



(51) International Patent Classification:

A01N 43/653 (2006.01) A01N 43/40 (2006.01)
A01P 3/00 (2006.01)

TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

(21) International Application Number:

PCT/CN2017/094623

Published:

— with international search report (Art. 21(3))

(22) International Filing Date:

27 July 2017 (27.07.2017)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

1613455.3 04 August 2016 (04.08.2016) GB

(71) Applicant: **JIANGSU ROTAM CHEMISTRY CO., LTD** [CN/CN]; No. 88, Rotam Road, ETDZ, Kunshan, Jiangsu 215301 (CN).

(72) Inventor: **BRISTOW, James, Timothy**; Unit 6, 26/F, Trend Centre, 29 Cheung Lee Street, Chai Wan, Hong Kong (CN).

(74) Agent: **UNITALEN ATTORNEYS AT LAW**; 7th Floor, Scitech Place, No. 22, Jian Guo Men Wai Ave., Chao Yang District, Beijing 100004 (CN).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,

(54) Title: SYNERGISTIC FUNGICIDAL COMPOSITION

(57) Abstract: A fungicidal composition exhibiting a synergistic effect is provided, the composition comprising as a component (A) the crystalline modification II of the anhydrate of 3-pyridinecarboxamide, 2-chloro-N-(4'chloro[1,1'biphenyl]-2-yl) (boscalid), and as a component (B) at least one triazole fungicide and/or at least one strobilurin fungicide. There is also provided the use of component (A) the crystalline modification II of the anhydrate of 3-pyridinecarboxamide, 2-chloro-N-(4'chloro[1,1'biphenyl]-2-yl) (boscalid), and component (B) at least one triazole fungicide and/or at least one strobilurin fungicide for preventing or treating fungal infestations of plants, plant parts or a locus. Still further, there is provided a method for controlling harmful fungi comprising applying to plants, plant parts or their locus as component (A) the crystalline modification II of the anhydrate of 3-pyridinecarboxamide, 2-chloro-N-(4'chloro[1,1'biphenyl]-2-yl) (boscalid), and as component (B) at least one triazole fungicide and/or at least one strobilurin fungicide.



SYNERGISTIC FUNGICIDAL COMPOSITION

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to GB Patent Application No.1613455.3, titled "A SYNERGISTIC FUNGICIDAL COMPOSITION", filed with GB Intellectual Property Office on August 4, 2016, the entire contents of which are incorporated herein by reference.

FIELD

[0002] The present invention relates to a synergistic fungicidal composition comprising two or more fungicidally active components. The composition may be used for preventing and/or treating fungal infestations in plants and plant parts. The present invention also relates to a method of preventing and/or treating fungal infestations in plants and plant parts comprising applying to the plants, plant parts, or their locus a combination of the aforementioned active components, including (1) preparing the synergistic fungicidal composition; and (2) applying the synergistic fungicidal composition on the plants or plant parts or on a locus. The present invention also relates to the use of a combination of the aforementioned active components and the synergistic fungicidal composition in the treatment and/or prevention of fungal infestations in plants.

BACKGROUND

[0003] The compound, 3-pyridinecarboxamide, 2-chloro-N-(4'chloro[1,1'biphenyl]-2-yl), having the common name boscalid, has been firstly described in US 5,330,995. The crystalline modification I of the anhydrate of boscalid, having a melting point from 144 to 145°C, is known. This crystalline modification is discussed in US 7,501,384.

[0004] The crystalline modification I of the anhydrate of boscalid is, however, hard to mill in water. As a result, it is not a simple task to directly formulate the crystalline modification I into formulations which require grinding/milling processes. Such formulations where the boscalid material is required to be ground and/or milled are, for example, granules, encapsulated granules, tablets, water-dispersible granules, water-dispersible tablets, water-dispersible powders, including water-dispersible powders for seed treatment, dust

formulations, and formulations in which the active compound is present in a dispersed form, such as, for example suspension concentrates, oil-based suspension concentrates, suspoemulsions, and suspension concentrates for seed treatment. Hydration of the crystalline modification I of boscalid is needed prior to formulating the material into a suspension concentrate (SC). As suggested in US 7,501,384, the crystalline modification II of the anhydrate of boscalid is more suitable for making formulations which require grinding/milling processes.

[0005] Experience with the single active straight formulation fungicides worldwide indicates that there is a high risk of development of resistance amongst the target pathogens. Resistance has been reported worldwide in an increasing number of fungal pathogens of field crops, fruit, vegetable, and so on. Employing a mixture of different class of fungicides can reduce selection pressure towards resistance.

[0006] Triazoles are a class of systemic fungicides that enter the plant and spread from the site of application to untreated or newly grown area, uprooting existing fungi or protecting the plant from future attacks. The mechanism of action of the triazole fungicides is due to their ability to interfere with the biosynthesis of biosteroids or to inhibit the biosynthesis of ergosterol. Ergosterol is needed for membrane structure and function and is essential for the development of functional cell walls by fungi. The application of triazoles results in abnormal fungal growth and eventually death.

[0007] Fungicidally active triazoles are known in the art. Examples of fungicidally active triazoles are azaconazole, bromuconazole, cyproconazole, diclobutrazol, difenoconazole, diniconazole, diniconazole-M, epoxiconazole, etaconazole, fenbuconazole, fluquinconazole, flusilazole, flutriafol, furconazole, furconazole-cis, hexaconazole, imibenconazole, ipconazole, metconazole, myclobutanil, penconazole, propiconazole, prothioconazole, quinconazole, simeconazole, tebuconazole, tetraconazole, triadimefon, triadimenol, triticonazole, uniconazole, amitrol, bitertanol, climbazole, clotrimazole, fluotrimazole, paclobutrazol, triazbutil and 1-(4-fluorophenyl)-2-(1H-1,2,4-triazole-1-yl)ethanone.

[0008] Strobilurin fungicides are a well-known class of fungicides with a broad spectrum of disease control. The strobilurin fungicides are extracted from the fungus *Strobilurus tenacellus*. They have a suppressive effect on other fungi, reducing competition for nutrients. In particular, they inhibit electron transfer between cytochrome b and cytochrome C1 at the

ubiquinol oxidising site in mitochondria, disrupting the metabolism and preventing growth of the target fungi. Examples of strobilurins are fluoxastrobin, mandestrobin, azoxystrobin, bifujunzhi, coumoxystrobin, enoxastrobin, flufenoxystrobin, jiaxiangjunzhi, picoxystrobin, pyraoxystrobin, pyraclostrobin, pyrametostrobin, triclopyricarb, dimoxystrobin, fenaminstrobin, metominostrobin, orysastrobin, kresoxim-methyl, trifloxystrobin, famoxadone and fenamidone.

[0009] We surprisingly found that by combining the crystalline modification II of the anhydrate of boscalid with one or more triazole and/or strobilurin fungicides an increased, synergistic fungicidal activity was achieved.

SUMMARY

[0010] In a first aspect, the present invention provides a synergistic fungicidal composition for preventing and/or treating fungal infestations in plants and plant parts, the composition comprising components:

[0011] (A) the crystalline modification II of the anhydrate of 3-pyridinecarboxamide, 2-chloro-N-(4'chloro[1,1'biphenyl]-2-yl) (boscalid); and

[0012] (B) at least one triazole fungicide and/or at least one strobilurin fungicide.

[0013] The present invention also provides in a further aspect a method for preventing and/or treating fungal infestations in plants and/or plant parts, the method comprising applying to the plants, plant parts and/or their locus the components:

[0014] (A) the crystalline modification II of the anhydrate of 3-pyridinecarboxamide, 2-chloro-N-(4'chloro[1,1'biphenyl]-2-yl) (boscalid); and

[0015] (B) at least one triazole fungicide and/or at least one strobilurin fungicide.

[0016] In a still further aspect, the present invention provides the use in the prevention and/or treatment of fungal infestations in plants and/or plant parts the components:

[0017] (A) the crystalline modification II of the anhydrate of 3-pyridinecarboxamide, 2-chloro-N-(4'chloro[1,1'biphenyl]-2-yl) (boscalid); and

[0018] (B) at least one triazole fungicide and/or at least one strobilurin fungicide.

[0019] In one preferred embodiment, the method and use of the present invention employ a synergistic composition of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS

[0020] "Plant" as used herein, refers to all plant and plant populations such as desired and undesired wild plants or crop plants.

[0021] "Plant parts" as used herein, refers to all parts and organs of plants, such as shoots, leaves, needles, stalks, stems, fruit bodies, fruits, seeds, roots, tubers and rhizomes. Harvested materials, and vegetative and generative propagation materials, for example, cuttings, tubers, meristem tissue, rhizomes, offsets, seeds, single and multiple plant cells and any other plant tissues, are also included.

[0022] "Locus" as used herein, refers to the place on which the plants are growing, the place at which the plant propagation materials of the plants are sown or the place at which the plant propagation materials of the plants will be sown.

[0023] "At least one" designates a number of the respective compounds or components of 1, 2, 3, 4, 5, 6, 7, 8, 9 or more, preferably 1, 2, or 3.

[0024] In the method and use of the present invention, the components (A) and (B) may be applied to the locus before and/or after the plants and/or plant propagation materials have been planted or sown at the locus.

[0025] The crystalline modification II of boscalid as used herein, refers to the crystalline modification of the anhydrate disclosed in US 2006/0154825, the content of which is incorporated herein by way of reference. US 2006/0154825 describes that the crystalline modification II of the anhydrate of boscalid may be prepared by a process comprising:

[0026] a) dissolving the anhydrate of the crystalline modification I of boscalid in a polar organic solvent or an aromatic hydrocarbon; and

[0027] b) precipitation of the anhydrate of the crystalline modification II of boscalid by cooling the solvent.

[0028] US 2006/0154825 describes the crystalline modification II of boscalid as having the following properties:

Molecular weight [g/mol]:	342
Melting point [°C] (DSC):	147.2
Heat of fusion [J/g] (DSC):	106
Density [g/cm ³]:	1.457
Characteristic IR bands [cm ⁻¹]:	868, 917, 1675

[0029] The cell parameters from the crystallographic investigations of the crystalline modification II of boscalid using a single crystal diffractometer from Siemens are given in US 2006/0154825 as follows:

Class:	Monoclinic
Space group:	P21/c
a:	1162.5(6) pm
b:	1134.2(4) pm
c:	1283.2(5) pm
α :	90°
β :	114.52(4) °
γ :	90°
Volume:	1.5390 nm ⁻³
Z:	4
Density (calculated):	1.481 mg/m ⁻³
R ¹ , wR ² :	0.0489; 0.1264

[0030] The parameters indicated above have the following meanings:

a, b, c = edge lengths of the unit cell;

α , β , γ = corresponding angles; and

Z = number of molecules in the unit cell.

[0031] As indicated above, the present invention employs a fungicidally active triazole. Any suitable fungicidally active triazole may be employed. The triazole is preferably one or more selected from azaconazole, bromuconazole, cyproconazole, diclobutrazol, difenoconazole, diniconazole, diniconazole-M, epoxiconazole, etaconazole, fenbuconazole,

fluquinconazole, flusilazole, flutriafol, furconazole, furconazole-cis, hexaconazole, imibenconazole, ipconazole, metconazole, myclobutanil, penconazole, propiconazole, prothioconazole, quinconazole, simeconazole, tebuconazole, tetraconazole, triadimefon, triadimenol, triticonazole, uniconazole, amitrol, bitertanol, climbazole, clotrimazole, fluotrimazole, paclobutrazol, triazbutil and 1-(4-fluorophenyl)-2-(1H-1,2,4-triazole-1-yl)ethanone. Particularly preferred triazoles are prothioconazole, cyproconazole and metconazole.

[0032] As also indicated above, the present invention employs a fungicidally active strobilurin. The strobilurin may be used in place of or in addition to the triazole fungicide. Any suitable fungicidally active strobilurin may be employed. The strobilurin is preferably one or more selected from fluoxastrobin, mandestrobin, azoxystrobin, bifujunzhi, coumoxystrobin, enoxastrobin, flufenoxystrobin, jiaxiangjunzhi, picoxystrobin, pyraoxystrobin, pyraclostrobin, pyrametostrobin, triclopyricarb, dimoxystrobin, fenaminstrobin, metominostrobin, orysastrobin, kresoxim-methyl, trifloxystrobin, famoxadone and fenamidone. A particularly preferred strobilurin is picoxystrobin.

[0033] The synergistic fungicidal composition, method and use of the present invention are suitable for treating and protecting a wide range of plants. In particular, the present invention is of significant advantage in treating and protecting plants of a range of crops. Crops which may be treated include cereals, such as wheat, barley, rye, oats, corn, rice, sorghum, triticale and related crops; fruit, such as pome fruit, stone fruit and soft fruit, for example apples, pears, plums, peaches, pistachios, almonds, cherries, and berries, for example vines, strawberries, bushberries, caneberries, raspberries and blackberries; leguminous plants, such as beans, lentils, peas and soybeans; oil plants, such as oilseed rape, mustard and sunflowers; cucurbitaceae, such as cantaloupe, marrows, cucumbers, melons, pumpkin, squash and watermelon; citrus fruit, such as oranges, lemons, grapefruit and mandarins; and vegetables, such as spinach, lettuces, asparagus, cabbages, carrots, onions, tomatoes, potatoes, paprika, garlic and leeks; coffee; sugarcane; hops; and tree nuts; as well as ornamentals, such as flowers, for example rose, shrubs, broad-leaved trees and evergreens, for example conifers. The composition, method and use of the present invention are particularly advantageous when applied to cereals, fruits and oil plants, more preferably wheat, barley, vine and oilseed rape.

[0034] The compositions, method and use of the present invention can be used in the

agricultural sector and related fields of use for preventing and/or treating fungal infestations caused by a wide range of pathogens, for example:

[0035] *Botrytis*, *Sclerotinia*, for example *Sclerotinia sclerotiorum*; *Alternaria*, for example *Alternaria brassicae*; *Phoma*, for example *Phoma lingam*; *Septoria* for example *Septoria nodorum* and *Septoria tritici*; *Erysiphe*, for example *Erysiphe graminis*; *Puccinia*, for example *Puccinia striiformis*, *Puccinia recondita*, *Puccinia hordei*, *Puccinia avenae*, *Puccinia triticina* and *Puccinia graminis*; *Fusarium*, for example *Fusarium pseudograminearum*, *Fusarium graminearum*, *Fusarium avenaceum*, *Fusarium culmorum* and *Fusarium roseum*; *Cladosporium*; *Rhynchosporium*, for example *Rhynchosporium secalis*; *Pyrenophora*, for example *Pyrenophora teres*; *Cylindrosporium*; *Tapesia*, for example *Tapesia yallundae* and *Tapesia acuformis*; *Ramulispora*, for example *Ramulispora herpotrichoides* and *Ramulispora acuformis*; *Leptosphaeria*; and *Pseudocercospora herpotrichoides*.

[0036] The present invention is particularly advantageous in the control of *Septoria tritici*, *Puccinia* sp., for example *Puccinia asparagi*, *Puccinia graminis*, *Puccinia horiana*, *Puccinia mariae-wilsoniae*, *Puccinia poarum*, *Puccinia psidii*, *Puccinia recondite*, *Puccinia sessilis*, *Puccinia striiformis* and *Puccinia triticina*; *Pyrenophora teres*; *Stagonosporopsis andigena*; *Sclerotinia sclerotiorum*; *Plasmopara viticola*; and *Botrytis cinerea*, more particularly *Septoria tritici*, *Puccinia triticina*, *Puccinia striiformis* var. *striiformis* on wheat; *Puccinia graminis*, *Pyrenophora teres* on barley; *Stagonosporopsis andigena*, *Sclerotinia sclerotiorum* on oilseed rape; and *plasmopara viticola*, *botrytis cinerea* on vines.

[0037] The crystalline modification II of boscalid may be present in the synergistic fungicidal composition of the present invention in any suitable amount, and is generally present in an amount of from about 1% to about 80% by weight of the composition, preferably from about 1% to about 60% by weight of the composition, more preferably from about 1% to about 50%, still more preferably from about 1% to about 40%, more preferably still from about 1% to about 30%, especially from about 1% to about 20%, more especially from about 1% to about 10% by weight of the composition.

[0038] The one or more triazole fungicides may be present in the synergistic fungicidal composition in any suitable amount, and are generally present in an amount of from about 1% to about 80% by weight of the composition, preferably from about 1% to about 60% by weight of the composition, more preferably from about 1% to about 50%, still more

preferably from about 1 % to about 40%, more preferably still from about 1% to about 30%, especially from about 1% to about 20%, more especially from about 1% to about 10% by weight of the composition.

[0039] The one or more strobilurin fungicides may be present in the synergistic fungicidal composition in any suitable amount, and are generally present in an amount of from about 1% to about 80% by weight of the composition, preferably from about 1% to about 60% by weight of the composition, more preferably from about 1% to about 50%, still more preferably from about 1% to about 40%, more preferably still from about 1% to about 30%, especially from about 1% to about 20%, more especially from about 1% to about 10% by weight of the composition.

[0040] The crystalline modification II of the anhydrate of boscalid and triazoles and/or strobilurin fungicides may be employed in any suitable weight ratio that provides the synergistic effect referred to above. In particular, the weight ratio of the crystalline modification II of the anhydrate of boscalid to the total amount of the triazole fungicides and/or strobilurin fungicides is preferably in the range of from about 25:1 to about 1:25, about 20:1 to about 1:20, or about 15:1 to about 1:15, more preferably from about 10:1 to about 1:10, from about 9:1 to about 1:9, from about 8:1 to about 1:8, from about 7:1 to about 1:7, still more preferably from about 6:1 to about 1:6, from about 5:1 to about 1:5, from about 4:1 to about 1:4, or about 3:1 to about 1:3, or from about 2:1 to about 1:2.

[0041] As noted above, the compositions, method and use of the present invention employ the crystalline modification II of boscalid in combination with one or more triazoles and/or one or more strobilurin fungicides. In some embodiments, the crystalline modification II of boscalid is employed with both a triazole and a strobilurin. In more preferred embodiments, the crystalline modification II of boscalid is employed with either one or more triazoles or one or more strobilurin fungicides.

[0042] In some preferred embodiments, the compositions, method and use of the present invention employ the following combinations of components:

[0043] (A) the crystalline modification II of the anhydrate of boscalid; and (B) cyproconazole;

[0044] (A) the crystalline modification II of the anhydrate of boscalid; and (B)

metconazole;

[0045] (A) the crystalline modification II of the anhydrate of boscalid; and (B) prothioconazole; and

[0046] (A) the crystalline modification II of the anhydrate of boscalid; and (B) picoxystrobin.

[0047] The compositions of the present invention may be produced in conventional manner and provided in any suitable formulation, for example by mixing the crystalline modification II of the anhydrate of boscalid with the one or more triazole fungicides and/or strobilurin fungicides, together with one or more auxiliaries appropriate for the type of formulation. Suitable auxiliaries which may be comprised in the composition of the invention are all customary formulation adjuvants or components, such as one or more extenders, carriers, solvents, surfactants, stabilizers, anti-foaming agents, anti-freezing agents, preservatives, antioxidants, colorants, thickeners, solid adherents and inert fillers. Such auxiliaries are known in the art and are commercially available. Their use in the formulation of the compositions of the present invention will be apparent to the person skilled in the art.

[0048] Formulation types suitable for the compositions of the present invention include water-soluble concentrates (SL), emulsifiable concentrates (EC), emulsions (EW), micro-emulsions (ME), suspension concentrates (SC), oil-based suspension concentrates (OD), flowable suspensions (FS), water-dispersible granules (WG), water-soluble granules (SG), water-dispersible powders (WP), water soluble powders (SP), granules (GR), encapsulated granules (CG), fine granules (FG), macrogranules (GG), aqueous suspo-emulsions (SE), capsule suspensions (CS) and microgranules (MG). Preferably, the composition is formulated as a suspension concentrate (SC), a water-dispersible powder (WP) or as water-dispersible granules (WG). A most preferred type of formulation is suspension concentrates (SC).

[0049] The fungicidal composition may comprise one or more inert fillers. Such inert fillers are known in the art and available commercially. Suitable fillers include, for example, natural ground minerals, such as kaolins, aluminas, talc, chalk, quartz, attapulgite, montmorillonite, and diatomaceous earth, or synthetic ground minerals, such as highly dispersed silicic acid, aluminum oxide, silicates, and calcium phosphates and calcium hydrogen phosphates. Suitable inert fillers for granules include, for example, crushed and fractionated natural

minerals, such as calcite, marble, pumice, sepiolite, and dolomite, or synthetic granules of inorganic and organic ground materials, as well as granules of organic material, such as sawdust, coconut husks, corn cobs, and tobacco stalks.

[0050] The fungicidal compositions of the present invention optionally include one or more surfactants, which are preferably non-ionic, cationic and/or anionic in nature, and surfactant mixtures which have good emulsifying, dispersing and wetting properties, depending on the nature of the active compound to be formulated. Suitable surfactants are known in the art and are commercially available. Suitable anionic surfactants can be both so-called water-soluble soaps and water-soluble synthetic surface-active compounds. Soaps which may be used in the composition are the alkali metal, alkaline earth metal or substituted or unsubstituted ammonium salts of higher fatty acid (C₁₀-C₂₂), for example the sodium or potassium salt of oleic or stearic acid, or of natural fatty acid mixtures. The surfactant can be an emulsifier, dispersant or wetting agent of ionic or nonionic type. Examples which may be used are salts of polyacrylic acids, salts of lignosulphonic acid, salts of phenylsulphonic or naphthalenesulphonic acids, polycondensates of ethylene oxide with fatty alcohols or with fatty acids or with fatty amines, substituted phenols, especially alkylphenols, sulphosuccinic ester salts, taurine derivatives, especially alkyltaurates, or phosphoric esters of polyethoxylated phenols or alcohols. The presence of at least one surfactant is generally required when the active compound and/or the inert carrier and/or auxiliary/adjuvant are insoluble in water and the vehicle for the final application of the composition is water.

[0051] The fungicidal compositions of the present invention optionally further comprise one or more polymeric stabilizers. The suitable polymeric stabilizers that may be used in the present invention include, but are not limited to, polypropylene, polyisobutylene, polyisoprene, copolymers of monoolefins and diolefins, polyacrylates, polystyrene, polyvinyl acetate, polyurethanes or polyamides. Suitable stabilizers are known in the art and commercially available.

[0052] The surfactants and polymeric stabilizers mentioned above are generally believed to impart stability to the composition, in turn allowing the composition to be formulated, stored, transported and applied.

[0053] Suitable anti-foam agents include all substances which can normally be used for this purpose in agrochemical compositions. Suitable anti-foam agents are known in the art and are

available commercially. Particularly preferred antifoam agents are mixtures of polydimethylsiloxanes and perfluoroalkylphosphonic acids, such as the silicone anti-foam agents available from GE or Compton.

[0054] Suitable organic solvents that may be used in the compositions may be selected from all customary organic solvents, which thoroughly dissolve one or more of the active compounds employed. Again, suitable organic solvents for the active compounds in the compositions of the present invention are known in the art. The following may be mentioned as being preferred: N-methyl pyrrolidone, N-octyl pyrrolidone, cyclohexyl-1-pyrrolidone; or a mixture of paraffinic, isoparaffinic, cycloparaffinic and aromatic hydrocarbons, such as SOLVESSO™200. Suitable solvents are commercially available.

[0055] Suitable preservatives include all substances which can normally be used for this purpose in agrochemical compositions of this type and again are well known in the art. Suitable examples that may be mentioned include PREVENTOL® (from Bayer AG) and PROXEL® (from Bayer AG).

[0056] Suitable antioxidants are all substances which can normally be used for this purpose in agrochemical compositions, as is known in the art. Preference is given to butylated hydroxytoluene.

[0057] Suitable thickeners include all substances which can normally be used for this purpose in agrochemical compositions. Suitable thickeners include, for example xanthan gum, PVOH, cellulose and its derivatives, clay hydrated silicates, magnesium aluminum silicates or a mixture thereof. Again, such thickeners are known in the art and available commercially.

[0058] The fungicidal composition of the present invention may further comprise one or more solid adherents. Such adherents are known in the art and are available commercially. They include organic adhesives, including tackifiers, such as celluloses or substituted celluloses, natural and synthetic polymers in the form of powders, granules, or lattices, and inorganic adhesives, such as gypsum, silica, or cement.

[0059] In addition, depending upon the formulation, the composition according to the invention may also comprise water.

[0060] The formulated components (A) and (B), including the compositions of the present invention, may be applied in any suitable form, such as in spray form, for example,

employing appropriate dilutions.

[0061] The rates of application (use) of the components (A) and (B) in the compositions, method and use of the present invention may vary, for example, according to such factors as type of use, soil type, season, climate, soil ecology, type of plants, but are such that the crystalline modification II of boscalid and the one or more triazole fungicides and/or strobilurin fungicides are applied in an effective amount to provide the desired action. The application rate of the composition for a given set of conditions can readily be determined by conducting trials.

[0062] The application rate of the total amount of the crystalline modification II of the anhydrate of boscalid and the one or more triazole fungicides and/or strobilurin fungicides typically lies in the range of from about 50 to about 1500 gram per hectare (g/ha). In general, satisfactory results will be obtained when employing from about 80 to about 1000 g/ha, for example about 50 to about 400 gram per hectare, preferably from about 100 to about 250 g/ha, of the crystalline modification II of boscalid and from about 1 to about 800 g/ha, preferably from about 10 to about 400 g/ha, of the one or more triazole fungicides and/or strobilurin fungicides.

[0063] Using such formulations, either straight (that is undiluted) or diluted with a suitable solvent, especially water, plants, plant parts and/or their locus can be treated and protected against fungal infestations by spraying, pouring or immersing. Generally, it is preferred that the formulations can be diluted with water before application. The compositions and formulations can be applied using the methods known in the art. Methods include coating, spraying, dipping, soaking, injection, irrigation, and the like.

[0064] Components (A) and (B) can be applied to the plants, plant parts and/or their locus where control is desired simultaneously and/or in succession, preferably at short intervals, for example on the same day. The components (A) and (B) may be applied to the plant, one or more parts thereof (such as leaves or seeds), and/or their locus in any order. Each component may be applied just once or a plurality of times. Preferably, each of the components (A) and (B) is applied a plurality of times, in particular from 2 to 5 times.

[0065] Components (A) and (B) may be applied in any suitable form, as described above. Typically, the active components will be applied as formulations, that is compositions comprising one or more of the active components together with further carriers, surfactants or

other application-promoting adjuvants customarily employed in formulation technology, as discussed above.

[0066] In the event, components (A) and (B) are applied simultaneously in the present invention, they may be applied as a composition containing components (A) and (B), in which case components (A) and (B) can be obtained from a separate formulation source and mixed together (known as a tank-mix, ready-to-apply, spray broth, or slurry), optionally with other pesticides, or components (A) and (B) can be obtained as a single formulation mixture source (known as a pre-mix, concentrate, formulated compound (or product)), and optionally mixed together with other pesticides, in particular as a composition of the present invention.

[0067] The compositions according to the invention are distinguished by the fact that they are especially well tolerated by plants and are environmentally friendly.

[0068] Each composition according to the invention is especially advantageous for the treatment of plants.

[0069] The present invention will be further described, for illustration purposes only, by way of the following examples.

[0070] In the following examples, percentages are weight percentage, unless otherwise indicated.

FORMULATION EXAMPLES

[0071] The formulations of Examples 1 to 22 were prepared having the composition summarized in Table 1 below.

[0072] Examples 1 to 10 and 15 to 18 are comparative examples. Examples 11 to 14 and 19 to 22 are examples of compositions of the present invention.

[0073] The finely ground active ingredients were intimately mixed with the adjuvants, giving a suspension concentrate from which suspensions of any desired dilution could be obtained by dilution with water. Adjuvants included 10% Propylene glycol, 1% Tristyrylphenol ethoxylates, 2% Sodium lignosulfonate, 2% Carboxymethylcellulose, 1% Silicone oil (in the form of a 75% emulsion in water), 0.2% Xanthan gum, 0.2% NIPACIDE BIT 20, Water (Balance to 1L).

Table 1

Example	Boscalid Crystalline modification I %	Boscalid Crystalline modification II %	Cyproconazole %	Metconazole %	Picoxystrobin %	Prothioconazole %
1	40	0	0	0	0	0
2	0	40	0	0	0	0
3	0	0	20	0	0	0
4	0	0	0	30	0	0
5	0	0	0	0	25	0
6	0	0	0	0	0	37.5
7	40	0	6	0	0	0
8	30	0	0	10	0	0
9	37.5	0	0	0	13.5	0
10	20	0	0	0	0	25
11	0	40	6	0	0	0
12	0	30	0	10	0	0
13	0	37.5	0	0	13.5	0
14	0	20	0	0	0	25
15	40	0	20	0	0	0
16	30	0	0	30	0	0
17	25	0	0	0	25	0
18	10	0	0	0	0	37.5

19	0	40	20	0	0	0
20	0	30	0	30	0	0
21	0	25	0	0	25	0
22	0	10	0	0	0	37.5

BIOLOGICAL EXAMPLES

[0074] A synergistic effect exists with a combination of two active compounds when the activity of a composition comprising both active compounds is greater than the sum of the activities of the two active compounds applied individually. The expected activity for a given combination of two active compounds can be calculated by the so called “Colby equation” (see S.R. Colby, “Calculating Synergistic and Antagonistic Responses of Herbicide Combinations”, Weeds 1967,15, 20-22):

whereby:

A = the activity percentage of compound A when active compound A is employed at an application rate of m g/ha;

B = the activity percentage of compound B when active compound B is employed at an application rate of n g/ha;

E = the percentage of estimated activity when compounds A and B are employed together at an application rate of m g/ha and n g/ha;

then:

$$E = A + B - (A \times B / 100).$$

[0075] If the actual activity observed for the combination of compounds A and B is greater than that calculated, then the activity of the combination is superadditive. In other words, synergism is present.

Field Test 1 – *Septoria tritici* - Wheat

[0076] Young wheat plants were sprayed with a conidial suspension of *Septoria tritici*, and

incubated at 20°C and 100% relative atmospheric humidity for 48 hours. The compositions of each of Formulation Examples 1 to 14 were diluted and then sprayed on the plants. The treated plants were held in a greenhouse at 15°C and 80% relative atmospheric humidity for 15 days, after which, the severity of the fungal infestation of the plants was examined.

[0077] The results are set out in Table 2 below. The severity of the fungal infestation is indicated in terms of the percentage of the plant observed to be infested with the pathogen.

Table 2

Test	Boscalid (g/ha)	Component B (g/ha)	Severity %
Untreated	0	0	95
Example 1	250	0	85
Example 2	250	0	80
Example 3	0	30	50
Example 4	0	50	50
Example 5	0	90	80
Example 6	0	125	45
Example 7	200	30	20
Example 8	150	50	25
Example 9	250	90	30
Example 10	100	125	20
Example 11	200	30	5
Example 12	150	50	5
Example 13	250	90	5
Example 14	100	125	0

[0078] As can be seen from the results set out in Table 2, the combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a significantly higher activity in the treatment of the fungal infestation than the comparative compositions containing either a single active component and/or the crystalline modification I of boscalid. The combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a synergistic effect.

Field Test 2 – *Puccinia triticina* – Wheat

[0079] Young wheat plants were sprayed with a conidial suspension of *Puccinia triticina*, and incubated at 20°C and 100 % relative atmospheric humidity for 48 hours. The compositions of each of Formulation Examples 1 to 6 and 15 to 22 were diluted and then sprayed on the plants. The treated plants were held in a greenhouse at 15°C and 80% relative atmospheric humidity for 15 days, after which, the severity of the fungal infestation of the plants was examined.

[0080] The results are set out in Table 3 below. The severity of the fungal infestation is indicated in terms of the percentage of the plant observed to be infested with the pathogen.

Table 3

Test	Boscalid (g/ha)	Component B (g/ha)	Severity %
Untreated	0	0	90
Example 1	250	0	80
Example 2	250	0	80
Example 3	0	100	85
Example 4	0	150	75
Example 5	0	250	50
Example 6	0	375	75
Example 15	200	100	25
Example 16	150	150	35
Example 17	250	250	20
Example 18	100	375	35
Example 19	200	100	5
Example 20	150	150	10
Example 21	250	250	5
Example 22	100	375	5

[0081] As can be seen from the results set out in Table 3, the combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a significantly higher

activity in the treatment of the fungal infestation than the comparative compositions containing either a single active component and/or the crystalline modification I of boscalid. The combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a synergistic effect.

Field Test 3 – *Puccinia graminis* – Barley

[0082] Young barley plants were sprayed with a conidial suspension of *Puccinia graminis*, and incubated at 20°C and 100% relative atmospheric humidity for 48 hours. The compositions of each of Formulation Examples 1 to 6 and 15 to 22 were diluted and then sprayed on the plants. The treated plants were held in a greenhouse at 15°C and 80% relative atmospheric humidity for 15 days, after which, the severity of the fungal infestation of the plants was examined.

[0083] The results are set out in Table 4 below. The severity of the fungal infestation is indicated in terms of the percentage of the plant observed to be infested with the pathogen.

Table 4

Test	Boscalid (g/ha)	Component B (g/ha)	Severity %
Untreated	0	0	90
Example 1	250	0	80
Example 2	250	0	85
Example 3	0	100	80
Example 4	0	150	70
Example 5	0	250	50
Example 6	0	375	70
Example 15	200	100	30
Example 16	150	150	30
Example 17	250	250	25
Example 18	100	375	30
Example 19	200	100	5
Example 20	150	150	5

Example 21	250	250	5
Example 22	100	375	5

[0084] As can be seen from the results set out in Table 4, the combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a significantly higher activity in the treatment of the fungal infestation than the comparative compositions containing either a single active component and/or the crystalline modification I of boscalid. The combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a synergistic effect.

Field Test 4 - *Puccinia striiformis* – Wheat

[0085] Young wheat plants were sprayed with a conidial suspension of *Puccinia striiformis*, and incubated at 20°C and 100% relative atmospheric humidity for 48 hours. The compositions of each of Formulation Examples 1 to 14 were diluted and then sprayed on the plants. The treated plants were held in a greenhouse at 15°C and 80% relative atmospheric humidity for 15 days, after which, the severity of the fungal infestation of the plants was examined.

[0086] The results are set out in Table 5 below. The severity of the fungal infestation is indicated in terms of the percentage of the plant observed to be infested with the pathogen.

Table 5

Test	Boscalid (g/ha)	Component B (g/ha)	Severity %
Untreated	0	0	95
Example 1	250	0	75
Example 2	250	0	75
Example 3	0	30	70
Example 4	0	50	75
Example 5	0	90	45
Example 6	0	125	70
Example 7	200	30	35
Example 8	150	50	30

Example 9	250	90	25
Example 10	100	125	30
Example 11	200	30	5
Example 12	150	50	0
Example 13	250	90	5
Example 14	100	125	5

[0087] As can be seen from the results set out in Table 5, the combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a significantly higher activity in the treatment of the fungal infestation than the comparative compositions containing either a single active component and/or the crystalline modification I of boscalid. The combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a synergistic effect.

Field Test 5 - *Pyrenophora teres* - Barley

[0088] Young barley plants were sprayed with a conidial suspension of *Pyrenophora teres*, and incubated at 20°C and 100% relative atmospheric humidity for 48 hours. The compositions of each of Formulation Examples 1 to 14 were diluted and then sprayed on the plants. The treated plants were held in a greenhouse at 15°C and 80% relative atmospheric humidity for 15 days, after which, the severity of the fungal infestation of the plants was examined.

[0089] The results are set out in Table 6 below. The severity of the fungal infestation is indicated in terms of the percentage of the plant observed to be infested with the pathogen.

Table 6

Test	Boscalid (g/ha)	Component B (g/ha)	Severity %
Untreated	0	0	90
Example 1	250	0	80
Example 2	250	0	75
Example 3	0	30	70
Example 4	0	50	80

Example 5	0	90	70
Example 6	0	125	50
Example 7	200	30	35
Example 8	150	50	30
Example 9	250	90	30
Example 10	100	125	20
Example 11	200	30	0
Example 12	150	50	5
Example 13	250	90	5
Example 14	100	125	0

[0090] As can be seen from the results set out in Table 6, the combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a significantly higher activity in the treatment of the fungal infestation than the comparative compositions containing either a single active component and/or the crystalline modification I of boscalid. The combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a synergistic effect.

Field Test 6 - *Stagonosporopsis andigena* – Oilseed rape

[0091] Young oilseed rape plants were sprayed with a conidial suspension of *Stagonosporopsis andigena*, and incubated at 20°C and 100% relative atmospheric humidity for 48 hours. The compositions of each of Formulation Examples 1 to 6 and 15 to 22 were diluted and then sprayed on the plants. The treated plants were held in a greenhouse at 15°C and 80% relative atmospheric humidity for 15 days, after which, the severity of the fungal infestation of the plants was examined.

[0092] The results are set out in Table 7 below. The severity of the fungal infestation is indicated in terms of the percentage of the plant observed to be infested with the pathogen.

Test	Boscalid (g/ha)	Component B (g/ha)	Severity %
Untreated	0	0	85
Example 1	250	0	70

Example 2	250	0	70
Example 3	0	100	65
Example 4	0	150	70
Example 5	0	250	65
Example 6	0	375	65
Example 15	200	100	50
Example 16	150	150	30
Example 17	250	250	35
Example 18	100	375	35
Example 19	200	100	0
Example 20	150	150	5
Example 21	250	250	5
Example 22	100	375	5

[0093] As can be seen from the results set out in Table 7, the combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a significantly higher activity in the treatment of the fungal infestation than the comparative compositions containing either a single active component and/or the crystalline modification I of boscalid. The combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a synergistic effect.

Field Test 7 - *Sclerotinia sclerotiorum* - Oilseed rape

[0094] Young oilseed rape plants were sprayed with a conidial suspension of *Sclerotinia sclerotiorum*, and incubated at 20°C and 100% relative atmospheric humidity for 48 hours. The compositions of each of Formulation Examples 1 to 6 and 15 to 22 were diluted and then sprayed on the plants. The treated plants were held in a greenhouse at 15°C and 80% relative atmospheric humidity for 15 days, after which, the severity of the fungal infestation of the plants was examined.

[0095] The results are set out in Table 8 below. The severity of the fungal infestation is indicated in terms of the percentage of the plant observed to be infested with the pathogen.

Table 8

Test	Boscalid (g/ha)	Component B (g/ha)	Severity %
Untreated	0	0	90
Example 1	250	0	55
Example 2	250	0	45
Example 3	0	100	45
Example 4	0	150	70
Example 5	0	250	75
Example 6	0	375	50
Example 15	200	100	15
Example 16	150	150	30
Example 17	250	250	35
Example 18	100	375	25
Example 19	200	100	5
Example 20	150	150	5
Example 21	250	250	5
Example 22	100	375	5

[0096] As can be seen from the results set out in Table 8, the combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a significantly higher activity in the treatment of the fungal infestation than the comparative compositions containing either a single active component and/or the crystalline modification I of boscalid. The combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a synergistic effect.

Field Test 8 - *Plasmopara viticola* – Vine

[0097] Young vine plants were sprayed with a conidial suspension of *Plasmopara viticola*, and incubated at 20°C and 100% relative atmospheric humidity for 48 hours. The compositions of each of Formulation Examples 1 to 6 and 15 to 22 were diluted and then sprayed on the plants. The treated plants were held in a greenhouse at 15°C and 80% relative atmospheric humidity for 15 days, after which, the severity of the fungal infestation of the plants was examined.

[0098] The results are set out in Table 9 below. The severity of the fungal infestation is indicated in terms of the percentage of the plant observed to be infested with the pathogen.

Table 9

Test	Boscalid (g/ha)	Component B (g/ha)	Severity %
Untreated	0	0	85
Example 1	250	0	70
Example 2	250	0	70
Example 3	0	100	75
Example 4	0	150	65
Example 5	0	250	45
Example 6	0	375	70
Example 15	200	100	20
Example 16	150	150	25
Example 17	250	250	25
Example 18	100	375	30
Example 19	200	100	5
Example 20	150	150	5
Example 21	250	250	0
Example 22	100	375	5

[0099] As can be seen from the results set out in Table 9, the combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a significantly higher activity in the treatment of the fungal infestation than the comparative compositions containing either a single active component and/or the crystalline modification I of boscalid. The combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a synergistic effect.

Field Test 9 - *Botrytis cinerea* - Vine

[00100] Young vine plants were sprayed with a conidial suspension of *Botrytis cinerea*, and incubated at 20°C and 100% relative atmospheric humidity for 48 hours. The compositions of

each of Formulation Examples 1 to 14 were diluted and then sprayed on the plants. The treated plants were held in a greenhouse at 15°C and 80% relative atmospheric humidity for 15 days, after which, the severity of the fungal infestation of the plants was examined.

[00101] The results are set out in Table 10 below. The severity of the fungal infestation is indicated in terms of the percentage of the plant observed to be infested with the pathogen.

Table 10

Test	Boscalid (g/ha)	Component B (g/ha)	Severity %
Untreated	0	0	85
Example 1	250	0	75
Example 2	250	0	70
Example 3	0	30	70
Example 4	0	50	65
Example 5	0	90	50
Example 6	0	125	75
Example 7	200	30	30
Example 8	150	50	30
Example 9	250	90	25
Example 10	100	125	30
Example 11	200	30	0
Example 12	150	50	0
Example 13	250	90	0
Example 14	100	125	0

[00102] As can be seen from the results set out in Table 10, the combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a significantly higher activity in the treatment of the fungal infestation than the comparative compositions containing either a single active component and/or the crystalline modification I of boscalid. The combination of the crystalline modification II of boscalid with the triazole or strobilurin exhibited a synergistic effect.

[00103] All publications, patents and patent applications cited in this specification are herein

incorporated by reference as if each individual publication or patent application were specifically and individually indicated to be incorporated by reference. Although the foregoing invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it will be readily apparent to those of ordinary skill in the art in light of the teachings of this invention that certain changes and modifications may be made thereto without departing from the spirit or scope of the appended claims.

CLAIMS

1. A fungicidal composition comprising as a component (A) the crystalline modification II of the anhydrate of 3-pyridinecarboxamide, 2-chloro-N-(4'chloro[1,1'biphenyl]-2-yl) (boscalid), and as a component (B) at least one triazole fungicide and/or at least one strobilurin fungicide.

2. The fungicidal composition according to claim 1, wherein the one or more triazole fungicides are selected from prothioconazole, cyproconazole and metconazole.

3. The fungicidal composition according to either of claims 1 or 2, wherein the strobilurin fungicide is picoxystrobin.

4. The composition according to any of the preceding claims, wherein the composition comprises:

(A) the crystalline modification II of the anhydrate of boscalid; and (B) cyproconazole;

(A) the crystalline modification II of the anhydrate of boscalid; and (B) metconazole;

(A) the crystalline modification II of the anhydrate of boscalid; and (B) prothioconazole; or

(A) the crystalline modification II of the anhydrate of boscalid; and (B) picoxystrobin.

5. The composition according to any of the preceding claims, wherein the weight ratio of component (A) to component (B) in the composition is in the range of from 25:1 to 1:25.

6. The composition according to any of the preceding claims, wherein component (A) is present in the composition in an amount of from 1 to 50% by weight of the composition.

7. The composition according to claim 6, wherein component (A) is present in the composition in an amount of from 1 to 20% by weight of the composition.

8. The composition according to any of the preceding claims, wherein component (B) comprises a triazole fungicide and the triazole is present in the composition in an amount of from 1 to 50% by weight of the composition.

9. The composition according to claim 8, wherein the triazole is present in the composition in an amount of from 1 to 20% by weight of the composition.

10. The composition according to any of the preceding claims, wherein component (B) comprises a strobilurin fungicide and the strobilurin is present in the composition in an amount of from 1 to 50% by weight of the composition.

11. The composition according to claim 10, wherein the strobilurin is present in the composition in an amount of from 1 to 20% by weight of the composition.

12. The composition according to any of the preceding claims, further comprising one or more auxiliaries.

13. The composition according to claim 12, wherein the one or more auxiliaries are selected from one or more extenders, carriers, solvents, surfactants, stabilizers, anti-foaming agents, anti-freezing agents, preservatives, antioxidants, colorants, thickeners, solid adherents and inert fillers.

14. The composition according to any of the preceding claims, wherein the composition is formulated as a water-soluble concentrate (SL), an emulsifiable concentrate (EC), an emulsion (EW), a micro-emulsion (ME), a suspension concentrate (SC), an oil-based suspension concentrate (OD), a flowable suspension (FS), water-dispersible granules (WG), water-soluble granules (SG), a water-dispersible powder (WP), a water soluble powder (SP), granules (GR), encapsulated granules (CG), fine granules (FG), macrogranules (GG), an aqueous suspo-emulsion (SE), a capsule suspension (CS) or microgranules (MG).

15. The composition according to claim 14, wherein the composition is formulated as a suspension concentrate (SC), a water-dispersible powder (WP) or as water-dispersible granules (WG).

16. Use of component (A) the crystalline modification II of the anhydrate of 3-pyridinecarboxamide, 2-chloro-N-(4'-chloro[1,1'-biphenyl]-2-yl)(boscalid), and component (B) at least one triazole fungicide and/or at least one strobilurin fungicide for preventing or treating fungal infestations of plants, plant parts or a locus.

17. The use according to claim 16, wherein the plant or plant parts are selected from cereals, fruit, leguminous plants, oil plants, cucurbitaceae, citrus fruit, vegetables, coffee, sugarcane, hops, tree nuts, and ornamentals.

18. The use according to claim 17, wherein the plant or plant parts are selected from cereals, fruits and oil plants.

19. The use according to claim 18, wherein the plant or plant parts are selected from wheat, barley, vine and oilseed rape.

20. The use according to any of claims 16 to 19, wherein the fungal infestations are caused by *Septoria tritici*; *Puccinia sp.*; *Pyrenophora teres*; *Stagonosporopsis andigena*; *Sclerotinia sclerotiorum*; *Plasmopara viticola*; or *Botrytis cinerea*.

21. The use according to any of claims 16 to 20, wherein the one or more triazole fungicides are selected from prothioconazole, cyproconazole and metconazole.

22. The use according to any of claims 16 to 21, wherein the strobilurin fungicide is picoxystrobin.

23. The use according to any of claims 16 to 22, wherein the components employed comprise:

(A) the crystalline modification II of the anhydrate of boscalid; and (B) cyproconazole;

(A) the crystalline modification II of the anhydrate of boscalid; and (B) metconazole;

(A) the crystalline modification II of the anhydrate of boscalid; and (B) prothioconazole; or

(A) the crystalline modification II of the anhydrate of boscalid; and (B) picoxystrobin.

24. The use according to any of claims 16 to 23, wherein the weight ratio of component (A) to component (B) is in the range of from 25:1 to 1:25.

25. The use according to any of claims 16 to 24, wherein the component (A) and component (B) are applied to the plants, plant parts or the locus simultaneously and/or successively.

26. The use according to any of claims 16 to 25, wherein a composition as claimed in any of claims 1 to 15 is employed.

27. A method for controlling harmful fungi comprising applying to plants, plant parts or their locus as component (A) the crystalline modification II of the anhydrate of 3-pyridinecarboxamide, 2-chloro-N-(4'-chloro[1,1'-biphenyl]-2-yl) (boscalid), and as component (B) at least one triazole fungicide and/or at least one strobilurin fungicide.

28. The method according to claim 27, wherein the plant or plant parts are selected from cereals, fruit, leguminous plants, oil plants, cucurbitaceae, citrus fruit, vegetables, coffee, sugarcane, hops, tree nuts, and ornamentals.

29. The method according to claim 28, wherein the plant or plant parts are selected from cereals, fruits and oil plants.

30. The use according to claim 29, wherein the plant or plant parts are selected from wheat, barley, vine and oilseed rape.

31. The method according to any of claims 27 to 30, wherein the fungal infestations are caused by *Septoria tritici*; *Puccinia sp.*; *Pyrenophora teres*; *Stagonosporopsis andigena*; *Sclerotinia sclerotiorum*; *Plasmopara viticola*; or *Botrytis cinerea*.

32. The method according to any of claims 27 to 31, wherein the one or more triazole fungicides are selected from prothioconazole, cyproconazole and metconazole.

33. The method according to any of claims 27 to 32, wherein the strobilurin fungicide is picoxystrobin.

34. The method according to any of claims 27 to 32, wherein the components employed comprise:

(A) the crystalline modification II of the anhydrate of boscalid; and (B) cyproconazole;

(A) the crystalline modification II of the anhydrate of boscalid; and (B) metconazole;

(A) the crystalline modification II of the anhydrate of boscalid; and (B) prothioconazole; or

(A) the crystalline modification II of the anhydrate of boscalid; and (B) picoxystrobin.

35. The method according to any of claims 27 to 34, wherein the weight ratio of component (A) to component (B) is in the range of from 25:1 to 1:25.

36. The method according to any of claims 27 to 35, wherein the component (A) and component (B) are applied to the plants, plant parts or the locus simultaneously and/or successively.

37. The method according to any of claims 27 to 36, wherein a composition as claimed in any of claims 1 to 15 is employed.

38. A synergistic fungicidal composition substantially as hereinbefore described.

39. A method of treating and/or preventing a fungicidal infestation substantially as hereinbefore described.

40. A use substantially as hereinbefore described for treating and/or preventing a fungicidal infestation.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2017/094623

A. CLASSIFICATION OF SUBJECT MATTER

A01N 43/653(2006.01)i; A01P 3/00(2006.01)i; A01N 43/40(2006.01)i

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A01N; A01P

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

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

WPI; EPODOC; CPRS; CNKI; CNABS; CAPLUS (STN) : BRISTOWJames Timothy, ROTAM, boscalid, triazole, strobilurin, crystalline, modification, picoxystrobin, prothioconazole, fungicidal, mill, 188425-85-6

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 102696606 A (SHANDONG HAYLEY CHEM LTD CO.) 03 October 2012 (2012-10-03) paragraphs 0010, 0019-0020, 0037, table 2	14, 38-40
Y	CN 102696606 A (SHANDONG HAYLEY CHEM LTD CO.) 03 October 2012 (2012-10-03) paragraphs 0010, 0019-0020, 0037, table 2	1-13, 25-37
X	CN 102217604 A (SHAANXI TANGPUSEN BIOTECHNOLOGY CO LTD.) 19 October 2011 (2011-10-19) paragraphs 0025,0057-0058	14, 38-40
Y	CN 102217604 A (SHAANXI TANGPUSEN BIOTECHNOLOGY CO LTD.) 19 October 2011 (2011-10-19) paragraphs 0025,0057-0058	1-13, 25-37
X	CN 103355308 A (HAILIR PESTICIDES & CHEM CO LTD.) 23 October 2013 (2013-10-23) paragraph 0007, table 1	14, 38-40
Y	CN 103355308 A (HAILIR PESTICIDES & CHEM CO LTD.) 23 October 2013 (2013-10-23) paragraph 0007, table 1	1-13, 25-37
Y	CN 1751026 A (BASF AG ETAL.) 22 March 2006 (2006-03-22) page 2, paragraph 2	1-13, 25-37

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

11 September 2017

Date of mailing of the international search report

29 September 2017

Name and mailing address of the ISA/CN

STATE INTELLECTUAL PROPERTY OFFICE OF THE
P.R.CHINA
6, Xitucheng Rd., Jimen Bridge, Haidian District, Beijing
100088
China

Authorized officer

BAI,Xiaolin

Facsimile No. (86-10)62019451

Telephone No. (86-10)010-52745144

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2017/094623

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 103858881 A (YU H) 18 June 2014 (2014-06-18) paragraphs 0007-0009, 0018, table 2	1-13, 25-37
Y	CN 103798242 A (GUANGXI IDYLLIC BIOCHEMISTRY CO LTD.) 21 May 2014 (2014-05-21) paragraphs 0005-0009, 0035	1-13, 25-37
A	CN 103980192 A (TAZHOU BAILI CHEM CO LTD.) 13 August 2014 (2014-08-13) the whole document	1-40
A	CN 104621123 A (NANJING HUAZHOU PHARM CO LTD.) 20 May 2015 (2015-05-20) the whole document	1-40

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2017/094623

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
CN	102696606	A	03 October 2012	None			
CN	102217604	A	19 October 2011	CN	102217604	B	06 November 2013
CN	103355308	A	23 October 2013	None			
CN	1751026	A	22 March 2006	ZA	200507344	B	28 February 2007
				ZA	200507344	A	28 February 2007
				BR	PI0407358	B1	18 November 2014
				EP	1597232	B1	13 September 2006
				KR	101146446	B1	18 May 2012
				US	2006154825	A1	13 July 2006
				EA	200501226	A1	24 February 2006
				KR	101146432	B1	21 May 2012
				HR	P20050803	B1	28 March 2014
				CY	1107513	T1	13 March 2013
				DE	10307751	A1	26 August 2004
				AP	200503370	D0	30 September 2005
				EC	SP055948	A	19 April 2006
				AU	2004212039	B2	22 July 2010
				AT	339405	T	15 October 2006
				DK	1597232	T3	29 January 2007
				JP	4642743	B2	02 March 2011
				JP	2006517548	A	27 July 2006
				AR	043175	A1	20 July 2005
				AR	094395	A2	29 July 2015
				MX	PA05007962	A	20 September 2005
				CL	2004000256	A1	04 February 2005
				CR	7939	A	07 February 2006
				AP	1955	A	13 February 2009
				PT	1597232	E	29 December 2006
				DE	502004001477	D1	26 October 2006
				NO	20053767	L	08 August 2005
				WO	2004072039	A1	26 August 2004
				ES	2273211	T3	01 May 2007
				OA	13150	A	13 December 2006
				ME	P7008	A	10 June 2010
				NO	20053767	A	08 August 2005
				UA	81659	C2	25 January 2008
				RS	51685	B	31 October 2011
				RS	20050621	A	21 September 2007
				EP	1597232	A1	23 November 2005
				NO	329988	B1	31 January 2011
				HR	P20050803	A2	31 October 2005
				PL	378403	A1	03 April 2006
				NZ	542308	A	31 July 2008
				BR	PI0407358	A	10 January 2006
				SI	1597232	T1	31 December 2006
				US	7501384	B2	10 March 2009
				CA	2515725	C	04 January 2011
				KR	20120018384	A	02 March 2012
				KR	20050101211	A	20 October 2005
				EA	008004	B1	27 February 2007

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2017/094623

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
				PL	219123	B1	31 March 2015
				MA	27619	A1	01 November 2005
CN	103858881	A	18 June 2014	None			
CN	103798242	A	21 May 2014	CN	103798242	B	12 August 2015
CN	103980192	A	13 August 2014	CN	103980192	B	17 February 2016
CN	104621123	A	20 May 2015	WO	2015070568	A1	21 May 2015
				CN	104621123	B	27 July 2016