(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
19 December 2024 (19.12.2024)

WIPO | PCT

(10) International Publication Number
WO 2024/256433 A1

(51) International Patent Classification:
A01N 43/90 (2006.01) *A01N 43/653* (2006.01)
A01N 43/56 (2006.01) *A01N 43/36* (2006.01)
A01N 45/02 (2006.01) *A01N 43/82* (2006.01)
A01N 43/54 (2006.01) *A01P 3/00* (2006.01)
A01N 43/40 (2006.01)

(21) International Application Number:
PCT/EP2024/066165

(22) International Filing Date:
12 June 2024 (12.06.2024)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
23179120.3 14 June 2023 (14.06.2023) EP

(71) Applicant: **SYNGENTA CROP PROTECTION AG** [CH/CH]; Rosentalstrasse 67, 4058 Basel (CH).

(72) Inventors: **EDMUNDS, Andrew**; Syngenta Crop Protection AG, Schaffhauserstrasse, 4332 Stein (CH). **SCARBOROUGH, Christopher Charles**; Syngenta Crop Protection AG, Schaffhauserstrasse, 4332 Stein (CH). **WOLF, Hanno Christian**; Syngenta Crop Protection AG, Schaffhauserstrasse, 4332 Stein (CH). **GRASSO, Valeria**; Syngenta Crop Protection AG, Schaffhauserstrasse, 4332 Stein (CH).

(74) Agent: **SYNGENTA IP**; Rosentalstrasse 67, 4058 Basel (CH).

(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, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, 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, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:
— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
— *of inventorship (Rule 4.17(iv))*

Published:
— *with international search report (Art. 21(3))*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(54) Title: FUNGICIDAL COMPOSITIONS

(57) Abstract: A fungicidal composition comprising a mixture of components (A) and (B), wherein components (A) and (B) are as defined in claim 1, and use of the compositions in agriculture or horticulture for controlling or preventing infestation of plants by phytopathogenic microorganisms, preferably fungi.

WO 2024/256433 A1

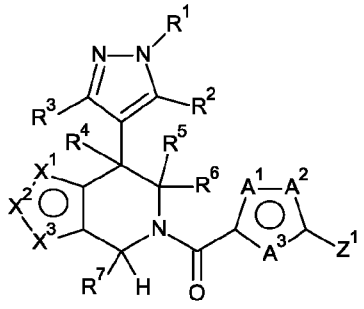
FUNGICIDAL COMPOSITIONS

The present invention relates to novel fungicidal compositions, to their use in agriculture or horticulture for controlling diseases caused by phytopathogens, especially phytopathogenic fungi, and to methods of controlling diseases on useful plants.

Whilst many fungicidal compounds and compositions, belonging to various different chemical classes, have and are being developed for use as fungicides in crops of useful plants, crop tolerance and activity against particular phytopathogenic fungi do not always satisfy the needs of agricultural practice in many respects. Therefore, there is a continuing need to find new compounds and compositions having superior biological properties for use in controlling or preventing infestation of plants by phytopathogenic fungi. For example, compounds possessing a greater biological activity, an advantageous spectrum of activity, an increased safety profile, improved physico-chemical properties, increased biodegradability. Or else, compositions possessing a broader spectrum of activity, improved crop tolerance, synergistic interactions or potentiating properties, or compositions which display a more rapid onset of action or which have longer lasting residual activity or which enable a reduction in the number of applications and/or a reduction in the application rate of the compounds and compositions required for effective control of a phytopathogen, thereby enabling beneficial resistance-management practices, reduced environmental impact and reduced operator exposure.

The use of compositions comprising mixtures of different fungicidal compounds possessing different modes of action can address some of these needs (e.g., by combining fungicides with differing spectrums of activity).

According to the present invention, there is provided a fungicidal composition comprising a mixture of components (A) and (B) as active ingredients, wherein component (A) is a compound of formula (I):



(I)

wherein

R^1 is selected from hydrogen, C_1-C_3-alkyl, or C_3-C_6-cycloalkyl;

R^2 is selected from hydrogen, halogen, C_1-C_3-alkyl, C_1-C_4-haloalkyl, or C_3-C_6-cycloalkyl;

R^3 is hydrogen;

R^4 is selected from hydrogen, or C_1-C_3-alkyl;

R^5 and R^6 are hydrogen;

R^7 is selected from hydrogen, C_1-C_3-alkyl, C_1-C_3-alkylcarbonyl, or C_1-C_3-alkoxycarbonyl;

Z^1 is selected from phenyl, or 5- or 6-membered heteroaryl, wherein any of said 5- or 6-membered heteroaryl contains 1, 2, or 3 heteroatoms individually selected from N, O or S, with the proviso that only one is selected

from O or S; and wherein any of said phenyl and 5- or 6-membered heteroaryl are unsubstituted or substituted by 1, 2 or 3 substituents independently selected from halogen, cyano, C_1-C_3-alkyl, C_1-C_2-haloalkyl, or C_1-C_3-alkoxy;

X^1, X^2 and X^3 are independently selected from CH, N or S, with the proviso that one of X^1, X^2 and X^3 is S; and A^1, A^2 and A^3 are independently selected from CH, N, O or S, with the proviso that at least one of A^1, A^2 and A^3 is selected from N, O or S, and that no more than one of A^1, A^2 and A^3 is O or S; or an agrochemically acceptable salt, stereoisomer, enantiomer, tautomer, or N-oxide thereof;

and

component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penflufen, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, isofetamid, fluindapyr, cyclobutrifluram, fluoxastrobin, fenamidone, mandestrobin, picoxystrobin, pyraclostrobin, famoxadone, kresoxim-methyl, trifloxystrobin, azoxystrobin, metyltetraprole, amisulbrom, cyazofamid, fenpicoxamid, florylpicoxamid, metharylpicoxamid, ametoctradin, fluazinam, fentin hydroxide, silthiofam, fenpropimorph, fenpropidine, spiroxamine, fenhexamid, imazalil, pyrisoxazole, bromuconazole, cyproconazole, difenoconazole, epoxiconazole, flutriafol, hexaconazole, ipconazole, metconazole, myclobutanil, penconazole, propiconazole, tebuconazole, tetraconazole, triticonazole, prothioconazole, fluoxytioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, kasugamycin, mancozeb, copper fungicides, sulphur, zinc thiazole, captan, folpet, chlorothalonil, dithianon, quinoxyfen, proquinazid, fludioxonil, iprodione, procymidone, thiabendazole, zoxamide, metrafenone, fluopicolide, propamocarb, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, isotianil, phosphorous acid, cyflufenamid, tebufloquin, picarbutrazox, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl

(Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A.

The term “compounds of formula (I)” refers to component A.

In general, the weight ratio of component (A) to component (B) may preferably be from 100:1 to 1:100, from 50:1 to 1:50, from 20:1 to 1:40, from 15:1 to 1:30, from 12:1 to 1:25, from 10:1 to 1:20, from 5:1 to 1:15, from 3:1 to 1:10 or from 2:1 to 1:5.

Further according to the invention, there is provided a method of controlling or preventing phytopathogenic diseases, especially phytopathogenic fungi, on useful plants or on propagation material thereof, which comprises applying to the useful plants, the locus thereof or propagation material thereof a fungicidal composition according to the invention.

The benefits provided by certain fungicidal mixture compositions according to the invention may also include, *inter alia*, advantageous levels of biological activity for protecting plants against diseases that are caused by fungi or superior properties for use as agrochemical active ingredients (for example, greater biological activity, an advantageous spectrum of activity, an increased safety profile, improved physico-chemical properties, or increased biodegradability).

The presence of one or more possible asymmetric carbon atoms in a compound of formula (I) means that the compounds may occur in optically isomeric forms, i.e., enantiomeric or diastereomeric forms. Also, atropisomers may occur as a result of restricted rotation about a single bond. The present invention includes all those possible isomeric forms (e.g., geometric isomers) and mixtures thereof for a compound of formula (I). The present invention includes all possible tautomeric forms for a compound of formula (I), and also a racemic compound, i.e., a mixture of at least two enantiomers in a ratio of substantially 50:50.

In each case, the compounds of formula (I) according to the invention are in free form, in oxidized form as a N-oxide or in salt form, e.g., an agronomically usable salt form.

N-oxides are oxidized forms of tertiary amines or oxidized forms of nitrogen containing heteroaromatic compounds. They are described for instance in the book “Heterocyclic N-oxides” by A. Albini and S. Pietra, CRC Press, Boca Raton 1991.

The compounds of formula (I) according to the invention also include hydrates which may be formed during the salt formation.

As used herein, the term "halogen" or “halo” refers to fluorine (fluoro), chlorine (chloro), bromine (bromo) or iodine (iodo), preferably fluorine, chlorine, or bromine. This also applies, correspondingly, to halogen in combination with other meanings, such as haloalkyl, haloalkenyl, haloalkynyl, haloalkoxy, and halocycloalkyl.

As used herein, amino means a -NH_2 group.

As used herein, cyano means a -CN group.

As used herein, the term "C_1-C_n-alkyl” refers to a saturated straight-chain or branched hydrocarbon radical attached via any of the carbon atoms having 1 to n carbon atoms, for example, any one of the radicals methyl, ethyl, n-propyl, 1-methylbutyl, 2-methylbutyl, 3-methylbutyl, 2, 2-dimethylpropyl, 1-ethylpropyl, n-hexyl, n-pentyl, 1,1-dimethylpropyl, 1,2-dimethylpropyl, 1-methylpentyl, 2-methylpentyl, 3-methylpentyl, 4-methylpentyl, 1,1-dimethylbutyl, 1,2-dimethylbutyl, 1,3-dimethylbutyl, 2,2-dimethylbutyl, 2,3-dimethylbutyl, 3,3-dimethylbutyl, 1-ethylbutyl, 2-ethylbutyl, 1,1,2-trimethylpropyl, 1,2,2-trimethylpropyl, 1-ethyl-1-methylpropyl, or 1-ethyl-2-methylpropyl.

As used herein, the term “C_3-C_n-cycloalkyl” refers to three (3) to n membered cycloalkyl radical such as cyclopropyl, cyclobutyl, cyclopentyl and cyclohexyl.

As used herein, the term "C_1-C_n-alkoxy" refers to a straight-chain or branched saturated alkyl radical having one (1) to n carbon atoms (as mentioned above) which is attached via an oxygen atom, i.e., for example, any one of the radicals methoxy, ethoxy, n-propoxy, 1-methylethoxy, n-butoxy, 1-methylpropoxy, 2-methylpropoxy and 1,1-dimethylethoxy.

As used herein, the term "C_1-C_n-haloalkyl" refers to a straight-chain or branched saturated alkyl radical attached via any of the carbon atoms having 1 to n carbon atoms (as mentioned above), where some or all of the hydrogen atoms in these radicals may be replaced by fluorine, chlorine, bromine and/or iodine, i.e., for example, any one of chloromethyl, dichloromethyl, trichloromethyl, fluoromethyl, difluoromethyl, trifluoromethyl, chlorofluoromethyl, dichlorofluoromethyl, chlorodifluoromethyl, 2-fluoroethyl, 2-chloroethyl, 2-bromoethyl, 2-iodoethyl, 2,2-difluoroethyl, 2,2,2-trifluoroethyl, 2-chloro-2-fluoroethyl, 2-chloro-2,2-difluoroethyl, 2,2-dichloro-2-fluoroethyl, 2,2,2-trichloroethyl, pentafluoroethyl, 2-fluoropropyl, 3-fluoropropyl, 2,2-difluoropropyl, 2,3-difluoropropyl, 2-chloropropyl, 3-chloropropyl, 2,3-dichloropropyl, 2-bromopropyl, 3-bromopropyl, 3,3,3-trifluoropropyl, 3,3,3-trichloropropyl, 2,2,3,3,3- pentafluoropropyl, heptafluoropropyl, 1-(fluoromethyl)-2-fluoroethyl, 1-(chloromethyl)-2-chloroethyl, 1-(bromomethyl)-2-bromoethyl, 4-fluorobutyl, 4-chlorobutyl, 4-bromobutyl or nonafluorobutyl.

As used herein, the term "C_1-C_n-alkylcarbonyl" refers to a C_1-C_n-alkyl group linked through the carbon atom of a carbonyl (C=O) group.

As used herein, the term "C_1-C_n-alkoxycarbonyl" refers to a C_1-C_n-alkoxy moiety linked through a carbon atom of a carbonyl (or C=O) group.

As used herein, the term "heteroaryl" refers to a 5- or 6-membered aromatic monocyclic ring radical which comprises 1, 2, 3 or 4 heteroatoms independently selected from N, O or S. Examples of heteroaryl include, but are not limited to, furanyl, pyrrolyl, thienyl, pyrazolyl, imidazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, tetrazolyl, pyrazinyl, pyridazinyl, pyrimidyl or pyridyl.

As used herein, the term "controlling" refers to reducing the number of pests, eliminating pests and/or preventing further pest damage such that damage to a plant or to a plant derived product is reduced.

As used herein, the term "pest" refers to insects, and molluscs that are found in agriculture, horticulture, forestry, the storage of products of vegetable origin (such as fruit, grain, and timber); and those pests associated with the damage of man-made structures. The term pest encompasses all stages in the life cycle of the pest.

As used herein, the term "effective amount" refers to the amount of the compound, or a salt thereof, which, upon single or multiple applications provides the desired effect.

The term "fungicide" as used herein means a compound that controls, modifies, or prevents the growth of fungi.

The term "fungicidally effective amount" means the quantity of such a compound or combination of such compounds that is capable of producing an effect on the growth of fungi. Controlling or modifying effects include all deviation from natural development, such as killing, retardation and the like, and prevention includes barrier or other defensive formation in or on a plant to prevent fungal infection.

An effective amount is readily determined by the skilled person in the art, using known techniques and by observing results obtained under analogous circumstances. In determining the effective amount, a number of factors are considered including, but not limited to the type of plant or derived product to be applied; the pest to be controlled and its lifecycle; the particular compound applied; the type of application; and other relevant circumstances.

As used herein, the term "compounds of formula (I)" refers to component A, it includes compounds of formula (I) and compounds of formula (I-A).

The term "plants" refers to all physical parts of a plant, including seeds, seedlings, saplings, roots, tubers, stems, stalks, foliage, and fruits.

The term "plant propagation material" denotes all generative parts of a plant, for example seeds or vegetative parts of plants such as cuttings and tubers. It includes seeds in the strict sense, as well as roots, fruits, tubers, bulbs, rhizomes, and parts of plants.

The term "locus" as used herein means fields in or on which plants are growing, or where seeds of cultivated plants are sown, or where seed will be placed into the soil. It includes soil, seeds, and seedlings, as well as established vegetation.

The term "g a.i./ha" as used herein refer to the application rate given in gramm [g] of active ingredient [a.i.] per unit of surface [ha]. The unit hectare (symbol ha) is the metric unit of area that equals a square with 100 m side (1 hm^2) or 10,000 square meters. Hectare is a commonly used unit of area in the metric system.

Throughout this document the expression "composition" stands for the various mixtures or combinations of components (A) and (B) (including the above-defined embodiments), for example in a single "ready-mix" form, in a combined spray mixture composed from separate formulations of the single active ingredient components, such as a "tank-mix", and in a combined use of the single active ingredients when applied in a sequential manner, i.e. one after the other with a reasonably short period, such as a few hours or days. The order of applying the components (A) and (B) is not essential for working the present invention.

As used herein, the term "room temperature" or "RT" or "rt" or "ambient temperature" refer to a temperature of about 15° C to about 35° C. For example, rt can refer to a temperature of about 20° C to about 30° C.

The following list provides definitions, including preferred definitions, for substituents R^1, R^2, R^3, R^4, R^5, R^6, R^7, X^1, X^2, X^3, A^1, A^2, A^3 and Z^1 with reference to the compounds of formula (I) of the present invention. For any one of these substituents, any of the definitions given below may be combined with any definition of any other substituent given below or elsewhere in this document.

In one embodiment of the invention, R^1 is selected from hydrogen, C_1-C_3-alkyl, or C_3-C_6-cycloalkyl. Preferably R^1 is C_1-C_3-alkyl, or C_3-C_6-cycloalkyl. More preferably R^1 is methyl, ethyl, or cyclopropyl. Even more preferably R^1 is methyl.

In one embodiment of the invention, R^2 is selected from hydrogen, halogen, C_1-C_3-alkyl, C_1-C_4-haloalkyl, or C_3-C_6-cycloalkyl. Preferably R^2 is hydrogen, halogen, or C_1-C_3-alkyl. More preferably R^2 is hydrogen, or C_1-C_3-alkyl. Even more preferably R^2 is hydrogen, methyl, or ethyl. Still even more preferably R^2 is hydrogen, or methyl.

In one embodiment of the invention, R^3 is hydrogen.

In one embodiment of the invention, R^4 is selected from hydrogen, or C_1-C_3-alkyl. Preferably R^4 is hydrogen, methyl, or ethyl. More preferably R^4 is hydrogen, or methyl.

In one embodiment of the invention, R^7 is selected from hydrogen, C_1-C_3-alkyl, C_1-C_3-alkylcarbonyl, or C_1-C_3-alkoxycarbonyl. Preferably R^7 is hydrogen, C_1-C_3-alkyl, or C_1-C_3-alkoxycarbonyl. More preferably R^7 is hydrogen, or C_1-C_3-alkyl. Even more preferably R^7 is hydrogen, or methyl.

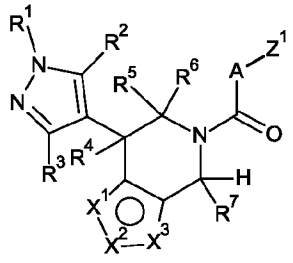
In one embodiment of the invention, Z^1 is selected from phenyl, or 5- or 6-membered heteroaryl, wherein any of said 5- or 6-membered heteroaryl contains 1, 2, or 3 heteroatoms individually selected from N, O or S, with the proviso that only one is selected from O or S; and wherein any of said phenyl and 5- or 6-membered heteroaryl are unsubstituted or substituted by 1, 2 or 3 substituents independently selected from halogen,

cyano, C_1-C_3-alkyl, C_1-C_2-haloalkyl, or C_1-C_3-alkoxy. Preferably Z^1 is phenyl, or 6-membered heteroaryl, wherein any of said 6-membered heteroaryl contains 1, or 2 heteroatoms individually selected from N, O or S, with the proviso that only one is selected from O or S; and wherein any of said phenyl and 6-membered heteroaryl are unsubstituted or substituted by 1, 2 or 3 substituents independently selected from halogen, cyano, C_1-C_3-alkyl, C_1-C_2-alkoxy, or C_1-C_2-haloalkyl. More preferably Z^1 is phenyl, or 6-membered heteroaryl, wherein any of said 6-membered heteroaryl contains one heteroatom selected from N; and wherein any of said phenyl and 6-membered heteroaryl are unsubstituted or substituted by 1, 2 or 3 substituents independently selected from halogen, C_1-C_3-alkyl, C_1-C_2-alkoxy, or C_1-C_2-haloalkyl. Even more preferably Z^1 is phenyl, or 6-membered heteroaryl, wherein any of said 6-membered heteroaryl contains one heteroatom selected from N; and wherein any of said phenyl and 6-membered heteroaryl are unsubstituted or substituted by 1, 2 or 3 substituents independently selected from chlorine, fluorine, methyl, methoxy, or trifluoromethyl. Still even more preferably Z^1 is selected from phenyl, 2,3,4-trifluorophenyl, 2,3-difluorophenyl, 3,4-difluorophenyl, 2,4,6-trifluorophenyl, 2,4-difluorophenyl, 2,5-difluorophenyl, 3,5-difluoro-2-pyridyl, 5-fluoro-2-pyridyl, 3-fluoro-2-pyridyl, 2-fluoro-4-methoxy-phenyl, 2-fluorophenyl, 3-fluorophenyl, 4-fluorophenyl, 2-methylphenyl, 3-methylphenyl, 4-methylphenyl, 2-chlorophenyl, 3-chlorophenyl, 4-chlorophenyl, 3-methoxyphenyl, 4-fluoro-2-methoxy-phenyl. Still even more preferably Z^1 is selected from 2,4-difluorophenyl, 3,5-difluoro-2-pyridyl, 2-fluorophenyl, 4-fluorophenyl or phenyl. Most preferably Z^1 is selected from 2,4-difluorophenyl, 3,5-difluoro-2-pyridyl, 2-fluorophenyl, or 4-fluorophenyl.

In one embodiment of the invention, X^1, X^2 and X^3 are independently selected CH, N or S, with the proviso that nor more than one of X^1, X^2 and X^3 is S. Preferably X^1 is CH or S; X^2 is C or N; and X^3 is CH, N or S, with the proviso that no more than one of X^1, X^2 and X^3 is S. More preferably X^1 is CH, X^2 is CH, and X^3 is S; or X^1 is S, X^2 is CH, and X^3 is CH; or X^1 is CH, X^2 is N, and X^3 is S; or X^1 is S, X^2 is N, and X^3 is N.

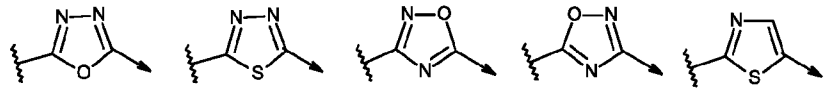
In one embodiment of the invention, A^1, A^2 and A^3 are independently selected from CH, N, O or S, with the proviso that at least one of A^1, A^2 and A^3 is selected from N, O or S, and that no more than one of A^1, A^2 and A^3 is O or S.

In an embodiment of the invention, the compound of formula (I) may be a compound of formula (I-A):

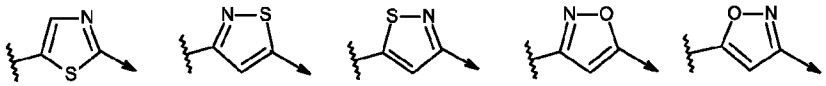


(I-A)

wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, X^1, X^2, X^3 and Z^1 are as defined for the compounds of formula (I) according to the present invention, and A is selected from A1 to A10;



A1, A2, A3, A4, A5,



A6, A7, A8, A9, or A10

wherein the staggered line denotes the bond to the C(=O) group, and the arrow denotes the bond to the Z^1 group.

In another embodiment of the invention, in the compound of formula (I-A) wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, X^1, X^2, X^3 and Z^1 are as defined for the compounds of formula (I) according to the present invention, A is selected from A1, A2, A3, A4, A9, or A10, wherein the staggered line denotes the bond to the C(=O) group, and the arrow denotes the bond to the Z^1 group.

In still another embodiment of the invention, in the compound of formula (I-A) wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, X^1, X^2, X^3 and Z^1 are as defined for the compounds of formula (I) according to the present invention, A is selected from A2, A9, or A10, wherein the staggered line denotes the bond to the C(=O) group, and the arrow denotes the bond to the Z^1 group.

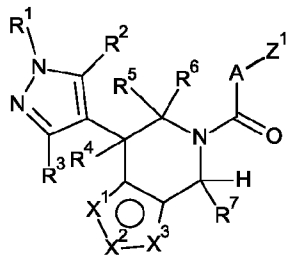
In still another embodiment of the invention, in the compound of formula (I-A) wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, X^1, X^2, X^3 and Z^1 are as defined for the compounds of formula (I) according to the present invention, A is selected from A2, or A9, wherein the staggered line denotes the bond to the C(=O) group, and the arrow denotes the bond to the Z^1 group.

The present invention, accordingly, makes available a compound of formula (I) having R^1, R^2, R^3, R^4, R^5, R^6, R^7, X^1, X^2, X^3, A^1, A^2, A^3 and Z^1 as defined above in all combinations / each permutation. The term “compound of formula (I)” refers to component A.

Further, the present invention, accordingly, makes available a compound of formula (I-A) having R^1, R^2, R^3, R^4, R^5, R^6, R^7, X^1, X^2, X^3, A and Z^1 as defined above in all combinations / each permutation. The term “compound of formula (I-A)” refers to component A.

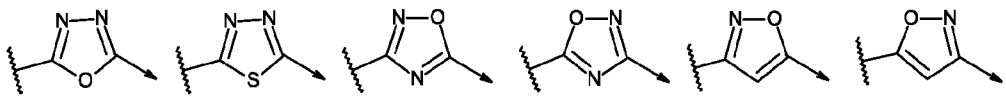
In a preferred embodiment of the invention, component (A) is a compound of formula (I), wherein R^1 is selected from C_1-C_3-alkyl, or C_3-C_6-cycloalkyl; R^2 is selected from hydrogen, or C_1-C_3-alkyl; R^3 is hydrogen; R^4 is selected from hydrogen, or methyl; R^5 and R^6 are hydrogen; R^7 is selected from hydrogen, or C_1-C_3-alkyl; Z^1 is selected from 2,4-difluorophenyl, 3,5-difluoro-2-pyridyl, 2-fluorophenyl, or 4-fluorophenyl; X^1 is CH, X^2 is CH, and X^3 is S; or X^1 is S, X^2 is CH, and X^3 is CH; or X^1 is CH, X^2 is N, and X^3 is S; or X^1 is S, X^2 is N, and X^3 is N; and A^1, A^2 and A^3 are independently selected from CH, N, O or S, with the proviso that at least one of A^1, A^2 and A^3 is selected from N, O or S, and that no more than one of A^1, A^2 and A^3 is O or S; or salt or N-oxide thereof.

In another preferred embodiment of the invention, component (A) is a compound of formula (I-A):



(I-A)

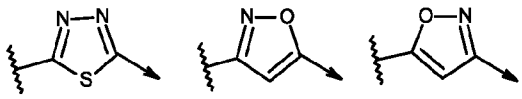
wherein R^1 is selected from C_1-C_3-alkyl, or C_3-C_6-cycloalkyl; R^2 is selected from hydrogen, or C_1-C_3-alkyl; R^3 is hydrogen; R^4 is selected from hydrogen, or methyl; R^5 and R^6 are hydrogen; R^7 is selected from hydrogen, or C_1-C_3-alkyl; Z^1 is selected from 2,4-difluorophenyl, 3,5-difluoro-2-pyridyl, 2-fluorophenyl, or 4-fluorophenyl; X^1 is CH, X^2 is CH, and X^3 is S; or X^1 is S, X^2 is CH, and X^3 is CH; or X^1 is CH, X^2 is N, and X^3 is S; or X^1 is S, X^2 is N, and X^3 is N; and A is selected from A1, A2, A3, A4, A9, or A10;



A1, **A2,** **A3,** **A4,** **A9, or** **A10**

wherein the staggered line denotes the bond to the C(=O) group, and the arrow denotes the bond to the Z^1 group; or salt or N-oxide thereof.

In another more preferred embodiment of the invention, component (A) is a compound of formula (I-A), wherein R^1 is selected from C_1-C_3-alkyl, or C_3-C_6-cycloalkyl; R^2 is selected from hydrogen, or C_1-C_3-alkyl; R^3 is hydrogen; R^4 is selected from hydrogen, or methyl; R^5 and R^6 are hydrogen; R^7 is selected from hydrogen, or C_1-C_3-alkyl; Z^1 is selected from 2,4-difluorophenyl, 3,5-difluoro-2-pyridyl, 2-fluorophenyl, or 4-fluorophenyl; X^1 is CH, X^2 is CH, and X^3 is S; or X^1 is S, X^2 is CH, and X^3 is CH; or X^1 is CH, X^2 is N, and X^3 is S; or X^1 is S, X^2 is N, and X^3 is N; and A is selected from A2, A9, or A10;



A2, **A9, or** **A10**

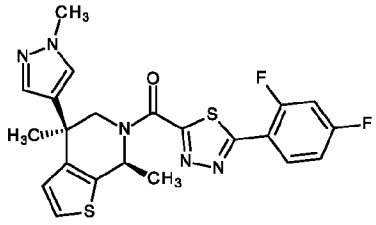
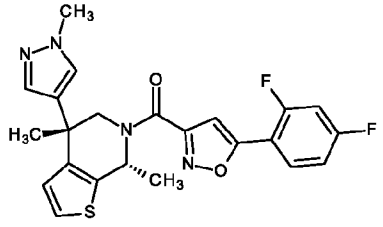
wherein the staggered line denotes the bond to the C(=O) group, and the arrow denotes the bond to the Z^1 group; or salt or N-oxide thereof.

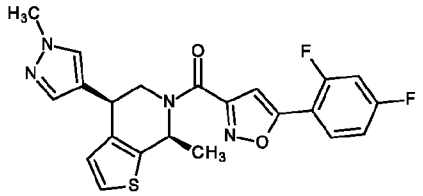
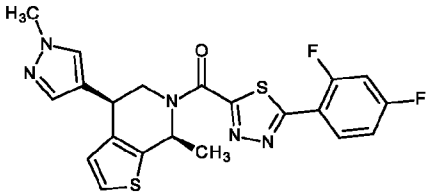
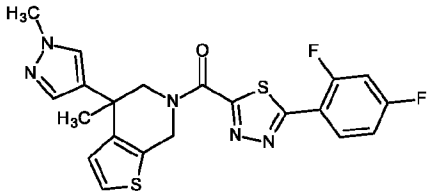
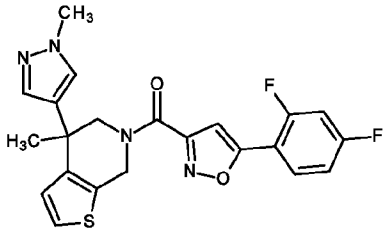
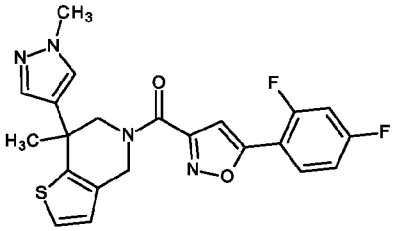
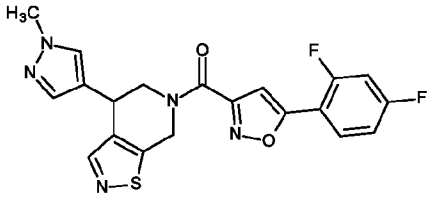
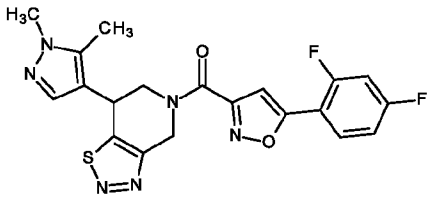
In another embodiment, component (A) is a compound selected from [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[(4R,7S)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.01); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7R)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.02); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.03); [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.04); [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.05); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-methyl-4-(1-

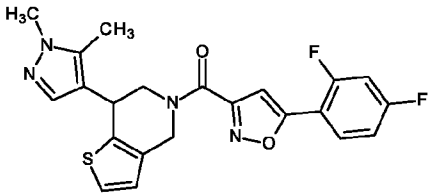
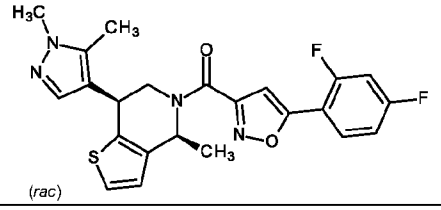
methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.06); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-methyl-7-(1-methylpyrazol-4-yl)-4,6-dihydrothieno[3,2-c]pyridin-5-yl]methanone (X.07); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-isothiazolo[5,4-c]pyridin-6-yl]methanone (X.08); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thiadiazolo[4,5-c]pyridin-5-yl]methanone (X.09); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone (X.10), or [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7S)-7-(1,5-dimethylpyrazol-4-yl)-4-methyl-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone (X.11), or one of the (*S*)- or (*R*)-enantiomers thereof, as defined in Table X below.

In another embodiment, component (A) is a compound selected from [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[(4R,7S)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.01); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7R)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.02); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.03); [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.04); [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.05); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.06); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-methyl-7-(1-methylpyrazol-4-yl)-4,6-dihydrothieno[3,2-c]pyridin-5-yl]methanone (X.07); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-isothiazolo[5,4-c]pyridin-6-yl]methanone (X.08); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thiadiazolo[4,5-c]pyridin-5-yl]methanone (X.09); or [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone (X.10), or one of the (*S*)- or (*R*)-enantiomers thereof, as defined in Table X below.

Table X: Component (A)

Entry	IUPAC name	Structure
X.01	[5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[(4R,7S)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone	
X.02	[5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7R)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (*rac*)	

X.03	[5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone	 (*rac*)
X.04	[5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone	 (*rac*)
X.05	[5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone	
X.06	[5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone	
X.07	[5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-methyl-7-(1-methylpyrazol-4-yl)-4,6-dihydrothieno[3,2-c]pyridin-5-yl]methanone	
X.08	[5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-isothiazolo[5,4-c]pyridin-6-yl]methanone	
X.09	[5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thiadiazolo[4,5-c]pyridin-5-yl]methanone	

X.10	[5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone	
X.11	[5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7S)-7-(1,5-dimethylpyrazol-4-yl)-4-methyl-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone	

In one embodiment of the invention, component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penflufen, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, isofetamid, fluindapyr, cyclobutrifluram, fluoxastrobin, fenamidone, mandestrobin, picoxystrobin, pyraclostrobin, famoxadone, kresoxim-methyl, trifloxystrobin, azoxystrobin, metyltetraprole, amisulbrom, cyazofamid, fenpicoxamid, florylpicoxamid, metharylpicoxamid, ametoctradin, fluazinam, fentin hydroxide, silthiofam, fenpropimorph, fenpropidin, spiroxamine, fenhexamid, imazalil, pyrisoxazole, bromuconazole, cyproconazole, difenoconazole, epoxiconazole, flutriafol, hexaconazole, ipconazole, metconazole, myclobutanil, penconazole, propiconazole, tebuconazole, tetraconazole, triticonazole, prothioconazole, fluoxytioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, kasugamycin, mancozeb, copper fungicides, sulphur, zinc thiazole, captan, folpet, chlorothalonil, dithianon, quinoxyfen, proquinazid, fludioxonil, iprodione, procymidone, thiabendazole, zoxamide, metrafenone, fluopicolide, propamocarb, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, isotianil, phosphorous acid, cyflufenamid, tebufloquin, picarbutrazox, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropane-carboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-

yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A.

In another embodiment of the invention, component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-

3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethyl-cyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)-amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A.

In another preferred embodiment of the invention, component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A.

Still more preferably, component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl.

In another embodiment of the invention, component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl.

In another embodiment of the invention, component (B) is a compound selected from TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A.

In still another embodiment of the invention, component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), or Aureobasidin A.

The component (B) compounds are referred to herein and above by a so-called "ISO common name" or another "common name" being used in individual cases or a trademark name. The component (B) compounds are known and are commercially available and/or can be prepared using procedures known in the art and/or procedures reported in the literature.

N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, these compounds may be prepared from the methods described in WO 2017/055473, WO 2017/055469, WO 2017/093348 and WO 2017/118689.

Methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate (these compounds may be prepared from the methods described in WO2020/079111), methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, these compounds may be prepared from the methods described in WO2020/193387.

N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-

[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, these compounds may be prepared from the methods described in WO2017/153380.

2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, these compounds may be prepared from the methods described in WO2017207362A1, WO2019105933A1, WO2020109509A1; 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, these compounds may be prepared from the methods described in WO2017207362A1, WO2019105933A1, WO2020109511A1, WO2021244952A1.

"TIMOREX Gold™" or "Timorex Gold®" as used herein, refers to melaluca alternifolia oil, which is an extract of the tea tree plant Melaluca alternifolia, commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide.

TAEGRO™ or TAEGRO® as used herein, refers to a microorganism-based fungicide formulated as a wettable powder containing 130 g/kg Bacillus amyloliquefaciens strain FZB24, having Accession No. DSM 10271 (13% w/w minimum of 1x10 exp 13 CFU/kg), commercially available as TAEGRO®.

BOTRISTOP® as used herein, refers to a broad spectrum biofungicide, a plant extract based on the extract of *Quillaja saponaria Molina*

"REGALIA®" as used herein, refers to a biofungicide, a plant extract based on the extract of Reynoutria sachalinensis extract (commercially available as REGALIA®)

Aureobasidin A is an antifungal cyclic depsipeptide antibiotic produced by Aureobasidium pullulans. See, for instance: Takesako et al., *J. Antibiot.* **1991**, *44*, 919-924. WO 2018/102345 discloses the use of Aureobasidin A as an agricultural fungicide to treat, prevent or control fungal infections in plants and seeds.

Enantiomerically pure final compounds may be obtained from racemic starting materials as appropriate via standard physical separation techniques, such as reverse phase chiral chromatography, or through stereoselective synthetic techniques, e.g., by using chiral starting materials.

The term "component A" refers to the compound of formula (I), or to a compound of formula (I-A).

Embodiments according to the invention are provided as set out below.

In one embodiment of the invention, there is provided a fungicidal composition comprising a mixture of components (A) and (B) as active ingredients, wherein component (A) is a compound of formula (I), wherein

R^1 is selected from C_1-C_3-alkyl, or C_3-C_6-cycloalkyl; R^2 is selected from hydrogen, or C_1-C_3-alkyl; R^3 is hydrogen; R^4 is selected from hydrogen, or methyl; R^5 and R^6 are hydrogen; R^7 is selected from hydrogen, or C_1-C_3-alkyl; Z^1 is selected from 2,4-difluorophenyl, 3,5-difluoro-2-pyridyl, 2-fluorophenyl, or 4-fluorophenyl; X^1 is CH, X^2 is CH, and X^3 is S; or X^1 is S, X^2 is CH, and X^3 is CH; or X^1 is CH, X^2 is N, and X^3 is S; or X^1 is S, X^2 is N, and X^3 is N; and A^1, A^2 and A^3 are independently selected from CH, N, O or S, with the proviso that at least one of A^1, A^2 and A^3 is selected from N, O or S, and that no more than one of A^1, A^2 and A^3 is O or S; or salt or N-oxide thereof; and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penflufen, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, isofetamid, fluindapyr, cyclobutrifluram, fluoxastrobin, fenamidone, mandestrobin, picoxystrobin, pyraclostrobin, famoxadone, kresoxim-methyl, trifloxystrobin, azoxystrobin, metyltetraprole, amisulbrom, cyazofamid, fenpicoxamid, florylpicoxamid, metharylpicoxamid, ametoctradin, fluazinam, fentin hydroxide, silthiofam, fenpropimorph, fenpropidine, spiroxamine, fenhexamid, imazalil, pyrisoxazole, bromuconazole, cyproconazole, difenoconazole, epoxiconazole, flutriafol, hexaconazole, ipconazole, metconazole, myclobutanil, penconazole, propiconazole, tebuconazole, tetraconazole, triticonazole, prothioconazole, fluoxytioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, kasugamycin, mancozeb, copper fungicides, sulphur, zinc thiazole, captan, folpet, chlorothalonil, dithianon, quinoxyfen, proquinazid, fludioxonil, iprodione, procymidone, thiabendazole, zoxamide, metrafenone, fluopicolide, propamocarb, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, isotianil, phosphorous acid, cyflufenamid, tebufloquin, picarbutrazox, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-

[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A.

In another embodiment of the invention, there is provided a fungicidal composition comprising a mixture of components (A) and (B) as active ingredients, wherein component (A) is a compound of formula (I), wherein R^1 is selected from C_1-C_3-alkyl, or C_3-C_6-cycloalkyl; R^2 is selected from hydrogen, or C_1-C_3-alkyl; R^3 is hydrogen; R^4 is selected from hydrogen, or methyl; R^5 and R^6 are hydrogen; R^7 is selected from hydrogen, or C_1-C_3-alkyl; Z^1 is selected from 2,4-difluorophenyl, 3,5-difluoro-2-pyridyl, 2-fluorophenyl, or 4-fluorophenyl; X^1 is CH, X^2 is CH, and X^3 is S; or X^1 is S, X^2 is CH, and X^3 is CH; or X^1 is CH, X^2 is N, and X^3 is S; or X^1 is S, X^2 is N, and X^3 is N; and A^1, A^2 and A^3 are independently selected from CH, N, O or S, with the proviso that at least one of A^1, A^2 and A^3 is selected from N, O or S, and that no more than one of A^1, A^2 and A^3 is O or S; or salt or N-oxide thereof; and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-

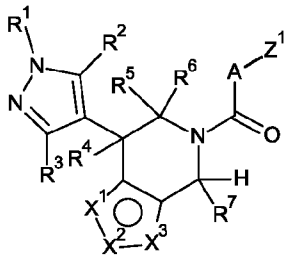
dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A.

In still another embodiment of the invention, there is provided a fungicidal composition comprising a mixture of components (A) and (B) as active ingredients, wherein component (A) is a compound of formula (I), wherein R^1 is selected from C_1-C_3-alkyl, or C_3-C_6-cycloalkyl; R^2 is selected from hydrogen, or C_1-C_3-alkyl; R^3 is hydrogen; R^4 is selected from hydrogen, or methyl; R^5 and R^6 are hydrogen; R^7 is selected from hydrogen, or C_1-C_3-alkyl; Z^1 is selected from 2,4-difluorophenyl, 3,5-difluoro-2-pyridyl, 2-fluorophenyl, or 4-fluorophenyl; X^1 is CH, X^2 is CH, and X^3 is S; or X^1 is S, X^2 is CH, and X^3 is CH; or X^1 is CH, X^2 is N, and X^3 is S; or X^1 is S, X^2 is N, and X^3 is N; and A^1, A^2 and A^3 are independently selected from CH, N, O or S, with the proviso that at least one of A^1, A^2 and A^3 is selected from N, O or S, and that no more than one of A^1, A^2 and A^3 is O or S; or salt or N-oxide thereof; and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-

carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A.

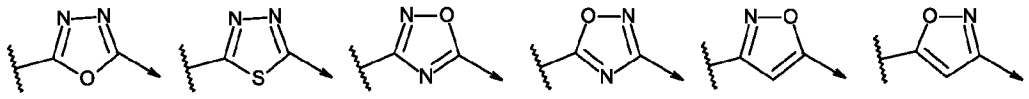
In a further embodiment of the invention, there is provided a fungicidal composition comprising a mixture of components (A) and (B) as active ingredients, wherein component (A) is a compound of formula (I), wherein R^1 is selected from C_1-C_3-alkyl, or C_3-C_6-cycloalkyl; R^2 is selected from hydrogen, or C_1-C_3-alkyl; R^3 is hydrogen; R^4 is selected from hydrogen, or methyl; R^5 and R^6 are hydrogen; R^7 is selected from hydrogen, or C_1-C_3-alkyl; Z^1 is selected from 2,4-difluorophenyl, 3,5-difluoro-2-pyridyl, 2-fluorophenyl, or 4-fluorophenyl; X^1 is CH, X^2 is CH, and X^3 is S; or X^1 is S, X^2 is CH, and X^3 is CH; or X^1 is CH, X^2 is N, and X^3 is S; or X^1 is S, X^2 is N, and X^3 is N; and A^1, A^2 and A^3 are independently selected from CH, N, O or S, with the proviso that at least one of A^1, A^2 and A^3 is selected from N, O or S, and that no more than one of A^1, A^2 and A^3 is O or S; or salt or N-oxide thereof; and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl.

In one embodiment of the invention, there is provided a fungicidal composition comprising a mixture of components (A) and (B) as active ingredients, wherein component (A) is a compound of formula (I-A):



(I-A)

wherein R^1 is selected from C_1-C_3-alkyl, or C_3-C_6-cycloalkyl; R^2 is selected from hydrogen, or C_1-C_3-alkyl; R^3 is hydrogen; R^4 is selected from hydrogen, or methyl; R^5 and R^6 are hydrogen; R^7 is selected from hydrogen, or C_1-C_3-alkyl; Z^1 is selected from 2,4-difluorophenyl, 3,5-difluoro-2-pyridyl, 2-fluorophenyl, or 4-fluorophenyl; X^1 is CH, X^2 is CH, and X^3 is S; or X^1 is S, X^2 is CH, and X^3 is CH; or X^1 is CH, X^2 is N, and X^3 is S; or X^1 is S, X^2 is N, and X^3 is N; and A is selected from A1, A2, A3, A4, A9, or A10;



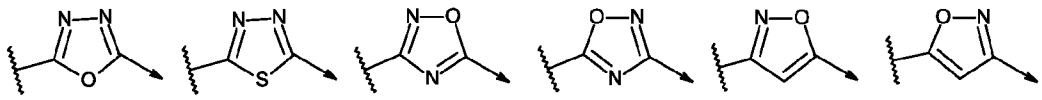
A1, **A2,** **A3,** **A4,** **A9, or** **A10**

wherein the staggered line denotes the bond to the C(=O) group, and the arrow denotes the bond to the Z^1 group; or salt or N-oxide thereof; and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penflufen, penthiopyrad, sedaxane, boscalid, fluopyram,

thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, isofetamid, fluindapyr, cyclobutrifluram, fluoxastrobin, fenamidone, mandestrobin, picoxystrobin, pyraclostrobin, famoxadone, kresoxim-methyl, trifloxystrobin, azoxystrobin, metyltetraprole, amisulbrom, cyazofamid, fenpicoxamid, florylpicoxamid, metharylpicoxamid, ametoctradin, fluazinam, fentin hydroxide, silthiofam, fenpropimorph, fenpropidine, spiroxamine, fenhexamid, imazalil, pyrisoxazole, bromuconazole, cyproconazole, difenoconazole, epoxiconazole, flutriafol, hexaconazole, ipconazole, metconazole, myclobutanil, penconazole, propiconazole, tebuconazole, tetraconazole, triticonazole, prothioconazole, fluoxytioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, kasugamycin, mancozeb, copper fungicides, sulphur, zinc thiazole, captan, folpet, chlorothalonil, dithianon, quinoxyfen, proquinazid, fludioxonil, iprodione, procymidone, thiabendazole, zoxamide, metrafenone, fluopicolide, propamocarb, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, isotianil, phosphorous acid, cyflufenamid, tebufloquin, picarbutrazox, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropane-carboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-

methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), and Aureobasidin A.

In another embodiment of the invention, there is provided a fungicidal composition comprising a mixture of components (A) and (B) as active ingredients, wherein component (A) is a compound of formula (I-A), wherein R^1 is selected from C_1-C_3-alkyl, or C_3-C_6-cycloalkyl; R^2 is selected from hydrogen, or C_1-C_3-alkyl; R^3 is hydrogen; R^4 is selected from hydrogen, or methyl; R^5 and R^6 are hydrogen; R^7 is selected from hydrogen, or C_1-C_3-alkyl; Z^1 is selected from 2,4-difluorophenyl, 3,5-difluoro-2-pyridyl, 2-fluorophenyl, or 4-fluorophenyl; X^1 is CH, X^2 is CH, and X^3 is S; or X^1 is S, X^2 is CH, and X^3 is CH; or X^1 is CH, X^2 is N, and X^3 is S; or X^1 is S, X^2 is N, and X^3 is N; and A is selected from A1, A2, A3, A4, A9, or A10;

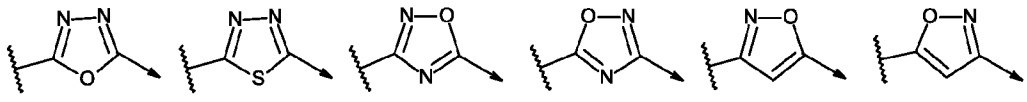


A1, **A2,** **A3,** **A4,** **A9, or** **A10**

wherein the staggered line denotes the bond to the C(=O) group, and the arrow denotes the bond to the Z^1 group; or salt or N-oxide thereof; and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-

3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A.

In still another embodiment of the invention, there is provided a fungicidal composition comprising a mixture of components (A) and (B) as active ingredients, wherein component (A)) is a compound of formula (I-A), wherein R^1 is selected from C_1-C_3-alkyl, or C_3-C_6-cycloalkyl; R^2 is selected from hydrogen, or C_1-C_3-alkyl; R^3 is hydrogen; R^4 is selected from hydrogen, or methyl; R^5 and R^6 are hydrogen; R^7 is selected from hydrogen, or C_1-C_3-alkyl; Z^1 is selected from 2,4-difluorophenyl, 3,5-difluoro-2-pyridyl, 2-fluorophenyl, or 4-fluorophenyl; X^1 is CH, X^2 is CH, and X^3 is S; or X^1 is S, X^2 is CH, and X^3 is CH; or X^1 is CH, X^2 is N, and X^3 is S; or X^1 is S, X^2 is N, and X^3 is N; and A is selected from A1, A2, A3, A4, A9, or A10;

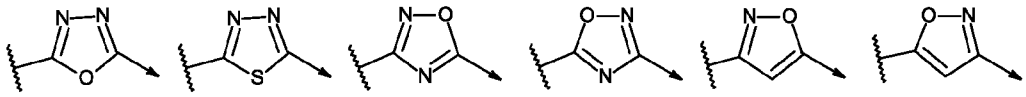


A1, **A2,** **A3,** **A4,** **A9, or** **A10**

wherein the staggered line denotes the bond to the C(=O) group, and the arrow denotes the bond to the Z^1 group; or salt or N-oxide thereof; and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-

(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A.

In a further embodiment of the invention, there is provided a fungicidal composition comprising a mixture of components (A) and (B) as active ingredients, wherein component (A) is a compound of formula (I-A), wherein R^1 is selected from C_1-C_3-alkyl, or C_3-C_6-cycloalkyl; R^2 is selected from hydrogen, or C_1-C_3-alkyl; R^3 is hydrogen; R^4 is selected from hydrogen, or methyl; R^5 and R^6 are hydrogen; R^7 is selected from hydrogen, or C_1-C_3-alkyl; Z^1 is selected from 2,4-difluorophenyl, 3,5-difluoro-2-pyridyl, 2-fluorophenyl, or 4-fluorophenyl; X^1 is CH, X^2 is CH, and X^3 is S; or X^1 is S, X^2 is CH, and X^3 is CH; or X^1 is CH, X^2 is N, and X^3 is S; or X^1 is S, X^2 is N, and X^3 is N; and A is selected from A1, A2, A3, A4, A9, or A10;



A1, **A2,** **A3,** **A4,** **A9, or** **A10**

wherein the staggered line denotes the bond to the C(=O) group, and the arrow denotes the bond to the Z^1 group; or salt or N-oxide thereof; and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl.

The following mixtures of components (A), wherein component (A) is a compound of formula (I) with component (B) as active ingredients are preferred (wherein the term "AX" means one component (A) selected from compounds of formula (I), (I-A), or compounds selected from (X.01), (X.02), (X.03), (X.04), (X.05), (X.06), (X.07), (X.08), (X.09), (X.10), or (X.11), listed in table X according to the present invention): pydiflumetofen + AX, benzovindiflupyr + AX, bixafen + AX, fluxapyroxad + AX, isopyrazam + AX, penflufen + AX, penthiopyrad + AX, sedaxane + AX, boscalid + AX, fluopyram + AX, thifluzamide + AX, pyraziflumid + AX, isoflucypram + AX, inpyrfluxam + AX, isofetamid + AX, fluindapyr + AX, cyclobutrifluram + AX, fluoxastrobin + AX, fenamidone + AX, mandestrobin + AX, picoxystrobin + AX, pyraclostrobin + AX, famoxadone + AX, kresoxim-methyl + AX, trifloxystrobin + AX, azoxystrobin + AX, metyltetraprole + AX, amisulbrom + AX, cyazofamid + AX, fenpicoxamid + AX, florylpicoxamid + AX, metharylpicoxamid + AX, ametoctradin + AX, fluazinam + AX, fentin hydroxide + AX, silthiofam + AX, fenpropimorph + AX, fenpropidin + AX, spiroxamine + AX, fenhexamid + AX, imazalil + AX, pyrisoxazole + AX, bromuconazole + AX, cyproconazole + AX, difenoconazole + AX, epoxiconazole, flutriafol + AX, hexaconazole + AX, ipconazole + AX, metconazole + AX, myclobutanil + AX, penconazole + AX, propiconazole + AX, tebuconazole + AX, tetraconazole + AX, triticonazole + AX, prothioconazole + AX, fluoxytioconazole + AX, mefentrifluconazole + AX, flufenoxadiazam + AX, ipflufenoquin + AX, quinofumelin + AX, metalaxyl-M + AX, cyprodinil + AX, pyrimethanil + AX, kasugamycin + AX, mancozeb + AX, copper fungicides + AX, sulphur + AX, zinc thiazole + AX, captan + AX, folpet + AX, chlorothalonil + AX,

dithianon + AX, quinoxyfen + AX, proquinazid + AX, fludioxonil + AX, iprodione + AX, procymidone + AX, thiabendazole + AX, zoxamide + AX, metrafenone + AX, fluopicolide + AX, propamocarb + AX, oxathiapiprolin + AX, fluoxapiprolin + AX, acibenzolar-S-methyl + AX, isotianil + AX, phosphorous acid + AX, cyflufenamid + AX, tebufloquin + AX, picarbutrazox + AX, tricyclazole + AX, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide + AX, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide + AX, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea + AX, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea + AX, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide + AX, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide + AX, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide + AX, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide + AX, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide + AX, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide + AX, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide + AX, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide + AX, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide + AX, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide + AX, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide + AX, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide + AX, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate + AX, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate + AX, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate + AX, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate + AX, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate + AX, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate + AX, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate + AX, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide + AX, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + AX, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide + AX, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + AX, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + AX, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + AX, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + AX, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + AX, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + AX, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24) + AX, melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)) + AX, Reynoutria sachalinensis extract (commercially available as REGALIA®) + AX, a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®) + AX, and Aureobasidin A + AX.

In another embodiment of the invention the following mixtures of components (A), wherein component (A) is a compound of formula (I) with component (B) as active ingredients are preferred (wherein the term "AX" means one component (A) selected from compounds of formula (I), (I-A), or compounds selected from (X.01), (X.02), (X.03), (X.04), (X.05), (X.06), (X.07), (X.08), (X.09), (X.10), or (X.11), listed in table X according to the present invention): pydiflumetofen + AX, benzovindiflupyr + AX, bixafen + AX, fluxapyroxad + AX, isopyrazam + AX, penflufen + AX, penthiopyrad + AX, sedaxane + AX, boscalid + AX, fluopyram + AX, thifluzamide + AX, pyraziflumid + AX, isoflucypram + AX, inpyrfluxam + AX, isofetamid + AX, fluindapyr + AX, cyclobutrifluram + AX, fluoxastrobin + AX, fenamidone + AX, mandestrobin + AX, picoxystrobin + AX, pyraclostrobin + AX, famoxadone + AX, kresoxim-methyl + AX, trifloxystrobin + AX, azoxystrobin + AX, metyltetraprole + AX, amisulbrom + AX, cyazofamid + AX, fenpicoxamid + AX, florylpicoxamid + AX, metharylpicoxamid + AX, ametoctradin + AX, fluazinam + AX, fentin hydroxide + AX, silthiofam + AX, fenpropimorph + AX, fenpropidin + AX, spiroxamine + AX, fenhexamid + AX, imazalil + AX, pyrisoxazole + AX, bromuconazole + AX, cyproconazole + AX, difenoconazole + AX, epoxiconazole, flutriafol + AX, hexaconazole + AX, ipconazole + AX, metconazole + AX, myclobutanil + AX, penconazole + AX, propiconazole + AX, tebuconazole + AX, tetraconazole + AX, triticonazole + AX, prothioconazole + AX, fluoxytioconazole + AX, mefentrifluconazole + AX, flufenoxadiazam + AX, ipflufenoquin + AX, quinofumelin + AX, metalaxyl-M + AX, cyprodinil + AX, pyrimethanil + AX, kasugamycin + AX, mancozeb + AX, copper fungicides + AX, sulphur + AX, zinc thiazole + AX, captan + AX, folpet + AX, chlorothalonil + AX, dithianon + AX, quinoxyfen + AX, proquinazid + AX, fludioxonil + AX, iprodione + AX, procymidone + AX, thiabendazole + AX, zoxamide + AX, metrafenone + AX, fluopicolide + AX, propamocarb + AX, oxathiapiprolin + AX, fluoxapiprolin + AX, acibenzolar-S-methyl + AX, isotianil + AX, phosphorous acid + AX, cyflufenamid + AX, tebufloquin + AX, picarbutrazox + AX, tricyclazole + AX, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide + AX, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide + AX, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea + AX, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea + AX, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide + AX, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide + AX, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide + AX, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide + AX, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide + AX, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide + AX, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide + AX, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide + AX, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide + AX, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide + AX, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide + AX, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide + AX, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate + AX, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate + AX, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate + AX, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate + AX, methyl (Z)-3-

methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate + AX, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate + AX, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate + AX, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide + AX, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + AX, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide + AX, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + AX, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + AX, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + AX, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + AX, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + AX, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + AX, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24) + AX, melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)) + AX, Reynoutria sachalinensis extract (commercially available as REGALIA®) + AX, a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®) + AX, and Aureobasidin A + AX, wherein the ratio of component (A) to component (B) is from 100:1 to 1:40, preferably from 40:1 to 1:40, even more preferably from 20:1 to 1:20, still more preferably from 15:1 to 1:30, still even more preferably from 10:1 to 1:10, most preferably from 5:1 to 1:5 and even most preferably from 2:1 to 1:2.

In another embodiment of the invention the following mixtures of components (A), wherein component (A) is a compound of formula (I) with component (B) as active ingredients are preferred (wherein the term "AX" means one component (A) selected from compounds of formula (I), (I-A), or compounds selected from (X.01), (X.02), (X.03), (X.04), (X.05), (X.06), (X.07), (X.08), (X.09), (X.10), or (X.11), listed in table X according to the present invention): TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24) + AX, melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)) + AX, Reynoutria sachalinensis extract (commercially available as REGALIA®) + AX, a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®) + AX, or Aureobasidin A + AX.

In another embodiment of the invention the following mixtures of components (A), wherein component (A) is a compound of formula (I) with component (B) as active ingredients are preferred (wherein the term "AX" means one component (A) selected from compounds of formula (I), (I-A), or compounds selected from (X.01), (X.02), (X.03), (X.04), (X.05), (X.06), (X.07), (X.08), (X.09), (X.10), or (X.11), listed in table X according to the present invention): TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24) + AX, melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)) + AX, Reynoutria sachalinensis extract (commercially available as REGALIA®) + AX, a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®) + AX, or Aureobasidin A + AX, wherein the weight ratio of component (A) to component (B) is from 100:1 to 1:40.

In another preferred embodiment of the invention the following mixtures of components (A), wherein component (A) is a compound of formula (I) with component (B) as active ingredients are preferred (wherein the term "AX" means one component (A) selected from compounds of formula (I), (I-A), or compounds selected from (X.01), (X.02), (X.03), (X.04), (X.05), (X.06), (X.07), (X.08), (X.09), (X.10), or (X.11), listed in table X according to the present invention): TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24) + AX, melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)) + AX, Reynoutria sachalinensis extract (commercially available as REGALIA®) + AX, a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®) + AX, or Aureobasidin A + AX, wherein the weight ratio of component (A) to component (B) is from 40:1 to 1:40.

In another more preferred embodiment of the invention the following mixtures of components (A), wherein component (A) is a compound of formula (I) with component (B) as active ingredients are preferred (wherein the term "AX" means one component (A) selected from compounds of formula (I), (I-A), or compounds selected from (X.01), (X.02), (X.03), (X.04), (X.05), (X.06), (X.07), (X.08), (X.09), (X.10), or (X.11), listed in table X according to the present invention): TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24) + AX, melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)) + AX, Reynoutria sachalinensis extract (commercially available as REGALIA®) + AX, a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®) + AX, or Aureobasidin A + AX, wherein the weight ratio of component (A) to component (B) is from 40:1 to 1:20.

In another even more preferred embodiment of the invention the following mixtures of components (A), wherein component (A) is a compound of formula (I) with component (B) as active ingredients are preferred (wherein the term "AX" means one component (A) selected from compounds of formula (I), (I-A), or compounds selected from (X.01), (X.02), (X.03), (X.04), (X.05), (X.06), (X.07), (X.08), (X.09), (X.10), or (X.11), listed in table X according to the present invention): TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24) + AX, melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)) + AX, Reynoutria sachalinensis extract (commercially available as REGALIA®) + AX, a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®) + AX, or Aureobasidin A + AX, wherein the weight ratio of component (A) to component (B) is from 20:1 to 1:20.

In another still more preferred embodiment of the invention component (A) is compound no. X.01: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[(4R,7S)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.01), or a salt enantiomer, tautomer, or N-oxide thereoftautomer, or N-oxide thereof, and component (B) is a compound selected from TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina*

(commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 40:1 to 1:40, preferably from 20:1 to 1:20.

In another still more preferred embodiment of the invention component (A) is compound no. X.02: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7R)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.02), or a salt enantiomer, tautomer, or N-oxide thereoftautomer, or N-oxide thereof, and component (B) is a compound selected from TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 40:1 to 1:40, preferably from 20:1 to 1:20.

In another still more preferred embodiment of the invention component (A) is compound no. X.03: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.03), or a salt enantiomer, tautomer, or N-oxide thereoftautomer, or N-oxide thereof, and component (B) is a compound selected from TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 40:1 to 1:40, preferably from 20:1 to 1:20.

In another still more preferred embodiment of the invention component (A) is compound no. X.04: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.04), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 40:1 to 1:40, preferably from 20:1 to 1:20.

In another still more preferred embodiment of the invention component (A) is compound no. X.05: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.05), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or

Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 40:1 to 1:40, preferably from 20:1 to 1:20.

In another still more preferred embodiment of the invention component (A) is compound no. X.06: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.06), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 40:1 to 1:40, preferably from 20:1 to 1:20.

In another still more preferred embodiment of the invention component (A) is compound no. X.07: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-methyl-7-(1-methylpyrazol-4-yl)-4,6-dihydrothieno[3,2-c]pyridin-5-yl]methanone (X.07), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 40:1 to 1:40, preferably from 20:1 to 1:20.

In another still more preferred embodiment of the invention component (A) is compound no. X.08: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-isothiazolo[5,4-c]pyridin-6-yl]methanone (X.08), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 40:1 to 1:40, preferably from 20:1 to 1:20.

In another still more preferred embodiment of the invention component (A) is compound no. X.09: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thiadiazolo[4,5-c]pyridin-5-yl]methanone (X.09), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or

Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 40:1 to 1:40, preferably from 20:1 to 1:20.

In another still more preferred embodiment of the invention component (A) is compound no. X.10: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone (X.10), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 40:1 to 1:40, preferably from 20:1 to 1:20.

In another still more preferred embodiment of the invention component (A) is compound no. X.11: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7S)-7-(1,5-dimethylpyrazol-4-yl)-4-methyl-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone, or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 40:1 to 1:40, preferably from 20:1 to 1:20.

In a preferred composition according to the invention, component (A) is compound no. X.01: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[(4R,7S)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.01), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-

3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another preferred composition according to the invention, component (A) is compound no. X.02: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7R)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.02), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-

[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another preferred composition according to the invention, component (A) is compound no. X.03: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.03), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid,

metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another preferred composition according to the invention, component (A) is compound no. X.04: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.04), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-

difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another preferred composition according to the invention, component (A) is compound no. X.05: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.05), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-

pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another preferred composition according to the invention, component (A) is compound no. X.06: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.06), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-

enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another preferred composition according to the invention, component (A) is compound no. X.07: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-methyl-7-(1-methylpyrazol-4-yl)-4,6-dihydrothieno[3,2-c]pyridin-5-yl]methanone (X.07), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-

fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another preferred composition according to the invention, component (A) is compound no. X.08: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-isothiazolo[5,4-c]pyridin-6-yl]methanone (X.08), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-

oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another preferred composition according to the invention, component (A) is compound no. X.09: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thiadiazolo[4,5-c]pyridin-5-yl]methanone (X.09), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole,

flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another preferred composition according to the invention, component (A) is compound no. X.10: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone

(X.10), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree

plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another preferred composition according to the invention, component (A) is compound no. X.11: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7S)-7-(1,5-dimethylpyrazol-4-yl)-4-methyl-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone, or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-

carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In a still more preferred composition according to the invention, component (A) is compound no. X.01: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[(4R,7S)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.01), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another still more preferred composition according to the invention, component (A) is compound no. X.02: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7R)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.02), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant

extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another still more preferred composition according to the invention, component (A) is compound no. X.03: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.03), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another still more preferred composition according to the invention, component (A) is compound no. X.04: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.04), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another still more preferred composition according to the invention, component (A) is compound no. X.05: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.05), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-

dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another still more preferred composition according to the invention, component (A) is compound no. X.06: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.06), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another still more preferred composition according to the invention, component (A) is compound no. X.07: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-methyl-7-(1-methylpyrazol-4-yl)-4,6-dihydrothieno[3,2-c]pyridin-5-yl]methanone (X.07), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant

extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another still more preferred composition according to the invention, component (A) is compound no. X.08: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-isothiazolo[5,4-c]pyridin-6-yl]methanone (X.08), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another still more preferred composition according to the invention, component (A) is compound no. X.09: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thiadiazolo[4,5-c]pyridin-5-yl]methanone (X.09), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another still more preferred composition according to the invention, component (A) is compound no. X.10: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone (X.10), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-

dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In another still more preferred composition according to the invention, component (A) is compound no. X.11: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7S)-7-(1,5-dimethylpyrazol-4-yl)-4-methyl-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone, or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 15:1 to 1:30.

In a still more preferred composition according to the invention, component (A) is compound no. X.01: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[(4R,7S)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.01), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-

(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still more preferred composition according to the invention, component (A) is compound no. X.02: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7R)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.02), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid,

metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A,

wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still more preferred composition according to the invention, component (A) is compound no. X.03: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.03), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-

pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still more preferred composition according to the invention, component (A) is compound no. X.04: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.04), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-

2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still more preferred composition according to the invention, component (A) is compound no. X.05: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.05), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-

((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still more preferred composition according to the invention, component (A) is compound no. X.06: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.06), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-

carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still more preferred composition according to the invention, component (A) is compound no. X.07: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-methyl-7-(1-methylpyrazol-4-yl)-4,6-dihydrothieno[3,2-c]pyridin-5-yl]methanone (X.07), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole,

flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5)

In another still more preferred composition according to the invention, component (A) is compound no. X.08: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-isothiazolo[5,4-c]pyridin-6-yl]methanone (X.08), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-

difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still more preferred composition according to the invention, component (A) is compound no. X.09: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thiadiazolo[4,5-c]pyridin-5-yl]methanone (X.09), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-

4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still more preferred composition according to the invention, component (A) is compound no. X.10: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone (X.10), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-

(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still more preferred composition according to the invention, component (A) is compound no. X.11: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7S)-7-(1,5-dimethylpyrazol-4-yl)-4-methyl-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone, or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-

methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In a still even more preferred composition according to the invention, component (A) is compound no. X.01: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[(4R,7S)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.01), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-

thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still even more preferred composition according to the invention, component (A) is compound no. X.02: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7R)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.02), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still even more preferred composition according to the invention, component (A) is compound no. X.03: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.03), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still even more preferred composition according to the invention, component (A) is compound no. X.04: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.04), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still even more preferred composition according to the invention, component (A) is compound no. X.05: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.05), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still even more preferred composition according to the invention, component (A) is compound no. X.06: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.06), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-

carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still even more preferred composition according to the invention, component (A) is compound no. X.07: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-methyl-7-(1-methylpyrazol-4-yl)-4,6-dihydrothieno[3,2-c]pyridin-5-yl]methanone (X.07), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still even more preferred composition according to the invention, component (A) is compound no. X.08: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-isothiazolo[5,4-c]pyridin-6-yl]methanone (X.08), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum

botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still even more preferred composition according to the invention, component (A) is compound no. X.09: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thiadiazolo[4,5-c]pyridin-5-yl]methanone (X.09), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still even more preferred composition according to the invention, component (A) is compound no. X.10: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone (X.10), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In another still even more preferred composition according to the invention, component (A) is compound no. X.11: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7S)-7-(1,5-dimethylpyrazol-4-yl)-4-methyl-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone, or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In a still even more preferred composition according to the invention, component (A) is compound no. X.01: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[(4R,7S)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.01), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In a still even more preferred composition according to the invention, component (A) is compound no. X.02: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7R)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.02), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In a still even more preferred composition according to the invention, component (A) is compound no. X.03: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.03), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In a still even more preferred composition according to the invention, component (A) is compound no. X.04: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.04), or a salt enantiomer, tautomer, or N-oxide thereof, and component

(B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In a still even more preferred composition according to the invention, component (A) is compound no. X.05: [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.05), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In a still even more preferred composition according to the invention, component (A) is compound no. X.06: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.06), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In a still even more preferred composition according to the invention, component (A) is compound no. X.07: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-methyl-7-(1-methylpyrazol-4-yl)-4,6-dihydrothieno[3,2-c]pyridin-5-yl]methanone (X.07), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In a still even more preferred composition according to the invention, component (A) is compound no. X.08: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-isothiazolo[5,4-c]pyridin-6-yl]methanone (X.08), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In a still even more preferred composition according to the invention, component (A) is compound no. X.09: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thiadiazolo[4,5-c]pyridin-5-yl]methanone (X.09), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In a still even more preferred composition according to the invention, component (A) is compound no. X.10: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone (X.10), or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound

selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In a still even more preferred composition according to the invention, component (A) is compound no. X.11: [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7S)-7-(1,5-dimethylpyrazol-4-yl)-4-methyl-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone, or a salt enantiomer, tautomer, or N-oxide thereof, and component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl, wherein the weight ratio of component (A) to component (B) is from 10:1 to 1:10 (or even more preferably, 5:1 to 1:5).

In any of the compositions according to the invention, the composition may comprise an additional active ingredient component (C), which is different to component (B), and is selected from the group consisting of pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penflufen, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, isofetamid, fluindapyr, cyclobutrifluram, fluoxastrobin, fenamidone, mandestrobin, picoxystrobin, pyraclostrobin, famoxadone, kresoxim-methyl, trifloxystrobin, azoxystrobin, metyltetraprole, amisulbrom, cyazofamid, fenpicoxamid, florylpicoxamid, metarylpicoxamid, ametoctradin, fluazinam, fentin hydroxide, silthiofam, fenpropimorph, fenpropidin, spiroxamine, fenhexamid, imazalil, pyrisoxazole, bromuconazole, cyproconazole, difenoconazole, epoxiconazole, flutriafol, hexaconazole, ipconazole, metconazole, myclobutanil, penconazole, propiconazole, tebuconazole, tetraconazole, triticonazole, prothioconazole, fluoxytioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, kasugamycin, mancozeb, copper fungicides, sulphur, zinc thiazole, captan, folpet, chlorothalonil, dithianon, quinoxyfen, proquinazid, fludioxonil, iprodione, procymidone, thiabendazole, zoxamide, metrafenone, fluopicolide, propamocarb, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, isotianil, phosphorous acid, cyflufenamid, tebufloquin, picarbutrazox, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropane-carboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, (this compound may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca

alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A.

Preferably component (C), which is different to component (B), is a compound selected from the group consisting of pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metarylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]-cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]-propanamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (this compound may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A.

Even more preferably, component (C), which is different to component (B), is a compound selected from the group consisting of pydiflumetofen, benzovindiflupyr, cyclobutrifluram, pyraclostrobin, azoxystrobin, metyltetraprole, florylpicoxamid, metarylpicoxamid, fluazinam, fenpropidin, difenoconazole, metconazole, propiconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, cyprodinil, fludioxonil, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propenamide, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca

alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A.

Still even more preferably, component (C), which is different to component (B), is a compound selected from the group consisting of pydiflumetofen, benzovindiflupyr, cyclobutrifluram, pyraclostrobin, azoxystrobin, metyltetraprole, florylpicoxamid, metarylpicoxamid, fluazinam, fenpropidin, difenoconazole, metconazole, propiconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, cyprodinil, fludioxonil, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propenamide, or methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate.

In another embodiment of the present invention, there is provided a fungicidal composition comprising a mixture of component (A) and a component (B) and a component (C) as active ingredients, wherein component (A) is a compound of formula (I) selected from compounds (X.01), (X.02), (X.03), (X.04), (X.05), (X.06), (X.07), (X.08), (X.09), (X.10), or (X.11), listed in table X according to the present invention, and wherein component (C), and component (B), are a compound selected from the group consisting of pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penflufen, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, isofetamid, fluindapyr, cyclobutrifluram, fluoxastrobin, fenamidone, mandestrobin, picoxystrobin, pyraclostrobin, famoxadone, kresoxim-methyl, trifloxystrobin, azoxystrobin, metyltetraprole, amisulbrom, cyazofamid, fenpicoxamid, florylpicoxamid, metarylpicoxamid, ametoctradin, fluazinam, fentin hydroxide, silthiofam, fenpropimorph, fenpropidin, spiroxamine, fenhexamid, imazalil, pyrisoxazole, bromuconazole, cyproconazole, difenoconazole, epoxiconazole, flutriafol, hexaconazole, ipconazole, metconazole, myclobutanil, penconazole, propiconazole, tebuconazole, tetraconazole, triticonazole, prothioconazole, fluoxytioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, kasugamycin, mancozeb, copper fungicides, sulphur, zinc thiazole, captan, folpet, chlorothalonil, dithianon, quinoxyfen, proquinazid, fludioxonil, iprodione, procymidone, thiabendazole, zoxamide, metrafenone, fluopicolide, propamocarb, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, isotianil, phosphorous acid, cyflufenamid, tebufloquin, picarbutrazox, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropane-carboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, (this compound may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-

carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A, and wherein component (B) and (C) are not the same compound.

Preferably, there is provided a fungicidal composition comprising a mixture of component (A) and a component (B) and a component (C) as active ingredients, wherein component (A) is a compound of formula (I) selected from (X.01), (X.02), (X.03), (X.04), (X.05), (X.06), (X.07), (X.08), (X.09), (X.10), or (X.11), listed in table X according to the present invention, and wherein component (C), and component (B), are a compound selected from the group consisting of pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metarylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]-cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]-propanamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (this compound may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina*

(commercially available as BOTRISTOP®), or Aureobasidin A, and wherein component (B) and (C) are not the same compound.

More preferably, there is provided a fungicidal composition comprising a mixture of component (A) and a component (B) and a component (C) as active ingredients, wherein component (A) is a compound of formula (I) selected from compounds (X.01), (X.02), (X.03), (X.04), (X.05), (X.06), (X.07), (X.08), (X.09), (X.10), or (X.11), listed in table X according to the present invention, and wherein component (C), and component (B), are a compound selected from the group consisting of pydiflumetofen, benzovindiflupyr, cyclobutrifluram, pyraclostrobin, azoxystrobin, metyltetraprole, florylpicoxamid, metarylpicoxamid, fluazinam, fenpropidin, difenoconazole, metconazole, propiconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, cyprodinil, fludioxonil, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propenamide, or methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, and wherein component (B) and (C) are not the same compound.

Still even more preferably, there is provided a fungicidal composition comprising a mixture of component (A) and a component (B) and a component (C) as active ingredients, wherein component (A) is a compound of formula (I) selected from compounds (X.01), (X.02), (X.03), (X.04), (X.05), (X.06), (X.07), (X.08), (X.09), (X.10), or (X.11), listed in table X according to the present invention, and wherein component (C), and component (B), are a compound selected from the group consisting of pydiflumetofen, benzovindiflupyr, cyclobutrifluram, pyraclostrobin, azoxystrobin, metyltetraprole, florylpicoxamid, metarylpicoxamid, fluazinam, fenpropidin, difenoconazole, metconazole, propiconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, cyprodinil, fludioxonil, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propenamide, or methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, and wherein component (B) and (C) are not the same compound.

The component (C) compounds are referred to herein and above by a so-called "ISO common name" or another "common name" being used in individual cases or a trademark name. The component (C) compounds are known and are commercially available and/or can be prepared using procedures known in the art and/or procedures reported in the literature such as indicated above.

Components (B) and (C) in combination with component (A) may enhance the effectiveness of the latter against fungi, and vice versa. Additionally, the fungicidal compositions may be effective against a wider spectrum of fungal pathogens that can be combated with the individual active ingredients when used solely. Generally, the weight ratio of component (A) to the mixture of components (B) and (C) may be from 100:1 to 1:100, or 50:1 to 1:50, or 20:1 to 1:20, or 10:1 to 1:10, or 5:1 and 1:5. Otherwise, the weight ratio of component (A) to the mixture of components (B) and (C) may be from 2:1 to 1:2, or 4:1 to 2:1, or 1:1, or 5:1, or 5:2, or 5:3, or 5:4, or 4:1, or 4:2, or 4:3, or 3:1, or 3:2, or 2:1, or 1:5, or 2:5, or 3:5, or 4:5, or 1:4, or 2:4, or 3:4, or 1:3, or 2:3, or 1:2, or 1:600, or 1:300, or 1:150, or 1:35, or 2:35, or 4:35, or 1:75, or 2:75, or 4:75, or 1:6000, or 1:3000,

or 1:1500, or 1:350, or 2:350, or 4:350, or 1:750, or 2:750, or 4:750. Those mixing ratios are understood to include, on the one hand, ratios by weight and also, on other hand, molar ratios.

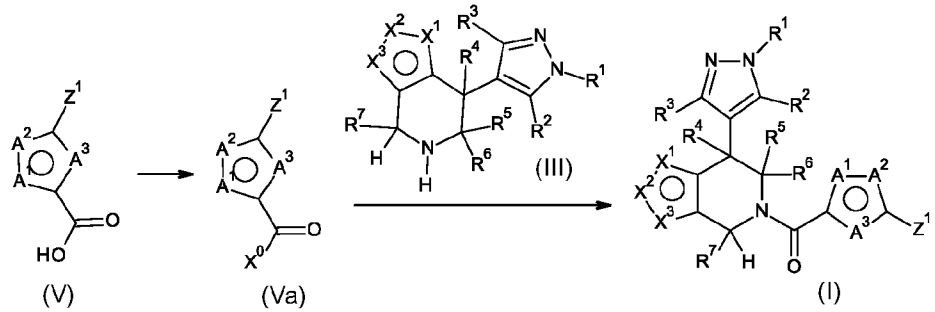
In embodiments of the invention where the composition comprise a component (A), a component (B) and a component (C), the weight ratio of component (A) to the sum of component (B) and component (C) may be from 100:1 to 1:100, preferably from 50:1 to 1:50, more preferably from 20:1 to 1:40, even more preferably from 15:1 to 1:30, still more preferably from 12:1 to 1:25, or from 10:1 to 1:20, or from 10:1 to 1:10, or from 5:1 to 1:15, or from 5:1 to 1:5, or from 4:1 to 1:4, or from 3:1 to 1:10, or from 3:1 to 1:3, or from 2:1 to 1:5, or 1:1.

The compounds of formula (I) according to the present invention can be made as shown in the following Schemes below, in which, unless otherwise stated, the definition of each variable is as defined above for a compound of formula (I).

The term “compounds of formula (I)” refers to component A.

In any of the Schemes below, the presence of one or more possible asymmetric carbon atoms in a compound of formula (I) according to the invention means that the compounds may occur in chiral isomeric forms, i.e., enantiomeric or diastereomeric forms.

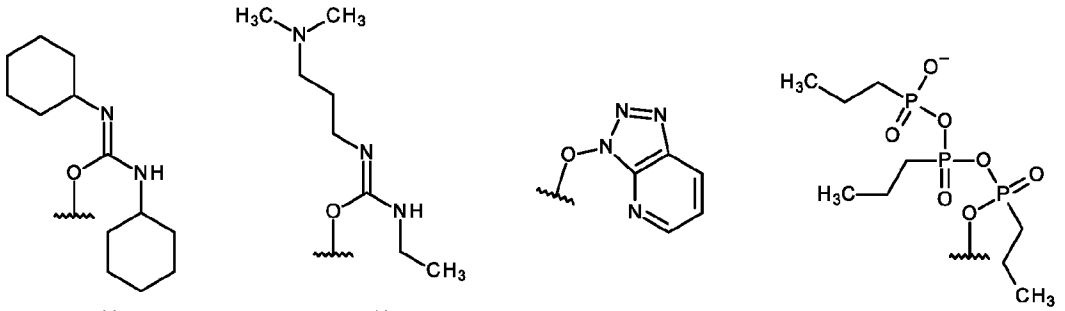
Compounds of formula (I) may be prepared by a person skilled in the art following known methods. More specifically, compounds of formula (I) may be prepared from compounds of formula (III) or a salt thereof, wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, X^1, X^2 and X^3 are as defined above for the compound of formula (I) by reaction with a compound of formula (V), wherein A^1, A^2, A^3 and Z^1 are as defined above for the compound of formula (I). This reaction is shown in Scheme 1.



Scheme 1

In Scheme 1, compounds of formula (V), wherein A^1, A^2, A^3 and Z^1 are as defined above for the compound of formula (I), are activated to compounds of formula (Va) by methods known to a person skilled in the art and described, for example, in *Tetrahedron* **2005**, *61* (46), 10827-10852. For example, compounds of formula (Va), where X^0 is halogen, are formed by treatment of compounds of formula (V) with, for example, oxalyl chloride or thionyl chloride in the presence of catalytic quantities of N,N-dimethylformamide (DMF) in inert solvents such as dichloromethane (DCM) or tetrahydrofuran (THF) at temperatures from 20°C to 100°C, preferably 25°C. Treatment of compounds of formula (Va) with compounds of formula (III), wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, X^1, X^2 and X^3 are as defined above for the compound of formula (I), optionally in the presence of a base, e.g. triethylamine or pyridine, leads to compounds of formula (I). Alternatively, compounds of formula (I)

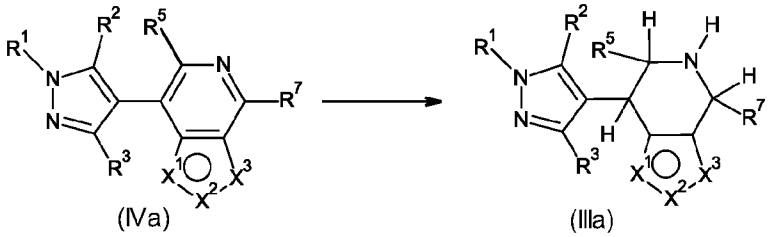
may be prepared by treatment of compounds of formula (V) with dicyclohexyl carbodiimide (DCC), 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide (EDC) or 1-[bis(dimethylamino)methylene]-1H-1,2,3-triazolo[4,5-b]pyridinium 3-oxide hexafluorophosphate (HATU) to give the activated compound of formula (Va), wherein X^0 is X^{01}, X^{02} or X^{03} as set forth below, in an inert solvent, e.g. pyridine, DMF, acetonitrile, DCM or THF, optionally in the presence of a base, e.g. triethylamine, at temperatures from 30°C to 180°C. Finally, a compound of formula (V) can also be activated by reaction with a coupling reagent such as propanephosphonic acid anhydride (T3P) to provide compounds of formula (Va), wherein X^0 is X^{04} as set forth below, as described for example in *Synthesis* **2013**, *45,* 1569. Further reaction with the compound of formula (III) or a salt thereof leads to compounds of formula (I).



X^{01} X^{02} X^{03} X^{04}

Compounds of formula (IIIa), wherein R^4 and R^6 are hydrogen, R^5 is hydrogen or methyl and R^1, R^2, R^3, R^7, X^1, X^2 and X^3 are as defined above for the compound of formula (I), may be prepared by a person skilled in the art following known methods.

For example, compounds of formula (IIIa), wherein R^4 and R^6 are hydrogen, R^5 is hydrogen or methyl and R^1, R^2, R^3, R^7, X^1, X^2 and X^3 are as defined above for the compound of formula (I), may be prepared from compounds of formula (IVa), wherein R^5 is hydrogen or methyl, and R^1, R^2, R^3, R^7, X^1, X^2 and X^3 are as defined above for the compound of formula (I), by treatment with a reducing agent such as $NaBH_3CN$ and an acid, for example hydrochloric acid, or acetic acid in a protic solvent such as methanol or ethanol and the like. Such reactions are well known in the literature and analogous reactions have been described for example in *Deng, Zeping et al*, CN103772278, and *Synthesis* **1979**, *4*, 281-3. Alternatively, compounds of formula (IIIa) may be prepared from compounds of formula (IV) by reduction with hydrogen in the presence of a suitable metal catalyst, such as Pd, Ir, Rh with a suitable ligand, e.g. diphosphine [1,2-bis(diphenylphosphino)ethane (dppe), 1,3-bis(diphenylphosphino)propane (dppp) or 1,4-bis(diphenylphosphino)butane (dppb)]. Similar reactions have been reported for example in *React. Kinet. Catal. Lett.* **2007**, *92*, 99-104 (Scheme 2.)

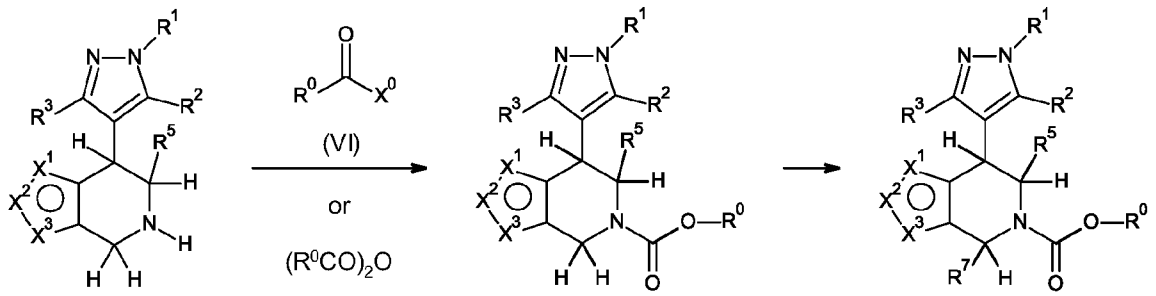


(IVa) (IIIa)

Scheme 2

Alternatively, compounds of formula (IIIa) may be prepared as shown in Scheme 4.

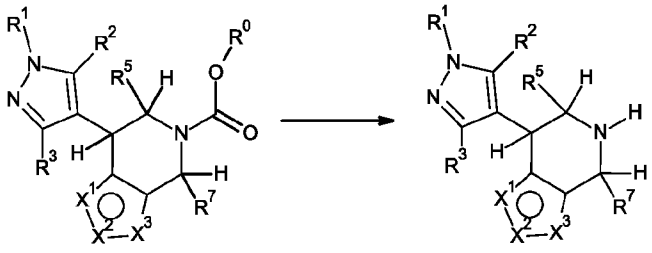
As shown in Scheme 3, compounds of formula (IIIb), wherein R^4, R^6 and R^7 are hydrogen, R^5 is hydrogen or methyl and R^1, R^2, R^3, X^1, X^2 and X^3 are as defined above for the compound of formula (I), can be converted to compounds of formula (VII), wherein R^4, R^6 and R^7 are hydrogen, R^5 is hydrogen or methyl and R^1, R^2, R^3, X^1, X^2 and X^3 are as defined above for the compound of formula (I), by treatment with a compound of formula (VI), wherein X^0 is a leaving group, such as halogen, and R^0 is C_1-C_4-alkyl, by methods known to a person skilled in the art and by those described in Scheme 1. Alternatively, compounds of formula (VII) may be prepared by treatment with an anhydride of formula $(R^0CO)_2O$, wherein R^0 is C_1-C_4-alkyl, in an inert solvent such as DCM, THF or 2-methyl-THF, optionally in the presence of a base, such as triethylamine or dimethylaminopyridine at temperatures between 0°C and 60°C. Compounds of formula (VII) are then metalated with a base, for example an alkyl metal base, such as tert-butyl lithium, and an additive such as *N,N,N',N'*-tetramethylethylendiamine (TMEDA) at low temperature, for example -78°C to room temperature, in an inert polar solvent such as THF or 2-methyl-THF. Subsequent treatment of the anion of formula (VII) formed under such conditions with an electrophile of formula R^X-X^0, wherein X^0 is as previously defined and R^X is C_1-C_4-alkyl, C_1-C_4-alkylcarbonyl, C_1-C_4-alkoxycarbonyl, N-methoxy-N-methyl-carbonyl, C_1-C_4-alkylaminocarbonyl, di(C_1-C_4-alkyl)aminocarbonyl or C_3-C_6-cycloalkyl, wherein the C_3-C_6-cycloalkyl is optionally substituted by 1, 2 or 3 substituents independently selected from halogen, cyano, C_1-C_4-alkyl, C_1-C_4-haloalkyl and C_1-C_4-alkoxy, yields compounds of formula (VIIa), wherein R^4 and R^6 are hydrogen, R^5 is hydrogen or methyl, R^0 is C_1-C_4-alkyl and R^1, R^2, R^3, R^7, X^1, X^2 and X^3 are as defined above for the compound of formula (I) (Scheme 3).



(IIIb) (VII) (VIIa)

Scheme 3

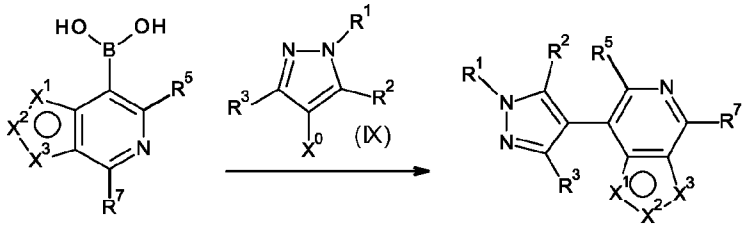
Compounds of formula (VIIa) may be converted to compounds of formula (IIIa), wherein R^4 and R^6 are hydrogen, R^5 is hydrogen or methyl and R^1, R^2, R^3, R^7, X^1, X^2 and X^3 are as defined above for the compound of formula (I), by methods known to a person skilled in the art. For example, compounds of formula (VIIa), wherein R^0 is tert-butyl, may be treated with an organic or inorganic acid such as trifluoroacetic acid or HCl to give compounds of formula (IIIa). This reaction is shown in Scheme 4.



(VIIa) (IIIa)

Scheme 4

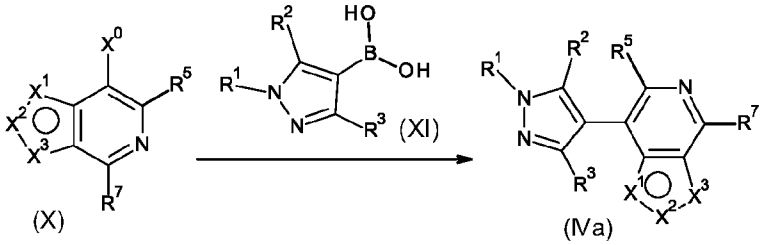
Compounds of formula (IVa), wherein R^5 is hydrogen or methyl and R^1, R^2, R^3, R^7, X^1, X^2 and X^3 are as defined above for the compound of formula (I), may be prepared by reacting compounds of formula (IX), wherein R^1, R^2 and R^3 are as defined above for the compound of formula (I) and X^0 is halogen, preferably chlorine, bromine or iodine, with compounds of formula (VIII), wherein R^5 is hydrogen or methyl and R^7, X^1, X^2 and X^3 are as defined above for the compound of formula (I), by means of a C-C bond formation reaction typically under palladium-catalyzed (alternatively nickel-catalyzed) cross-coupling conditions (Scheme 5).



(VIII) (IX) (IVa)

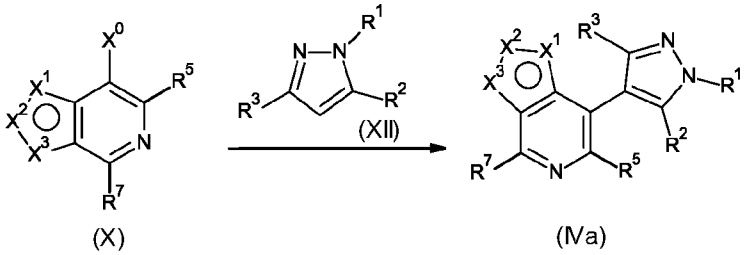
Scheme 5

Suzuki–Miyaura cross-coupling reactions between compounds of formula (VIII) and compound of formula (IX) are well known to a person skilled in the art and are usually carried out in the presence of a palladium catalyst, such as tetrakis(triphenylphosphine)-palladium(0) or [1,1'-bis(diphenylphosphino)ferrocene]palladium(II) dichloride dichloromethane complex, and a base, such as sodium or potassium carbonate, in a solvent, such as N,N-dimethylformamide, dioxane or dioxane-water mixtures, at temperatures between room temperature and 160°C, optionally under microwave heating conditions, and preferably under inert atmosphere. Such reactions have been reviewed for example in *J. Organomet. Chem.* **1999**, *576*, 147-168. A person skilled in the art will also recognize that the reaction can be reversed, i.e. by reacting a compound of formula (XI), wherein R^1, R^2 and R^3 are as defined above for the compound of formula (I), with a compound of formula (X), wherein R^5 is hydrogen or methyl, R^7, X^1, X^2 and X^3 are as defined above for the compound of formula (I) and X^0 is halogen, preferably chlorine, bromine or iodine, to provide a compound of formula (IVa), wherein R^5 is hydrogen or methyl and R^1, R^2, R^3, R^7, X^1, X^2 and X^3 are as defined above for the compound of formula (I). This reaction is shown in Scheme 6.



Scheme 6

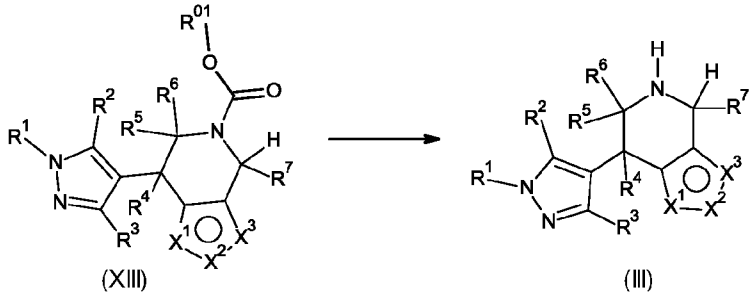
A further cross-coupling chemistry, namely C-H activation, can also be used to prepare compounds of formula (IVa), wherein R^5 is hydrogen or methyl and R^1, R^2, R^3, R^7, X^1, X^2 and X^3 are as defined above for the compound of formula (I). This reaction is shown in Scheme 7.



Scheme 7

As shown in Scheme 7, compounds of formula (X), wherein R^5 is hydrogen or methyl, R^7, X^1, X^2 and X^3 are as defined above for the compound of formula (I) and X^0 is halogen, preferably chlorine, bromine or iodine, are reacted with compounds of formula (XII), wherein R^1, R^2 and R^3 are as defined above for the compound of formula (I), in the presence of a palladium catalyst, typically palladium acetate $Pd(OAc)_2$, a suitable ligand, for example 1,10-phenanthroline, in the presence of a base such as cesium carbonate or potassium carbonate, in inert solvents such as chlorobenzene, toluene or xylene at temperatures between rt and 180°C, optionally under microwave heating conditions, preferably under inert atmosphere. Similar reactions have been reported in the literature for example *in Chem. Sci.* **2013**, *4*, 2374-2379.

Also, compounds of formula (III) may be prepared from compounds of formula (XIII) (Scheme 8).

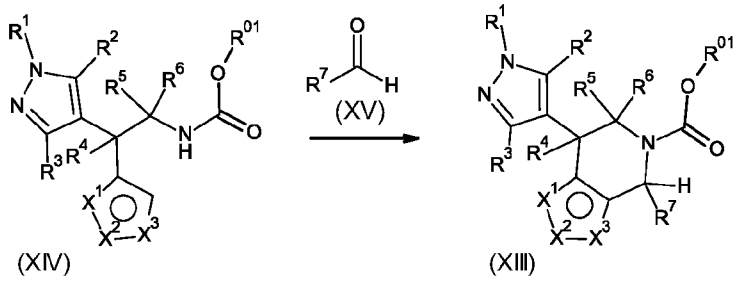


Scheme 8

As shown in Scheme 8, compounds of formula (III) may be prepared by a person skilled in the art by a carbamate deprotection reaction of compounds of formula (XIII), wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, X^1, X^2 and

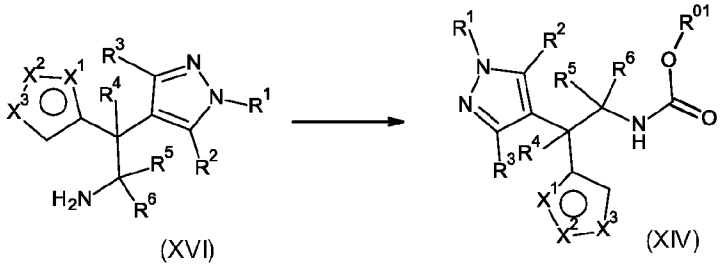
X^3 are as defined above for the compound of formula (I) and R^{01} may be a member of a common carbamate protecting group substituent, for example methyl, *tert*-butyl, allyl, 2,2,2-trichloroethyl or benzyl. For example, when R^{01} is methyl, a suitable solvent such as dichloromethane and a suitable reagent such as iodotrimethylsilane may be employed to afford the product upon heating at temperatures between rt and 200°C, preferably between 20°C and the boiling point of the reaction mixture as described, for example, in *J. Am. Chem. Soc.* **1992**, *114*, 5959. The compounds of formula (III) thus obtained are converted to compounds of formula (I) as shown in Scheme 1.

Compounds of formula (XIII), wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, X^1, X^2 and X^3 are as defined above for the compound of formula (I) and wherein R^{01} is as described above, may be formed by a Pictet-Spengler reaction between an aldehyde (including formaldehyde in its various forms) of formula (XV), wherein R^7 is as defined above for the compound of formula (I), and a compound of formula (XIV), wherein R^1, R^2, R^3, R^4, R^5, R^6, X^1, X^2 and X^3 are as defined above for the compound of formula (I) and wherein R^{01} is as described above, by combination with an acid in a suitable solvent, for example as described in *Tetrahedron* **1987**, *43*, 439. This reaction is shown in Scheme 9.



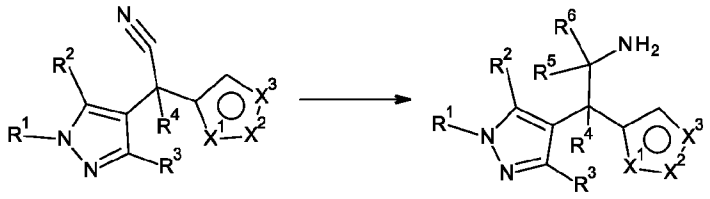
Scheme 9

Compounds of formula (XIV), wherein R^1, R^2, R^3, R^4, R^5, R^6, X^1, X^2 and X^3 are as defined above for the compound of formula (I) and wherein R^{01} is as described above, may be prepared by a reaction between amines of formula (XVI), wherein R^1, R^2, R^3, R^4, R^5, R^6, X^1, X^2 and X^3 are as defined above for the compound of formula (I), and a suitable protecting reagent such as methyl chloroformate, optionally in the presence of a base such as triethylamine or pyridine, in a suitable solvent such as dichloromethane at temperatures between -20°C and the boiling point of the mixture, as for example described in *Org. Biomolec. Chem.* **2016,** *14,* 6853. This reaction is shown in Scheme 10.



Scheme 10

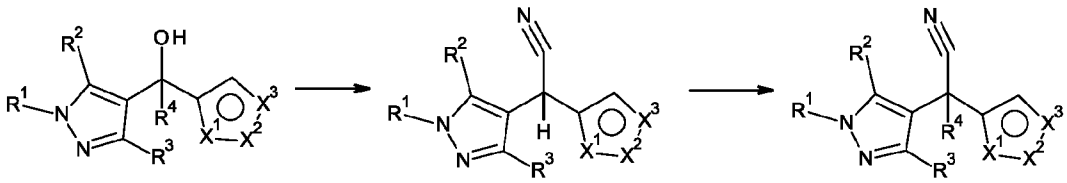
Compounds of formula (XVI), or salts thereof, wherein R^1, R^2, R^3, R^4, R^5, R^6, X^1, X^2 and X^3 are as defined above for the compound of formula (I), may be prepared by a person skilled in the art by a reaction between nitriles of formula (XVII), wherein R^1, R^2, R^3, R^4, X^1, X^2 and X^3 are as defined above for the compound of formula (I), and a suitable nucleophile such as (dimethyl sulfide)dihydroboron (BMS) in a suitable aprotic solvent such as THF, for example as described in *J. Org. Chem.* **1981** *47,* 3153. Alternatively, Grignard reagents R^5MgBr or R^6MgBr, wherein R^5 and R^6 are as defined above for the compound of formula (I), may be added as nucleophiles to compounds of formula (XVII), sequentially or simultaneously, to allow more highly substituted amines of formula (XVI) to be prepared. Such Grignard additions to nitriles are carried out in an inert solvent such as diethyl ether, *tert*-butylmethyl ether, and cyclopentyl methyl ether in the presence of a Lewis acid such as $Ti(O\text{-}^iPr)_4$ (see *Synlett* **2007**, (4), 652-654). This reaction is shown in Scheme 11.



(XVII) (XVI)

Scheme 11

Compounds of formula (XVII), wherein R^1, R^2, R^3, R^4, X^1, X^2 and X^3 are as defined above for the compound of formula (I), may be prepared by a person skilled in the art following known methods. More specifically, compounds of formula (XVII), and intermediates thereof, may be prepared from compounds of formula (XVIII) as shown in Scheme 12.



(XVIII) (XVIIa) (XVII)

Scheme 12

For example, compounds of formula (XVII), wherein R^1, R^2, R^3, R^4, X^1, X^2 and X^3 are as defined above for the compound of formula (I) and R^4 is different from hydrogen, may be prepared by a person skilled in the art by deprotonation of compound of formula (XVIIa), wherein R^4 is hydrogen and R^1, R^2, R^3, X^1, X^2 and X^3 are as defined above for the compound of formula (I), using a strong base such as *n*-butyl lithium or sodium hydride at cryogenic temperatures in an inert solvent such as THF, followed by addition of a suitable alkylating agent R^4-X, wherein X is halogen, for example iodomethane.

Compounds of formula (XVIIa), wherein R^4 is hydrogen and R^1, R^2, R^3, X^1, X^2 and X^3 are as defined above for the compound of formula (I), may be prepared from alcohols of formula (XVIII) by treatment with cyanotrimethylsilane (TMSCN) in the presence of a base such as lithium carbonate in a nonpolar solvent such as dichloromethane at temperatures between 0°C and the boiling point of the reaction mixture. Such

transformations are well known in the literature under a variety of conditions, for example as described in *Org. Lett.* **2008**, *10, 4570* and references therein. This reaction is shown in Scheme 12.

Compounds of formula (III) are commercially available or are readily prepared by compounds known in the state of the art. Compounds of formula (XVIII) may be prepared by methods known to a person skilled in the art.

A compound of formula (I) as defined in any of the embodiments of the present invention can be converted in a manner known *per se* into another compound as defined in any of the embodiments of the present invention by replacing one or more substituents of the starting compound in the customary manner by (an)other substituent(s) according to the invention. Those skilled in the art will also appreciate that compounds of formula (I) can be further transformed to further derivatives of formula (I) by, for example, alkylation, nucleophilic substitution, elimination, C-C-bond forming reactions in the presence of metal catalysts, heteroatom-carbon bond formation in the presence of metal catalysts, oxidation, and reduction.

Depending on the choice of the reaction conditions and starting materials which are suitable in each case, it is possible, for example, in one reaction step only to replace one substituent by another substituent according to the invention, or a plurality of substituents can be replaced by other substituents according to the invention in the same reaction step.

Salts of compounds of formula (I) may be prepared in a manner known *per se*. Thus, for example, acid addition salts of compounds of formula (I) are obtained by treatment with a suitable acid or a suitable ion exchanger reagent and salts with bases are obtained by treatment with a suitable base or with a suitable ion exchanger reagent.

Salts of compounds of formula (I) can be converted in the customary manner into the free compounds (I), acid addition salts, for example, by treatment with a suitable basic compound or with a suitable ion exchanger reagent and salts with bases, for example, by treatment with a suitable acid or with a suitable ion exchanger reagent.

Salts of compounds of formula (I) can be converted in a manner known *per se* into other salts of compounds of formula (I), acid addition salts, for example, into other acid addition salts, for example by treatment of a salt of inorganic acid such as hydrochloride with a suitable metal salt such as a sodium, barium or silver salt, of an acid, for example with silver acetate, in a suitable solvent in which an inorganic salt which forms, for example silver chloride, is insoluble and thus precipitates from the reaction mixture.

Depending on the procedure or the reaction conditions, the compounds of formula (I), which have salt-forming properties, can be obtained in free form or in the form of salts.

The compounds of formula (I) and, where appropriate, the tautomer's thereof, in each case in free form or in salt form, can be present in the form of one of the isomers which are possible or as a mixture of these, for example in the form of pure isomers, such as antipodes and/or diastereomers, or as isomer mixtures, such as enantiomer mixtures, for example racemates, or diastereomer mixtures, depending on the number, absolute

and relative configuration of asymmetric carbon atoms which occur in the molecule and/or depending on the configuration of non-aromatic double bonds which occur in the molecule, the invention relates to the pure isomers and also to all isomer mixtures which are possible and is to be understood in each case in this sense hereinabove and herein below, even when stereochemical details are not mentioned specifically in each case.

Diastereomeric mixtures or racemic mixtures of compounds of formula (I), in free form or in salt form, which can be obtained depending on which starting materials and procedures have been chosen can be separated in a known manner into the pure diastereomers or racemates on the basis of the physicochemical differences of the components, for example by fractional crystallization, distillation and/or chromatography.

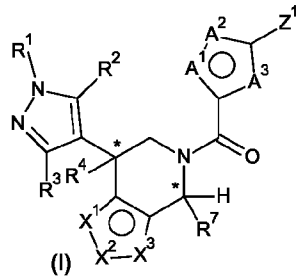
Enantiomeric mixtures, such as racemates, which can be obtained in a similar manner can be resolved into the optical antipodes by known methods, for example by recrystallization from an optically active solvent, by chromatography on chiral adsorbents, for example high-performance liquid chromatography (HPLC) on acetyl cellulose, with the aid of suitable microorganisms, by cleavage with specific, immobilized enzymes, via the formation of inclusion compounds, for example using chiral crown ethers, where only one enantiomer is complexed, or by conversion into diastereomeric salts, for example by reacting a basic end-product racemate with an optically active acid, such as a carboxylic acid, for example camphor, tartaric or malic acid, or sulfonic acid, for example camphorsulfonic acid, and separating the diastereomer mixture which can be obtained in this manner, for example by fractional crystallization based on their differing solubilities, to give the diastereomers, from which the desired enantiomer can be set free by the action of suitable agents, for example basic agents.

Pure diastereomers or enantiomers can be obtained according to the invention not only by separating suitable isomer mixtures, but also by generally known methods of diastereoselective or enantioselective synthesis, for example by carrying out the process according to the invention with starting materials of a suitable stereochemistry.

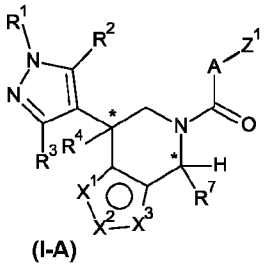
It is advantageous to isolate or synthesize in each case the biologically more effective isomer, for example enantiomer or diastereomer, or isomer mixture, for example enantiomer mixture or diastereomer mixture, if the individual components have a different biological activity.

As an example, compounds with more than one asymmetric carbon atoms may exist in diastereomeric forms which can be optionally separated using for example supercritical fluid chromatography (SFC) chromatography with chiral columns. Such diastereomers can show a different fungicidal activity profile, but all isomers and diastereomers form part of this invention.

The compounds of formula (I) (also shown for compounds of formula (I-A)) of the present invention exhibit two asymmetric carbon atoms, wherein the star (*) indicates the asymmetric carbon atom, such there are four stereoisomers available. These four stereoisomers consist of two sets of enantiomers.



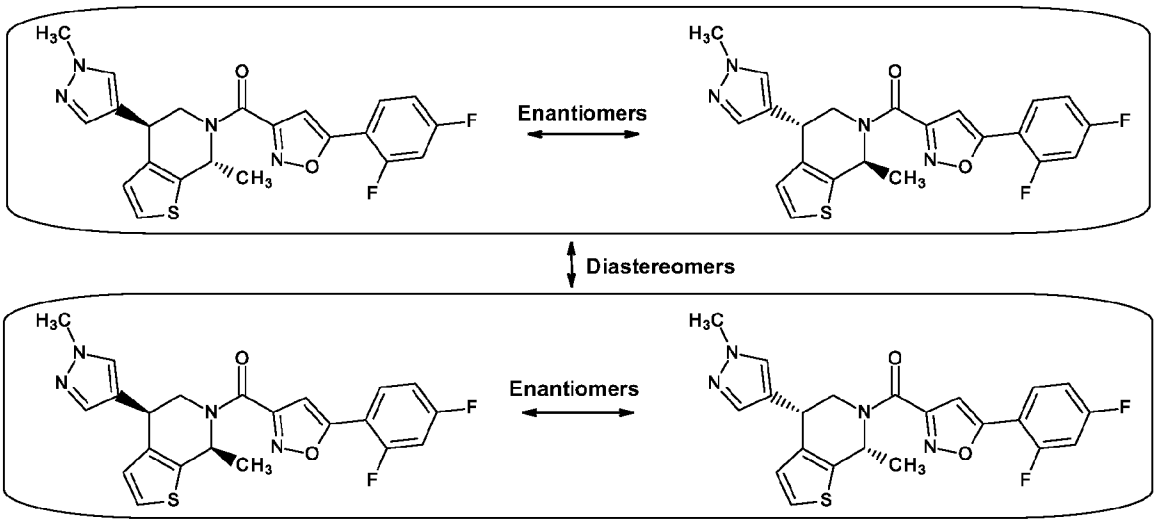
(I)



(I-A)

A person skilled in the art is well aware that above diastereomers and enantiomers of formula (I) and formula (I-A), wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, X^1, X^2, X^3, A, and Z^1 are as defined for formula (I) are within the scope of the invention.

The relationship between enantiomers and diastereomers of compounds of formula (I-A), wherein R^1 is methyl; R^2, and R^4, are hydrogen; R^7 is methyl; X^1 and X^2 are CH; X^3 is S; and A is A9 is shown below.



The compounds of formula (I) and, where appropriate, the tautomers thereof, in each case in free form or in salt form, can, if appropriate, also be obtained in the form of hydrates and/or include other solvents, for example those which may have been used for the crystallization of compounds which are present in solid form.

The composition according to the invention is effective against harmful microorganisms, such as microorganisms, that cause phytopathogenic diseases, in particular against phytopathogenic fungi and bacteria.

The composition of the invention may be used to control plant diseases caused by a broad spectrum of fungal plant pathogens in the Basidiomycete, Ascomycete, Oomycete and/or Deuteromycete, Blastocladiomycete, Chrytidiomycete, Glomeromycete and/or Mucoromycete classes.

The composition is effective in controlling a broad spectrum of plant diseases, such as foliar pathogens of ornamental, turf, vegetable, field, cereal, and fruit crops.

These pathogens may include: Oomycetes, including Phytophthora diseases such as those caused by *Phytophthora capsici*, *Phytophthora infestans*, *Phytophthora sojae*, *Phytophthora fragariae*, *Phytophthora nicotianae*, *Phytophthora cinnamomi*, *Phytophthora citricola*, *Phytophthora citrophthora* and *Phytophthora erythroseptica*; Pythium diseases such as those caused by *Pythium aphanidermatum*, *Pythium arrhenomanes*, *Pythium graminicola*, *Pythium irregulare* and *Pythium ultimum*; diseases caused by Peronosporales such as *Peronospora destructor*, *Peronospora parasitica*, *Plasmopara viticola*, *Plasmopara halstedii*, *Pseudoperonospora cubensis*, *Albugo candida*, *Sclerophthora macrospora* and *Bremia lactucae*; and others such as *Aphanomyces cochlioides*, *Labyrinthula zosterae*, *Peronosclerospora sorghi* and *Sclerospora graminicola*;

Ascomycetes, including blotch, spot, blast or blight diseases and/or rots for example those caused by Pleosporales such as *Stemphylium solani*, *Stagonospora tainanensis*, *Spilocaea oleaginea*, *Setosphaeria turcica*, *Pyrenochaeta lycoperisici*, *Pleospora herbarum*, *Phoma destructiva*, *Phaeosphaeria herpotrichoides*, *Phaeocryptocus gaeumannii*, *Ophiosphaerella graminicola*, *Ophiobolus graminis*, *Leptosphaeria maculans*, *Hendersonia creberrima*, *Helminthosporium triticirepentis*, *Setosphaeria turcica*, *Drechslera glycines*, *Didymella bryoniae*, *Cycloconium oleagineum*, *Corynespora cassiicola*, *Cochliobolus sativus*, *Bipolaris cactivora*, *Venturia inaequalis*, *Pyrenophora teres*, *Pyrenophora tritici-repentis*, *Alternaria alternata*, *Alternaria brassicicola*, *Alternaria solani* and *Alternaria tomatophila*, Capnodiales such as *Septoria tritici*, *Septoria nodorum*, *Septoria glycines*, *Cercospora arachidicola*, *Cercospora sojina*, *Cercospora zeae-maydis*, *Cercosporella capsellae* and *Cercosporella herpotrichoides*, *Cladosporium carpophilum*, *Cladosporium effusum*, *Passalora fulva*, *Cladosporium oxysporum*, *Dothistroma septosporum*, *Isariopsis clavispora*, *Mycosphaerella fijiensis*, *Mycosphaerella graminicola*, *Mycovellosiella koepkeii*, *Phaeoisariopsis bataticola*, *Pseudocercospora vitis*, *Pseudocercosporella herpotrichoides*, *Ramularia beticola*, *Ramularia collo-cygni*, Magnaporthales such as *Gaeumannomyces graminis*, *Magnaporthe grisea*, *Pyricularia oryzae*, Diaporthales such as *Anisogramma anomala*, *Apiognomonia errabunda*, *Cytospora platani*, *Diaporthe phaseolorum*, *Discula destructiva*, *Gnomonia fructicola*, *Greeneria uvicola*, *Melanconium juglandinum*, *Phomopsis viticola*, *Sirococcus clavigignenti-juglandacearum*, *Tubakia dryina*, *Dicarpella* spp., *Valsa ceratosperma*, and others such as *Actinothyrium graminis*, *Ascochyta pisi*, *Aspergillus flavus*, *Aspergillus fumigatus*, *Aspergillus nidulans*, *Asperisporium caricae*, *Blumeriella jaapii*, *Candida* spp., *Capnodium ramosum*, *Cephaloascus* spp., *Cephalosporium gramineum*, *Ceratocystis paradoxa*, *Chaetomium* spp., *Hymenoscyphus pseudoalbidus*, *Coccidioides* spp., *Cylindrosporium padi*, *Diplocarpon malae*, *Drepanopeziza campestris*, *Elsinoe ampelina*, *Epicoccum nigrum*, *Epidermophyton* spp., *Eutypa lata*, *Geotrichum candidum*, *Gibellina cerealis*, *Gloeocercospora sorghi*, *Gloeodes pomigena*, *Gloeosporium perennans*; *Gloeotinia temulenta*, *Griphospaeria corticola*, *Kabatiella lini*, *Leptographium microsporum*, *Leptosphaerulinia crassiasca*, *Lophodermium seditiosum*, *Marssonina graminicola*, *Microdochium nivale*, *Monilinia fructicola*, *Monographella albescens*, *Monosporascus cannonballus*, *Naemacyclus* spp., *Ophiostoma novo-ulmi*, *Paracoccidioides brasiliensis*, *Penicillium expansum*, *Pestalotia rhododendri*, *Petriellidium* spp., *Pezicula* spp., *Phialophora gregata*, *Phyllachora pomigena*, *Phymatotrichum omnivora*, *Physalospora abdita*, *Plectosporium tabacinum*, *Polyscytalum pustulans*, *Pseudopeziza medicaginis*, *Pyrenopeziza brassicae*, *Ramulispora sorghi*,

Rhabdocline pseudotsugae, *Rhynchosporium secalis*, *Sacrocladium oryzae*, *Scedosporium* spp., *Schizothyrium pomi*, *Sclerotinia sclerotiorum*, *Sclerotinia minor*; *Sclerotium* spp., *Typhula ishikariensis*, *Seimatosporium mariae*, *Lepteutypa cupressi*, *Septocyta ruborum*, *Sphaceloma perseae*, *Sporonema phacidioides*, *Stigmina palmivora*, *Tapesia yallundae*, *Taphrina bullata*, *Thielviopsis basicola*, *Trichoseptoria fructigena*, *Zygophiala jamaicensis*; powdery mildew diseases for example those caused by Erysiphales such as *Blumeria graminis*, *Erysiphe polygoni*, *Uncinula necator*, *Sphaerotheca fuligena*, *Podosphaera leucotricha*, *Podospaera macularis Golovinomyces cichoracearum*, *Leveillula taurica*, *Microsphaera diffusa*, *Oidiopsis gossypii*, *Phyllactinia guttata* and *Oidium arachidis*; molds for example those caused by Botryosphaeriales such as *Dothiorella aromatica*, *Diplodia seriata*, *Guignardia bidwellii*, *Botrytis cinerea*, *Botryotinia allii*, *Botryotinia fabae*, *Fusicoccum amygdali*, *Lasiodiplodia theobromae*, *Macrophoma theicola*, *Macrophomina phaseolina*, *Phyllosticta cucurbitacearum*; anthracnoses for example those caused by Glommerelales such as *Colletotrichum gloeosporioides*, *Colletotrichum lagenarium*, *Colletotrichum gossypii*, *Glomerella cingulata*, and *Colletotrichum graminicola*; and wilts or blights for example those caused by Hypocreales such as *Acremonium strictum*, *Claviceps purpurea*, *Fusarium culmorum*, *Fusarium graminearum*, *Fusarium virguliforme*, *Fusarium oxysporum*, *Fusarium subglutinans*, *Fusarium oxysporum* f.sp. *cubense*, *Gerlachia nivale*, *Gibberella fujikuroi*, *Gibberella zeae*, *Gliocladium* spp., *Myrothecium verrucaria*, *Nectria ramulariae*, *Trichoderma viride*, *Trichothecium roseum*, and *Verticillium theobromae*;

Basidiomycetes, including smuts for example those caused by Ustilaginales such as *Ustilaginoidea virens*, *Ustilago nuda*, *Ustilago tritici*, *Ustilago zeae*, rusts for example those caused by Pucciniales such as *Cerotelium fici*, *Chrysomyxa arctostaphyli*, *Coleosporium ipomoeae*, *Hemileia vastatrix*, *Puccinia arachidis*, *Puccinia cacabata*, *Puccinia graminis*, *Puccinia recondita*, *Puccinia sorghi*, *Puccinia hordei*, *Puccinia striiformis* f.sp. Hordei, *Puccinia striiformis* f.sp. Secalis, *Pucciniastrum coryli*, or Uredinales such as *Cronartium ribicola*, *Gymnosporangium juniperi-virginianae*, *Melampsora medusae*, *Phakopsora pachyrhizi*, *Phragmidium mucronatum*, *Physopella ampelosidis*, *Tranzschelia discolor* and *Uromyces viciae-fabae*; and other rots and diseases such as those caused by *Cryptococcus* spp., *Exobasidium vexans*, *Marasmiellus inoderma*, *Mycena* spp., *Sphacelotheca reiliana*, *Typhula ishikariensis*, *Urocystis agropyri*, *Itersonilia perplexans*, *Corticium invisum*, *Laetisaria fuciformis*, *Waitea circinata*, *Rhizoctonia solani*, *Thanetephorus cucurmeris*, *Entyloma dahliae*, *Entylomella microspora*, *Neovossia moliniae* and *Tilletia caries*;

Blastocladiomycetes, such as *Physoderma maydis*;

Mucoromycetes, such as *Choanephora cucurbitarum*; *Mucor* spp.; *Rhizopus arrhizus*;

as well as diseases caused by other species and genera closely related to those listed above.

In addition to their fungicidal activity, the compositions may also have activity against bacteria such as *Erwinia amylovora*, *Erwinia caratovora*, *Xanthomonas campestris, Pseudomonas syringae*, *Strptomyces scabies* and other related species as well as certain protozoa.

The composition according to the invention is particularly effective against phytopathogenic fungi belonging to the following classes: Ascomycetes (e.g., Venturia, Podosphaera, Erysiphe, Monilinia, Mycosphaerella,

Uncinula); Basidiomycetes (e.g., the genus Hemileia, Rhizoctonia, Phakopsora, Puccinia, Ustilago, Tilletia); Fungi imperfecti (also known as Deuteromycetes; e.g., Botrytis, Helminthosporium, Rhynchosporium, Fusarium, Septoria, Cercospora, Alternaria, Pyricularia and Pseudocercosporella); Oomycetes (e.g., Phytophthora, Peronospora, Pseudoperonospora, Albugo, Bremia, Pythium, Pseudosclerospora, Plasmopara).

Crops of useful plants in which the composition according to the invention can be used include perennial and annual crops, such as berry plants for example blackberries, blueberries, cranberries, raspberries and strawberries; cereals for example barley, maize (corn), millet, oats, rice, rye, sorghum triticale and wheat; fibre plants for example cotton, flax, hemp, jute and sisal; field crops for example sugar and fodder beet, coffee, hops, mustard, oilseed rape (canola), poppy, sugar cane, sunflower, tea and tobacco; fruit trees for example apple, apricot, avocado, banana, cherry, citrus, nectarine, peach, pear and plum; grasses for example Bermuda grass, bluegrass, bentgrass, centipede grass, fescue, ryegrass, St. Augustine grass and Zoysia grass; herbs such as basil, borage, chives, coriander, lavender, lovage, mint, oregano, parsley, rosemary, sage and thyme; legumes for example beans, lentils, peas and soya beans; nuts for example almond, cashew, ground nut, hazelnut, peanut, pecan, pistachio and walnut; palms for example oil palm; ornamentals for example flowers, shrubs and trees; other trees, for example cacao, coconut, olive and rubber; vegetables for example asparagus, aubergine, broccoli, cabbage, carrot, cucumber, garlic, lettuce, marrow, melon, okra, onion, pepper, potato, pumpkin, rhubarb, spinach and tomato; and vines for example grapes.

Crops are to be understood as being those which are naturally occurring, obtained by conventional methods of breeding, or obtained by genetic engineering. They include crops which contain so-called output traits (e.g., improved storage stability, higher nutritional value and improved flavour).

Crops are to be understood as also including those crops which have been rendered tolerant to herbicides like bromoxynil or classes of herbicides such as ALS-, EPSPS-, GS-, HPPD- and PPO-inhibitors. An example of a crop that has been rendered tolerant to imidazolinones, e.g., imazamox, by conventional methods of breeding is Clearfield® summer canola. Examples of crops that have been rendered tolerant to herbicides by genetic engineering methods include e.g., glyphosate- and glufosinate-resistant maize varieties commercially available under the trade names RoundupReady®, Herculex I® and LibertyLink®.

Crops are also to be understood as being those which naturally are or have been rendered resistant to harmful insects. This includes plants transformed by the use of recombinant DNA techniques, for example, to be capable of synthesising one or more selectively acting toxins, such as are known, for example, from toxin-producing bacteria. Examples of toxins which can be expressed include δ-endotoxins, vegetative insecticidal proteins (Vip), insecticidal proteins of bacteria colonising nematodes, and toxins produced by scorpions, arachnids, wasps and fungi.

An example of a crop that has been modified to express the *Bacillus thuringiensis* toxin is the Bt maize KnockOut® (Syngenta Seeds). An example of a crop comprising more than one gene that codes for insecticidal resistance and thus expresses more than one toxin is VipCot® (Syngenta Seeds). Crops or seed material

thereof can also be resistant to multiple types of pests (so-called stacked transgenic events when created by genetic modification). For example, a plant can have the ability to express an insecticidal protein while at the same time being herbicide tolerant, for example Herculex I® (Dow AgroSciences, Pioneer Hi-Bred International).

The term "useful plants" is to be understood as including also useful plants which have been so transformed by the use of recombinant DNA techniques that they are capable of synthesising one or more selectively acting toxins, such as are known, for example, from toxin-producing bacteria, especially those of the genus Bacillus.

Examples of such plants are: YieldGard® (maize variety that expresses a CryIA(b) toxin); YieldGard Rootworm ® (maize variety that expresses a CryIIIB(b1) toxin); YieldGard Plus® (maize variety that expresses a CryIA(b) and a CryIIIB(b1) toxin); Starlink® (maize variety that expresses a Cry9(c) toxin); Herculex I® (maize variety that expresses a CryIF(a2) toxin and the enzyme phosphinothricine N-acetyltransferase (PAT) to achieve tolerance to the herbicide glufosinate ammonium); NuCOTN 33B® (cotton variety that expresses a CryIA(c) toxin); Bollgard I® (cotton variety that expresses a CryIA(c) toxin); Bollgard II® (cotton variety that expresses a CryIA(c) and a CryIIA(b) toxin); VIPCOT® (cotton variety that expresses a VIP toxin); NewLeaf® (potato variety that expresses a CryIIIA toxin); NatureGard® Agrisure® GT Advantage (GA21 glyphosate-tolerant trait), Agrisure® CB Advantage (Bt11 corn borer (CB) trait), Agrisure® RW (corn rootworm trait) and Protecta ®.

The term "crops" is to be understood as including also crop plants which have been so transformed by the use of recombinant DNA techniques that they are capable of synthesising one or more selectively acting toxins, such as are known, for example, from toxin-producing bacteria, especially those of the genus Bacillus.

Toxins that can be expressed by such transgenic plants include, for example, insecticidal proteins from Bacillus cereus or Bacillus popilliae; or insecticidal proteins from Bacillus thuringiensis, such as δ-endotoxins, e.g., Cry1Ab, Cry1Ac, Cry1F, Cry1Fa2, Cry2Ab, Cry3A, Cry3Bb1 or Cry9C, or vegetative insecticidal proteins (Vip), e.g., Vip1, Vip2, Vip3 or Vip3A; or insecticidal proteins of bacteria colonising nematodes, for example Photorhabdus spp. or Xenorhabdus spp., such as Photorhabdus luminescens, Xenorhabdus nematophilus; toxins produced by animals, such as scorpion toxins, arachnid toxins, wasp toxins and other insect-specific neurotoxins; toxins produced by fungi, such as Streptomycetes toxins, plant lectins, such as pea lectins, barley lectins or snowdrop lectins; agglutinins; proteinase inhibitors, such as trypsin inhibitors, serine protease inhibitors, patatin, cystatin, papain inhibitors; ribosome-inactivating proteins (RIP), such as ricin, maize-RIP, abrin, luffin, saporin or bryodin; steroid metabolism enzymes, such as 3-hydroxysteroidoxidase, ecdysteroid-UDP-glycosyl-transferase, cholesterol oxidases, ecdysone inhibitors, HMG-COA-reductase, ion channel blockers, such as blockers of sodium or calcium channels, juvenile hormone esterase, diuretic hormone receptors, stilbene synthase, bibenzyl synthase, chitinases and glucanases.

In the context of the present invention there are to be understood by δ-endotoxins, for example Cry1Ab, Cry1Ac, Cry1F, Cry1Fa2, Cry2Ab, Cry3A, Cry3Bb1 or Cry9C, or vegetative insecticidal proteins (Vip), for

example Vip1, Vip2, Vip3 or Vip3A, expressly also hybrid toxins, truncated toxins and modified toxins. Hybrid toxins are produced recombinantly by a new combination of different domains of those proteins (see, for example, WO02/15701). Truncated toxins, for example a truncated Cry1Ab, are known. In the case of modified toxins, one or more amino acids of the naturally occurring toxin are replaced. In such amino acid replacements, preferably non-naturally present protease recognition sequences are inserted into the toxin, such as, for example, in the case of Cry3A055, a cathepsin-G-recognition sequence is inserted into a Cry3A toxin (see WO03/018810).

Examples of such toxins or transgenic plants capable of synthesising such toxins are disclosed, for example, in EP-A-0 374 753, WO 93/07278, WO 95/34656, EP-A-0 427 529, EP-A-451 878 and WO 03/052073.

The processes for the preparation of such transgenic plants are generally known to the person skilled in the art and are described, for example, in the publications mentioned above. CryI-type deoxyribonucleic acids and their preparation are known, for example, from WO 95/34656, EP-A-0 367 474, EP-A-0 401 979 and WO 90/13651.

The toxin contained in the transgenic plants imparts to the plant tolerance to harmful insects. Such insects can occur in any taxonomic group of insects but are especially commonly found in the beetles (Coleoptera), two-winged insects (Diptera) and butterflies (Lepidoptera).

Transgenic plants containing one or more genes that code for an insecticidal resistance and express one or more toxins are known and some of them are commercially available. Examples of such plants are: YieldGard ® (maize variety that expresses a Cry1Ab toxin); YieldGard Rootworm® (maize variety that expresses a Cry3Bb1 toxin); YieldGard Plus® (maize variety that expresses a Cry1Ab and a Cry3Bb1 toxin); Starlink® (maize variety that expresses a Cry9C toxin); Herculex I® (maize variety that expresses a Cry1Fa2 toxin and the enzyme phosphinothricine N-acetyltransferase (PAT) to achieve tolerance to the herbicide glufosinate ammonium); NuCOTN 33B® (cotton variety that expresses a Cry1Ac toxin); Bollgard I® (cotton variety that expresses a Cry1Ac toxin); Bollgard II® (cotton variety that expresses a Cry1Ac and a Cry2Ab toxin); VipCot ® (cotton variety that expresses a Vip3A and a Cry1Ab toxin); NewLeaf® (potato variety that expresses a Cry3A toxin); NatureGard®, Agrisure® GT Advantage (GA21 glyphosate-tolerant trait), Agrisure® CB Advantage (Bt11 corn borer (CB) trait) and Protecta®.

Further examples of such transgenic crops are:

1. **Bt11 Maize** from Syngenta Seeds SAS, Chemin de l'Hobit 27, F-31 790 St. Sauveur, France, registration number C/FR/96/05/10. Genetically modified *Zea mays* which has been rendered resistant to attack by the European corn borer (*Ostrinia nubilalis* and *Sesamia nonagrioides*) by transgenic expression of a truncated Cry1Ab toxin. Bt11 maize also transgenically expresses the enzyme PAT to achieve tolerance to the herbicide glufosinate ammonium.

2. **Bt176 Maize** from Syngenta Seeds SAS, Chemin de l'Hobit 27, F-31 790 St. Sauveur, France, registration number C/FR/96/05/10. Genetically modified *Zea mays* which has been rendered resistant to attack by the

European corn borer (*Ostrinia nubilalis* and *Sesamia nonagrioides*) by transgenic expression of a Cry1Ab toxin. Bt176 maize also transgenically expresses the enzyme PAT to achieve tolerance to the herbicide glufosinate ammonium.

3. **MIR604 Maize** from Syngenta Seeds SAS, Chemin de l'Hobit 27, F-31 790 St. Sauveur, France, registration number C/FR/96/05/10. Maize which has been rendered insect-resistant by transgenic expression of a modified Cry3A toxin. This toxin is Cry3A055 modified by insertion of a cathepsin-G-protease recognition sequence. The preparation of such transgenic maize plants is described in WO 03/018810.

4. **MON 863 Maize** from Monsanto Europe S.A. 270-272 Avenue de Tervuren, B-1150 Brussels, Belgium, registration number C/DE/02/9. MON *863* expresses a Cry3Bb1 toxin and has resistance to certain Coleoptera insects.

5. **IPC 531 Cotton** from Monsanto Europe S.A. 270-272 Avenue de Tervuren, B-1150 Brussels, Belgium, registration number C/ES/96/02.

6. **1507 Maize** from Pioneer Overseas Corporation, Avenue Tedesco, 7 B-1160 Brussels, Belgium, registration number C/NL/00/10. Genetically modified maize for the expression of the protein Cry1F for achieving resistance to certain Lepidoptera insects and of the PAT protein for achieving tolerance to the herbicide glufosinate ammonium.

7. **NK603 × MON 810 Maize** from Monsanto Europe S.A. 270-272 Avenue de Tervuren, B-1150 Brussels, Belgium, registration number C/GB/02/M3/03. Consists of conventionally bred hybrid maize varieties by crossing the genetically modified varieties NK603 and MON 810. NK603 × MON 810 Maize transgenically expresses the protein CP4 EPSPS, obtained from *Agrobacterium sp.* strain CP4, which imparts tolerance to the herbicide Roundup® (contains glyphosate), and also a Cry1Ab toxin obtained from *Bacillus thuringiensis subsp. kurstaki* which brings about tolerance to certain Lepidoptera, include the European corn borer.

Additionally, to date, no cross-resistance has been observed between the composition comprising a mixture of components (A) and (B) and any fungicidal solutions used to control phytopathogenic fungi such *as Absidia corymbifera, Alternaria spp, Aphanomyces spp, Ascochyta spp, Aspergillus spp. including A. flavus, A. fumigatus, A. nidulans, A. niger, A. terrus, Aureobasidium spp. including A. pullulans, Blastomyces dermatitidis, Blumeria graminis, Bremia lactucae, Botryosphaeria spp. including B. dothidea, B. obtusa, Botrytis spp. inclusing B. cinerea, Candida spp. including C. albicans, C. glabrata, C. krusei, C. lusitaniae, C. parapsilosis, C. tropicalis, Cephaloascus fragrans, Ceratocystis spp, Cercospora spp. including C. arachidicola, Cercosporidium personatum, Cladosporium spp, Claviceps purpurea, Coccidioides immitis, Cochliobolus spp, Colletotrichum spp. including C. musae, Cryptococcus neoformans, Diaporthe spp, Didymella spp, Drechslera spp, Elsinoe spp, Epidermophyton spp, Erwinia amylovora, Erysiphe spp. including E. cichoracearum, Eutypa lata, Fusarium spp. including F. culmorum, F. graminearum, F. langsethiae, F. moniliforme, F. oxysporum, F. proliferatum, F. subglutinans, F. solani, Gaeumannomyces graminis, Gibberella fujikuroi, Gloeodes pomigena, Gloeosporium musarum, Glomerella cingulate, Guignardia bidwellii, Gymnosporangium juniperi-virginianae, Helminthosporium spp, Hemileia spp, Histoplasma spp. including H. capsulatum, Laetisaria fuciformis,*

Leptographium lindbergi, Leveillula taurica, Lophodermium seditiosum, Microdochium nivale, Microsporum spp, Monilinia spp, Mucor spp, Mycosphaerella spp. including M. graminicola, M. pomi, Oncobasidium theobromaeon, Ophiostoma piceae, Paracoccidioides spp, Penicillium spp. including P. digitatum, P. italicum, Petriellidium spp, Peronosclerospora spp. Including P. maydis, P. philippinensis and P. sorghi, Peronospora spp, Phaeosphaeria nodorum, Phakopsora pachyrhizi, Phellinus igniarus, Phialophora spp, Phoma spp, Phomopsis viticola, Phytophthora spp. including P. infestans, Plasmopara spp. including P. halstedii, P. viticola, Pleospora spp., Podosphaera spp. including P. leucotricha, Polymyxa graminis, Polymyxa betae, Pseudocercosporella herpotrichoides, Pseudomonas spp, Pseudoperonospora spp. including P. cubensis, P. humuli, Pseudopeziza tracheiphila, Puccinia Spp. including P. hordei, P. recondita, P. striiformis, P. triticina, Pyrenopeziza spp, Pyrenophora spp, Pyricularia spp. including P. oryzae, Pythium spp. including P. ultimum, Ramularia spp, Rhizoctonia spp, Rhizomucor pusillus, Rhizopus arrhizus, Rhynchosporium spp, Scedosporium spp. including S. apiospermum and S. prolificans, Schizothyrium pomi, Sclerotinia spp, Sclerotium spp, Septoria spp, including S. nodorum, S. tritici, Sphaerotheca macularis, Sphaerotheca fusca (Sphaerotheca fuliginea), Sporothorix spp, Stagonospora nodorum, Stemphylium spp., Stereum hirsutum, Thanatephorus cucumeris, Thielaviopsis basicola, Tilletia spp, Trichoderma spp., including T. harzianum, T. pseudokoningii, T. viride, Trichophyton spp, Typhula spp, Uncinula necator, Urocystis spp, Ustilago spp, Venturia spp. including V. inaequalis, Verticillium spp, and Xanthomonas spp., in particular, Zymoseptoria tritici, Puccinia recondita, Puccinia striiformis, Erysiphe graminis, Uncinula necator, Sphaerotheca fuliginea, Leveillula taurica, Phakopsora pachyrhizi, Pyricularia oryzae, Alternaria solani, Alternaria alternata, Mycosphaerella fijiensis, Colletotrichum lagenarium, Didymella bryoniae, Ascochyta pisii, Verticillium dahliae, Pyrenophora teres, Cercospora beticola, Ramularia collo-cygni, Botrytis cinerea, Sclerotinia sclerotiorum, Monilinia laxa, Monographella nivalis and Venturia inaequalis.

Indeed, fungicidal-resistant strains in any of the species as outlined above have been reported in the scientific literature, with strains resistant to one or more fungicides from at least one of the following fungicidal modes of action classes: quinone-outside-inhibitors (QoI), quinone-inside-inhibitors (QiI), succinate dehydrogenase inhibitors (SDHI) and sterol demethylation-inhibitors (DMI). Such fungicidal-resistant strains may contain:

A mutation in the mitochondrial cytochrome b gene conferring resistance to Qo inhibitors, wherein the mutation is G143A, F129L or G137R. See for example: Gisi et al., *Pest Manag Sci.* **2000**, 56, 833-841, Lucas, *Pestic Outlook* **2003**, 14(6), 268-70, Fraaije et al., *Phytopathol* **2005**, 95(8), 933-41, Sierotzki et al., *Pest Manag. Sci.* **2007**, 63(3), 225-233 (2007), Semar et al., *J. Plant Dis. Prot.* **2007**, (3), 117-119; and Pasche et al., *J. Crop Prot.* **2008,** 27(3-5), 427-435 (2008).

A mutation in the mitochondrial cytochrome b gene conferring resistance to Qi inhibitors, wherein the mutation is G37A/C/D/S/V or N31K. See for example: Meunier et al., *Pest Manag Sci.* **2019**; 75: 2107–2114, Young et al., *Pest Manag Sci.* **2018**; 74(2): 489-498, Walker et al., *Environ. Microbiol.* **2021** (https://doi.org/10.1111/1462-2920.15760.)

A mutation in the genes encoding the SdhB,C,D subunits conferring resistance to SDHI inhibitors wherein the mutation is in the following major pathogens:

Botrytis cinerea: B-P225H/L/T/Y/F, B-N230I, B-H272L/Y/R, C-P80H/L, C-N87S;

Alternaria solani: B-H278R/Y, C-H134R/Q, D-D123E, D-H133R and C-H134R;

Zymoseptoria tritici: sdhB: N225T, N225I, R265P, T268I, T268A. In sdhC: T79N, T79I, W80S, W80A, A84F, N86S, N86A, P127A, R151M/S/T/G, R151S, R151T, H152R/Y, V166M, T168R. In sdhD: I50F, M114V, D129G, T20P+K186R;

Pyrenophora teres: In sdhB: S66P, N235I, H277Y. In sdhC: K49E, R64K, N75S, G79R, H134R, S135R. In sdhD: D124E, H134R, G138V, D145G;

Ramularia collo-cygni: In sdhB: N224T, T267I. In sdhC: N87S, G91R, H146R/L, G171D, H153R;

Phakopsora pachyrhizi: C-I86F;

Sclerotinia sclerotiorum: In sdhB: H273Y. In sdhC: G91R, H146R. In sdhD: T108K, H132R, G150R.

Major source of information is www.frac.info, Sierotzki and Scalliet, *Phytopathology* (**2013**) 103(9): 880–887 and Simões et al., *J. Plant Dis. Prot.* **2018,** 125: 21-2.

A mutation or combination of mutations in the CYP51 gene conferring resistance to DMI inhibitors wherein the mutations are: L50S, D134G, V136A/C, Y137F, S188N, A379G, I381V, deletion 459-460, Y461H/S, N513K, S524T. Major source of information is www.frac.info, Cools et al., *Plant Pathol.* **2013,** 62: 36-42 and Schmitz HK et al., *Pest Manag. Sci.* **2014,** 70: 378-388.

Thus, in a preferred embodiment, the compositions according to the present invention comprising a mixture of components (A) and (B), are used to control fungal strains which are resistant to one or more fungicides from any of the following fungicidal MoA classes: quinone-outside-inhibitors (QoI), quinone-inside-inhibitors (QiI), succinate dehydrogenase inhibitors (SDHI) and sterol demethylation-inhibitors (DMI).

Compositions of this invention, including all of the above disclosed embodiments and preferred examples thereof, can be mixed with one or more further pesticides including further fungicides, insecticides, nematocides, bactericides, acaricides, growth regulators, chemosterilants, semiochemicals, repellents, attractants, pheromones, feeding stimulants or other biologically active compounds to form a multi-component pesticide giving an even broader spectrum of agricultural protection.

Examples of such agricultural protectants with which the composition of this invention can be formulated are:

Fungicides such as etridiazole, fluazinam, benalaxyl, benalaxyl-M (kiralaxyl), furalaxyl, metalaxyl, metalaxyl-M (mefenoxam), dodicin, N'-(2,5-dimethyl-4-phenoxy-phenyl)-N-ethyl-N-methyl-formamidine, N'-[4-(4,5-dichloro-thiazol-2-yloxy)-2,5-dimethyl-phenyl]-N-ethyl-N-methyl-formamidine, N'-[4-[[3-[(4-chlorophenyl)methyl]-1,2,4-thiadiazol-5-yl]oxy]-2,5-dimethyl-phenyl]-N-ethyl-N-methyl-formamidine, ethirimol, 3′-chloro-2-methoxy-N-[(3RS)-tetrahydro-2-oxofuran-3-yl]acet-2′,6′-xylidide (clozylacon), cyprodinil, mepanipyrim, pyrimethanil, dithianon, aureofungin, blasticidin-S, biphenyl, chloroneb, dicloran, benzovindiflupyr, pydiflumetofen, hexachlorobenzene, quintozene, tecnazene (TCNB), tolclofos-methyl, metrafenone, 2,6-dichloro-N-(4-trifluoromethylbenzyl)-benzamide, fluopicolide (flupicolide), tioxymid,

flusulfamide, benomyl, carbendazim, carbendazim chlorhydrate, chlorfenazole, fuberidazole, thiabendazole, thiophanate-methyl, benthiavalicarb, chlobenthiazone, probenazole, acibenzolar, bethoxazin, pyriofenone (IKF-309), acibenzolar-S-methyl, pyribencarb (KIF-7767), butylamine, 3-iodo-2-propinyl n-butylcarbamate (IPBC), picarbutrazox, polycarbamate, propamocarb, tolprocarb, 3-(difluoromethyl)-N-(7-fluoro-1,1,3,3-tetramethyl-indan-4-yl)-1-methyl-pyrazole-4-carboxamide, diclocymet, N-[(5-chloro-2-isopropyl-phenyl)methyl]-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-pyrazole-4-carboxamide, N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-[(2-isopropylphenyl)methyl]-1-methyl-pyrazole-4-carboxamide, carpropamid, chlorothalonil, flumorph, oxine-copper, cymoxanil, phenamacril, cyazofamid, flutianil, thicyofen, chlozolinate, iprodione, procymidone, vinclozolin, bupirimate, dinocton, dinopenton, dinobuton, dinocap, meptyldinocap, diphenylamine, phosdiphen, 2,6-dimethyl-[1,4]dithiino[2,3-c:5,6-c']dipyrrole-1,3,5,7(2H,6H)-tetraone, azithiram, etem, ferbam, mancozeb, maneb, metam, metiram (polyram), metiram-zinc, nabam, propineb, thiram, vapam (metam sodium), zineb, ziram, dithioether, isoprothiolane, ethaboxam, fosetyl, phosetyl-Al (fosetyl-al), methyl bromide, methyl iodide, methyl isothiocyanate, cyclafuramid, fenfuram, validamycin, streptomycin, (2RS)-2-bromo-2-(bromomethyl)glutaronitrile (bromothalonil), dodine, doguadine, guazatine, iminoctadine, iminoctadine triacetate, 2,4-D, 2,4-DB, kasugamycin, dimethirimol, fenhexamid, hymexazole, hydroxyisoxazole imazalil, imazalil sulphate, oxpoconazole, pefurazoate, prochloraz, triflumizole, fenamidone, Bordeaux mixture, calcium polysulfide, copper acetate, copper carbonate, copper hydroxide, copper naphthenate, copper oleate, copper oxychloride, copper oxyquinolate, copper silicate, copper sulphate, copper tallate, cuprous oxide, sulphur, carbaryl, phthalide (fthalide), dingjunezuo (Jun Si Qi), oxathiapiprolin, fluoroimide, mandipropamid, KSF-1002, benzamorf, dimethomorph, fenpropimorph, tridemorph, dodemorph, diethofencarb, fentin acetate, fentin hydroxide, carboxin, oxycarboxin, drazoxolon, famoxadone, m-phenylphenol, p-phenylphenol, tribromophenol (TBP), 2-[2-[(7,8-difluoro-2-methyl-3-quinolyl)oxy]-6-fluoro-phenyl]propan-2-ol 2-[2-fluoro-6-[(8-fluoro-2-methyl-3-quinolyl)oxy]phenyl]propan-2-ol, cyflufenamid, ofurace, oxadixyl, flutolanil, mepronil, isofetamid, fenpiclonil, fludioxonil, pencycuron, edifenphos, iprobenfos, pyrazophos, phosphorus acids, tecloftalam, captafol, captan, ditalimfos, triforine, fenpropidin, piperalin, osthol, 1-methylcyclopropene, 4-CPA, chlormequat, clofencet, dichlorprop, dimethipin, endothal, ethephon, flumetralin, forchlorfenuron, gibberellic acid, gibberellins, hymexazol, maleic hydrazide, mepiquat, naphthalene acetamide, paclobutrazol, prohexadione, prohexadione-calcium, thidiazuron, tribufos (tributyl phosphorotrithioate), trinexapac, uniconazole, α-naphthalene acetic acid, polyoxin D (polyoxrim), BLAD, chitosan, fenoxanil, folpet, 3-(difluoromethyl)-N-methoxy-1-methyl-N-[1-methyl-2-(2,4,6-trichlorophenyl)ethyl]pyrazole-4-carboxamide, bixafen, fluxapyroxad, furametpyr, isopyrazam, penflufen, penthiopyrad, sedaxane, fenpyrazamine, diclomezine, pyrifenox, boscalid, fluopyram, diflumetorim, fenarimol, 5-fluoro-2-(p-tolylmethoxy)pyrimidin-4-amine, ferimzone, dimetachlone (dimethaclone), pyroquilon, proquinazid, ethoxyquin, quinoxyfen, 4,4,5-trifluoro-3,3-dimethyl-1-(3-quinolyl)isoquinoline, 4,4-difluoro-3,3-dimethyl-1-(3-quinolyl)isoquinoline, 5-fluoro-3,3,4,4-tetramethyl-1-(3-quinolyl)isoquinoline, 9-fluoro-2,2-dimethyl-5-(3-quinolyl)-3H-1,4-benzoxazepine, tebufloquin, oxolinic acid, chinomethionate (oxythioquinox, quinoxymethionate), spiroxamine, (E)-N-methyl-2- [2-(2,5-dimethylphenoxymethyl)phenyl]-2-methoxy-iminoacetamide, azoxystrobin, coumoxystrobin, dimoxystrobin, enestroburin, enoxastrobin, fenamistrobin,

flufenoxystrobin, fluoxastrobin, kresoxim-methyl, mandestrobin, metaminostrobin, metominostrobin, orysastrobin, picoxystrobin, pyraclostrobin, pyrametostrobin, pyraoxystrobin, triclopyricarb, trifloxystrobin, amisulbrom, dichlofluanid, tolylfluanid, but-3-ynyl N-[6-[[(Z)-[(1-methyltetrazol-5-yl)-phenyl-methylene]amino]oxymethyl]-2-pyridyl]carbamate, dazomet, isotianil, tiadinil, thifluzamide, benthiazole (TCMTB), silthiofam, zoxamide, anilazine, tricyclazole, (*rac*)-cis-1-(4-chlorophenyl)-2-(1H-1,2,4-triazol-1-yl)-cycloheptanol (huanjunzuo), 1-(5-bromo-2-pyridyl)-2-(2,4-difluorophenyl)-1,1-difluoro-3-(1,2,4-triazol-1-yl)propan-2-ol 2-(1-tert-butyl)-1-(2-chlorophenyl)-3-(1,2,4-triazol-1-yl)-propan-2-ol (TCDP), azaconazole, bitertanol (biloxazol), bromuconazole, climbazole, cyproconazole, difenoconazole, dimetconazole, diniconazole, diniconazole-M, epoxiconazole, etaconazole, fenbuconazole, fluquinconazole, flusilazole, flutriafol, hexaconazole, imibenconazole, ipconazole, ipfentrifluconazole, metconazole, myclobutanil, penconazole, propiconazole, prothioconazole, simeconazole, tebuconazole, tetraconazole, triadimefon, triadimenol, triazoxide, triticonazole, mefentrifluconazole, 2-[[(1R,5S)-5-[(4-fluorophenyl)methyl]-1-hydroxy-2,2-dimethyl-cyclopentyl]methyl]-4H-1,2,4-triazole-3-thione, 2-[[3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl]-4H-1,2,4-triazole-3-thione, ametoctradin (imidium), iprovalicarb, valifenalate, 2-benzyl-4-chlorophenol (Chlorophene), allyl alcohol, azafenidin, benzalkonium chloride, chloropicrin, cresol, daracide, dichlorophen (dichlorophene), difenzoquat, dipyrithione, N-(2-p-chlorobenzoylethyl)-hexaminium chloride, NNF-0721, octhilinone, oxasulfuron, propamidine and propionic acid.

Insecticides such as abamectin, acephate, acetamiprid, amidoflumet (S-1955), avermectin, azadirachtin, azinphos-methyl, bifenthrin, bifenazate, buprofezin, carbofuran, cartap, chlorantraniliprole (DPX-E2Y45), chlorfenapyr, chlorfluazuron, chlorpyrifos, chlorpyrifos-methyl, chromafenozide, clothianidin, cyflumetofen, cyfluthrin, beta-cyfluthrin, cyhalothrin, lambda-cyhalothrin, cypermethrin, cyromazine, deltamethrin, diafenthiuron, diazinon, dieldrin, diflubenzuron, dimefluthrin, dimethoate, dinotefuran, diofenolan, emamectin, endosulfan, esfenvalerate, ethiprole, fenothiocarb, fenoxycarb, fenpropathrin, fenvalerate, fipronil, flonicamid, flubendiamide, flucythrinate, tau-fluvalinate, flufenerim (UR-50701), flufenoxuron, fonophos, halofenozide, hexaflumuron, hydramethylnon, imidacloprid, indoxacarb, isofenphos, lufenuron, malathion, metaflumizone, metaldehyde, methamidophos, methidathion, methomyl, methoprene, methoxychlor, metofluthrin, monocrotophos, methoxyfenozide, nitenpyram, nithiazine, novaluron, noviflumuron (XDE-007), oxamyl, parathion, parathion-methyl, permethrin, phorate, phosalone, phosmet, phosphamidon, pirimicarb, profenofos, profluthrin, pymetrozine, pyrafluprole, pyrethrin, pyridalyl, pyrifluquinazon, pyriprole, pyriproxyfen, rotenone, ryanodine, spinetoram, spinosad, spirodiclofen, spiromesifen (BSN 2060), spirotetramat, sulprofos, tebufenozide, teflubenzuron, tefluthrin, terbufos, tetrachlorvinphos, thiacloprid, thiamethoxam, thiodicarb, thiosultap-sodium, tralomethrin, triazamate, trichlorfon and triflumuron;

Bactericides such as streptomycin;

Acaricides such as amitraz, chinomethionat, chlorobenzilate, cyenopyrafen, cyhexatin, dicofol, dienochlor, etoxazole, fenazaquin, fenbutatin oxide, fenpropathrin, fenpyroximate, hexythiazox, propargite, pyridaben and tebufenpyrad; and

Biological agents such as *Bacillus thuringiensis*, *Bacillus thuringiensis* delta endotoxin, baculovirus, and entomopathogenic bacteria, virus and fungi.

Other examples of "reference" mixture compositions are as follows (wherein the term "TX" represents a compound (according to the definition of component (A) of the compositions of the present invention) selected from compounds of formula (I), or compounds of formula (I-A), or compounds selected from (X.01), (X.02), (X.03), (X.04), (X.05), (X.06), (X.07), (X.08), (X.9), (X.10), or (X.11) as defined in the Table X above): a compound selected from the group of substances consisting of (4E,10Z)-tetradeca-4,10-dienyl acetate + TX; (7E,9Z)-dodeca-7,9-dien-1-yl acetate + TX; (E)-6-methylhept-2-en-4-ol + TX; (E)-dec-5-en-1-yl acetate with (E)-dec-5-en-1-ol + TX; (E)-tridec-4-en-1-yl acetate + TX; (S)-bioallethrin + TX; (Z)-dodec-7-en-1-yl acetate + TX; (Z)-hexadec-11-en-1-yl acetate + TX; (Z)-hexadec-11-enal + TX; (Z)-hexadec-13-en-11-yn-1-yl acetate + TX; (Z)-icos-13-en-10-one + TX; (Z)-tetradec-7-en-1-al + TX; (Z)-tetradec-9-en-1-ol + TX; (Z)-tetradec-9-en-1-yl acetate + TX; 1,1-bis(4-chlorophenyl)-2-ethoxyethanol + TX; 1-(2-chlorophenyl)-3,3-dimethyl-2-(1,2,4-triazol-1-ylmethyl)butan-2-ol + TX; 1-(5-bromo-2-pyridyl)-2-(2,4-difluorophenyl)-1,1-difluoro-3-(1,2,4-triazol-1-yl)propan-2-ol + TX; 1-hydroxy-1H-pyridine-2-thione + TX; 1-methylcyclopropene + TX; 1-naphthaleneacetamide + TX; 1-naphthylacetic acid + TX; 2,2-dichlorovinyl 2-ethylsulfinylethyl methyl phosphate + TX; 2,4-D + TX; 2,4-DB + TX; 2,6-dichloro-N-(4-trifluormethylbenzyl)benzamide + TX; 2-(1,3-dithiolan-2-yl)phenyl dimethylcarbamate + TX; 2-(2-butoxyethoxy)ethyl piperonylate + TX; 2-(4,5-dimethyl-1,3-dioxolan-2-yl)phenyl methylcarbamate + TX; 2-(difluoromethyl)-N-((3R)-1,1,3-trimethylindan-4-yl) pyridine-3-carboxamide + TX; 2-(octylthio)-ethanol + TX; 2-bromo-2-bromomethyl-pentanedinitrile + TX; 2-chlorovinyl diethyl phosphate + TX; 2-imidazolidone + TX; 2-methyl(prop-2-ynyl)aminophenyl methylcarbamate + TX; 2-thiocyanatoethyl laurate + TX; 3-(4-chlorophenyl)-5-methylrhodanine + TX; 3-(difluoromethyl)-1-methyl-N-[1,1,3-trimethylindan-4-yl]pyrazole-4-carboxamide + TX; 3-(difluoromethyl)-N-(7-fluoro-1,1,3,3-tetramethyl-indan-4-yl)-1-methyl-pyrazole-4-carboxamide + TX; 3-(difluoromethyl)-N-(7-fluoro-1,1,3,3-tetramethyl-indan-4-yl)-1-methyl-pyrazole-4-carboxamide + TX; 3-chloro-6-methyl-5-phenyl-4-(2,4,6-trifluorophenyl)pyridazine + TX; 3-methyl-1-phenylpyrazol-5-yl dimethyl-carbamate + TX; 3-phenylphenol + TX; 4,5-dichlorodithiol-3-one + TX; 4-(2,6-difluorophenyl)-6-methyl-5-phenyl-pyridazine-3-carbonitrile + TX; 4-(2-bromo-4-fluoro-phenyl)-N-(2-chloro-6-fluoro-phenyl)-2,5-dimethyl-pyrazol-3-amine + TX; 4-(quinoxalin-2-ylamino)benzenesulfonamide + TX; 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy]benzonitrile + TX; 4-chloro-2-(2-chloro-2-methyl-propyl)-5-[(6-iodo-3-pyridyl)methoxy]pyridazin-3-one + TX; 4-CPA + TX; 4-methyl(prop-2-ynyl)amino-3,5-xylyl methylcarbamate + TX; 4-methylnonan-5-ol with 4-methylnonan-5-one + TX; 4-phenylphenol + TX; 5-(1,3-benzodioxol-5-yl)-3-hexylcyclohex-2-enone + TX; 5-amino-1,3,4-thiadiazole-2-thiol + TX; 5-fluoro-2-(p-tolylmethoxy)pyrimidin-4-amine + TX; 5-hydroxy-6-methyl-4-(((E)-pyridin-3-ylmethylene)amino)-4,5-dihydro-1,2,4-triazin-3(2H)-one + TX; 5-methyl-6-thioxo-1,3,5-thiadiazinan-3-ylacetic acid + TX; 8-hydroxyquinoline sulfate + TX; 11-ethyl-10,12-dioxo-2,5,8-trithia-4,11-diazatricyclo[7.3.0.03,7]dodeca-1(9),3,6-triene-6-carbonitrile + TX; 14-methyloctadec-1-ene + TX; [(9Z,11E)-tetradeca-9,11-dienyl] acetate + TX; [(Z)-dodec-9-enyl] acetate + TX; abamectin + TX; acephate + TX; acequinocyl + TX; acetamiprid + TX; acethion + TX; acetoprole + TX; acibenzolar + TX; acibenzolar-S-methyl + TX; acrinathrin + TX; Adoxophyes orana GV + TX; Agrobacterium radiobacter + TX; alanycarb + TX;

albendazole + TX; aldicarb + TX; allethrin + TX; allosamidin + TX; allyl alcohol + TX; allyxycarb + TX; alpha-ecdysone + TX; alpha-multistriatin + TX; Amblyseius spp. + TX; ametoctradin + TX; amidithion + TX; amidoflumet + TX; amidothioate + TX; aminocarb + TX; amisulbrom + TX; amiton + TX; amiton hydrogen oxalate + TX; amitraz + TX; anabasine + TX; Anagrapha falcifera NPV + TX; Anagrus atomus + TX; ancymidol + TX; anilazine + TX; anisiflupurin + TX; anthraquinone + TX; antu + TX; Aphelinus abdominalis + TX; Aphidius colemani + TX; Aphidoletes aphidimyza + TX; athidathion + TX; aureofungin + TX; Autographa californica NPV + TX; avermectin B1a + TX; azaconazole + TX; azadirachtin A + TX; azafenidin + TX; azamethiphos + TX; azinphos-ethyl + TX; azinphos-methyl + TX; azithiram + TX; azoxystrobin + TX; Bacillus sphaericus (Neide) + TX; Bacillus thuringiensis + TX; Bacillus thuringiensis delta endotoxin + TX; Bacillus thuringiensis ssp. aizawai + TX; baculovirus + TX; barthrin + TX; Beauveria brongniartii + TX; benalaxyl + TX; benalaxyl-M + TX; benazepril + TX; benclothiaz + TX; benfuracarb + TX; benomyl + TX; bensultap + TX; benthiavalicarb + TX; benzalkonium chloride + TX; benzamorf + TX; benzothiostrobin + TX; benzovindiflupyr + TX; beta-cyfluthrin + TX; beta-cypermethrin + TX; bethoxazin + TX; bifenazate + TX; bifenthrin + TX; binapacryl + TX; bioallethrin + TX; bioethanomethrin + TX; biopermethrin + TX; bioresmethrin + TX; bisthiosemi + TX; bistrifluron + TX; bitertanol + TX; bixafen + TX; blasticidin-S + TX; borax + TX; bordeaux mixture + TX; boscalid + TX; brodifacoum + TX; brofenvalerate + TX; brofluthrinate + TX; bromadiolone + TX; bromfenvinfos + TX; bromophos + TX; bromophos-ethyl + TX; bromuconazole + TX; bufencarb + TX; bupirimate + TX; buprofezin + TX; buserelin + TX; busulfan + TX; but-3-ynyl N-[6-[[(Z)-[(1-methyltetrazol-5-yl)-phenyl-methylene]amino]oxymethyl]-2-pyridyl]carbamate + TX; butacarb + TX; butathiofos + TX; butocarboxim + TX; butonate + TX; butopyronoxyl + TX; butoxy(polypropylene glycol) + TX; butoxycarboxim + TX; butylamine + TX; cadusafos + TX; calciferol + TX; calcium phosphate + TX; calcium polysulfide + TX; cambendazole + TX; captafol + TX; captan + TX; carbanolate + TX; carbaryl + TX; carbendazim + TX; carbendazim hydrochloride + TX; carbofuran + TX; carbosulfan + TX; carboxin + TX; carprofen + TX; carpropamid + TX; cartap + TX; cartap hydrochloride + TX; cefalexin + TX; cefovecin + TX; cefquinome + TX; ceftiour + TX; cestex + TX; cevadine + TX; chinomethionat + TX; chitosan + TX; chlobenthiazone + TX; chloralose + TX; chlorantraniliprole + TX; chlorbenside + TX; chlordimeform + TX; chlorethephon + TX; chlorethoxyfos + TX; chlorfenapyr + TX; chlorfenazole + TX; chlorfentazine + TX; chlorfenvinphos + TX; chlorfluazuron + TX; chlormephos + TX; chlormequat + TX; chlorodimeform hydrochloride + TX; chloroinconazide + TX; chloromebuform + TX; chloromethiuron + TX; chloroneb + TX; chlorothalonil + TX; chlorphoxim + TX; chlorprazophos + TX; chlorpyrifos + TX; chlorpyrifos-methyl + TX; chlortetracycline + TX; chlorthiophos + TX; chlozolinate + TX; cholecalciferol + TX; chromafenozide + TX; Chrysoperla carnea + TX; cinerin + TX; cinerin I + TX; cinerin II + TX; cis-jasmone + TX; cis-resmethrin + TX; cismethrin + TX; clenbuterol + TX; climbazole + TX; cloethocarb + TX; clofencet + TX; clorsulon + TX; clothianidin + TX; clozylacon (acetamide) + TX; codlelure + TX; copper acetate + TX; copper hydroxide + TX; copper naphthenate + TX; copper octanoate + TX; copper oleate + TX; copper oxide + TX; copper oxychloride + TX; copper silicate + TX; copper sulfate + TX; copper(II) carbonate + TX; coumachlor + TX; coumafene + TX; coumafuryl + TX; Coumatetralyl + TX; coumethoxystrobin (jiaxiangjunzhi) + TX; coumithoate + TX; coumoxystrobin + TX; cryolite + TX; Cryptolaemus montrouzieri + TX; cuelure + TX; cufraneb + TX; cuprous(I) oxide + TX; cyanofenphos + TX; cyanthoate + TX; cyazofamid + TX;

cybutryne + TX; cyclafuramid + TX; cyclethrin + TX; cyclobutrifluram + TX; Cydia pomonella GV + TX; cyenopyrafen + TX; cyflufenamid + TX; cyflumetofen + TX; cyfluthrin + TX; cyhalothrin + TX; cymiazole + TX; cymoxanil + TX; cypermethrin (alphametrin) + TX; cyphenothrin + TX; cyproconazole + TX; cyprodinil + TX; cyprodinil + TX; cyromazine + TX; cytokinins + TX; D-tetramethrin + TX; Dacnusa sibirica + TX; DAEP + TX; dazomet + TX; DCPM + TX; debacarb + TX; decarbofuran + TX; deltamethrin + TX; demephion-O + TX; demephion-S + TX; demeton-O + TX; demeton-S + TX; demeton-S-methyl + TX; demeton-S-methylsulphon + TX; diafenthiuron + TX; dialifos + TX; diazinon + TX; dibutyl adipate + TX; dibutyl phthalate + TX; dibutyl succinate + TX; dicapthon + TX; dichlobentiazox + TX; dichlofluanid + TX; dichlone + TX; dichlorprop + TX; dichlorvos + TX; dichlozoline + TX; diclocymet + TX; diclomezine + TX; dicloran + TX; dicofol + TX; dicresyl + TX; dicrotophos + TX; dicyclanil + TX; dicyclopentadiene + TX; diethofencarb + TX; diethyltoluamide + TX; difenacoum + TX; difenoconazole + TX; difenzoquat + TX; difethialone + TX; diflovidazin + TX; diflubenzuron + TX; diflumetorim + TX; Diglyphus isaea + TX; dimatif + TX; dimefluthrin + TX; dimetan + TX; dimethachlon + TX; dimethipin + TX; dimethirimol + TX; dimethoate + TX; dimethomorph + TX; dimethrin + TX; dimethyl disulfide + TX; dimethyl phthalate + TX; dimetilan + TX; dimoxystrobin + TX; dinactin + TX; diniconazole + TX; diniconazole-M + TX; dinobuton + TX; dinocap + TX; dinocton + TX; dinoseb + TX; dinotefuran + TX; diofenolan + TX; dioxabenzofos + TX; diphenylamine + TX; dipyrithione + TX; disparlure + TX; disulfiram + TX; disulfoton + TX; ditalimfos + TX; dithianon + TX; dithicrofos + TX; dithiocarbamate + TX; dodec-8-en-1-yl acetate + TX; dodemorph + TX; dodicin + TX; dodine + TX; dofenapyn + TX; dominicalure + TX; doramectin + TX; drazoxolon + TX; DSP + TX; ecdysterone + TX; edifenphos + TX; emamectin benzoate + TX; EMPC + TX; empenthrin + TX; Encarsia formosa + TX; endosulfan + TX; endothal + TX; endothion + TX; enestroburin (enoxastrobin) + TX; enrofloxacin + TX; entomopathogenic bacteria + TX; entomopathogenic fungi + TX; entomopathogenic virus + TX; EPBP + TX; epoxiconazole + TX; eprinomectin + TX; Eretmocerus eremicus + TX; esfenvalerate + TX; etaconazole + TX; ethaboxam + TX; ethiofencarb + TX; ethion + TX; ethiprole + TX; ethirimol + TX; ethoate-methyl + TX; ethoprophos + TX; ethoxyquin + TX; ethyl 4-methyloctanoate + TX; ethyl formate + TX; ethyl hexanediol + TX; etofenprox + TX; etoxazole + TX; etridiazole + TX; etrimfos + TX; eugenol + TX; eurax + TX; EXD + TX; exo-brevicomin + TX; famoxadone + TX; famphur + TX; farnesol with nerolidol + TX; febantel + TX; fenamidone + TX; fenaminstrobin + TX; fenamiphos + TX; fenarimol + TX; fenazaquin + TX; fenbendazole + TX; fenbuconazole + TX; fenbutatin oxide + TX; feneptamidoquin + TX; fenethacarb + TX; fenfluthrin + TX; fenfuram + TX; fenhexamid + TX; fenitrothion + TX; fenobucarb + TX; fenopyramid + TX; fenothiocarb + TX; fenoxacrim + TX; fenoxanil + TX; fenoxycarb + TX; fenpiclonil + TX; fenpicoxamid + TX; fenpirithrin + TX; fenpropathrin + TX; fenpropidin + TX; fenpropimorph + TX; fenpyrazamine + TX; fenpyroximate + TX; fensulfothion + TX; fenthion + TX; fenthion-ethyl + TX; fentin + TX; fentin acetate + TX; fentin chloride + TX; fentin hydroxide + TX; fenvalerate + TX; ferbam + TX; ferimzone + TX; ferric phosphate + TX; fipronil + TX; flocoumafen + TX; flonicamid + TX; florfenicol + TX; florylpicoxamid + TX; fluacrypyrim + TX; fluazinam + TX; fluazuron + TX; flubendazole + TX; flubendiamide + TX; flubeneteram + TX; flubenzimin + TX; flucycloxuron + TX; flucycloxuron + TX; flucythrinate + TX; fludioxonil + TX; fluenetil + TX; flufenerim + TX; flufenoxuron + TX; flufenoxystrobin + TX; flufenprox + TX; fluindapyr + TX; flumetralin + TX; flumetylsulforim + TX; flumorph + TX; fluopicolide + TX; fluopimomide + TX; fluopyram + TX; fluoroimide + TX;

fluoxapiprolin + TX; fluoxastrobin + TX; fluoxytioconazole + TX; flupyrazofos + TX; fluquinconazole + TX; flusilazole + TX; flusulfamide + TX; flutianil + TX; flutolanil + TX; flutriafol + TX; fluxapyroxad + TX; folpet + TX; fonofos + TX; forchlorfenuron + TX; formaldehyde + TX; formetanate + TX; formetanate hydrochloride + TX; formothion + TX; formparanate + TX; fosetyl + TX; fosetyl-aluminium + TX; fosmethilan + TX; fosthiazate + TX; fosthietan + TX; frontalin + TX; fuberidazole + TX; furalaxyl + TX; furametpyr + TX; furathiocarb + TX; furethrin + TX; furfural + TX; gibberellic acid + TX; glyodin + TX; glyphosate + TX; grandlure I + TX; grandlure II + TX; grandlure III + TX; grandlure IV + TX; guazatine triacetate + TX; halfenprox + TX; halofenozide + TX; hemel + TX; heptenophos + TX; Heterorhabditis bacteriophora and H. megidis + TX; hexaconazole + TX; hexadecyl cyclopropanecarboxylate + TX; hexaflumuron + TX; hexalure + TX; hexamide + TX; hexythiazox + TX; Hippodamia convergens + TX; huanjunzuo (rac-(1S,2S)-1-(4-chlorophenyl)-2-(1,2,4-triazol-1-yl)cycloheptanol) + TX; hydramethylnon + TX; hydrated lime (calcium hydroxide) + TX; hymexazol + TX; hyquincarb + TX; icaridin + TX; imanin (hypericin) + TX; imazalil + TX; imazalil sulfate + TX; imibenconazole + TX; imidacloprid + TX; iminoctadine + TX; indoxacarb + TX; inpyrfluxam + TX; iodocarb + TX; ipconazole + TX; ipfentrifluconazole + TX; ipflufenoquin + TX; iprobenfos (IBP) + TX; iprodione + TX; iprovalicarb + TX; ipsdienol + TX; ipsenol + TX; IPSP + TX; isamidofos + TX; isazofos + TX; isocarbophos + TX; isofetamid + TX; isoflucypram + TX; isolan + TX; isoprocarb + TX; isoprothiolane + TX; isopyrazam + TX; isothioate + TX; isotianil + TX; isoxathion + TX; ivermectin + TX; japonilure + TX; jasmolin I + TX; jasmolin II + TX; juvenile hormone I + TX; juvenile hormone II + TX; juvenile hormone III + TX; kadethrin + TX; kanamycin + TX; kasugamycin + TX; kasugamycin hydrochloride hydrate + TX; kinetin + TX; kinoprene + TX; kresoxim-methyl + TX; kurstaki + TX; lambda-cyhalothrin + TX; Leptomastix dactylopii + TX; leptophos + TX; levamisole + TX; lineatin + TX; lirimfos + TX; looplure + TX; lufenuron + TX; lvbenmixianan + TX; lythidathion + TX; m-cumenyl methylcarbamate + TX; Macrolophus caliginosus + TX; magnesium phosphide + TX; malathion + TX; maleic hydrazide + TX; malonoben + TX; Mamestra brassicae NPV + TX; mancopper + TX; mancozeb + TX; mandestrobin + TX; mandipropamid + TX; maneb + TX; mazidox + TX; mebendazole + TX; mecarbam + TX; mecarphon + TX; medlure + TX; mefentrifluconazole + TX; megatomoic acid + TX; meloxicam + TX; menazon + TX; mepanipyrim + TX; meperfluthrin + TX; mephosfolan + TX; mepiquat + TX; mepronil + TX; meptyldinocap + TX; mesulfenfos + TX; metaflumizone + TX; metalaxyl + TX; metalaxyl-M + TX; metaldehyde + TX; metam + TX; metam-potassium + TX; metam-sodium + TX; Metaphycus helvolus + TX; Metarhizium anisopliae var. acridum + TX; Metarhizium anisopliae var. anisopliae + TX; metarylpicoxamid + TX; metconazole + TX; methacrifos + TX; methamidophos + TX; methasulfocarb + TX; methidathion + TX; methiocarb + TX; methiotepa + TX; methocrotophos + TX; methomyl + TX; methoprene + TX; methoquin-butyl + TX; methothrin + TX; methoxyfenozide + TX; methyl apholate + TX; methyl eugenol + TX; methyl iodide + TX; methyl neodecanamide + TX; metiram + TX; metofluthrin + TX; metolcarb + TX; metominostrobin + TX; metoxadiazone + TX; metrafenone + TX; metyltetraprole + TX; mevinphos + TX; mexacarbate + TX; MGK 264 + TX; milbemycin + TX; milbemycin oxime + TX; monocrotophos + TX; morantel tartrate + TX; morzid + TX; moxidectin + TX; muscalure + TX; myclobutanil + TX; myclozolin + TX; Myrothecium verrucaria composition + TX; N-[2-[2,4-dichloro-phenoxy]phenyl]-3-(difluoromethyl)-1-methyl-pyrazole-4-carboxamide + TX; N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-[(2-isopropylphenyl)methyl]-1-methyl-pyrazole-4-carboxamide + TX;

nabam + TX; naled + TX; NC-170 + TX; nemadectin + TX; Neodiprion sertifer NPV and N. lecontei NPV + TX; niclosamide-olamine + TX; nicotine + TX; nicotine sulfate + TX; nikkomycins + TX; nitenpyram + TX; nithiazine + TX; nitrapyrin + TX; nitrilacarb + TX; nitrothal-isopropyl + TX; norbormide + TX; nornicotine + TX; novaluron + TX; noviflumuron + TX; nuarimol + TX; O,O,O',O'-tetrapropyl dithiopyrophosphate + TX; octadeca-2,13-dien-1-yl acetate + TX; octadeca-2,13-dien-1-yl acetate + TX; octhilinone + TX; ofurace + TX; oleic acid + TX; omethoate + TX; orfralure + TX; Orius spp. + TX; orysastrobin + TX; osthol + TX; ostramone + TX; oxadixyl + TX; oxamate + TX; oxamyl + TX; oxantel pamoate + TX; oxasulfuron + TX; oxathiapiprolin + TX; oxfendazole + TX; oxibendazole + TX; oxine copper + TX; oxolinic acid + TX; oxpoconazole + TX; oxycarboxin + TX; oxydemeton-methyl + TX; oxydeprofos + TX; oxydisulfoton + TX; oxytetracycline + TX; oxytetracycline dihydrate + TX; paclobutrazol + TX; Paecilomyces fumosoroseus + TX; paraoxon + TX; parathion + TX; parathion-methyl + TX; parbendazole + TX; pefurazoate + TX; penconazole + TX; pencycuron + TX; penethamate + TX; penflufen + TX; penthiopyrad + TX; permethrin + TX; petroleum oils + TX; PH 60-38 + TX; phenamacril + TX; phenthoate + TX; phorate + TX; phosacetim + TX; phosalone + TX; phosfolan + TX; phosglycin + TX; phosmet + TX; phosnichlor + TX; phosphamidon + TX; phosphocarb + TX; phosphonic acid + TX; phosphorus + TX; phoxim + TX; phoxim-methyl + TX; phthalide + TX; Phytoseiulus persimilis + TX; picarbutrazox + TX; picoxystrobin + TX; pimobendan + TX; pindone + TX; piperalin + TX; piperonyl butoxide + TX; piprotal + TX; pirimetaphos + TX; pirimicarb + TX; pirimiphos-methyl + TX; polycarbamate + TX; polynactin + TX; polyoxin B + TX; polyoxin d + TX; potassium ethylxanthate + TX; potassium hydroxyquinoline sulfate + TX; praziquantel + TX; precocene I + TX; precocene II + TX; precocene III + TX; primidophos + TX; probenazole + TX; prochloraz + TX; procymidone + TX; profenofos + TX; profluthrin + TX; prohexadione + TX; prohexadione-calcium + TX; promacyl + TX; promecarb + TX; propamidine + TX; propamocarb + TX; propaphos + TX; propargite + TX; propetamphos + TX; propiconazole + TX; propineb + TX; propionic acid + TX; propoxur + TX; propyl isomer + TX; proquinazid + TX; prothidathion + TX; prothioconazole + TX; prothiofos + TX; prothoate + TX; protrifenbute + TX; pydiflumetofen + TX; pymetrozine + TX; pyraclofos + TX; pyraclostrobin + TX; pyrafluprole + TX; pyrametostrobin + TX; pyrantel pamoate + TX; pyraoxystrobin + TX; pyrapropoyne + TX; pyraziflumid + TX; pyrazophos + TX; pyrazoxone + TX; pyresmethrin + TX; pyrethrin I + TX; pyrethrin II + TX; pyrethrins (natural products) + TX; pyrethroids (natural products) + TX; pyribencarb + TX; pyridaben + TX; pyridachlometyl + TX; pyridalyl + TX; pyridaphenthion + TX; pyridin-4-amine + TX; pyrifenox + TX; pyrifluquinazon + TX; pyrimethanil + TX; pyrimidifen + TX; pyrimorph + TX; pyriofenone + TX; pyriprole + TX; pyriproxyfen + TX; pyrisoxazole + TX; pyroquilon + TX; quassia + TX; quinalphos + TX; quinalphos-methyl + TX; quinoclamine + TX; quinofumelin + TX; quinonamid + TX; quinothion + TX; quinoxyfen + TX; quintozene + TX; R-1492 + TX; R-metalaxyl + TX; Reynoutria sachalinensis extract + TX; ribavirin + TX; rotenone + TX; ryanodine (ryania) + TX; sabadilla + TX; schradan + TX; scilliroside + TX; seboctylamine + TX; sedaxane + TX; selamectin + TX; sesamex + TX; sesamolin + TX; siglure + TX; silafluofen + TX; silthiofam + TX; simeconazole + TX; sodium tetrathiocarbonate + TX; sophamide + TX; sordidin + TX; spinetoram + TX; spinosad + TX; spirodiclofen + TX; spiromesifen + TX; spirotetramat + TX; spiroxamine + TX; Steinernema bibionis + TX; Steinernema carpocapsae + TX; Steinernema feltiae + TX; Steinernema glaseri + TX; Steinernema riobrave + TX; Steinernema riobravis + TX; Steinernema scapterisci + TX; Steinernema spp. +

TX; streptomycin + TX; streptomycin sesquisulfate + TX; sulcatol + TX; sulcofuron + TX; sulfiram + TX; sulfur + TX; sulprofos + TX; tar oils + TX; tau-fluvalinate + TX; TCMTB + TX; TDE + TX; tebuconazole + TX; tebufenozide + TX; tebufenpyrad + TX; tebufloquin + TX; tebupirimfos + TX; tecnazene + TX; teflubenzuron + TX; tefluthrin + TX; temephos + TX; terallethrin + TX; terbam + TX; terbufos + TX; tetrachlorvinphos + TX; tetraconazole + TX; tetradec-11-en-1-yl acetate + TX; tetradifon + TX; tetramethrin + TX; tetramethylfluthrin + TX; tetranactin + TX; thiabendazole + TX; thiacloprid + TX; thiadiazole copper + TX; thiamethoxam + TX; thiapronil + TX; thicrofos + TX; thicyofen + TX; thidiazuron + TX; thifluzamide + TX; thiocarboxime + TX; thiocyclam + TX; thiocyclam hydrogen oxalate + TX; thiodicarb + TX; thiofanox + TX; thiometon + TX; thiophanate + TX; thiophanate-methyl + TX; thioquinox + TX; thiosultap + TX; thiosultap-disodium + TX; thiram + TX; thuringiensin + TX; tiadinil + TX; tiamulin + TX; tioxymid + TX; tolclofos-methyl + TX; tolfenpyrad + TX; tolprocarb + TX; tolylfluanid + TX; tralomethrin + TX; transpermethrin + TX; tretamine + TX; triadimefon + TX; triadimenol + TX; triarathene + TX; triazamate + TX; triazophos + TX; triazoxide + TX; tribufos + TX; trichlorfon + TX; trichlormetaphos-3 + TX; trichloronat + TX; Trichogramma spp. + TX; triclabendazole + TX; triclopyricarb + TX; tricyclazole + TX; tridemorph + TX; trifenmorph + TX; trifloxystrobin + TX; triflumizole + TX; triflumuron + TX; triforine + TX; trimedlure + TX; trimedlure A + TX; trimedlure B1 + TX; trimedlure B2 + TX; trimedlure C + TX; trimethacarb + TX; trinactin + TX; trinexapac + TX; trinexapac-ethyl + TX; triprene + TX; triticonazole + TX; trunc-call + TX; tulathromycin + TX; Typhlodromus occidentalis + TX; uniconazole + TX; uredepa + TX; validamycin + TX; valifenalate + TX; vamidothion + TX; vaniliprole + TX; veratridine + TX; veratrine + TX; verbutin + TX; Verticillium lecanii + TX; vinclozolin + TX; XMC + TX; xylenols + TX; zeatin + TX; zeta-cypermethrin + TX; zhongshengmycin + TX; zinc naphthenate + TX; zinc thiazole + TX; zineb + TX; ziram + TX; zolaprofos + TX; zoxamide + TX; 2-(difluoromethyl)-N-[(3S)-3-ethyl-1,1-dimethyl-indan-4-yl]pyridine-3-carboxamide (this compound may be prepared from the methods described in WO 2014/095675) + TX; methyl 3-[(4-chlorophenyl)methyl]-2-hydroxy-1-methyl-2-(1,2,4-triazol-1-ylmethyl)cyclopentanecarboxylate (this compound may be prepared from the methods described in WO 2019/093522) + TX; methyl (2R)-2-[2-chloro-4-(4-chlorophenoxy)phenyl]-2-hydroxy-3-(1,2,4-triazol-1-yl)propanoate (this compound may be prepared from the methods described in WO 2019/093522) + TX; 5-[5-(difluoromethyl)-1,3,4-oxadiazol-2-yl]-N-[1-(2,6-difluorophenyl)cyclopropyl]pyrimidin-2-amine (this compound may be prepared from the methods described in WO 2021/255093) + TX; aminopyrifen (this compound may be prepared from the methods described in WO 2014/006945) + TX; dipymetitrone (this compound may be prepared from the methods described in WO 2011/138281) + TX; 1-[6-(difluoromethyl)-5-methyl-3-pyridyl]-4,4-difluoro-3,3-dimethyl-isoquinoline (this compound may be prepared from the methods described in WO 2017/016915) + TX; 1-[4-(difluoromethoxy)-2-methyl-phenyl]-2-(1,2,4-triazol-1-yl)-1-[1-(trifluoromethyl)cyclopropyl]ethanol (this compound may be prepared from the methods described in WO 2021/249800) + TX; 1-[2-chloro-4-(difluoromethoxy)phenyl]-2-(1,2,4-triazol-1-yl)-1-[1-(trifluoromethyl)cyclopropyl]ethanol (this compound may be prepared from the methods described in WO 2021/249800) + TX; 1-(5,6-dimethyl-3-pyridyl)-4,4-difluoro-3,3-dimethyl-isoquinoline (this compound may be prepared from the methods described in WO 2017/016915) + TX; N-methyl-4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]benzenecarbothioamide (this compound may be prepared from the methods described in WO 2015/185485) + TX; 2,2-difluoro-N-methyl-2-[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-

3-yl]phenyl]acetamide (this compound may be prepared from the methods described in WO 2017/178245) + TX; flufenoxadiazam + TX; N-methyl-4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]benzamide (this compound may be prepared from the methods described in WO 2015/185485) + TX; (Z,2E)-5-[1-(2,4-dichlorophenyl)pyrazol-3-yl]oxy-2-methoxyimino-N,3-dimethyl-pent-3-enamide (this compound may be prepared from the methods described in WO 2018/153707) + TX; (Z,2E)-5-[1-(4-chlorophenyl)pyrazol-3-yl]oxy-2-methoxyimino-N,3-dimethyl-pent-3-enamide (this compound may be prepared from the methods described in WO 2013/092224) + TX; methyl (2E)-2-methoxyimino-2-[3-methyl-2-[[(E)-1-[4-(trifluoromethyl)-2-pyridyl]ethylideneamino]oxymethyl]phenyl]acetate (this compound may be prepared from the methods described in WO 2022/033906) + TX; (2E)-2-methoxyimino-N-methyl-2-[3-methyl-2-[[(E)-1-[4-(trifluoromethyl)-2-pyridyl]ethylideneamino]oxymethyl]phenyl]acetamide (this compound may be prepared from the methods described in WO 2022/033906) + TX; (2E)-2-[2-[[(E)-[3-(4-fluorophenyl)-1-methyl-prop-2-ynylidene]amino]oxymethyl]-3-methyl-phenyl]-2-methoxyimino-N-methyl-acetamide (this compound may be prepared from the methods described in WO 2021/249928) + TX; methyl (2E)-2-[2-[[(E)-[3-(4-fluorophenyl)-1-methyl-prop-2-ynylidene]amino]oxymethyl]-3-methyl-phenyl]-2-methoxyimino-acetate (this compound may be prepared from the methods described in WO 2021/249928) + TX; 3-[2-(1-chlorocyclopropyl)-3-(3-chloro-2-fluoro-phenyl)-2-hydroxy-propyl]imidazole-4-carbonitrile (this compound may be prepared from the methods described in WO 2016/156290) + TX; 3-[2-(1-chlorocyclopropyl)-3-(2-fluorophenyl)-2-hydroxy-propyl]imidazole-4-carbonitrile (this compound may be prepared from the methods described in WO 2016/156290) + TX; 2-[6-(4-bromophenoxy)-2-(trifluoromethyl)-3-pyridyl]-1-(1,2,4-triazol-1-yl)propan-2-ol (this compound may be prepared from the methods described in WO 2017/029179) + TX; 2-[6-(4-chlorophenoxy)-2-(trifluoromethyl)-3-pyridyl]-1-(1,2,4-triazol-1-yl)propan-2-ol (this compound may be prepared from the methods described in WO 2017/029179) + TX; 5-[5-(difluoromethyl)-1,3,4-oxadiazol-2-yl]-N-[1-(2-fluorophenyl)ethyl]pyrimidin-2-amine (this compound may be prepared from the methods described in WO 2021/255093) + TX; 5-[5-(difluoromethyl)-1,3,4-oxadiazol-2-yl]-N-[1-(3,5-difluorophenyl)ethyl]pyrimidin-2-amine (this compound may be prepared from the methods described in WO 2021/255093) + TX; N-[1-(2-fluorophenyl)cyclopropyl]-5-[5-(trifluoromethyl)-1,3,4-oxadiazol-2-yl]pyrimidin-2-amine (this compound may be prepared from the methods described in WO 2021/255093) + TX; 5-[5-(difluoromethyl)-1,3,4-oxadiazol-2-yl]-N-[1-(2,6-difluorophenyl)ethyl]pyrimidin-2-amine (this compound may be prepared from the methods described in WO 2021/255093) + TX; 2-(difluoromethyl)-5-[2-[1-(2,6-difluorophenyl)cyclopropoxy]pyrimidin-5-yl]-1,3,4-oxadiazole (this compound may be prepared from the methods described in WO 2021/255093) + TX; 5-[5-(difluoromethyl)-1,3,4-oxadiazol-2-yl]-N-[1-(2-fluorophenyl)cyclopropyl]pyrimidin-2-amine (this compound may be prepared from the methods described in WO 2021/255093) + TX; 5-[(4-bromo-2-methyl-phenyl)methyl]-3-[3-(3-chloro-2-fluoro-phenoxy)-6-methyl-pyridazin-4-yl]-5,6-dihydro-4H-1,2,4-oxadiazine (this compound may be prepared from the methods described in WO 2021/255070) + TX; 3-[3-(3-cyclopropyl-2-fluoro-phenoxy)-6-methyl-pyridazin-4-yl]-5-[(2,4-dimethylphenyl)methyl]-5,6-dihydro-4H-1,2,4-oxadiazine (this compound may be prepared from the methods described in WO 2021/255070) + TX; N-(2,2,2-trifluoroethyl)-2-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]oxazole-4-carboxamide (this compound may be prepared from the methods described in WO 2022/133114) + TX; ethyl 1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-

yl]phenoxy]methyl]pyrazole-4-carboxylate (this compound may be prepared from the methods described in WO 2022/133114) + TX; ethyl 1-[[4-[(*Z*)-2-ethoxy-3,3,3-trifluoro-prop-1-enoxy]phenyl]methyl]pyrazole-4-carboxylate (this compound may be prepared from the methods described in WO 2020/056090 and WO 2021/183707) + TX; ethyl 1-[[4-[[2-(trifluoromethyl)-1,3-dioxolan-2-yl]methoxy]phenyl]methyl]pyrazole-4-carboxylate (this compound may be prepared from the methods described in WO 2020/056090 and WO 2021/183707) + TX; methyl N-[[5-[4-(2,4-dimethylphenyl)triazol-2-yl]-2-methyl-phenyl]methyl]carbamate (this compound may be prepared from the methods described in WO 2020/097012) + TX; methyl N-[[5-[1-(2,6-difluoro-4-isopropyl-phenyl)pyrazol-3-yl]-2-methyl-phenyl]methyl]carbamate (this compound may be prepared from the methods described in WO 2020/097012) + TX; methyl N-[[5-[1-(4-cyclopropyl-2,6-difluoro-phenyl)pyrazol-3-yl]-2-methyl-phenyl]methyl]carbamate (this compound may be prepared from the methods described in WO 2020/097012) + TX; methyl 2-[2-chloro-4-(4-chlorophenoxy)phenyl]-2-hydroxy-3-(1,2,4-triazol-1-yl)propanoate (this compound may be prepared from the methods described in WO 2019/093522) + TX; 4,4,5-trifluoro-3,3-dimethyl-1-(3-quinolyl)isoquinoline + TX; 5-fluoro-3,3,4,4-tetramethyl-1-(3-quinolyl)isoquinoline + TX; 2-methoxy-N-[methoxy-[5-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]-2-thienyl]methyl]acetamide (this compound may be prepared from the methods described in WO 2020/256113) + TX; N-[methoxy-[5-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]-2-thienyl]methyl]-2-methyl-propanamide (this compound may be prepared from the methods described in WO 2020/256113) + TX; N-[methoxy-[5-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]-2-thienyl]methyl]butanamide (this compound may be prepared from the methods described in WO 2020/256113) + TX; 2-(difluoromethyl)-N-[(3R)-3-ethyl-1,1-dimethyl-indan-4-yl]pyridine-3-carboxamide (this compound may be prepared from the methods described in WO 2014/095675) + TX; 2-(difluoromethyl)-N-(3-ethyl-1,1-dimethyl-indan-4-yl)pyridine-3-carboxamide (this compound may be prepared from the methods described in WO 2014/095675) + TX; 2-(difluoromethyl)-N-(1,1,3-trimethylindan-4-yl)pyridine-3-carboxamide + TX; (5R)-3-[3-(3-chloro-2-fluoro-phenoxy)-6-methyl-pyridazin-4-yl]-5-[(2-chloro-4-methyl-phenyl)methyl]-5,6-dihydro-4H-1,2,4-oxadiazine (this compound may be prepared from the methods described in WO 2020/127780, WO 2021/255070) + TX; (5S)-3-[3-(3-chloro-2-fluoro-phenoxy)-6-methyl-pyridazin-4-yl]-5-[(2-chloro-4-methyl-phenyl)methyl]-5,6-dihydro-4H-1,2,4-oxadiazine (this compound may be prepared from the methods described in WO 2020/127780, WO 2021/255070) + TX; 3-[3-(3-chloro-2-fluoro-phenoxy)-6-methyl-pyridazin-4-yl]-5-[(2-chloro-4-methyl-phenyl)methyl]-5,6-dihydro-4H-1,2,4-oxadiazine (this compound may be prepared from the methods described in WO 2020/127780, WO 2021/255070) + TX; methyl (*Z*)-3-methoxy-2-(2-methyl-5-phenyl-phenoxy)prop-2-enoate (this compound may be prepared from methods as described in JP2023078251) +TX; 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + TX; or the (*R*) or (*S*) enantiomer or mixtures thereof +TX (this compound may be prepared from the methods described in WO2017207362A1, WO2019105933A1, WO2020109511A1, WO2021244952A1); 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + TX; or the (*R*) or (*S*) enantiomer or mixtures thereof +TX (this compound may be prepared from the methods described in WO2017207362A1, WO2019105933A1, WO2020109511A1, WO2021244952A1); 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide + TX; or the (*R*) or (*S*) enantiomer or mixtures thereof

+TX (this compound may be prepared from the methods described in WO2017207362A1, WO2019105933A1, WO2020109509A1); 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + TX; or the (*R*) or (*S*) enantiomer or mixtures thereof +TX (this compound may be prepared from the methods described in WO2017207362A1, WO2019105933A1, WO2020109509A1); 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + TX; or the (*R*) or (*S*) enantiomer or mixtures thereof +TX (this compound may be prepared from the methods described in WO2017207362A1, WO2019105933A1, WO2020109511A1, WO2021244952A1); 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide + TX; or the (*R*) or (*S*) enantiomer or mixtures thereof +TX (this compound may be prepared from the methods described in WO2017207362A1, WO2019105933A1, WO2020109511A1, WO2021244952A1); N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide (this compound may be prepared from the methods described in WO 2017/055473) +TX; methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (this compound may be prepared from the methods described in WO2020/193387) +TX; methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (this compound may be prepared from the methods described in WO2020/193387) +TX; N-[(1R)-1-benzyl-1,3-dimethylbutyl]-8-fluoroquinoline-3-carboxamide (this compound may be prepared from the methods described in WO2017/153380) +TX; N-[(1S)-1-benzyl-1,3-dimethylbutyl]-8-fluoroquinoline-3-carboxamide (this compound may be prepared from the methods described in WO2017/153380) +TX; 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + TX; or the (*R*) or (*S*) enantiomer or mixtures thereof +TX (this compound may be prepared from the methods described in WO2017207362A1, WO2019105933A1, WO2020109511A1, WO2021244952A1); 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide + TX; or the (*R*) or (*S*) enantiomer or mixtures thereof +TX (this compound may be prepared from the methods described in WO2017207362A1, WO2019105933A1, WO2020109511A1, WO2021244952A1); N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide + TX; or the (*R*) or (*S*) enantiomer or mixtures thereof +TX (this compound may be prepared from the methods described in WO 2017/055473).

The references in brackets behind the active ingredients, e.g., *[3878-19-1]* refer to the Chemical Abstracts Registry number. The above described mixing partners are known. Where the active ingredients are included in "The Pesticide Manual" [The Pesticide Manual - A World Compendium; Thirteenth Edition; Editor: C. D. S. TomLin; The British Crop Protection Council], they are described therein under the entry number given in round brackets hereinabove for the particular compound; for example, the compound "abamectin" is described under entry number (1). Where "[CCN]" is added hereinabove to the particular compound, the compound in question is included in the "Compendium of Pesticide Common Names", which is accessible on the internet [A. Wood; Compendium of Pesticide Common Names, Copyright © 1995-2004]; for example, the compound "acetoprole" is described under the internet address http://www.alanwood.net/pesticides/acetoprole.html

Most of the active ingredients described above are referred to hereinabove by a so-called "common name", the relevant "ISO common name" or another "common name" being used in individual cases. If the designation is not a "common name", the nature of the designation used instead is given in round brackets for the particular

compound; in that case, the IUPAC name, the IUPAC/Chemical Abstracts name, a "chemical name", a "traditional name", a "compound name" or a "development code" is used or, if neither one of those designations nor a "common name" is used, an "alternative name" is employed. "CAS Reg. No" means the Chemical Abstracts Registry Number.

The term "compounds of formula (I)" refers to component A.

In the "reference" mixture compositions the mixtures of compounds of formula (I) (selected from compounds of formula (I), (I-A) or compounds selected from (X.01), (X.02), (X.03), (X.04), (X.05), (X.06), (X.07), (X.08), (X.9), (X.10), or (X.11), as listed in Table X (above)) with active ingredients described above comprise a compound selected from Table X (above) and an active ingredient as described above preferably in a mixing ratio of from 100:1 to 1:100, especially from 50:1 to 1:50, more especially in a ratio of from 20:1 to 1:20, even more especially from 10:1 to 1:10, very especially from 5:1 to 1:5, special preference being given to a ratio of from 2:1 to 1:2, and a ratio of from 4:1 to 2:1 being likewise preferred, above all in a ratio of 1:1, or 5:1, or 5:2, or 5:3, or 5:4, or 4:1, or 4:2, or 4:3, or 3:1, or 3:2, or 2:1, or 1:5, or 2:5, or 3:5, or 4:5, or 1:4, or 2:4, or 3:4, or 1:3, or 2:3, or 1:2, or 1:600, or 1:300, or 1:150, or 1:35, or 2:35, or 4:35, or 1:75, or 2:75, or 4:75, or 1:6000, or 1:3000, or 1:1500, or 1:350, or 2:350, or 4:350, or 1:750, or 2:750, or 4:750. Those mixing ratios are by weight.

The mixture compositions as described above (both according to the invention and the "reference" mixture compositions) can be used in a method for controlling pests, which comprises applying a composition comprising a mixture as described above to the pests or their environment.

The mixtures comprising a compound of formula (I) selected from compounds of formula (I), or compounds of formula (I-A), or compounds selected from (X.01), (X.02), (X.03), (X.04), (X.05), (X.06), (X.07), (X.08), (X.9), (X.10), or (X.11), as listed in Table X (above), and one or more active ingredients as described above can be applied, for example, in a single "ready-mix" form, in a combined spray mixture composed from separate formulations of the single active ingredient components, such as a "tank-mix", and in a combined use of the single active ingredients when applied in a sequential manner, i.e. one after the other with a reasonably short period, such as a few hours or days. The order of applying the compounds of formula (I) selected from Table X (above) and the active ingredients as described above is not essential for working the present invention.

The compositions of the present invention may also be used in crop enhancement. According to the present invention, 'crop enhancement' means an improvement in plant vigour, an improvement in plant quality, improved tolerance to stress factors, and/or improved input use efficiency.

According to the present invention, an 'improvement in plant vigour' means that certain traits are improved qualitatively or quantitatively when compared with the same trait in a control plant which has been grown under the same conditions in the absence of the method of the invention. Such traits include, but are not limited to, early and/or improved germination, improved emergence, the ability to use less seeds, increased root growth, a more developed root system, increased root nodulation, increased shoot growth, increased tillering, stronger tillers, more productive tillers, increased or improved plant stand, less plant verse (lodging), an increase and/or improvement in plant height, an increase in plant weight (fresh or dry), bigger leaf blades, greener leaf colour,

increased pigment content, increased photosynthetic activity, earlier flowering, longer panicles, early grain maturity, increased seed, fruit or pod size, increased pod or ear number, increased seed number per pod or ear, increased seed mass, enhanced seed filling, less dead basal leaves, delay of senescence, improved vitality of the plant, increased levels of amino acids in storage tissues and/or less inputs needed (e.g., less fertiliser, water and/or labour needed). A plant with improved vigour may have an increase in any of the aforementioned traits or any combination or two or more of the aforementioned traits.

According to the present invention, an 'improvement in plant quality' means that certain traits are improved qualitatively or quantitatively when compared with the same trait in a control plant which has been grown under the same conditions in the absence of the method of the invention. Such traits include, but are not limited to, improved visual appearance of the plant, reduced ethylene (reduced production and/or inhibition of reception), improved quality of harvested material, e.g., seeds, fruits, leaves, vegetables (such improved quality may manifest as improved visual appearance of the harvested material), improved carbohydrate content (e.g., increased quantities of sugar and/or starch, improved sugar acid ratio, reduction of reducing sugars, increased rate of development of sugar), improved protein content, improved oil content and composition, improved nutritional value, reduction in anti-nutritional compounds, improved organoleptic properties (e.g., improved taste) and/or improved consumer health benefits (e.g., increased levels of vitamins and anti-oxidants), improved post-harvest characteristics (e.g., enhanced shelf-life and/or storage stability, easier processability, easier extraction of compounds), more homogenous crop development (e.g., synchronised germination, flowering and/or fruiting of plants), and/or improved seed quality (e.g., for use in following seasons). A plant with improved quality may have an increase in any of the aforementioned traits, or any combination or two or more of the aforementioned traits.

According to the present invention, an 'improved tolerance to stress factors' means that certain traits are improved qualitatively or quantitatively when compared with the same trait in a control plant which has been grown under the same conditions in the absence of the method of the invention. Such traits include, but are not limited to, an increased tolerance and/or resistance to abiotic stress factors which cause sub-optimal growing conditions such as drought (e.g., any stress which leads to a lack of water content in plants, a lack of water uptake potential or a reduction in the water supply to plants), cold exposure, heat exposure, osmotic stress, UV stress, flooding, increased salinity (e.g., in the soil), increased mineral exposure, ozone exposure, high light exposure and/or limited availability of nutrients (e.g., nitrogen and/or phosphorus nutrients). A plant with improved tolerance to stress factors may have an increase in any of the aforementioned traits, or any combination or two or more of the aforementioned traits. In the case of drought and nutrient stress, such improved tolerances may be due to, for example, more efficient uptake, use or retention of water and nutrients.

According to the present invention, an 'improved input use efficiency' means that the plants are able to grow more effectively using given levels of inputs compared to the grown of control plants which are grown under the same conditions in the absence of the method of the invention. In particular, the inputs include, but are not limited to fertiliser (such as nitrogen, phosphorous, potassium, micronutrients), light and water. A plant with

improved input use efficiency may have an improved use of any of the aforementioned inputs, or any combination of two or more of the aforementioned inputs.

Other crop enhancements of the present invention include a decrease in plant height, or reduction in tillering, which are beneficial features in crops or conditions where it is desirable to have less biomass and fewer tillers.

Any or all of the above crop enhancements may lead to an improved yield by improving e.g., plant physiology, plant growth and development and/or plant architecture. In the context of the present invention 'yield' includes, but is not limited to, (i) an increase in biomass production, grain yield, starch content, oil content and/or protein content, which may result from (a) an increase in the amount produced by the plant *per se* or (b) an improved ability to harvest plant matter, (ii) an improvement in the composition of the harvested material (e.g., improved sugar acid ratios, improved oil composition, increased nutritional value, reduction of anti-nutritional compounds, increased consumer health benefits) and/or (iii) an increased/facilitated ability to harvest the crop, improved processability of the crop and/or better storage stability/shelf life. Increased yield of an agricultural plant means that, where it is possible to take a quantitative measurement, the yield of a product of the respective plant is increased by a measurable amount over the yield of the same product of the plant produced under the same conditions, but without application of the present invention. According to the present invention, it is preferred that the yield be increased by at least 0.5%, more preferred at least 1%, even more preferred at least 2%, still more preferred at least 4%, preferably 5% or even more.

Any or all of the above crop enhancements may also lead to an improved utilisation of land, i.e. land which was previously unavailable or sub-optimal for cultivation may become available. For example, plants which show an increased ability to survive in drought conditions, may be able to be cultivated in areas of sub-optimal rainfall, e.g., perhaps on the fringe of a desert or even the desert itself.

In one aspect of the present invention, crop enhancements are made in the substantial absence of pressure from pests and/or diseases and/or abiotic stress. In a further aspect of the present invention, improvements in plant vigour, stress tolerance, quality and/or yield are made in the substantial absence of pressure from pests and/or diseases. For example, pests and/or diseases may be controlled by a pesticidal treatment that is applied prior to, or at the same time as, the method of the present invention. In a still further aspect of the present invention, improvements in plant vigour, stress tolerance, quality and/or yield are made in the absence of pest and/or disease pressure. In a further embodiment, improvements in plant vigour, quality and/or yield are made in the absence, or substantial absence, of abiotic stress.

The compositions of the present invention may also be used in the field of protecting storage goods against attack of fungi. According to the present invention, the term "storage goods" is understood to denote natural substances of vegetable and/or animal origin and their processed forms, which have been taken from the natural life cycle and for which long-term protection is desired. Storage goods of vegetable origin, such as plants or parts thereof, for example stalks, leaves, tubers, seeds, fruits or grains, can be protected in the freshly harvested state or in processed form, such as pre-dried, moistened, comminuted, ground, pressed or roasted. Also falling under the definition of storage goods is timber, whether in the form of crude timber, such as

construction timber, electricity pylons, and barriers, or in the form of finished articles, such as furniture or objects made from wood. Storage goods of animal origin are hides, leather, furs, hairs, and the like. The composition according to the present invention can prevent disadvantageous effects such as decay, discoloration or mold. Preferably "storage goods" is understood to denote natural substances of vegetable origin and/or their processed forms, more preferably fruits and their processed forms, such as pomes, stone fruits, soft fruits, and citrus fruits, and their processed forms. In another preferred embodiment of the invention "storage goods" is understood to denote wood.

Therefore, a further aspect of the present invention is a method of protecting storage goods, which comprises applying to the storage goods a composition according to the invention.

The composition of the present invention may also be used in the field of protecting technical material against attack of fungi. According to the present invention, the term "technical material" includes paper, carpets, constructions, cooling and heating systems, wallboards, ventilation, and air conditioning systems, and the like, preferably "technical material" is understood to denote wallboards. The composition according to the present invention can prevent disadvantageous effects such as decay, discoloration, or mold.

The composition according to the invention is generally formulated in various ways using formulation adjuvants, such as carriers, solvents and surface-active substances. The formulations can be in various physical forms, e.g., in the form of dusting powders, gels, wettable powders, water-dispersible granules, water-dispersible tablets, effervescent pellets, emulsifiable concentrates, microemulsifiable concentrates, oil-in-water emulsions, oil-flowables, aqueous dispersions, oily dispersions, suspo-emulsions, capsule suspensions, emulsifiable granules, soluble liquids, water-soluble concentrates (with water or a water-miscible organic solvent as carrier), impregnated polymer films or in other forms known e.g., from the Manual on Development and Use of FAO and WHO Specifications for Pesticides, United Nations, First Edition, Second Revision (2010). Such formulations can either be used directly or diluted prior to use. The dilutions can be made, for example, with water, liquid fertilisers, micronutrients, biological organisms, oil or solvents.

The formulations can be prepared e.g., by mixing the active ingredient with the formulation adjuvants in order to obtain compositions in the form of finely divided solids, granules, solutions, dispersions or emulsions. The active ingredients can also be formulated with other adjuvants, such as finely divided solids, mineral oils, oils of vegetable or animal origin, modified oils of vegetable or animal origin, organic solvents, water, surface-active substances, or combinations thereof.

The active ingredients can also be contained in microcapsules. Microcapsules contain the active ingredients in a porous carrier. This enables the active ingredients to be released into the environment in controlled amounts (e.g., slow-release). Microcapsules usually have a diameter of from 0.1 to 500 microns. They contain active ingredients in an amount of about from 25 to 95 % by weight of the capsule weight. The active ingredients can be in the form of a monolithic solid, in the form of fine particles in solid or liquid dispersion or in the form of a suitable solution. The encapsulating membranes can comprise, for example, natural or synthetic rubbers, cellulose, styrene/butadiene copolymers, polyacrylonitrile, polyacrylate, polyesters,

polyamides, polyureas, polyurethane or chemically modified polymers and starch xanthates or other polymers that are known to the person skilled in the art. Alternatively, very fine microcapsules can be formed in which the active ingredient is contained in the form of finely divided particles in a solid matrix of base substance, but the microcapsules are not themselves encapsulated.

The formulation adjuvants that are suitable for the preparation of the formulations according to the invention are known *per se*. As liquid carriers there may be used: water, toluene, xylene, petroleum ether, vegetable oils, acetone, methyl ethyl ketone, cyclohexanone, acid anhydrides, acetonitrile, acetophenone, amyl acetate, 2-butanone, butylene carbonate, chlorobenzene, cyclohexane, cyclohexanol, alkyl esters of acetic acid, diacetone alcohol, 1,2-dichloropropane, diethanolamine, p-diethylbenzene, diethylene glycol, diethylene glycol abietate, diethylene glycol butyl ether, diethylene glycol ethyl ether, diethylene glycol methyl ether, *N,N*-dimethylformamide, dimethyl sulfoxide, 1,4-dioxane, dipropylene glycol, dipropylene glycol methyl ether, dipropylene glycol dibenzoate, diproxitol, alkylpyrrolidone, ethyl acetate, 2-ethylhexanol, ethylene carbonate, 1,1,1-trichloroethane, 2-heptanone, alpha-pinene, d-limonene, ethyl lactate, ethylene glycol, ethylene glycol butyl ether, ethylene glycol methyl ether, gamma-butyrolactone, glycerol, glycerol acetate, glycerol diacetate, glycerol triacetate, hexadecane, hexylene glycol, isoamyl acetate, isobornyl acetate, isooctane, isophorone, isopropylbenzene, isopropyl myristate, lactic acid, laurylamine, mesityl oxide, methoxypropanol, methyl isoamyl ketone, methyl isobutyl ketone, methyl laurate, methyl octanoate, methyl oleate, methylene chloride, m-xylene, *n*-hexane, *n*-octylamine, octadecanoic acid, octylamine acetate, oleic acid, oleylamine, o-xylene, phenol, polyethylene glycol, propionic acid, propyl lactate, propylene carbonate, propylene glycol, propylene glycol methyl ether, p-xylene, toluene, triethyl phosphate, triethylene glycol, xylenesulfonic acid, paraffin, mineral oil, trichloroethylene, perchloroethylene, ethyl acetate, amyl acetate, butyl acetate, propylene glycol methyl ether, diethylene glycol methyl ether, methanol, ethanol, isopropanol, and alcohols of higher molecular weight, such as amyl alcohol, tetrahydrofurfuryl alcohol, hexanol, octanol, ethylene glycol, propylene glycol, glycerol, *N*-methyl-2-pyrrolidone and the like.

Suitable solid carriers are, for example, talc, titanium dioxide, pyrophyllite clay, silica, attapulgite clay, kieselguhr, limestone, calcium carbonate, bentonite, calcium montmorillonite, cottonseed husks, wheat flour, soybean flour, pumice, wood flour, ground walnut shells, lignin, and similar substances.

A large number of surface-active substances can advantageously be used in both solid and liquid formulations, especially in those formulations which can be diluted with a carrier prior to use. Surface-active substances may be anionic, cationic, non-ionic or polymeric and they can be used as emulsifiers, wetting agents or suspending agents or for other purposes. Typical surface-active substances include, for example, salts of alkyl sulfates, such as diethanolammonium lauryl sulfate; salts of alkylarylsulfonates, such as calcium dodecyl-benzenesulfonate; alkylphenol/alkylene oxide addition products, such as nonylphenol ethoxylate; alcohol/alkylene oxide addition products, such as tridecylalcohol ethoxylate; soaps, such as sodium stearate; salts of alkylnaphthalenesulfonates, such as sodium dibutylnaphthalenesulfonate; dialkyl esters of sulfosuccinate salts, such as sodium di(2-ethylhexyl)sulfosuccinate; sorbitol esters, such as sorbitol oleate; quaternary amines, such as lauryltrimethylammonium chloride, polyethylene glycol esters of fatty acids, such

as polyethylene glycol stearate; block copolymers of ethylene oxide and propylene oxide; and salts of mono- and di-alkylphosphate esters; and also further substances described e.g., in McCutcheon's Detergents and Emulsifiers Annual, MC Publishing Corp., Ridgewood New Jersey (1981).

Further adjuvants that can be used in pesticidal formulations include crystallisation inhibitors, viscosity modifiers, suspending agents, dyes, anti-oxidants, foaming agents, light absorbers, mixing auxiliaries, antifoams, complexing agents, neutralising or pH-modifying substances and buffers, corrosion inhibitors, fragrances, wetting agents, take-up enhancers, micronutrients, plasticisers, glidants, lubricants, dispersants, thickeners, antifreezes, microbicides, and liquid and solid fertilisers.

The formulations according to the invention can include an additive comprising an oil of vegetable or animal origin, a mineral oil, alkyl esters of such oils or mixtures of such oils and oil derivatives. The amount of oil additive in the formulation according to the invention is generally from 0.01 to 10 %, based on the mixture to be applied. For example, the oil additive can be added to a spray tank in the desired concentration after a spray mixture has been prepared. Preferred oil additives comprise mineral oils or an oil of vegetable origin, for example rapeseed oil, olive oil or sunflower oil, emulsified vegetable oil, alkyl esters of oils of vegetable origin, for example the methyl derivatives, or an oil of animal origin, such as fish oil or beef tallow. Preferred oil additives comprise alkyl esters of C_8-C_{22} fatty acids, especially the methyl derivatives of C_{12}-C_{18} fatty acids, for example the methyl esters of lauric acid, palmitic acid and oleic acid (methyl laurate, methyl palmitate and methyl oleate, respectively). Many oil derivatives are known from the Compendium of Herbicide Adjuvants, 10th Edition, Southern Illinois University, 2010.

The formulations generally comprise from 0.1 to 99 % by weight, especially from 0.1 to 95 % by weight, of compounds of component (A) and component (B) and from 1 to 99.9 % by weight of a formulation adjuvant which preferably includes from 0 to 25 % by weight of a surface-active substance. Whereas commercial products may preferably be formulated as concentrates, the end user will normally employ dilute formulations.

The rates of application vary within wide limits and depend on the nature of the soil, the method of application, the crop plant, the pest to be controlled, the prevailing climatic conditions, and other factors governed by the method of application, the time of application and the target crop. As a general guideline, the compositions or compounds may be applied at a rate of from 1 to 2000 l/ha, especially from 10 to 1000 l/ha.

Certain mixture compositions comprising a compound of formula (I) described above may show a synergistic effect. This occurs whenever the action of an active ingredient combination is greater than the sum of the actions of the individual components. The action to be expected E for a given active ingredient combination obeys the so-called COLBY formula and can be calculated as follows (COLBY, S.R. "Calculating synergistic and antagonistic responses of herbicide combination". Weeds, Vol. 15, pages 20-22; 1967):

ppm = milligrams of active ingredient (= a.i.) per liter of spray mixture

X = % action by active ingredient A) using p ppm of active ingredient

Y = % action by active ingredient B) using q ppm of active ingredient.

According to COLBY, the expected (additive) action of active ingredients A)+B) using p+q ppm of active ingredient is:

$$E = X + Y - \frac{X \cdot Y}{100}$$

If the action actually observed (O) is greater than the expected action (E), then the action of the combination is super-additive, i.e. there is a synergistic effect. In mathematical terms, synergism corresponds to a positive value for the difference of (O-E). In the case of purely complementary addition of activities (expected activity), said difference (O-E) is zero. A negative value of said difference (O-E) signals a loss of activity compared to the expected activity.

However, besides the actual synergistic action with respect to fungicidal activity, the composition according to the invention may also have further surprising advantageous properties. Examples of such advantageous properties that may be mentioned are: more advantageous degradability; improved toxicological and/or ecotoxicological behaviour; or improved characteristics of the useful plants including: emergence, crop yields, more developed root system, tillering increase, increase in plant height, bigger leaf blade, less dead basal leaves, stronger tillers, greener leaf colour, less fertilizers needed, less seeds needed, more productive tillers, earlier flowering, early grain maturity, less plant verse (lodging), increased shoot growth, improved plant vigor, and early germination.

The composition according to the invention can be applied to the phytopathogenic microorganisms, the useful plants, the locus thereof, the propagation material thereof, storage goods or technical materials threatened by microorganism attack.

The composition according to the invention may be applied before or after infection of the useful plants, the propagation material thereof, storage goods or technical materials by the microorganisms.

The amount of a composition according to the invention to be applied, will depend on various factors, such as the compounds employed; the subject of the treatment, such as, for example plants, soil or seeds; the type of treatment, such as, for example spraying, dusting or seed dressing; the purpose of the treatment, such as, for example prophylactic or therapeutic; the type of fungi to be controlled or the application time.

When applied to the useful plants component (A) is typically applied at a rate of 5 to 2000 g a.i./ha, particularly 10 to 1000 g a.i./ha, e.g., 50, 75, 100 or 200 g a.i./ha, typically in association with 1 to 5000 g a.i./ha, particularly 2 to 2000 g a.i./ha, e.g., 100, 250, 500, 800, 1000, 1500 g a.i./ha of component (B).

In agricultural practice the application rates of the composition according to the invention depend on the type of effect desired, and typically range from 20 to 4000 g of total composition per hectare.

When the composition according to the invention is used for treating seed, rates of 0.001 to 50 g of a compound of component (A) per kg of seed, preferably from 0.01 to 10g per kg of seed, and 0.001 to 50 g of a compound of component (B), per kg of seed, preferably from 0.01 to 10g per kg of seed, are generally sufficient.

For the avoidance of doubt, where a literary reference, patent application, or patent, is cited within the text of this application, the entire text of said citation is herein incorporated by reference.

EXAMPLES

The Examples which follow serve to illustrate the invention and are not meant in any way to limit the invention.

The compounds of the invention can be distinguished from known compounds by virtue of greater efficacy at low application rates, which can be verified by a person skilled in the art using the experimental procedures outlined in the Examples, using lower application rates, if necessary, for example 60 ppm, 20 ppm or 2 ppm.

Compounds of formula (I) may possess any number of benefits including, *inter alia*, advantageous levels of biological activity for protecting plants against diseases that are caused by fungi or superior properties for use as agrochemical active ingredients (for example, greater biological activity, an advantageous spectrum of activity, an increased safety profile (including improved crop tolerance), improved physico-chemical properties, or increased biodegradability).

Throughout this description, temperatures are given in degrees Celsius and "m.p." means melting point. LC/MS means Liquid Chromatography Mass Spectroscopy and the description of the apparatus, and the methods is as follows.

^{1}H NMR and ^{19}F NMR measurements were recorded on a Bruker 400MHz spectrometer, chemical shifts are given in ppm relevant to a TMS (^{1}H) and $CFCl_3$ (^{19}F) standard. Spectra measured in deuterated solvents as indicated. Either one of the LCMS methods below was used to characterize the compounds. The characteristic LCMS values obtained for each compound were the retention time ("Rt", recorded in minutes) and the measured molecular ion $(M+H)^+$ or $(M-H)^-$.

LC-MS Method A: Spectra were recorded on a mass spectrometer from Waters (SQD, SQDII Single quadrupole mass spectrometer) equipped with an electrospray source (Polarity: positive and negative ions, Capillary: 3.00 kV, Cone range: 30 V, Extractor: 2.00 V, Source Temperature: 150°C, Desolvation Temperature: 350°C, Cone Gas Flow: 50 l/h, Desolvation Gas Flow: 650 l/h, Mass range: 100 to 900 Da) and an Acquity UPLC from Waters: binary pump, heated column compartment, diode-array detector and ELSD detector. Column: Waters UPLC HSS T3, 1.8 µm, 30 x 2.1 mm, Temperature: 60°C, DAD Wavelength range (nm): 210 to 500, Solvent Gradient: A = water + 5% MeOH + 0.05% HCOOH, B = Acetonitrile + 0.05% HCOOH, gradient: 10-100% B in 1.2 min; Flow (ml/min): 0.85.

LC-MS Method D: Spectra were recorded on a mass spectrometer from Acquity QDA Mass Spectrometer from Waters (HPLC: UPLC 'H' class) equipped with an electrospray source (Polarity: positive and negative ions (Ionisation method: Electrospray (ESI), Polarity: Positive and Negative Polarity Switch); Scan Type: Full Scan; Capillary (kV): 0.8; Cone Voltage: 25.00 V; Source Temperature: 120°C; Desolvation Gas Flow: 1000 L/Hr; Desolvation Temperature: 600°C; Gas Flow @ Cone: 50 L/Hr; Mass range: 110 to 850 Da; PDA Wavelength range: 230 to 400 nm.

Column: Acquity UPLC HSS T3 C18, Column length: 30 mm; Internal diameter of column: 2.1 mm, Particle size: 1.8 µ; Column oven temperature: 40°C

Optimized Chromatographic parameter: with the following gradient conditions: Solvent A = Water with 0.1% formic acid: Acetonitrile: 95:5 v/v; Solvent B = Acetonitrile with 0.05% formic acid

Time (minutes)	A (%)	B (%)	Flow rate (ml/min)
0	90	10	0.6
0.2	90	10	0.6
0.3	50	50	0.6
0.6	0	100	0.6
1.3	0	100	0.6
1.4	90	10	0.6
1.6	90	10	0.6

Formulation Examples

Wettable powders	a)	b)	c)
active ingredients	25 %	50 %	75 %
sodium lignosulfonate	5 %	5 %	-
sodium lauryl sulfate	3 %	-	5 %
sodium diisobutylnaphthalenesulfonate	-	6 %	10 %
phenol polyethylene glycol ether (7 to 8 mol of ethylene oxide)	-	2 %	-
highly dispersed silicic acid	5 %	10 %	10 %
Kaolin	62 %	27 %	-

The combination is thoroughly mixed with the adjuvants and the mixture is thoroughly ground in a suitable mill, affording wettable powders that can be diluted with water to give suspensions of the desired concentration.

Powders for dry seed treatment	a)	b)	c)
active ingredients	25 %	50 %	75 %
light mineral oil	5 %	5 %	5 %
highly dispersed silicic acid	5 %	5 %	-
Kaolin	65 %	40 %	-
Talcum	-	-	20 %

The combination is thoroughly mixed with the adjuvants and the mixture is thoroughly ground in a suitable mill, affording powders that can be used directly for seed treatment.

Emulsifiable concentrate		
active ingredients	10 %	
octylphenol polyethylene glycol ether (4 to 5 mol of ethylene oxide)		3 %
calcium dodecylbenzene sulfonate	3 %	

castor oil polyglycol ether (35 mol of ethylene oxide)	4 %
Cyclohexanone	30 %
xylene mixture	50 %

Emulsions of any required dilution, which can be used in plant protection, can be obtained from this concentrate by dilution with water.

Dusts	a)	b)	c)
Active ingredients	5 %	6 %	4 %
Talcum	95 %	-	-
Kaolin	-	94 %	-
mineral filler	-	-	96 %

Ready-for-use dusts are obtained by mixing the combination with the carrier and grinding the mixture in a suitable mill. Such powders can also be used for dry dressings for seed.

Extruder granules

Active ingredients	15 %
sodium lignosulfonate	2 %
carboxymethylcellulose	1 %
Kaolin	82 %

The combination is mixed and ground with the adjuvants, and the mixture is moistened with water. The mixture is extruded and then dried in a stream of air.

Coated granules

Active ingredients	8%
polyethylene glycol (mol. wt. 200)	3 %
Kaolin	89 %

The finely ground combination is uniformly applied, in a mixer, to the kaolin moistened with polyethylene glycol. Non-dusty coated granules are obtained in this manner.

Suspension concentrate

active ingredients	40 %
propylene glycol	10 %
nonylphenol polyethylene glycol ether (15 mol of ethylene oxide)	6 %
Sodium lignosulfonate	10 %
carboxymethylcellulose	1 %
silicone oil (in the form of a 75 % emulsion in water)	1 %
Water	32 %

The finely ground combination is intimately mixed with the adjuvants, giving a suspension concentrate from which suspensions of any desired dilution can be obtained by dilution with water. Using such dilutions, living

plants as well as plant propagation material can be treated and protected against infestation by microorganisms, by spraying, pouring or immersion.

Flowable concentrate for seed treatment

active ingredients	40 %
propylene glycol	5 %
copolymer butanol PO/EO	2 %
Tristyrenephenole with 10-20 moles EO	2 %
1,2-benzisothiazolin-3-one (in the form of a 20% solution in water)	0.5 %
monoazo-pigment calcium salt	5 %
Silicone oil (in the form of a 75 % emulsion in water)	0.2 %
Water	45.3 %

The finely ground combination is intimately mixed with the adjuvants, giving a suspension concentrate from which suspensions of any desired dilution can be obtained by dilution with water. Using such dilutions, living plants as well as plant propagation material can be treated and protected against infestation by microorganisms, by spraying, pouring or immersion.

Slow-Release Capsule Suspension

28 parts of the combination are mixed with 2 parts of an aromatic solvent and 7 parts of toluene diisocyanate/polymethylene-polyphenylisocyanate-mixture (8:1). This mixture is emulsified in a mixture of 1.2 parts of polyvinylalcohol, 0.05 parts of a defoamer and 51.6 parts of water until the desired particle size is achieved. To this emulsion a mixture of 2.8 parts 1,6-diaminohexane in 5.3 parts of water is added. The mixture is agitated until the polymerization reaction is completed. The obtained capsule suspension is stabilized by adding 0.25 parts of a thickener and 3 parts of a dispersing agent. The capsule suspension formulation contains 28% of the active ingredients. The medium capsule diameter is 8-15 microns. The resulting formulation is applied to seeds as an aqueous suspension in an apparatus suitable for that purpose.

Formulation types include an emulsion concentrate (EC), a suspension concentrate (SC), a suspo-emulsion (SE), a capsule suspension (CS), a water dispersible granule (WG), an emulsifiable granule (EG), an emulsion, water in oil (EO), an emulsion, oil in water (EW), a micro-emulsion (ME), an oil dispersion (OD), an oil miscible flowable (OF), an oil miscible liquid (OL), a soluble concentrate (SL), an ultra-low volume suspension (SU), an ultra-low volume liquid (UL), a technical concentrate (TK), a dispersible concentrate (DC), a wettable powder (WP), a soluble granule (SG) or any technically feasible formulation in combination with agriculturally acceptable adjuvants.

Abbreviations

$CDCl_3$	deuterated chloroform
DMF	dimethylformamide
DMSO	dimethyl sulfoxide
DMSO-d6	deuterated Dimethyl sulfoxide

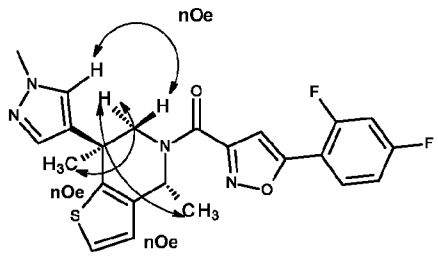
EtOAc	ethyl acetate
HCl	hydrochloric acid
h/hrs	hour/hours
LC-MS	Liquid Chromatography Mass Spectrometry (LC-MS or LCMS)
rh	relative humidity
rt	room temperature
Rt	retention time
ssp.	subspecies
T3P	propanephosphonic acid anhydride, also called 2,4,6-tripropyl-1,3,5,2,4,6-trioxatriphosphorinane-2,4,6-trioxide
THF	tetrahydrofuran

PREPARATION EXAMPLES

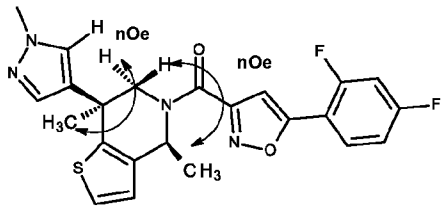
The compounds of formula (I) according to the invention may be prepared using the synthetic techniques described both above and below.

"Mp" means melting point in °C. Free radicals represent methyl groups. ^{1}H NMR and ^{19}F NMR measurements were recorded on a Bruker 400MHz spectrometer (or 600MHz as indicated), chemical shifts are given in ppm relevant to a TMS (^{1}H) and $CFCl_3$ (^{19}F) standard. Spectra measured in deuterated solvents as indicated. Either one of the LC-MS methods below was used to characterize the compounds. The characteristic LCMS values obtained for each compound were the retention time ("Rt", recorded in minutes) and the measured molecular ion $(M+H)^+$ or $(M-H)^-$.

Syn- and anti-isomers could be distinguished using high field NMR techniques such as ROESY 2D NMR. For example:

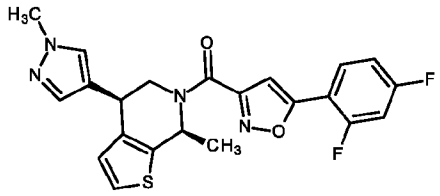


(anti-isomer, compound X.03 of Table P)



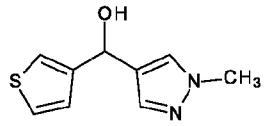
(syn-isomer, compound X.03 of Table P)

Example P1: Preparation of [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (compound X.03, Table P)



(rac) (Compound X.03, Table P)

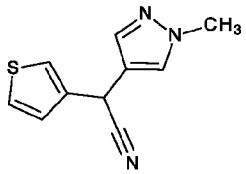
Step A: Preparation of (1-methylpyrazol-4-yl)-(3-thienyl)methanol



A one necked round bottom flask, equipped with a magnetic stirred bar, was charged with 4-iodo-1-methyl-1h-pyrazole (7.37 g, 33.6 mmol) and tetrahydrofuran (92 mL). Isopropyl magnesium chloride lithium chloride complex (1.3 mol/L) in THF (35 mL) was added dropwise at 0°C under argon atmosphere (white suspension). The mixture was stirred at 0°C for 45 min. Then, 3-thiophenecarboxaldehyde (3.50 g, 30.6 mmol) was added dropwise to the previous mixture at 0°C under argon atmosphere. The mixture was stirred at this temperature for 10 min and then allowed to warm to rt and stirred for 1 hour. The reaction mixture was then poured into water (100 mL) and extracted with EtOAc (2X80 mL). The combined organic layers were washed with brine, dried over sodium sulfate and concentrated *in vacuo* to yield the title compound.

LC-MS (Method A): retention time 0.56 min, 195 $(M+H)^+$

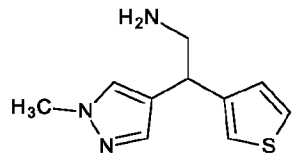
Step B: Preparation of 2-(1-methylpyrazol-4-yl)-2-(3-thienyl)acetonitrile



A sealed tube, equipped with a magnetic stirrer bar, was charged with (1-methylpyrazol-4-yl)-(3-thienyl)methanol (5.94 g, 30.6 mmol) and dichloromethane (245 mL). To this solution was added successively at rt lithium carbonate (0.456 g, 6.12 mmol), trimethylsilyl cyanide (18.7 mL, 138 mmol) and iodine (14.2 g, 55.0 mmol). After stirring for one hour at 35°C, the reaction mixture was cooled to rt and poured into a saturated solution of $Na_2S_2O_3$ (80 mL) and extracted with dichloromethane (2X60 mL). The combined organic layers were washed with brine, dried over sodium sulfate and concentrated *in vacuo*. The crude material was purified by chromatography over silica gel (20 g SiO_2, EtOAc/cyclohexane gradient) to yield the title compound.

LC-MS (Method A): retention time 0.75 min, 204 $(M+H)^+$. ^1H NMR (400 MHz, $CDCl_3$) δ ppm 3.92 (s, 3 H) 5.13 - 5.22 (m, 1 H) 7.00 - 7.08 (m, 1 H) 7.29 - 7.30 (m, 1 H) 7.36 - 7.40 (m, 2 H) 7.42 - 7.47 (m, 1 H).

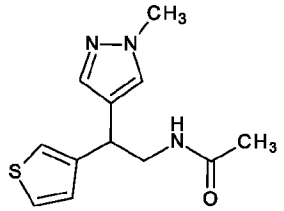
Step C: Preparation of 2-(1-methylpyrazol-4-yl)-2-(3-thienyl)ethanamine



A one necked round bottom flask, equipped with a magnetic stirrer bar, was charged with 2-(1-methylpyrazol-4-yl)-2-(3-thienyl)acetonitrile (1.78 g, 8.76 mmol) in THF (26 mL). To this solution was added dropwise at rt borane dimethyl sulfide complex (2.65 mL, 26.3 mmol) under argon atmosphere, and the mixture then stirred at 65°C for 1 hour. The reaction mixture was cooled to 0°C before adding dropwise HCl (6 mol/L, 5.87 mL, 35.2 mmol) followed by heating the mixture to 65°C for 1 hr. The mixture was diluted with water (20 mL), basified (to pH 12) with NaOH 6M, cooled and extracted with EtOAc (3X20 mL). The combined organic layers were washed with brine, dried over sodium sulfate and concentrated *in vacuo* to afford 2-(1-methylpyrazol-4-yl)-2-(3-thienyl)ethanamine.

LC-MS (Method A): retention time 0.25 min, 208 $(M+H)^+$. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.30 - 7.44 (m, 2 H) 7.06 - 7.27 (m, 3 H) 7.00 (br d, *J*=4.7 Hz, 1 H) 4.06 - 4.30 (m, 1 H) 3.87 (s, 3 H) 3.57 - 3.78 (m, 1 H) 3.21 (br s, 2 H).

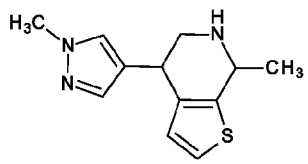
Step D: Preparation of N-[2-(1-methylpyrazol-4-yl)-2-(3-thienyl)ethyl]acetamide



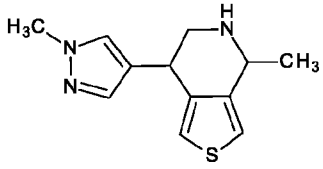
A one necked round bottom flask, equipped with a magnetic stirrer bar, was charged with 2-(1-methylpyrazol-4-yl)-2-(3-thienyl)ethanamine (1.80 g, 8.68 mmol) and sodium bicarbonate aqueous saturated solution (43 mL). Acetyl chloride (0.71 mL, 9.55 mmol) in EtOAc (43 mL) was added dropwise at rt under vigorous stirring. The mixture was stirred at rt for 15 minutes. The reaction mixture was then extracted with EtOAc (2X20 mL) and the combined organic layers were washed with brine, dried over sodium sulfate and concentrated *in vacuo* to yield N-[2-(1-methylpyrazol-4-yl)-2-(3-thienyl)ethyl]acetamide.

LC-MS (Method A): retention time 0.25 min, 234 $(M+H)^+$; ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.37 - 7.41 (m, 1 H) 7.33 (dd, *J*=5.1, 2.9 Hz, 1 H) 7.21 (s, 1 H) 7.06 (dd, *J*=1.5, 0.7 Hz, 1 H) 6.99 (dd, *J*=4.9, 1.3 Hz, 1 H) 5.50 (br s, 1 H) 4.21 (t, *J*=7.4 Hz, 1 H) 3.89 (s, 3 H) 3.73 (td, *J*=7.9, 6.0 Hz, 2 H) 1.94 (s, 3 H).

Step E: Preparation of 7-methyl-4-(1-methylpyrazol-4-yl)-4,5,6,7-tetrahydrothieno[2,3-c]pyridine and 4-methyl-7-(1-methylpyrazol-4-yl)-4,5,6,7-tetrahydrothieno[3,4-c]pyridine



and



Step 1

A one necked round bottom flask, equipped with a magnetic stirrer bar, was charged with N-[2-(1-methylpyrazol-4-yl)-2-(3-thienyl)ethyl]acetamide (1.73 g, 6.94 mmol) and phosphoryl chloride (7 mL). The mixture was stirred at 60°C for 1 hr. The reaction mixture was cooled to rt and slowly poured into a saturated solution of Na_2CO_3 (20 mL) at 0°C (gas evolution and exothermic!). The mixture was extracted with EtOAc (3X20 mL), the combined organic layers were washed with brine, dried over sodium sulfate and concentrated *in vacuo* to the title products as a mixture which were used in the next steps without further purification.

Step 2

A one necked round bottom flask, equipped with a magnetic stirrer bar, was charged with the product from step 1 *vide supra* (913 mg, 3.947 mmol) and methanol (12 mL). To this solution was added sodium borohydride (0.233 g, 5.92 mmol) at rt (gas evolution) and the mixture then stirred at rt for 1 hr. The reaction mixture was poured into water (20 mL) and the mixture was extracted with EtOAc (3X20 mL). The combined organic layers were washed with brine, dried over sodium sulfate and concentrated *in vacuo* to yield 7-methyl-4-(1-methylpyrazol-4-yl)-4,5,6,7-tetrahydrothieno[2,3-c]pyridine as a mixture with 4-methyl-7-(1-methylpyrazol-4-yl)-4,5,6,7-tetrahydrothieno[3,4-c]pyridine.

LC-MS (Method A): retention time 0.25 min, 234 $(M+H)^+$

Step F: Preparation of [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (compound X.03, Table P).

A one necked round bottom flask, equipped with a magnetic stirrer bar, was charged with 7-methyl-4-(1-methylpyrazol-4-yl)-4,5,6,7-tetrahydrothieno[2,3-c]pyridine as a mixture with 4-methyl-7-(1-methylpyrazol-4-yl)-4,5,6,7-tetrahydrothieno[3,4-c]pyridine (117 mg, 0.265 mmol, mixture from step E, step 2, example 1), EtOAc (17 mL), N,N-diisopropylethylamine (0.88 mL, 5.14 mmol) and 5-(2,4-difluorophenyl)isoxazole3-carboxylic acid (0.4378 g, 1.88 mmol). Then, propylphosphonic anhydride (1.82 mL, 3.08 mmol) was added dropwise at rt and the mixture was stirred at rt. After one hour, the reaction mixture was poured into water (20 mL). The mixture was extracted with EtOAc (2X20 mL) and the combined organic layers were washed with brine, dried over sodium sulfate and concentrated *in vacuo*. The crude material was purified by preparative HPLC (Preparative HPLC method: Autopurification System from Waters: 2767 sample Manager, 2489 UV/Visible Detector, 2545 Quaternary Gradient Module. MS - RP2: SQDII Single quadrupole mass spectrometer equipped with an electrospray source. Column: BC: Phenomenex Gemini NX C18, 5 micron particle size, 110 Angström, 100 x 50 mm. Solvent: A: water; Solvent: B: acetonitrile; modifier: formic acid,

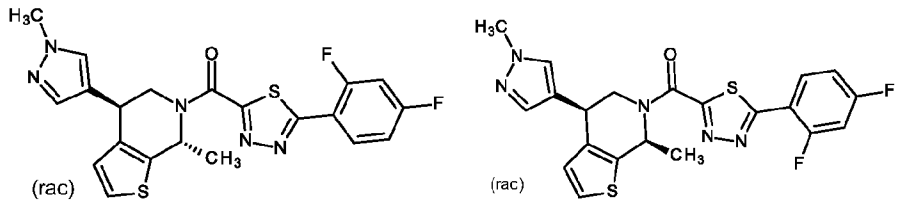
Gradient: 40% B - 60% B, Runtime: 10 min) to yield as first eluting product [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4R,7R)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone.

LC-MS (Method A): retention time 1.05 min, 441 $(M+H)^+$

Isolated as second eluting product was [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.03).

LC-MS (Method A): retention time 1.08 min, 441 $(M+H)^+$.^{1}H NMR (400 MHz, CDCl3) δ ppm 7.88 - 8.09 (m, 1 H) 7.30 - 7.49 (m, 2 H) 7.04 - 7.19 (m, 2 H) 6.95 - 7.04 (m, 2 H) 6.67 (d, *J*=5.1 Hz, 1 H) 5.68 - 6.06 (m, 1 H) 4.53 - 4.98 (m, 1 H) 4.14 - 4.31 (m, 1 H) 3.84 - 4.02 (m, 3 H) 3.00 - 3.47 (m, 1 H) 1.67 - 1.83 (m, 3 H).

Example P2: Preparation of [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[rac-(4R,7R)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone and [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (compound X.04, Table P)



(Compound X.04, Table P)

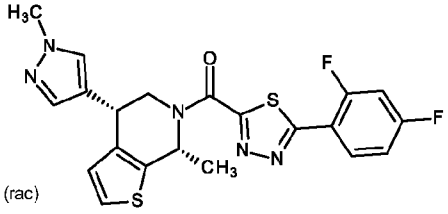
A one necked round bottom flask, equipped with a magnetic stirrer bar, was charged with a mixture of 7-methyl-4-(1-methylpyrazol-4-yl)-4,5,6,7-tetrahydrothieno[2,3-c]pyridine and 4-methyl-7-(1-methylpyrazol-4-yl)-4,5,6,7-tetrahydrothieno[3,4-c]pyridine (117 mg, 0.265 mmol, mixture from step E, step 2, example 1) (468 mg, 2.006 mmol) and toluene (8 mL). Trimethylaluminium (2.01 mL, 4.01 mmol) was added stepwise at rt under an argon atmosphere. The reaction was stirred at rt for 20 min before adding ethyl 5-(2,4-difluorophenyl)-1,3,4-thiadiazole-2-carboxylate (0.5964 g, 2.207 mmol), diluted in toluene (8 mL) dropwise at rt and the mixture was stirred at 90°C for 24 hours. The reaction mixture was cooled to 0°C and quenched with careful addition of HCl 1M (1 mL). The mixture was diluted with a saturated solution of $NaHCO_3$ (20 mL) and extracted with EtOAc (3X20 mL). The combined organic layers were washed with brine, dried over sodium sulfate and concentrated under vacuum. The crude material was purified by preparative HPLC (Preparative HPLC method: Autopurification System from Waters: 2767 sample Manager, 2489 UV/Visible Detector, 2545, Quaternary Gradient Module, MS - RP2: SQDII Single quadrupole mass spectrometer equipped with an electrospray source, Column: MC:Phenomenex Gemini NX C18, 4 micron particle size, 80 Angström, 75 x 30 mm. Solvent: A: water; Solvent: B: acetonitrile; modifier: formic acid. Gradient: 40% B - 50% B, Runtime: 10 min) to yield as first eluting product [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[rac-(4R,7R)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone

LC-MS (Method A): retention time 1.13 min, 458 $(M+H)^+$

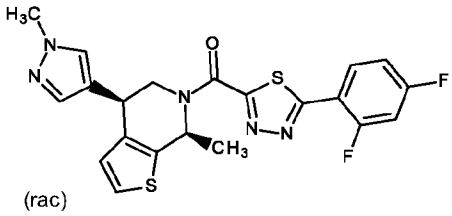
The second eluting product was [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (compound X.04, Table P).

LC-MS (Method A): retention time 1.18 min, 458 $(M+H)^+$.^{1}H NMR (400 MHz, CDCl3) δ ppm 8.39 - 8.58 (m, 1 H) 7.31 - 7.58 (m, 2 H) 6.95 - 7.21 (m, 3 H) 6.65 - 6.73 (m, 1 H) 5.84 - 6.66 (m, 1 H) 4.79 - 5.56 (m, 1 H) 4.18 - 4.46 (m, 1 H) 3.87 - 4.03 (m, 3 H) 3.12 - 3.49 (m, 1 H) 1.64 - 1.89 (m, 3 H).

Example P3: Preparation of [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[(4S,7R)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone and 5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (compound X.04, Table P)



(Compound X.04, Table P)



(Compound X.04, Table P)

The racemic mixture [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone was separated into its enantiomers by preparative SFC HPLC.

Preparative SFC method:

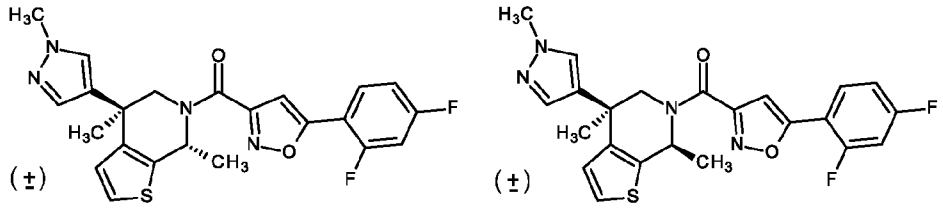
Sepiatec Preparative SFC 100, Column: Daicel CHIRALPAK® IB, 5µm, 2.0 cm x 25cm. Mobile phase: A: CO2 - B: MeOH isocratic: 10% B. Backpressure: 150 bar, Flow rate: 60 ml/min, GLS pump: Detection: UV 285 nm, Sample concentration: 97 mg in 3 ml MeOH, Injection: 500 microlitre.

The following eluting peaks were obtained:

i. [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[(4S,7R)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone, Retention time (min) ~ 2.88, Chemical purity (area% at 285 nm) > 99, Enantiomeric excess (%) > 98.8%

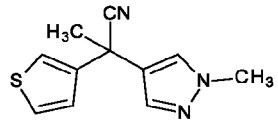
ii. [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone, Retention time (min) ~ 3.30, Chemical purity (area% at 285 nm) > 99, Enantiomeric excess (%) > 95.3%

Example P4: Preparation of [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7S)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone and [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7R)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (compound X.02, Table P)



(Compound X.02, Table P)

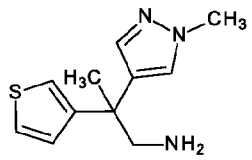
Step A: Preparation of 2-(1-methylpyrazol-4-yl)-2-(3-thienyl)propanenitrile



A sealed tube, equipped with a magnetic stirrer bar and a temperature probe, was charged with 2-(1-methylpyrazol-4-yl)-2-(3-thienyl)acetonitrile (2.32 g, 11.4 mmol) and THF (46 mL). To this solution n-butyllithium (2.5 mol/L, 5.5 mL, 13.7 mmol) was added dropwise at -70°C under argon atmosphere. The mixture was stirred at this temperature for 30 minutes before adding iodomethane (1.08 mL, 17.1 mmol) dropwise at -78°C. The reaction was stirred at -78°C for 5 minutes and then at rt for 30 minutes. The reaction mixture was poured into water (60 mL), and extracted with EtOAc (2X50 mL), and the combined organic layers washed with brine, dried over sodium sulfate and concentrated *in vacuo* to yield 2-(1-methylpyrazol-4-yl)-2-(3-thienyl)propanenitrile.

LC-MS (Method A): retention time 0.81 min, 218 $(M+H)^+$.^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 2.04 (s, 3 H) 3.91 (s, 3 H) 7.02 - 7.08 (m, 1 H) 7.24 - 7.30 (m, 1 H) 7.31 - 7.34 (m, 1 H) 7.34 - 7.39 (m, 1 H) 7.42 - 7.46 (m, 1 H).

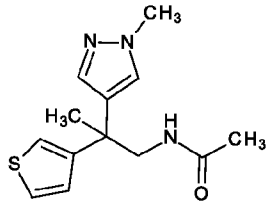
Step B: Preparation of 2-(1-methylpyrazol-4-yl)-2-(3-thienyl)propan-1-amine



A one necked round bottom flask, equipped with a magnetic stirrer bar, was charged with 2-(1-methylpyrazol-4-yl)-2-(3-thienyl)propanenitrile (2.48 g, 11.4 mmol) and THF (34 mL). Borane dimethyl sulfide complex (3.45 mL, 34.2 mmol) was added dropwise at rt under argon atmosphere and the mixture was stirred at 65°C for 1 hr. The reaction mixture was cooled to 0°C before adding HCL (6 mol/L, 7.65 mL, 45.9 mmol) dropwise (strong gas evolution) and the mixture was stirred at 65°C for 1 hr. The mixture was diluted with water (30mL), basified with NaOH 6M (pH 12) and extracted with EtOAc (3X20 mL). The combined organic layers were washed with brine, dried over sodium sulfate and concentrated *in vacuo* to yield 2-(1-methylpyrazol-4-yl)-2-(3-thienyl)propan-1-amine.

LC-MS (Method A): retention time 0.28 min, 222 $(M+H)^+$ ^1H NMR (400 MHz, $CDCl_3$) δ ppm 7.36 (d, *J*=0.7 Hz, 1 H) 7.29 (s, 1 H) 7.17 (s, 1 H) 7.04 (dd, *J*=2.9, 1.5 Hz, 1 H) 6.99 (dd, *J*=5.1, 1.5 Hz, 1 H) 3.88 (s, 3 H) 3.16 (s, 2 H) 1.65 (s, 3 H).

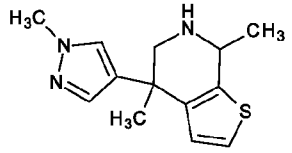
Step C: Preparation of N-[2-(1-methylpyrazol-4-yl)-2-(3-thienyl)propyl]acetamide



A one necked round bottom flask, equipped with a magnetic stirrer bar, was charged with 2-(1-methylpyrazol-4-yl)-2-(3-thienyl)propan-1-amine (1.54 g, 6.96 mmol) and sodium bicarbonate aqueous saturated solution (35 mL). Then, acetyl chloride (0.573 mL, 7.65 mmol) dissolved in EtOAc (35 mL) was added dropwise at rt under vigorous stirring. The mixture was stirred at rt for 15 minutes. The reaction mixture was extracted with EtOAc (2X20 mL) and the combined organic layers were washed with brine, dried over sodium sulfate and concentrated *in vacuo* to get N-[2-(1-methylpyrazol-4-yl)-2-(3-thienyl)propyl]acetamide.

LC-MS (Method A): retention time 0.68 min, 264 $(M+H)^+$ ^1H NMR (400 MHz, $CDCl_3$) δ ppm 7.29 - 7.36 (m, 2 H) 7.18 (s, 1 H) 7.05 (dd, *J*=2.9, 1.5 Hz, 1 H) 6.99 (dd, *J*=4.9, 1.3 Hz, 1 H) 5.22 - 5.38 (m, 1 H) 3.89 (s, 3 H) 3.77 (dd, *J*=5.8, 5.1 Hz, 2 H) 1.93 (s, 3 H) 1.61 (s, 3 H).

Step D: Preparation of 4,7-dimethyl-4-(1-methylpyrazol-4-yl)-6,7-dihydro-5H-thieno[2,3-c]pyridine



A one necked round bottom flask, equipped with a magnetic stirrer bar, was charged with N-[2-(1-methylpyrazol-4-yl)-2-(3-thienyl)propyl]acetamide (1.46 g, 5.54 mmol) and phosphoryl chloride (5.5 mL). The reaction mixture was stirred at 60°C for 1 hour, cooled down to rt and slowly poured into water (30 mL) at 45°C. The mixture was basified with Na_2CO_3 (pH 9) and extracted with EtOAc (3X20 mL). The combined organic layers were washed with brine, dried over sodium sulfate, and concentrated *in vacuo* to yield 4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5H-thieno[2,3-c]pyridine. This was diluted with methanol (9 mL) and treated with sodium borohydride (0.1728 g, 4.384 mmol) portionwise at rt. The reaction mixture was stirred 30 minutes and poured into water (20mL). The mixture was extracted with EtOAc (3X20 mL), and the combined organic layers were washed with brine, dried over sodium sulfate and concentrated *in vacuo* to yield 4,7-dimethyl-4-(1-methylpyrazol-4-yl)-6,7-dihydro-5H-thieno[2,3-c]pyridine.

LC-MS (Method A): retention time 0.41 min, 248 $(M+H)^+$

Step E: Preparation of [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7S)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone and [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7R)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (compound X.02, Table P).

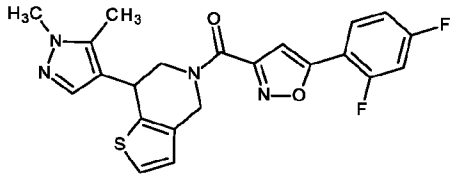
A one necked round bottom flask, equipped with a magnetic stirrer bar, was charged with 4,7-dimethyl-4-(1-methylpyrazol-4-yl)-6,7-dihydro-5H-thieno[2,3-c]pyridine (0.210g, 0.848 mmol), EtOAc (9 mL), N,N-diisopropylethylamine (0.437 mL, 2.54 mmol) and 5-(2,4-difluorophenyl)isoxazole-3-carboxylic acid (0.216 g, 0.933 mmol). Then, propylphosphonic anhydride (0.900 mL, 1.528 mmol) was added dropwise at rt. The reaction mixture was stirred at rt for 1 hr and poured into water (20 mL). The aqueous layer was extracted with EtOAc (2X20 mL) and the combined organic layers were washed with brine, dried over sodium sulfate and concentrated under vacuum. The crude material was purified by preparative HPLC (Preparative HPLC method: Autopurification System from Waters: 2767 sample Manager, 2489 UV/Visible Detector, 2545 Quaternary Gradient Module. MS - RP2: SQDII Single quadrupole mass spectrometer) equipped with an electrospray source. Column: MC:Phenomenex Gemini NX C18, 4 micron, particle size, 80 Angström, 75 x 30 mm. Solvent: A: water; Solvent: B: acetonitrile; modifier: formic acid. Gradient: 40% B - 50% B. Runtime: 10 min) to afford as first eluting product [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7S)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone.

LC-MS (Method A): retention time 1.14 min, 455 (M+H); ^{1}H NMR (600 MHz, $CDCl_3$) δ ppm 1.61 (s, 3 H) 1.67 (d, *J*=6.7 Hz, 3 H) 1.69 - 1.70 (m, 1 H) 1.70 (s, 1 H) 3.20 (d, *J*=12.9 Hz, 1 H) 3.58 (d, *J*=13.6 Hz, 1 H) 3.72 (s, 3 H) 3.82 (s, 1 H) 3.90 (d, *J*=15.6 Hz, 1 H) 4.41 (d, *J*=13.6 Hz, 1 H) 4.92 (d, *J*=12.9 Hz, 1 H) 5.84 (q, *J*=6.6 Hz, 1 H) 6.09 (q, *J*=6.7Hz, 1 H) 6.24 (d, *J*=3.7 Hz, 1 H) 6.63 (s, 1 H) 6.83 (d, *J*=5.1 Hz, 1 H) 6.86 (d, *J*=3.7 Hz, 1 H) 6.99 (s, 1 H) 7.03 - 7.10 (m, 2 H) 7.24 (d, *J*=5.1 Hz, 1 H) 7.88 -8.05 (m, 1 H).

The second eluting product was [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7R)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (compound X.02, Table P).

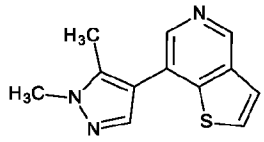
LC-MS (Method A): retention time 1.16 min, 455 (M+H). ^{1}H NMR (600 MHz, $CDCl_3$) δ ppm 1.56 (s, 5 H) 1.59 (s, 3 H) 1.68 (d, J=6.6 Hz, 5 H) 1.76 (d, J=6.6 Hz, 4 H) 3.26 (d, J=13.2 Hz, 1 H) 3.58 (d, J=13.8 Hz, 2 H) 3.90 (s, 4 H) 3.94 (s, 3 H) 4.53 (d, J=13.8 Hz, 1 H) 4.74 (d, J=13.1 Hz, 1 H) 5.82 (q, J=6.5 Hz, 1 H) 5.99 (q, J=6.6 Hz, 1 H) 6.62 (d, J=5.1 Hz, 1 H) 6.66 (d, J=5.1 Hz, 1 H) 7.14 (d, J=5.1 Hz, 2 H) 7.25 (s, 1 H) 7.30 (s, 1 H) 7.36 (s, 1 H) 7.40 (s, 1 H).

Example P5: Preparation of [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone (compound X.10, Table P)



(Compound X.10, Table P)

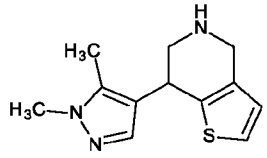
Step A: Preparation of 7-(1,5-dimethylpyrazol-4-yl)thieno[3,2-c]pyridine



In a microwave vial, to a mixture of 7-bromothieno[3,2-c]pyridine (2.00 g, 9.34 mmol, CAS [1535297-40-5]), 1,5-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyrazole (4.93 g, 22.2 mmol) and potassium carbonate (2.25 g, 16.28 mmol) were added toluene (37.0 mL) and methanol (3.70 mL). The resulting suspension was degassed with argon for several minutes, followed by the addition of terakis(triphenylphosphine) palladium(0) (0.86 g, 0.74 mmol). The vial was sealed, and the reaction mixture was heated to 100°C and stirred for 1 hour under microwave irradiation. After cooling to rt, the reaction mixture was partitioned between a saturated solution of ammonium chloride and EtOAc. The aqueous layer was back extracted twice with EtOAc and the combined organic layers dried over sodium sulfate, filtered and concentrated *in vacuo*. Purification of the crude material by flash chromatography over silica gel (EtOAc ethanol 0 to 30 %) afforded the title compound as a brown solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ ppm: 2.39 (s, 3 H) 3.93 (s, 3 H) 7.54 (2d, 2 H) 7.81 (s, 1 H) 8.35 (s, 1 H) 9.08 (s, 1 H).

Step B: Preparation of 7-(1,5-dimethylpyrazol-4-yl)-4,5,6,7-tetrahydrothieno[3,2-c]pyridine



To a solution of 7-(1,5-dimethylpyrazol-4-yl)thieno[3,2-c]pyridine (intermediate prepared as described in step a) *vide supra*, 1.70 g, 7.72 mmol) in methanol (74 mL) was added at rt portion wise sodium cyanoborohydride (2.9 g, 46.3 mmol). The reaction mixture was stirred at rt, until LC-MS showed reaction completion. The reaction was then treated with hydrochloric acid (44.0 mL 1.25 M in methanol) until the pH reached 3-4. After two hours stirring at rt, the reaction mixture was then diluted with water and basified with 2 N sodium hydroxide. Methanol was evaporated under reduced pressure and the remaining aqueous layer extracted three times with EtOAc. The combined organic layers were dried over sodium sulfate, filtered, and concentrated *in vacuo*. The resulting brown oil was purified by flash chromatography over silica gel (EtOAc ethanol 0 to 30 %) to the title compound which was used without further purification.

LC-MS (Method A): retention time 0.26 min, m/z 234 $(M+H)^+$

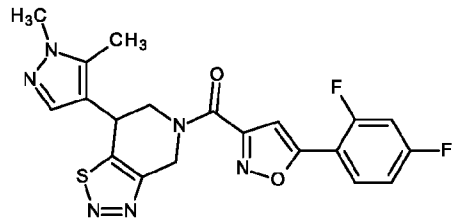
Step C: Preparation of [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone (compound X.10, Table -T1)

To a solution of 7-(1,5-dimethylpyrazol-4-yl)-4,5,6,7-tetrahydrothieno[3,2-c]pyridine (intermediate prepared as described in step B above, 150 mg, 0.64 mmol) and 5-(2,4-difluorophenyl)isoxazole-3-carboxylic acid (145 mg, 0.64 mmol) in EtOAc (1.3 mL) was added at rt propylphosphonic acid anhydride as a 50% solution in EtOAc (1.02 g, 1.60 mmol), followed by the addition of N,N-diisopropylethylamine (430 mg, 3.20 mmol). The reaction

mixture was stirred at rt overnight and the reaction mixture was then partitioned between water and EtOAc. The aqueous layer was back extracted twice with EtOAc and the combined organic layers dried over sodium sulfate, filtered and concentrated *in vacuo*. Purification of the crude material by flash chromatography over silica gel (cyclohexane EtOAc 10 to 100 %) afforded the title compound as a white solid. Melting point: 160 - 161°C.

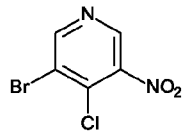
^{1}H NMR (400 MHz, $CDCl_3$) δ ppm: 2.20 + 2.29 (2s, 3 H) 3.33-3.42 + 3.68-3.72 (2m, 1 H) 3.75 1 3.85 (2s, 3 H) 4.28-4.32 + 4.34-4.38 (2m, 1 H) 4.43-4.48 + 4.75-4.80 (2m, 1 H) 4.71-4.76 + 4.82-4.87 (2m, 1 H) 5.20-5.25 + 5.30-5.35 (2m, 1 H) 6.78-6.81 (m, 1 H) 6.90-6.92 (m, 1 H) 6.94-7.13 (m, 3 H) 7.19-7.28 (m, 2 H) 7.93-8.14 (m, 1 H).

Example P6: This example illustrates the preparation of [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thiadiazolo[4,5-c]pyridin-5-yl]methanone (compound X.09, Table P)



(Compound X.09, Table P)

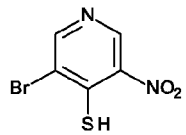
Step A: Preparation of 3-bromo-4-chloro-5-nitro-pyridine



A mixture of phosphoryl chloride (21.5 ml, 228 mmol) and 3-bromo-5-nitro-pyridin-4-ol (10.0 g, 45.6 mmol) in toluene (20 mL) was heated to 90°C for 12 hours. The progress of the reaction was monitored by LC-MS. The reaction mass was cooled to rt and phosphoryl chloride was removed under reduced pressure. The reaction was quenched with ice water, extracted with EtOAc (X3) and the combined organic layers was washed with brine, dried over sodium sulfate and concentrated *in vacuo* to afford 3-bromo-4-chloro-5-nitro-pyridine as solid.

^{1}H NMR (400 MHz, DMSO-d6) δ ppm 9.20 (s, 1 H), 9.17 (s, 1 H). LC-MS (Method D): retention time 1.08 min, 237 (M+H).

Step B: Preparation of 3-bromo-5-nitro-pyridine-4-thiol

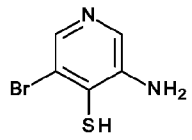


To a solution of 3-bromo-4-chloro-5-nitro-pyridine (2.0 g, 8.42 mmol) in methanol (20 mL) was added sodium hydrosulfide (0.96 g, 16.8 mmol). This reaction mixture was stirred for 2 hours at rt. Reaction was monitored

by TLC and LC-MS. After completion, the reaction mixture was concentrated *in vacuo* to afford crude 3-bromo-5-nitro-pyridine-4-thiol (1.80 g, 6.90 mmol) was used as such in next step.

LC-MS (Method D): retention time 0.51 min, 235 (M+H).

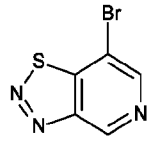
Step C: Preparation of 3-amino-5-bromo-pyridine-4-thiol



To a solution of 3-bromo-5-nitro-pyridine-4-thiol (2.0 g, 8.50 mmol) in hydrochloric acid (8 mL) was added stannous chloride (3.24 g, 17.0 mmol) in water (8 mL). This reaction mixture was stirred for 3 hours at rt. After reaction completion, the reaction mixture was filtered, and the filtrate was concentrated *in vacuo* to afford crude 3-amino-5-bromo-pyridine-4-thiol (2 g) was used as such for the next step.

LC-MS (Method D): retention time 0.19 min, 205 (M+H).

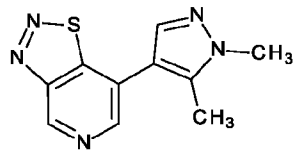
Step D: Preparation of 7-bromothiadiazolo[4,5-c]pyridine



A solution of sodium nitrite (0.52 g, 7.60 mmol) in water (20 mL) was added dropwise to a mixture of 3-amino-5-bromo-pyridine-4-thiol (2.0 g, 5.85 mmol) in hydrochloric acid (2M) (60 mL, 708 mmol) at 0°C. The mixture was kept at this temperature for 12 hours. The progress of the reaction was monitored by LC-MS and upon completion was quenched with sodium bicarbonate, extracted with EtOAc (X3) and the combined organic layers were washed with brine, dried over sodium sulfate, and concentrated *in vacuo*. The resultant crude residue was purified by chromatography on silica gel, using a cyclohexane / EtOAc eluent system, to afford 7-bromothiadiazolo[4,5-c]pyridine.

^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 9.90 (s, 1 H) 8.84 (s, 1 H). LC-MS (Method D): retention time 1.05 min, 216 (M+H).

Step E: Preparation of 7-(1,5-dimethylpyrazol-4-yl)thiadiazolo[4,5-c]pyridine

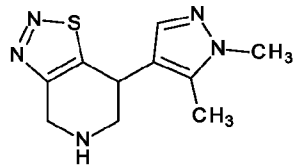


A mixture of 7-bromothiadiazolo[4,5-c]pyridine (0.9 g, 4.16 mmol), 1,5-dimethyl-4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)pyrazole (1.46 g, 6.24 mmol) and sodium carbonate(1.32 g, 12.5 mmol) in 1,4 dioxane (9 mL) and water (2 mL) was degassed for 5 min with nitrogen. To this solution was added XPhos-Pd-G2 (0.16 g, 0.20 mmol, CAS[1310584-14-5] and the reaction mixture was heated to 80°C for 12 hours. The reaction

mass was then diluted with water and extracted twice with EtOAc. The combined organic layers were washed with water, brine, dried over sodium sulfate, filtered, and concentrated under reduced pressure. The resultant crude residue was purified by trituration with pentane to afford 7-(1,5-dimethylpyrazol-4-yl)thiadiazolo[4,5-c]pyridine.

^{1}H NMR (400 MHz, DMSO-d6) δ ppm 9.98 (s, 1 H), 8.76 (s, 1 H), 7.79 (s, 1 H), 3.87 (s, 3 H), 2.40 (s, 3H). LC-MS (Method D): retention time 0.88 min, 232 (M+H).

Step F: Preparation of 7-(1,5-dimethylpyrazol-4-yl)-4,5,6,7-tetrahydrothiadiazolo[4,5-c]pyridine



A solution of 7-(1,5-dimethylpyrazol-4-yl)thiadiazolo[4,5-c]pyridine (0.17 g, 0.73 mmol) in methanol (11 mL) was treated with sodium cyanoborohydride (0.48 g, 7.35 mmol) and hydrochloric acid (1.25M in ethanol, 7.35 mL, 9.19 mmol) was added at rt. Resulting reaction mixture was stirred 12 hrs at rt. The reaction was monitored by TLC and LC-MS, and after completion was concentrated *in vacuo* to afford crude 7-(1,5-dimethylpyrazol-4-yl)-4,5,6,7-tetrahydrothiadiazolo[4,5-c]pyridine (0.21 g). Crude compound was used as such for the next step.

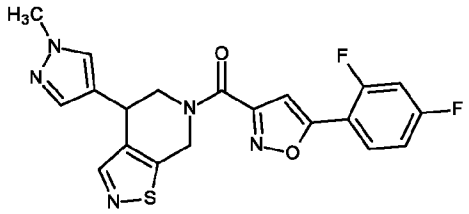
LC-MS (Method D): retention time 0.17 min, 236 $(M+H)^+$

Step G: Preparation of [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thiadiazolo[4,5-c]pyridin-5-yl]methanone (compound X.09, Table P)

To a solution of 5-(2,4-difluorophenyl)isoxazole-3-carboxylic acid (0.17 g, 0.75 mmol) in acetonitrile (5 mL/mmol) was added N,N-diisopropylethylamine (0.66 mL, 3.77 mmol) followed by 1-propanephosphonic anhydride (1.12 mL, 1.88 mmol). The resulting solution was stirred for 5 minutes under nitrogen atmosphere and then resulting reaction mass then transferred into another reaction flask containing 7-(1,5-dimethylpyrazol-4-yl)-4,5,6,7-tetrahydrothiadiazolo[4,5-c]pyridine (0.21 g, 0.90 mmol) dissolved in 1 mL of acetonitrile. The reaction mixture was stirred overnight at rt, monitoring by TLC and LC-MS. After completion, the reaction mixture was diluted with water, extracted with EtOAc (X3) and the combined organic layers washed with brine, dried over sodium sulfate, and concentrated *in vacuo*. The resulting crude residue was purified by silica gel chromatography (eluting with cyclohexane/EtOAc) to afford [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thiadiazolo[4,5-c]pyridin-5-yl]methanone as a solid.

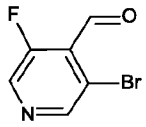
LC-MS (Method D): retention time 1.08 min, 443.2 $(M+H)^+$

Example P7: This example illustrates the preparation of [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-isothiazolo[5,4-c]pyridin-6-yl]methanone (compound X.08, Table P)



(Compound X.08, Table P)

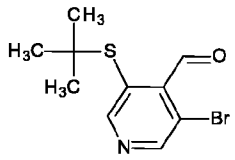
Step A: Preparation of 3-bromo-5-fluoro-pyridine-4-carbaldehyde



To a solution of 3-bromo-5-fluoro-pyridine (12.0 g, 68.1 mmol) in tetrahydrofuran (120 mL), cooled to -78°C was added lithium diisopropylamide (75 mL, 150 mmol) dropwise at -78°C (the reaction mixture turned brown in color) and the resulting reaction mixture was stirred at this temperature for 45 minutes. To this reaction mixture was added ethyl formate (56 mL, 681mmol) over 15 minutes and the reaction mixture stirred for additional 1.5 hours at -78°C. After the completion of reaction (monitored by TLC and GCMS), the reaction mixture was quenched with saturated solution of ammonium chloride and the resulting mixture was extracted with EtOAc (X3). The combined organic layers were washed with brine, dried and concentrated *in vacuo* to obtain a brown residue which was subjected to combiflash chromatography using a cyclohexane / EtOAc as eluent. This gave 3-bromo-5-fluoro-pyridine-4-carbaldehyde as a bright yellow solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 10.35 (s, 1 H), 8.74 (s, 1 H), 8.60 (s, 1 H).

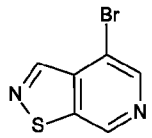
Step B: Preparation of 3-bromo-5-tert-butylsulfanyl-pyridine-4-carbaldehyde



A mixture of 3-bromo-5-fluoro-pyridine-4-carbaldehyde (6.8 g, 30 mmol), potassium carbonate (5.1 g, 36 mmol) and 2-methyl-2-propanethiol (3.0 mL, 30 mmol) in dry N,N-dimethylformamide (20 mL) was taken in Teflon vessel and heated to 110°C in a sealed tube for 32 hours. The reaction was cooled to rt, water was added, and the mixture was extracted with EtOAc (X3). The combined organic fractions were washed with water, dried over sodium sulfate, filtered, and concentrated *in vacuo* to afford the crude title compound, which was purified using combiflash chromatography using EtOAc / cyclohexane as eluent to obtain 3-bromo-5-tert-butylsulfanyl-pyridine-4-carbaldehyde as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 10.5 (s, 1 H), 8.85 (s, 1 H), 8.73 (s, 1 H), 1.34 (s, 9 H).

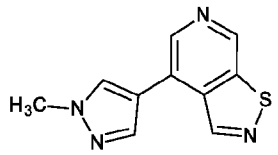
Step C: Preparation of 4-bromoisothiazolo[5,4-c]pyridine



A mixture of 3-bromo-5-tert-butylsulfanyl-pyridine-4-carbaldehyde (3.8 g, 12.0 mmol) and hydroxylamine hydrochloride (4.4 g, 62.0 mmol) in isopropanol (160 mL) and water (33 mL) was heated to 90°C for 16 hours. The reaction mixture was cooled, and 2-propanol was removed *in vacuo*. Water was added to the residue, followed by saturated aqueous sodium bicarbonate until the pH was ~ 8. The mixture was extracted with EtOAc (X3) and the combined organic fractions were dried over sodium sulfate, filtered, and concentrated *in vacuo* to afford the crude title compound, which was used in the next step without further purification. The crude oxime obtained was then suspended in polyphosphoric acid (15 mL) and heated to 110°C for 2 hours. The reaction mixture was cooled to rt, and extracted with EtOAc, dried over sodium sulfate, and concentrated *in vacuo*. The crude reside was subjected to combiflash purification using EtOAc / cyclohexane as eluent, to afford pure 4-bromoisothiazolo[5,4-c]pyridine as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 9.29 (s, 1 H), 9.09 (d, *J* = 0.61 Hz, 1 H), 8.69 (s, 1 H). LC-MS (Method D): retention time 0.98 min, 215 (M+H).

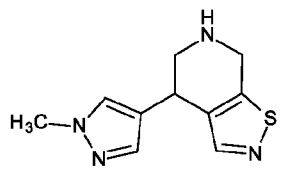
Step D: Preparation of 4-(1-methylpyrazol-4-yl)isothiazolo[5,4-c]pyridine



A microwave vial was charged with 4-bromoisothiazolo[5,4-c]pyridine (0.17 g, 0.79 mmol), 1-methyl-1H-pyrazole-4-boronic acid (0.15 g, 1.18 mmol), sodium carbonate (0.25 g, 2.37 mmol), 1,4-dioxane (1.7 mL) and water (1.6 mL). The reaction mixture was degassed with nitrogen for 5.0 minutes, then XPhos-Pd-G2 (0.031 g, 0.039 mmol) was added, and the mixture heated to 120°C for 2 hours under microwave irradiation. After completion of the reaction (monitored by TLC and LC-MS), the reaction mixture was filtered through celite, washed with EtOAc and the filtrate concentrated *in vacuo* to obtain a brown residue which on purification by combiflash using EtOAc / cyclohexane eluent system, afforded pure 4-(1-methylpyrazol-4-yl)isothiazolo[5,4-c]pyridine as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 9.26 (s, 1 H), 9.19 (s, 1 H), 8.62 (s, 1 H), 7.92 (s, 1 H), 7.81 (s, 1 H), 4.07 (s, 3 H). LC-MS (Method D): retention time 0.55 min; 217.1 (M+H).

Step E: Preparation of 4-(1-methylpyrazol-4-yl)-4,5,6,7-tetrahydroisothiazolo[5,4-c]pyridine



A round bottomed flask, equipped with a magnetic stirrer bar, was charged with 4-(1-methylpyrazol-4-yl)isothiazolo[5,4-c]pyridine (0.15 g, 0.69 mmol) and methanol (10.4 mL) to obtain a clear solution. To this solution was added sodium cyanoborohydride (0.45 g, 6.93 mmol) portionwise at 0°C. Then, methanolic hydrochloric acid (6.9 mL, 20.8 mmol, 3 mol/L) was added dropwise at rt (evolution of gas was observed) and the mixture was stirred at rt overnight. After the completion of the reaction (monitored by TLC and LC-MS), the reaction mixture was stirred with basic resin until the solution is basic to pH paper. The mixture was filtered and washed with methanol and the clear solution was concentrated to get the crude 4-(1-methylpyrazol-4-yl)-4,5,6,7-tetrahydroisothiazolo[5,4-c]pyridine (0.1 g, 0.43 mmol) brownish yellow residue.

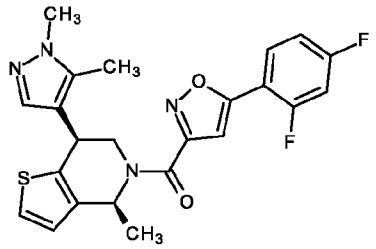
^{1}H NMR (400 MHz, DMSO-d6) δ ppm 8.17 (s, 1 H), 7.48 (s, 1 H), 7.29 (s, 1 H), 4.08 (br d, *J* = 2.9 Hz, 2 H), 3.92 - 4.24 (m, 1 H), 3.77 (s, 3 H), 3.75 (s, 1 H), 3.12 (br dd, *J* = 12.9, 5.2 Hz, 1 H), 2.73 (dd, *J* = 12.9, 7.2 Hz, 1 H). LC-MS (Method D): retention time 0.19 min; 221.1 (M+H).

Step F: Preparation of [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-isothiazolo[5,4-c]pyridin-6-yl]methanone (compound X.08, Table P)

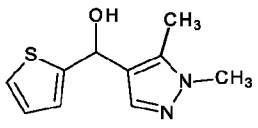
A solution of 5-(2,4-difluorophenyl)isoxazole-3-carboxylic acid (0.09 g, 0.40 mmol) in EtOAc (1.7 mL) was treated with N,N-diisopropylethylamine (0.13 mL, 0.73 mmol) under stirring. To this reaction mixture was added 4-(1-methylpyrazol-4-yl)-4,5,6,7-tetrahydroisothiazolo[5,4-c]pyridine (0.085 g, 0.36 mmol) followed by 1-propanephosphonic anhydride (50 mass%) in EtOAc (0.65 mL, 1.1 mmol) and the reaction mixture was stirred at rt for overnight. After the completion of the reaction (monitored by TLC and LC-MS), the reaction mixture was quenched with $NaHCO_3$ and extracted with EtOAc (X3). The combined organic layers were dried over sodium sulfate and concentrated *in vacuo*. The crude material was purified by reverse-phase combiflash using acetonitrile / water eluent system to afford [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-isothiazolo[5,4-c]pyridin-6-yl]methanone as a white solid.

LC-MS (Method D): retention time 1.07 min; 428.2 (M+H).

Example P8: Preparation of [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7S)-7-(1,5-dimethylpyrazol-4-yl)-4-methyl-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone (Compound X.11 in Table P)



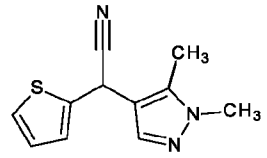
Step A: Preparation of (1,5-dimethylpyrazol-4-yl)-(2-thienyl)methanol



To a solution of 2-bromothiophene (13.0 g, 80.6 mmol) in THF (250 mL) was assed isopropyl magnesium chloride lithium chloride complex (1.3 mol/L in THF, 62 mL) at 0°C. The resulting mixture was aged for 45 min at 0°C, then 1,5-dimethylpyrazole-4-carbaldehyde (5.0 g, 40.3 mmol) in THF (5 mL) was added dropwise over 20 min. The mixture was stirred at this temperature for 10 min, allowed to warm to rt and stirred for 1 hr. The reaction mixture was quenched with aqueous NH_4Cl and extracted with EtOAc. The combined organic layers were washed with brine, dried over sodium sulfate, and concentrated *in vacuo*. The residue was triturated with pentanes to yield the title compound as off white solid.

LC-MS (Method A): retention time 0.16 min, 209 $(M+H)^+$

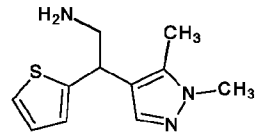
Step B: Preparation of 2-(1,5-dimethylpyrazol-4-yl)-2-(2-thienyl)acetonitrile



A solution of (1,5-dimethylpyrazol-4-yl)-(2-thienyl)methanol (2.0 g, 9.6 mmol) in acetonitrile (60 mL) was treated with lithium carbonate (0.14 g, 1.92 mmol), trimethylsilyl cyanide (5.9 mL, 43.2 mmol) and iodine (4.46 g, 17.3 mmol) at 20°C. The resulting mixture was warmed to 40°C and stirred for 2h at this temperature. After cooling to 20°C, the reaction mixture was slowly poured into aqueous thiosulfate solution and the resulting emulsion extracted with EtOAc. The organic layer was washed with brine, dried over sodium sulfate and concentrated *in vacuo* to yield the title compound.

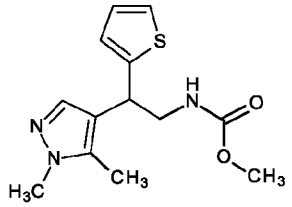
LC-MS (Method A): retention time 0.88 min, 218 $(M+H)^+$; ^1H NMR (400 MHz, $CDCl_3$) δ ppm 7.44 (s, 1 H) 7.25 - 7.29 (m, 1 H) 7.10 (dt, 1 H) 6.98 (dd, 1 H) 5.26 (s, 1 H) 3.81 (s, 3 H) 2.23 (s, 3 H).

Step C: Preparation of 2-(1,5-dimethylpyrazol-4-yl)-2-(2-thienyl)ethanamine



A round bottom flask, equipped with a magnetic stirrer bar, was charged with 2-(1,5-dimethylpyrazol-4-yl)-2-(2-thienyl)acetonitrile (2.50 g, 11.5 mmol) in tetrahydrofuran (35 mL). To this solution was added dropwise at rt borane dimethyl sulfide complex (3.48 mL, 34.5 mmol) under argon atmosphere, and the mixture then stirred at 65°C for 2 hrs. The reaction mixture was cooled to 0°C before adding dropwise HCl followed by heating the reaction mixture to 55°C for 1 hr. The reaction mixture was diluted with water, made alkaline with NaOH (6M) and extracted with EtOAc. The organic layer was washed with brine, dried over sodium sulfate and concentrated *in vacuo* to afford the title compound as brown gum.

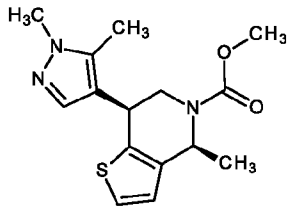
Step C: Preparation of methyl N-[2-(1,5-dimethylpyrazol-4-yl)-2-(2-thienyl)ethyl]carbamate



Methyl chloroformate (0.77 mL, 9.92 mmol) and TEA (4.63 mL, 33.1 mmol) was added sequentially to a solution of 2-(1,5-dimethylpyrazol-4-yl)-2-(2-thienyl)ethanamine (1.83 g, 8.27 mmol) in THF (35 mL) at 0°C. The resulting solution was gradually warmed to 20°C and stirred at this temperature for 3 hr. The reaction mixture was then poured into water and the mixture extracted with EtOAc. The organic phase was washed with brine, dried over sodium sulfate, filtrated, and concentrated in vacuo to afford the title compound as yellow gum.

LC-MS (Method A): retention time 0.96 min, 280 $(M+H)^+$

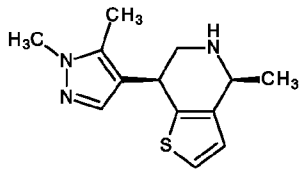
Step D: Preparation of methyl rac-(4S,7S)-7-(1,5-dimethylpyrazol-4-yl)-4-methyl-6,7-dihydro-4H-thieno[3,2-c]pyridine-5-carboxylate



A solution of methyl N-[2-(1,5-dimethylpyrazol-4-yl)-2-(2-thienyl)ethyl]carbamate (2.0 g, 7.16 mmol) in DCM (20 mL) was cooled to 0°C and treated with trifluoroacetic acid (10 mL) and acetaldehyde (3.15 g, 71.6 mmol). The cooling bath was removed, the reaction mixture was warmed to 20°C and stirred for 3 h at this temperature. Water was then added, the mixture was neutralized with sodium bicarbonate solution and extracted with EtOAc. The organic phase was washed with brine, dried over sodium sulfate, filtrated, and concentrated in vacuo. The residue was purified by medium pressure chromatography (stationary phase: silica, eluent: cyclohexane, EtOAc) to afford the title compound.

LC-MS (Method A): retention time 1.05 min, 306 $(M+H)^+$

Step E: Preparation of *rac*-(4S,7S)-7-(1,5-dimethylpyrazol-4-yl)-4-methyl-4,5,6,7-tetrahydrothieno[3,2-c]pyridine



Iodotrimethylsilane (1.52 mL, 10.8 mmol) was added to a solution of methyl rac-(4S,7S)-7-(1,5-dimethylpyrazol-4-yl)-4-methyl-6,7-dihydro-4H-thieno[3,2-c]pyridine-5-carboxylate (1.10 g, 3.6 mmol) in 1,2-dichloroethane (18 mL) at 20°C. The resulting solution was warmed to 60°C and stirred for 3h at this

temperature. The reaction was then cooled to rt and slowly poured into aqueous sodium bicarbonate solution. The resulting emulsion was extracted with EtOAc, the organic phase was washed with aqueous thiosulfate solution and brine, dried over sodium sulfate, filtrated, and concentrated *in vacuo* to afford the title compound.

LC-MS (Method A): retention time 0.18 min, 248 $(M+H)^+$; ^1H NMR (400 MHz, $CDCl_3$) δ ppm 7.15 (d, 1 H) 7.09 (s, 1 H) 6.83 (d, 1 H) 4.21 (dd, 1 H) 4.07 - 4.16 (m, 1 H) 3.79 (s, 3 H) 3.30 (dd, 1 H) 3.10 (dd, 1 H) 2.21 (s, 3 H) 1.51 (d, 3 H).

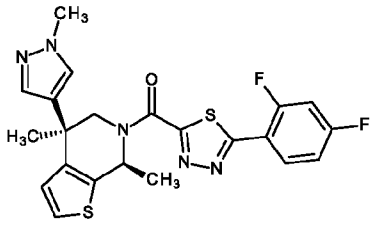
Step F: Preparation of [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7S)-7-(1,5-dimethylpyrazol-4-yl)-4-methyl-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone (Compound X.11 in Table P)

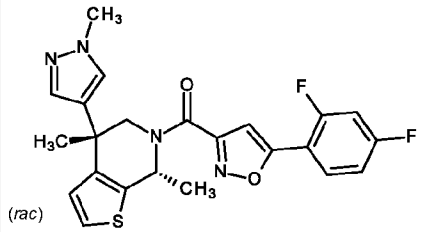
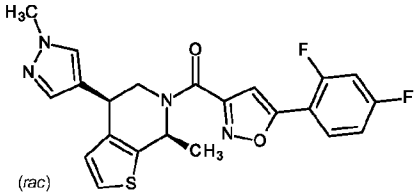
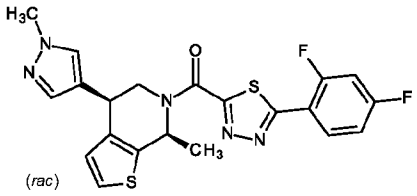
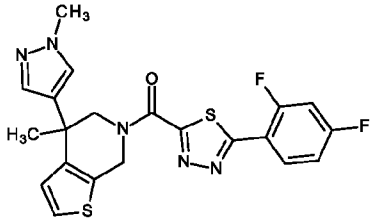
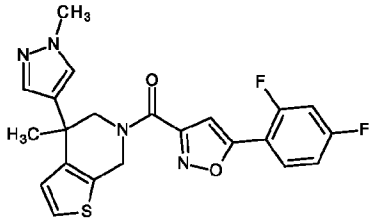
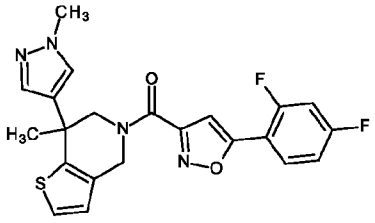
A mixture of rac-(4S,7S)-7-(1,5-dimethylpyrazol-4-yl)-4-methyl-4,5,6,7-tetrahydrothieno[3,2-c]pyridine (0.25 g, 0.81 mmol) and 5-(2,4-difluorophenyl)isoxazole-3-carboxylic acid (0.20 g, 0.89 mmol) in EtOAc (4 mL) was treated with N,N-diisopropylethylamine (0.45 mL, 2.4 mmol) and T3P (50% in EtOAc, 1.43 mLm 2.4 mmol) at 20°C. The resulting solution was stirred for 2 h at 20°C and was then diluted with water. The mixture was extracted with EtOAc, the organic phase was washed with brine, dried over sodium sulfate, filtrated and concentrated in vacuo. The residue was purified by preparative reverse phase HPLC to afford the title compound as white solid.

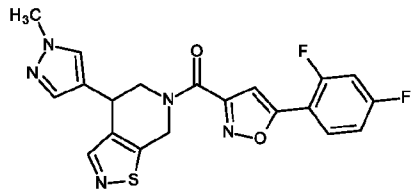
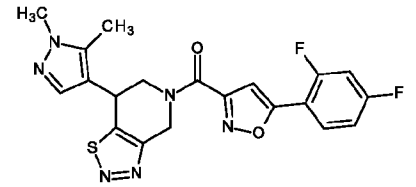
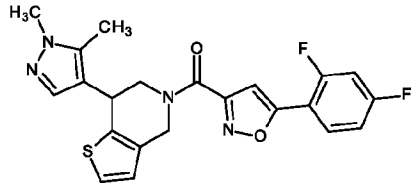
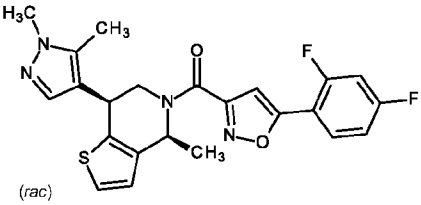
LC-MS (Method A): retention time 1.16 min, 456 $(M+H)^+$; ^1H NMR (400 MHz, $CDCl_3$) δ ppm (the compound is present as mixture of rotamers in an approx. 2:1 ratio, chemical shifts are reported for the major rotamer) 7.94-8.02 (m, 1 H) 7.36 (s, 1H) 7.21 (d, 1 H) 7.01-7.06 (m, 3H) 6.89 (d, 1 H) 5.78 (m, 1H) 4.52 (dd, 1 H) 4.38 (dd, 1 H) 3.84 (s, 3 H) 3.38 (m, 1 H) 2.32 (s, 3H) 1.63 (d, 3 H).

Examples of synthesized compounds of formula (I) (component A) are shown in Table P.

Table P: Synthesized compounds and Spectral and Physical Chemical Data for compounds X.01 to X.11 according to formula (I) (Table X above)

Entry	IUPAC name	Structure	RT (min)	[M+H] (measure	Method
X.01	[5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[(4*R*,7*S*)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone		1.19	472	A

X.02	[5-(2,4-difluorophenyl)isoxazol-3-yl]-[*rac*-(4*S*,7*R*)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone		1.16	455	A
X.03	[5-(2,4-difluorophenyl)isoxazol-3-yl]-[*rac*-(4*R*,7*S*)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4*H*-thieno[2,3-c]pyridin-6-yl]methanone		1.08	441	A
X.04	[5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[*rac*-(4*R*,7*S*)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4*H*-thieno[2,3-c]pyridin-6-yl]methanone		1.18	458	A
X.05	[5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone		1.05	458	A
X.06	[5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone		1.05	441	A
X.07	[5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-methyl-7-(1-methylpyrazol-4-yl)-4,6-dihydrothieno[3,2-c]pyridin-5-yl]methanone		1.04	441	A

X.08	[5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-(1-methylpyrazol-4-yl)-5,7-dihydro-4*H*-isothiazolo[5,4-c]pyridin-6-yl]methanone		1.07	428.2	D
X.09	[5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4*H*-thiadiazolo[4,5-c]pyridin-5-yl]methanone		1.08	443.2	D
X.10	[5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4*H*-thieno[3,2-c]pyridin-5-yl]methanone		1.03	441.4	A
X.11	[5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7S)-7-(1,5-dimethylpyrazol-4-yl)-4-methyl-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone	 (*rac*)	1.16	456.3	A

BIOLOGICAL EXAMPLES FOR COMPONENT A

Example B1: *Alternaria solani* / tomato / leaf disc (early blight)

Tomato leaf disks cv. Baby are placed on agar in multiwell plates (24-well format) and sprayed with the formulated test compound diluted in water. The leaf disks are inoculated with a spore suspension of the fungus 2 days after application. The inoculated leaf disks are incubated at 23°C / 21°C (day/night) and 80% rh under a light regime of 12/12 h (light/dark) in a climate cabinet and the activity of a compound is assessed as percent disease control compared to untreated when an appropriate level of disease damage appears on untreated check disk leaf disks (5 to 7 days after application). The following compounds gave at least 80% control of Alternaria solani at 200 ppm when compared to untreated control under the same conditions, which showed extensive disease development: X.01, X.02, X.03, X.04, X.05, X.06, X.08, X.09, X.10, X.11

Example B2: *Botryotinia fuckeliana* (Botrytis cinerea) / liquid culture (Gray mould)

Conidia of the fungus from cryogenic storage are directly mixed into nutrient broth (Vogels broth). After placing a (DMSO) solution of test compound into a microtiter plate (96-well format), the nutrient broth containing the fungal spores is added. The test plates are incubated at 24°C and the inhibition of growth is determined photometrically 3 to 4 days after application. The following compounds gave at least 80% control of Botryotinia

fuckeliana at 20 ppm when compared to untreated control under the same conditions, which showed extensive disease development: X.01, X.02, X.03, X.04, X.05, X.06, X.07, X.08, X.10, X.11

Example B3: *Glomerella lagenarium* (Colletotrichum lagenarium) / liquid culture (Anthracnose)

Conidia of the fungus from cryogenic storage are directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of test compound into a microtiter plate (96-well format), the nutrient broth containing the fungal spores is added. The test plates are incubated at 24°C and the inhibition of growth is measured photometrically 3 to 4 days after application. The following compounds gave at least 80% control of Glomerella lagenarium at 20 ppm when compared to untreated control under the same conditions, which showed extensive disease development: X.01, X.02, X.03, X.04, X.05, X.06, X.07, X.08, X.09, X.10, X.11

Example B4: *Blumeria graminis f. sp. tritici* (Erysiphe graminis f. sp. tritici) / wheat / leaf disc preventative (Powdery mildew on wheat)

Wheat leaf segments cv. Kanzler are placed on agar in a multiwell plate (24-well format) and sprayed with the formulated test compound diluted in water. The leaf disks are inoculated by shaking powdery mildew infected plants above the test plates 1 day after application. The inoculated leaf disks are incubated at 20°C and 60% rh under a light regime of 24 h darkness followed by 12 h light / 12 h darkness in a climate chamber and the activity of a compound is assessed as percent disease control compared to untreated when an appropriate level of disease damage appears on untreated check leaf segments (6 to 8 days after application). The following compounds gave at least 80% control of Blumeria graminis f. sp. tritici at 200 ppm when compared to untreated control under the same conditions, which showed extensive disease development: X.01, X.03, X.04, X.05, X.06, X.09, X.10, X.11

Example B5: *Fusarium culmorum* / liquid culture (Head blight)

Conidia of the fungus from cryogenic storage are directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of test compound into a microtiter plate (96-well format), the nutrient broth containing the fungal spores is added. The test plates are incubated at 24°C and the inhibition of growth is determined photometrically 3 to 4 days after application. The following compounds gave at least 80% control of Fusarium culmorum at 20 ppm when compared to untreated control under the same conditions, which showed extensive disease development: X.01, X.03, X.04, X.05, X.10

Example B6: *Fusarium culmorum* / wheat / spikelet preventative (Head blight)

Wheat spikelets cv. Monsun are placed on agar in multiwell plates (24-well format) and sprayed with the formulated test compound diluted in water. The spikelets are inoculated with a spore suspension of the fungus 1 day after application. The inoculated spikelets are incubated at 20°C and 60% rh under a light regime of 72 h semi darkness followed by 12 h light / 12 h darkness in a climate chamber and the activity of a compound is assessed as percent disease control compared to untreated when an appropriate level of disease damage appears on untreated check spikelets (6 to 8 days after application). The following compounds gave at least 80% control of Fusarium culmorum at 200 ppm when compared to untreated control under the same conditions, which showed extensive disease development: X.04

Example B7: *Phaeosphaeria nodorum* (Septoria nodorum) / wheat / leaf disc preventative (Glume blotch)

Wheat leaf segments cv. Kanzler are placed on agar in a multiwell plate (24-well format) and sprayed with the formulated test compound diluted in water. The leaf disks are inoculated with a spore suspension of the fungus 2 days after application. The inoculated test leaf disks are incubated at 20°C and 75% rh under a light regime of 12 h light / 12 h darkness in a climate cabinet and the activity of a compound is assessed as percent disease control compared to untreated when an appropriate level of disease damage appears in untreated check leaf disks (5 to 7 days after application). The following compounds gave at least 80% control of Phaeosphaeria nodorum at 200 ppm when compared to untreated control under the same conditions, which showed extensive disease development: X.01, X.02, X.03, X.04, X.05, X.06, X.07, X.08, X.09, X.10, X.11

Example B8: *Monographella nivalis* (Microdochium nivale) / liquid culture (foot rot cereals)

Conidia of the fungus from cryogenic storage are directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of test compound into a microtiter plate (96-well format), the nutrient broth containing the fungal spores is added. The test plates are incubated at 24°C and the inhibition of growth is determined photometrically 4 to 5 days after application. The following compounds gave at least 80% control of Monographella nivalis at 20 ppm when compared to untreated control under the same conditions, which showed extensive disease development: X.01, X.02, X.07, X.08, X.09, X.10, X.11

Example B9: *Mycosphaerella arachidis* (Cercospora arachidicola) / liquid culture (early leaf spot)

Conidia of the fungus from cryogenic storage are directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of test compound into a microtiter plate (96-well format), the nutrient broth containing the fungal spores is added. The test plates are incubated at 24°C and the inhibition of growth is determined photometrically 4 to 5 days after application. The following compounds gave at least 80% control of Mycosphaerella arachidis at 20 ppm when compared to untreated control under the same conditions, which showed extensive disease development: X.01, X.02, X.03, X.04, X.05, X.06, X.07, X.10, X.11

Example B10: *Magnaporthe grisea* (Pyricularia oryzae) / rice / leaf disc preventative (Rice Blast)

Rice leaf segments cv. Ballila are placed on agar in a multiwell plate (24-well format) and sprayed with the formulated test compound diluted in water. The leaf segments are inoculated with a spore suspension of the fungus 2 days after application. The inoculated leaf segments are incubated at 22°C and 80% rh under a light regime of 24 h darkness followed by 12 h light / 12 h darkness in a climate cabinet and the activity of a compound is assessed as percent disease control compared to untreated when an appropriate level of disease damage appears in untreated check leaf segments (5 to 7 days after application). The following compounds gave at least 80% control of Magnaporthe grisea at 200 ppm when compared to untreated control under the same conditions, which showed extensive disease development: X.06

Example B11: *Pyrenophora teres* / barley / leaf disc preventative (Net blotch)

Barley leaf segments cv. Hasso are placed on agar in a multiwell plate (24-well format) and sprayed with the formulated test compound diluted in water. The leaf segmens are inoculated with a spore suspension of the fungus 2 days after application. The inoculated leaf segments are incubated at 20°C and 65% rh under a light regime of 12 h light / 12 h darkness in a climate cabinet and the activity of a compound is assessed as disease

control compared to untreated when an appropriate level of disease damage appears in untreated check leaf segments (5 to 7 days after application). The following compounds gave at least 80% control of Pyrenophora teres at 200 ppm when compared to untreated control under the same conditions, which showed extensive disease development: X.01, X.03, X.04, X.05, X.06, X.09, X.10, X.11

Example B12: *Sclerotinia sclerotiorum* / liquid culture (cottony rot)

Mycelia fragments of a newly grown liquid culture of the fungus are directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of test compound into a microtiter plate (96-well format) the nutrient broth containing the fungal material is added. The test plates are incubated at 24°C and the inhibition of growth is determined photometrically 3 to 4 days after application. The following compounds gave at least 80% control of Sclerotinia sclerotiorum at 20 ppm when compared to untreated control under the same conditions, which showed extensive disease development: X.01, X.02, X.03, X.05, X.06, X.10, X.11

Example B13: *Mycosphaerella graminicola* (Septoria tritici) / liquid culture (Septoria blotch)

Conidia of the fungus from cryogenic storage are directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of test compound into a microtiter plate (96-well format), the nutrient broth containing the fungal spores is added. The test plates are incubated at 24°C and the inhibition of growth is determined photometrically 4 to 5 days after application. The following compounds gave at least 80% control of Mycosphaerella graminicola at 20 ppm when compared to untreated control under the same conditions, which showed extensive disease development: X.01, X.02, X.03, X.04, X.05, X.06, X.07, X.08, X.09, X.10, X.11

BIOLOGICAL EXAMPLES FOR FUNGICIDAL MIXTURE

Example M-B1*: Botrytis cinerea* (grey mould)

Conidia of the fungus from cryogenic storage were directly mixed into nutrient broth (Vogel's). After placing a (DMSO) solution of the test compounds into a microtiter plate (96-well format) the nutrient broth containing the fungal spores was added. The test plates were incubated at 24°C and the inhibition of growth was determined photometrically and visually after 72 hrs. The following mixture compositions (A:B) at the reported concentration (in ppm) gave at least 70% disease control in the test system.

The term "component A" or "comp. A" refers to the compound of formula (I).

Comp A	Comp. B	Ratio A:B	Conc. [ppm] (A:B)
X.01	Pydiflumetofen	1:6	1:6
X.01	Pydiflumetofen	1.6:1	1:0.6
X.01	Pydiflumetofen	1:60	0.1:6
X.01	Pydiflumetofen	1:6	0.1:0.6
X.01	Benzovindiflupyr	1:2	1:2
X.01	Benzovindiflupyr	5:1	1:0.2
X.01	Benzovindiflupyr	1:20	0.1:2
X.01	Benzovindiflupyr	1:2	0.1:0.2
X.01	Cyprodinil	1:20	1:20
X.01	Cyprodinil	10:1	1:0.1
X.01	Cyprodinil	1:200	0.1:20
X.01	Cyprodinil	1:1	0.1:0.1
X.01	Fludioxonil	1:6	1:6
X.01	Fludioxonil	16.6:1	1:0.06
X.01	Fludioxonil	1:60	0.1:6
X.01	Fludioxonil	1.6:1	0.1:0.06
X.01	Azoxystrobin	1:6	1:6
X.01	Azoxystrobin	1.6:1	1:0.6
X.01	Azoxystrobin	1:60	0.1:6
X.01	Azoxystrobin	1:6	0.1:0.6
X.01	Difenoconazole	1:6	1:6
X.01	Difenoconazole	1.6:1	1:0.6
X.01	Difenoconazole	1:60	0.1:6
X.01	Difenoconazole	1:6	0.1:0.6
X.01	Prothioconazole	1.6:1	1:0.6
X.01	Prothioconazole	16.6:1	1:0.06
X.01	Prothioconazole	1:6	0.1:0.6
X.01	Mefentrifluconazole	1:6	1:6
X.01	Mefentrifluconazole	10:1	1:0.1
X.01	Mefentrifluconazole	1:60	0.1:6
X.01	Mefentrifluconazole	1:1	0.1:0.1
X.01	Florylpicoxamid	1:1	1:1
X.01	Florylpicoxamid	10:1	1:0.1
X.01	Florylpicoxamid	1:10	0.1:1
X.01	Florylpicoxamid	1:1	0.1:0.1
X.01	Acibenzolar-S-methyl	1:20	1:20
X.01	Acibenzolar-S-methyl	1:6	1:6
X.01	Acibenzolar-S-methyl	1:200	0.1:20
X.01	Acibenzolar-S-methyl	1:60	0.1:6
X.02	PydiflumetofenPydiflumetofen	1:3	2:6
X.02	Pydiflumetofen	3.3:1	2:0.6
X.02	Pydiflumetofen	1:30	0.2:6
X.02	Pydiflumetofen	1:3	0.2:0.6
X.02	Benzovindiflupyr	1:1	2:2
X.02	Benzovindiflupyr	10:1	2:0.2
X.02	Benzovindiflupyr	1:10	0.2:2
X.02	Benzovindiflupyr	1:1	0.2:0.2
X.02	Cyprodinil	1:10	2:20
X.02	Cyprodinil	20:1	2:0.1
X.02	Cyprodinil	1:100	0.2:20
X.02	Cyprodinil	2:1	0.2:0.1
X.02	Fludioxonil	1:3	2:6
X.02	Fludioxonil	33.3:1	2:0.06
X.02	Fludioxonil	1:30	0.2:6
X.02	Fludioxonil	3.3:1	0.2:0.06
X.02	Azoxystrobin	1:3	2:6
X.02	Azoxystrobin	3.3:1	2:0.6
X.02	Azoxystrobin	1:30	0.2:6
X.02	Azoxystrobin	1:3	0.2:0.6
X.02	Difenoconazole	1:3	2:6
X.02	Difenoconazole	3.3:1	2:0.6
X.02	Difenoconazole	1:30	0.2:6
X.02	Difenoconazole	1:3	0.2:0.6
X.02	Prothioconazole	3.3:1	2:0.6
X.02	Prothioconazole	33.3:1	2:0.06
X.02	Prothioconazole	1:3	0.2:0.6
X.02	Mefentrifluconazole	1:3	2:6
X.02	Mefentrifluconazole	20:1	2:0.1
X.02	Mefentrifluconazole	1:30	0.2:6
X.02	Mefentrifluconazole	2:1	0.2:0.1
X.02	Florylpicoxamid	2:1	2:1
X.02	Florylpicoxamid	20:1	2:0.1
X.02	Florylpicoxamid	1:5	0.2:1
X.02	Florylpicoxamid	2:1	0.2:0.1
X.02	Acibenzolar-S-methyl	1:10	2:20
X.02	Acibenzolar-S-methyl	1:3	2:6
X.03	Pydiflumetofen	1:6	1:6
X.03	Pydiflumetofen	1.6:1	1:0.6
X.03	Pydiflumetofen	1:60	0.1:6
X.03	Pydiflumetofen	1:6	0.1:0.6
X.03	Benzovindiflupyr	1:2	1:2
X.03	Benzovindiflupyr	5:1	1:0.2
X.03	Benzovindiflupyr	1:20	0.1:2
X.03	Benzovindiflupyr	1:2	0.1:0.2
X.03	Cyprodinil	1:20	1:20
X.03	Cyprodinil	10:1	1:0.1
X.03	Cyprodinil	1:200	0.1:20
X.03	Cyprodinil	1:1	0.1:0.1
X.03	Fludioxonil	1:6	1:6
X.03	Fludioxonil	16.6:1	1:0.06
X.03	Fludioxonil	1:60	0.1:6
X.03	Fludioxonil	1.6:1	0.1:0.06
X.03	Azoxystrobin	1:6	1:6
X.03	Azoxystrobin	1.6:1	1:0.6
X.03	Azoxystrobin	1:60	0.1:6
X.03	Azoxystrobin	1:6	0.1:0.6
X.03	Difenoconazole	1:6	1:6
X.03	Difenoconazole	1.6:1	1:0.6
X.03	Difenoconazole	1:60	0.1:6
X.03	Difenoconazole	1:6	0.1:0.6
X.03	Prothioconazole	1.6:1	1:0.6
X.03	Prothioconazole	16.6:1	1:0.06
X.03	Prothioconazole	1:6	0.1:0.6
X.03	Prothioconazole	1.6:1	0.1:0.06
X.03	Mefentrifluconazole	1:6	1:6
X.03	Mefentrifluconazole	10:1	1:0.1
X.03	Mefentrifluconazole	1:60	0.1:6
X.03	Mefentrifluconazole	1:1	0.1:0.1
X.03	Florylpicoxamid	1:1	1:1
X.03	Florylpicoxamid	10:1	1:0.1
X.03	Florylpicoxamid	1:10	0.1:1
X.03	Florylpicoxamid	1:1	0.1:0.1
X.03	Acibenzolar-S-methyl	1:20	1:20

X.03	Acibenzolar-S-methyl	1:6	1:6
X.04	Pydiflumetofen	1:3	2:6
X.04	Pydiflumetofen	3.3:1	2:0.6
X.04	Pydiflumetofen	1:30	0.2:6
X.04	Pydiflumetofen	1:3	0.2:0.6
X.04	Benzovindiflupyr	1:1	2:2
X.04	Benzovindiflupyr	10:1	2:0.2
X.04	Benzovindiflupyr	1:10	0.2:2
X.04	Benzovindiflupyr	1:1	0.2:0.2
X.04	Cyprodinil	1:10	2:20
X.04	Cyprodinil	20:1	2:0.1
X.04	Cyprodinil	1:100	0.2:20
X.04	Cyprodinil	2:1	0.2:0.1
X.04	Fludioxonil	1:3	2:6
X.04	Fludioxonil	33.3:1	2:0.06
X.04	Fludioxonil	1:30	0.2:6
X.04	Fludioxonil	3.3:1	0.2:0.06
X.04	Azoxystrobin	1:3	2:6
X.04	Azoxystrobin	3.3:1	2:0.6
X.04	Azoxystrobin	1:30	0.2:6
X.04	Azoxystrobin	1:3	0.2:0.6
X.04	Difenoconazole	1:3	2:6
X.04	Difenoconazole	3.3:1	2:0.6
X.04	Difenoconazole	1:30	0.2:6
X.04	Difenoconazole	1:3	0.2:0.6
X.04	Prothioconazole	3.3:1	2:0.6
X.04	Prothioconazole	33.3:1	2:0.06
X.04	Prothioconazole	1:3	0.2:0.6
X.04	Mefentrifluconazole	1:3	2:6
X.04	Mefentrifluconazole	20:1	2:0.1
X.04	Mefentrifluconazole	1:30	0.2:6
X.04	Mefentrifluconazole	2:1	0.2:0.1
X.04	Florylpicoxamid	2:1	2:1
X.04	Florylpicoxamid	20:1	2:0.1
X.04	Florylpicoxamid	1:5	0.2:1
X.04	Florylpicoxamid	2:1	0.2:0.1
X.04	Acibenzolar-S-methyl	1:10	2:20
X.04	Acibenzolar-S-methyl	1:3	2:6
X.04	Acibenzolar-S-methyl	1:100	0.2:20
X.04	Acibenzolar-S-methyl	1:30	0.2:6
X.05	Pydiflumetofen	1:6	1:6
X.05	Pydiflumetofen	1.6:1	1:0.6
X.05	Pydiflumetofen	1:30	0.2:6
X.05	Pydiflumetofen	1:3	0.2:0.6
X.05	Benzovindiflupyr	1:2	1:2
X.05	Benzovindiflupyr	5:1	1:0.2
X.05	Benzovindiflupyr	1:10	0.2:2
X.05	Benzovindiflupyr	1:1	0.2:0.2
X.05	Cyprodinil	1:20	1:20
X.05	Cyprodinil	10:1	1:0.1
X.05	Cyprodinil	1:100	0.2:20
X.05	Cyprodinil	2:1	0.2:0.1
X.05	Fludioxonil	1:6	1:6
X.05	Fludioxonil	16.6:1	1:0.06
X.05	Fludioxonil	1:30	0.2:6
X.05	Fludioxonil	3.3:1	0.2:0.06
X.05	Azoxystrobin	1:6	1:6
X.05	Azoxystrobin	1.6:1	1:0.6
X.05	Azoxystrobin	1:30	0.2:6
X.05	Azoxystrobin	1:3	0.2:0.6
X.05	Difenoconazole	1:6	1:6
X.05	Difenoconazole	1.6:1	1:0.6
X.05	Difenoconazole	1:30	0.2:6
X.05	Difenoconazole	1:3	0.2:0.6
X.05	Prothioconazole	1.6:1	1:0.6
X.05	Prothioconazole	16.6:1	1:0.06
X.05	Prothioconazole	3.3:1	0.2:0.06
X.05	Mefentrifluconazole	1:6	1:6
X.05	Mefentrifluconazole	10:1	1:0.1
X.05	Mefentrifluconazole	1:30	0.2:6
X.05	Mefentrifluconazole	2:1	0.2:0.1
X.05	Florylpicoxamid	1:1	1:1
X.05	Florylpicoxamid	10:1	1:0.1
X.05	Florylpicoxamid	1:5	0.2:1
X.05	Acibenzolar-S-methyl	1:20	1:20
X.05	Acibenzolar-S-methyl	1:6	1:6
X.05	Acibenzolar-S-methyl	1:30	0.2:6
X.06	Pydiflumetofen	1:6	1:6
X.06	Pydiflumetofen	1.6:1	1:0.6
X.06	Pydiflumetofen	1:30	0.2:6
X.06	Pydiflumetofen	1:3	0.2:0.6
X.06	Benzovindiflupyr	1:2	1:2
X.06	Benzovindiflupyr	5:1	1:0.2
X.06	Benzovindiflupyr	1:10	0.2:2
X.06	Benzovindiflupyr	1:1	0.2:0.2
X.06	Cyprodinil	1:20	1:20
X.06	Cyprodinil	10:1	1:0.1
X.06	Cyprodinil	1:100	0.2:20
X.06	Cyprodinil	2:1	0.2:0.1
X.06	Fludioxonil	1:6	1:6
X.06	Fludioxonil	16.6:1	1:0.06
X.06	Fludioxonil	1:30	0.2:6
X.06	Fludioxonil	3.3:1	0.2:0.06
X.06	Azoxystrobin	1:6	1:6
X.06	Azoxystrobin	1.6:1	1:0.6
X.06	Azoxystrobin	1:30	0.2:6
X.06	Azoxystrobin	1:3	0.2:0.6
X.06	Difenoconazole	1:6	1:6
X.06	Difenoconazole	1.6:1	1:0.6
X.06	Difenoconazole	1:30	0.2:6
X.06	Difenoconazole	1:3	0.2:0.6
X.06	Prothioconazole	1.6:1	1:0.6
X.06	Prothioconazole	16.6:1	1:0.06
X.06	Prothioconazole	1:3	0.2:0.6
X.06	Prothioconazole	3.3:1	0.2:0.06
X.06	Mefentrifluconazole	1:6	1:6
X.06	Mefentrifluconazole	10:1	1:0.1
X.06	Mefentrifluconazole	1:30	0.2:6
X.06	Mefentrifluconazole	2:1	0.2:0.1
X.06	Florylpicoxamid	1:1	1:1
X.06	Florylpicoxamid	10:1	1:0.1
X.06	Florylpicoxamid	1:5	0.2:1
X.06	Florylpicoxamid	2:1	0.2:0.1
X.06	Acibenzolar-S-methyl	1:20	1:20
X.06	Acibenzolar-S-methyl	1:6	1:6
X.07	Pydiflumetofen	3.3:1	20:6
X.07	Pydiflumetofen	33.3:1	20:0.6
X.07	Pydiflumetofen	1:3	2:6
X.07	Pydiflumetofen	3.3:1	2:0.6
X.07	Benzovindiflupyr	10:1	20:2
X.07	Benzovindiflupyr	100:1	20:0.2
X.07	Benzovindiflupyr	1:1	2:2

X.07	Benzovindiflupyr	10:1	2:0.2
X.07	Cyprodinil	1:1	20:20
X.07	Cyprodinil	200:1	20:0.1
X.07	Cyprodinil	1:10	2:20
X.07	Cyprodinil	20:1	2:0.1
X.07	Fludioxonil	3.3:1	20:6
X.07	Fludioxonil	333.3:1	20:0.06
X.07	Fludioxonil	1:3	2:6
X.07	Fludioxonil	33.3:1	2:0.06
X.07	Azoxystrobin	3.3:1	20:6
X.07	Azoxystrobin	33.3:1	20:0.6
X.07	Azoxystrobin	1:3	2:6
X.07	Azoxystrobin	3.3:1	2:0.6
X.07	Difenoconazole	3.3:1	20:6
X.07	Difenoconazole	33.3:1	20:0.6
X.07	Difenoconazole	1:3	2:6
X.07	Prothioconazole	33.3:1	20:0.6
X.07	Prothioconazole	333.3:1	20:0.06
X.07	Prothioconazole	3.3:1	2:0.6
X.07	Mefentrifluconazole	3.3:1	20:6
X.07	Mefentrifluconazole	200:1	20:0.1
X.07	Mefentrifluconazole	1:3	2:6
X.07	Mefentrifluconazole	20:1	2:0.1
X.07	Florylpicoxamid	20:1	20:1
X.07	Florylpicoxamid	200:1	20:0.1
X.07	Florylpicoxamid	2:1	2:1
X.07	Florylpicoxamid	20:1	2:0.1
X.07	Acibenzolar-S-methyl	1:1	20:20
X.07	Acibenzolar-S-methyl	3.3:1	20:6
X.08	Pydiflumetofen	3.3:1	20:6
X.08	Pydiflumetofen	33.3:1	20:0.6
X.08	Pydiflumetofen	1:3	2:6
X.08	Pydiflumetofen	3.3:1	2:0.6
X.08	Benzovindiflupyr	10:1	20:2
X.08	Benzovindiflupyr	100:1	20:0.2
X.08	Benzovindiflupyr	1:1	2:2
X.08	Benzovindiflupyr	10:1	2:0.2
X.08	Cyprodinil	1:1	20:20
X.08	Cyprodinil	200:1	20:0.1
X.08	Cyprodinil	1:10	2:20
X.08	Cyprodinil	20:1	2:0.1
X.08	Fludioxonil	3.3:1	20:6
X.08	Fludioxonil	333.3:1	20:0.06
X.08	Fludioxonil	1:3	2:6
X.08	Fludioxonil	33.3:1	2:0.06
X.08	Azoxystrobin	3.3:1	20:6
X.08	Azoxystrobin	33.3:1	20:0.6
X.08	Azoxystrobin	1:3	2:6
X.08	Azoxystrobin	3.3:1	2:0.6
X.08	Difenoconazole	3.3:1	20:6
X.08	Difenoconazole	33.3:1	20:0.6
X.08	Difenoconazole	1:3	2:6
X.08	Prothioconazole	33.3:1	20:0.6
X.08	Prothioconazole	333.3:1	20:0.06
X.08	Prothioconazole	3.3:1	2:0.6
X.08	Mefentrifluconazole	3.3:1	20:6
X.08	Mefentrifluconazole	200:1	20:0.1
X.08	Mefentrifluconazole	1:3	2:6
X.08	Mefentrifluconazole	20:1	2:0.1
X.08	Florylpicoxamid	20:1	20:1
X.08	Florylpicoxamid	200:1	20:0.1

X.08	Florylpicoxamid	2:1	2:1
X.08	Florylpicoxamid	20:1	2:0.1
X.08	Acibenzolar-S-methyl	1:1	20:20
X.09	Pydiflumetofen	3.3:1	20:6
X.09	Pydiflumetofen	33.3:1	20:0.6
X.09	Pydiflumetofen	1:3	2:6
X.09	Pydiflumetofen	3.3:1	2:0.6
X.09	Benzovindiflupyr	10:1	20:2
X.09	Benzovindiflupyr	100:1	20:0.2
X.09	Benzovindiflupyr	1:1	2:2
X.09	Benzovindiflupyr	10:1	2:0.2
X.09	Cyprodinil	1:1	20:20
X.09	Cyprodinil	200:1	20:0.1
X.09	Cyprodinil	1:10	2:20
X.09	Cyprodinil	20:1	2:0.1
X.09	Fludioxonil	3.3:1	20:6
X.09	Fludioxonil	333.3:1	20:0.06
X.09	Fludioxonil	1:3	2:6
X.09	Fludioxonil	33.3:1	2:0.06
X.09	Azoxystrobin	3.3:1	20:6
X.09	Azoxystrobin	33.3:1	20:0.6
X.09	Azoxystrobin	1:3	2:6
X.09	Azoxystrobin	3.3:1	2:0.6
X.09	Difenoconazole	3.3:1	20:6
X.09	Difenoconazole	33.3:1	20:0.6
X.09	Difenoconazole	1:3	2:6
X.09	Difenoconazole	3.3:1	2:0.6
X.09	Prothioconazole	33.3:1	20:0.6
X.09	Prothioconazole	333.3:1	20:0.06
X.09	Prothioconazole	3.3:1	2:0.6
X.09	Mefentrifluconazole	3.3:1	20:6
X.09	Mefentrifluconazole	200:1	20:0.1
X.09	Mefentrifluconazole	1:3	2:6
X.09	Mefentrifluconazole	20:1	2:0.1
X.09	Florylpicoxamid	20:1	20:1
X.09	Florylpicoxamid	200:1	20:0.1
X.09	Florylpicoxamid	2:1	2:1
X.09	Florylpicoxamid	20:1	2:0.1
X.09	Acibenzolar-S-methyl	1:1	20:20
X.09	Acibenzolar-S-methyl	3.3:1	20:6
X.10	Pydiflumetofen	1:3	2:6
X.10	Pydiflumetofen	3.3:1	2:0.6
X.10	Pydiflumetofen	1:30	0.2:6
X.10	Pydiflumetofen	1:3	0.2:0.6
X.10	Benzovindiflupyr	1:1	2:2
X.10	Benzovindiflupyr	10:1	2:0.2
X.10	Benzovindiflupyr	1:10	0.2:2
X.10	Benzovindiflupyr	1:1	0.2:0.2
X.10	Cyprodinil	1:10	2:20
X.10	Cyprodinil	20:1	2:0.1
X.10	Cyprodinil	1:100	0.2:20
X.10	Cyprodinil	2:1	0.2:0.1
X.10	Fludioxonil	1:3	2:6
X.10	Fludioxonil	33.3:1	2:0.06
X.10	Fludioxonil	1:30	0.2:6
X.10	Fludioxonil	3.3:1	0.2:0.06
X.10	Azoxystrobin	1:3	2:6
X.10	Azoxystrobin	3.3:1	2:0.6
X.10	Azoxystrobin	1:30	0.2:6
X.10	Azoxystrobin	1:3	0.2:0.6
X.10	Difenoconazole	1:3	2:6

X.10	Difenoconazole	3.3:1	2:0.6
X.10	Difenoconazole	1:30	0.2:6
X.10	Difenoconazole	1:3	0.2:0.6
X.10	Prothioconazole	3.3:1	2:0.6
X.10	Prothioconazole	33.3:1	2:0.06
X.10	Prothioconazole	1:3	0.2:0.6
X.10	Prothioconazole	3.3:1	0.2:0.06
X.10	Mefentrifluconazole	1:3	2:6
X.10	Mefentrifluconazole	20:1	2:0.1
X.10	Mefentrifluconazole	1:30	0.2:6
X.10	Mefentrifluconazole	2:1	0.2:0.1
X.10	Florylpicoxamid	2:1	2:1
X.10	Florylpicoxamid	20:1	2:0.1
X.10	Florylpicoxamid	1:5	0.2:1
X.10	Florylpicoxamid	2:1	0.2:0.1
X.10	Acibenzolar-S-methyl	1:10	2:20
X.10	Acibenzolar-S-methyl	1:3	2:6

Example M-B2: *Glomerella lagenarium syn. Colletotrichum lagenarium* (anthracnose of cucurbits):

Conidia of the fungus, prepared from a freshly cultivated petri dish, were directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of the test compounds into a microtiter plate (96-well format) the nutrient broth containing the fungal spores was added. The test plates were incubated at 24°C and the inhibition of growth was determined photometrically and visually after 72 hrs. The following mixture compositions (A:B) at the reported concentration (in ppm) gave at least 70% disease control in the test system.

Comp. A	Comp. B	Ratio A:B	Conc. (ppm) (A:B)
X.01	Pydiflumetofen	1:6	1:6
X.01	Pydiflumetofen	1.6:1	1:0.6
X.01	Pydiflumetofen	1:60	0.1:6
X.01	Pydiflumetofen	1:6	0.1:0.6
X.01	Benzovindiflupyr	1:2	1:2
X.01	Benzovindiflupyr	5:1	1:0.2
X.01	Benzovindiflupyr	1:20	0.1:2
X.01	Benzovindiflupyr	1:2	0.1:0.2
X.01	Cyprodinil	1:20	1:20
X.01	Cyprodinil	10:1	1:0.1
X.01	Cyprodinil	1:200	0.1:20
X.01	Cyprodinil	1:1	0.1:0.1
X.01	Fludioxonil	1:6	1:6
X.01	Fludioxonil	16.6:1	1:0.06
X.01	Fludioxonil	1:60	0.1:6
X.01	Fludioxonil	1.6:1	0.1:0.06
X.01	Azoxystrobin	1:6	1:6
X.01	Azoxystrobin	1.6:1	1:0.6
X.01	Azoxystrobin	1:60	0.1:6
X.01	Azoxystrobin	1:6	0.1:0.6
X.01	Difenoconazole	1:6	1:6
X.01	Difenoconazole	1.6:1	1:0.6
X.01	Difenoconazole	1:60	0.1:6
X.01	Difenoconazole	1:6	0.1:0.6
X.01	Prothioconazole	1.6:1	1:0.6
X.01	Prothioconazole	16.6:1	1:0.06
X.01	Prothioconazole	1:6	0.1:0.6
X.01	Prothioconazole	1.6:1	0.1:0.06
X.01	Mefentrifluconazole	1:6	1:6
X.01	Mefentrifluconazole	10:1	1:0.1
X.01	Mefentrifluconazole	1:60	0.1:6
X.01	Mefentrifluconazole	1:1	0.1:0.1
X.01	Florylpicoxamid	1:1	1:1
X.01	Florylpicoxamid	10:1	1:0.1
X.01	Florylpicoxamid	1:10	0.1:1
X.01	Florylpicoxamid	1:1	0.1:0.1
X.01	Acibenzolar-S-methyl	1:20	1:20
X.01	Acibenzolar-S-methyl	1:6	1:6
X.01	Acibenzolar-S-methyl	1:200	0.1:20
X.01	Acibenzolar-S-methyl	1:60	0.1:6
X.02	Pydiflumetofen	1:3	2:6
X.02	Pydiflumetofen	3.3:1	2:0.6
X.02	Benzovindiflupyr	1:1	2:2
X.02	Benzovindiflupyr	10:1	2:0.2
X.02	Benzovindiflupyr	1:10	0.2:2
X.02	Benzovindiflupyr	1:1	0.2:0.2
X.02	Cyprodinil	1:10	2:20
X.02	Cyprodinil	20:1	2:0.1
X.02	Cyprodinil	1:100	0.2:20
X.02	Fludioxonil	1:3	2:6
X.02	Fludioxonil	33.3:1	2:0.06
X.02	Fludioxonil	1:30	0.2:6
X.02	Azoxystrobin	1:3	2:6
X.02	Azoxystrobin	3.3:1	2:0.6
X.02	Azoxystrobin	1:30	0.2:6
X.02	Azoxystrobin	1:3	0.2:0.6
X.02	Difenoconazole	1:3	2:6
X.02	Difenoconazole	3.3:1	2:0.6
X.02	Difenoconazole	1:30	0.2:6
X.02	Prothioconazole	3.3:1	2:0.6
X.02	Prothioconazole	33.3:1	2:0.06
X.02	Prothioconazole	1:3	0.2:0.6
X.02	Mefentrifluconazole	1:3	2:6
X.02	Mefentrifluconazole	20:1	2:0.1
X.02	Mefentrifluconazole	1:30	0.2:6
X.02	Florylpicoxamid	2:1	2:1
X.02	Florylpicoxamid	20:1	2:0.1
X.02	Florylpicoxamid	1:5	0.2:1
X.02	Florylpicoxamid	2:1	0.2:0.1
X.02	Acibenzolar-S-methyl	1:10	2:20
X.02	Acibenzolar-S-methyl	1:3	2:6
X.02	Acibenzolar-S-methyl	1:100	0.2:20

X.03	Pydiflumetofen	1:6	1:6
X.03	Pydiflumetofen	1.6:1	1:0.6
X.03	Benzovindiflupyr	1:2	1:2
X.03	Benzovindiflupyr	5:1	1:0.2
X.03	Benzovindiflupyr	1:20	0.1:2
X.03	Benzovindiflupyr	1:2	0.1:0.2
X.03	Cyprodinil	1:20	1:20
X.03	Cyprodinil	10:1	1:0.1
X.03	Cyprodinil	1:200	0.1:20
X.03	Fludioxonil	1:6	1:6
X.03	Fludioxonil	16.6:1	1:0.06
X.03	Fludioxonil	1:60	0.1:6
X.03	Azoxystrobin	1:6	1:6
X.03	Azoxystrobin	1.6:1	1:0.6
X.03	Azoxystrobin	1:60	0.1:6
X.03	Azoxystrobin	1:6	0.1:0.6
X.03	Difenoconazole	1:6	1:6
X.03	Difenoconazole	1.6:1	1:0.6
X.03	Difenoconazole	1:60	0.1:6
X.03	Difenoconazole	1:6	0.1:0.6
X.03	Prothioconazole	1.6:1	1:0.6
X.03	Prothioconazole	16.6:1	1:0.06
X.03	Prothioconazole	1:6	0.1:0.6
X.03	Mefentrifluconazole	1:6	1:6
X.03	Mefentrifluconazole	10:1	1:0.1
X.03	Mefentrifluconazole	1:60	0.1:6
X.03	Mefentrifluconazole	1:1	0.1:0.1
X.03	Florylpicoxamid	1:1	1:1
X.03	Florylpicoxamid	10:1	1:0.1
X.03	Florylpicoxamid	1:10	0.1:1
X.03	Florylpicoxamid	1:1	0.1:0.1
X.03	Acibenzolar-S-methyl	1:20	1:20
X.03	Acibenzolar-S-methyl	1:6	1:6
X.03	Acibenzolar-S-methyl	1:200	0.1:20
X.04	Pydiflumetofen	1:3	2:6
X.04	Pydiflumetofen	3.3:1	2:0.6
X.04	Pydiflumetofen	1:30	0.2:6
X.04	Pydiflumetofen	1:3	0.2:0.6
X.04	Benzovindiflupyr	1:1	2:2
X.04	Benzovindiflupyr	10:1	2:0.2
X.04	Benzovindiflupyr	1:10	0.2:2
X.04	Benzovindiflupyr	1:1	0.2:0.2
X.04	Cyprodinil	1:10	2:20
X.04	Cyprodinil	20:1	2:0.1
X.04	Cyprodinil	1:100	0.2:20
X.04	Cyprodinil	2:1	0.2:0.1
X.04	Fludioxonil	1:3	2:6
X.04	Fludioxonil	33.3:1	2:0.06
X.04	Fludioxonil	1:30	0.2:6
X.04	Fludioxonil	3.3:1	0.2:0.06
X.04	Azoxystrobin	1:3	2:6
X.04	Azoxystrobin	3.3:1	2:0.6
X.04	Azoxystrobin	1:30	0.2:6
X.04	Azoxystrobin	1:3	0.2:0.6
X.04	Difenoconazole	1:3	2:6
X.04	Difenoconazole	3.3:1	2:0.6
X.04	Difenoconazole	1:30	0.2:6
X.04	Difenoconazole	1:3	0.2:0.6
X.04	Prothioconazole	3.3:1	2:0.6
X.04	Prothioconazole	33.3:1	2:0.06
X.04	Prothioconazole	1:3	0.2:0.6

X.04	Prothioconazole	3.3:1	0.2:0.06
X.04	Mefentrifluconazole	1:3	2:6
X.04	Mefentrifluconazole	20:1	2:0.1
X.04	Mefentrifluconazole	1:30	0.2:6
X.04	Mefentrifluconazole	2:1	0.2:0.1
X.04	Florylpicoxamid	2:1	2:1
X.04	Florylpicoxamid	20:1	2:0.1
X.04	Florylpicoxamid	1:5	0.2:1
X.04	Florylpicoxamid	2:1	0.2:0.1
X.04	Acibenzolar-S-methyl	1:10	2:20
X.04	Acibenzolar-S-methyl	1:3	2:6
X.04	Acibenzolar-S-methyl	1:100	0.2:20
X.04	Acibenzolar-S-methyl	1:30	0.2:6
X.05	Pydiflumetofen	1:6	1:6
X.05	Pydiflumetofen	1.6:1	1:0.6
X.05	Pydiflumetofen	1:30	0.2:6
X.05	Benzovindiflupyr	1:2	1:2
X.05	Benzovindiflupyr	5:1	1:0.2
X.05	Benzovindiflupyr	1:10	0.2:2
X.05	Benzovindiflupyr	1:1	0.2:0.2
X.05	Cyprodinil	1:20	1:20
X.05	Cyprodinil	10:1	1:0.1
X.05	Cyprodinil	1:100	0.2:20
X.05	Fludioxonil	1:6	1:6
X.05	Fludioxonil	16.6:1	1:0.06
X.05	Fludioxonil	1:30	0.2:6
X.05	Fludioxonil	3.3:1	0.2:0.06
X.05	Azoxystrobin	1:6	1:6
X.05	Azoxystrobin	1.6:1	1:0.6
X.05	Azoxystrobin	1:30	0.2:6
X.05	Azoxystrobin	1:3	0.2:0.6
X.05	Difenoconazole	1:6	1:6
X.05	Difenoconazole	1.6:1	1:0.6
X.05	Difenoconazole	1:30	0.2:6
X.05	Difenoconazole	1:3	0.2:0.6
X.05	Prothioconazole	1.6:1	1:0.6
X.05	Prothioconazole	16.6:1	1:0.06
X.05	Prothioconazole	1:3	0.2:0.6
X.05	Prothioconazole	3.3:1	0.2:0.06
X.05	Mefentrifluconazole	1:6	1:6
X.05	Mefentrifluconazole	10:1	1:0.1
X.05	Mefentrifluconazole	1:30	0.2:6
X.05	Mefentrifluconazole	2:1	0.2:0.1
X.05	Florylpicoxamid	1:1	1:1
X.05	Florylpicoxamid	10:1	1:0.1
X.05	Florylpicoxamid	1:5	0.2:1
X.05	Florylpicoxamid	2:1	0.2:0.1
X.05	Acibenzolar-S-methyl	1:20	1:20
X.05	Acibenzolar-S-methyl	1:6	1:6
X.05	Acibenzolar-S-methyl	1:100	0.2:20
X.05	Acibenzolar-S-methyl	1:30	0.2:6
X.06	Pydiflumetofen	1:6	1:6
X.06	Pydiflumetofen	1.6:1	1:0.6
X.06	Benzovindiflupyr	1:2	1:2
X.06	Benzovindiflupyr	5:1	1:0.2
X.06	Benzovindiflupyr	1:10	0.2:2
X.06	Benzovindiflupyr	1:1	0.2:0.2
X.06	Cyprodinil	1:20	1:20
X.06	Cyprodinil	10:1	1:0.1
X.06	Fludioxonil	1:6	1:6
X.06	Fludioxonil	16.6:1	1:0.06

X.06	Azoxystrobin	1:6	1:6
X.06	Azoxystrobin	1.6:1	1:0.6
X.06	Azoxystrobin	1:30	0.2:6
X.06	Azoxystrobin	1:3	0.2:0.6
X.06	Difenoconazole	1:6	1:6
X.06	Difenoconazole	1.6:1	1:0.6
X.06	Difenoconazole	1:30	0.2:6
X.06	Prothioconazole	1.6:1	1:0.6
X.06	Prothioconazole	16.6:1	1:0.06
X.06	Prothioconazole	1:3	0.2:0.6
X.06	Mefentrifluconazole	1:6	1:6
X.06	Mefentrifluconazole	10:1	1:0.1
X.06	Mefentrifluconazole	1:30	0.2:6
X.06	Florylpicoxamid	1:1	1:1
X.06	Florylpicoxamid	10:1	1:0.1
X.06	Florylpicoxamid	1:5	0.2:1
X.06	Acibenzolar-S-methyl	1:20	1:20
X.06	Acibenzolar-S-methyl	1:6	1:6
X.07	Pydiflumetofen	3.3:1	20:6
X.07	Pydiflumetofen	33.3:1	20:0.6
X.07	Benzovindiflupyr	10:1	20:2
X.07	Benzovindiflupyr	100:1	20:0.2
X.07	Benzovindiflupyr	1:1	2:2
X.07	Benzovindiflupyr	10:1	2:0.2
X.07	Cyprodinil	1:1	20:20
X.07	Cyprodinil	200:1	20:0.1
X.07	Cyprodinil	1:10	2:20
X.07	Fludioxonil	3.3:1	20:6
X.07	Fludioxonil	333.3:1	20:0.06
X.07	Azoxystrobin	3.3:1	20:6
X.07	Azoxystrobin	33.3:1	20:0.6
X.07	Azoxystrobin	1:3	2:6
X.07	Azoxystrobin	3.3:1	2:0.6
X.07	Difenoconazole	3.3:1	20:6
X.07	Difenoconazole	33.3:1	20:0.6
X.07	Difenoconazole	1:3	2:6
X.07	Prothioconazole	33.3:1	20:0.6
X.07	Prothioconazole	333.3:1	20:0.06
X.07	Mefentrifluconazole	3.3:1	20:6
X.07	Mefentrifluconazole	200:1	20:0.1
X.07	Florylpicoxamid	20:1	20:1
X.07	Florylpicoxamid	200:1	20:0.1
X.07	Florylpicoxamid	2:1	2:1
X.07	Florylpicoxamid	20:1	2:0.1
X.07	Acibenzolar-S-methyl	1:1	20:20
X.07	Acibenzolar-S-methyl	3.3:1	20:6
X.08	Pydiflumetofen	3.3:1	20:6
X.08	Pydiflumetofen	33.3:1	20:0.6
X.08	Benzovindiflupyr	10:1	20:2
X.08	Benzovindiflupyr	100:1	20:0.2
X.08	Benzovindiflupyr	1:1	2:2
X.08	Benzovindiflupyr	10:1	2:0.2
X.08	Cyprodinil	1:1	20:20
X.08	Cyprodinil	200:1	20:0.1
X.08	Fludioxonil	3.3:1	20:6
X.08	Fludioxonil	333.3:1	20:0.06
X.08	Azoxystrobin	3.3:1	20:6
X.08	Azoxystrobin	33.3:1	20:0.6
X.08	Azoxystrobin	1:3	2:6
X.08	Azoxystrobin	3.3:1	2:0.6
X.08	Difenoconazole	3.3:1	20:6

X.08	Difenoconazole	33.3:1	20:0.6
X.08	Difenoconazole	1:3	2:6
X.08	Prothioconazole	33.3:1	20:0.6
X.08	Prothioconazole	333.3:1	20:0.06
X.08	Mefentrifluconazole	3.3:1	20:6
X.08	Mefentrifluconazole	200:1	20:0.1
X.08	Florylpicoxamid	20:1	20:1
X.08	Florylpicoxamid	200:1	20:0.1
X.08	Florylpicoxamid	2:1	2:1
X.08	Florylpicoxamid	20:1	2:0.1
X.08	Acibenzolar-S-methyl	1:1	20:20
X.08	Acibenzolar-S-methyl	3.3:1	20:6
X.09	Pydiflumetofen	3.3:1	20:6
X.09	Pydiflumetofen	33.3:1	20:0.6
X.09	Pydiflumetofen	1:3	2:6
X.09	Pydiflumetofen	3.3:1	2:0.6
X.09	Benzovindiflupyr	10:1	20:2
X.09	Benzovindiflupyr	100:1	20:0.2
X.09	Benzovindiflupyr	1:1	2:2
X.09	Benzovindiflupyr	10:1	2:0.2
X.09	Cyprodinil	1:1	20:20
X.09	Cyprodinil	200:1	20:0.1
X.09	Cyprodinil	20:1	2:0.1
X.09	Fludioxonil	3.3:1	20:6
X.09	Fludioxonil	333.3:1	20:0.06
X.09	Azoxystrobin	3.3:1	20:6
X.09	Azoxystrobin	33.3:1	20:0.6
X.09	Azoxystrobin	1:3	2:6
X.09	Azoxystrobin	3.3:1	2:0.6
X.09	Difenoconazole	3.3:1	20:6
X.09	Difenoconazole	33.3:1	20:0.6
X.09	Difenoconazole	1:3	2:6
X.09	Difenoconazole	3.3:1	2:0.6
X.09	Prothioconazole	33.3:1	20:0.6
X.09	Prothioconazole	333.3:1	20:0.06
X.09	Prothioconazole	3.3:1	2:0.6
X.09	Prothioconazole	33.3:1	2:0.06
X.09	Mefentrifluconazole	3.3:1	20:6
X.09	Mefentrifluconazole	200:1	20:0.1
X.09	Mefentrifluconazole	1:3	2:6
X.09	Florylpicoxamid	20:1	20:1
X.09	Florylpicoxamid	200:1	20:0.1
X.09	Florylpicoxamid	2:1	2:1
X.09	Florylpicoxamid	20:1	2:0.1
X.09	Acibenzolar-S-methyl	1:1	20:20
X.09	Acibenzolar-S-methyl	3.3:1	20:6
X.10	Pydiflumetofen	1:3	2:6
X.10	Pydiflumetofen	3.3:1	2:0.6
X.10	Pydiflumetofen	1:30	0.2:6
X.10	Pydiflumetofen	1:3	0.2:0.6
X.10	Benzovindiflupyr	1:1	2:2
X.10	Benzovindiflupyr	10:1	2:0.2
X.10	Benzovindiflupyr	1:10	0.2:2
X.10	Benzovindiflupyr	1:1	0.2:0.2
X.10	Cyprodinil	1:10	2:20
X.10	Cyprodinil	20:1	2:0.1
X.10	Cyprodinil	1:100	0.2:20
X.10	Cyprodinil	2:1	0.2:0.1
X.10	Fludioxonil	1:3	2:6
X.10	Fludioxonil	33.3:1	2:0.06
X.10	Fludioxonil	1:30	0.2:6

X.10	Fludioxonil	3.3:1	0.2:0.06
X.10	Azoxystrobin	1:3	2:6
X.10	Azoxystrobin	3.3:1	2:0.6
X.10	Azoxystrobin	1:30	0.2:6
X.10	Azoxystrobin	1:3	0.2:0.6
X.10	Difenoconazole	1:3	2:6
X.10	Difenoconazole	3.3:1	2:0.6
X.10	Difenoconazole	1:30	0.2:6
X.10	Difenoconazole	1:3	0.2:0.6
X.10	Prothioconazole	3.3:1	2:0.6
X.10	Prothioconazole	33.3:1	2:0.06
X.10	Prothioconazole	1:3	0.2:0.6
X.10	Prothioconazole	3.3:1	0.2:0.06
X.10	Mefentrifluconazole	1:3	2:6
X.10	Mefentrifluconazole	20:1	2:0.1
X.10	Mefentrifluconazole	1:30	0.2:6
X.10	Mefentrifluconazole	2:1	0.2:0.1
X.10	Florylpicoxamid	2:1	2:1
X.10	Florylpicoxamid	20:1	2:0.1
X.10	Florylpicoxamid	1:5	0.2:1
X.10	Florylpicoxamid	2:1	0.2:0.1
X.10	Acibenzolar-S-methyl	1:10	2:20
X.10	Acibenzolar-S-methyl	1:3	2:6
X.10	Acibenzolar-S-methyl	1:100	0.2:20
X.10	Acibenzolar-S-methyl	1:30	0.2:6

Example M-B3: *Septoria tritici* (leaf blotch):

Conidia of the fungus from cryogenic storage were directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of the test compounds into a microtiter plate (96-well format) the nutrient broth containing the fungal spores was added. The test plates were incubated at 24°C and the inhibition of growth was determined photometrically and visually after 72 hrs. The following mixture compositions (A:B) at the reported concentration (in ppm) gave at least 70% disease control in the test system.

Comp. A	Comp- B	Ratio A:B	Conc. (ppm) (A:B)
X.01	Pydiflumetofen	1:6	1:6
X.01	Pydiflumetofen	16.6:1	1:0.06
X.01	Pydiflumetofen	1:60	0.1:6
X.01	Pydiflumetofen	1.6:1	0.1:0.06
X.01	Benzovindiflupyr	1:6	1:6
X.01	Benzovindiflupyr	1.6:1	1:0.6
X.01	Benzovindiflupyr	1:60	0.1:6
X.01	Benzovindiflupyr	1:6	0.1:0.6
X.01	Cyprodinil	1:6	1:6
X.01	Cyprodinil	1.6:1	1:0.6
X.01	Cyprodinil	1:60	0.1:6
X.01	Cyprodinil	1:6	0.1:0.6
X.01	Fludioxonil	1.6:1	1:0.6
X.01	Fludioxonil	16.6:1	1:0.06
X.01	Fludioxonil	1:6	0.1:0.6
X.01	Fludioxonil	1.6:1	0.1:0.06
X.01	Azoxystrobin	1:6	1:6
X.01	Azoxystrobin	10:1	1:0.1
X.01	Azoxystrobin	1:60	0.1:6
X.01	Azoxystrobin	1:1	0.1:0.1
X.01	Difenoconazole	1:1	1:1
X.01	Difenoconazole	10:1	1:0.1
X.01	Difenoconazole	1:10	0.1:1
X.01	Difenoconazole	1:1	0.1:0.1
X.01	Prothioconazole	1:20	1:20
X.01	Prothioconazole	1:6	1:6
X.01	Prothioconazole	1:200	0.1:20
X.01	Prothioconazole	1:60	0.1:6
X.01	Mefentrifluconazole	1:6	1:6
X.01	Mefentrifluconazole	16.6:1	1:0.06
X.01	Mefentrifluconazole	1:60	0.1:6
X.01	Mefentrifluconazole	1.6:1	0.1:0.06
X.01	Florylpicoxamid	1:6	1:6
X.01	Florylpicoxamid	1.6:1	1:0.6
X.01	Florylpicoxamid	1:60	0.1:6
X.01	Florylpicoxamid	1:6	0.1:0.6
X.01	Acibenzolar-S-methyl	1:6	1:6
X.01	Acibenzolar-S-methyl	1.6:1	1:0.6
X.01	Acibenzolar-S-methyl	1:60	0.1:6
X.01	Acibenzolar-S-methyl	1:6	0.1:0.6
X.02	Pydiflumetofen	1:3	2:6
X.02	Pydiflumetofen	3.3:1	2:0.6
X.02	Pydiflumetofen	1:30	0.2:6
X.02	Pydiflumetofen	1:3	0.2:0.6
X.02	Benzovindiflupyr	1:1	2:2
X.02	Benzovindiflupyr	10:1	2:0.2
X.02	Benzovindiflupyr	1:10	0.2:2
X.02	Benzovindiflupyr	1:1	0.2:0.2
X.02	Cyprodinil	1:10	2:20
X.02	Cyprodinil	20:1	2:0.1
X.02	Cyprodinil	1:100	0.2:20
X.02	Cyprodinil	2:1	0.2:0.1
X.02	Fludioxonil	1:3	2:6
X.02	Fludioxonil	33.3:1	2:0.06
X.02	Fludioxonil	1:30	0.2:6
X.02	Fludioxonil	3.3:1	0.2:0.06
X.02	Azoxystrobin	1:3	2:6
X.02	Azoxystrobin	3.3:1	2:0.6
X.02	Azoxystrobin	1:30	0.2:6
X.02	Azoxystrobin	1:3	0.2:0.6
X.02	Difenoconazole	1:3	2:6
X.02	Difenoconazole	3.3:1	2:0.6
X.02	Difenoconazole	1:30	0.2:6
X.02	Difenoconazole	1:3	0.2:0.6
X.02	Prothioconazole	3.3:1	2:0.6
X.02	Prothioconazole	33.3:1	2:0.06
X.02	Prothioconazole	1:3	0.2:0.6
X.02	Prothioconazole	3.3:1	0.2:0.06
X.02	Mefentrifluconazole	1:3	2:6

X.02	Mefentrifluconazole	20:1	2:0.1
X.02	Mefentrifluconazole	1:30	0.2:6
X.02	Mefentrifluconazole	2:1	0.2:0.1
X.02	Florylpicoxamid	2:1	2:1
X.02	Florylpicoxamid	20:1	2:0.1
X.02	Florylpicoxamid	1:5	0.2:1
X.02	Florylpicoxamid	2:1	0.2:0.1
X.02	Acibenzolar-S-methyl	1:10	2:20
X.02	Acibenzolar-S-methyl	1:3	2:6
X.02	Acibenzolar-S-methyl	1:100	0.2:20
X.02	Acibenzolar-S-methyl	1:30	0.2:6
X.03	Pydiflumetofen	1:6	1:6
X.03	Pydiflumetofen	1.6:1	1:0.6
X.03	Pydiflumetofen	1:60	0.1:6
X.03	Pydiflumetofen	1:6	0.1:0.6
X.03	Benzovindiflupyr	1:2	1:2
X.03	Benzovindiflupyr	5:1	1:0.2
X.03	Benzovindiflupyr	1:20	0.1:2
X.03	Benzovindiflupyr	1:2	0.1:0.2
X.03	Cyprodinil	1:20	1:20
X.03	Cyprodinil	10:1	1:0.1
X.03	Cyprodinil	1:200	0.1:20
X.03	Cyprodinil	1:1	0.1:0.1
X.03	Fludioxonil	1:6	1:6
X.03	Fludioxonil	16.6:1	1:0.06
X.03	Fludioxonil	1:60	0.1:6
X.03	Fludioxonil	1.6:1	0.1:0.06
X.03	Azoxystrobin	1:6	1:6
X.03	Azoxystrobin	1.6:1	1:0.6
X.03	Azoxystrobin	1:60	0.1:6
X.03	Azoxystrobin	1:6	0.1:0.6
X.03	Difenoconazole	1:6	1:6
X.03	Difenoconazole	1.6:1	1:0.6
X.03	Difenoconazole	1:60	0.1:6
X.03	Difenoconazole	1:6	0.1:0.6
X.03	Prothioconazole	1.6:1	1:0.6
X.03	Prothioconazole	16.6:1	1:0.06
X.03	Prothioconazole	1:6	0.1:0.6
X.03	Prothioconazole	1.6:1	0.1:0.06
X.03	Mefentrifluconazole	1:6	1:6
X.03	Mefentrifluconazole	10:1	1:0.1
X.03	Mefentrifluconazole	1:60	0.1:6
X.03	Mefentrifluconazole	1:1	0.1:0.1
X.03	Florylpicoxamid	1:1	1:1
X.03	Florylpicoxamid	10:1	1:0.1
X.03	Florylpicoxamid	1:10	0.1:1
X.03	Florylpicoxamid	1:1	0.1:0.1
X.03	Acibenzolar-S-methyl	1:20	1:20
X.03	Acibenzolar-S-methyl	1:6	1:6
X.03	Acibenzolar-S-methyl	1:200	0.1:20
X.03	Acibenzolar-S-methyl	1:60	0.1:6
X.04	Pydiflumetofen	1:3	2:6
X.04	Pydiflumetofen	3.3:1	2:0.6
X.04	Pydiflumetofen	1:30	0.2:6
X.04	Pydiflumetofen	1:3	0.2:0.6
X.04	Benzovindiflupyr	1:1	2:2
X.04	Benzovindiflupyr	10:1	2:0.2
X.04	Benzovindiflupyr	1:10	0.2:2
X.04	Benzovindiflupyr	1:1	0.2:0.2
X.04	Cyprodinil	1:10	2:20
X.04	Cyprodinil	20:1	2:0.1

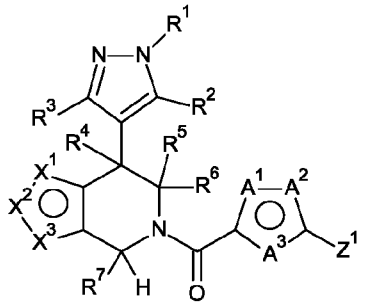
X.04	Cyprodinil	1:100	0.2:20
X.04	Cyprodinil	2:1	0.2:0.1
X.04	Fludioxonil	1:3	2:6
X.04	Fludioxonil	33.3:1	2:0.06
X.04	Fludioxonil	1:30	0.2:6
X.04	Fludioxonil	3.3:1	0.2:0.06
X.04	Azoxystrobin	1:3	2:6
X.04	Azoxystrobin	3.3:1	2:0.6
X.04	Azoxystrobin	1:30	0.2:6
X.04	Azoxystrobin	1:3	0.2:0.6
X.04	Difenoconazole	1:3	2:6
X.04	Difenoconazole	3.3:1	2:0.6
X.04	Difenoconazole	1:30	0.2:6
X.04	Difenoconazole	1:3	0.2:0.6
X.04	Prothioconazole	3.3:1	2:0.6
X.04	Prothioconazole	33.3:1	2:0.06
X.04	Prothioconazole	1:3	0.2:0.6
X.04	Prothioconazole	3.3:1	0.2:0.06
X.04	Mefentrifluconazole	1:3	2:6
X.04	Mefentrifluconazole	20:1	2:0.1
X.04	Mefentrifluconazole	1:30	0.2:6
X.04	Mefentrifluconazole	2:1	0.2:0.1
X.04	Florylpicoxamid	2:1	2:1
X.04	Florylpicoxamid	20:1	2:0.1
X.04	Florylpicoxamid	1:5	0.2:1
X.04	Florylpicoxamid	2:1	0.2:0.1
X.04	Acibenzolar-S-methyl	1:10	2:20
X.04	Acibenzolar-S-methyl	1:3	2:6
X.04	Acibenzolar-S-methyl	1:100	0.2:20
X.04	Acibenzolar-S-methyl	1:30	0.2:6
X.05	Pydiflumetofen	1:6	1:6
X.05	Pydiflumetofen	1.6:1	1:0.6
X.05	Pydiflumetofen	1:30	0.2:6
X.05	Pydiflumetofen	1:3	0.2:0.6
X.05	Benzovindiflupyr	1:2	1:2
X.05	Benzovindiflupyr	5:1	1:0.2
X.05	Benzovindiflupyr	1:10	0.2:2
X.05	Benzovindiflupyr	1:1	0.2:0.2
X.05	Cyprodinil	1:20	1:20
X.05	Cyprodinil	10:1	1:0.1
X.05	Cyprodinil	1:100	0.2:20
X.05	Cyprodinil	2:1	0.2:0.1
X.05	Fludioxonil	1:6	1:6
X.05	Fludioxonil	16.6:1	1:0.06
X.05	Fludioxonil	1:30	0.2:6
X.05	Fludioxonil	3.3:1	0.2:0.06
X.05	Azoxystrobin	1:6	1:6
X.05	Azoxystrobin	1.6:1	1:0.6
X.05	Azoxystrobin	1:30	0.2:6
X.05	Azoxystrobin	1:3	0.2:0.6
X.05	Difenoconazole	1:6	1:6
X.05	Difenoconazole	1.6:1	1:0.6
X.05	Difenoconazole	1:30	0.2:6
X.05	Difenoconazole	1:3	0.2:0.6
X.05	Prothioconazole	1.6:1	1:0.6
X.05	Prothioconazole	16.6:1	1:0.06
X.05	Prothioconazole	1:3	0.2:0.6
X.05	Prothioconazole	3.3:1	0.2:0.06
X.05	Mefentrifluconazole	1:6	1:6
X.05	Mefentrifluconazole	10:1	1:0.1
X.05	Mefentrifluconazole	1:30	0.2:6

X.05	Mefentrifluconazole	2:1	0.2:0.1
X.05	Florylpicoxamid	1:1	1:1
X.05	Florylpicoxamid	10:1	1:0.1
X.05	Florylpicoxamid	1:5	0.2:1
X.05	Florylpicoxamid	2:1	0.2:0.1
X.05	Acibenzolar-S-methyl	1:20	1:20
X.05	Acibenzolar-S-methyl	1:6	1:6
X.05	Acibenzolar-S-methyl	1:100	0.2:20
X.05	Acibenzolar-S-methyl	1:30	0.2:6
X.06	Pydiflumetofen	1:6	1:6
X.06	Pydiflumetofen	1.6:1	1:0.6
X.06	Pydiflumetofen	1:30	0.2:6
X.06	Pydiflumetofen	1:3	0.2:0.6
X.06	Benzovindiflupyr	1:2	1:2
X.06	Benzovindiflupyr	5:1	1:0.2
X.06	Benzovindiflupyr	1:10	0.2:2
X.06	Benzovindiflupyr	1:1	0.2:0.2
X.06	Cyprodinil	1:20	1:20
X.06	Cyprodinil	10:1	1:0.1
X.06	Cyprodinil	1:100	0.2:20
X.06	Cyprodinil	2:1	0.2:0.1
X.06	Fludioxonil	1:6	1:6
X.06	Fludioxonil	16.6:1	1:0.06
X.06	Fludioxonil	1:30	0.2:6
X.06	Fludioxonil	3.3:1	0.2:0.06
X.06	Azoxystrobin	1:6	1:6
X.06	Azoxystrobin	1.6:1	1:0.6
X.06	Azoxystrobin	1:30	0.2:6
X.06	Azoxystrobin	1:3	0.2:0.6
X.06	Difenoconazole	1:6	1:6
X.06	Difenoconazole	1.6:1	1:0.6
X.06	Difenoconazole	1:30	0.2:6
X.06	Difenoconazole	1:3	0.2:0.6
X.06	Prothioconazole	1.6:1	1:0.6
X.06	Prothioconazole	16.6:1	1:0.06
X.06	Prothioconazole	1:3	0.2:0.6
X.06	Prothioconazole	3.3:1	0.2:0.06
X.06	Mefentrifluconazole	1:6	1:6
X.06	Mefentrifluconazole	10:1	1:0.1
X.06	Mefentrifluconazole	1:30	0.2:6
X.06	Mefentrifluconazole	2:1	0.2:0.1
X.06	Florylpicoxamid	1:1	1:1
X.06	Florylpicoxamid	10:1	1:0.1
X.06	Florylpicoxamid	1:5	0.2:1
X.06	Florylpicoxamid	2:1	0.2:0.1
X.06	Acibenzolar-S-methyl	1:20	1:20
X.06	Acibenzolar-S-methyl	1:6	1:6
X.06	Acibenzolar-S-methyl	1:100	0.2:20
X.06	Acibenzolar-S-methyl	1:30	0.2:6
X.07	Pydiflumetofen	3.3:1	20:6
X.07	Pydiflumetofen	33.3:1	20:0.6
X.07	Pydiflumetofen	1:3	2:6
X.07	Pydiflumetofen	3.3:1	2:0.6
X.07	Benzovindiflupyr	10:1	20:2
X.07	Benzovindiflupyr	100:1	20:0.2
X.07	Benzovindiflupyr	1:1	2:2
X.07	Benzovindiflupyr	10:1	2:0.2
X.07	Cyprodinil	1:1	20:20
X.07	Cyprodinil	200:1	20:0.1
X.07	Cyprodinil	1:10	2:20
X.07	Cyprodinil	20:1	2:0.1
X.07	Fludioxonil	3.3:1	20:6
X.07	Fludioxonil	333.3:1	20:0.06
X.07	Fludioxonil	1:3	2:6
X.07	Fludioxonil	33.3:1	2:0.06
X.07	Azoxystrobin	3.3:1	20:6
X.07	Azoxystrobin	33.3:1	20:0.6
X.07	Azoxystrobin	1:3	2:6
X.07	Azoxystrobin	3.3:1	2:0.6
X.07	Difenoconazole	3.3:1	20:6
X.07	Difenoconazole	33.3:1	20:0.6
X.07	Difenoconazole	1:3	2:6
X.07	Difenoconazole	3.3:1	2:0.6
X.07	Prothioconazole	33.3:1	20:0.6
X.07	Prothioconazole	333.3:1	20:0.06
X.07	Prothioconazole	3.3:1	2:0.6
X.07	Prothioconazole	33.3:1	2:0.06
X.07	Mefentrifluconazole	3.3:1	20:6
X.07	Mefentrifluconazole	200:1	20:0.1
X.07	Mefentrifluconazole	1:3	2:6
X.07	Mefentrifluconazole	20:1	2:0.1
X.07	Florylpicoxamid	20:1	20:1
X.07	Florylpicoxamid	200:1	20:0.1
X.07	Florylpicoxamid	2:1	2:1
X.07	Florylpicoxamid	20:1	2:0.1
X.07	Acibenzolar-S-methyl	1:1	20:20
X.07	Acibenzolar-S-methyl	1:10	2:20
X.07	Acibenzolar-S-methyl	1:3	2:6
X.08	Pydiflumetofen	3.3:1	20:6
X.08	Pydiflumetofen	33.3:1	20:0.6
X.08	Pydiflumetofen	1:3	2:6
X.08	Pydiflumetofen	3.3:1	2:0.6
X.08	Benzovindiflupyr	10:1	20:2
X.08	Benzovindiflupyr	100:1	20:0.2
X.08	Benzovindiflupyr	1:1	2:2
X.08	Benzovindiflupyr	10:1	2:0.2
X.08	Cyprodinil	1:1	20:20
X.08	Cyprodinil	200:1	20:0.1
X.08	Cyprodinil	1:10	2:20
X.08	Fludioxonil	3.3:1	20:6
X.08	Fludioxonil	333.3:1	20:0.06
X.08	Fludioxonil	1:3	2:6
X.08	Azoxystrobin	3.3:1	20:6
X.08	Azoxystrobin	33.3:1	20:0.6
X.08	Azoxystrobin	1:3	2:6
X.08	Difenoconazole	3.3:1	20:6
X.08	Difenoconazole	33.3:1	20:0.6
X.08	Difenoconazole	1:3	2:6
X.08	Difenoconazole	3.3:1	2:0.6
X.08	Prothioconazole	33.3:1	20:0.6
X.08	Prothioconazole	333.3:1	20:0.06
X.08	Mefentrifluconazole	3.3:1	20:6
X.08	Mefentrifluconazole	200:1	20:0.1
X.08	Mefentrifluconazole	1:3	2:6
X.08	Mefentrifluconazole	20:1	2:0.1
X.08	Florylpicoxamid	20:1	20:1
X.08	Florylpicoxamid	200:1	20:0.1
X.08	Florylpicoxamid	2:1	2:1
X.08	Florylpicoxamid	20:1	2:0.1
X.08	Acibenzolar-S-methyl	1:1	20:20
X.08	Acibenzolar-S-methyl	3.3:1	20:6

X.09	Pydiflumetofen	3.3:1	20:6
X.09	Pydiflumetofen	33.3:1	20:0.6
X.09	Pydiflumetofen	1:3	2:6
X.09	Pydiflumetofen	3.3:1	2:0.6
X.09	Benzovindiflupyr	10:1	20:2
X.09	Benzovindiflupyr	100:1	20:0.2
X.09	Benzovindiflupyr	1:1	2:2
X.09	Benzovindiflupyr	10:1	2:0.2
X.09	Cyprodinil	1:1	20:20
X.09	Cyprodinil	200:1	20:0.1
X.09	Cyprodinil	1:10	2:20
X.09	Cyprodinil	20:1	2:0.1
X.09	Fludioxonil	3.3:1	20:6
X.09	Fludioxonil	333.3:1	20:0.06
X.09	Fludioxonil	1:3	2:6
X.09	Fludioxonil	33.3:1	2:0.06
X.09	Azoxystrobin	3.3:1	20:6
X.09	Azoxystrobin	33.3:1	20:0.6
X.09	Azoxystrobin	1:3	2:6
X.09	Azoxystrobin	3.3:1	2:0.6
X.09	Difenoconazole	3.3:1	20:6
X.09	Difenoconazole	33.3:1	20:0.6
X.09	Difenoconazole	1:3	2:6
X.09	Difenoconazole	3.3:1	2:0.6
X.09	Prothioconazole	33.3:1	20:0.6
X.09	Prothioconazole	333.3:1	20:0.06
X.09	Prothioconazole	3.3:1	2:0.6
X.09	Prothioconazole	33.3:1	2:0.06
X.09	Mefentrifluconazole	3.3:1	20:6
X.09	Mefentrifluconazole	200:1	20:0.1
X.09	Mefentrifluconazole	1:3	2:6
X.09	Mefentrifluconazole	20:1	2:0.1
X.09	Florylpicoxamid	20:1	20:1
X.09	Florylpicoxamid	200:1	20:0.1
X.09	Florylpicoxamid	2:1	2:1
X.09	Florylpicoxamid	20:1	2:0.1
X.09	Acibenzolar-S-methyl	1:1	20:20
X.09	Acibenzolar-S-methyl	3.3:1	20:6
X.09	Acibenzolar-S-methyl	1:10	2:20
X.09	Acibenzolar-S-methyl	1:3	2:6
X.10	Pydiflumetofen	1:3	2:6
X.10	Pydiflumetofen	3.3:1	2:0.6
X.10	Pydiflumetofen	1:30	0.2:6
X.10	Pydiflumetofen	1:3	0.2:0.6
X.10	Benzovindiflupyr	1:1	2:2
X.10	Benzovindiflupyr	10:1	2:0.2
X.10	Benzovindiflupyr	1:10	0.2:2
X.10	Benzovindiflupyr	1:1	0.2:0.2
X.10	Cyprodinil	1:10	2:20
X.10	Cyprodinil	20:1	2:0.1
X.10	Cyprodinil	1:100	0.2:20
X.10	Cyprodinil	2:1	0.2:0.1
X.10	Fludioxonil	1:3	2:6
X.10	Fludioxonil	33.3:1	2:0.06
X.10	Fludioxonil	1:30	0.2:6
X.10	Fludioxonil	3.3:1	0.2:0.06
X.10	Azoxystrobin	1:3	2:6
X.10	Azoxystrobin	3.3:1	2:0.6
X.10	Azoxystrobin	1:30	0.2:6
X.10	Azoxystrobin	1:3	0.2:0.6
X.10	Difenoconazole	1:3	2:6
X.10	Difenoconazole	3.3:1	2:0.6
X.10	Difenoconazole	1:30	0.2:6
X.10	Difenoconazole	1:3	0.2:0.6
X.10	Prothioconazole	3.3:1	2:0.6
X.10	Prothioconazole	33.3:1	2:0.06
X.10	Prothioconazole	1:3	0.2:0.6
X.10	Prothioconazole	3.3:1	0.2:0.06
X.10	Mefentrifluconazole	1:3	2:6
X.10	Mefentrifluconazole	20:1	2:0.1
X.10	Mefentrifluconazole	1:30	0.2:6
X.10	Mefentrifluconazole	2:1	0.2:0.1
X.10	Florylpicoxamid	2:1	2:1
X.10	Florylpicoxamid	20:1	2:0.1
X.10	Florylpicoxamid	1:5	0.2:1
X.10	Florylpicoxamid	2:1	0.2:0.1
X.10	Acibenzolar-S-methyl	1:10	2:20
X.10	Acibenzolar-S-methyl	1:3	2:6
X.10	Acibenzolar-S-methyl	1:100	0.2:20
X.10	Acibenzolar-S-methyl	1:30	0.2:6

CLAIMS

1. A fungicidal composition comprising components (A) and (B) as active ingredients, wherein component (A) is a compound of formula (I):



(I)

wherein

R^1 is selected from hydrogen, C_1-C_3-alkyl, or C_3-C_6-cycloalkyl;

R^2 is selected from hydrogen, halogen, C_1-C_3-alkyl, C_1-C_4-haloalkyl, or C_3-C_6-cycloalkyl;

R^3 is hydrogen;

R^4 is selected from hydrogen, or C_1-C_3-alkyl;

R^5 and R^6 are hydrogen;

R^7 is selected from hydrogen, C_1-C_3-alkyl, C_1-C_3-alkylcarbonyl, or C_1-C_3-alkoxycarbonyl;

Z^1 is selected from phenyl, or 5- or 6-membered heteroaryl, wherein any of said 5- or 6-membered heteroaryl contains 1, 2, or 3 heteroatoms individually selected from N, O or S, with the proviso that only one is selected from O or S; and wherein any of said phenyl and 5- or 6-membered heteroaryl are unsubstituted or substituted by 1, 2 or 3 substituents independently selected from halogen, cyano, C_1-C_3-alkyl, C_1-C_2-haloalkyl, or C_1-C_3-alkoxy;

X^1, X^2 and X^3 are independently selected from CH, N or S, with the proviso that one of X^1, X^2 and X^3 is S; and

A^1, A^2 and A^3 are independently selected from CH, N, O or S, with the proviso that at least one of A^1, A^2 and A^3 is selected from N, O or S, and that no more than one of A^1, A^2 and A^3 is O or S; or salt or N-oxide thereof,

and

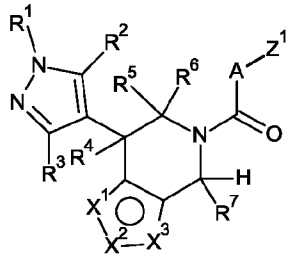
component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penflufen, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, isofetamid, fluindapyr, cyclobutrifluram, fluoxastrobin, fenamidone, mandestrobin, picoxystrobin, pyraclostrobin, famoxadone, kresoxim-methyl, trifloxystrobin, azoxystrobin, metyltetraprole, amisulbrom, cyazofamid, fenpicoxamid, florylpicoxamid, metharylpicoxamid, ametoctradin, fluazinam, fentin hydroxide, silthiofam, fenpropimorph, fenpropidin, spiroxamine, fenhexamid, imazalil, pyrisoxazole, bromuconazole, cyproconazole, difenoconazole, epoxiconazole, flutriafol, hexaconazole, ipconazole, metconazole, myclobutanil, penconazole,

propiconazole, tebuconazole, tetraconazole, triticonazole, prothioconazole, fluoxytioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, kasugamycin, mancozeb, copper fungicides, sulphur, zinc thiazole, captan, folpet, chlorothalonil, dithianon, quinoxyfen, proquinazid, fludioxonil, iprodione, procymidone, thiabendazole, zoxamide, metrafenone, fluopicolide, propamocarb, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, isotianil, phosphorous acid, cyflufenamid, tebufloquin, picarbutrazox, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical

biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), and Aureobasidin A.

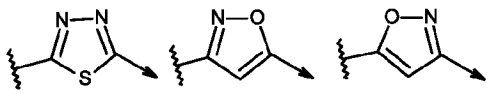
2. The fungicidal composition according to claim 1, wherein component (A) is a compound of formula (I) wherein R^1 is selected from C_1-C_3-alkyl; R^2 is selected from hydrogen, or C_1-C_3-alkyl; R^3 is hydrogen; R^4 is selected from hydrogen, or methyl; R^5 and R^6 are hydrogen; R^7 is selected from hydrogen, or C_1-C_3-alkyl; Z^1 is selected from 2,4-difluorophenyl, 3,5-difluoro-2-pyridyl, 2-fluorophenyl, or 4-fluorophenyl; X^1 is CH, X^2 is CH, and X^3 is S; or X^1 is S, X^2 is CH, and X^3 is CH; or X^1 is CH, X^2 is N, and X^3 is S; or X^1 is S, X^2 is N, and X^3 is N; and A^1, A^2 and A^3 are independently selected from CH, N, O or S, with the proviso that at least one of A^1, A^2 and A^3 is selected from N, O or S, and that no more than one of A^1, A^2 and A^3 is O or S.

3. The fungicidal composition according to claim 1 or claim 2, wherein component (A) is a compound of formula (I-A),



(I-A)

wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, X^1, X^2, X^3, and Z^1 correspond to the same definitions as for the compounds of formula (I) according to claim 1 or claim 2, and A is selected from A2, A9, or A10;



A2, **A9, or** **A10**

wherein the staggered line denotes the bond to the C(=O) group, and the arrow denotes the bond to the Z^1 group.

4. The fungicidal composition according to any one of claims 1 to 3, wherein component (A) is selected from [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[(4R,7S)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.01); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4S,7R)-4,7-dimethyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.02); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[rac-(4R,7S)-7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.03); [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[rac-(4R,7S)-

7-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-thieno[2,3-c]pyridin-6-yl]methanone (X.04); [5-(2,4-difluorophenyl)-1,3,4-thiadiazol-2-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.05); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-methyl-4-(1-methylpyrazol-4-yl)-5,7-dihydrothieno[2,3-c]pyridin-6-yl]methanone (X.06); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-methyl-7-(1-methylpyrazol-4-yl)-4,6-dihydrothieno[3,2-c]pyridin-5-yl]methanone (X.07); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[4-(1-methylpyrazol-4-yl)-5,7-dihydro-4H-isothiazolo[5,4-c]pyridine-6-yl]methanone (X.08); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thiadiazolo[4,5-c]pyridin-5-yl]methanone (X.09); [5-(2,4-difluorophenyl)isoxazol-3-yl]-[7-(1,5-dimethylpyrazol-4-yl)-6,7-dihydro-4H-thieno[3,2-c]pyridin-5-yl]methanone (X.10), or [5-(2,4-difluorophenyl)isoxazol-3-yl]-[*rac*-(4*S*,7*S*)-7-(1,5-dimethylpyrazol-4-yl)-4-methyl-6,7-dihydro-4*H*-thieno[3,2-c]pyridin-5-yl]methanone (X.11).

5. The fungicidal composition according to any one of claims 1 to 4, wherein component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, fluindapyr, cyclobutrifluram, pyraclostrobin, trifloxystrobin, azoxystrobin, metyltetraprole, fenpicoxamid, florylpicoxamid, metharylpicoxamid, fluazinam, fenpropidin, fenhexamid, cyproconazole, difenoconazole, metconazole, penconazole, propiconazole, tebuconazole, tetraconazole, prothioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, mancozeb, copper-compounds (different salts), sulphur, folpet, chlorothalonil, dithianon, proquinazid, fludioxonil, metrafenone, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, phosphorous acid, cyflufenamid, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-

phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate, methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-hexyl-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A.

6. The fungicidal composition according to any one of claims 1 to 5, wherein component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, acibenzolar-S-methyl, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A.

7. The fungicidal composition according to any one of claims 1 to 6, wherein component (B) is a compound selected from pydiflumetofen, benzovindiflupyr, azoxystrobin, florylpicoxamid, difenoconazole, prothioconazole, mefentrifluconazole, cyprodinil, fludioxonil, or acibenzolar-S-methyl.

8. The fungicidal composition according to any one of claims 1 to 7, wherein the weight ratio of component (A) to component (B) is from 20:1 to 1:40.

9. The fungicidal composition according to any one of claims 1 to 8, wherein the weight ratio of component (A) to component (B) is from 12:1 to 1:25.

10. The fungicidal composition according to any one of claims 1 to 9, wherein the weight ratio of component (A) to component (B) is from 5:1 to 1:15.

11. The fungicidal composition according to any one of claims 1 to 10, wherein the weight ratio of component (A) to component (B) is from 2:1 to 1:5.

12. The fungicidal composition according to any of claims 1 to 11, wherein the composition comprises one or more further pesticides selected from the group consisting of pydiflumetofen, benzovindiflupyr, bixafen, fluxapyroxad, isopyrazam, penflufen, penthiopyrad, sedaxane, boscalid, fluopyram, thifluzamide, pyraziflumid, isoflucypram, inpyrfluxam, isofetamid, fluindapyr, cyclobutrifluram, fluoxastrobin, fenamidone, mandestrobin, picoxystrobin, pyraclostrobin, famoxadone, kresoxim-methyl, trifloxystrobin, azoxystrobin, metyltetraprole, amisulbrom, cyazofamid, fenpicoxamid, florylpicoxamid, metarylpicoxamid, ametoctradin, fluazinam, fentin hydroxide, silthiofam, fenpropimorph, fenpropidin, spiroxamine, fenhexamid, imazalil, pyrisoxazole, bromuconazole, cyproconazole, difenoconazole, epoxiconazole, flutriafol, hexaconazole, ipconazole, metconazole, myclobutanil, penconazole, propiconazole, tebuconazole, tetraconazole, triticonazole, prothioconazole, fluoxytioconazole, mefentrifluconazole, flufenoxadiazam, ipflufenoquin, quinofumelin, metalaxyl-M, cyprodinil, pyrimethanil, kasugamycin, mancozeb, copper fungicides, sulphur, zinc thiazole, captan, folpet, chlorothalonil, dithianon, quinoxyfen, proquinazid, fludioxonil, iprodione, procymidone, thiabendazole, zoxamide, metrafenone, fluopicolide, propamocarb, oxathiapiprolin, fluoxapiprolin, acibenzolar-S-methyl, isotianil, phosphorous acid, cyflufenamid, tebufloquin, picarbutrazox, tricyclazole, N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropane-carboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, methyl (Z)-2-(5-

cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, (this compound may be prepared from the methods described in WO2020/193387), 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-5-methyl-N-spiro[3.4]octan-3-yl-thiazole-4-carboxamide, 2-[cyano-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methoxyacetyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydropyran-4-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(oxetane-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(tetrahydrofuran-3-carbonyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[acetyl-(2,6-difluoro-4-pyridyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, 2-[(2,6-difluoro-4-pyridyl)-(2-methylpropanoyl)amino]-N-(2,2-dimethylcyclobutyl)-5-methyl-thiazole-4-carboxamide, TAEGRO® (i.e, Bacillus amyloliquefaciens strain FZB24), melaluca alternifolia oil (an extract of the tea tree plant Melaluca alternifolia (commercially available as Timorex Gold®, which is a broad-spectrum botanical biofungicide)), Reynoutria sachalinensis extract (commercially available as REGALIA®), a plant extract based on the extract of *Quillaja saponaria Molina* (commercially available as BOTRISTOP®), or Aureobasidin A.

13. The fungicidal composition according to any one of claims 1 to 12, wherein said composition further comprises an agriculturally acceptable carrier and, optionally, a surfactant and/or formulation adjuvants.

14. A method of controlling or preventing phytopathogenic diseases, especially phytopathogenic fungi, on useful plants or on propagation material thereof, which comprises applying to the useful plants, the locus thereof or propagation material thereof the fungicidal composition comprising component (A) and component (B) as defined in any one of claims 1 to 12.

15. The method according to claim 14, wherein the components (A) and (B) are applied in a sequential manner.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2024/066165

A. CLASSIFICATION OF SUBJECT MATTER

INV. A01N43/90 A01N43/56 A01N45/02 A01N43/54 A01N43/40
A01N43/653 A01N43/36 A01N43/82 A01P3/00

ADD.

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)

EPO-Internal, CHEM ABS Data, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2019/141957 A1 (CADO BIOTECHNOLOGY IVS [DK]) 25 July 2019 (2019-07-25) abstract page 1, lines 5-17 page 3, line 30 - page 8, line 25 page 43, line 1 - page 50, line 14 page 50, line 31 - page 53, line 23 page 99 - page 101; table T1; compounds P-6, P-12	1-15

Y	WO 2022/234470 A1 (PI INDUSTRIES LTD [IN]) 10 November 2022 (2022-11-10) abstract page 1, lines 5-9 page 1, line 30 - page 2, line 17 page 59, line 29 - page 61, line 20	1-15

	-/--	

[x] Further documents are listed in the continuation of Box C.

[x] 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	Date of mailing of the international search report
22 October 2024	06/11/2024

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Hateley, Martin

4

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2024/066165

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Anon.: "FRAC code list 2022", , 1 March 2022 (2022-03-01), pages 1-17, XP093103405, Retrieved from the Internet: URL:https://www.frac.info/docs/default-source/publications/frac-code-list/frac-code-list-2022--final.pdf?sfvrsn=b6024e9a_2 [retrieved on 2023-11-20] pages 6-9, 11	1-15
X,P	WO 2023/110869 A1 (SYNGENTA CROP PROTECTION AG [CH]) 22 June 2023 (2023-06-22) abstract page 1, line 2 - page 2, line 25 page 10, line 20 - page 13, line 1; compounds A.01 - A.02 page 33, line 31 - page 50, line 14 page 99 - page 106; claims 1-15; examples B1-B15; table T1; sequences P-1 - P-39	1-11, 13-15

4

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2024/066165

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2019141957 A1	25-07-2019	NONE	
WO 2022234470 A1	10-11-2022	AR 125764 A1	09-08-2023
		BR 112023022854 A2	23-01-2024
		TW 202309047 A	01-03-2023
		UY 39755 A	30-11-2022
		WO 2022234470 A1	10-11-2022
WO 2023110869 A1	22-06-2023	AR 127922 A1	13-03-2024
		AU 2022415492 A1	06-06-2024
		CA 3240895 A1	22-06-2023
		CO 2024007424 A2	27-06-2024
		EP 4448534 A1	23-10-2024
		IL 313075 A	01-07-2024
		KR 20240119086 A	06-08-2024
		TW 202340205 A	16-10-2023
		WO 2023110869 A1	22-06-2023