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(54) **PLANT DISEASE CONTROL COMPOSITION AND METHOD FOR CONTROLLING PLANT DISEASES BY APPLYING THE COMPOSITION**

PFLANZENKRANKHEITBEKÄMPFUNGSZUSAMMENSETZUNG UND VERFAHREN ZUR BEKÄMPFUNG VON PFLANZENKRANKHEITEN DURCH ANWENDUNG DER ZUSAMMENSETZUNG

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Description

TECHNICAL FIELD

[0001] The present invention relates to a plant disease control composition which comprises (Group a) at least one quinoline compound represented by the formula (I) or a salt thereof and (Group b) at least one fungicidal compound selected from the group consisting of Groups 1 to 4, 9, 10, 12, 13, 15 and 16 as effective ingredients and a method for controlling plant diseases by applying the composition.

BACKGROUND ART

[0002] A number of chemical agents have heretofore been used for controlling plant diseases. However, the problem that plant pathogens have acquired resistance to the chemical agents becomes remarkable due to frequent use or excessive application, etc., of the chemical agents having similar structures and same functions for controlling the same kinds of diseases.

[0003] On the other hand, consumers' needs for agricultural chemical-reduced crops and social needs to reduce environmental loads due to agricultural chemicals have now increased.

[0004] Also, in a farmer's field where the chemicals have been actually used, when two or more kinds of chemicals are used in admixture for the treatment by the tank mix method, there are many risks to lower the effect of the other chemical to be mixed with each other or possibilities to cause chemical damages against plant materials depending on a combination of chemicals where they are not well-suited to each other.

[0005] Under such a situation, it has been desired to develop a plant disease control composition having high effects against fungi or bacteria which are resistant to existing chemicals, and having high effects with a low amount of an effective ingredient. Moreover, for the purpose of preventing plant pathogens from obtaining resistance, it has also been desired to develop a plant disease control composition comprising components (compounds) having different basic structures and different functions with well-suited to each other, and a method for controlling plant diseases.

[0006] It has been known that a quinoline compound represented by the formula (I) shows, as a fungicide, controlling effects to rice blast (Pyricularia oryzae) and gray mold (Botrytis cinerea) of tomato, cucumber and kidney bean, etc., by an application method such as seed disinfection, foliar spray treatment, etc. (Patent Literatures 1 to 4).

[0007] Patent Literature 5 describes a soil treating agent or a seed treatment agent which comprises one or more 3-(dihydroisoquinolin-1-yl)quinoline compounds or salts thereof as active agents.

[0008] However, it has never been known yet about a controlling effect of the quinoline compound represented by the formula (I) and the other fungicide(s) in admixture.

[Patent Literature 1] WO 2005/070917A
[Patent Literature 2] JP 2007-1944A
[Patent Literature 3] WO 2007/011022A
[Patent Literature 4] JP 2007-217353A
[Patent Literature 5] EP 2 103 214 A1

DISCLOSURE OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0009] The present inventors have investigated a combination of the quinoline compound represented by the formula (I) and the other fungicidal component(s), and as a result, they have found that by combining a particular quinoline compound(s) represented by the formula (I) and a specific fungicidal compound(s), excellent controlling effects (synergistic effects) against various plant pathogens can be obtained, which could never be expected from the single component alone, stable prophylaxis effect can be obtained against the existing fungi and bacteria resistant to chemicals, and no chemical damage to plants occurred to accomplish the present invention.

[0010] An object of the present invention is to provide a novel plant disease control composition having a broad spectrum against various kinds of plant pathogens, having high plant disease controlling effects against existing fungi and bacteria resistant to chemicals, showing high activity even when amounts of effective ingredients to be applied to environment where fungi or bacteria are living are low, and showing no chemical damage against plants, and a method for controlling plant disease by appling the composition.

MEANS TO SOLVE THE PROBLEMS

[0011] The present invention comprises a plant disease control composition containing

(Group a)

(a) at least one kind of a quinoline compound selected from the group consisting of: (Group a)

(a-14) 3-(5-fluoro-3,3,4,4-tetramethyl-3,4-dihydroisoquinolin-1-yl)quinoline,
(a-18) 3-(4,4-difluoro-3,3-dimethyl-3,4-dihydroisoquinolin-1-yl)quinoline, and
(a-20) 3-(4,4,5-trifluoro-3,3-dimethyl-3,4-dihydroisoquinolin-1-yl)quinoline, or a salt thereof, and

(Group b)

(b) one or more fungicide(s) selected from the group consisting of the following mentioned Groups: (1) to (4), (9), (10), (12), (13), (15) and (16):

Group (1)
a Strobilurin series compound selected from

(b-1-1) Azoxystrobin
(b-1-2) Kresoxim-methyl
(b-1-3) Pyraclostrobin
(b-1-4) Picoxystrobin
(b-1-5) Fluoxastrobin
(b-1-6) Dimoxystrobin
(b-1-7) Orysastrobin
(b-1-8) Metominostrobin and
(b-1-9) Trifloxystrobin,

Group (2)
a triazole series compound selected from

(b-2-1) Simeconazole
(b-2-2) Tebuconazole
(b-2-3) Fenbuconazole
(b-2-4) Hexaconazole
(b-2-5) Imibenconazole
(b-2-6) Triadimefon
(b-2-7) Tetraconazole
(b-2-8) Prothioconazole
(b-2-10) Epoxiconazole
(b-2-11) Ipconazole
(b-2-12) Metconazole
(b-2-13) Propiconazole
(b-2-14) Cyproconazole
(b-2-15) Difenoconazole
(b-2-17) Fluquinconazole
(b-2-18) Flusilazole
(b-2-19) Penconazole
(b-2-21) Triadimenol
(b-2-22) Flutriafol and
(b-2-23) Myclobutanil,

Group (3)
an imidazole series compound selected from

(b-3-1) Oxpoconazole fumarate

(b-3-2) Triflumizole
(b-3-3) Imazalil and
(b-3-5) Prochloraz,

Group (4)
a carboxamide series compound selected from

(b-4-1) Penthiopyrad
(b-4-2) Flutolanil
(b-4-3) Furametpyr
(b-4-4) Boscalid
(b-4-5) Fenhexamid
(b-4-6) Cyflufenamid
(b-4-8) Mandipropamid
(b-4-9) Bixafen
(b-4-10) Carboxin
(b-4-14) Thifluzamide
(b-4-16) Ethaboxam
(b-4-17) Zoxamide
(b-4-18) Tiadinil
(b-4-19) Isotianil
(b-4-22) Fluopicolide
(b-4-23) Fluopyram
(b-4-26) N-[2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazol-4-carboxamide
(b-4-27) N-{2-[1,1'-bi(cyclopropyl)-2-yl]phenyl}-3-(difluoromethyl)-1-methyl-1H-pyrazol-4-carboxamide and
(b-4-28) 3-(Difluoromethyl)-N-(9-isopropyl-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl)-1-methyl-1H-pyrazol-4-carboxamide,

Group (9)
a carbamate series compound selected from

(b-9-2) Propamocarb hydrochloride
(b-9-3) Diethofencarb and
(b-9-4) Pyribencarb,

Group (10)
a dithiocarbamate series compound selected from

(b-10-1) Manzeb (Mancozeb)
(b-10-2) Maneb
(b-10-3) Propineb
(b-10-5) Metiram and
(b-10-7) Thiuram,

Group (12)
a guanidine series compound selected from

(b-12-1) Iminoctadine trialbesilate,

Group (13)
a pyrimidine series compound selected from

(b-13-1) Mepanipyrim
(b-13-2) Fenarimol
(b-13-3) Ferimzone
(b-13-4) Cyprodinil and
(b-13-5) Pyrimethanil,

Group (15) a benzimidazole series compound selected from

(b-15-2) Thiophanatemethyl
(b-15-3) Benomyl
(b-15-4) Carbendazim and
(b-15-5) Thiabendazole,

Group (16)
a pyrrole series compound selected from

(b-16-1) Fludioxonil

as effective ingredients.

[0012] Also provided is a controlling method for controlling plant diseases by applying the plant disease control composition according to the invention.

[0013] Further provided is a method for controlling plant diseases, which comprises simultaneously applying a plant disease control composition containing the quinoline compound as defined herein as an active ingredient and a plant disease control composition containing the fungicidal compound of Group b as defined herein as an active ingredient, or after applying either one of the plant disease control composition containing the compound of Group a as defined herein as an active ingredient or the plant disease control composition containing the fungicidal compound of Group b as defined herein as an active ingredient, and then 1 minute to 2 weeks after the first application applying the other above-mentioned composition.

EFFECTS OF THE INVENTION

[0014] The plant disease control composition of the present invention shows a broad spectrum against various plant pathogens (for example, rice blast (*Pyricularia oryzae*), gray mold *(Botrytis cinerea)* of tomato, cucumber and kidney bean, etc.) including fungi and bacteria resistant to chemicals, and shows excellent controlling effects (synergistic controlling effects) which could never be expected from a single component alone. Also, it shows high plant disease controlling effects against existing fungi and bacteria resistant to chemicals, and no chemical damage against plants can be admitted.

BEST MODE TO CARRY OUT THE INVENTION

[0015] Compound (I) of the present invention is at least one kind of quinoline compound selected from the group consisting of:

(a-14) 3-(5-fluoro-3,3,4,4-tetramethyl-3,4-dihydroisoquinolin-1-yl)quinoline,
(a-18) 3-(4,4-difluoro-3,3-dimethyl-3,4-dihydroisoquinolin-1-yl)quinoline, and
(a-20) 3-(4,4,5-trifluoro-3,3-dimethyl-3,4-dihydroisoquinolin-1-yl)quinoline,

[0016] Compound (I) in the present invention may be made, for example, a mineral acid salt such as a hydrochloride, sulfate, nitrate, etc.: a phosphate; a sulfonate such as a methanesulfonate, ethanesulfonate, benzenesulfonate, p-toluenesulfonate, etc.; or an organic carboxylate such as an acetate, benzoate, oxalate, fumarate, salicylate, etc. (preferably a hydrochloride, sulfate, nitrate, methanesulfonate, oxalate, fumarate or salicylate).

[0017] Compound (I) and a salt thereof of the present invention may be made a solvate, and these solvates are also contained in the present invention. Such a solvate is preferably a hydrate.

[0018] In Compound (I) of the present invention, there is compound having an asymmetric carbon, and in such a case, the present invention includes a kind of an optical isomer and a mixture of several kinds of optical isomers with an optional ratio.

[0019] The compounds (I: compound of Group a) in the present invention are known compounds, and can be prepared by the methods, for example, described in WO 2005/070917 pamphlet or in accordance with these methods.

[0020] The compound in Group b of the present invention is selected from

(B-1) preferably selected from

Group (1)
a Strobilurin series compound selected from

(b-1-1) Azoxystrobin
(b-1-2) Kresoxim-methyl
(b-1-3) Pyraclostrobin
(b-1-4) Picoxystrobin
(b-1-5) Fluoxastrobin
(b-1-6) Dimoxystrobin
(b-1-7) Orysastrobin
(b-1-8) Metominostrobin and
(b-1-9) Trifloxystrobin,

Group (2)
a triazole series compound selected from

(b-2-1) Simeconazole
(b-2-2) Tebuconazole
(b-2-3) Fenbuconazole
(b-2-4) Hexaconazole
(b-2-5) Imibenconazole
(b-2-6) Triadimefon
(b-2-7) Tetraconazole
(b-2-8) Prothioconazole
(b-2-10) Epoxiconazole
(b-2-11) Ipconazole
(b-2-12) Metconazole
(b-2-13) Propiconazole
(b-2-14) Cyproconazole
(b-2-15) Difenoconazole
(b-2-17) Fluquinconazole
(b-2-18) Flusilazole
(b-2-19) Penconazole
(b-2-21) Triadimenol
(b-2-22) Flutriafol and
(b-2-23) Myclobutanil,

Group (3)
an imidazole series compound selected from

(b-3-1) Oxpoconazole fumarate
(b-3-2) Triflumizole
(b-3-3) Imazalil and
(b-3-5) Prochloraz;

Group (4)
a carboxamide series compound selected from

(b-4-1) Penthiopyrad
(b-4-2) Flutolanil
(b-4-3) Furametpyr
(b-4-4) Boscalid
(b-4-5) Fenhexamid
(b-4-6) Cyflufenamid
(b-4-8) Mandipropamid
(b-4-9) Bixafen
(b-4-10) Carboxin
(b-4-14) Thifluzamide
(b-4-16) Ethaboxam
(b-4-17) Zoxamide
(b-4-18) Tiadinil

(b-4-19) Isotianil
(b-4-22) Fluopicolide
(b-4-23) Fluopyram
(b-4-26) N-[2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazol-4-carboxamide
(b-4-27) N-{2-[1,1'-bi(cyclopropyl)-2-yl]phenyl-3-(difluoromethyl)-1-methyl-1H-pyrazol-4-carboxamide and
(b-4-28) 3-(difluoromethyl)-N-(9-isopropyl-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl)-1-methyl-1H-pyrazol-4-carboxamide,

Group (9)
a carbamate series compound selected from

(b-9-2) Propamocarb hydrochloride
(b-9-3) Diethofencarb and
(b-9-4) Pyribencarb,

Group (10)
a dithiocarbamate series compound selected from

(b-10-1) Manzeb (Mancozeb)
(b-10-2) Maneb
(b-10-3) Propineb
(b-10-5) Metiram and
(b-10-7) Thiuram;

Group (12)
a guanidine series compound selected from

(b-12-1) Iminoctadine trialbesilate,

Group (13)
a pyrimidine series compound selected from

(b-13-1) Mepanipyrim
(b-13-2) Fenarimol
(b-13-3) Ferimzone
(b-13-4) Cyprodinil and
(b-13-5) Pyrimethanil,

Group (15)
a benzimidazole series compound selected from

(b-15-2) Thiophanate-methyl
(b-15-3) Benomyl
(b-15-4) Carbendazim and
(b-15-5) Thiabendazole,

Group (16)
a pyrrole series compound selected from

(b-16-1) Fludioxonil;

(B-2) further preferably selected from

Group (1)
a Strobilurin series compound selected from

(b-1-1) Azoxystrobin
(b-1-2) Kresoxim-methyl

(b-1-3) Pyraclostrobin
(b-1-4) Picoxystrobin
(b-1-5) Fluoxastrobin
(b-1-6) Dimoxystrobin
(b-1-7) Orysastrobin
(b-1-8) Metominostrobin and
(b-1-9) Trifloxystrobin,

Group (2)
a triazole series compound selected from

(b-2-1) Simeconazole
(b-2-2) Tebuconazole
(b-2-3) Fenbuconazole
(b-2-4) Hexaconazole
(b-2-5) Imibenconazole
(b-2-6) Triadimefon
(b-2-7) Tetraconazole
(b-2-8) Prothioconazole
(b-2-10) Epoxiconazole
(b-2-11) Ipconazole
(b-2-12) Metconazole
(b-2-13) Propiconazole
(b-2-14) Cyproconazole
(b-2-15) Difenoconazole
(b-2-17) Fluquinconazole and
(b-2-18) Flusilazole,

Group (3)
an imidazole series compound selected from

(b-3-1) Oxpoconazole fumarate
(b-3-2) Triflumizole
(b-3-3) Imazalil and
(b-3-5) Prochloraz,

Group (4)
a carboxamide series compound selected from

(b-4-1) Penthiopyrad
(b-4-2) Flutolanil
(b-4-3) Furametpyr
(b-4-4) Boscalid
(b-4-5) Fenhexamid
(b-4-6) Cyflufenamid
(b-4-8) Mandipropamid
(b-4-9) Bixafen
(b-4-10) Carboxin
(b-4-14) Thifluzamide
(b-4-16) Ethaboxam
(b-4-17) Zoxamide
(b-4-18) Tiadinil
(b-4-19) Isotianil
(b-4-22) Fluopicolide
(b-4-23) Fluopyram
(b-4-26) N-[2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazol-4-carboxamide
(b-4-27) N-{2-[1,1'-bi(cyclopropyl)-2-yl]phenyl}-3-(difluoromethyl)-1-methyl-1H-pyrazol-4-carboxamide and
(b-4-28) 3-(Difluoromethyl)-N-(9-isopropyl-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl)-1-methyl-1H-

pyrazol-4-carboxamide,

Group (9)
a carbamate series compound selected from

(b-9-2) Propamocarb hydrochloride
(b-9-3) Diethofencarb and
(b-9-4) Pyribencarb,

Group (10)
a dithiocarbamate series compound selected from

(b-10-1) Manzeb (Mancozeb)
(b-10-2) Maneb
(b-10-3) Propineb
(b-10-5) Metiram and
(b-10-6) Ziram and
(b-10-7) Thiuram,

Group (12)
a guanidine series compound selected from

(b-12-1) Iminoctadine trialbesilate,

Group (13)
a pyrimidine series compound selected from

(b-13-1) Mepanipyrim
(b-13-2) Fenarimol
(b-13-3) Ferimzone
(b-13-4) Cyprodinil and
(b-13-5) Pyrimethanil,

Group (15)
a benzimidazole series compound selected from

(b-15-2) Thiophanate-methyl
(b-15-3) Benomyl
(b-15-4) Carbendazim and
(b-15-5) Thiabendazole,

Group (16)
a pyrrole series compound selected from

(b-16-1) Fludioxonil;

(B-3) further more preferably selected from

Group (1)
a Strobilurin series compound selected from

(b-1-1) Azoxystrobin and
(b-1-2) Kresoxim-methyl,

Group (2)
a triazole series compound selected from

(b-2-1) Simeconazole

(b-2-2) Tebuconazole
(b-2-3) Fenbuconazole
(b-2-4) Hexaconazole
(b-2-5) Imibenconazole and
(b-2-6) Triadimefon,

Group (3)
an imidazole series compound selected from

(b-3-1) Oxpoconazole fumarate and
(b-3-2) Triflumizole,

Group (4)
a carboxamide series compound selected from

(b-4-1) Penthiopyrad
(b-4-2) Flutolanil
(b-4-3) Furametpyr
(b-4-4) Boscalid
(b-4-5) Fenhexamid and
(b-4-6) Cyflufenamid,

Group (9)
a carbamate series compound selected from

(b-9-1) Propamocarb hydrochloride and
(b-9-2) Diethofencarb,

Group (10)
a dithiocarbamate series compound selected from

(b-10-1) Manzeb (Mancozeb) and
(b-10-2) Maneb,

Group (12)
a guanidine series compound which is

(b-12-1) Iminoctadine trialbesilate,

Group (13)
a pyrimidine series compound selected from

(b-13-1) Mepanipyrim
(b-13-2) Fenarimol and
(b-13-3) Ferimzone,

Group (15)
a benzimidazole series compound which is

(b-15-2) Thiophanate-methyl

Group (16)
a pyrrole series compound which is

(b-16-1) Fludioxonil.

[0021] The compounds of Group b in the present invention are known compounds, and they can be prepared by, for example, the methods described in The Pesticide Manual (14th Edition) [British Crop Protection Council Pubn., 2006],

WO 1997/15552A, WO 2003/070705A, AGROWNo. 243 (1995), WO 1999/024413A, WO 2004/016088A, WO 2003/010149A, WO 2003/74491A, WO 2004/35589A, WO 2004/58723A, WO 1999/21851A, WO 2001/10825A, WO 1998/46607A, JP 2000-119275A, WO 2002/38565A, WO 2006/87325A, WO 2005/87773A, WO 2002/02527A, WO 2003/008372A, WO 2005/042474A, WO 2007/111024A, JP 2006-282508A, JP 2000-281678A, WO 2001/92231A, JP 2000-319270A and JP 2000-226374A or in accordance with these methods.

[0022] The plant disease control compositions of the present invention give synergistic controlling effects as compared to the case where each effective ingredient is used alone.

[0023] The plant disease control composition of the present invention may be used as such, but it is generally used by mixing with a carrier, and depending on necessity, by adding an auxiliary for preparation such as a surfactant, wetting agent, fixing agent, thickener, antiseptics, colorant, stabilizer, etc., to prepare a wettable powder, flowable, water dispersible granule, dust formulation, emulsifiable concentrate, etc., according to the conventionally known method and used suitably. A content of the quinoline compound (I: compound of Group a) as an effective ingredient in these preparations is generally in the range of 0.005 to 99%, preferably in the range of 0.01 to 90%, more preferably in the range of 0.1 to 85% in a weight ratio. Also, a content of the fungicidal compound of Group b as an effective ingredient in these preparations is generally in the range of 0.005 to 99%, preferably in the range of 0.1 to 90% in a weight ratio, and a sum of the quinoline compound (I: compound of Group a) and the fungicidal compound of Group b is generally in the range of 0.005 to 99%, preferably in the range of 0.01 to 90%, more preferably in the range of 0.1 to 85% in a weight ratio. A mixing ratio of the quinoline compound (I: compound of Group a) and the fungicidal compound of Group b is generally 0.01 to 1000 of the fungicidal compound of Group b based on the quinoline compound as 1, preferably 0.1 to 100 of the fungicidal compound of Group b based on the quinoline compound as 1 in a weight ratio.

[0024] In the plant disease control composition of the present invention, a total content of the effective ingredients including the quinoline compound (I: compound of Group a) and the fungicidal compound of Group b may vary depending on the form of the preparation, and generally 0.01 to 30% by weight in the dust formulation, 0.1 to 80% by weight in the wettable powder, 0.5 to 20% by weight in the granule, 2 to 50% by weight in the emulsifiable concentrate, 1 to 50% by weight in the flowable preparation, and 1 to 80% by weight in the dry flowable preparation. It is preferably 0.05 to 10% by weight in the dust formulation, 5 to 60% by weight in the wettable powder, 5 to 20% by weight in the emulsifiable concentrate, 5 to 50% by weight in the flowable preparation, and 5 to 50% by weight in the dry flowable preparation. A content of the auxiliary is 0 to 80% by weight, and a content of the carrier is an amount in which total contents of the compounds of the effective ingredients and the auxiliary are deducted from 100% by weight.

[0025] The carrier to be used in the above-mentioned composition means a synthetic or natural inorganic or organic substance to be formulated for the purposes of helping the effective ingredients to be reached to the portion to be treated, and making storage, transport and handling of the compounds of effective ingredients easy. Either of the solid or liquid carriers may be used so long as it is generally used for agricultural and horticultural chemicals. The solid carrier may be mentioned, for example, inorganic substance substances such as bentonite, montmorillonite, kaolinite, diatomaceous earth, white clay, talc, clay, vermiculite, gypsum, calcium carbonate, amorphous silica, ammonium sulfate, etc.; vegetable organic substances such as soybean powder, wood powder, sawdust, wheat powder, lactose, sucrose, glucose, etc.; or urea, etc. The liquid carrier may be mentioned, for example, aromatic hydrocarbons and naphthenes such as toluene, xylene, cumene, etc.; paraffin series hydrocarbons such as n-paraffin, iso-paraffin, liquid paraffin, kelosine, mineral oil, polybutene, etc.; ketones such as acetone, methylethyl ketone, etc.; ethers such as dioxane, diethylene glycol dimethyl ether, etc.; alcohols such as ethanol, propanol, ethylene glycol, etc.; carbonates such as ethylene carbonate, propylene carbonate, butylene carbonate, etc.; aprotic solvents such as dimethylformamide, dimethylsulfoxide, etc.; or water, etc.

[0026] Further, to strengthen the effect of the compounds in the composition of the present invention, an auxiliary may be used each singly or in combination depending on the purposes and considering the preparation form of the preparation, treatment methods, etc. As the auxiliary, a surfactant which is generally used for the purpose of emulsifying, dispersing, spreading or/and wetting the agricultural preparation may be mentioned, for example, a nonionic surfactant such as a sorbitane fatty acid ester, polyoxyethylene sorbitane fatty acid ester, sucrose fatty acid ester, polyoxyethylene fatty acid ester, polyoxyethylene resin acid ester, polyoxyethylene fatty acid diester, polyoxyethylene castor oil, polyoxyethylene alkyl ether, polyoxyethylene alkyl phenyl ether, polyoxyethylene dialkyl phenyl ether, formalin condensate of polyoxyethylene alkyl phenyl ether, polyoxyethylene polyoxypropylene block polymer, alkyl polyoxyethylene polyoxypropylene block polymer ether, alkyl phenyl polyoxyethylene polyoxypropylene block polymer ether, polyoxyethylene alkyl amine, polyoxyethylene fatty acidamide, polyoxyethylene bisphenyl ether, polyoxyalkylene benzyl phenyl ether, polyoxyalkylene styrylphenyl ether, polyoxyalkylene adduct of a higher alcohol, and polyoxyethylene ether and ester type silicone and fluorine series surfactant, etc.; an anionic surfactant such as an alkyl sulfate, polyoxyethylene alkyl ether sulfate, polyoxyethylene alkyl phenyl ether sulfate, polyoxyethylene benzyl phenyl ether sulfate, polyoxyethylene styrylphenyl ether sulfate, polyoxyethylene polyoxypropylene block polymersulfate, paraffin sulfonate, alkanesulfonate, AOS, dialkyl sulfosuccinate, alkyl benzene sulfonate, naphthalene sulfonate, dialkyl naphthalene sulfonate, formalin condensate of naphthalene sulfonate, alkyl diphenyl ether disulfonate, lignin sulfonate, polyoxyethylene alkyl phenyl ether sulfonate, polyoxyethylene alkyl ether sulfosuccinic acid half ester, fatty acid salt, N-methyl-fatty acid sarcosinate, resin acid salt,

polyoxyethylene alkyl ether phosphate, polyoxyethylene phenyl ether phosphate, polyoxyethylene dialkylphenyl ether phosphate, polyoxyethylene benzylated phenyl ether phosphate, polyoxyethylene benzylated phenyl phenyl ether phosphate, polyoxyethylene styrylated phenyl ether phosphate, polyoxyethylene styrylated phenyl phenyl ether phosphate, polyoxyethylene polyoxypropylene block polymerphosphate, phosphatidylcholine, phosphatidylethanol imine, alkyl phosphate, sodium tripolyphosphate, etc.; a cationic surfactant such as a polyanion type polymer surfactant derived from acrylic acid, acrylonitrile and acrylamido methylpropane sulfonic acid, alkyl trimethyl ammonium chloride, methyl polyoxyethylene alkyl ammonium chloride, alkyl N-methyl pyridinium bromide, monomethylated ammonium chloride, dialkyl methylated ammonium chloride, alkyl penta methylpropylene amine dichloride, alkyl dimethyl benzalkonium chloride, benzethonium chloride, etc.; or an amphoteric surfactant such as a dialkyl diaminoethyl betaine, alkyl dimethyl benzyl betaine, etc. A binder to be used as the auxiliary may be mentioned, for example, sodium arginate, polyvinyl alcohol, Gum Arabic, CMC sodium or bentonite, etc., a disintegrator may be mentioned, for example, CMC sodium or croscarmellose sodium sodium, and a stabilizer may be mentioned, for example, a hindered phenol series antioxidant, or a benzotriazole series or hindered amine series UV absorber, etc. A pH adjuster may be mentioned, for example, phosphoric acid, acetic acid or sodium hydroxide, and an antifungal and antiseptic may be mentioned, for example, a fungicide for industrial purpose, an antifungal and antiseptic such as 1,2-benzisothiazolin-3-one, etc. A thickening agent may be mentioned, for example, xanthan gum, guar gum, CMC sodium, Gum Arabic, polyvinyl alcohol or montmorillonite, etc. A defoaming agent may be mentioned, for example, a silicone series compound, and an antifreezing agent may be mentioned, for example, propylene glycol or ethylene glycol, etc.

[0027] An application method of the composition of the present invention may be mentioned, for example, a foliar spray treatment to individual plants, nursery-box treatment, spray treatment onto the soil surface, soil incorporation after spray treatment onto the soil surface, injection treatment into the soil, soil incorporation after injection treatment into the soil, soil drench, soil incorporation after soil drench, spray treatment to plant seeds, smear treatment to plant seeds, dip treatment to plant seeds or powder dressing treatment to plant seeds, etc., and any application methods generally utilized for a person skilled in the art can give sufficient effects.

[0028] Also, a method for controlling plant disease in the present invention includes methods in which a plant disease control composition containing Compound (I) of Group a and the fungicidal compound of Group b as effective ingredients is applied, a plant disease control composition containing Compound (I) of Group a as an effective ingredient and a plant disease control composition containing a fungicidal compound of Group b as an effective ingredient are simultaneously applied, and, either one of the plant disease control composition containing Compound (I) of Group a as an effective ingredient or a plant disease control composition containing a fungicidal compound of Group b as an effective ingredient is firstly applied, and then, the other above-mentioned composition is applied. An hour(s) (term) after applying either one of the plant disease control composition containing Compound (I) of Group a as an effective ingredient or the plant disease control composition containing a fungicidal compound of Group b as an effective ingredient is firstly applied till the other above-mentioned composition is applied is, for example, 1 minute to 2 weeks after applying either one of which is applied, preferably 5 minutes to 1 week after applying either one of which is applied, more preferably 10 minutes to 3 days after applying either one of which is applied.

[0029] Further, the plant disease control composition of the present invention can be prepared as a composition containing the quinoline compound (I) and the fungicidal compound of Group b with high concentrations. The high concentration composition can be used as a spreding liquid by diluting with water. The plant disease control composition of the present invention can be also prepared by mixing a composition containing the quinoline compound (I) with a high concentration, and a composition containing the fungicidal compound of Group b with a high concentration at the time of use to prepare a mixture. This high concentration composition can be used as a spreding liquid by diluting with water (tank mix method).

[0030] In the plant disease control composition containing the quinoline compound (I) of Group a and the fungicidal compound of Group b as effective ingredients, its applied amount and a concentration to be applied may vary depending on the crops to be applied, diseases to be controlled, degree of occurrence of diseases, preparation form of the compound, application method and various environmental conditions, etc., and when it is sprayed, it is generally 50 to 10,000 g per hectare, preferably 100 to 5,000 g per hectare as an amount of effective ingredients. When the wettable powder, flowable agent or emulsifiable concentrate is used by diluting with water and spreading, its diluting ratio is generally 5 to 50,000-fold, preferably 10 to 20,000-fold, more preferably 15 to 10,000-fold. In case of the seed disinfection, an amount of the fungicide mixture to be used is generally 0.001 to 50 g, preferably 0.01 to 10 g per kg of the seeds. When the composition of the present invention is applied to individual plants by a foliar spray treatment, spray treatment to the soil surface, injection treatment into the soil, or soil drench, the treatment may be carried out after diluting the chemical to be used by a suitable carrier with a suitable concentration. When the composition of the present invention is contacted to plant seeds, the plant seeds may be dipped into the chemical as such. Also, after diluting the chemical to be used in a suitable carrier with a suitable concentration, the plant seeds may be carried out a dip, powder dressing, spray, or smear treatment. An amount of the preparation to be used for powder dressing, spray or smear treatment is generally 0.05 to 50% based on the weight of the dry plant seeds, preferably 0.1 to 30%. Suitable carriers may include, for example, liquid carriers

including water and organic solvents such as ethanol, etc.; inorganic substances such as bentonite, montmorillonite, kaolinite, diatomaceous earth, white clay, talc, clay, vermiculite, gypsum, calcium carbonate, amorphous silica, ammonium sulfate, etc., vegetable organic substances such as soybean powder, wood powder, sawdust, wheat powder, lactose, sucrose, glucose, etc.: or solid carriers such as urea, etc.

[0031] The individual plants in present specification are those which live with photosynthesis without any movement, more specifically, there may be mentioned, for example, rice, wheat, barley, corn, grape, apple, pear, peach, yellow peach, persimmon, citrus, soybean, kidney bean, strawberry, potato, cabbage, lettuce, tomato, cucumber, eggplant, water melon, sugar beet, spinach, field pea, pumpkin, sugarcane, tobacco, green pepper, sweet potato, taro, *konnyaku*, sugar beet, cotton, sunflower, tulip, chrysanthemum or turf, etc.

[0032] The plant seeds in the present specification are those which store nutrients for embryo plant to germination and to be agriculturally used for breeding, more specifically, there may be mentioned, for example, seeds of corn, soybean, cotton, rice, sugar beet, wheat, barley, sunflower, tomato, cucumber, eggplant, spinach, field pea, pumpkin, sugarcane, tobacco, green pepper and canola, etc.; seed tuber of taro, potato, sweet potato, *konnyaku*, etc.; bulb of edible Lily bulbs, tulip, etc., or seed bulb of scallion, etc.; or plants artificially generated by operating the gene, etc. Said plants may be mentioned, for example, transformed seeds such as soybean, corn, cotton, etc., to which herbicidal resistance is provided; rice, tobacco, etc., adapted to cold ground; corn, cotton, potato, etc., to which insecticidal substance-producing ability is provided, etc., which are not inherently present in natural world.

[0033] The composition of the present invention can be used by mixing with the other agricultural chemicals, soil conditioners or fertilizing substances such as insecticides, acaricides, nematocides, herbicides and plant growth controllers, etc., as a matter of course, and also possible to use as a mixed preparation with these materials. Insecticides may be mentioned, for example, phosphorus series insecticides such as phenitrothione, diazinon, pyridaphenthion, chlorpyrifos, malathion, phenthoate, dimethoate, methyl thiometon, prothiofos, DDVP, acephate, salithion, EPN, etc.; carbamate series insecticides such as NAC, MTMC, BPMC, pirimicarb, carbosulfan, methomyl, etc.; pyrethroid series insecticides such as ethofenprox, silafluofen, permethrin, fenvalerate, etc.; neonicotinoid series insecticides such as dinotefuran, clothianidin, nitenpyram, thiamethoxam, imidacloprid, thiacloprid, acetamiprid, etc.; and fipronil and ethiprole, etc.

[0034] The composition and the controlling method of the present invention are effective to, for example, the following mentioned plant diseases. In the following, specific diseases and its fungi or bacteria to be controlled by the present invention may be exemplified:

blast (*Pyricularia oryzae*), sheath blight (*Thanatephorus cucumeris*), brown spot (*Cochliobolus miyabeanus*), "Bakanae" disease (*Gibberella fujikuroi*), seedling blight (*Pythium spp.*, *Fusarium spp.*, *Trichoderma spp.*, *Rhizopus spp.*, *Rhizoctonia solanietc.*), rice ustilaginoidea virens (*Claviceps virens*) and smut (*Tilletia barelayana*) of rice; powdery mildew (*Erysiphe graminis f.sp.hordei; f.sp.tritici*), rust (*Puccinia striiformis; Puccinia graminis, Puccinia recondita, Puccinia hordei),* mottle leaf (*Pyrenophora graminea*), net blotch (*Pyrenophora teres*), fusarium blight (*Fusarium graminearum*, *Fusarium culmorum, Fusarium avenaceum, Microdochium nivale*), snow mould (*Typhula incarnata, Typhula ishikariensis, Micronectriella nivalis*), loose kernel smut (*Ustilago nuda, Ustilago tritici, Ustilago nigra, Ustilago avenae*), stinking smut (*Tilletia caries, Tilletia pancicii*), eye spot (*Pseudocercosporella herpotrichoides*), foot rot (*Rhizoctonia cerealis*), scald (*Rhynchosporium secalis*), leaf blight (*Septoria tritici*), glume blotch (*Leptosphaeria nodorum*), seedling blight (*Fusarium spp.*, *Pythium spp.*, *Rhizoctonia spp.*, *Septoria nodorum*, *Pyrenophora spp.*), damping off (*Gaeumannomyces graminis*), anthracnose (*Colletotrichum gramaminicola*), ergot (*Claviceps purpurea*) and spot blotch (*Cochliobolus sativus*) of family of wheat; fusarium blight (*Fusarium graminearumetc.*), seedling blight (*Fusarium avenaceum, Penicillium spp, Pythium spp., Rhizoctonia spp*), rust (*Puccinia sorghi),* brown spot (*Cochliobolus heterostrophus*), smut (*Ustilago maydis*), anthracnose (*Colletotrichum gramaminicola*) and Northern leaf spot (*Cochliobolus carbonum*) of corn;

downy mildew (*Plasmopora viticola*), rust (*Phakopsora ampelopsidis*), powdery mildew (*Uncinula necator*), anthracnose (*Elsinoe ampelina*), ripe rot (*Glomerella cingulata*), black rot (*Guignardia bidwellii),* dead arm (*Phomopsis viticola*), fry speck (*Zygophiala jamaicensis*), gray mold *(Botrytis cinerea*), bud blight (*Diaporthe medusaea*), violet root rot (*Helicobasidium mompa*) and white root rot (*Rosellinia necatrix*) of grape vine; powdery mildew (*Podosphaera leucotricha*), scab (*Venturia inaequalis*), alternaria blotch (*Alternaria alternata* (*Apple pathotype*)), rust (*Gymnosporangium yamadae*), blossom blight (*Monillia mali*), valsa canker (*Valsa ceratosperma*), ring rot (*Botryosphaeria berengeriana*), anthracnose (*Colletotrichum acutatum*), fry speck (*Zygophiala jamaicensis*), sooty blotch (*Gloeodes pomigena*), fruit spot (*Mycosphaerella pomi*), violet root rot (*Helicobasidium mompa*), white root rot (*Rosellinia necatrix*), diaporthe canker (*Phomopsis mali, Diaporthe tanakae*) and blotch (*Diplocarpon mali*) of apple; phoma rot (*Alternaria alternata* (*Japanese pear pathotype*)), scab (*Venturia nashicola*), rust (*Gymnosporangium haraeanum*), Physalospora canker (*Physalospora piricola*) and canker (*Diaporthe medusaea, Diaporthe eres*) of pear; phytophthora rot (*Phytophthora cactorum*) of European pear; scab (*Cladosporium carpophilum*), phomopsis rot (*Phomopsis sp.*), phytophthora fruit rot (*Phytophthora sp.*) and anthracnose (*Gloeosporium laeticolor*) of peach; anthracnose

(Glomerella cingulata), young-fruit rot (*Monilinia kusanoi*) and brown rot (*Monilinia fructicola*) of cherry; anthracnose (*Gloeosporium kaki*), angular leaf spot (*Cercospora kaki; Mycosphaerella nawae*), powdery mildew (*Phyllactinia kakikora*) of persimmon; melanose (*Diaporthe citri),* common green mold (*Penicillium digitatum*), blue mold (*Penicillium italicum*) and scab (*Elsinoe fawcettii*) of citrus;

gray mold (*Botrytis cinerea*) of tomato, cucumber, pulse, strawberry, potato, cabbage, eggplant, lettuce, etc.; stem rot (*Sclerotinia sclerotiorum)* of tomato, cucumber, bean, strawberry, potato, rape, cabbage, eggplant, lettuce, etc.; seedling blight (*Rhizoctonia spp., Pythium spp., Fusarium spp., Phythophthora spp., Sclerotinia sclerotiorumetc.*) of various kinds of vegetables such as tomato, cucumber, bean, Japanese radish, water melon, eggplant, rape, green pepper, spinach, sugar beet, etc.; downy mildew (*Pseudoperonospora cubensis*), powdery mildew (*Sphaerotheca fuliginea*), anthracnose (*Colletotrichum lagenarium*), gummy stem blight (*Didymella bryoniae*), fusarium wilt (*Fusarium oxysporum*) and plytophthora rot (*Phytophthora parasitica, Phytophthora melonis, Phytophthora nicotianae, Phytophthora drechsleri, Phytophthora capsicietc.*) of oriental melon; early blight (*Alternaria solani*), leaf mold (*Cladosporium fulvam*), late blight (*Phytophthora infestans*), fusarium wilt (*Fusarium oxysporum*), root rot (*Pythium myriotylum, Pythium dissotocum*) and anthracnose (*Colletotrichum phomoides*) of tomato; powdery mildew (*Sphaerotheca fuligineaetc.*), leaf mold (*Mycovellosiella nattrassii*), late blight (*Phytophthora infestans*) and brown rot (*Phytophthora capsici*) of eggplant; alternaria leaf spot (*Alternaria brassicae*) of rapeseed; alternaria leaf spot (*Alternaria brassicaeetc.*), white spot (*Cercosporella brassicae*), blackleg (*Leptospheria maculans),* clubroot (*Plasmodiophora brassicae*) and downy mildew (*Peronospora brassicae*) of Brassica vegetables; foot rot (*Rhizoctonia solani),* yellows (*Fusarium oxysporum*) of cabbage; bottom rot (*Rhizoctonia solani*) and yellows (*Verticillium dahlie*) of Chinese cabbage; rust (*Puccinia allii*), altenaria leaf spot (*Alternaria porri*), southern blight (*Sclerotium rolfsii. Sclerotium rolfsii*) and white tip disease (*Phytophthora porri)* of weish onion; purple stain (*Cercospora kikuchii),* sphaceloma scab (*Elsinoe glycinnes*), black spot (*Diaporthe phaseololum*), rhizoctonia root rot (*Rhizoctonia solani*), stem rot (*Phytophthora megasperma*), downy mildew (*Peronospora manshurica*), rust (*Phakopsora pachyrhizi*) and anthracnose (*Colletotrichum truncatum*) of soybean; anthracnose (*Colletotrichum lindemuthianum*) of kidney bean; leaf spot (*Mycosphaerella personatum*) and brown leaf spot (*Cercospora arachidicola*) of peanuts; powdery mildew (*Erysiphe pisi*) and downy mildew (*Peronospora pisi*) of pea; downy mildew (*Peronospora viciae*) and phytophthora rot (*Phytophthora nicotianae*) of broad bean; early blight (*Alternaria solani*), black scurf (*Rhizoctonia solani*), late blight (*Phytophthora infestans*), silver scurf (*Spondylocladium atrovirens*), dry spot (*Fusarium oxysporum, Fusarium solani*) and powdery scab (*Spongospora subterranea*) of potato; cercospora leaf spot (*Cercospora beticola*), downy mildew (*Peronospora schachtii*), aphanomyces root rot (*Aphanomyces cochioides*) and leaf spot (*Phoma batae*) of sugar beet; leaf blight (*Alternaria dauci*) of carrots; powdery mildew (*Sphaerotheca humuli*), phytophthora rot (*Phytophthora nicotianae*), anthracnose (*Gromerella cingulata*) and soft-rotted fruits (*Pythium ultimum Trow var. ultimum*) of strawberry;

net blister blight (*Exobasidium reticulatum*), white scab (*Elsinoe leucospila*), anthracnose (*Colletotrichum theaesinensis*) and gray blight (*Pestalotiopsis longiseta*) of green tea; brown spot (*Alternaria alternata (Tobacco pathotype*)), powdery mildew (*Erysiphe cichoracearum*), anthracnose (*Colletotrichum tabacum*) and black shank (*Phytophthora parasitica*) of tobacco; damping off (*Fusarium oxysporum*) of cotton;

sclerotinia rot (*Sclerotinia sclerotiorum*) of sunflower; black spot (*Diplocarpon rosae*), powdery mildew (*Sphaerotheca pannosa*), phytophthora rot (*Phytophthora megasperma*) and downy mildew (*Peronospora sparsa*) of rose; leaf blight (*Septoria chrysanthemi-indici*), rust (*Puccinia horiana*) and phytophthora rot (*Phytophthora cactorum*) of chrysanthemum; or

brown patch (*Rhizoctonia solani*), dollar spot (*Sclerotinia homoeocarpa*), Curvularia leaf blight (*Curvularia geniculata*), rust (*Puccinia zoysiae*), Helminthosporium leaf blight (*Cochliobolus sp.*), scald (*Rhynchosporium secalis*), damping off (*Gaeumannomyces graminis*), anthracnose (*Colletotrichum graminicola*), typhula brown snow blight (*Typhula incarnata*), typhula black snow blight (*Typhula ishikariensis*), sclerotinia snow blight (*Sclerotinia borealis*), fairy rings (*Marasmius oreadesetc.*), pythium blight (*Pythium aphanidermatumetc.*) and blast (*Pyricularia oryzae*) of turfgrass.

EXAMPLES

[0035] In the following, the present invention is more specifically explained by referring to Preparation examples and Test examples. Incidentally, all the numerical value of the formulation amounts of the respective components described in the following Preparation examples mean part(s) by weight.

[0036] Compounds A (a-14), B (a-18) and C (a-20) in compound (I: Group a) to be used in the following Preparation examples and Test examples are compounds of compounds Nos. 1-866, 1-929 and 1-930 in WO 2005/070917, respectively, and described in Examples 114, 177 and 178. Their chemical structures are shown in Table 1.

[Table 1]

Compound	R^1	R^2	R^3	R^4	Xn	Ym
A (a-14)	Me	Me	Me	Me	5-F	H
B (a-18)	Me	Me	F	F	H	H
C (a-20)	Me	Me	F	F	5-F	H

Preparation example 1 Wettable powder (a1-1

[0037] Either one of the compounds (10 parts) among Compounds A, B and C as Component I (Group a), either one of the following mentioned compounds (added amount) as Component II (Group b), Neogen Powder (0.5 part), Carplex (0.5 part), GOHSENOL (0.2 part), Radiolite (0.8 part) and H fine powder (used as the remainder so that the total became 100 parts) were crushed and mixed to obtain Wettable powder (a1-1).

[0038] Compound (added amount) as Component II (Group b) was Maneb (88 parts), Oxpoconazole fumarate (5 parts), Boscalid (25 parts), Diethofencarb (6 parts), Fludioxonil (10 parts), Thiophanate-methyl (35 parts), Fenhexamid (25 parts), Iminoctadine trialbesilate (20 parts), Penthiopyrad (5 parts), Simeconazole (5 parts), Azoxystrobin (4 parts), Ferimzone (5 parts), Flutolanil (12 parts), Furametpyr (5 parts), Hexaconazole (1 parts), Fenbuconazole (2.2 parts), Tebuconazole (10 parts), Kresoxim-methyl (10 parts), Triadimefon (5 parts), Mepanipyrim (10 parts), Imibenconazole (7.5 parts), Cyflufenamid (0.8 parts), Fenarimol (2 parts), Triflumizole (3 parts), Propamocarb hydrochloride (80 parts), Ethaboxam (5 parts) or Mancozeb (3.7 parts).

Preparation example 2 Wettable powder (a2-1)

[0039] Either one of the compounds (5 parts) among Compounds A, B and C as Component I (Group a), either one of the compounds mentioned in Preparation example 1 as Component II (Group b), Neogen Powder (0.5 part), Carplex (0.5 part), GOHSENOL (0.2 part), Radiolite (0.8 part) and H fine powder (used as the remainder so that the total became 100 parts) were crushed and mixed to obtain Wettable powder (a2-1).

Preparation example 3 Dust formulation (b1-1)

[0040] Either one of the compounds (2 parts) among Compounds A, B and C as Component I (Group a), either one of the following mentioned compounds (added amount) as Component II (Group b) and clay (used as the remainder so that the total became 100 parts) were uniformly crushed and mixed to obtain Dust formulation (b1-1 1).

[0041] Compounds (added amount) as Component II (Group b) were Boscalid (25 parts), Thiophanatemethyl (35 parts), Iminoctadine trialbesilate (15 parts), Simeconazole (10 parts) or Flutolanil (5 parts).

Preparation example 4 Dust formulation (b2-1)

[0042] Either one of the compounds (10 parts) among Compounds A, B and C as Component I (Group a), either one of the compounds mentioned in Preparation example 3 as Component II (Group b), flocculant (Driless A: 0.3 part), clay (50 parts) and calcium carbonate (used as the remainder so that the total became 100 parts) were mixed, and pulverized by a pin mill to obtain Dust formulation (b2-1).

Preparation example 5 Flowable (c1)

[0043] Either one of the compounds (5 parts) among Compounds A, B and C as Component I (Group a), either one of the following mentioned compounds (added amount) as Component II, propylene glycol (7 parts), sodium lignosulfate (4 parts), sodium dioctylsulfosuccinate (2 parts) and water (used as the remainder so that the total became 100 parts) were wet pulverized by a sand grinder to obtain Flowable (c1).

[0044] Compounds (added amount) as Component II (Group b) were Azoxystrobin (10 parts), Ferimzone (10 parts), Flutolanil (3.5 parts), Hexaconazole (10 parts), Fenbuconazole (11 parts), Tebuconazole (10 parts) or Iminoctadine trialbesilate (5 parts).

Preparation example 6 Emulsifiable concentrate (d1-1)

[0045] Either one of the compounds (10 parts) among Compounds A, B and C as Component I (Group a), either one of the following mentioned compounds (added amount) as Component II (Group b), cyclo hexane (10 parts), Tween 20 (surfactant: 20 parts) and xylene (used as the remainder so that the total became 100 parts) were uniformly dissolved and mixed to obtain Emulsifiable concentrate (d1-1

[0046] Compounds (added amount) as Component II (Group b) were Boscalid (20 parts), Flutolanil (3.5 parts), Fenbuconazole (11 parts), Tebuconazole (10 parts), Triflumizole (15 parts), Ipconazole (10 parts), Tetraconazole (10 parts), Triadimefon (25 parts) or Difenoconazole (25 parts).

Preparation example 7 Granules (e1-1)

[0047] Either one of the compounds (5 parts) among Compounds A, B and C as Component I (Group a), either one of the following mentioned compounds (added amount) as Component II (Group b), wetting agent (Neopelex No. 6F Powder: 0.5 part), binder (AMICOL No. 1: 3 parts), talc (15 parts) and clay (used as the remainder so that the total became 100 parts) were mixed, hydrolyzed and then, molded by a pellet mill. The obtained molded product was dried and seived to obtain Granules (e1-1).

[0048] Compounds (added amount) as Component II (Group b) were Boscalid (25 parts), Fludioxonil (10 parts), Fenhexamid (25 parts), Iminoctadine trialbesilate (15 parts), Penthiopyrad (10 parts), Simeconazole (10 parts), Azoxystrobin (10 parts), Flutolanil (3.5 parts), Furametpyr (10 parts), Tebuconazole (10 parts), Mancozeb (7 parts), Diclocymet (3 parts), Metominostrobin (10 parts) or Carpropamid (15 parts).

Comparative preparation example 1 Wettable powder (a1-2)

[0049] Either one of the compounds (10 parts) among Compounds A, B and C as Component I (Group a), Neogen Powder (0.2 part), Carplex (0.2 part), GOHSENOL (0.1 part), Radiolite (1 part) and H fine powder (used as the remainder so that the total became 100 parts) were pulverized and mixed to obtain Wettable powder (a1-2).

Comparative preparation example 2 Wettable powder (a2-2)

[0050] Either one of the compounds (5 parts) among Compounds A, B and C as Component I (Group a), Neogen Powder (0.2 part), Carplex (0.2 part), GOHSENOL (0.1 part), Radiolite (1 part) and H fine powder (used as the remainder so that the total became 100 parts) were pulverized and mixed to obtain Wettable powder (a2-2).

Comparative preparation example 3 Dust formulation (b1-2)

[0051] Either one of the compounds (2 parts) among Compounds A, B and C as Component I (Group a) and clay (98 parts) were uniformuly pulverized and mixed to obtain Powder (b1-2).

Comparative preparation example 4 Dust formulation (b2-2)

[0052] Either one of the compounds (10 parts) among Compounds A, B and C as Component I (Group a), flocculant (Driless A: 0.3 part), clay (50 parts), calcium carbonate (used as the remainder so that the total became 100 parts) were mixed and pulverized by a pin mill to obtain Powder (b2-2).

Comparative preparation example 5 Flowable (c1-1)

[0053] Either one of the compounds (5 parts) among Compounds A, B and C as Component I (Group a), propylene glycol (7 parts), sodium lignosulfate (4 parts), sodium dioctylsulfosuccinate (2 parts) and water (82 parts) were wet pulverized by a sand grinder to obtain Flowable (c1-1).

Comparative preparation example 6 Emulsifiable concentrate (d1-2)

[0054] Either one of the compounds (10 parts) among Compounds A, B and C as Component I (Group a), cyclo hexane (10 parts), xylene (50 parts) and Tween 20 (surfactant: used as the remainder so that the total became 100 parts) were uniformly dissolved and mixed to obtain Emulsifiable concentrate (d1-2).

Comparative preparation example 7 Granules (e1-2)

[0055] Either one of the compounds (5 parts) among Compounds A, B and C as Component I (Group a), wetting agent (Neopelex No. 6F Powder: 0.5 part), binder (AMICOL No. 1: 3 parts), talc (15 parts) and clay (used as the remainder so that the total became 100 parts) were uniformly mixed, hydrolyzed, and then, molded by a pellet mill. The obtained molded product was dried and seived to obtain Granules (e1-2).

Test example 1 Tomato gray mold preventive test (Diethofencarb-resistant strain)

[0056] In a greenhouse, tomato (variety: Ohgata-Fukuju) planted in a plastic pot having a diameter of 5 cm was grown to the 2nd to 3rd-leaf stage. Wettable powder prepared according to Preparation example 1 and Preparation example 2 were diluted to a predetermined concentration with water, and sprayed with a spray gun with 10 ml per 2 pots. After drying the chemical liquid, a conidiospore suspension prepared from *Botrytis cinerea* (Diethofencarb-resistant strain) which had been previously cultured on a MY medium were inoculated by spraying. After inoculation, the pots were placed in a high-humidity chamber (20 to 22°C), and after 2 days, the pots were taken out and controlling effects were examined. In the examination, a ratio of lesion area occupied per whole leaflet of tomato was determined according to the indexes of the following mentioned degree of diseases. Also, from the average degree of diseases of each treated district, the control value was calculated from the following numerical formula. Incidentally, as a comparison, Wettable powder prepared according to Comparative preparation example 1 and Comparative preparation example 2 were similarly tested, and controlling effects were examined. The results of the spreading test and the theoretical value according to the Colby's formula are shown in Table 3.

Index of degree of disease

[0057]

Index	Degree of disease
0	No lesion
1	Lesion area is less than 1/3 of whole leaflet
2	Lesion area is 1/3 or more and less than 2/3 of whole leaflet
3	Lesion area is 2/3 or more of whole leaflet

[0058] Incidentally, average values of the each treated district and non-treated district were used as the degree of diseases.

[0059] The control value was calculated from the following formula.

$$\text{Control value} = (1 - \text{Ratio of diseased leaflets in the treated district} / \text{Ratio of diseased leaflets in the non-treated district}) \times 100$$

[0060] Here, Colby's formula is X = P+Q-PxQ/100, wherein X is a theoretical value of the control value, P is a control value where a certain chemical is spread alone, and Q is a control value where chemicals to be used in combination are spread in admixture.

[Table 3-1]

Effective ingredient in the preparation	Treatment concentration (ppm)	Control value	Theoretical value
A + Maneb	10 + 177.5	90	86
A + Oxpoconazole fumarate	10 + 10	100	83
A + Boscalid	10 + 50	100	86
A + Diethofencarb	10 + 12.5	90	83
A + Fludioxonil	10 + 20	100	94
A + Thiophanate-methyl	10 + 70	100	91
A + Fenhexamid	10 + 50	100	92
A + Iminoctadine trialbesilate	10 + 40	100	94
A + Penthiopyrad	10 + 10	100	89

(continued)

Effective ingredient in the preparation	Treatment concentration (ppm)	Control value	Theoretical value
A + Simeconazole	10 + 10	100	89
B + Maneb	10 + 177.5	100	86
B + Oxpoconazole fumarate	10 + 10	100	83
B + Boscalid	10 + 50	100	86
B + Diethofencarb	10 + 12.5	100	83
B + Fludioxonil	10 + 20	100	94
B + Thiophanate-methyl	10 + 70	100	91
B + Fenhexamid	10 + 50	100	92
B + Iminoctadine trialbesilate	10 + 40	100	94
B + Penthiopyrad	10 + 10	100	89
B + Simeconazole	10 + 10	100	89

[Table 3-2]

C + Maneb	10+177.5	95	83
C + Oxpoconazole fumarate	10 + 10	95	80
C + Boscalid	10 + 50	100	83
C + Diethofencarb	10 + 12.5	93	80
C + Fludioxonil	10 + 20	100	93
C + Thiophanate-methyl	10 + 70	100	89
C + Fenhexamid	10 + 50	100	90
C + Iminoctadine trialbesilate	10 + 40	100	93
C + Penthiopyrad	10 + 10	100	87
C + Simeconazole	10 + 10	98	87
Maneb	177.5	17	
Oxpoconazole fumarate	10	0	
Boscalid	50	17	
Diethofencarb	12.5	0	
Fludioxonil	20	67	
Thiophanate-methyl	70	43	
Fenhexamid	50	50	
Iminoctadine trialbesilate	40	67	
Penthiopyrad	10	33	
Simeconazole	10	33	
A	10	83	
B	10	83	
C	10	80	

[0061] From the results shown in the above-mentioned Table 3, it could be understood that synergistic effects could be obtained when Compound A, B or C and the compound of Group b are used in combination. Incidentally, even when Compound A, B or C and the compound of Group b are used in combination, no chemical damage symptom was admitted in the plant material, tomato (variety: Ohgata-Fukuju).

Test example 2 Rice blast preventive test

[0062] In a greenhouse, rice (variety: Sachikaze) planted in a plastic pot having a diameter of 5 cm was grown to the 3rd to 4th-leaf stage. Spray was carried out in the same manner as in Test example 1, and after 3 days from the spray, a conidiospore suspension prepared from *Pyricularia oryzae* which had been previously cultured on an oatmeal medium were inoculated by spraying. After inoculation, the pots were placed in a high-humidity chamber (20 to 23°C), and taken

out on the next day and transferred into a greenhouse. Controlling effects were examined after 7 days from the inoculation. In the examination, a ratio of lesion area occupied per one leaf of rice was determined according to the same index as in Test example 1, and the control value and the theoretical value according to Colby's formula were similarly calculated. The results are shown in Table 4.

[Table 4-1]

Effective ingredient in the preparation	Treatment concentration (ppm)	Control value	Theoretical value
A + Azoxystrobin	10 + 8	67	38
A + Ferimzone	10 + 10	60	38
A + Flutolanil	10 + 25	50	38
A + Furametpyr	10 + 10	60	36
B + Azoxystrobin	10 + 8	90	84
B + Ferimzone	10 + 10	97	84
B + Flutolanil	10 + 25	98	84
B + Furametpyr	10 + 10	97	84

[Table 4-2]

C + Azoxystrobin	10 + 8	95	79
C + Ferimzone	10 + 10	97	79
C + Flutolanil	10 + 25	95	79
C + Furametpyr	10 + 10	97	79
Azoxystrobin	8	6.7	
Ferimzone	10	6.7	
Flutolanil	25	6.7	
Furametpyr	10	3.3	
A	10	33	
B	10	83	
C	10	78	

[0063] From the results shown in the above-mentioned Table 4, it could be understood that synergistic effects could be obtained when Compound A, B or C and the compound of Group b are used in combination. Incidentally, even when Compound A, B or C and the compound of Group b are used in combination, no chemical damage symptom was admitted in the plant material, rice (variety: Sachikaze).

Test example 3 Rice blast curative test

[0064] In a greenhouse, rice (variety: Sachikaze) planted in a plastic pot having a diameter of 5 cm was grown to the 3rd to 4th-leaf stage. A conidiospore suspension prepared from *Pyricularia oryzae* which had been previously cultured on an oatmeal medium were inoculated by spraying. After inoculation, the pots were placed in a high-humidity chamber (20 to 23°C) and taken out on the next day, and spray was carried out in the same manner as in Test example 1. After drying the chemical liquid, the pots were transferred into a greenhouse, and controlling effects were examined after 7 days from the spray. In the examination, a ratio of lesion area occupied per one leaf of rice was determined according to the same index as in Test example 1, and the control value and the theoretical value according to Colby's formula were similarly calculated. The results are shown in Table 5.

[Table 5]

Effective ingredient in the preparation	Treatment concentration (ppm)	Control value	Theoretical value
A + Azoxystrobin	10 + 8	96	79
A + Ferimzone	10 + 10	89	77
A + Flutolanil	10 + 25	89	77

(continued)

Effective ingredient in the preparation	Treatment concentration (ppm)	Control value	Theoretical value
A + Furametpyr	10 + 10	89	77
B + Azoxystrobin	10 + 8	96	86
B + Ferimzone	10 + 10	94	85
B + Flutolanil	10 + 25	94	85
B + Furametpyr	10 + 10	100	87
C + Azoxystrobin	10 + 8	94	86
C + Ferimzone	10 + 10	96	85
C + Flutolanil	10 + 25	91	85
C + Furametpyr	10 + 10	94	87
Azoxystrobin	8	1.8	
Ferimzone	10	0	
Flutolanil	25	0	
Furametpyr	10	11	
A	10	79	
B	10	86	
C	10	86	

[0065] From the results shown in the above-mentioned Table 5, it could be understood that synergistic effects could be obtained when Compound A, B or C and the compound of Group b are used in combination. Incidentally, even when Compound A, B or C and the compound of Group b are used in combination, no chemical damage symptom was admitted in the plant material, rice (variety: Sachikaze).

Test example 4 Cucumber powdery mildew preventive test

[0066] In a greenhouse, cucumber (variety: Sagamihanpaku) planted in a plastic pot having a diameter of 5 cm was grown to the 3rd to 5th-leaf stage. Spray was carried out in the same manner as in Test example 1, and 3 days after the spray, a conidiospore suspension prepared from *Sphaerotheca fuliginea* were inoculated on the leaf surface. After inoculation, the pots were placed in a thermostatic greenhouse (20 to 25°C), and controlling effects were examined after 7 days from the inoculation. In the examination, a ratio of lesion area occupied per one leaf of cucumber was determined according to the same index as in Test example 1, and the control value and the theoretical value according to Colby's formula were similarly calculated. The results are shown in Table 6.

[Table 6-1]

Effective ingredient in the preparation	Treatment concentration (ppm)	Control value	Theoretical value
A + Hexaconazole	10 + 2	67	58
A + Fenbuconazole	10 + 4.4	75	63
A + Tebuconazole	10 + 20	75	67
A + Simeconazole	10 + 10	67	50
A + Kresoxim-methyl	10 + 20	67	58
A + Triadimefon	10 + 10	67	50
A + Mepanipyrim	10 + 20	60	50
A + Imibenconazole	10 + 15	73	67
A + Cyflufenamid	10 + 1.7	83	67
A + Fenarimol	10 + 4	93	83
A + Triflumizole	10 + 6	83	67
B + Hexaconazole	10 + 2	93	67
B + Fenbuconazole	10 + 4.4	83	71
B + Tebuconazole	10 + 20	100	73
B + Simeconazole	10 + 10	83	60

(continued)

Effective ingredient in the preparation	Treatment concentration (ppm)	Control value	Theoretical value
B + Kresoxim-methyl	10 + 20	92	67
B + Triadimefon	10 + 10	73	60
B + Mepanipyrim	10 + 20	67	60
B + Imibenconazole	10 + 15	83	73
B + Cyflufenamid	10 + 1.7	93	73
B + Fenarimol	10 + 4	92	87
B + Triflumizole	10 + 6	93	73

[Table 6-2]

C + Hexaconazole	10 + 2	85	71
C + Fenbuconazole	10 + 4.4	88	74
C + Tebuconazole	10 + 20	100	77
C + Simeconazole	10 + 10	88	65
C + Kresoxim-methyl	10 + 20	90	71
C + Triadimefon	10 + 10	76	65
C + Mepanipyrim	10 + 20	72	65
C + Imibenconazole	10 + 15	90	77
C + Cyflufenamid	10 + 1.7	100	77
C + Fenarimol	10 + 4	98	88
C + Triflumizole	10 + 6	98	77
Hexaconazole	2	17	
Fenbuconazole	4.4	27	
Tebuconazole	20	33	
Simeconazole	10	0	
Kresoxim-methyl	20	17	
Triadimefon	10	0	
Mepanipyrim	20	0	
Imibenconazole	15	33	
Cyflufenamid	1.7	33	
Fenarimol	4	67	
Triflumizole	6	33	
A	10	50	
B	10	60	
C	10	65	

[0067] From the results shown in the above-mentioned Table 6, it could be understood that synergistic effects could be obtained when Compound A, B or C and the compound of Group b are used in combination. Incidentally, even when Compound A, B or C and the compound of Group b are used in combination, no chemical damage symptom was admitted in the plant material, cucumber (variety: Sagamihanpaku).

Test example 5 Cucumber powdery mildew curative test

[0068] In a greenhouse, cucumber (variety: Sagamihanpaku) planted in a plastic pot having a diameter of 5 cm was grown to the 3rd to 5th-leaf stage. A conidiospore suspension prepared from *Sphaerotheca fuliginea* were inoculated on the leaf surface, and the pots were transferred into a thermostatic greenhouse (20 to 25°C). Two days after inoculation, spray was carried out in the same manner as in Test example 1. After drying the chemical liquid, the pots were transferred into a thermostatic greenhouse, and controlling effects were examined after 7 days from the inoculation. In the examination, a ratio of lesion area occupied per one leaf of cucumber was determined according to the same index as in Test

example 1, and the control value and the theoretical value according to Colby's formula were similarly calculated. The results are shown in Table 7.

[Table 7-1]

Effective ingredient in the preparation	Treatment concentration (ppm)	Control value	Theoretical value
A + Hexaconazole	10 + 2	100	92
A + Fenbuconazole	10 + 4.4	100	92
A + Tebuconazole	10 + 20	100	89
A + Simeconazole	10 + 10	89	78
A + Kresoxim-methyl	10 + 20	96	89
A + Triadimefon	10 + 10	96	89
A + Mepanipyrim	10 + 20	100	92
A + Imibenconazole	10 + 15	100	92
A + Cyflufenamid	10 + 1.7	100	89
A + Fenarimol	10 + 4	100	93
A + Triflumizole	10 + 6	100	89
B + Hexaconazole	10 + 2	100	93
B + Fenbuconazole	10 + 4.4	100	93
B + Tebuconazole	10 + 20	100	91
B + Simeconazole	10 + 10	100	82
B + Kresoxim-methyl	10 + 20	98	91
B + Triadimefon	10 + 10	100	91
B + Mepanipyrim	10 + 20	100	93
B + Imibenconazole	10 + 15	100	93
B + Cyflufenamid	10 + 1.7	100	91
B + Fenarimol	10 + 4	100	94
B + Triflumizole	10 + 6	100	91

[Table 7-2]

C + Hexaconazole	10+2	100	93
C + Fenbuconazole	10+4.4	100	93
C + Tebuconazole	10+20	100	91
C + Simeconazole	10+10	100	82
C + Kresoxim-methyl	10+20	97	91
C + Triadimefon	10+10	100	91
C + Mepanipyrim	10+20	100	93
C + Imibenconazole	10+15	100	93
C + Cyflufenamid	10+1.7	100	91
C + Fenarimol	10+4	100	94
C + Triflumizole	10+6	97	91
Hexaconazole	2	75	
Fenbuconazole	4.4	75	
Tebuconazole	20	67	
Simeconazole	10	33	
Kresoxim-methyl	20	67	
Triadimefon	10	67	
Mepanipyrim	20	75	
Imibenconazole	15	75	
Cyflufenamid	1.7	67	
Fenarimol	4	78	

(continued)

Triflumizole	6	67
A	10	67
B	10	73
C	10	73

[0069] From the results shown in the above-mentioned Table 7, it could be understood that synergistic effects could be obtained when Compound A, B or C and the compound of Group b are used in combination. Incidentally, even when Compound A, B or C and the compound of Group b are used in combination, no chemical damage symptom was admitted in the plant material, cucumber (variety: Sagamihanpaku).

Test example 6 Tomato late blight preventive test

[0070] In a greenhouse, tomato (variety: Ohgata-Fukuju) planted in a plastic pot having a diameter of 5 cm was grown to the 2nd to 3rd-leaf stage. Spray was carried out in the same manner as in Test example 1, and after drying the chemical liquid, the pots were transferred into a greenhouse. After 3 days from the spray, a sporangium suspension of *Phytophthora infestans* were inoculated by spraying. After inoculation, the pots were placed in a high-humidity chamber (20 to 22°C), transferred into a greenhouse on the next day, and controlling effects were examined after 7 days from the inoculation. A ratio of lesion area occupied per one leaf of tomato was determined according to the same index as in Test example 1, and the control value and the theoretical value according to Colby's formula were similarly calculated. The results are shown in Table 8.

[Table 8-1]

Effective ingredient in the preparation	Treatment concentration (ppm)	Control value	Theoretical value
A + Propamocarb hydrochloride	10+160	17	0
A + Ethaboxam	10+10	93	83
A + Mancozeb	10+7.5	83	67
A + Azoxystrobin	10+8	83	67
B + Propamocarb hydrochloride	10+160	33	0
B + Ethaboxam	10+10	97	83
B + Mancozeb	10+7.5	83	67
B + Azoxystrobin	10+8	83	67

[Table 8-2]

C + Propamocarb hydrochloride	10+160	17	0
C + Ethaboxam	10+10	92	83
C + Mancozeb	10+7.5	83	67
C + Azoxystrobin	10+8	83	67
Propamocarb hydrochloride	160	0	
Ethaboxam	10	83	
Mancozeb	7.5	67	
Azoxystrobin	8	67	
A	10	0	
B	10	0	
C	10	0	

[0071] From the results shown in the above-mentioned Table 8, it could be understood that synergistic effects could be obtained when Compound A, B or C and the compound of Group b are used in combination. Incidentally, even when Compound A, B or C and the compound of Group b are used in combination, no chemical damage symptom was admitted in the plant material, tomato (variety: Ohgata-Fukuju).

Test example 7 Tomato late blight curative test

[0072] In a greenhouse, tomato (variety: Ohgata-Fukuju) planted in a plastic pot having a diameter of 5 cm was grown to the 2nd to 3rd-leaf stage. A sporangium suspension of *Phytophthora infestans* were inoculated, the pots were placed in a high-humidity chamber (20 to 22°C), and taken out on the next day and spray was carried out in the same manner as in Test example 1. After drying the chemical liquid, the pots were transferred into a greenhouse, and controlling effects were examined after 7 days from the inoculation. A ratio of lesion area occupied per one leaf of tomato was determined according to the same index as in Test example 1, and the control value and the theoretical value according to Colby's formula were similarly calculated. The results are shown in Table 9.

[Table 9-1]

Effective ingredient in the preparation	Treatment concentration (ppm)	Control value	Theoretical value
A + Propamocarb hydrochloride	10+160	33	0
A + Ethaboxam	10+10	76	67
A + Mancozeb	10+7.5	6.7	0
A + Azoxystrobin	10+8	6.7	0
B + Propamocarb hydrochloride	10+160	33	0
B + Ethaboxam	10+10	83	67
B + Mancozeb	10+7.5	17	0
B + Azoxystrobin	10+8	17	0

[Table 9-2]

C + Propamocarb hydrochloride	10+160	33	0
C + Ethaboxam	10+10	83	67
C + Mancozeb	10+7.5	17	0
C + Azoxystrobin	10+8	17	0
Propamocarb hydrochloride	160	0	
Ethaboxam	10	67	
Mancozeb	7.5	0	
Azoxystrobin	8	0	
A	10	0	
B	10	0	
C	10	0	

[0073] From the results shown in the above-mentioned Table 9, it could be understood that synergistic effects could be obtained when Compound A, B or C and the compound of Group b are used in combination. Incidentally, even when Compound A, B or C and the compound of Group b are used in combination, no chemical damage symptom was admitted in the plant material, tomato (variety: Ohgata-Fukuju).

Test example 8 Cucumber downy mildew preventive test

[0074] In a greenhouse, cucumber (variety: Sagamihanpaku) planted in a plastic pot having a diameter of 5 cm was grown to the 3rd to 5th-leaf stage. Spray was carried out in the same manner as in Test example 1, and after drying the chemical liquid, the pots were transferred into a greenhouse. After 3 days from the spray, a sporangium suspension of *Pseudoperonospora cubensis* were inoculated. After inoculation, the pots were placed in a high-humidity chamber (20 to 25°C), transferred into a greenhouse on the next day, and controlling effects were examined after 7 days from the inoculation. A ratio of lesion area occupied per one leaf of cucumber was determined according to the same index as in Test example 1, and the control value and the theoretical value according to Colby's formula were similarly calculated. The results are shown in Table 10.

[Table 10-1]

Effective ingredient in the preparation	Treatment concentration (ppm)	Control value	Theoretical value
A + Propamocarb hydrochloride	10 + 160	80	36
A + Ethaboxam	10 + 10	80	36
A + Mancozeb	10 + 7.5	100	68
A + Azoxystrobin	10 + 8	80	68
B + Propamocarb hydrochloride	10 + 160	60	42
B + Ethaboxam	10 + 10	100	42
B + Mancozeb	10 + 7.5	100	71
B + Azoxystrobin	10 + 8	100	71

[Table 10-2]

C + Propamocarb hydrochloride	10+160	71	46
C + Ethaboxam	10+10	100	46
C + Mancozeb	10+7.5	100	73
C + Azoxystrobin	10+8	100	73
Propamocarb hydrochloride	160	20	
Ethaboxam	10	20	
Mancozeb	7.5	60	
Azoxystrobin	8	60	
A	10	20	
B	10	28	
C	10	33	

[0075] From the results of the above-mentioned Table 10, it could be understood that synergistic effects could be obtained when Compound A, B or C and the compound of Group b are used in combination. Incidentally, even when Compound A, B or C and the compound of Group b are used in combination, no chemical damage symptom was admitted in the plant material, cucumber (variety: Sagamihanpaku).

Test example 9 Cucumber downy mildew curative test

[0076] In a greenhouse, cucumber (variety: Sagamihanpaku) planted in a plastic pot having a diameter of 5 cm was grown to the 3rd to 5th-leaf stage. A sporangium suspension of *Pseudoperonospora cubensis* were inoculated, the pots were placed in a high-humidity chamber (20 to 22°C) and taken out on the next day, and spray was carried out in the same manner as in Test example 1. After drying the chemical liquid, the pots were transferred into a greenhouse, and controlling effects were examined after 7 days from the inoculation. A ratio of lesion area occupied per one leaf of cucumber was determined according to the same index as in Test example 1, and the control value and the theoretical value according to Colby's formula were similarly calculated. The results are shown in Table 11.

[Table 11-1]

Effective ingredient in the preparation	Treatment concentration (ppm)	Control value	Theoretical value
A + Propamocarb hydrochloride	10+160	92	17
A + Ethaboxam	10+10	83	72
A + Mancozeb	10+7.5	87	72
A + Azoxystrobin	10+8	100	93
B + Propamocarb hydrochloride	10+160	100	33
B + Ethaboxam	10+10	93	78
B + Mancozeb	10+7.5	87	78
B + Azoxystrobin	10+8	100	94

[Table 11-2]

C + Propamocarb hydrochloride	10+160	100	33
C + Ethaboxam	10+10	93	78
C + Mancozeb	10+7.5	87	78
C + Azoxystrobin	10 + 8	100	94
Propamocarb hydrochloride	160	0	
Ethaboxam	10	67	
Mancozeb	7.5	67	
Azoxystrobin	8	92	
A	10	17	
B	10	33	
C	10	33	

[0077] From the results shown in the above-mentioned Table 11, it could be understood that synergistic effects could be obtained when Compound A, B or C and the compound of Group b are used in combination. Incidentally, even when Compound A, B or C and the compound of Group b are used in combination, no symptom of chemical damage was admitted in the plant material, cucumber (variety: Sagamihanpaku).

UTILIZABILITY IN INDUSTRY

[0078] The plant disease control composition of the present invention showed a broad spectrum against various plant pathogens (for example, rice blast (*Pyricularia oryzae*), and gray mold *(Botrytis cinerea)* of tomato, cucumber and kidney bean, etc.) including fungi and bacteria resistant to chemicals, and shows excellent controlling effects (synergistic controlling effects) which could never be expected from a single component alone. Also, it shows high plant disease controlling effects against existing fungi and bacteria resistant to chemicals, and no chemical damage against plants can be admitted so that it can be used as an excellent plant disease controlling agent.

Claims

1. A plant disease control composition comprising

(Group a)

(a) at least one kind of a quinoline compound selected from the group consisting of

(a-14) 3-(5-fluoro-3,3,4,4-tetramethyl-3,4-dihydroisoquinolin-1-yl)quinoline,
(a-18) 3-(4,4-difluoro-3,3-dimethyl-3,4-dihydroisoquinolin-1-yl)quinoline, and
(a-20) 3-(4,4,5-trifluoro-3,3-dimethyl-3,4-dihydroisoquinolin-1-yl)quinoline,

or a salt thereof, and
(Group b)

(b) one or more fungicide(s) selected from the group consisting of the following mentioned Groups:

Group (1)
a Strobilurin series compound selected from

(b-1-1) Azoxystrobin
(b-1-2) Kresoxim-methyl
(b-1-3) Pyraclostrobin
(b-1-4) Picoxystrobin
(b-1-5) Fluoxastrobin
(b-1-6) Dimoxystrobin

(b-1-7) Orysastrobin
(b-1-8) Metominostrobin and
(b-1-9) Trifloxystrobin

Group (2)
a triazole series compound selected from

(b-2-1) Simeconazole
(b-2-2) Tebuconazole
(b-2-3) Fenbuconazole
(b-2-4) Hexaconazole
(b-2-5) Imibenconazole
(b-2-6) Triadimefon
(b-2-7) Tetraconazole
(b-2-8) Prothioconazole
(b-2-10) Epoxiconazole
(b-2-11) Ipconazole
(b-2-12) Metconazole
(b-2-13) Propiconazole
(b-2-14) Cyproconazole
(b-2-15) Difenoconazole
(b-2-17) Fluquinconazole
(b-2-18) Flusilazole
(b-2-19) Penconazole
(b-2-21) Triadimenol
(b-2-22) Flutriafol and
(b-2-23) Myclobutanil

Group (3)
an imidazole series compound selected from

(b-3-1) Oxpoconazole fumarate (b-3-2) Triflumizole
(b-3-3) Imazalil and
(b-3-5) Prochloraz

Group (4)
a carboxamide series compound selected from

(b-4-1) Penthiopyrad
(b-4-2) Flutolanil
(b-4-3) Furametpyr
(b-4-4) Boscalid
(b-4-5) Fenhexamid
(b-4-6) Cyflufenamid
(b-4-8) Mandipropamid
(b-4-9) Bixafen
(b-4-10) Carboxin
(b-4-14) Thifluzamide
(b-4-16) Ethaboxam
(b-4-17) Zoxamide
(b-4-18) Tiadinil
(b-4-19) Isotianil
(b-4-22) Fluopicolide
(b-4-23) Fluopyram
(b-4-26) N-[2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazol-4-carboxamide
(b-4-27) N-{2-[1,1'-bi(cyclopropyl)-2-yl]phenyl}-3-(difluoromethyl)-1-methyl-1H-pyrazol-4-carboxamide and
(b-4-28) 3-(difluoromethyl)-N-(9-isopropyl-1,2,3,4-tetrahydro-1,4-methanonaphthalen5-yl)-1-me-

thyl-1H-pyrazol-4-carboxamide

Group (9)
a carbamate series compound selected from

(b-9-2) Propamocarb hydrochloride
(b-9-3) Diethofencarb and
(b-9-4) Pyribencarb

Group (10)
a dithiocarbamate series compound selected from

(b-10-1) Manzeb (Mancozeb)
(b-10-2) Maneb
(b-10-3) Propineb
(b-10-5) Metiram and
(b-10-7) Thiuram

Group (12)
a guanidine series compound selected from

(b-12-1) Iminoctadine trialbesilate

Group (13)
a pyrimidine series compound selected from

(b-13-1) Mepanipyrim
(b-13-2) Fenarimol
(b-13-3) Ferimzone
(b-13-4) Cyprodinil and
(b-13-5) Pyrimethanil

Group (15)
a benzimidazole series compound selected from

(b-15-2) Thiophanatemethyl
(b-15-3) Benomyl
(b-15-4) Carbendazim and
(b-15-5) Thiabendazole

Group (16)
a pyrrole series compound selected from

(b-16-1) Fludioxonil
as effective ingredients.

2. A controlling method for controlling plant diseases by applying the plant disease control composition according to Claim 1.

3. A method for controlling plant diseases, which comprises simultaneously applying a plant disease control composition containing the quinoline compound of Group a according to Claim 1 as an active ingredient and a plant disease control composition containing the fungicidal compound of Group b according to Claim 1 as an active ingredient, or after applying either one of the plant disease control composition containing the compound of Group a according to Claim 1 as an active ingredient or the plant disease control composition containing the fungicidal compound of Group b according to Claim 1 as an active ingredient, and, 1 minute to 2 weeks after the first application, applying the other above-mentioned composition.

Patentansprüche

1. Zusammensetzung zur Bekämpfung von Pflanzenkrankheiten, umfassend

(Gruppe a)

(a) mindestens eine Art einer Chinolinverbindung ausgewählt aus der Gruppe bestehend aus

(a-14) 3-(5-fluor-3,3,4,4-tetramethyl-3,4-dihydroisochinolin-1-yl-chinolin,
(a-18) 3-(4,4-difluor-3,3-dimethyl-3,4-dihydroisochinolin-1-yl)chinolin und
(a-20) 3-(4,4,5-trifluor-3,3-dimethyl-3,4-dihydroisochinolin-1-yl)chinolin

oder einem Salz davon, und
(Gruppe b)

(b) ein oder mehrere Fungizid(e) ausgewählt aus der Gruppe bestehend aus den nachfolgend aufgeführten Gruppen:

Gruppe (1)
eine Verbindung aus der Gruppe der Strobilurine ausgewählt aus

(b-1-1) Azoxystrobin
(b-1-2) Kresoxim-methyl
(b-1-3) Pyraclostrobin
(b-1-4) Picoxystrobin
(b-1-5) Fluoxastrobin
(b-1-6) Dimoxystrobin
(b-1-7) Orysastrobin
(b-1-8) Metominostrobin und
(b-1-9) Trifloxystrobin

Gruppe (2)
eine Verbindung aus der Gruppe der Triazole ausgewählt aus

(b-2-1) Simeconazol
(b-2-2) Tebuconazol
(b-2-3) Fenbuconazol
(b-2-4) Hexaconazol
(b-2-5) Imibenconazol
(b-2-6) Triadimefon
(b-2-7) Tetraconazol
(b-2-8) Prothioconazol
(b-2-10) Epoxiconazol
(b-2-11) Ipconazol
(b-2-12) Metconazol
(b-2-13) Propiconazol
(b-2-14) Cyproconazol
(b-2-15) Difenoconazol
(b-2-17) Fluquinconazol
(b-2-18) Flusilazol
(b-2-19) Penconazol
(b-2-21) Triadimenol
(b-2-22) Flutriafol und
(b-2-23) Myclobutanil

Gruppe (3)
eine Verbindung aus der Gruppe der Imidazole ausgewählt aus

(b-3-1) Oxpoconazolfumarat
(b-3-2) Triflumizol
(b-3-3) Imazalil und
(b-3-5) Prochloraz

Gruppe (4)
eine Verbindung aus der Gruppe der Carboxamide ausgewählt aus

(b-4-1) Penthiopyrad
(b-4-2) Flutolanil
(b-4-3) Furametpyr
(b-4-4) Boscalid
(b-4-5) Fenhexamid
(b-4-6) Cyflufenamid
(b-4-8) Mandipropamid
(b-4-9) Bixafen
(b-4-10) Carboxin
(b-4-14) Thifluzamid
(b-4-16) Ethaboxam
(b-4-17) Zoxamid
(b-4-18) Tiadinil
(b-4-19) Isotianil
(b-4-22) Fluopicolid
(b-4-23) Fluopyram (b-4-26) N-[2-(1,3-dimethylbutyl)phenyl]-5-fluor-1,3-dimethyl-1H-pyrazol-4-carboxamid
(b-4-27) N-{2-[1,1-bi(cyclopropyl)-2-yl]phenyl}-3-(difluormethyl)-1-methyl-1H-pyrazol-4-carboxamid und
(b-4-28) 3-(difluormethyl)-N-(9-isopropyl-1,2,3,4-tetrahydro-1,4-methanonaphthalen5-yl)-1-methyl-1 H-pyrazol-4-carboxamid

Gruppe (9)
eine Verbindung aus der Gruppe der Carbamate ausgewählt aus

(b-9-2) Propamocarbhydrochlorid
(b-9-3) Diethofencarb und
(b-9-4) Pyribencarb

(Gruppe(10)
eine Verbindung aus der Gruppe der Dithiocarbamate ausgewählt aus

(b-10-1) Manzeb (Mancozeb)
(b-10-2) Maneb
(b-10-3) Propineb
(b-10-5) Metiram und
(b-10-7) Thiuram

(Gruppe (12)
eine Verbindung aus der Gruppe der Guanidine ausgewählt aus

(b-12-1) Iminoctadinetrialbesilat

Gruppe (13)
eine Verbindung aus der Gruppe der Pyrimidine ausgewählt aus

(b-13-1) Mepanipyrim
(b-13-2) Fenarimol
(b-13-3) Ferimzon
(b-13-4) Cyprodinil und

(b-13-5) Pyrimethanil

(Gruppe (15)
eine Verbindung aus der Gruppe der Benzimidazole ausgewählt aus

(b-15-2) Thiophanatemethyl
(b-15-3) Benomyl
(b-15-4) Carbendazim und
(b-15-5) Thiabendazol

Gruppe (16)
eine Verbindung aus der Gruppe der Pyrrole ausgewählt aus

(b-16-1) Fludioxonil
als wirksame Inhaltsstoffe

2. Verfahren zur Bekämpfung von Pflanzenkrankheiten durch Auftragen der Zusammensetzung zur Bekämpfung von Pflanzenkrankheiten nach Anspruch 1.

3. Verfahren zur Bekämpfung von Pflanzenkrankheiten, umfassend das gleichzeitige Auftragen der Zusammensetzung zur Bekämpfung von Pflanzenkrankheiten, die die Chinolinverbindung der Gruppe a nach Anspruch 1 als einen Wirkstoff enthält, und einer Zusammensetzung zur Bekämpfung von Pflanzenkrankheiten, die die Fungizidverbindung der Gruppe b nach Anspruch 1 als einen Wirkstoff enthält, oder nach dem Auftragen einer der Zusammensetzung zur Bekämpfung von Pflanzenkrankheiten, die die Verbindung der Gruppe a nach Anspruch 1 als einen Wirkstoff enthält, oder der Zusammensetzung zur Bekämpfung von Pflanzenkrankheiten, die die Fungizidverbindung der Gruppe b nach Anspruch 1 als einen Wirkstoff enthält, und 1 Minute bis 2 Wochen nach dem ersten Auftragen, das Auftragen der anderen oben genannten Verbindung.

Revendications

1. Composition permettant de lutter contre les maladies végétales comprenant :

(Groupe a)

(a) au moins un type de composé quinoléine choisi dans le groupe constitué par :

(a-14) 3-(5-fluoro-3,3,4,4-tétraméthyl-3,4-dihydroisoquinoléin-1-yl)quinoléine,
(a-18) 3-(4,4-difluoro-3,3-diméthyl-3,4-dihydroisoquinoléin-1-yl)quinoléine, et
(a-20) 3-(4,4,5-trifluoro-3,3-diméthyl-3,4-dihydroisoquinoléin-1-yl)quinoléine,

ou un sel de ceux-ci, et
(Groupe b)

(b) un ou plusieurs fongicides choisis dans le groupe constitué par les Groupes mentionnés ci-après :

Groupe (1)
un composé de la série des strobilurines choisi parmi

(b-1-1) Azoxystrobine
(b-1-2) Krésoxim-méthyle
(b-1-3) Pyraclostrobine
(b-1-4) Picoxystrobine
(b-1-5) Fluoxastrobine
(b-1-6) Dimoxystrobine
(b-1-7) Orysastrobine
(b-1-8) Métominostrobine et
(b-1-9) Trifloxystrobine

Groupe (2)
un composé de la série des triazoles choisi parmi

(b-2-1) Simeconazole
(b-2-2) Tébuconazole
(b-2-3) Fenbuconazole
(b-2-4) Hexaconazole
(b-2-5) Imibenconazole
(b-2-6) Triadiméfon
(b-2-7) Tétraconazole
(b-2-8) Prothioconazole
(b-2-10) Époxiconazole
(b-2-11) Ipconazole
(b-2-12) Metconazole
(b-2-13) Propiconazole
(b-2-14) Cyproconazole
(b-2-15) Difénoconazole
(b-2-17) Fluquinconazole
(b-2-18) Flusilazole
(b-2-19) Penconazole
(b-2-21) Triadiménol
(b-2-22) Flutriafol et
(b-2-23) Myclobutanil

Groupe (3)
un composé de la série des imidazoles choisi parmi

(b-3-1) Fumarate d'oxpoconazole
(b-3-2) Triflumizole
(b-3-3) Imazalil et
(b-3-5) Prochloraze

Groupe (4)
un composé de la série des carboxamides choisi parmi

(b-4-1) Penthiopyrad
(b-4-2) Flutolanil
(b-4-3) Furametpyr
(b-4-4) Boscalid
(b-4-5) Fenhexamid
(b-4-6) Cyflufénamid
(b-4-8) Mandipropamid
(b-4-9) Bixafen
(b-4-10) Carboxin
(b-4-14) Thifluzamide
(b-4-16) Éthaboxam
(b-4-17) Zoxamide
(b-4-18) Tiadinil
(b-4-19) Isotianil
(b-4-22) Fluopicolide
(b-4-23) Fluopyram
(b-4-26) N-[2-(1,3-diméthylbutyl)phényl]-5-fluoro-1,3-diméthyl-1H-pyrazol-4-carboxamide
(b-4-27) N- {2-[1,1'-bi(cyclopropyl)-2-yl]phényl}-3-(difluorométhyl)-1-méthyl-1H-pyrazol-4-carboxamide, et
(b-4-28) 3-(difluorométhyl)-N-(9-isopropyl-1,2,3,4-tétrahydro-1,4-méthanonaphtalèn-5-yl)-1-méthyl-1H-pyrazol-4-carboxamide

Groupe (9)

un composé de la série des carbamates choisi parmi

(b-9-2) chlorhydrate de propamocarb
(b-9-3) diéthofencarb et
(b-9-4) Pyribencarb

Groupe (10)
un composé de la série des dithiocarbamates choisi parmi

(b-10-1) Manzèbe (Mancozèbe)
(b-10-2) Manèbe
(b-10-3) Propinèbe
(b-10-5) Métirame et
(b-10-7) Thiurame

Groupe (12)
un composé de la série des guanidines choisi parmi

(b-12-1) Trialbésilate d'iminoctadine

Groupe (13)
un composé de la série des pyrimidines choisi parmi

(b-13-1) Mépanipyrim
(b-13-2) Fénarimol
(b-13-3) Ferimzone
(b-13-4) Cyprodinil et
(b-13-5) Pyriméthanil

Groupe (15)
un composé de la série des benzimidazoles choisi parmi

(b-15-2) Thiophanate-méthyle
(b-15-3) Bénomyle
(b-15-4) Carbendazime et
(b-15-5) Thiabendazole

Groupe (16)
un composé de la série des pyrroles choisi parmi

(b-16-1) Fludioxonil
en tant qu'ingrédients actifs.

2. Procédé de lutte contre les maladies végétales par application de la composition permettant de lutter contre les maladies végétales selon la revendication 1.

3. Procédé de lutte contre les maladies végétales, comprenant simultanément l'application d'une composition permettant de lutter contre les maladies végétales contenant le composé quinoléine du Groupe a selon la revendication 1 comme ingrédient actif et d'une composition permettant de lutter contre les maladies végétales contenant le composé fongicide du Groupe b selon la revendication 1 en tant qu'ingrédient actif, ou bien, après l'application soit de la composition permettant de lutter contre les maladies végétales contenant le composé du Groupe a selon la revendication 1 en tant qu'ingrédient actif, soit de la composition permettant de lutter contre les maladies végétales contenant le composé fongicide du Groupe b selon la revendication 1 en tant qu'ingrédient actif, et une minute à deux semaines après la première application, l'application de l'autre desdites compositions mentionnées ci-avant.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 2005070917 A **[0008] [0019] [0036]**
- JP 2007001944 A **[0008]**
- WO 2007011022 A **[0008]**
- JP 2007217353 A **[0008]**
- EP 2103214 A1 **[0008]**
- WO 199715552 A **[0021]**
- WO 2003070705 A **[0021]**
- WO 1999024413 A **[0021]**
- WO 2004016088 A **[0021]**
- WO 2003010149 A **[0021]**
- WO 200374491 A **[0021]**
- WO 200435589 A **[0021]**
- WO 200458723 A **[0021]**
- WO 199921851 A **[0021]**
- WO 200110825 A **[0021]**
- WO 199846607 A **[0021]**
- JP 2000119275 A **[0021]**
- WO 200238565 A **[0021]**
- WO 200687325 A **[0021]**
- WO 200587773 A **[0021]**
- WO 200202527 A **[0021]**
- WO 2003008372 A **[0021]**
- WO 2005042474 A **[0021]**
- WO 2007111024 A **[0021]**
- JP 2006282508 A **[0021]**
- JP 2000281678 A **[0021]**
- WO 200192231 A **[0021]**
- JP 2000319270 A **[0021]**
- JP 2000226374 A **[0021]**

Non-patent literature cited in the description

- The Pesticide Manual. British Crop Protection Council Pubn. 2006 **[0021]**
- *AGROW,* 1995 **[0021]**

EP2517562

NÖVÉNYI BETEGSÉGEK ELLENI VÉDEKEZÉST SZOLGÁLÓ KÉSZÍTMÉNY ÉS A NÖVÉNYI BETEGSÉGEK ELLENI VÉDEKEZÉSI MÓDSZER A KÉSZÍTMÉNY ALKALMAZÁSÁVAL

SZABADALMI IGÉNYPONTOK

1. Növényi betegségek elleni védekezést szolgáló készítmény, amely a következőket tartalmazza:

(a csoport)

(a) legalább egy kinolin-vegyület az alábbi csoportból választva:

(a-14) 3-(5-fluor-3,3,4,4-tetrametil-3,4-dihidro-izokinolin-1-il)kinolin,

(a-18) 3-(4,4-difluor-3,3-dimetil-3,4-dihidro-izokinolin-1-il)kinolin és

(a-20) 3-(4,4,5-trifluor-3,3-dimetil-3,4-dihidro-izokinolin-1-il)kinolin,

vagy ennek egy sója és

(b csoport)

(b) egy vagy több gombaölőszer az alábbiakban felsorolt Csoportokat tartalmazó csoportból választva:

(1.) Csoport

egy vegyület a strobilurin-sorozatból a következők közül választva:

(b-1-1) azoxistrobin

(b-1-2) krezoxim-metil

(b-1-3) piraklostrobin

(b-1-4) pikoxistrobin

(b-1-5) fluoxastrobin

(b-1-6) dimoxistrobin

(b-1-7) orizastrobin

(b-1-8) metominostrobin és

(b-1-9) trifloxistrobin

(2.) Csoport

egy vegyület a tirazol-sorozatból a következők közül választva:

(b-2-1) szimekonazol

(b-2-2) tebukonazol

(b-2-3) fenbukonazol

(b-2-4) hexakonazol

(b-2-5) imibenkonazol

(b-2-6) triadimefon

(b-2-7) tetrakonazol

(b-2-8) protickonazol

(b-2-10) epoxikonazol

(b-2-11) ipkonazol

(b-2-12) metkonazol

(b-2-13) propikonazol

(b-2-14) ciprokonazol

(b-2-15) difenokonazol

(b-2-17) fluquinkonazol

(b-2-18) fluszilazol

(b-2-19) penkonazol

(b-2-21) triadimenol

(b-2-22) flutriafol és

(b-2-23) miklobutanil

(3.) Csoport

egy vegyület az imidazol-sorozatból a következők közül választva:

(b-3-1) oxpokonazol fumarát

(b-3-2) triflumizol

(b-3-3) imazalil és

(b-3-5) prokloraz

(4.) Csoport

egy vegyület a karboxamid-sorozatból a következők közül választva:

(b-4-1) pentiopirad

(b-4-2) flutolanil

(b-4-3) furametpir

(b-4-4) boszkalid

(b-4-5) fenhexamid

(b-4-6) ciflufenamid

(b-4-8) mandipropamid

(b-4-9) bixafen

(b-4-10) karboxin

(b-4-14) tifluzamid

(b-4-16) etaboxam

(b-4-17) zoxamid

(b-4-18) tiadinil

(b-4-19) izotianil

(b-4-22) fluopikolid

(b-4-23) fluopiram

(b-4-26) N-[2-(1,3-dimetil-butil)fenil]-5-fluor-1,3-dimetil-1H-pirazol-4-karboxamid

(b-4-27) N-(2-[1,1'-bi(ciklopropil)-2-il]fenil)-3-(difluor-metil)-1-metil-1H-pirazol-4-karboxamid és

(b-4-28) 3-(difluor-metil)-N-(9-izopropil-1,2,3,4-tetrahidro-1,4-metanonaftalén5-il)-1-meti-1H-pirazol-4-karboxamid

(9.) Csoport

egy vegyület a karbamát-sorozatból a következők közül választva:

(b-9-2) propamokarb-hidroklorid

(b-9-3) dietofenkarb és

(b-9-4) piribenkarb

(10.) Csoport

egy vegyület a ditiokarbamát-sorozatból a következők közül választva:

(b-10-1) manzeb (mankozeb)
(b-10-2) maneb
(b-10-3) propineb
(b-10-5) metiram és
(b-10-7) tiuram
(12.) Csoport
egy vegyület a guanidin-sorozatból a következők közül választva:
(b-12-1) iminoktadin trialbeszilát
(13.) Csoport
egy vegyület a pirimidin-sorozatból a következők közül választva:
(b-13-1) mepanipirim
(b-13-2) fenarimol
(b-13-3) ferimzon
(b-13-4) ciprodinil és
(b-13-5) pirimetanil
(15.) Csoport
egy vegyület a benzimidazol-sorozatból a következők közül választva:
(b-15-2) tiofanát-metil
(b-15-3) benomil
(b-15-4) karbendazim és
(b-15-5) tiabendazol
(16.) Csoport
egy vegyület a pirrol-sorozatból a következők közül választva:
(b-16-1) fludioxonil
mint hatóanyagot.

2. Növényi betegségek elleni védekezési módszer az 1. igénypont szerinti növényi betegségek elleni védekezést szolgáló készítmény alkalmazásával.

3. Növényi betegségek elleni védekezési módszer, ahol a módszer a következőkből áll: egyidejűleg alkalmazzuk az 1. igénypont szerinti „a" csoport kinolin-vegyületét hatóanyagként tartalmazó, növényi betegségek elleni védekezést szolgáló készítményt és az 1. igénypont szerinti „b" csoport gombaölő vegyületét hatóanyagként tartalmazó, növényi betegségek elleni védekezést szolgáló készítményt, vagy miután alkalmaztuk az 1. igénypont szerinti „a" csoport vegyületét hatóanyagként tartalmazó, növényi betegségek elleni védekezést szolgáló készítmény vagy az 1. igénypont szerinti „b" csoport gombaölő vegyületét hatóanyagként tartalmazó, növényi betegségek elleni védekezést szolgáló készítmény közül az egyik készítményt, 1 perc és 2 hét közötti időszak eltelte után alkalmazzuk a fent említett másik készítményt.