

(19)



INTELLECTUAL PROPERTY OFFICE

(11) Publication number:

NZ 584754 A

(41) Publication date:

29.06.2012

(51) Int. Cl:

A01P 3/00 A I; A01N 35/04 A I;
 A01N 37/06 A I; A01N 37/24 A I;
 A01N 37/32 A I; A01N 37/34 A I;
 A01N 37/38 A I; A01N 37/50 A I;
 A01N 37/52 A I; A01N 43/10 A I;
 A01N 43/16 A I; A01N 43/30 A I;
 A01N 43/36 A I; A01N 43/40 A I; A01N 43/56 A I;

(12)

Patent Application

(21) Application number: NZ20080584754

(71) Applicant(s):

ISHIHARA SANGYO KAISHA

(22) Date of filing: 20.10.2008

(72) Inventor(s):

MITANI SHIGERU
TSUKUDA SHINTARO(30) Priority: 20070287699 JP 05.11.2007
2008JP69392 WO 20.10.2008

(54) Title:

FUNGICIDAL COMPOSITION AND METHOD FOR CONTROLLING NOXIOUS FUNGI

(57) Abstract:

Disclosed is a fungicidal composition comprising a carboxylic acid amide of formula (I), which is N-[(3',4'-dichloro-1,1-dimethyl)phenacyl]-3-methyl-2-thiophenecarboxamide, N-[[2'-methyl-4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-trifluoromethyl-2-pyridinecarboxamide, N-[[2'-methyl-4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-methyl-2-thiophenecarboxamide, N-[[4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-trifluoromethyl-2-pyridinecarboxamide, N-[[4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-methyl-2-thiophenecarboxamide and N-[[4'-(2-pentyloxy)-1,1-dimethyl]phenacyl]-3-trifluoromethyl-2-pyridinecarboxamide. And a fungicidal compound selected from: triflumizole, myclobutanil, cyproconazole, tebuconazole, hexaconazole, N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]imidazole-1-carboxamide, metconazole, epoxiconazole, prothioconazole, difenoconazole, tetraconazole, tricyclazole, oxpoconazole fumarate, cyazofamid, hymexazol, mepanipyrim, pyrimethanil, cyprodinil, ferimzone, 5-chloro-7-(4-methylpiperidin-1-yl)-6-(2,4,6-trifluorophenyl)-[1,2,4]triazolo[1,5-a]pyrimidine, azoxystrobin, kresoximmethyl, trifloxystrobin, dimoxystrobin, pyraclostrobin, captan, folpet, fluazinam, potassium bicarbonate, sulfur, mancozeb, chlorothalonil, procymidone, iprodione, spiroxamine, fludioxonil, metrafenone, fenpropidin, meptyldinocap, dimethomorph, fenpropimorph, cymoxanil, potassium phosphite, fosetyl-Al, tolclofos-methyl, flutolanil, fenhexamid, quinoxyfen, copper oxychloride, thiophanate-methyl, pyribencarb, propamocarb hydrochloride, polyoxins, kasugamycin, iminoctadine, cyflufenamid, 2,3-dimethyl-6-t-butyl-8-fluoro-4-acetylquinoline, 2-(2-fluoro-5-(trifluoromethyl)phenylthio)-2-(3-(2-thoxyphenyl)thiazolidin-2-yliden)acetone, proquinazid, 4-(2,3,4-trimethoxy-6-methylbenzoyl)-2,5-dichloro-3-trifluoromethylpyridine, 4-(2,3,4-trimethoxy-6-methylbenzoyl)-2-chloro-3-trifluoromethyl-5-methoxypyridine, 3-(2,3,4-trimethoxy-6-methylbenzoyl)-5-bromo-4-chloro-2-methoxypyridine and 3-(2,3,4-trimethoxy-6-methylbenzoyl)-5-chloro-2-methoxy-4-methylpyridine.

Disclosed is a fungicidal composition comprising a carboxylic acid amide of formula (I), which is N-[(3',4'-dichloro-1,1-dimethyl)phenacyl]-3-methyl-2-thiophenecarboxamide, N-[[2'-methyl-4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-trifluoromethyl-2-pyridinecarboxamide, N-[[2'-methyl-4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-methyl-2-thiophenecarboxamide, N-[[4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-trifluoromethyl-2-pyridinecarboxamide, N-[[4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-methyl-2-thiophenecarboxamide and N-[[4'-(2-pentyloxy)-1,1-dimethyl]phenacyl]-3-trifluoromethyl-2-pyridinecarboxamide

And a fungicidal compound selected from:

triflumizole, myclobutanil, cyproconazole, tebuconazole, hexaconazole, N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]imidazole-1-carboxamide, metconazole, epoxiconazole, prothioconazole, difenoconazole, tetraconazole, tricyclazole, oxpoconazole fumarate, cyazofamid, hymexazol, mepanipyrim, pyrimethanil, cyprodinil, ferimzone, 5-chloro-7-(4-methylpiperidin-1-yl)-6-(2,4,6-trifluorophenyl)-[1,2,4]triazolo[1,5-a]pyrimidine, azoxystrobin, kresoximmethyl, trifloxystrobin, dimoxystrobin, pyraclostrobin, captan, folpet, fluazinam, potassium bicarbonate, sulfur, mancozeb, chlorothalonil, procymidone, iprodione, spiroxamine, fludioxonil, metrafenone, fenpropidin, meptyldinocap, dimethomorph, fenpropimorph, cymoxanil, potassium phosphite, fosetyl-Al, tolclofos -methyl, flutolanil, fenhexamid, quinoxifen, copper oxychloride, thiophanate-methyl, pyribencarb, propamocarb hydrochloride, polyoxins, kasugamycin, iminoctadine, cyflufenamid, 2,3-dimethyl-6-*t*-butyl-8-fluoro-4-acetylquinoline, 2-(2-fluoro-5-(trifluoromethyl)phenylthio)-2-(3-(2-thoxyphenyl)thiazolidin-2-yliden)acetonitrile, proquinazid, 4-(2,3,4-trimethoxy-6-methylbenzoyl)-2,5-dichloro-3-trifluoromethylpyridine, 4-(2,3,4-trimethoxy-6-methylbenzoyl)-2-chloro-3-trifluoromethyl-5-methoxypyridine, 3-(2,3,4-trimethoxy-6-methylbenzoyl)-5-bromo-4-chloro-2-methoxypyridine and 3-(2,3,4-trimethoxy-6-methylbenzoyl)-5-chloro-2-methoxy-4-methylpyridine.

DESCRIPTION

FUNGICIDAL COMPOSITION AND METHOD FOR CONTROLLING NOXIOUS
FUNGI

5

TECHNICAL FIELD

The present invention relates to a fungicidal composition having effects for controlling various noxious fungi remarkably improved, and a method for
10 controlling noxious fungi.

BACKGROUND ART

Patent Documents 1, 2 and 3 disclose that compounds included in the formula (I) given hereinafter are useful
15 as fungicides, and it is disclosed that they may be used in combination or as mixed with other fungicides, as the case requires. However, it is not known that the compound of the formula (I) presents a distinctly superior fungicidal effect when it is used in combination
20 with another specific fungicide in a synergistically effective amount. Further, Patent Documents 4 and 5 disclose that compounds included in the formula (I) given hereinafter are useful as pesticides such as nematocidal agents.

25 Patent Document 1: WO06/016708

Patent Document 2: WO07/069777

Patent Document 3: JP-A-2007-210924

Patent Document 4: EP1256569A

Patent Document 5: EP1428817A

DISCLOSURE OF THE INVENTION

5 PROBLEM TO BE SOLVED BY THE INVENTION

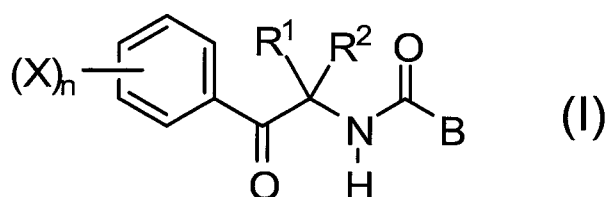
The carboxylic acid amide derivatives of the formula (I) given hereinafter sometimes show practically no adequate controlling effects against certain diseases, such that their controlling effects are not adequate
10 against certain noxious fungi depending upon the concentration range or the application site, the residual effects are relatively short, or the resistance against rain is weak.

15 MEANS TO SOLVE THE PROBLEM

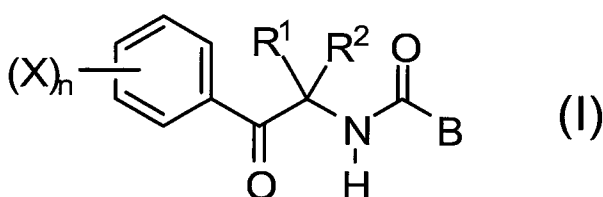
The present inventors have conducted a research to solve the above problem and as a result, have found that particularly when a carboxylic acid amide derivative of the formula (I) given hereinafter and a certain specific
20 fungicidally effective compound are used as mixed, it is possible to obtain unexpectedly excellent fungicidal activities as compared with a case where the respective compounds are used independently. Thus, the present invention has been accomplished on the basis of this
25 discovery. Namely, the present invention provides a fungicidal composition comprising synergistically effective amounts of (a) a carboxylic acid amide

3

derivative of the formula (I) or its salt:



wherein B is a heterocyclic group which may be substituted by Y; each of R¹ and R² which are independent of each other, is C₁₋₁₂ alkyl; X is halogen, C₁₋₁₂ alkyl or C₁₋₁₂ alkoxy; Y is halogen, C₁₋₁₂ alkyl or C₁₋₁₂ haloalkyl; and n is an integer of from 0 to 5; the present invention provides a fungicidal composition comprising synergistically effective amounts of (a) a carboxylic acid amide derivative of the formula (I) or its salt:



10

wherein B is a heterocyclic group which may be substituted by Y; each of R¹ and R² which are independent of each other, is C₁₋₁₂ alkyl; X is halogen, C₁₋₁₂ alkyl or C₁₋₁₂ alkoxy; Y is halogen, C₁₋₁₂ alkyl or C₁₋₁₂ haloalkyl; and n is an integer of from 0 to 5; wherein the compound of the formula (I) is at least one compound selected from the group consisting of N-[(3',4'-dichloro-1,1-dimethyl)phenacyl]-3-methyl-2-thiophenecarboxamide, N-[[2'-methyl-4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-trifluoromethyl-2-pyridinecarboxamide, N-[[2'-methyl-4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-methyl-2-

thiophenecarboxamide, N-[[4'-(2-propyloxy)-1,1-
 dimethyl]phenacyl]-3-trifluoromethyl-2-
 pyridinecarboxamide, N-[[4'-(2-propyloxy)-1,1-
 dimethyl]phenacyl]-3-methyl-2-thiophenecarboxamide and N-
 5 [[4'-(2-pentyloxy)-1,1-dimethyl]phenacyl]-3-
 trifluoromethyl-2-pyridinecarboxamide; and (b) at least
 one fungicidal compound selected from the group
 consisting of triflumizole, myclobutanil, cyproconazole,
 tebuconazole, hexaconazole, N-propyl-N-[2-(2,4,6-
 10 trichlorophenoxy)ethyl]imidazole-1-carboxamide,
 metconazole, epoxiconazole, prothioconazole,
 difenoconazole, tetraconazole, tricyclazole, oxpoconazole
 fumarate, cyazofamid, hymexazol, mepanipyrim,
 pyrimethanil, cyprodinil, ferimzone, 5-chloro-7-(4-
 15 methylpiperidin-1-yl)-6-(2,4,6-trifluorophenyl)-
 [1,2,4]triazolo[1,5-a]pyrimidine, azoxystrobin, kresoxim-
 methyl, trifloxystrobin, dimoxystrobin, pyraclostrobin,
 captan, folpet, fluazinam, potassium bicarbonate, sulfur,
 mancozeb, chlorothalonil, procymidone, iprodione,
 20 spiroxamine, fludioxonil, metrafenone, fenpropidin,
 meptyldinocap, dimethomorph, fenpropimorph, cymoxanil,
 potassium phosphite, fosetyl-Al, tolclofos-methyl,
 flutolanil, fenhexamid, quinoxifen, copper oxychloride,
 thiophanate-methyl, pyribencarb, propamocarb
 25 hydrochloride, polyoxins, kasugamycin, iminoctadine,
 cyflufenamid, 2,3-dimethyl-6-t-butyl-8-fluoro-4-
 acetylquinoline, 2-(2-fluoro-5-

(trifluoromethyl)phenylthio)-2-(3-(2-methoxyphenyl)thiazolidin-2-yliden)acetonitrile, proquinazid, 4-(2,3,4-trimethoxy-6-methylbenzoyl)-2,5-dichloro-3-trifluoromethylpyridine, 4-(2,3,4-trimethoxy-
5 6-methylbenzoyl)-2-chloro-3-trifluoromethyl-5-methoxypyridine, 3-(2,3,4-trimethoxy-6-methylbenzoyl)-5-bromo-4-chloro-2-methoxypyridine and 3-(2,3,4-trimethoxy-6-methylbenzoyl)-5-chloro-2-methoxy-4-methylpyridine.
Further, the present invention provides a method for
10 controlling noxious fungi, which comprises applying a

5a

fungicidally effective amount of such a fungicidal composition to noxious fungi or to a site where they grow. Further, the present invention provides a method for controlling noxious fungi, which comprises applying a
5 fungicidally effective amount of (a) the carboxylic acid amide derivative of the formula (I) or its salt, and a fungicidally effective amount of (b) the fungicidal compound of the invention, to noxious fungi or to a site where they grow.

10

EFFECTS OF THE INVENTION

The fungicidal composition comprising synergistically effective amounts of (a) the carboxylic acid amide derivative of the formula (I) or its salt, and
15 (b) the fungicidal compound (hereinafter referred to simply as the composition of the present invention) is capable of controlling, particularly at low dose, various fungi such as Oomycetes, Ascomycetes, Basidiomycetes or Deuteromycetes, and capable of effectively controlling
20 various plant diseases thereby caused. Unexpectedly, their fungicidal activities exhibit an effect more than a mere additive effect of their respective individual fungicidal activities, i.e. a synergistic fungicidal activity. Thus, the composition of the present invention
25 containing synergistically effective amounts of (a) the carboxylic acid amide derivative of the formula (I) or its salt, and (b) the fungicidal compound, can be applied

5b

in a low dose as compared with a case where the
respective agents are used independently, and accordingly,
it is effective also to reduce the environmental load at
the application site or its surroundings. Further, the
5 fungicidal spectrum can be enlarged, and further, the
fungicidal activities will last over a long period of
time.

The term "comprising" as used in this specification and
claims means "consisting at least in part of". When int
10 erpreting statements in this specification and claims whic
h includes the "comprising", other features besides the fe
atures prefaced by this term in each statement can also be
present. Related terms such as "comprise" and "comprise
d" are to be interpreted in similar manner

15

In this specification where reference has been made to
patent specifications, other external documents, or other
sources of information, this is generally for the purpose
of providing a context for discussing the features of the
20 invention. Unless specifically stated otherwise, referen
ce to such external documents is not to be construed as an
admission that such documents, or such sources of informat
ion, in any jurisdiction, are prior art, or form part of t
he common general knowledge in the art.

25

In the description in this specification reference may
be made to subject matter that is not within the scope of

5c

the claims of the current application. That subject matter should be readily identifiable by a person skilled in the art and may assist in putting into practice the invention as defined in the claims of this application.

5

BRIEF DESCRIPTION OF DRAWINGS

Fig. 1 is a photograph showing the results of the test on antimicrobial activity against gray mold pathogen in Test Example 7.

10 Fig. 2 is a view diagrammatically showing the results of the test on antimicrobial activity against gray mold pathogen in Test Example 7, wherein the four portions at which the distance from both ends of the longitudinally-placed filter paper to mycelial growth
15 area of Botrytis cinerea was measured, are shown by arrows.

Fig. 3 is a view diagrammatically showing the results of the test on antimicrobial activity against gray mold pathogen in Test Example 7, wherein the four
20 portions at which the distance from the portion where filter papers intersect each other to mycelial growth area of Botrytis cinerea, are shown by arrows.

BEST MODE FOR CARRYING OUT THE INVENTION

25 In a case where in the above formula (I), the number

of substituents represented by X is more than one, such substituents may be the same or different. The substitution number of Y as substituents contained in B may be one or more, and in the case of more than one, such
5 substituents may be the same or different.

The heterocyclic moiety of the substituent represented by B in the above formula (I) is preferably a 3- to 6-membered heterocyclic ring containing from 1 to 4 atoms of at least one type selected from the group
10 consisting of an oxygen atom, a sulfur atom and a nitrogen atom, and it may, for example, be a 3-membered heterocyclic ring such as oxiranyl; a 5-membered heterocyclic ring such as furyl, tetrahydrofuryl, thienyl, pyrrolyl, pyrrolinyl, pyrrolidinyl, dioxolanyl, oxazolyl,
15 isoxazolyl, thiazolyl, isothiazolyl, imidazolyl, imidazolinyl, imidazolidinyl, pyrazolyl, pyrazolinyl, pyrazolidinyl, triazolyl, oxadiazolyl, thiadiazolyl or tetrazolyl; or a 6-membered heterocyclic ring such as pyranyl, pyridyl, piperidinyl, dioxanyl, oxazinyl,
20 morpholinyl, thiazinyl, pyridazinyl, pyrimidinyl, pyrazinyl, piperazinyl, triazinyl, dihydrooxathiinyl, dihydrooxoxathiinyl, dihydrodioxoxathiinyl, dihydropyranyl or dihydrothiinyl. Among them, more preferred is a 5- or 6-membered heterocyclic group
25 containing one or two atoms of at least one type selected from the group consisting of an oxygen atom, a sulfur atom and a nitrogen atom, and most preferred is pyridyl,

thienyl or pyrazolyl. Further, a specific example of the substituent represented by B may, for example, be 3-trifluoromethyl-2-pyridyl, 3-methyl-2-thienyl or 1-methyl-3-trifluoromethyl-4-pyrazolyl.

5 The alkyl or alkyl moiety in the above formula (I) may be C₁₋₁₂ linear or branched one, such as methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, tert-butyl, n-pentyl, 2-pentyl, n-hexyl, 2-hexyl, 3-hexyl, heptyl, octyl, nonyl, decanyl, undecanyl or dodecanyl.

10 The halogen or the halogen as a substituent in the above formula (I) may be an atom of fluorine, chlorine, bromine or iodine. The number of halogens as substituents, may be one or more, and in the case of more than one, such halogens may be the same or different.

15 Further, such halogens may be substituted at any positions.

 The salt of the carboxylic acid amide derivative of the above formula (I) may be any salt so long as it is agriculturally acceptable. For example, it may be an
20 alkali metal salt such as a sodium salt or a potassium salt; an alkaline earth metal salt such as a magnesium salt or a calcium salt; an inorganic acid salt such as a hydrochloride, a perchlorate, a sulfate or a nitrate; or an organic acid salt such as an acetate or a methane
25 sulfonate.

 The carboxylic acid amide derivative of the above formula (I) has various isomers such as optical isomers

or geometrical isomers, and the present invention includes both isomers and mixtures of such isomers. Further, the present invention also includes various isomers other than the above isomers within the common
5 knowledge in the technical field concerned. Further, depending upon the types of isomers, they may have chemical structures different from the above formula (I), but they are within the scope of the present invention, since it is obvious to those skilled in the art that they
10 are isomers.

The carboxylic acid amide derivative of the above formula (I) or its salt may be produced by the process disclosed in the above-mentioned Patent Document 1, 2 or 3.

15 Among the carboxylic acid amide derivatives of the above formula (I), preferred ones will be listed below.

(1) The carboxylic acid amide derivative of the above formula (I) wherein B is a 5- or 6-membered heterocyclic group which may be substituted by Y.

20 (2) The carboxylic acid amide derivative according to the above (1), wherein the heterocyclic group for B is one containing one or two atoms of at least one type selected from the group consisting of a nitrogen atom, a sulfur atom and an oxygen atom.

25 (3) The carboxylic acid amide derivative according to the above (1), wherein the heterocyclic group for B is pyridyl, thienyl or pyrazolyl.

(4) The carboxylic acid amide derivative of the above formula (I), wherein B is 3-trifluoromethyl-2-pyridyl, 3-methyl-2-thienyl or 1-methyl-3-trifluoromethyl-4-pyrazolyl.

- 5 (5) At least one carboxylic acid amide derivative of the above formula (I) selected from the group consisting N-[(3',4'-dichloro-1,1-dimethyl)phenacyl]-3-trifluoromethyl-2-pyridinecarboxamide (Compound No. 1), N-[(3',4'-dichloro-1,1-dimethyl)phenacyl]-3-methyl-2-
- 10 thiophenecarboxamide (Compound No. 2), N-[(3',4'-dichloro-1,1-dimethyl)phenacyl]-1-methyl-3-trifluoromethyl-4-pyrazolecarboxamide (Compound No. 3), N-[[2'-methyl-4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-trifluoromethyl-2-pyridinecarboxamide (Compound No. 4),
- 15 N-[[2'-methyl-4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-methyl-2-thiophenecarboxamide (Compound No. 5), N-[[2'-methyl-4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-1-methyl-3-trifluoromethyl-4-pyrazolecarboxamide (Compound No. 6), N-[[4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-
- 20 trifluoromethyl-2-pyridinecarboxamide (Compound No. 7), N-[[4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-methyl-2-thiophenecarboxamide (Compound No. 8), N-[[4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-1-methyl-3-trifluoromethyl-4-pyrazolecarboxamide (Compound No. 9),
- 25 N-[[2'-methyl-4'-(2-pentyloxy)-1,1-dimethyl]phenacyl]-3-trifluoromethyl-2-pyridinecarboxamide (Compound No. 10) and N-[[4'-(2-pentyloxy)-1,1-dimethyl]phenacyl]-3-

trifluoromethyl-2-pyridinecarboxamide (Compound No. 11).

The fungicidal compound of the above (b) will be described. Among the fungicidal compounds, those having their common names already approved by ISO (International
5 Organization for Standardization) will be represented by such common names. Other ones will be represented by chemical names, and those having their common names provisionally approved by ISO or having their common names applied to ISO for approval will be identified also
10 by such common names.

An azole compound may, for example, be triadimefon, triflumizole, penconazole, flusilazole, myclobutanil, cyproconazole, tebuconazole, hexaconazole, N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]imidazole-1-carboxamide
15 (prochloraz), metconazole, epoxiconazole, prothioconazole, triadimenol, difenoconazole, fluquinconazole, eniliconazol, imazalil, bitertanol, etaconazole, propiconazole, furconazole-cis, tetraconazole, oxpoconazole fumarate, flutriafol, fenbuconazole, bromuconazole, diniconazole, tricyclazole, probenazole, simeconazole, pent-4-enyl (2RS)-2-[furfuryl(imidazol-1-ylcarbonyl)amino] butyrate (pefurazoate), ipconazole, imibenconazole, cyazofamid, hymexazol, amisulbrom or fuberiazole. Among them, preferred is triflumizole,
20 myclobutanil, cyproconazole, tebuconazole, hexaconazole, oxpoconazole fumarate, prochloraz, metconazole, epoxiconazole, prothioconazole, difenoconazole,

tetraconazole, tricyclazole, cyazofamid or hymexazol.

An anilinopyrimidine compound may, for example, be mepanipyrin, pyrimethanil, cyprodinil or ferimzone.

A triazolopyrimidine compound may, for example, be
5 5-chloro-7-(4-methylpiperidin-1-yl)-6-(2,4,6-trifluorophenyl)-[1,2,4]triazolo[1,5-a]pyrimidine
(Compound α).

A strobilurin compound may, for example, be azoxystrobin, kresoxim-methyl, metominostrobin,
10 trifloxystrobin, picoxystrobin, (2E)-2-(methoxyimino)-2-[2-[(3E,5E,6E)-5-(methoxyimino)-4,6-dimethyl-2,8-dioxo-3,7-diazanona-3,6-dien-1-yl]phenyl]-N-methylacetamide
(orysastrobin), dimoxystrobin, pyraclostrobin, fluoxastrobin or methyl 3-methoxy-2-[2-(((1-methyl-3-
15 (4'-chlorophenyl)-2-propenylidene)amino)oxy)-methyl]phenyl]propenoate (enestrobin). Among them, preferred is azoxystrobin, kresoxim-methyl, trifloxystrobin, dimoxystrobin or pyraclostrobin.

An N-halogenothioalkyl compound may, for example, be
20 captan, captafol or folpet. Among them, preferred is captan or folpet.

A pyridinamine compound may, for example, be fluazinam.

A bicarbonate may, for example, be sodium
25 bicarbonate or potassium bicarbonate. Among them, potassium bicarbonate is preferred.

An inorganic sulfur compound may, for example, be

sulfur, calcium polysulfide or zinc sulfate. Among them, sulfur is preferred.

A dithiocarbamate compound may, for example, be mancozeb, maneb, zineb, polycarbamate, metiram, propineb
5 or thiram. Among them, mancozeb is preferred.

An organic chlorine compound may, for example, be chlorothalonil, fthalide or quintozone. Among them, chlorothalonil is preferred.

A dicarboxyimide compound may, for example, be
10 procymidone, iprodione or vinclozolin. Among them, preferred is procymidone or iprodione.

An amine compound may, for example, be spiroxamine or dichlofluanid. Among them, spiroxamine is preferred.

A phenylpyrrole compound may, for example, be
15 fludioxonil or fenpiclonil. Among them, fludioxonil is preferred.

A benzophenone compound may, for example, be metrafenone i.e. (3'-bromo-2,3,4,6'-tetramethoxy-2',6-dimethylbenzophenone).

20 A piperidine compound may, for example, be fenpropidin.

A dinitrobenzene compound may, for example, be meptyldinocap.

A morpholine compound may, for example, be
25 fenpropimorph, tridemorph, dodemorph, dimethomorph or flumorph. Among them, preferred is dimethomorph or fenpropimorph.

A cyanoacetamide compound may, for example, be cymoxanil.

A phosphorous acid compound may, for example, be phosphorous acid, sodium phosphite, potassium phosphite
5 or calcium phosphite. Among them, potassium phosphite is preferred.

An organophosphorus compound may, for example, be fosetyl-Al, tolclofos-methyl, S-benzyl O,O-diisopropylphosphorothioate, O-ethyl S,S-
10 diphenylphosphorodithioate, aluminum ethyl hydrogenphosphonate, edifenphos or iprobenfos. Among them, preferred is fosetyl-Al or tolclofos-methyl.

A carboxamide compound may, for example, be flutolanil, 3,4-dichloro-2'-cyano-1,2-thiazole-5-
15 carboxyanilide (isotianil), mepronil, zoxamid, tiadinil, carboxin, oxycarboxin, thifluzamide, furametpyr, penthiopyrad, boscalid, N-(3',4'-dichloro-5-fluorobiphenyl-2-yl)-3-(difluoromethyl)-1-methylpyrazole-4-carboxamide (bixafen), N-[2-[3-chloro-5-
20 (trifluoromethyl)-2-pyridyl]ethyl]- α,α,α -trifluoro-o-toluamide (fluopyram), mixture of 2 *syn*-isomers 3-(difluoromethyl)-1-methyl-N-[(1*RS*,4*SR*,9*RS*)-1,2,3,4-tetrahydro-9-isopropyl-1,4-methanonaphthalen-5-yl]pyrazole-4-carboxamide and 2 *anti*-isomers 3-
25 (difluoromethyl)-1-methyl-N-[(1*RS*,4*SR*,9*SR*)-1,2,3,4-tetrahydro-9-isopropyl-1,4-methanonaphthalen-5-yl]pyrazole-4-carboxamide (isopyrazam), silthiofam or

fenhexamid. Among them, preferred is flutolanil or fenhexamid.

A quinoline compound may, for example, be quinoxifen.

A copper compound may, for example, be copper
5 oxychloride, cupric hydroxide, copper sulfate, bordeaux mixture or oxine copper. Among them, copper oxychloride is preferred.

A carbamate compound may, for example, be
thiophanate-methyl, benomyl, carbendazim, thiabendazole,
10 pyribencarb, diethofencarb, propamocarb hydrochloride, iprovalicarb, methyl [S-(R,S)]-3-[(N-isopropoxycarbonylvalinyl)amino]-3-(4-chlorophenyl)propionate (valiphenal) or benthiavalicarb-isopropyl. Among them, preferred is thiophanate-methyl,
15 pyribencarb or propamocarb hydrochloride.

An antibiotic may, for example, be polyoxins, validamycin or kasugamycin. Among them, preferred is polyoxins or kasugamycin.

A guanidine compound may, for example, be
20 iminoctadine or dodine. Among them, iminoctadine is preferred.

An oxime ether compound may, for example, be cyflufenamid.

4-Quinololinol derivatives may, for example, be
25 Compound Nos. 1 to 11 disclosed on pages 8 to 14 in WO2001/92231. Among them, preferred is 2,3-dimethyl-6-t-butyl-8-fluoro-4-acetylquinoline (Compound β) disclosed

as Compound 2 in the same publication.

Cyanomethylene compounds may, for example, be
Compound Nos. 1 to 236 disclosed on pages 27 to 57 in
WO2001/47902. Among them, preferred is 2-(2-fluoro-5-
5 (trifluoromethyl)phenylthio)-2-(3-(2-
methoxyphenyl)thiazolidin-2-yliden)acetonitrile (Compound
γ) disclosed as Compound No. 120 in the same publication.

A quinazolinone compound may, for example, be
proquinazid.

10 Benzoylpyridine compounds may, for example, be
compounds disclosed in Tables 1 to 18 in WO2002/02527 and
Tables 1 and 2 in WO2004/039155. Among them, preferred
is 4-(2,3,4-trimethoxy-6-methylbenzoyl)-2,5-dichloro-3-
trifluoromethylpyridine (Compound A), 4-(2,3,4-
15 trimethoxy-6-methylbenzoyl)-2-chloro-3-trifluoromethyl-5-
methoxypyridine (Compound B), 3-(2,3,4-trimethoxy-6-
methylbenzoyl)-5-bromo-4-chloro-2-methoxypyridine
(Compound C) or 3-(2,3,4-trimethoxy-6-methylbenzoyl)-5-
chloro-2-methoxy-4-methylpyridine (Compound D).

20 Among the above-mentioned ones, (b) the fungicidal
compound in the composition of the present invention is
preferably at least one member selected from the group
consisting of triflumizole, myclobutanil, cyproconazole,
tebuconazole, hexaconazole, N-propyl-N-[2-(2,4,6-
25 trichlorophenoxy)ethyl]imidazole-1-carboxamide
(prochloraz), metconazole, epoxiconazole,
prothioconazole, difenoconazole, tetraconazole,

tricyclazole, oxpoconazole fumarate, cyazofamid,
hymexazol, mepanipyrim, pyrimethanil, cyprodinil,
ferimzone, 5-chloro-7-(4-methylpiperidin-1-yl)-6-(2,4,6-
trifluorophenyl)-[1,2,4]triazolo[1,5-a]pyrimidine,
5 azoxystrobin, kresoxim-methyl, trifloxystrobin,
dimoxystrobin, pyraclostrobin, captan, folpet, fluazinam,
potassium bicarbonate, sulfur, mancozeb, chlorothalonil,
procymidone, iprodione, spiroxamine, fludioxonil,
metrafenone, fenpropidin, meptyldinocap, dimethomorph,
10 fenpropimorph, cymoxanil, potassium phosphite, fosetyl-
Al, tolclufos-methyl, flutolanil, fenhexamid, quinoxifen,
copper oxychloride, thiophanate-methyl, pyribencarb,
propamocarb hydrochloride, polyoxins, kasugamycin,
iminocadine, cyflufenamid, 2,3-dimethyl-6-*t*-butyl-8-
15 fluoro-4-acetylquinoline, 2-(2-fluoro-5-
(trifluoromethyl)phenylthio)-2-(3-(2-
methoxyphenyl)thiazolidin-2-yliden)acetonitrile,
proquinazid, 4-(2,3,4-trimethoxy-6-methylbenzoyl)-2,5-
dichloro-3-trifluoromethylpyridine, 4-(2,3,4-trimethoxy-
20 6-methylbenzoyl)-2-chloro-3-trifluoromethyl-5-
methoxypyridine, 3-(2,3,4-trimethoxy-6-methylbenzoyl)-5-
bromo-4-chloro-2-methoxypyridine and 3-(2,3,4-trimethoxy-
6-methylbenzoyl)-5-chloro-2-methoxy-4-methylpyridine.

The composition of the present invention is useful
25 as a fungicidal composition capable of controlling
noxious fungi at a low dose, particularly useful as an
agricultural or horticultural fungicidal composition.

When used as an agricultural or horticultural fungicidal composition, the composition of the present invention is capable of controlling noxious fungi such as Oomycetes, Ascomycetes, Basidiomycetes, Deuteromycetes and
5 particularly effective for controlling noxious fungi belonging to e.g. Ascomycetes or Deuteromycetes.

The following may be mentioned as specific examples of the above noxious fungi.

Oomycetes may, for example, be genus Phytophthora,
10 such as potato or tomato late blight pathogen (Phytophthora infestans), or tomato haiiro-eki-byo pathogen (Phytophthora capsici); genus Pseudoperonospora, such as cucumber downy mildew pathogen (Pseudoperonospora cubensis); genus Plasmopara, such as grape downy mildew
15 pathogen (Plasmopara viticola); and genus Pythium, such as rice seedling blight pathogen (Pythium graminicola), or wheat browning root rot pathogen (Pythium iwayamai).

Ascomycetes may, for example, be genus Claviceps such as false smut of rice (Claviceps virens); genus
20 Erysiphe, such as wheat powdery mildew pathogen (Erysiphe graminis); genus Sphaerotheca, such as cucumber powdery mildew pathogen (Sphaerotheca fuliginea), or strawberry powdery mildew pathogen (Sphaerotheca humuli); genus Uncinula, such as grape powdery mildew pathogen (Uncinula
25 necator); genus Podosphaera, such as apple powdery mildew pathogen (Podosphaera leucotricha); genus Mycosphaerella, such as garden pea Mycosphaerella blight pathogen

(Mycosphaerella pinodes), apple fruit spot pathogen
(Mycosphaerella pomi), banana black sigatoka pathogen
(Mycosphaerella musicola), persimmons circular leaf spot
pathogen (Mycosphaerella nawae), or strawberry leaf spot
5 pathogen (Mycosphaerella fragariae); genus Venturia, such
as apple scab pathogen (Venturia inaequalis), or pear
scab pathogen (Venturia nashicola); genus Pyrenophora,
such as barley net blotch pathogen (Pyrenophora teres),
or barley stripe pathogen (Pyrenophora graminea); genus
10 Sclerotinia, such as various Sclerotinia disease pathogen
(Sclerotinia Sclerotiorum) such as kidney bean stem rot
pathogen, cucumber Sclerotinia rot pathogen, cabbage
Sclerotinia rot pathogen, Chinese cabbage Sclerotinia rot
pathogen, red pepper Sclerotinia rot pathogen, sweet
15 pepper Sclerotinia rot pathogen, onion watery soft rot
pathogen, or rapeseed rot pathogen, wheat Sclerotinia
snow blight pathogen (Sclerotinia borealis), tomato
syoryu-kinkaku pathogen (Sclerotinia minor), or alfalfa
Sclerotinia rot and crown rot pathogen (Sclerotinia
20 trifoliorum); genus Botryolinia, such as peanut small
Sclerotinia rot pathogen (Botryolinia arachidis); genus
Cochliobolus, such as rice brown spot pathogen
(Cochliobolus miyabeanus); genus Didymella, such as
cucumber gummy stem blight pathogen (Didymella bryoniae);
25 genus Gibberella, such as wheat Fusarium blight pathogen
(Gibberella zeae); genus Elsinoe, such as grape
anthracnose pathogen (Elsinoe ampelina), or citrus scab

pathogen (Elsinoe fawcettii); genus Diaporthe, such as citrus melanose pathogen (Diaporthe citri), or grape swelling arm pathogen (Diaporthe sp.); genus Guignardia, such as grape black spot pathogen (Guignardia bidwellii);
 5 genus Monilinia, such as apple blossom blight pathogen (Monilinia mali), or peach brown rot pathogen (Monilinia fructicola); and genus Glomerella, such as grape ripe rot pathogen (Glomerella cingulata).

Basidiomycetes may, for example, be genus
 10 Rhizoctonia, such as rice sheath blight pathogen (Rhizoctonia solani); genus Ustilago, such as wheat loose smut pathogen (Ustilago nuda); genus Puccinia, such as oat crown rust pathogen (Puccinia coronata), wheat brown rust pathogen (Puccinia recondita), or wheat stripe rust
 15 pathogen (Puccinia striiformis); and genus Typhula, such as wheat or barley Typhula snow blight pathogen (Typhula incarnata, Typhula ishikariensis).

Deuteromycetes may, for example, be genus Septoria, such as wheat glume blotch pathogen (Septoria nodorum),
 20 wheat speckled leaf blotch (Septoria tritici); genus Botrytis, such as various gray mold pathogen (Botrytis cinerea) such as grape gray mold pathogen, citrus gray mold pathogen, cucumber gray mold pathogen, tomato gray mold pathogen, strawberry gray mold pathogen, eggplant
 25 gray mold pathogen, kidney bean gray mold pathogen, adzuki bean gray mold pathogen, garden pea gray mold pathogen, peanut gray mold pathogen, red pepper gray mold

pathogen, sweet pepper gray mold pathogen, lettuce gray mold pathogen, onion gray mold pathogen, statice gray mold pathogen, carnation gray mold pathogen, rose Botrytis blight pathogen, garden pansy gray mold pathogen, or sunflower gray mold pathogen, onion gray mold neck rot pathogen (Botrytis allii), or onion Botrytis hagare-syo (Botrytis squamosa, Botrytis byssoidea, Botrytis tulipae); genus Pyricularia, such as rice blast pathogen (Pyricularia oryzae); genus

10 Cercospora, such as sugar beet Cercospora leaf spot pathogen (Cercospora beticola), or persimmons Cercospora leaf spot pathogen (Cercospora kakivola); genus Colletotrichum, such as cucumber anthracnose pathogen (Colletotrichum orbiculare); genus Alternaria, such as

15 apple Alternaria leaf spot pathogen (Alternaria alternata apple pathotype), pear black spot pathogen (Alternaria alternata Japanese pear pathotype), potato or tomato early blight pathogen (Alternaria solani), cabbage or Chinese cabbage Alternaria leaf spot pathogen (Alternaria brassicae), cabbage Alternaria sooty spot pathogen

20 (Alternaria brassicola), onion or Welsh onion Alternaria leaf spot pathogen (Alternaria porri), Alternaria padwickii; genus Pseudocercospora, such as wheat eye spot pathogen (Pseudocercospora herpotrichoides);

25 genus Pseudocercospora, such as grape leaf spot pathogen (Pseudocercospora vitis); genus Rhynchosporium, such as barley scald pathogen (Rhynchosporium secalis); genus

Cladosporium, such as peach scab pathogen (Cladosporium
carpophilum); genus Phomopsis, such as peach Phomopsis
rot pathogen (Phomopsis sp.); genus Gloeosporium, such as
persimmons anthracnose pathogen (Gloeosporium kaki);
5 genus Fulvia, such as tomato leaf mold pathogen (Fulvia
fulva); genus Corynespora, such as cucumber Corynespora
leaf spot pathogen (Corynespora cassiiicola); genus
Curvularia such as Curvularia intermedia, Curvularia
clavata, Curvularia inaequalis, Curvularia ovoidea; genus
10 Epicoccum such as Epicoccum purpurascens.

The composition of the present invention is capable
of controlling the above various noxious fungi and thus
capable of preventively or curatively controlling various
diseases. Particularly, the composition of the present
15 invention is effective for controlling various diseases
which are problematic in the agricultural and
horticultural field, such as blast, brown spot, sheath
blight or damping-off of rice (Oryza sativa, etc.);
powdery mildew, scab, brown rust, stripe rust, net
20 blotch, stripe, snow mold, snow blight, loose smut, eye
spot, scald, leaf spot or glume blotch of cereals
(Hordeum vulgare, Tricum aestivum, etc.); melanose or
scab of citrus (Citrus spp., etc.); blossom blight,
powdery mildew, melanose, Alternaria leaf spot or scab of
25 apple (Malus pumila); scab or black spot of pear (Pyrus
serotina, Pyrus ussuriensis, Pyrus communis); brown rot,
scab or Phomopsis rot of peach (Prunus persica, etc.);

- anthracnose, ripe rot, leaf spot, swelling arm, powdery mildew or downy mildew of grape (Vitis vinifera spp., etc.); anthracnose, circular leaf spot or Cercospora leaf spot of Japanese persimmon (Diospyros kaki, etc.);
- 5 anthracnose, powdery mildew, gummy stem blight, corynespora leaf spot or downy mildew of cucurbit (Cucumis melo, etc.); early blight, haiiro-eki-byo, leaf mold or late blight of tomato (Lycopersicon esculentum); black sigatoka of banana (Musa sapientum, etc.);
- 10 Cercospora leaf spot of sugar beet (Beta vulgaris var. saccharifera, etc.); Mycosphaerella blight of garden pea (Pisum sativum); various Alternaria disease pathogens of cruciferous vegetables (Brassica sp., Raphanus sp., etc); late blight or early blight of potato (Solanum
- 15 tuberosum); powdery mildew or leaf spot of strawberry (Fragaria, etc.); and gray mold or disease caused by Sclerotinia of various crops such as beans, vegetables, fruits or flowers. Among them, it is particularly effective against various gray mold or disease caused by
- 20 Sclerotinia of cucumber (Cucumis sativus), kidney bean (Phaseolus vulgaris), adzuki bean (Vigna angularis), soybean (Glycine max), garden pea, peanut (Arachis hypogaea), tomato, strawberry, eggplant (Solanum melongena), red pepper (Capsicum annuum), sweet pepper
- 25 (Capsicum annuum), lettuce (Lactuca sativa), onion (Allium cepa), grape, citrus, statice (Limonium spp.), carnation (Dianthus spp.), rose (Rosa spp.), garden pansy

(Viola, etc.) or sunflower (Helianthus annuus).

Further, the composition of the present invention is effective also for preventive or curative control of soil diseases caused by plant pathogens such as Fusarium,
5 Pythium, Rhizoctonia, Verticillium and Plasmodiophora.

Still further, the composition of the present invention is effective also to control various pathogens resistant to fungicides such as benzimidazoles, strobilurins, dicarboximides, phenylamides and ergosterol
10 biosynthesis inhibitors.

Furthermore, the composition of the present invention has an excellent penetrative migration property, and when a pesticide containing the composition of the present invention is applied to soil, it is
15 possible to control noxious fungi on stems and leaves at the same time as controlling noxious fungi in soil.

The composition of the present invention, is usually formulated by mixing above mentioned (a) the carboxylic acid amide derivative represented by the formula (I) or a
20 salt thereof (hereinafter referred to simply as component (a)), and above mentioned (b) fungicidal compound (hereinafter referred to simply as component (b)), each of which may separately be mixed with various agricultural adjuvants in the same manner as conventional
25 agricultural chemicals, and used in the form of a formulation such as a dust, granules, water-dispersible granules, a wettable powder, a water-based suspension

concentrate, an oil-based suspension concentrate, water soluble granules, an emulsifiable concentrate, a soluble concentrate, a paste, an aerosol or an ultra low-volume formulation. However, so long as it is suitable for the purpose of the present invention, it may be formulated into any type of formulation which is commonly used in this field. Such agricultural adjuvants include solid carriers such as diatomaceous earth, slaked lime, calcium carbonate, talc, white carbon, kaoline, bentonite, kaolinite, sericite, clay, sodium carbonate, sodium bicarbonate, mirabilite, zeolite and starch; solvents such as water, toluene, xylene, solvent naphtha, dioxane, acetone, isophorone, methyl isobutyl ketone, chlorobenzene, cyclohexane, dimethylsulfoxide, N,N-dimethylformamide, dimethylacetamide, N-methyl-2-pyrrolidone, and alcohol; anionic surfactants and spreaders such as a salt of fatty acid, a benzoate, an alkylsulfosuccinate, a dialkylsulfosuccinate, a polycarboxylate, a salt of alkylsulfuric acid ester, an alkyl sulfate, an alkylaryl sulfate, an alkyl diglycol ether sulfate, a salt of alcohol sulfuric acid ester, an alkyl sulfonate, an alkylaryl sulfonate, an aryl sulfonate, a lignin sulfonate, an alkyl diphenyl ether disulfonate, a polystyrene sulfonate, a salt of alkylphosphoric acid ester, an alkylaryl phosphate, a styrylaryl phosphate, a salt of polyoxyethylene alkyl ether sulfuric acid ester, a polyoxyethylene alkylaryl

ether sulfate, a salt of polyoxyethylene alkylaryl ether
sulfuric acid ester, a polyoxyethylene alkyl ether
phosphate, a salt of polyoxyethylene alkylaryl phosphoric
acid ester, and a salt of a condensate of naphthalene
5 sulfonate with formalin; nonionic surfactants and
spreaders such as a sorbitan fatty acid ester, a glycerin
fatty acid ester, a fatty acid polyglyceride, a fatty
acid alcohol polyglycol ether, acetylene glycol,
acetylene alcohol, an oxyalkylene block polymer, a
10 polyoxyethylene alkyl ether, a polyoxyethylene alkylaryl
ether, a polyoxyethylene styrylaryl ether, a
polyoxyethylene glycol alkyl ether, a polyoxyethylene
fatty acid ester, a polyoxyethylene sorbitan fatty acid
ester, a polyoxyethylene glycerin fatty acid ester, a
15 polyoxyethylene hydrogenated castor oil, and a
polyoxypropylene fatty acid ester; and vegetable and
mineral oils such as olive oil, kapok oil, castor oil,
palm oil, camellia oil, coconut oil, sesame oil, corn
oil, rice bran oil, peanut oil, cottonseed oil, soybean
20 oil, rapeseed oil, linseed oil, tung oil, and liquid
paraffins. Such adjuvants may be selected for use among
these known in this field, so long as such selection does
not depart from the purpose of the present invention.
Further, it is possible to use commonly employed various
25 additives such as a filler, a thickener, an anti-settling
agent, an anti-freezing agent, a dispersion stabilizer, a
phytotoxicity reducing agent, an anti-mold agent, etc.

The blend ratio of the components (a) and (b) as active components to various additives is usually from 0.005:99.995 to 95:5, preferably from 0.2:99.8 to 90:10. In actual use of such a formulation, it may be used as it is, or it may be diluted with a diluting agent such as water to a predetermined concentration, and as a case requires, various extenders may be added.

In the composition of the present invention, a proper blend weight ratio of component (a) to component (b) varies by a difference in weather conditions, crop plants concerned, the method of use, the formulation, etc., and can not simply be defined, but it is usually from 1:70,000 to 70,000:1, preferably from 1:1,000 to 70,000:1. Further, a more preferred blend weight ratio of component (a) to component (b) may be mentioned with respect to each fungicidal compound of component (b). Namely, for example, in a case where component (b) is an azole compound, it is from 1:100 to 70,000:1; in a case where component (b) is an anilinopyrimidine compound, it is from 1:100 to 500:1; in a case where component (b) is at least one fungicidal compound selected from the group consisting of an N-halogenothioalkyl compound, a pyridinamine compound, a bicarbonate, an inorganic sulfur compound, a dithiocarbamate compound, a dicarboxyimide compound, a morpholine compound, a cyanoacetamide compound, a phosphorous acid compound, a carboxamide compound and an antibiotic, it is from 1:500 to 200:1; in

a case where component (b) is a copper compound and/or a carbamate compound, it is from 1:1,000 to 200:1; in a case where component (b) is a benzophenone compound, it is from 1:100 to 40,000:1; in a case where component (b) is a quinoline compound and/or a benzoylpyridine compound, it is from 1:100 to 5,000:1; and in the case of other compounds, it is from 1:100 to 200:1.

The composition of the present invention may be applied by an application method which is commonly used, such as spreading (spreading, spraying, misting, atomizing, grain diffusing or application on water surface), soil application (such as mixing or irrigation) or surface application (such as coating, dust coating or covering). Further, it may be applied also by so-called ultra low volume. In this method, the formulation may contain 100% of the active ingredient. In its application, it is possible to optionally select an application to noxious fungi or to a site where they grow (the application may be pre-emergence or post-emergence of such noxious fungi). Further, the components (a) and (b) may be separately formulated, and at the time of application, they may be mixed and applied. Otherwise, they may be formulated together and applied. The formulation may be applied as it is or after being diluted with e.g. water.

The dose of the composition of the present invention varies depending upon the weather conditions, crop

plants, method of use, formulation, etc. and can not be generally defined. However, in the case of foliage treatment, it is applied so that the total amount of components (a) and (b) as active ingredients will be at a concentration of usually from 0.1 to 10,000 ppm, preferably from 1 to 4,000 ppm, more preferably from 1 to 2,000 ppm, and in the case of soil treatment, it is applied so that the total amount of components (a) and (b) as active ingredients will be usually from 10 to 100,000 g/ha, preferably from 200 to 20,000 g/ha.

Additionally, the composition of the present invention may be mixed with or may be used in combination with other agricultural chemicals, fertilizers or phytotoxicity-reducing agents, whereby synergistic effects or activities may sometimes be obtained. Such other agricultural chemicals may, for example, be a fungicide, an insecticide, a miticide, a nematocide, a herbicide, an antiviral agent, an attractant, a plant hormone and a plant growth regulating agent.

The active ingredient compounds (common names; including some which are under application, or test code of the Japan Plant Protection Association) of the fungicides in such other agricultural chemicals, may, for example, be:

a phenylamide compound such as metalaxyl, metalaxyl-M, mefenoxam, oxadixyl, ofurace, benalaxyl, benalaxyl-M (another name: kiralexyl or chiralaxyl), furalaxyl or

cyprofuram;

a piperazine compound such as triforine;

a pyridine compound such as pyrifenox;

a carbinol compound such as fenarimol or flutriafol;

5 an oxazolidinone compound such as famoxadone;

a thiazole carboxamide compound such as ethaboxam;

an imidazolidine compound such as fenamidone

a benzenesulfoneamide compound such as flusulfamid;

an oxime ether compound such as cyflufenamid;

10 a phenoxy amide compound such as fenoxanil;

an anthraquinone compound;

a crotonic acid compound;

an azole compound such as triadimefon, triflumizole,
penconazole, flusilazole, myclobutanil, cyproconazole,

15 tebuconazole, hexaconazole, N-propyl-N-[2-(2,4,6-
trichlorophenoxy)ethyl]imidazole-1-carboxamide

(prochloraz), metconazole, epoxiconazole,

prothioconazole, triadimenol, difenoconazole,

fluquinconazole, eniliconazol, imazalil, bitertanol,

20 etaconazole, propiconazole, furconazole-cis,

tetraconazole, oxpoconazole fumarate, flutriafol,

fenbuconazole, bromuconazole, diniconazole, tricyclazole,

probenazole, simeconazole, pent-4-enyl (2RS)-2-

[furfuryl(imidazol-1-ylcarbonyl)amino]butyrate

25 (pefurazoate), ipconazole, imibenconazole, cyazofamid,

hymexazol, amisulbrom or fuberiazole;

an anilinopyrimidine compound such as mepanipyrim,

pyrimethanil, cyprodinil or ferimzone;

a triazolopyrimidine compound such as 5-chloro-7-(4-methylpiperidin-1-yl)-6-(2,4,6-trifluorophenyl)-[1,2,4]triazolo[1,5-a]pyrimidine;

5 a strobilurin compound such as azoxystrobin, kresoxim-methyl, metominostrobin, trifloxystrobin, picoxystrobin, (2E)-2-(methoxyimino)-2-[2-[(3E,5E,6E)-5-(methoxyimino)-4,6-dimethyl-2,8-dioxa-3,7-diazanona-3,6-dien-1-yl]phenyl]-N-methylacetamide (orysastrobin),
10 dimoxystrobin, pyraclostrobin, fluoxastrobin, or methyl 3-methoxy-2-[2-(((1-methyl-3-(4'-chlorophenyl)-2-propenylidene)amino)oxy)-methyl]phenyl]propenoate (enestrobin);

an N-halogenothioalkyl compound such as captan,
15 captafol or folpet;

a pyridinamine compound such as fluazinam;

a bicarbonate such as sodium bicarbonate or potassium bicarbonate;

an inorganic sulfur compound such as sulfur, calcium
20 polysulfide or zinc sulfate;

a dithiocarbamate compound such as mancozeb, maneb, zineb, polycarbamate, metiram, propineb or thiram;

an organic chlorine compound such as chlorothalonil, fthalide or quintozene;

25 a dicarboxyimide compound such as procymidone, iprodione or vinclozolin;

an amine compound such as spiroxamine or

dichlofluanid;

a phenylpyrrole compound such as fludioxonil or fenpiclonil;

a benzophenone compound such as metrafenone (3'-
5 bromo-2,3,4,6'-tetramethoxy-2',6-dimethylbenzophenone);

a dinitrobenzene compound such as meptyldinocap;

a piperidine compound such as fenpropidin;

a morpholine compound such as fenpropimorph,
tridemorph, dodemorph, dimethomorph or flumorph;

10 a cyanoacetamide compound such as cymoxanil;

a phosphorous acid compound such as phosphorus acid,
sodium primary phosphite, potassium primary phosphite,
calcium primary phosphite, sodium secondary phosphite,
potassium secondary phosphite or calcium secondary
15 phosphite;

an organophosphorus compound such as fosetyl-Al,
tolcofos-methyl, S-benzyl O,O-diisopropyl
phosphorothioate, O-ethyl S,S-diphenyl
phosphorodithioate, aluminum ethyl hydrogenphosphonate,
20 edifenphos or iprobenfos;

a carboxamide compound such as flutolanil, 3,4-
dichloro-2'-cyano-1,2-thiazole-5-carboxyanilide
(isotianil), mepronil, zoxamid, tiadinil, carboxin,
oxycarboxin, thifluzamide, furametpyr, penthiopyrad,
25 boscalid, N-(3',4'-dichloro-5-fluorobiphenyl-2-yl)-3-
(difluoromethyl)-1-methylpyrazole-4-carboxamide
(bixafen), N-[2-[3-chloro-5-(trifluoromethyl)-2-

pyridyl]ethyl]- α, α, α -trifluoro-o-toluide (fluopyram),
mixture of 2 *syn*-isomers 3-(difluoromethyl)-1-methyl-N-
[(1*RS*,4*SR*,9*RS*)-1,2,3,4-tetrahydro-9-isopropyl-1,4-
methanonaphthalen-5-yl]pyrazole-4-carboxamide and 2 *anti*-
5 isomers 3-(difluoromethyl)-1-methyl-N-[(1*RS*,4*SR*,9*SR*)-
1,2,3,4-tetrahydro-9-isopropyl-1,4-methanonaphthalen-5-
yl]pyrazole-4-carboxamide (isopyrazam), silthiofam or
fenhexamid;

a quinoline compound such as quinoxifen;

10 a copper compound such as copper oxychloride, cupric
hydroxide, copper sulfate, bordeaux mixture or oxine
copper;

a carbamate compound such as thiophanate-methyl,
benomyl, carbendazim, thiabendazole, pyribencarb,
15 diethofencarb, propamocarb hydrochloride, iprovalicarb,
methyl [S-(*R,S*)]-3-[(N-isopropoxycarbonylvalinyl)-amino]-
3-(4-chlorophenyl)propanoate (valiphenal) or
benthiavalicarb-isopropyl;

an antibiotic such as polyoxins, validamycin or
20 kasugamycin;

a guanidine compound such as iminoctadine or dodine;

a 4-quinolinol derivative compound such as 2,3-
dimethyl-6-*t*-butyl-8-fluoro-4-acetylquinoline;

a cyanomethylene compound such as 2-(2-fluoro-5-
25 (trifluoromethyl)phenylthio)-2-(3-(2-
methoxyphenyl)thiazolidin-2-ylidene)acetonitrile;

a benzoylpyridine compound such as 4-(2,3,4-

trimethoxy-6-methylbenzoyl)-2,5-dichloro-3-trifluoromethylpyridine, 4-(2,3,4-trimethoxy-6-methylbenzoyl)-2-chloro-3-trifluoromethyl-5-methoxypyridine, 3-(2,3,4-trimethoxy-6-methylbenzoyl)-5-bromo-4-chloro-2-methoxypyridine or 3-(2,3,4-trimethoxy-6-methylbenzoyl)-5-chloro-2-methoxy-4-methylpyridine; or other compounds, such as proquinazid, isoprothiolane, pyroquilon, diclomezine, chloropicrin, dazomet, metam-sodium, UBF-307, diclocymet, Syngenta 446510 (mandipropamid, dipromandamid), fluopicolide, carpropamid, BCF051, BCM061 and BCM062.

Now, among the above fungicidal compositions of the present invention, some of preferred combinations not described above will be exemplified.

- (1) A fungicidal composition comprising synergistically effective amounts of (a) the carboxylic acid amide derivative of the above formula (I) or its salt, and (b) at least one fungicidal compound selected from the group consisting of an azole compound, an anilinopyrimidine compound, a strobilurin compound, an N-halogenothioalkyl compound, a pyridinamine compound, a dithiocarbamate compound, an organic chlorine compound, a dicarboxyimide compound, an amine compound, a phenylpyrrole compound, a benzophenone compound, a piperidine compound, a morpholine compound, a cyanoacetamide compound, an organophosphorus compound, a carboxamide compound, a quinoline compound, a copper compound, a carbamate

compound, an antibiotic, a guanidine compound and a benzoylpyridine compound.

- (2) The composition according to the above (1), wherein
(b) the fungicidal compound is at least one member
5 selected from the group consisting of triadimefon,
triflumizole, penconazole, flusilazole, myclobutanil,
cyproconazole, tebuconazole, hexaconazole, N-propyl-N-[2-
(2,4,6-trichlorophenoxy)ethyl]imidazole-1-carboxamide,
metconazole, epoxiconazole, prothioconazole, triadimenol,
10 difenoconazole, fluquinconazole, eniliconazol, imazalil,
bitertanol, etaconazole, propiconazole, furconazole-cis,
tetraconazole, oxpoconazole fumarate, flutriafol,
fenbuconazole, bromuconazole, diniconazole, tricyclazole,
probenazole, simeconazole, pent-4-enyl (2RS)-2-
15 [furfuryl(imidazol-1-ylcarbonyl)amino] butyrate,
ipconazole, imibenconazole, cyazofamid, hymexazol,
amisulbrom, fuberiazole, mepanipyrim, pyrimethanil,
cyprodinil, azoxystrobin, kresoxim-methyl,
metominostrobin, trifloxystrobin, picoxystrobin, (2E)-2-
20 (methoxyimino)-2-[2-[(3E,5E,6E)-5-(methoxyimino)-4,6-
dimethyl-2,8-dioxa-3,7-diazanona-3,6-dien-1-yl]phenyl]-N-
methylacetamide, dimoxystrobin, pyraclostrobin,
fluoxastrobin, methyl 3-methoxy-2-[2-(((1-methyl-3-(4'-
chlorophenyl)-2-propenylidene)amino)oxy)-
25 methyl)phenyl]propenoate, captan, captafol, folpet,
fluazinam, mancozeb, maneb, zineb, polycarbamate, metiram,
propineb, thiram, chlorothalonil, fthalide, quintozone,

procymidone, iprodione, vinclozolin, spiroxamine,
dichlofluanid, fludioxonil, fenpiclonil, metrafenone,
fenpropidin, fenpropimorph, tridemorph, dodemorph,
dimethomorph, flumorph, cymoxanil, fosetyl-Al, tolclofos-
5 methyl, S-benzyl O,O-diisopropylphosphorothioate, O-ethyl
S,S-diphenylphosphorodithioate, aluminum ethyl
hydrogenphosphonate, edifenphos, iprobenfos, flutolanil,
3,4-dichloro-2'-cyano-1,2-thiazole-5-carboxyanilide,
mepronil, zoxamid, tiadinil, carboxin, oxycarboxin,
10 thifluzamide, furametpyr, penthiopyrad, boscalid, N-
(3',4'-dichloro-5-fluorobiphenyl-2-yl)-3-
(difluoromethyl)-1-methylpyrazole-4-carboxamide, N-[2-[3-
chloro-5-(trifluoromethyl)-2-pyridyl]ethyl]- α, α, α -
trifluoro-o-toluamide, mixture of 2 *syn*-isomers 3-
15 (difluoromethyl)-1-methyl-N-[(1*RS*,4*SR*,9*RS*)-1,2,3,4-
tetrahydro-9-isopropyl-1,4-methanonaphthalen-5-
yl]pyrazole-4-carboxamide and 2 *anti*-isomers 3-
(difluoromethyl)-1-methyl-N-[(1*RS*,4*SR*,9*SR*)-1,2,3,4-
tetrahydro-9-isopropyl-1,4-methanonaphthalen-5-
20 yl]pyrazole-4-carboxamide, silthiofam, fenhexamid,
quinoxifen, copper oxychloride, cupric hydroxide, copper
sulfate, bordeaux mixture, oxine copper, thiophanate-
methyl, benomyl, carbendazim, thiabendazole, pyribencarb,
diethofencarb, propamocarb hydrochloride, iprovalicarb,
25 methyl [S-(*R,S*)]-3-[(N-isopropoxycarbonylvalinyl)-amino]-
3-(4-chloro-phenyl)propanoate, benthiavalicarb-isopropyl,
polyoxins, validamycin, kasugamycin, iminoctadine, dodine,

4-(2,3,4-trimethoxy-6-methylbenzoyl)-2,5-dichloro-3-trifluoromethylpyridine, 4-(2,3,4-trimethoxy-6-methylbenzoyl)-2-chloro-3-trifluoromethyl-5-methoxypyridine, 3-(2,3,4-trimethoxy-6-methylbenzoyl)-5-bromo-4-chloro-2-methoxypyridine and 3-(2,3,4-trimethoxy-6-methylbenzoyl)-5-chloro-2-methoxy-4-methylpyridine.

(3) The composition according to the above (2), wherein (b) the fungicidal compound is at least one member selected from the group consisting of cyproconazole, tebuconazole, N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]imidazole-1-carboxamide, metconazole, epoxiconazole, prothioconazole, difenoconazole, tetraconazole, oxpoconazole fumarate, cyazofamid, mepanipyrim, pyrimethanil, cyprodinil, azoxystrobin, kresoxim-methyl, trifloxystrobin, pyraclostrobin, captan, folpet, fluazinam, mancozeb, chlorothalonil, procymidone, iprodione, spiroxamine, fludioxonil, metrafenone, fenpropidin, fenpropimorph, cymoxanil, fosetyl-Al, flutolanil, fenhexamid, quinoxyfen, copper oxychloride, thiophanate-methyl, pyribencarb, polyoxins, iminoctadine, 4-(2,3,4-trimethoxy-6-methylbenzoyl)-2,5-dichloro-3-trifluoromethylpyridine, 4-(2,3,4-trimethoxy-6-methylbenzoyl)-2-chloro-3-trifluoromethyl-5-methoxypyridine, 3-(2,3,4-trimethoxy-6-methylbenzoyl)-5-bromo-4-chloro-2-methoxypyridine and 3-(2,3,4-trimethoxy-6-methylbenzoyl)-5-chloro-2-methoxy-4-methylpyridine.

Now, Test Examples of the present invention will be described, but it should be understood that the present invention is by no means thereby restricted. Compound No. in each Test Example corresponds to Compound No.

5 shown in the above exemplification of the carboxylic acid amide derivative of the formula (I).

TEST EXAMPLE 1: Test on Preventive Effect Against Wheat Powdery Mildew

Wheat (cultivar: Norin-61-go) was cultivated in a plastic pot having a diameter of 7.5 cm, and when it reached 1.5-leaf stage, a mixed chemical solution having the respective test compounds adjusted to prescribed concentrations, was applied by a spray gun in an amount of 10 ml per seedling. After the chemical solution dried, conidia of Erysiphe graminis were dusted and inoculated and maintained in a constant temperature chamber at 20°C. From 7 to 8 days after the inoculation, the area of sporulation was investigated, and the diseased area ratio to non-treated section was obtained by the following equation. The results are shown in Tables 1-1 to 1-101.

Diseased area ratio to non-treated section

$$= (a/b) \times 100$$

a: Average area of sporulation in treated section

25 b: Average area of sporulation in non-treated section

Further, the theoretical value was calculated by a

Colby's formula and shown in brackets () in Tables 1-1 to 1-101. Since the diseased area ratio to non-treated section (experimental value) is lower than the theoretical value, the composition of the present invention can be said to have a synergistic effect.

TABLE 1-1

Concentration of cyproconazole (ppm)	Concentration of Compound No. 4 (ppm)			
	63	31	16	0
0.5	0 (0.9)	0 (1.2)	0 (4.5)	60.0
0.125	0 (1.5)	0 (2.0)	0 (7.3)	97.5
0	1.5	2.0	7.5	—

TABLE 1-2

Concentration of cyproconazole (ppm)	Concentration of Compound No. 5 (ppm)			
	63	31	16	0
0.5	0 (0.9)	0 (1.5)	0 (9.0)	60.0
0.25	0 (1.2)	0 (2.0)	0 (12.0)	80.0
0.125	0 (1.5)	0 (2.4)	0 (14.6)	97.5
0	1.5	2.5	15.0	—

10

TABLE 1-3

Concentration of cyproconazole (ppm)	Concentration of Compound No. 8 (ppm)		
	125	63	0
0.5	0 (9.0)	0 (10.5)	60.0
0.25	0 (12.0)	0 (14.0)	80.0
0.125	0 (14.6)	0 (17.1)	97.5
0	15.0	17.5	—

TABLE 1-4

Concentration of cyproconazole (ppm)	Concentration of Compound No. 11 (ppm)		
	250	63	0
0.5	0 (21.0)	3.0 (51.0)	60.0
0.25	0 (28.0)	5.0 (68.0)	80.0
0	35.0	85.0	—

TABLE 1-5

Concentration of tebuconazole (ppm)	Concentration of Compound No. 4 (ppm)		
	125	31	0
1	0 (0.25)	0 (0.38)	5.0
0.25	0 (2.0)	0 (3.0)	40.0
0	5.0	7.5	—

5 TABLE 1-6

Concentration of tebuconazole (ppm)	Concentration of Compound No. 5 (ppm)		
	125	63	0
1	0 (0.13)	0 (0.13)	5.0
0.5	0 (0.25)	0 (0.25)	10.0
0.25	0 (1.0)	0 (1.0)	40.0
0	2.5	2.5	—

TABLE 1-7

Concentration of tebuconazole (ppm)	Concentration of Compound No. 8 (ppm)			
	250	125	63	0
1	0 (0.5)	0 (1.5)	2.0 (3.0)	5.0
0.5	0 (1.0)	0 (3.0)	2.0 (6.0)	10.0
0	10.0	30.0	60.0	—

TABLE 1-8

Concentration of tebuconazole (ppm)	Concentration of Compound No. 11 (ppm)			
	250	125	63	0
1	0 (0.63)	0 (1.3)	0 (3.0)	5.0
0.5	0 (1.3)	0 (2.5)	2.0 (6.0)	10.0
0.25	0 (5.0)	2.0 (10.0)	5.0 (24.0)	40.0
0	12.5	25.0	60.0	—

TABLE 1-9

Concentration of epoxiconazole (ppm)	Concentration of Compound No. 4 (ppm)			
	250	125	63	0
1	0 (0.02)	0 (0.11)	0 (0.24)	3.0
0.5	0 (0.13)	0 (0.76)	0 (1.7)	21.2
0.25	0 (0.36)	0 (2.2)	0 (4.8)	60.6
0	0.6	3.6	7.9	—

5 TABLE 1-10

Concentration of epoxiconazole (ppm)	Concentration of Compound No. 5 (ppm)			
	250	125	63	0
1	0 (0.02)	0 (0.02)	0 (0.11)	3.0
0.5	0 (0.13)	0 (0.13)	0 (0.76)	21.2
0	0.6	0.6	3.6	—

TABLE 1-11

Concentration of epoxiconazole (ppm)	Concentration of Compound No. 8 (ppm)		
	250	63	0
0.5	0 (1.9)	3.6 (4.5)	21.2
0.25	0 (5.5)	6.1 (12.8)	60.6
0	9.1	21.2	—

TABLE 1-12

Concentration of epoxiconazole (ppm)	Concentration of Compound No. 11 (ppm)			
	250	125	63	0
1	0 (0.46)	0 (0.64)	0 (0.73)	3.0
0.5	0 (3.2)	0 (4.5)	0 (5.1)	21.2
0.25	0 (9.2)	3.6 (12.8)	3.6 (14.7)	60.6
0	15.2	21.2	24.2	—

TABLE 1-13

Concentration of tetraconazole (ppm)	Concentration of Compound No. 4 (ppm)			
	63	31	16	0
0.5	0 (0.79)	0 (1.1)	0 (3.9)	52.5
0.25	0 (0.86)	0 (1.2)	0 (4.3)	57.5
0.125	0 (0.90)	0 (1.2)	2.0 (4.5)	60.0
0	1.5	2.0	7.5	—

5 TABLE 1-14

Concentration of tetraconazole (ppm)	Concentration of Compound No. 5 (ppm)			
	63	31	16	0
0.25	0 (0.86)	0 (1.4)	0 (8.6)	57.5
0.125	0 (0.90)	0 (1.5)	0 (9.0)	60.0
0	1.5	2.5	15.0	—

TABLE 1-15

Concentration of tetraconazole (ppm)	Concentration of Compound No. 8 (ppm)			
	250	125	63	0
0.5	0 (6.6)	0 (7.9)	0 (9.2)	52.5
0.125	1.0 (7.5)	1.0 (9.0)	5.0 (10.5)	60.0
0	12.5	15.0	17.5	—

TABLE 1-16

Concentration of tetraconazole (ppm)	Concentration of Compound No. 11 (ppm)			
	250	125	63	0
0.5	2.0 (18.4)	10.0 (31.5)	20.0 (44.6)	52.5
0.25	3.0 (20.1)	20.0 (34.5)	30.0 (48.9)	57.5
0.125	5.0 (21.0)	25.0 (36.0)	30.0 (51.0)	60.0
0	35.0	60.0	85.0	—

TABLE 1-17

Concentration of cyprodinil (ppm)	Concentration of Compound No. 4 (ppm)			
	63	31	16	0
125	0 (0.33)	0 (2.1)	0 (4.1)	32.5
63	0 (0.70)	0 (4.6)	0 (8.8)	70.0
31	0 (0.75)	0 (4.9)	2.0 (9.4)	75.0
0	1.0	6.5	12.5	—

5 TABLE 1-18

Concentration of cyprodinil (ppm)	Concentration of Compound No. 5 (ppm)			
	63	31	16	0
125	0 (0.16)	0 (0.81)	0 (2.6)	32.5
63	0 (0.35)	0 (1.8)	0 (5.6)	70.0
31	0 (0.38)	0 (1.9)	0 (6.0)	75.0
0	0.5	2.5	8.0	—

TABLE 1-19

Concentration of cyprodinil (ppm)	Concentration of Compound No. 7 (ppm)			
	31	16	8	0
125	0 (1.3)	0 (8.1)	5.0 (9.8)	32.5
63	0 (2.8)	0 (17.5)	8.0 (21.0)	70.0
31	0 (3.0)	5.0 (18.8)	10.0 (22.5)	75.0
0	4.0	25.0	30.0	—

TABLE 1-20

Concentration of cyprodinil (ppm)	Concentration of Compound No. 11 (ppm)			
	250	125	63	0
125	0 (5.7)	5.0 (19.5)	15.0 (22.8)	32.5
63	0 (12.3)	5.0 (42.0)	25.0 (49.0)	70.0
31	0 (13.1)	15.0 (45.0)	30.0 (52.5)	75.0
0	17.5	60.0	70.0	—

TABLE 1-21

Concentration of kresoxim-methyl (ppm)	Concentration of Compound No. 4 (ppm)			
	250	125	63	0
25	0 (0.01)	0 (0.06)	0 (0.14)	1.8
12.5	0 (0.03)	0 (0.18)	0 (0.39)	4.9
0	0.6	3.6	7.9	—

5 TABLE 1-22

Concentration of kresoxim-methyl (ppm)	Concentration of Compound No. 5 (ppm)			
	250	125	63	0
25	0 (0.01)	0 (0.01)	0 (0.06)	1.8
12.5	0 (0.03)	0 (0.03)	0 (0.18)	4.9
0	0.6	0.6	3.6	—

TABLE 1-23

Concentration of kresoxim-methyl (ppm)	Concentration of Compound No. 8 (ppm)			
	250	125	63	0
25	0 (0.16)	0 (0.27)	0 (0.38)	1.8
12.5	0 (0.45)	0 (0.74)	0 (1.0)	4.9
6.3	0 (0.56)	0 (0.93)	0 (1.3)	6.1
0	9.1	15.2	21.2	—

TABLE 1-24

Concentration of kresoxim-methyl (ppm)	Concentration of Compound No. 11 (ppm)			
	250	125	63	0
25	0 (0.03)	0 (0.03)	0 (0.03)	1.8
12.5	0 (0.09)	0 (0.09)	0 (0.09)	4.9
6.3	0 (0.11)	0 (0.11)	0 (0.11)	6.1
0	1.8	1.8	1.8	—

TABLE 1-25

Concentration of spiroxamine (ppm)	Concentration of Compound No. 4 (ppm)			
	250	125	63	0
50	0 (0.04)	0 (0.22)	0 (0.48)	6.1
12.5	0 (0.58)	0 (3.5)	0 (7.7)	97.0
0	0.6	3.6	7.9	—

5 TABLE 1-26

Concentration of spiroxamine (ppm)	Concentration of Compound No. 5 (ppm)			
	250	125	63	0
50	0 (0.04)	0 (0.04)	0 (0.22)	6.1
25	0 (0.09)	0 (0.09)	0 (0.55)	15.2
0	0.6	0.6	3.6	—

TABLE 1-27

Concentration of spiroxamine (ppm)	Concentration of Compound No. 8 (ppm)			
	250	125	63	0
50	0 (0.56)	0 (0.93)	0 (1.3)	6.1
25	0 (1.4)	0 (2.3)	0 (3.2)	15.2
12.5	0 (8.8)	0 (14.7)	6.1 (20.6)	97.0
0	9.1	15.2	21.2	—

TABLE 1-28

Concentration of spiroxamine (ppm)	Concentration of Compound No. 11 (ppm)			
	250	125	63	0
50	0 (0.93)	0 (1.3)	1.2 (1.5)	6.1
12.5	6.1 (14.7)	14.6 (20.6)	12.1 (23.5)	97.0
0	15.2	21.2	24.2	—

TABLE 1-29

Concentration of fludioxonil (ppm)	Concentration of Compound No. 4 (ppm)			
	63	31	16	0
500	0 (0.85)	0 (5.5)	0 (10.6)	85.0
250	0 (0.90)	0 (5.9)	3.0 (11.3)	90.0
125	0 (0.95)	0 (6.2)	5.0 (11.9)	95.0
0	1.0	6.5	12.5	—

5 TABLE 1-30

Concentration of fludioxonil (ppm)	Concentration of Compound No. 5 (ppm)			
	63	31	16	0
500	0 (0.43)	0 (2.1)	0 (6.8)	85.0
250	0 (0.45)	0 (2.3)	0 (7.2)	90.0
125	0 (0.48)	0 (2.4)	3.0 (7.6)	95.0
0	0.5	2.5	8.0	—

TABLE 1-31

Concentration of fludioxonil (ppm)	Concentration of Compound No. 7 (ppm)			
	31	16	8	0
500	0 (3.4)	5.0 (21.3)	15.0 (25.5)	85.0
250	0 (3.6)	15.0 (22.5)	20.0 (27.0)	90.0
125	0 (3.8)	15.0 (23.8)	20.0 (28.5)	95.0
0	4.0	25.0	30.0	—

TABLE 1-32

Concentration of fludioxonil (ppm)	Concentration of Compound No. 11 (ppm)			
	250	125	63	0
500	5.0 (14.9)	25.0 (51.0)	30.0 (59.5)	85.0
125	15.0 (16.6)	30.0 (57.0)	30.0 (66.5)	95.0
0	17.5	60.0	70.0	—

TABLE 1-33

Concentration of metrafenone (ppm)	Concentration of Compound No. 4 (ppm)			
	125	63	31	0
0.03	0 (1.8)	0 (2.6)	0 (2.6)	35.0
0.015	0 (2.0)	0 (3.0)	0 (3.0)	40.0
0.0075	2.0 (5.0)	0 (7.5)	0 (7.5)	100
0	5.0	7.5	7.5	—

5 TABLE 1-34

Concentration of metrafenone (ppm)	Concentration of Compound No. 5 (ppm)			
	125	63	31	0
0.03	0 (0.88)	0 (0.88)	0 (4.4)	35.0
0.015	0 (1.0)	0 (1.0)	0 (5.0)	40.0
0.0075	0 (2.5)	2.0 (2.5)	3.0 (12.5)	100
0	2.5	2.5	12.5	—

TABLE 1-35

Concentration of metrafenone (ppm)	Concentration of Compound No. 8 (ppm)		
	125	63	0
0.03	7.0 (10.5)	20.0 (21.0)	35.0
0.0075	10.0 (30.0)	35.0 (60.0)	100
0	30.0	60.0	—

TABLE 1-36

Concentration of metrafenone (ppm)	Concentration of Compound No. 11 (ppm)			
	250	125	63	0
0.03	0 (4.4)	3.0 (8.8)	15.0 (21.0)	35.0
0.015	0 (5.0)	10.0 (10.0)	20.0 (24.0)	40.0
0.0075	0 (12.5)	10.0 (25.0)	20.0 (60.0)	100
0	12.5	25.0	60.0	—

TABLE 1-37

Concentration of fenpropidin (ppm)	Concentration of Compound No. 4 (ppm)			
	63	31	16	0
50	0 (0.02)	0 (0.02)	0 (0.08)	1.0
25	0 (0.03)	0 (0.04)	0 (0.15)	2.0
12.5	0 (0.41)	0 (0.55)	0 (2.1)	27.5
0	1.5	2.0	7.5	—

5 TABLE 1-38

Concentration of fenpropidin (ppm)	Concentration of Compound No. 5 (ppm)			
	63	31	16	0
50	0 (0.02)	0 (0.03)	0 (0.15)	1.0
25	0 (0.03)	0 (0.05)	0 (0.3)	2.0
12.5	0 (0.41)	0 (0.69)	0 (4.1)	27.5
0	1.5	2.5	15.0	—

TABLE 1-39

Concentration of fenpropidin (ppm)	Concentration of Compound No. 8 (ppm)			
	250	125	63	0
50	0 (0.13)	0 (0.15)	0 (0.18)	1.0
25	0 (0.25)	0 (0.30)	0 (0.35)	2.0
12.5	0 (3.4)	0 (4.1)	0 (4.8)	27.5
0	12.5	15.0	17.5	—

TABLE 1-40

Concentration of fenpropidin (ppm)	Concentration of Compound No. 11 (ppm)			
	250	125	63	0
50	0 (0.35)	0 (0.60)	0 (0.85)	1.0
25	0 (0.70)	0 (1.2)	0 (1.7)	2.0
12.5	0 (9.6)	0 (16.5)	0 (23.4)	27.5
0	35.0	60.0	85.0	—

TABLE 1-41

Concentration of fenpropimorph (ppm)	Concentration of Compound No. 4 (ppm)			
	250	125	63	0
25	0 (0.05)	0 (0.33)	0 (0.72)	9.1
12.5	0 (0.22)	0 (1.3)	0 (2.9)	36.4
0	0.6	3.6	7.9	—

5 TABLE 1-42

Concentration of fenpropimorph (ppm)	Concentration of Compound No. 5 (ppm)		
	250	125	0
25	0 (0.05)	0 (0.05)	9.1
12.5	0 (0.22)	0 (0.22)	36.4
0	0.6	0.6	—

TABLE 1-43

Concentration of fenpropimorph (ppm)	Concentration of Compound No. 8 (ppm)			
	250	125	63	0
25	0 (0.83)	0 (1.4)	0 (1.9)	9.1
12.5	0 (3.3)	0 (5.5)	0 (7.7)	36.4
0	9.1	15.2	21.2	—

TABLE 1-44

Concentration of fenpropimorph (ppm)	Concentration of Compound No. 11 (ppm)			
	250	125	63	0
25	0 (1.4)	0 (1.9)	0 (2.2)	9.1
12.5	0 (5.5)	0 (7.7)	0 (8.8)	36.4
0	15.2	21.2	24.2	—

TABLE 1-45

Concentration of fosetyl-Al (ppm)	Concentration of Compound No. 4 (ppm)			
	63	31	16	0
1000	0 (3.9)	0 (4.9)	3.0 (12.2)	97.5
0	4.0	5.0	12.5	—

5 TABLE 1-46

Concentration of fosetyl-Al (ppm)	Concentration of Compound No. 5 (ppm)		
	63	31	0
1000	2.0 (2.9)	10.0 (14.6)	97.5
0	3.0	15.0	—

TABLE 1-47

Concentration of fosetyl-Al (ppm)	Concentration of Compound No. 8 (ppm)			
	250	125	63	0
500	0 (19.5)	0 (24.4)	20.0 (43.9)	97.5
0	20.0	25.0	45.0	—

TABLE 1-48

Concentration of fosetyl-Al (ppm)	Concentration of Compound No. 11 (ppm)			
	250	125	63	0
1000	13.0 (39.0)	15.0 (48.8)	50.0 (87.8)	97.5
500	15.0 (39.0)	30.0 (48.8)	50.0 (87.8)	97.5
0	40.0	50.0	90.0	—

50

TABLE 1-49

Concentration of flutolanil (ppm)	Concentration of Compound No. 4 (ppm)			
	63	31	16	0
500	0 (0.3)	0 (0.38)	0 (0.94)	7.5
0	4.0	5.0	12.5	—

TABLE 1-50

Concentration of flutolanil (ppm)	Concentration of Compound No. 5 (ppm)		
	63	16	0
1000	0 (0.38)	3.0 (3.1)	12.5
0	3.0	25.0	—

5 TABLE 1-51

Concentration of flutolanil (ppm)	Concentration of Compound No. 8 (ppm)		
	250	125	0
1000	0 (2.5)	0 (3.1)	12.5
0	20.0	25.0	—

TABLE 1-52

Concentration of quinoxifen (ppm)	Concentration of Compound No. 4 (ppm)			
	63	31	16	0
0.25	0 (0.75)	0 (4.9)	0 (9.4)	75.0
0.125	0 (0.78)	0 (5.0)	8.0 (9.7)	77.5
0	1.0	6.5	12.5	—

TABLE 1-53

Concentration of quinoxifen (ppm)	Concentration of Compound No. 5 (ppm)		
	63	31	0
0.25	0 (0.38)	0 (1.9)	75.0
0.125	0 (0.39)	0 (1.9)	77.5
0	0.5	2.5	—

TABLE 1-54

Concentration of quinoxifen (ppm)	Concentration of Compound No. 7 (ppm)			
	31	16	8	0
0.25	0 (3.0)	0 (18.8)	20.0 (22.5)	75.0
0.06	0 (3.2)	15.0 (20.0)	29.0 (24.0)	80.0
0	4.0	25.0	30.0	—

TABLE 1-55

Concentration of quinoxifen (ppm)	Concentration of Compound No. 11 (ppm)			
	250	125	63	0
0.25	0 (13.1)	20.0 (45.0)	30.0 (52.5)	75.0
0.125	0 (13.6)	25.0 (46.5)	35.0 (54.3)	77.5
0.06	3.0 (14.0)	25.0 (48.0)	40.0 (56.0)	80.0
0	17.5	60.0	70.0	—

5 TABLE 1-56

Concentration of metconazole (ppm)	Concentration of Compound No. 2 (ppm)			
	500	250	125	0
0.03	10.0 (38.5)	10.0 (52.3)	10.0 (53.6)	55.0
0.015	40.0 (63.0)	40.0 (85.5)	60.0 (87.8)	90.0
0.0075	65.0 (66.5)	75.0 (90.3)	80.0 (92.6)	95.0
0	70.0	95.0	97.5	—

TABLE 1-57

Concentration of metconazole (ppm)	Concentration of Compound No. 4 (ppm)			
	63	31	16	0
0.03	0 (6.9)	3.0 (9.6)	3.0 (11.0)	55.0
0.015	3.0 (11.3)	3.0 (15.8)	3.0 (18.0)	90.0
0.0075	5.0 (11.9)	5.0 (16.6)	5.0 (19.0)	95.0
0	12.5	17.5	20.0	—

TABLE 1-58

Concentration of metconazole (ppm)	Concentration of Compound No. 5 (ppm)			
	63	31	16	0
0.015	10.0 (24.8)	5.0 (36.0)	8.0 (38.3)	90.0
0.0075	10.0 (26.1)	10.0 (38.0)	10.0 (40.4)	95.0
0	27.5	40.0	42.5	—

TABLE 1-59

Concentration of metconazole (ppm)	Concentration of Compound No. 8 (ppm)			
	250	125	63	0
0.03	5.0 (35.8)	10.0 (49.5)	20.0 (52.3)	55.0
0.015	20.0 (58.5)	50.0 (81.0)	50.0 (85.5)	90.0
0.0075	40.0 (61.8)	55.0 (85.5)	65.0 (90.3)	95.0
0	65.0	90.0	95.0	—

5 TABLE 1-60

Concentration of metconazole (ppm)	Concentration of Compound No. 11 (ppm)		
	250	125	0
0.03	30.0 (35.8)	45.0 (52.3)	55.0
0.015	30.0 (58.5)	60.0 (85.5)	90.0
0.0075	40.0 (61.8)	65.0 (90.3)	95.0
0	65.0	95.0	—

TABLE 1-61

Concentration of tricyclazole (ppm)	Concentration of Compound No. 2 (ppm)		
	250	125	0
500	20.0 (37.5)	25.0 (45.0)	50.0
50	15.0 (16.9)	15.0 (20.3)	22.5
0	75.0	90.0	—

TABLE 1-62

Concentration of tricyclazole (ppm)	Concentration of Compound No. 4 (ppm)		
	63	16	0
500	0 (2.5)	5.0 (6.3)	50.0
0	5.0	12.5	—

TABLE 1-63

Concentration of tricyclazole (ppm)	Concentration of Compound No. 5 (ppm)		
	31	16	0
500	5.0 (15.0)	0 (20.0)	50.0
50	5.0 (6.8)	5.0 (9.0)	22.5
0	30.0	40.0	—

5 TABLE 1-64

Concentration of tricyclazole (ppm)	Concentration of Compound No. 8 (ppm)		
	125	63	0
500	10.0 (12.5)	5.0 (20.0)	50.0
50	5.0 (5.6)	0 (9.0)	22.5
0	25.0	40.0	—

TABLE 1-65

Concentration of tricyclazole (ppm)	Concentration of Compound No. 11 (ppm)		
	125	63	0
500	5.0 (40.0)	5.0 (43.8)	50.0
0	80.0	87.5	—

TABLE 1-66

Concentration of dimoxystrobin (ppm)	Concentration of Compound No. 2 (ppm)	
	250	0
5	3.0 (3.8)	5.0
0	75.0	—

TABLE 1-67

Concentration of dimoxystrobin (ppm)	Concentration of Compound No. 4 (ppm)			
	63	31	16	0
5	0 (0.25)	0 (0.50)	0 (0.63)	5.0
0	5.0	10.0	12.5	—

TABLE 1-68

Concentration of dimoxystrobin (ppm)	Concentration of Compound No. 5 (ppm)		
	63	31	0
5	0 (0.75)	0 (1.5)	5.0
0	15.0	30.0	—

5 TABLE 1-69

Concentration of dimoxystrobin (ppm)	Concentration of Compound No. 8 (ppm)		
	250	63	0
5	0 (1.0)	0 (2.0)	5.0
0	20.0	40.0	—

TABLE 1-70

Concentration of dimoxystrobin (ppm)	Concentration of Compound No. 11 (ppm)		
	250	125	0
5	0 (0.38)	3.0 (4.3)	5.0
0	7.5	85.0	—

TABLE 1-71

Concentration of sulfur (ppm)	Concentration of Compound No. 2 (ppm)			
	500	250	125	0
500	5.0 (28.0)	5.0 (38.0)	25.0 (39.0)	40.0
50	55.0 (68.3)	60.0 (92.6)	65.0 (95.1)	97.5
0	70.0	95.0	97.5	—

TABLE 1-72

Concentration of sulfur (ppm)	Concentration of Compound No. 4 (ppm)			
	63	31	16	0
500	0 (5.0)	0 (7.0)	5.0 (8.0)	40.0
50	3.0 (12.2)	5.0 (17.1)	15.0 (19.5)	97.5
0	12.5	17.5	20.0	—

TABLE 1-73

Concentration of sulfur (ppm)	Concentration of Compound No. 5 (ppm)			
	63	31	16	0
500	0 (11.0)	0 (16.0)	1.0 (17.0)	40.0
50	10.0 (26.8)	15.0 (39.0)	30.0 (41.4)	97.5
0	27.5	40.0	42.5	—

5 TABLE 1-74

Concentration of sulfur (ppm)	Concentration of Compound No. 8 (ppm)			
	250	125	63	0
500	0 (26.0)	0 (36.0)	5.0 (38.0)	40.0
50	15.0 (63.4)	15.0 (87.8)	60.0 (92.6)	97.5
0	65.0	90.0	95.0	—

TABLE 1-75

Concentration of sulfur (ppm)	Concentration of Compound No. 11 (ppm)			
	250	125	63	0
500	3.0 (26.0)	3.0 (38.0)	5.0 (39.0)	40.0
50	10.0 (63.4)	10.0 (92.6)	10.0 (95.1)	97.5
0	65.0	95.0	97.5	—

TABLE 1-76

Concentration of kasugamycin (ppm)	Concentration of Compound No. 2 (ppm)			
	500	250	125	0
500	5.0 (38.5)	5.0 (52.3)	15.0 (53.6)	55.0
50	60.0 (68.3)	60.0 (92.6)	65.0 (95.1)	97.5
0	70.0	95.0	97.5	—

TABLE 1-77

Concentration of kasugamycin (ppm)	Concentration of Compound No. 4 (ppm)			
	63	31	16	0
500	5.0 (6.9)	5.0 (9.6)	10.0 (11.0)	55.0
50	12.0 (12.2)	10.0 (17.1)	15.0 (19.5)	97.5
0	12.5	17.5	20.0	—

TABLE 1-78

Concentration of kasugamycin (ppm)	Concentration of Compound No. 5 (ppm)			
	63	31	16	0
500	5.0 (15.1)	5.0 (22.0)	10.0 (23.4)	55.0
50	10.0 (26.8)	35.0 (39.0)	40.0 (41.4)	97.5
0	27.5	40.0	42.5	—

5 TABLE 1-79

Concentration of kasugamycin (ppm)	Concentration of Compound No. 8 (ppm)			
	250	125	63	0
500	5.0 (35.8)	10.0 (49.5)	20.0 (52.3)	55.0
50	20.0 (63.4)	30.0 (87.8)	30.0 (92.6)	97.5
0	65.0	90.0	95.0	—

TABLE 1-80

Concentration of kasugamycin (ppm)	Concentration of Compound No. 11 (ppm)			
	250	125	63	0
500	0 (35.8)	0 (52.3)	5.0 (53.6)	55.0
50	10.0 (63.4)	10.0 (92.6)	20.0 (95.1)	97.5
0	65.0	95.0	97.5	—

TABLE 1-81

Concentration of compound β (ppm)	Concentration of Compound No. 2 (ppm)		
	250	125	0
100	5 (15)	5 (18)	20.0
10	70 (71.3)	60 (85.5)	95.0
0	75.0	90.0	—

TABLE 1-82

Concentration of compound β (ppm)	Concentration of Compound No. 4 (ppm)	
	63	0
100	0 (1.8)	35.0
0	5.0	—

TABLE 1-83

Concentration of compound β (ppm)	Concentration of Compound No. 5 (ppm)		
	31	16	0
100	5.0 (6.0)	5.0 (8.0)	20.0
10	5.0 (28.5)	0 (38.0)	95.0
0	30.0	40.0	—

5 TABLE 1-84

Concentration of compound β (ppm)	Concentration of Compound No. 8 (ppm)			
	250	125	63	0
10	15.0 (19.0)	15.0 (23.8)	30.0 (38.0)	95.0
0	20.0	25.0	40.0	—

TABLE 1-85

Concentration of compound β (ppm)	Concentration of Compound No. 11 (ppm)			
	250	125	63	0
100	0 (1.5)	3 (16.0)	0 (17.5)	20.0
10	5 (7.1)	10 (76.0)	5 (83.1)	95.0
0	7.5	80.0	87.5	—

TABLE 1-86

Concentration of compound A (ppm)	Concentration of Compound No. 4 (ppm)			
	63	31	16	0
0.25	0 (6.0)	1.0 (7.0)	3.0 (7.0)	40.0
0.125	1.0 (9.8)	3.0 (11.4)	5.0 (11.4)	65.0
0.063	1.0 (13.5)	3.0 (15.8)	7.0 (15.8)	90.0
0	15.0	17.5	17.5	—

TABLE 1-87

Concentration of compound A (ppm)	Concentration of Compound No. 5 (ppm)			
	63	31	16	0
0.125	5.0 (6.5)	8.0 (11.4)	15.0 (16.3)	65.0
0.063	5.0 (9.0)	10.0 (15.8)	15.0 (22.5)	90.0
0	10.0	17.5	25.0	—

TABLE 1-88

Concentration of compound A (ppm)	Concentration of Compound No. 8 (ppm)			
	250	125	63	0
0.125	7.0 (26.0)	10.0 (35.8)	10.0 (39.0)	65
0.063	8.0 (36.0)	20.0 (49.5)	25.0 (54.0)	90
0	40.0	55.0	60.0	—

5 TABLE 1-89

Concentration of compound A (ppm)	Concentration of Compound No. 11 (ppm)	
	125	0
0.25	10.0 (14.0)	40.0
0.125	10.0 (22.8)	65.0
0.063	15.0 (31.5)	90.0
0	35.0	—

TABLE 1-90

Concentration of compound B (ppm)	Concentration of Compound No. 4 (ppm)		
	63	31	0
0.5	3.0 (4.5)	0 (5.3)	30.0
0.25	3.0 (6.0)	0 (7.0)	40.0
0.125	3.0 (7.5)	5 (8.8)	50.0
0	15.0	17.5	—

TABLE 1-91

Concentration of compound B (ppm)	Concentration of Compound No. 5 (ppm)			
	63	31	16	0
0.5	0 (3.0)	2.0 (5.3)	5.0 (7.5)	30.0
0	10.0	17.5	25.0	—

TABLE 1-92

Concentration of compound B (ppm)	Concentration of Compound No. 8 (ppm)			
	250	125	63	0
0.25	10.0 (16.0)	10.0 (22.0)	20.0 (24.0)	40.0
0.125	10.0 (20.0)	20.0 (27.5)	25.0 (30.0)	50.0
0	40.0	55.0	60.0	—

5 TABLE 1-93

Concentration of compound B (ppm)	Concentration of Compound No. 11 (ppm)			
	250	125	63	0
0.5	2.0 (6.8)	3.0 (10.5)	5.0 (13.5)	30.0
0.25	3.0 (9.0)	5.0 (14.0)	15.0 (18.0)	40.0
0.125	3.0 (11.3)	10.0 (17.5)	20.0 (22.5)	50.0
0	22.5	35.0	45.0	—

TABLE 1-94

Concentration of compound C (ppm)	Concentration of Compound No. 4 (ppm)		
	63	31	0
0.5	0 (0.90)	0 (1.1)	6.0
0.25	0 (4.5)	3.0 (5.3)	30.0
0.125	0 (5.6)	5.0 (6.6)	37.5
0	15.0	17.5	—

TABLE 1-95

Concentration of compound C (ppm)	Concentration of Compound No. 5 (ppm)			
	63	31	16	0
0.5	0 (0.60)	0 (1.1)	0 (1.5)	6.0
0.25	0 (3.0)	0 (5.3)	3.0 (7.5)	30.0
0.125	3.0 (3.8)	5.0 (6.6)	5.0 (9.4)	37.5
0	10.0	17.5	25.0	—

TABLE 1-96

Concentration of compound C (ppm)	Concentration of Compound No. 8 (ppm)			
	250	125	63	0
0.5	0 (2.4)	0 (3.3)	0 (3.6)	6.0
0.125	10.0 (15.0)	13.0 (20.6)	15.0 (22.5)	37.5
0	40.0	55.0	60.0	—

5 TABLE 1-97

Concentration of compound C (ppm)	Concentration of Compound No. 11 (ppm)		
	125	63	0
0.5	0 (2.1)	0 (2.7)	6.0
0.25	0 (10.5)	8.0 (13.5)	30.0
0.125	5.0 (13.1)	10.0 (16.9)	37.5
0	35.0	45.0	—

TABLE 1-98

Concentration of compound D (ppm)	Concentration of Compound No. 4 (ppm)		
	125	63	0
0.25	0 (0.63)	0 (0.94)	12.5
0.125	0 (0.75)	0 (1.1)	15.0
0.06	0 (1.4)	2.0 (2.1)	27.5
0	5.0	7.5	—

TABLE 1-99

Concentration of compound D (ppm)	Concentration of Compound No. 5 (ppm)		
	125	31	0
0.25	0 (0.31)	0 (1.6)	12.5
0.125	0 (0.38)	0 (1.9)	15.0
0.06	0 (0.69)	2 (3.4)	27.5
0	2.5	12.5	—

TABLE 1-100

Concentration of compound D (ppm)	Concentration of Compound No. 8 (ppm)			
	250	125	63	0
0.25	0 (1.3)	3.0 (3.8)	3.0 (7.5)	12.5
0.06	2.0 (2.8)	3 (8.3)	10.0 (16.5)	27.5
0	10.0	30.0	60.0	—

5 TABLE 1-101

Concentration of compound D (ppm)	Concentration of Compound No. 11 (ppm)		
	250	63	0
0.25	0 (1.6)	5.0 (7.5)	12.5
0.125	0 (1.9)	5.0 (9.0)	15.0
0.06	0 (3.4)	8.0 (16.5)	27.5
0	12.5	60.0	—

TEST EXAMPLE 2: Test on Preventive Effect Against
Cucumber Powdery Mildew

Cucumber (cultivar: Suyo) was cultivated in a
10 plastic pot having a diameter of 7.5 cm, and when it
reached 1.5-leaf stage, a mixed chemical solution having
the respective sample compounds adjusted to prescribed
concentrations, was applied by a spray gun in an amount
of 10 ml per seedling. After the chemical solution
15 dried, a suspension of conidia of Sphaerotheca fuliginea

was sprayed and inoculated and maintained in a constant temperature chamber at 20°C. From 7 to 12 days after the inoculation, the area of sporulation was investigated, and the diseased area ratio to non-treated section was
 5 obtained in the same manner as in Test Example 1. The results are shown in Tables 2-1 to 2-112.

Further, the theoretical value was calculated by a Colby's formula and shown in brackets () in Tables 2-1 to 2-112. Since the diseased area ratio to non-treated
 10 section (experimental value) is lower than the theoretical value, the composition of the present invention can be said to have a synergistic effect.

TABLE 2-1

Concentration of difenoconazole (ppm)	Concentration of Compound No. 4 (ppm)		
	4	1	0
8	0(0.59)	1.0(2.5)	31.3
0	1.9	8.1	—

15

TABLE 2-2

Concentration of difenoconazole (ppm)	Concentration of Compound No. 5 (ppm)		
	2	1	0
16	0(0.18)	0(1.5)	9.4
8	0(0.59)	0(4.9)	31.3
0	1.9	15.6	—

TABLE 2-3

Concentration of difenoconazole (ppm)	Concentration of Compound No. 8 (ppm)			
	16	8	4	0
31	0(0.25)	0(0.25)	0(0.66)	8.1
16	0(0.29)	0(0.29)	0(0.76)	9.4
0	3.1	3.1	8.1	—

TABLE 2-4

Concentration of difenoconazole (ppm)	Concentration of Compound No. 11 (ppm)			
	4	2	1	0
31	0(0.05)	0(0.15)	0(0.51)	8.1
16	0(0.06)	0(0.18)	0(0.59)	9.4
8	0(0.19)	0(0.59)	0(2.0)	31.3
0	0.6	1.9	6.3	—

5 TABLE 2-5

Concentration of cyazofamid (ppm)	Concentration of Compound No. 4 (ppm)	
	2	0
125	1.0(1.4)	57.5
63	1.0(2.0)	80.0
0	7.5	—

TABLE 2-6

Concentration of cyazofamid (ppm)	Concentration of Compound No. 5 (ppm)	
	2	0
125	0(0.29)	57.5
0	0.5	—

TABLE 2-7

Concentration of cyazofamid (ppm)	Concentration of Compound No. 8 (ppm)			
	8	4	2	0
125	5.0 (23.0)	8.0 (20.1)	15.0 (25.9)	57.5
31	10.0 (32.0)	10.0 (28.0)	15.0 (36.0)	80.0
0	40.0	35.0	45.0	—

TABLE 2-8

Concentration of cyazofamid (ppm)	Concentration of Compound No. 11 (ppm)		
	8	4	0
63	1.0 (2.8)	2.0 (3.5)	70.0
31	0 (3.4)	2.0 (4.3)	85.0
0	4.0	5.0	—

5 TABLE 2-9

Concentration of mepanipyrim (ppm)	Concentration of Compound No. 4 (ppm)		
	4	2	0
125	0 (0.013)	0 (0.038)	0.5
63	0 (0.013)	0 (0.038)	0.5
31	0 (0.25)	0 (0.75)	10.0
0	2.5	7.5	—

TABLE 2-10

Concentration of mepanipyrim (ppm)	Concentration of Compound No. 5 (ppm)		
	4	2	0
125	0 (0.0025)	0 (0.015)	0.5
63	0 (0.0025)	0 (0.015)	0.5
31	0 (0.05)	0 (0.3)	10.0
0	0.5	3.0	—

TABLE 2-11

Concentration of mepanipyrin (ppm)	Concentration of Compound No. 8 (ppm)		
	4	2	0
125	0 (0.18)	0 (0.23)	0.5
63	0 (0.18)	0 (0.23)	0.5
0	35.0	45.0	—

TABLE 2-12

Concentration of mepanipyrin (ppm)	Concentration of Compound No. 11 (ppm)			
	8	4	2	0
125	0 (0.02)	0 (0.03)	0 (0.03)	0.5
31	0 (1.6)	0 (2.0)	0 (2.6)	40.0
0	4.0	5.0	6.5	—

5 TABLE 2-13

Concentration of azoxystrobin (ppm)	Concentration of Compound No. 4 (ppm)	
	4	0
125	0 (0.88)	35.0
63	0 (0.88)	35.0
31	0 (0.94)	37.5
0	2.5	—

TABLE 2-14

Concentration of azoxystrobin (ppm)	Concentration of Compound No. 5 (ppm)		
	4	2	0
63	0 (0.18)	0 (1.1)	35.0
31	0 (0.19)	0 (1.1)	37.5
0	0.5	3.0	—

TABLE 2-15

Concentration of azoxystrobin (ppm)	Concentration of Compound No. 8 (ppm)	
	4	0
125	12.0 (12.3)	35.0
63	12.0 (12.3)	35.0
31	13.0 (13.1)	37.5
0	35.0	—

TABLE 2-16

Concentration of azoxystrobin (ppm)	Concentration of Compound No. 11 (ppm)			
	8	4	2	0
63	0 (2.2)	0 (2.8)	3.0 (3.6)	55.0
31	1.0 (2.2)	1.0 (2.8)	3.0 (3.6)	55.0
0	4.0	5.0	6.5	—

5 TABLE 2-17

Concentration of folpet (ppm)	Concentration of Compound No. 4 (ppm)		
	4	1	0
500	0 (4.1)	6.3 (12.7)	81.3
125	1.3 (4.2)	10.0 (13.2)	84.4
0	5.0	15.6	—

TABLE 2-18

Concentration of folpet (ppm)	Concentration of Compound No. 5 (ppm)		
	4	1	0
500	0 (3.1)	10.0 (12.7)	81.3
250	1.3 (3.2)	10.0 (13.2)	84.4
0	3.8	15.6	—

TABLE 2-19

Concentration of folpet (ppm)	Concentration of Compound No. 7 (ppm)		
	2	1	0
250	12.5 (63.3)	18.8 (68.6)	84.4
0	75.0	81.3	—

TABLE 2-20

Concentration of folpet (ppm)	Concentration of Compound No. 11 (ppm)		
	4	1	0
500	0 (1.7)	0 (12.7)	81.3
250	0 (1.8)	0 (13.2)	84.4
125	0 (1.8)	0 (13.2)	84.4
0	2.1	15.6	—

5 TABLE 2-21

Concentration of fluazinam (ppm)	Concentration of Compound No. 4 (ppm)		
	4	2	0
500	0 (0.08)	0 (0.10)	2.0
250	0 (0.16)	0 (0.20)	4.0
125	0 (0.70)	0 (0.88)	17.5
0	4.0	5.0	—

TABLE 2-22

Concentration of fluazinam (ppm)	Concentration of Compound No. 5 (ppm)			
	4	2	1	0
500	0 (0.02)	0 (0.08)	0 (0.25)	2.0
250	0 (0.04)	0 (0.16)	0 (0.50)	4.0
0	1.0	4.0	12.5	—

TABLE 2-23

Concentration of fluazinam (ppm)	Concentration of Compound No. 8 (ppm)			
	16	8	4	0
500	0 (0.11)	0 (0.13)	0 (0.20)	2.0
250	0 (0.22)	0 (0.26)	0 (0.40)	4.0
0	5.5	6.5	10.0	—

TABLE 2-24

Concentration of fluazinam (ppm)	Concentration of Compound No. 11 (ppm)			
	4	2	1	0
250	0 (0.04)	0 (0.16)	0 (0.30)	4.0
125	0 (0.18)	0 (0.70)	0 (1.3)	17.5
0	1.0	4.0	7.5	—

5 TABLE 2-25

Concentration of mancozeb (ppm)	Concentration of Compound No. 4 (ppm)			
	4	2	1	0
500	0 (0.78)	0 (1.3)	0 (2.4)	15.6
0	5.0	8.1	15.6	—

TABLE 2-26

Concentration of mancozeb (ppm)	Concentration of Compound No. 5 (ppm)		
	4	2	0
125	1.3 (1.9)	2.5 (2.5)	50.0
0	3.8	5.0	—

TABLE 2-27

Concentration of mancozeb (ppm)	Concentration of Compound No. 7 (ppm)			
	4	2	1	0
500	12.5 (17.6)	18.8 (23.5)	18.8 (25.4)	31.3
0	56.3	75.0	81.3	—

TABLE 2-28

Concentration of mancozeb (ppm)	Concentration of Compound No. 11 (ppm)			
	4	2	1	0
500	0 (0.48)	0 (0.59)	0 (2.4)	15.6
250	0 (0.97)	0 (1.2)	0 (4.9)	31.3
125	0 (1.6)	0 (1.9)	0 (7.8)	50.0
0	3.1	3.8	15.6	—

TABLE 2-29

Concentration of chlorothalonil (ppm)	Concentration of Compound No. 4 (ppm)		
	4	2	0
4	1.0 (1.9)	3.0 (5.8)	77.5
0	2.5	7.5	—

5 TABLE 2-30

Concentration of chlorothalonil (ppm)	Concentration of Compound No. 5 (ppm)		
	4	2	0
8	0 (0.23)	0 (1.4)	45.0
0	0.5	3.0	—

TABLE 2-31

Concentration of chlorothalonil (ppm)	Concentration of Compound No. 8 (ppm)	
	8	0
16	15.0 (15.0)	37.5
8	15.0 (18.0)	45.0
4	20.0 (31.0)	77.5
0	40.0	—

TABLE 2-32

Concentration of chlorothalonil (ppm)	Concentration of Compound No. 11 (ppm)		
	8	2	0
8	1.0 (2.2)	1.0 (3.6)	55.0
0	4.0	6.5	—

TABLE 2-33

Concentration of procymidone (ppm)	Concentration of Compound No. 4 (ppm)	
	1	0
250	10.0 (12.4)	82.5
125	10.0 (12.8)	85.0
0	15.0	—

5 TABLE 2-34

Concentration of procymidone (ppm)	Concentration of Compound No. 5 (ppm)		
	8	2	0
500	0 (1.8)	1.0 (3.2)	70.0
0	2.5	4.5	—

TABLE 2-35

Concentration of procymidone (ppm)	Concentration of Compound No. 8 (ppm)		
	8	4	0
125	3.0 (4.3)	10.0 (29.8)	85.0
0	5.0	35.0	—

TABLE 2-36

Concentration of procymidone (ppm)	Concentration of Compound No. 11 (ppm)		
	4	2	0
500	0 (0.35)	0 (0.35)	70.0
250	0 (0.41)	0 (0.41)	82.5
125	0 (0.43)	0 (0.43)	85.0
0	0.5	0.5	—

TABLE 2-37

Concentration of iprodione (ppm)	Concentration of Compound No. 4 (ppm)		
	4	2	0
500	0(0.03)	0(0.07)	45.0
0	1.5	3.5	—

TABLE 2-38

Concentration of iprodione (ppm)	Concentration of Compound No. 5 (ppm)		
	4	1	0
500	0(1.1)	0(2.3)	45.0
250	0(1.1)	0(2.3)	45.0
0	2.5	5.0	—

5 TABLE 2-39

Concentration of iprodione (ppm)	Concentration of Compound No. 8 (ppm)		
	8	4	0
500	2.0(2.3)	3.0(15.8)	45.0
0	5.0	35.0	—

TABLE 2-40

Concentration of iprodione (ppm)	Concentration of Compound No. 11 (ppm)		
	4	2	0
500	0(0.23)	0(0.23)	45.0
250	0(0.23)	0(0.23)	45.0
125	0(0.30)	0(0.30)	60.0
0	0.5	0.5	—

TABLE 2-41

Concentration of cymoxanil (ppm)	Concentration of Compound No. 4 (ppm)			
	4	2	1	0
500	0 (0.47)	0 (0.76)	0 (1.5)	9.4
250	0 (1.3)	0 (2.0)	0 (3.9)	25.0
125	0 (3.1)	0 (5.1)	0 (9.8)	62.5
0	5.0	8.1	15.6	—

TABLE 2-42

Concentration of cymoxanil (ppm)	Concentration of Compound No. 5 (ppm)		
	2	1	0
125	0 (3.3)	0 (9.8)	62.5
0	5.0	15.63	—

5 TABLE 2-43

Concentration of cymoxanil (ppm)	Concentration of Compound No. 8 (ppm)			
	4	2	1	0
500	0 (5.3)	0 (7.0)	3.8 (7.6)	9.4
250	0 (14.1)	3.8 (18.8)	6.3 (20.3)	25.0
125	0 (35.2)	3.8 (46.9)	18.8 (50.8)	62.5
0	56.3	75.0	81.3	—

TABLE 2-44

Concentration of cymoxanil (ppm)	Concentration of Compound No. 11 (ppm)			
	4	2	1	0
500	0 (0.29)	0 (0.35)	0 (1.5)	9.4
250	0 (0.78)	0 (0.94)	0 (3.9)	25.0
125	0 (2.0)	0 (2.3)	0 (9.8)	62.5
0	3.1	3.8	15.6	—

TABLE 2-45

Concentration of fenhexamid (ppm)	Concentration of Compound No. 4 (ppm)		
	4	2	0
500	0 (0.03)	0 (0.07)	50.0
125	0 (0.26)	0 (0.61)	52.5
0	1.5	3.5	—

TABLE 2-46

Concentration of fenhexamid (ppm)	Concentration of Compound No. 5 (ppm)			
	4	2	1	0
500	0 (1.3)	0 (2.3)	0 (2.5)	50.0
125	0 (1.3)	0 (2.4)	1.0 (2.6)	52.5
0	2.5	4.5	5.0	—

5 TABLE 2-47

Concentration of fenhexamid (ppm)	Concentration of Compound No. 8 (ppm)		
	16	8	0
250	0 (2.1)	0 (2.6)	52.5
0	4.0	5.0	—

TABLE 2-48

Concentration of fenhexamid (ppm)	Concentration of Compound No. 11 (ppm)		
	4	1	0
250	0 (0.26)	0 (2.1)	52.5
125	0 (0.26)	1.0 (2.1)	52.5
0	0.5	4.0	—

TABLE 2-49

Concentration of copper oxychloride (ppm)	Concentration of Compound No. 4 (ppm)	
	4	0
1000	0 (0.39)	20.7
500	0 (0.42)	21.9
250	0 (0.48)	25.0
0	1.9	—

TABLE 2-50

Concentration of copper oxychloride (ppm)	Concentration of Compound No. 5 (ppm)		
	2	1	0
1000	0 (0.39)	0 (3.2)	20.6
250	0 (0.48)	0 (3.9)	25.0
0	1.9	15.6	—

5 TABLE 2-51

Concentration of copper oxychloride (ppm)	Concentration of Compound No. 8 (ppm)	
	16	0
1000	0 (0.64)	20.6
500	0 (0.68)	21.9
0	3.1	—

TABLE 2-52

Concentration of copper oxychloride (ppm)	Concentration of Compound No. 11 (ppm)	
	4	0
1000	0 (0.12)	20.6
500	0 (0.13)	21.9
250	0 (0.15)	25.0
0	0.6	—

TABLE 2-53

Concentration of thiophanate- methyl (ppm)	Concentration of Compound No. 5 (ppm)			
	4	2	1	0
125	23.0 (26.0)	25.0 (32.5)	50.0 (58.5)	65.0
63	25.0 (30.0)	30.0 (37.5)	60.0 (67.5)	75.0
0	40.0	50.0	90.0	—

TABLE 2-54

Concentration of thiophanate- methyl (ppm)	Concentration of Compound No. 11 (ppm)	
	2	0
125	8.0 (13.0)	65.0
63	12.0 (15.0)	75.0
0	20.0	—

5 TABLE 2-55

Concentration of polyoxins (ppm)	Concentration of Compound No. 4 (ppm)	
	4	0
250	0 (7.0)	35.0
125	5.0 (8.0)	40.0
0	20.0	—

TABLE 2-56

Concentration of polyoxins (ppm)	Concentration of Compound No. 5 (ppm)			
	4	2	1	0
250	7.0 (14.0)	15.0 (17.5)	30.0 (31.5)	35.0
0	40.0	50.0	90.0	—

TABLE 2-57

Concentration of polyoxins (ppm)	Concentration of Compound No. 8 (ppm)		
	16	8	0
250	8.0 (10.5)	10.0 (14.0)	35.0
0	30.0	40.0	—

TABLE 2-58

Concentration of iminooctadine (ppm)	Concentration of Compound No. 4 (ppm)			
	4	2	1	0
16	0 (6.0)	3.0 (7.5)	10.0 (13.5)	30.0
8	0 (9.0)	5.0 (11.3)	18.0 (20.3)	45.0
4	0 (13.0)	8.0 (16.3)	20.0 (29.3)	65.0
0	20.0	25.0	45.0	—

5 TABLE 2-59

Concentration of iminooctadine (ppm)	Concentration of Compound No. 5 (ppm)			
	4	2	1	0
16	8.0 (12.0)	10.0 (15.0)	10.0 (27.0)	30.0
8	12.0 (18.0)	15.0 (22.0)	30.0 (40.5)	45.0
0	40.0	50.0	90.0	—

TABLE 2-60

Concentration of iminooctadine (ppm)	Concentration of Compound No. 8 (ppm)			
	16	8	4	0
16	1.0 (9.0)	4.0 (12.0)	4.0 (13.5)	30.0
8	3.0 (13.5)	5.0 (18.0)	5.0 (20.3)	45.0
0	30.0	40.0	45.0	—

TABLE 2-61

Concentration of iminoctadine (ppm)	Concentration of Compound No. 4 (ppm)			
	4	2	1	0
16	0 (3.0)	1.0 (6.0)	2.0 (7.5)	30.0
8	0 (4.5)	7.0 (9.0)	8.0 (11.3)	45.0
4	0 (6.5)	9.0 (13.0)	10.0 (16.3)	65.0
0	10.0	20.0	25.0	—

TABLE 2-62

Concentration of triflumizole (ppm)	Concentration of Compound No. 2 (ppm)			
	8	4	2	0
12	14 (15.8)	20 (35)	25 (49)	70
3	15 (19.1)	30 (42.5)	40 (59.5)	85
0	22.5	50.0	70.0	—

5 TABLE 2-63

Concentration of triflumizole (ppm)	Concentration of Compound No. 4 (ppm)			
	4	2	1	0
12	5.0 (5.3)	0 (10.5)	0 (35.0)	70.0
3	0 (6.4)	0 (12.8)	10.0 (42.5)	85.0
0	7.5	15.0	50.0	—

TABLE 2-64

Concentration of triflumizole (ppm)	Concentration of Compound No. 5 (ppm)			
	4	2	1	0
12	0 (1.1)	0 (21.0)	4.0 (45.5)	70.0
3	0 (1.3)	4.0 (25.5)	5.0 (55.3)	85.0
0	1.5	30.0	65.0	—

TABLE 2-65

Concentration of triflumizole (ppm)	Concentration of Compound No. 8 (ppm)		
	8	4	0
12	6 (7.0)	10 (24.5)	70.0
3	7 (8.5)	27 (29.8)	85.0
0	10.0	35.0	—

TABLE 2-66

Concentration of triflumizole (ppm)	Concentration of Compound No. 11 (ppm)			
	4	2	1	0
12	0 (4.6)	1.0 (5.3)	1.0 (21.0)	70.0
3	0 (5.5)	1.0 (6.4)	3 (25.5)	85.0
0	6.5	7.5	30.0	—

5 TABLE 2-67

Concentration of hexaconazole (ppm)	Concentration of Compound No. 2 (ppm)		
	8	4	0
8	0 (7.5)	0 (24.4)	75.0
4	0 (8.5)	5.0 (27.6)	85.0
2	0 (9.5)	25.0 (30.9)	95.0
0	10.0	32.5	—

TABLE 2-68

Concentration of hexaconazole (ppm)	Concentration of Compound No. 4 (ppm)			
	4	2	1	0
8	0 (1.9)	0 (18.8)	0 (45.0)	75.0
4	0 (2.1)	0 (21.3)	5.0 (51.0)	85.0
2	0 (2.4)	0 (23.8)	5.0 (57.0)	95.0
0	2.5	25.0	60.0	—

TABLE 2-69

Concentration of hexaconazole (ppm)	Concentration of Compound No. 5 (ppm)			
	4	2	1	0
8	0 (3.8)	0 (5.6)	0 (16.9)	75.0
4	0 (4.3)	0 (6.4)	0 (19.1)	85.0
2	0 (4.8)	0 (7.1)	0 (21.4)	95.0
0	5.0	7.5	22.5	—

TABLE 2-70

Concentration of hexaconazole (ppm)	Concentration of Compound No. 8 (ppm)		
	16	8	0
8	0 (1.9)	0 (6.8)	75.0
4	0 (2.1)	0 (7.7)	85.0
2	0 (2.4)	0 (8.6)	95.0
0	2.5	9.0	—

5 TABLE 2-71

Concentration of hexaconazole (ppm)	Concentration of Compound No. 11 (ppm)			
	4	2	1	0
8	0 (1.9)	0 (7.5)	0 (41.3)	75.0
4	0 (2.1)	0 (8.5)	0 (46.8)	85.0
2	0 (2.4)	0 (9.5)	5.0 (52.3)	95.0
0	2.5	10.0	55.0	—

TABLE 2-72

Concentration of hymexazol (ppm)	Concentration of Compound No. 4 (ppm)			
	4	2	1	0
100	25.0 (38.0)	30.0 (42.8)	30.0 (71.3)	95.0
0	40.0	45.0	75.0	—

TABLE 2-73

Concentration of hymexazol (ppm)	Concentration of Compound No. 5 (ppm)			
	4	2	1	0
100	15.0 (23.8)	25.0 (61.8)	30.0 (76.0)	95.0
0	25.0	65.0	80.0	—

TABLE 2-74

Concentration of hymexazol (ppm)	Concentration of Compound No. 8 (ppm)		
	8	4	0
100	50.0 (52.3)	60.0 (66.5)	95.0
0	55.0	70.0	—

5 TABLE 2-75

Concentration of hymexazol (ppm)	Concentration of Compound No. 11 (ppm)	
	4	0
100	0 (6.2)	95.0
0	6.5	—

TABLE 2-76

Concentration of pyrimethanil (ppm)	Concentration of Compound No. 4 (ppm)		
	4	1	0
25	15.0 (36.0)	60.0 (67.5)	90.0
0	40.0	75.0	—

TABLE 2-77

Concentration of pyrimethanil (ppm)	Concentration of Compound No. 5 (ppm)	
	1	0
25	50.0 (72.0)	90.0
0	80.0	—

TABLE 2-78

Concentration of pyrimethanil (ppm)	Concentration of Compound No. 8 (ppm)			
	16	8	4	0
25	10.0 (15.8)	40.0 (49.5)	60.0 (63.0)	90.0
0	17.5	55.0	70.0	—

TABLE 2-79

Concentration of pyrimethanil (ppm)	Concentration of Compound No. 11 (ppm)			
	4	2	1	0
25	0 (5.9)	3.0 (13.5)	20.0 (40.5)	90.0
0	6.5	15.0	45.0	—

5 TABLE 2-80

Concentration of trifloxystrobin (ppm)	Concentration of Compound No. 2 (ppm)			
	8	4	2	0
200	0 (11.3)	3.0 (25.0)	15.0 (35.0)	50.0
4	5.0 (19.1)	20.0 (42.5)	30.0 (59.5)	85.0
0	22.5	50.0	70.0	—

TABLE 2-81

Concentration of trifloxystrobin (ppm)	Concentration of Compound No. 4 (ppm)			
	4	2	1	0
200	0 (3.8)	0 (7.5)	20.0 (25.0)	50.0
4	0 (6.4)	1.0 (12.8)	21.0 (42.5)	85.0
0	7.5	15.0	50.0	—

TABLE 2-82

Concentration of trifloxystrobin (ppm)	Concentration of Compound No. 5 (ppm)			
	4	2	1	0
200	0 (0.75)	1.0 (15.0)	20.0 (32.5)	50.0
4	0 (1.3)	10.0 (25.5)	20.0 (55.3)	85.0
0	1.5	30.0	65.0	—

TABLE 2-83

Concentration of trifloxystrobin (ppm)	Concentration of Compound No. 8 (ppm)		
	2	1	0
4	7.0 (8.5)	27.0 (29.8)	85.0
0	10.0	35.0	—

5 TABLE 2-84

Concentration of trifloxystrobin (ppm)	Concentration of Compound No. 11 (ppm)			
	4	2	1	0
200	0 (3.3)	3.0 (3.8)	5.0 (15.0)	50.0
4	0 (5.5)	3.0 (6.4)	20.0 (25.5)	85.0
0	6.5	7.5	30.0	—

TABLE 2-85

Concentration of pyraclostrobin (ppm)	Concentration of Compound No. 4 (ppm)	
	1	0
100	70.0 (75.0)	100
0	75.0	—

TABLE 2-86

Concentration of pyraclostrobin (ppm)	Concentration of Compound No. 5 (ppm)			
	4	2	1	0
100	10.0 (25.0)	50.0 (65.0)	50.0 (80.0)	100
0	25.0	65.0	80.0	—

TABLE 2-87

Concentration of pyraclostrobin (ppm)	Concentration of Compound No. 11 (ppm)	
	1	0
100	5.0 (45.0)	100
0	45.0	—

5 TABLE 2-88

Concentration of potassium bicarbonate (ppm)	Concentration of Compound No. 2 (ppm)	
	2	0
1000	0 (2.0)	20.0
0	10.0	—

TABLE 2-89

Concentration of potassium bicarbonate (ppm)	Concentration of Compound No. 4 (ppm)	
	2	0
1000	0 (1.5)	20.0
100	0 (1.9)	25.0
0	7.5	—

TABLE 2-90

Concentration of potassium bicarbonate (ppm)	Concentration of Compound No. 5 (ppm)	
	2	0
100	0 (0.63)	25.0
0	2.5	—

TABLE 2-91

Concentration of potassium bicarbonate (ppm)	Concentration of Compound No. 8 (ppm)	
	16	0
100	0 (1.6)	25.0
0	6.5	—

TABLE 2-92

Concentration of potassium bicarbonate (ppm)	Concentration of Compound No. 11 (ppm)			
	4	2	1	0
100	0 (2.5)	0 (3.1)	5.0 (5.6)	25.0
0	10.0	12.5	22.5	—

5 TABLE 2-93

Concentration of meptyldinocap (ppm)	Concentration of Compound No. 2 (ppm)			
	8	4	2	0
3	0 (0.40)	0 (0.29)	0 (0.25)	2.5
0	16.0	11.5	10.0	—

TABLE 2-94

Concentration of meptyldinocap (ppm)	Concentration of Compound No. 4 (ppm)		
	2	1	0
3	0 (0.19)	0 (0.13)	2.5
0	7.5	5.0	—

TABLE 2-95

Concentration of meptyldinocap (ppm)	Concentration of Compound No. 5 (ppm)		
	4	1	0
3	0 (0.06)	0 (0.25)	2.5
0	2.5	10.0	—

TABLE 2-96

Concentration of meptyldinocap (ppm)	Concentration of Compound No. 8 (ppm)	
	8	0
3	0 (0.19)	2.5
0	7.5	—

TABLE 2-97

Concentration of meptyldinocap (ppm)	Concentration of Compound No. 11 (ppm)		
	4	1	0
3	0 (0.25)	0 (0.56)	2.5
0	10.0	22.5	—

5 TABLE 2-98

Concentration of dimethomorph (ppm)	Concentration of Compound No. 5 (ppm)		
	2	1	0
500	50.0 (61.8)	70.0 (76.0)	95.0
0	65.0	80.0	—

TABLE 2-99

Concentration of potassium phosphite (ppm)	Concentration of Compound No. 2 (ppm)			
	8	4	2	0
500	15.0 (18.0)	20.0 (40.0)	30.0 (56.0)	80.0
0	22.5	50.0	70.0	—

TABLE 2-100

Concentration of potassium phosphite (ppm)	Concentration of Compound No. 4 (ppm)			
	4	2	1	0
500	0 (6.0)	4.0 (12.0)	30.0 (40.0)	80.0
100	0 (6.4)	5.0 (12.8)	40.0 (42.5)	85.0
0	7.5	15.0	50.0	—

TABLE 2-101

Concentration of potassium phosphite (ppm)	Concentration of Compound No. 5 (ppm)		
	2	1	0
500	14.0 (24.0)	30.0 (52.0)	80.0
100	15.0 (25.5)	40.0 (55.3)	85.0
0	30.0	65.0	—

TABLE 2-102

Concentration of potassium phosphite (ppm)	Concentration of Compound No. 8 (ppm)	
	4	0
500	7.0 (8.0)	80.0
100	8.0 (8.5)	85.0
0	10.0	—

5 TABLE 2-103

Concentration of potassium phosphite (ppm)	Concentration of Compound No. 11 (ppm)	
	4	0
500	0 (5.2)	80.0
100	5.0 (5.5)	85.0
0	6.5	—

TABLE 2-104

Concentration of tolclofos-methyl (ppm)	Concentration of Compound No. 4 (ppm)			
	4	2	1	0
100	10.0 (32.0)	15.0 (36.0)	20.0 (60.0)	80.0
0	40.0	45.0	75.0	—

TABLE 2-105

Concentration of tolclofos-methyl (ppm)	Concentration of Compound No. 5 (ppm)			
	4	2	1	0
100	0 (20.0)	5.0 (52.0)	30.0 (64.0)	80.0
0	25.0	65.0	80.0	—

TABLE 2-106

Concentration of tolclofos-methyl (ppm)	Concentration of Compound No. 8 (ppm)			
	16	8	4	0
100	0 (14.0)	10.0 (44.0)	30.0 (56.0)	80.0
0	17.5	55.0	70.0	—

5 TABLE 2-107

Concentration of tolclofos-methyl (ppm)	Concentration of Compound No. 11 (ppm)			
	4	2	1	0
100	0 (5.2)	5.0 (12.0)	10.0 (36.0)	80.0
0	6.5	15.0	45.0	—

TABLE 2-108

Concentration of propamocarb hydrochloride (ppm)	Concentration of Compound No. 2 (ppm)		
	8	4	0
100	0 (9.5)	0 (30.9)	95.0
10	0 (9.5)	10.0 (30.9)	95.0
0	10.0	32.5	—

TABLE 2-109

Concentration of propamocarb hydrochloride (ppm)	Concentration of Compound No. 4 (ppm)		
	4	2	0
1000	0 (2.3)	5.0 (23.1)	92.5
100	0 (2.4)	10.0 (23.8)	95.0
10	0 (2.4)	10.0 (23.8)	95.0
0	2.5	25.0	—

TABLE 2-110

Concentration of propamocarb hydrochloride (ppm)	Concentration of Compound No. 5 (ppm)		
	4	2	0
1000	0 (4.6)	0 (6.9)	92.5
100	0 (4.8)	0 (7.1)	95.0
10	0 (4.8)	0 (7.1)	95.0
0	5.0	7.5	—

5 TABLE 2-111

Concentration of propamocarb hydrochloride (ppm)	Concentration of Compound No. 8 (ppm)		
	16	4	0
1000	0 (2.3)	2.0 (11.6)	92.5
100	0 (2.4)	5.0 (11.9)	95.0
10	2.0 (2.4)	5.0 (11.9)	95.0
0	2.5	12.5	—

TABLE 2-112

Concentration of propamocarb hydrochloride (ppm)	Concentration of Compound No. 11 (ppm)			
	4	2	1	0
1000	0 (2.3)	0 (9.3)	5.0 (50.9)	92.5
100	0 (2.4)	0 (9.5)	10.0 (52.3)	95.0
10	0 (2.4)	0 (9.5)	10.0 (52.3)	95.0
0	2.5	10.0	55.0	—

TEST EXAMPLE 3: Test on Preventive Effect Against Wheat
Glum Bloth

Wheat (cultivar: Norin-61-go) was cultivated in a plastic pot having a diameter of 7.5 cm, and when it
5 reached 1.5-leaf stage, a mixed chemical solution having the respective sample compounds adjusted to prescribed concentrations, was applied by a spray gun in an amount of 10 ml per seedling. After the chemical solution dried, a suspension of conidia of Septoria nodorum was
10 sprayed and inoculated and maintained at 20°C for 7 days (for the first 3 days maintained under high humidity condition). Thereafter, the area of lesions was investigated, and the diseased area ratio to non-treated section was obtained by the following equation. The
15 results are shown in Tables 3-1 to 3-14.

Diseased area ratio to non-treated section

$$= (a/b) \times 100$$

a: Average area of lesions in treated section

b: Average area of lesions in non-treated section

20 Further, the theoretical value was calculated by a Colby's formula and shown in brackets () in Tables 3-1 to 3-14. Since the diseased area ratio to non-treated section (experimental value) is lower than the theoretical value, the composition of the present
25 invention can be said to have a synergistic effect.

TABLE 3-1

Concentration of myclobutanil (ppm)	Concentration of Compound No. 2 (ppm)		
	50	12.5	0
20	0 (12.3)	5.0 (17.5)	35.0
5	7.0 (21.0)	10.0 (30.0)	60.0
0	35.0	50.0	—

TABLE 3-2

Concentration of myclobutanil (ppm)	Concentration of Compound No. 4 (ppm)		
	50	12.5	0
20	0 (7.0)	7.0 (12.3)	35.0
5	7.0 (12.0)	7.0 (21.0)	60.0
0	20.0	35.0	—

5 TABLE 3-3

Concentration of myclobutanil (ppm)	Concentration of Compound No. 5 (ppm)		
	50	12.5	0
20	5.0 (7.0)	7.0 (10.5)	35.0
0	20.0	30.0	—

TABLE 3-4

Concentration of myclobutanil (ppm)	Concentration of Compound No. 8 (ppm)		
	50	12.5	0
20	0 (7.0)	2.0 (12.3)	35.0
5	2.0 (12.0)	8.0 (21.0)	60.0
0	20.0	35.0	—

TABLE 3-5

Concentration of myclobutanil (ppm)	Concentration of Compound No. 11 (ppm)		
	50	12.5	0
20	2.0 (8.8)	5.0 (17.5)	35.0
5	3.0 (15.0)	10.0 (30.0)	60.0
0	25.0	50.0	—

TABLE 3-6

Concentration of prochloraz (ppm)	Concentration of Compound No. 4 (ppm)		
	50	12.5	0
20	0 (3.0)	0 (5.3)	15.0
5	0 (8.0)	0 (14.0)	40.0
0	20.0	35.0	—

TABLE 3-7

Concentration of prochloraz (ppm)	Concentration of Compound No. 5 (ppm)		
	50	12.5	0
20	0 (3.0)	0 (4.5)	15.0
5	5.0 (8.0)	10.0 (12.0)	40.0
0	20.0	30.0	—

5 TABLE 3-8

Concentration of prochloraz (ppm)	Concentration of Compound No. 8 (ppm)		
	50	12.5	0
20	0 (3.0)	2.0 (5.3)	15.0
5	7.0 (8.0)	13.0 (14.0)	40.0
0	20.0	35.0	—

TABLE 3-9

Concentration of prochloraz (ppm)	Concentration of Compound No. 11 (ppm)		
	50	12.5	0
20	0 (3.8)	7.0 (7.5)	15.0
5	3.0 (10.0)	15.0 (20.0)	40.0
0	25.0	50.0	—

TABLE 3-10

Concentration of prothioconazole (ppm)	Concentration of Compound No. 2 (ppm)		
	50	12.5	0
10	0 (10.5)	0 (15.0)	30.0
2.5	9.0 (14.0)	10.0 (20.0)	40.0
0	35.0	50.0	—

TABLE 3-11

Concentration of prothioconazole (ppm)	Concentration of Compound No. 4 (ppm)		
	50	12.5	0
10	0 (6.0)	3.0 (10.5)	30.0
2.5	3.0 (8.0)	10.0 (14.0)	40.0
0	20.0	35.0	—

5 TABLE 3-12

Concentration of prothioconazole (ppm)	Concentration of Compound No. 5 (ppm)		
	50	12.5	0
10	0 (6.0)	7.0 (9.0)	30.0
2.5	5.0 (8.0)	10.0 (12.0)	40.0
0	20.0	30.0	—

TABLE 3-13

Concentration of prothioconazole (ppm)	Concentration of Compound No. 8 (ppm)		
	50	12.5	0
10	0 (6.0)	0 (10.5)	30.0
2.5	3.0 (8.0)	13.0 (14.0)	40.0
0	20.0	35.0	—

TABLE 3-14

Concentration of prothioconazole (ppm)	Concentration of Compound No. 11 (ppm)		
	50	12.5	0
10	0 (7.5)	2.0 (15.0)	30.0
2.5	0 (10.0)	2.0 (20.0)	40.0
0	25.0	50.0	—

TEST EXAMPLE 4: Test on Preventive Effect Against Kidney Bean Gray Mold

5 Kidney bean (cultivar: Taisyou Kintoki) was cultivated in a plastic pot having a diameter of 12.0 cm, and when it reached 2.5-leaf stage, a mixed chemical solution having the respective test compounds adjusted to prescribed concentrations, was applied by a spray gun in

10 an amount of 10 ml per seedling. After the chemical solution dried, the leaf was cut out, and a filter paper disk (8 mm in diameter) was placed on the leaf. Then, 120 μ l of a suspension of spores of Botrytis cinerea (1.0×10^6 spores/ml) was dropped thereon and inoculated.

15 The system was maintained under a humidity condition at 20°C for three days, whereupon the area of lesions was investigated, and the diseased area ratio to non-treated section was obtained in the same manner as in Test Example 3. The results are shown in Tables 4-1 to 4-19.

20 Further, the theoretical value was calculated by a Colby's formula and shown in brackets () in Tables 4-1 to 4-19. Since the diseased area ratio to non-treated section (experimental value) is lower than the

theoretical value, the composition of the present invention can be said to have a synergistic effect.

TABLE 4-1

Concentration of Compound α (ppm)	Concentration of Compound No. 2 (ppm)	
	4	0
8	0 (9.8)	15.0
0	65.0	—

5

TABLE 4-2

Concentration of Compound α (ppm)	Concentration of Compound No. 5 (ppm)	
	4	0
8	0 (11.1)	15.0
0	74.0	—

TABLE 4-3

Concentration of Compound α (ppm)	Concentration of Compound No. 8 (ppm)	
	4	0
4	0 (6.5)	43.0
0	15.0	—

10 TABLE 4-4

Concentration of Compound α (ppm)	Concentration of Compound No. 11 (ppm)	
	4	0
8	0 (10.5)	15.0
4	22.0 (30.1)	43.0
0	70.0	—

TABLE 4-5

Concentration of pyribencarb (ppm)	Concentration of Compound No. 2 (ppm)	
	4	0
8	15.0 (42.3)	65.0
4	35.0 (45.5)	70.0
0	65.0	—

TABLE 4-6

Concentration of pyribencarb (ppm)	Concentration of Compound No. 4 (ppm)	
	4	0
8	0 (45.5)	65.0
4	35.0 (49.0)	70.0
0	70.0	—

5 TABLE 4-7

Concentration of pyribencarb (ppm)	Concentration of Compound No. 5 (ppm)	
	4	0
8	0 (48.1)	65.0
4	0 (51.8)	70.0
0	74.0	—

TABLE 4-8

Concentration of pyribencarb (ppm)	Concentration of Compound No. 8 (ppm)	
	4	0
4	0 (10.5)	70.0
0	15.0	—

TABLE 4-9

Concentration of pyribencarb (ppm)	Concentration of Compound No. 11 (ppm)	
	4	0
8	0 (45.5)	65.0
4	0 (49.0)	70.0
0	70.0	—

TABLE 4-10

Concentration of cyflufenamid (ppm)	Concentration of Compound No. 4 (ppm)	
	8	0
10	38.0 (56.4)	87.3
0	64.6	—

5 TABLE 4-11

Concentration of cyflufenamid (ppm)	Concentration of Compound No. 5 (ppm)		
	8	4	0
100	22.8 (61.5)	48.1 (68.7)	82.3
0	74.7	83.5	—

TABLE 4-12

Concentration of cyflufenamid (ppm)	Concentration of Compound No. 8 (ppm)	
	4	0
100	75.9 (81.2)	82.3
10	70.9 (86.2)	87.3
0	98.7	—

TABLE 4-13

Concentration of proquinazid (ppm)	Concentration of Compound No. 4 (ppm)	
	8	0
100	55.7 (59.7)	92.4
10	55.7 (62.2)	96.2
0	64.6	—

TABLE 4-14

Concentration of proquinazid (ppm)	Concentration of Compound No. 5 (ppm)		
	8	4	0
100	55.7 (69.0)	43.0 (77.2)	92.4
10	70.9 (71.9)	65.8 (80.3)	96.2
0	74.7	83.5	—

TABLE 4-15

Concentration of proquinazid (ppm)	Concentration of Compound No. 8 (ppm)	
	4	0
100	78.5 (91.2)	92.4
0	98.7	—

5 TABLE 4-16

Concentration of proquinazid (ppm)	Concentration of Compound No. 11 (ppm)	
	8	0
100	40.5 (51.5)	92.4
10	50.6 (53.6)	96.2
0	55.7	—

TABLE 4-17

Concentration of compound γ (ppm)	Concentration of Compound No. 4 (ppm)	
	4	0
10	55.7 (70.6)	88.6
1	55.7 (70.6)	88.6
0	79.7	—

TABLE 4-18

Concentration of compound γ (ppm)	Concentration of Compound No. 5 (ppm)		
	8	4	0
10	35.4 (66.2)	60.8 (74.0)	88.6
0	74.7	83.5	—

TABLE 4-19

Concentration of compound γ (ppm)	Concentration of Compound No. 8 (ppm)	
	4	0
10	10.1 (87.5)	88.6
1	83.5 (87.5)	88.6
0	98.7	—

TEST EXAMPLE 5: Test on Antifungal Activity Against Rice Blast Pathogen

5 Mycelial growth of Phyicularia oryzae preliminarily obtained by cultivation was punched out by a cork borer having a diameter of 4 mm and transplanted on a potato sucrose agar medium containing mixed chemical agents adjusted to prescribed concentrations. The system was

10 left to stand at 25°C for 3 days for cultivation, and thereafter, the diameter of mycelial growth was measured. The incidence to non-treated section was obtained by the following equation, and the results are shown in Table 5-1 to 5-3.

15 Incidence to non-treated section = $(a/b) \times 100$

a: Average diameter (mm) of mycelial growth in treated section

b: Average diameter (mm) of mycelial growth in non-treated section.

20 Further, the theoretical value was calculated by a Colby's formula and shown in brackets () in Tables 5-1 to 5-3. Since the incidence to non-treated section is lower than the theoretical value, the composition of the

present invention can be said to have a synergistic effect.

TABLE 5-1

Concentration of ferimzone (ppm)	Concentration of Compound No. 2 (ppm)	
	100	0
0.5	2.2 (9.0)	10.9
0	82.6	—

5

TABLE 5-2

Concentration of ferimzone (ppm)	Concentration of Compound No. 4 (ppm)		
	100	10	0
0.5	0 (7.6)	6.5 (7.8)	10.9
0.25	26.1 (33.3)	28.3 (34.3)	47.8
0	69.6	71.7	—

TABLE 5-3

Concentration of ferimzone (ppm)	Concentration of Compound No. 11 (ppm)		
	50	5	0
0.5	0 (6.9)	0 (8.1)	10.9
0.25	26.1 (30.1)	28.3 (35.3)	47.8
0	63.0	73.9	—

10 TEST EXAMPLE 6: Test on Antifungal Activity Against Gray Mold Pathogen

15 Mycelial growth of Botrytis cinerea preliminarily obtained by cultivation was punched out by a cork borer having a diameter of 4 mm and transplanted on a potato sucrose agar medium containing mixed chemical agents adjusted to prescribed concentrations. The system was

left to stand at 25°C for 3 days for cultivation,
 whereupon the diameter of mycelial growth was measured.
 The incidence to non-treated section was obtained in the
 same manner as the above Test Example 5, and the results
 5 are shown in Table 6-1 to 6-3.

Further, the theoretical value was calculated by a
 Colby's formula and shown in brackets () in Tables 6-1
 to 6-3. Since the incidence to non-treated section is
 lower than the theoretical value, the composition of the
 10 present invention can be said to have a synergistic
 effect.

TABLE 6-1

Concentration of captan (ppm)	Concentration of Compound No. 4 (ppm)	
	0.5	0
1	41.9 (42.7)	94.4
0	45.2	—

15 TABLE 6-2

Concentration of captan (ppm)	Concentration of Compound No. 5 (ppm)	
	5	0
1	27.4 (30.5)	94.4
0	32.3	—

TABLE 6-3

Concentration of captan (ppm)	Concentration of Compound No. 11 (ppm)		
	50	5	0
1	22.6 (30.5)	40.3 (43.4)	94.4
0	32.3	46.0	—

TEST EXAMPLE 7: Test on Antifungal Activity Against Gray Mold Pathogen

On a potato sucrose agar medium in a Petri dish, a suspension of spores of Botrytis cinerea (spore concentration: 2×10^6 spores/ml) was spread in an amount of 300 μ l per Petri dish and dried. Thereon, filter paper immersed in a chemical solution (30 ppm) of Compound No. 2 and a filter paper immersed in a chemical solution (30 ppm) of fluazinam were placed to intersect each other (the respective filter papers were air-dried ones of 0.7 cm \times 8 cm). The system was left to stand at 20°C for 4 days, and then, mycelial growth of Botrytis cinerea was observed (photograph in Fig. 1). In Fig. 1, the transversely-placed filter paper is one immersed in Compound No. 2, and the longitudinally-placed filter paper is one immersed in fluazinam. The white turbid portion is a portion where Botrytis cinerea proliferated.

Both end portions of the transversely-placed filter paper are in contact with mycelial growth area of Botrytis cinerea, thus indicating that by the single use of Compound No. 2 (30 ppm), no adequate controlling effect can be obtained. Whereas, both end portions of the longitudinally-placed filter paper, are not in contact with mycelial growth area of Botrytis cinerea, thus indicating that by the single use of fluazinam (30 ppm), a certain controlling effect is obtained. Whereas, in the vicinity of the intersection of filter papers, the

filter papers are not in contact with mycelial growth area of Botrytis cinerea over a wide range, thus indicating that when Compound No. 2 and fluazinam are used in combination, an excellent controlling effect can
5 be obtained.

This controlling effect was numerically represented. Namely, the distance from both ends of the longitudinally-placed filter paper corresponding to a single use section of fluazinam to the mycelial growth
10 area of Botrytis cinerea was measured at four portions (arrow portions in Fig. 2), and averaged to obtain 5 mm. On the other hand, the distance from the portion where the filter papers intersect each other, corresponding to a mixed use section of Compound No. 2 and fluazinam to
15 mycelial growth area of Botrytis cinerea was measured at four portions (arrow portions in Fig. 3) and averaged to obtain 17 mm.

TEST EXAMPLE 8: Test on Antifungal Activity Against Gray Mold Pathogen

20 The test was carried out in the same manner as in Test Example 7 except that 30 ppm of fluazinam was changed to 30 ppm of oxpoconazole fumarate. As a result, the distance (average value) from both ends of the longitudinally-placed filter paper corresponding to the
25 single use section of oxpoconazole fumarate to mycelial growth area of Botrytis cinerea, was 7.5 mm. Whereas, the distance (average value) from the portion where the

filter papers intersect each other corresponding to a mixed use section of Compound No. 2 and oxpoconazole fumarate to mycelial growth area of Botrytis cinerea was 13.3 mm.

5 Now, Formulation Examples of the composition of the present invention will be described, but it should be understood that the blend components, blend ratio, type of formulation, etc. in the present invention are not limited to the following examples.

10 FORMULATION EXAMPLE 1

- | | | |
|----|---|--------------------|
| | (a) Kaolin | 78 parts by weight |
| | (b) Condensate of β -naphthalenesulfonic acid sodium salt with formalin | 2 parts by weight |
| | (c) Polyoxyethylene alkylaryl ether sulfate | |
| 15 | | 5 parts by weight |
| | (d) Hydrated amorphous silicon dioxide | |
| | | 15 parts by weight |

A mixture of the above components, a compound of the formula (I) and epoxiconazole are mixed in a weight ratio
20 of 8:1:1 to obtain a wettable powder.

FORMULATION EXAMPLE 2

- | | | |
|----|---------------------------------|--------------------|
| | (a) Compound of the formula (I) | 0.5 part by weight |
| | (b) Epoxiconazole | 0.5 part by weight |
| | (c) Bentonite | 20 parts by weight |
| 25 | (d) Kaolin | 74 parts by weight |
| | (e) Sodium lignin sulfonate | 5 parts by weight |

To the above components, a suitable amount of water

required for granulation is added, followed by mixing and granulation to obtain granules.

FORMULATION EXAMPLE 3

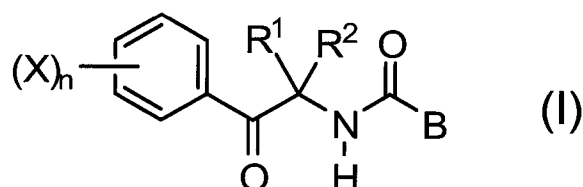
	(a) Compound of the formula (I)	2 parts by weight
5	(b) Epoxiconazole	3 parts by weight
	(c) Talc	95 parts by weight

The above components are uniformly mixed to obtain a dust.

10 The entire disclosure of Japanese Patent Application No. 2007-287699 filed on November 5, 2007 including specification, claims, drawings and summary is incorporated herein by reference in its entirety.

CLAIMS:

1. A fungicidal composition comprising synergistically effective amounts of (a) a carboxylic acid amide derivative of the formula (I) or its salt:



5 wherein B is a heterocyclic group which may be substituted by Y; each of R¹ and R² which are independent of each other, is C₁₋₁₂ alkyl; X is halogen, C₁₋₁₂ alkyl or C₁₋₁₂ alkoxy; Y is halogen, C₁₋₁₂ alkyl or C₁₋₁₂ haloalkyl; and n is an integer of from 0 to 5; wherein the compound

10 of the formula (I) is at least one compound selected from the group consisting of N-[(3',4'-dichloro-1,1-dimethyl)phenacyl]-3-methyl-2-thiophenecarboxamide, N-[[2'-methyl-4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-trifluoromethyl-2-pyridinecarboxamide, N-[[2'-methyl-4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-methyl-2-

15 thiophenecarboxamide, N-[[4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-trifluoromethyl-2-pyridinecarboxamide, N-[[4'-(2-propyloxy)-1,1-dimethyl]phenacyl]-3-methyl-2-thiophenecarboxamide and N-[[4'-(2-pentyloxy)-1,1-dimethyl]phenacyl]-3-

20 trifluoromethyl-2-pyridinecarboxamide; and (b) at least one fungicidal compound selected from the group consisting of triflumizole, myclobutanil, cyproconazole, tebuconazole, hexaconazole, N-propyl-N-[2-(2,4,6-

trichlorophenoxy)ethyl]imidazole-1-carboxamide,
 metconazole, epoxiconazole, prothioconazole,
 difenoconazole, tetraconazole, tricyclazole, oxpoconazole
 fumarate, cyazofamid, hymexazol, mepanipyrim,
 5 pyrimethanil, cyprodinil, ferimzone, 5-chloro-7-(4-
 methylpiperidin-1-yl)-6-(2,4,6-trifluorophenyl)-
 [1,2,4]triazolo[1,5-a]pyrimidine, azoxystrobin, kresoxim-
 methyl, trifloxystrobin, dimoxystrobin, pyraclostrobin,
 captan, folpet, fluazinam, potassium bicarbonate, sulfur,
 10 mancozeb, chlorothalonil, procymidone, iprodione,
 spiroxamine, fludioxonil, metrafenone, fenpropidin,
 meptyldinocap, dimethomorph, fenpropimorph, cymoxanil,
 potassium phosphite, fosetyl-Al, tolclofos-methyl,
 flutolanil, fenhexamid, quinoxifen, copper oxychloride,
 15 thiophanate-methyl, pyribencarb, propamocarb
 hydrochloride, polyoxins, kasugamycin, iminoctadine,
 cyflufenamid, 2,3-dimethyl-6-t-butyl-8-fluoro-4-
 acetylquinoline, 2-(2-fluoro-5-
 (trifluoromethyl)phenylthio)-2-(3-(2-
 20 methoxyphenyl)thiazolidin-2-yliden)acetonitrile,
 proquinazid, 4-(2,3,4-trimethoxy-6-methylbenzoyl)-2,5-
 dichloro-3-trifluoromethylpyridine, 4-(2,3,4-trimethoxy-
 6-methylbenzoyl)-2-chloro-3-trifluoromethyl-5-
 methoxypyridine, 3-(2,3,4-trimethoxy-6-methylbenzoyl)-5-
 25 bromo-4-chloro-2-methoxypyridine and 3-(2,3,4-trimethoxy-
 6-methylbenzoyl)-5-chloro-2-methoxy-4-methylpyridine.

2. The composition according to Claim 1, wherein the

blend weight ratio of (a) the carboxylic acid amide derivative or its salt to (b) the fungicidal compound is from 1:70,000 to 70,000:1.

3. A method for controlling noxious fungi, which
5 comprises applying the composition as defined in Claim 1 to noxious fungi or to a site where they grow.

4. A method for controlling noxious fungi, which comprises applying (a) the carboxylic acid amide derivative of the formula (I) or its salt, and (b) the
10 fungicidal compound, as defined in Claim 1, to noxious fungi or to a site where they grow.

Fig. 1

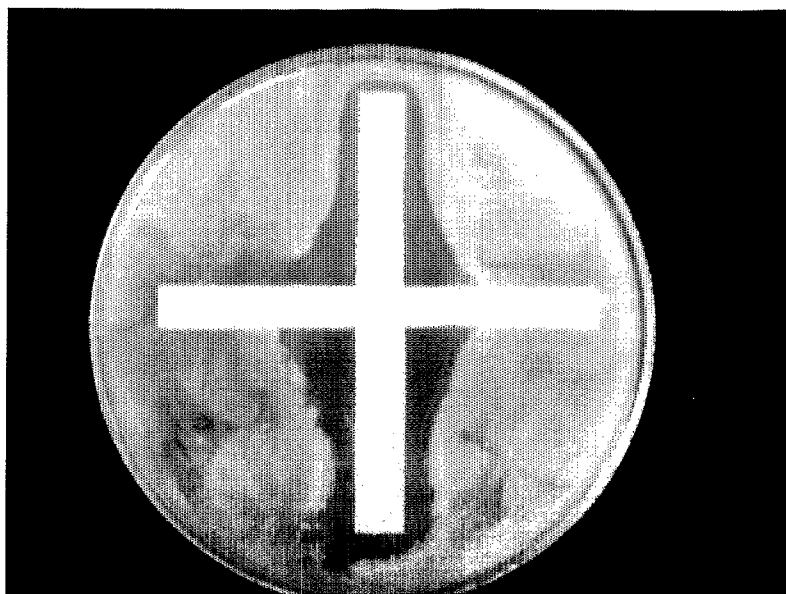


Fig. 2

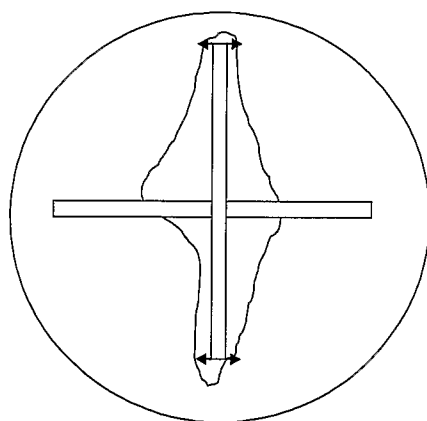
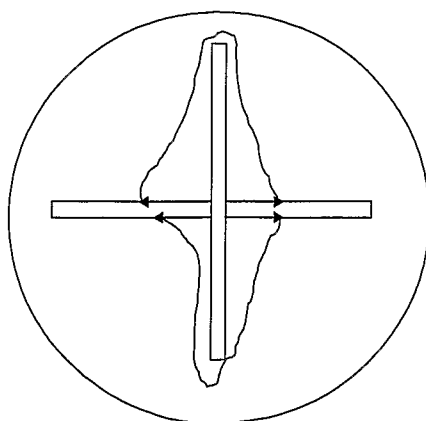


Fig. 3



END