficacies in % of the untreated control. An efficacy of 0 means the same infection as in the untreated control, an efficacy of 100 means 0% infection. The expected efficacies for combinations of active compounds were
10 determined using Colby's formula (Colby, S. R. (Calculating synergistic and antagonistic responses of herbicide Combinations", Weeds, 15, pp. 20 - 22, 1967) and compared to the observed efficacies.

15 Table A

	Active compound	Concentration of active compound in the spray liquor in ppm	Efficacy in % of the untreated control
20	Control (untreated)	(83% infection)	0
	Compound I-28	0.125	52
		0.06	3
	Compound I-37	0.25	3
25		0.125	3
		0.06	3
	Compound II-59	0.025	82
		0.0125	70
30		0.006	58

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Table B

	Combinations according to the invention	Observed efficacy	Calculated efficacy ^{a)}
5			
	Compound I-28 + Compound II-59 0.125 + 0.0125 ppm Mixture 10 : 1	100	85
10			
	Compound I-28 + Compound II-59 0.06 + 0.006 ppm Mixture 10 : 1	99	59
15			
	Compound I-28 + Compound II-59 0.06 + 0.0125 ppm Mixture 4.8 : 1	94	71
20			
	Compound I-28 + Compound II-59 0.06 + 0.025 ppm Mixture 2.4 : 1	96	71
25			
	Compound I-28 + Compound II-59 0.125 + 0.006 ppm Mixture 21 :1	100	80
30			
	Compound I-37 + Compound II-59 0.125 + 0.0125 ppm Mixture 10 : 1	96	71
35			
	Compound I-37 + Compound II-59 0.06 + 0.006 ppm Mixture 10 : 1	100	59
40			
	Compound I-37 + Compound II-59 0.06 + 0.0125 ppm Mixture 4.8 :1	100	71
45			
	Compound I-37 + Compound II-59 0.06 + 0.025 ppm Mixture 2.4 : 1	100	71

	Combinations according to the Invention	Observed efficacy	Calculated efficacy*)
5	Compound I-37 + Compound II-59 0.125 + 0.006 ppm Mixture 21 : 1	100	59
10	Compound I-37 + Compound II-59 0.25 + 0.006 ppm Mixture 42:1	100	59

15 *) calculated using Colby's formula

The test results show that, for all mixing ratios, the observed efficacy is higher than the efficacy calculated beforehand using Colby's formula (from Synerg 166A. XLS).

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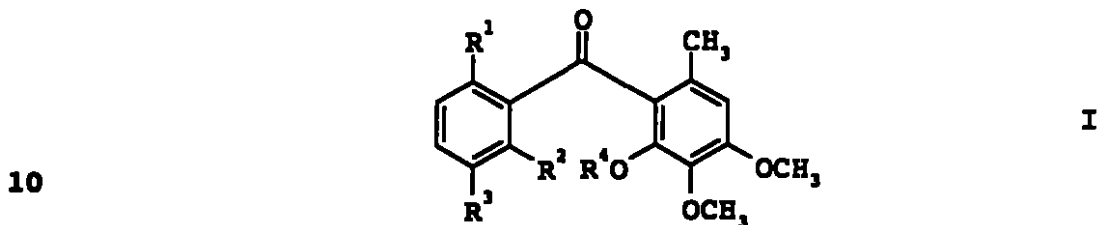
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We claim:

1. A fungicidal mixture, comprising

5 a) benzophenones of the formula I



in which

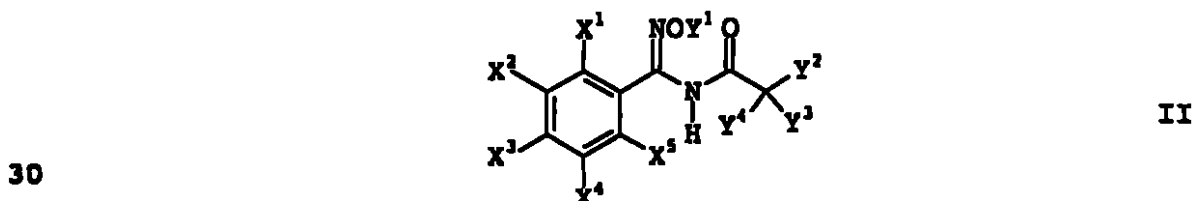
15 R¹ is chlorine, methyl, methoxy, acetoxy, pivaloyloxy or hydroxyl;

R² is chlorine or methyl;

20 R³ is hydrogen, halogen or methyl; and

R⁴ is C₁-C₆-alkyl or benzyl, where the phenyl moiety of the benzyl radical may carry a halogen or methyl substituent, and

25 b) oxime ether derivatives of the formula II



where the substituents X¹ to X⁵ and Y¹ to Y⁴ are as defined below:

35 X¹ is halogen, C₁-C₄-haloalkyl or C₁-C₄-haloalkoxy;

X² to X⁵ independently of one another are hydrogen, halogen, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

40 Y¹ is C₁-C₄-alkyl, C₂-C₆-alkenyl, C₂-C₆-alkynyl, C₁-C₄-alkyl-C₃-C₇-cycloalkyl, where these radicals may carry substituents selected from the group consisting of halogen, cyano and C₁-C₄-alkoxy;

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5 Y^2 is a phenyl radical or a 5- or 6-membered saturated or unsaturated heterocyclyl radical having at least one heteroatom selected from the group consisting of N, O and S, where the cyclic radicals may have one to three substituents selected from the group consisting of halogen, C_1-C_4 -alkyl, C_1-C_4 -alkoxy, C_1-C_4 -haloalkyl, C_1-C_4 -haloalkoxy, C_1-C_4 -alkoxy- C_2-C_4 -alkenyl, C_1-C_4 -alkoxy- C_2-C_4 -alkynyl;

10

Y^3 , Y^4 independently of one another are hydrogen, C_1-C_4 -alkyl, C_1-C_4 -alkoxy, C_1-C_4 -alkylthio, N- C_1-C_4 -alkylamino, C_1-C_4 -haloalkyl or C_1-C_4 -haloalkoxy;

15

in a synergistically effective amount.

2. A fungicidal mixture as claimed in claim 1, where in formula I

20

R^1 is methoxy, acetoxy or hydroxyl;
 R^2 is methyl;
 R^3 is hydrogen, chlorine or bromine; and
 R^4 is C_1-C_4 -alkyl.

25

3. A fungicidal mixture as claimed in claim 1, wherein the weight ratio of the benzophenones I to the oxime ether derivatives of the formula II is from 20:1 to 1:20.

30 4. A method for controlling harmful fungi, which comprises treating the harmful fungi, their habitat or the plants, seeds, soils, areas, materials or spaces to be kept free from them with benzophenones of the formula I as set forth in claim 1 and oxime ether derivatives of the formula II as set forth in claim 1.

35

5. A method as claimed in claim 4, wherein benzophenones of the formula I as set forth in claim 1 and oxime ether derivatives of the formula II as set forth in claim 1 are applied simultaneously, that is either together or separately, or successively.

40

6. A method as claimed in claim 4 or 5, wherein the benzophenones of the formula I as set forth in claim 1 are applied in an amount of from 0.08 to 3.0 kg/ha.

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7. A method as claimed in any of claims 4 to 6, wherein the oxime ether derivatives of the formula II as set forth in claim 1 are applied in an amount of from 0.02 to 2.0 kg/ha.

5 8. A fungicidal composition, which is conditioned in two parts, one part comprising benzophenones of the formula I as set forth in claim 1 in a solid or liquid carrier and the other part comprising oxime ether derivatives of the formula II as set forth in claim 1 in a solid or liquid carrier.

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Fungicidal mixtures

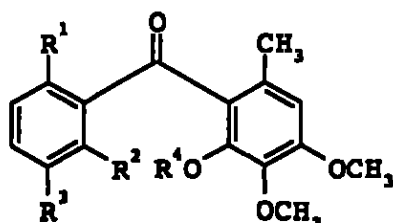
Abstract

5

Fungicidal mixtures, comprising

a) benzophenones of the formula I

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I

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in which

R¹ is chlorine, methyl, methoxy, acetoxy, pivaloyloxy or hydroxyl;

R² is chlorine or methyl;

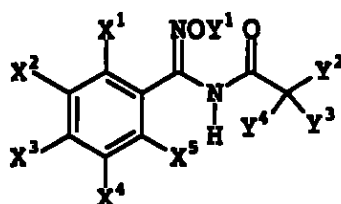
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R³ is hydrogen, halogen or methyl; and

R⁴ is C₁-C₆-alkyl or benzyl, where the phenyl moiety of the benzyl radical may carry a halogen or methyl substituent, and

25 b) oxime ether derivatives of the formula II

30



II

where the substituents X¹ to X⁵ and Y¹ to Y⁴ are as defined in the description;

35 in a synergistically effective amount, methods for controlling harmful fungi using mixtures of the compounds I and II and compositions comprising them are described.

40

45



2020
Bogotá, D.C.,

Doctor:
EMILIO FERRERO
Apoderado
BASF AKTIENGESELLSCHAFT

Oficio N° 87929

ASUNTO:	Radicación N°	03-56702
	Solicitud Internacional	PCT/EP2002/00414
	Fecha inicio fase nacional	18/08/2003
	Trámite	011
	Evento	379
	Actuación	430
	Folios	001

Como resultado del examen de forma, realizado con fundamento en el artículo 38 de la Decisión 486 de la Comisión de la Comunidad Andina, artículo 27 del Tratado de Cooperación en Materia de Patentes (PCT), regla 51 bis del Reglamento y Circular Única de la Superintendencia de Industria y Comercio, se le comunica que:

- ☐ El solicitante debe presentar un nuevo título que permita identificar la materia de la cual trata la solicitud, ya que el título relacionado no se encuentra con la precisión necesaria para identificar claramente el objeto de la solicitud de patente. (Regla 4.3 PCT, Art 26-27 D-486, Circular única 5.2.9).
- ☐ El nombre del solicitante de la solicitud internacional no corresponde al nombre del solicitante de la solicitud nacional.
- ☐ El inventor número 6 relacionado en la solicitud nacional no corresponde al relacionado en la solicitud internacional.

En cumplimiento de lo dispuesto por el artículo 38 de la Decisión 486, se le requiere para que dentro del término de dos meses siguientes a la fecha de notificación del presente oficio, complete los requisitos anteriormente enunciados. En caso de no dar cumplimiento al presente requerimiento, la solicitud se considerará abandonada y perderá su prelación.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única N° 10 de 2001.


ALIX CARMENZA CESPEDES DE VERGEL
Jefe de la División de Nuevas Creaciones.

El anterior requerimiento fue notificado por fijación en lista de fecha, 7 de SEPT 2003.