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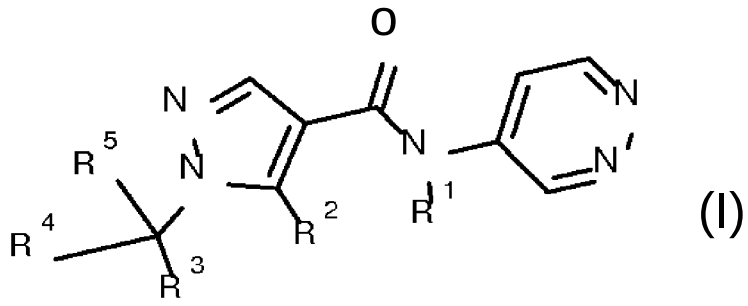
(54) Title: PESTICIDAL MIXTURE COMPRISING A PYRAZOLE COMPOUND AND A BIOPESTICIDE



(I)

(57) Abstract: The present invention relates to pesticidal mixtures comprising as active components at least one active compound of formula (I) wherein the variables are as defined ni the specification, and at least one biopesticide II as defined in the specificartion. Furthermore, the present invention relates to seed treatment compositions comprising said mixtures, to methods and uses comprising the application of these mixtures and to seeds comprising the mixtures of the invention or a seed treatment composition thereof.

Pesticidal mixture comprising a pyrazole compound and a biopesticide

Description

The present invention relates to mixtures of active compounds having synergistically enhanced action and to methods and uses comprising applying said mixtures.

One typical problem arising in the field of pest control lies in the need to reduce the dosage rates of the active ingredient in order to reduce or avoid unfavorable environmental or toxicological effects whilst still allowing effective pest control.

Another problem encountered concerns the need to have available pest control agents which are effective against a broad spectrum of pests.

There also exists the need for pest control agents that combine knock-down activity with prolonged control, that is, fast action with long lasting action.

Another difficulty in relation to the use of pesticides is that the repeated and exclusive application of an individual pesticidal compound leads in many cases to a rapid selection of pests which have developed natural or adapted resistance against the active compound in question. Therefore there is a need for pest control agents that help prevent or overcome resistance induced by pesticides.

Furthermore, there is a desire for pesticide compounds or combinations of compounds, which when applied improve plants, which may result in "plant health", "vitality of plant propagation material" or "increased plant yield".

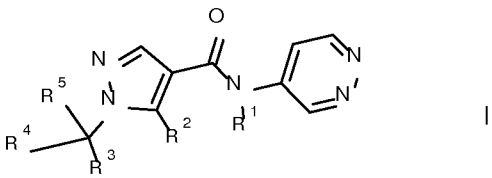
It is therefore an object of the present invention to provide pesticidal mixtures, which solve one or more than one of the discussed problems suche as

- reducing the dosage rate,
- enhancing the spectrum of activity,
- combining knock-down activity with prolonged control,
- improving resistance management,
- improving plant health,
- improving vitality of plant propagation material, also termed seed vitality,
- increasing plant yield.

It has been found that this object is in part or in whole achieved by the combination of active compounds defined below.

The present invention relates to pesticidal mixtures comprising as active components

1) at least one active compound of formula I:



I

wherein

R^1 is H, Ci-C_2-alkyl, or Ci-C_2-alkoxy-Ci-C_2-alkyl;

R^2 is CH_3, or halomethyl;

R^3 is CN, C_1-Ce-alkyl, c i-C_6-haloalkyl, c i-C_2-alkoxy-ci-C_2-alkyl, C_2-C_6-alkenyl and C_2-C_6-alkynyl, C3-C6 -cycloalkyl, Cs-Ce-cycloalkenyl, c i-C6 -alkoxy, wherein the C-atoms are unsubstituted, or partially or fully substituted by R^a,

R^a is halogen, CN, c i-C_2-alkyl, c i-C_2-haloalkyl, c i-C4-alkoxy, c i-C_2-haloalkoxy;

R^4 is c i-C4-alkyl, or a group mentioned for R^3; or

R^3 and R^4 may together form Cs-Ce-cycloalkyl, which is unsubstituted, or partially or fully substituted by R^a;

R^5 is H, or a group mentioned for R^4;

and the stereoisomers, salts, tautomers and N-oxides thereof;

and

2) at least one biopesticide II selected from the groups L1 to L5:

L1) Microbial pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: *Ampelomyces quisqualis, Aspergillus flavus, Aureobasidium pullulans, Bacillus altitudinis, B. amyloliquefaciens, B. megaterium, B. mojavensis, B. mycoides, B. pumilus, B. simplex, B. solisalsi, B. subtilis, B. subtilis* var. *amyloliquefaciens, Candida oleophila, C. saitoana, Clavibacter michiganensis* (bacteriophages), *Coniothyrium minitans, Cryphonectria parasitica, Cryptococcus albidus, Dilophosphora alopecuri, Fusarium oxysporum, C/onostachys rosea* f. *catenulate* (also named *Gliocladium catenulatum), Gliocladium roseum, Lysobacter antibioticus, L. enzymogenes, Metschnikowia fructicola, Microdochium dimerum, Microsphaeropsis ochracea, Muscodor a/bus, Paenibacillus alvei, Paenibacillus polymyxa, Pantoea vagans, Penicillium bilaiae, P.steckii, Phlebiopsis gigantea, Pseudomonas sp., Pseudomonas ch/oraphis, Pseudozyma flocculosa, Pichia anomala, Pythium oligandrum, Sphaerodes mycoparasitica, Streptomyces griseoviridis, S. lydicus, S. violaceusniger, Talaromyces flavus, Trichoderma asperelloides, T. asperellum, T. atroviride, T. gamsii, T. harmatum, T. harzianum, T. polysporum, T. stromaticum, T. virens, T. viride, Typhula phacorrhiza, Ulocladium oudemansii, Verticillium dahlia,* zucchini yellow mosaic virus (avirulent strain);

L2) Biochemical pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: harpin protein, *Reynoutria sachalinensis* extract;

L3) Microbial pesticides with insecticidal, acaricidal, molluscidal and/or nematicidal activity: *Agrobacterium radiobacter, Bacillus cereus, B. firmus, B. thuringiensis, B. thuringiensis* ssp. *aizawai, B. t.* ssp. *israelensis, B. t.* ssp. *galleriae, B. t.* ssp. *kurstaki, B. t.* ssp. *tenebrionis, Beauveria bass/ana, B. brongniartii, Burkho/deria sp., Chromobacterium subtsugae, Cydia pomonella* granulovirus (CpGV), *Cryptophlebia leucotreta* granulovirus (CrleGV), *Flavobacterium* sp., *Helicoverpa armigera* nucleopolyhedrovirus (HearNPV), *Helicoverpa zea* nucleopolyhedrovirus (HzNPV), *Helicoverpa zea* single capsid nucleopolyhedrovirus (HzSNPV), *Heterorhabditis bacteriophora, Isaria fumosorosea, Lecanicillium longisporum, L. muscarium, Metarhizium anisopliae, Metarhizium anisopliae* var. *anisopliae, M. anisopliae var. acridum, Nomuraea rileyi, Paecilomyces fumosoroseus, P. lilacinus, Paenibacillus popilliae, Pasteur/a sp., P. nishizawae, P. penetrans, P. ramosa, P. thornea, P. usgae, Pseudomonas fluorescens, Spodoptera littoralis* nucleopolyhedrovirus (SpliNPV), *Steinernema carpocapsae, S. feltiae, S. kraussei, Streptomyces galbus, S. microflavus;*

L4) Biochemical pesticides with insecticidal, acaricidal, molluscidal, pheromone and/or

nematicidal activity: L-carvone, citral, (E,Z)-7,9-dodecadien-1-yl acetate, ethyl formate, (E,Z)-2,4-ethyl decadienoate (pear ester), (Z,Z,E)-7,11,13-hexadecatrienal, heptyl butyrate, isopropyl myristate, lavanulyl senecioate, cis-jasmone, 2-methyl 1-butanol, methyl eugenol, methyl jasmonate, jasmonic acid or salts or derivatives thereof, (E,Z)-2,13-octadecadien-1-ol, (E,Z)-2,13-octadecadien-1-ol acetate, (E,Z)-3,13-octadecadien-1-ol, R-1-octen-3-ol, pentatermanone, (E,Z,Z)-3,8,11-tetradecatrienyl acetate, (Z,E)-9,12-tetradecadien-1-yl acetate, Z-7-tetradecen-2-one, Z-9-tetradecen-1-yl acetate, Z-11-tetradecenal, Z-11-tetradecen-1-ol, extract of *Chenopodium ambrosiodes,* Neem oil, Quillay extract;

L5) Microbial pesticides with plant stress reducing, plant growth regulator, plant growth promoting and/or yield enhancing activity: *Azospirillum amazonense, A. brasilense, A. lipoferum, A. irakense, A. halopraeferens, Bradyrhizobium* sp., *B. elkanii, B. japonicum, B. liaoningense, B. lupini, Delftia acidovorans, Glomus intraradices, Mesorhizobium* sp., *Rhizobium leguminosarum* bv. *phaseoli, R. l.* bv. *trifolii, R. l.* bv. *viciae, R. tropici, Sinorhizobium meliloti;*

in synergistically effective amounts.

Moreover, it has been found that simultaneous, that is joint or separate, application of one or more active compound(s) I and one or more biopesticide(s) II or successive application (that is immediately one after another and thereby creating the mixture "in-situ" on the desired location, as e.g. the plant) of one or more active compound(s) I and one or more biopesticide(s) II allows enhanced control of pests compared to the control rates that are possible with the individual compounds. Therefore, the term "mixture" as used herein is intended to include also combinations.

The present invention also relates to a seed treatment composition comprising an auxiliary and a mixture of at least one active compound I and at least one biopesticide II as defined above.

The present invention also relates to the use of the mixture of at least one active compound I and at least one biopesticide II for protecting a plant, plant propagation material, or soil or water, in which the plants are growing, against the attack or infestation by invertebrate pests.

In particular, the present invention relates to the use of the mixture of at least one active compound I and at least one biopesticide II for protecting plant propagation material, preferably seeds, from soil insects and the seedlings' roots and shoots from soil and foliar insects, wherein the plant progagation material as e.g. the seeds are contacted with a pesticidally effective amount of the mixture before sowing and/or after pregermination.

The present invention further relates to a method for controlling invertebrate pests, which method comprises contacting the plant or the plant propagation material or the soil; the pests or their food supply, habitat or breeding grounds, with a pesticidally effective amount of the mixture of at least one active compound I and at least one biopesticide II.

The invention also provides seeds comprising the mixture of at least one active compound I and at least one biopesticide II.

The mixture(s) of at least one active compound of formula I with at least one biopesticide II are herein referred to as "mixture(s) according to the invention" or "mixture(s) of the invention",

wherein the compounds of formula I are understood to include their stereoisomers, salts, tautomers or N-oxides, or a polymorphic crystalline form, a co-crystal or a solvate of a compound or a stereoisomer, salt, tautomer or N-oxide thereof.

In a specific embodiment, the mixture according to the invention is a mixture of one active compound of formula I with one biopesticide II (binary mixture).

In another embodiment, the mixture according to the invention is a mixture of one active compound of formula I with at least one biopesticide II.

The term "composition(s) according to the invention" or "composition(s) of the present invention" encompasses composition(s) comprising the mixtures of the invention, i.e. mixtures of the compounds of formula I with at least one biopesticide II for being used and/or applied in methods according to the invention as defined herein, wherein the compounds of formula I are understood to include their stereoisomers, salts, tautomers or N-oxides, or a polymorphic crystalline form, a co-crystal or a solvate of a compound or a stereoisomer, salt, tautomer or N-oxide thereof.

Compounds of formula I are known from WO 2010/034738, WO 201 2/084670, WO 2012/143317, and US 61/891437 and can be prepared by the methods described therein. These compounds are known to be useful for combating invertebrate pests.

WO201 2/084670 and WO 2013/189801 describe pesticidal mixtures of compounds of formula I with fungicides or insecticides. However, mixtures of compounds of formula I with biopesticides have not been described previously.

The term "compound(s) of formula I" or "compound(s) according to the invention" comprises the compound(s) as defined herein as well as a stereoisomer, salt, tautomer or N-oxide thereof. The term "compound(s) of the present invention" is to be understood as equivalent to the term "compound(s) according to the invention", therefore also comprising a stereoisomer, salt, tautomer or N-oxide thereof.

Depending on the substitution pattern, the compounds of the present invention may have one or more centers of chirality, in which case they are present as mixtures of enantiomers or diastereomers. The invention encompasses both the pure enantiomers or pure diastereomers of the compounds of the present invention, and their mixtures and the use according to the invention of the pure enantiomers or pure diastereomers of the compounds of the present invention or their mixtures. Suitable compounds of the formula of the present invention also include all possible geometrical stereoisomers (cis/trans isomers) and mixtures thereof. Cis/trans isomers may be present with respect to an alkene, carbon-nitrogen double-bond, nitrogen-sulfur double bond or amide group.

The term "stereoisomer(s)" encompasses both optical isomers, such as enantiomers or diastereomers, the latter existing due to more than one center of chirality in the molecule, as well as geometrical isomers (cis/trans isomers).

The compounds of the present invention may be present in the form of their N-oxides. The term "N-oxide" includes any compound of the present invention which has at least one tertiary nitrogen atom that is oxidized to an N-oxide moiety. N-oxides of compounds of the present invention can in particular be prepared by oxidizing the ring nitrogen atom(s) of the pyridazine ring and/or the pyrazole ring with a suitable oxidizing agent, such as peroxo carboxylic acids or other peroxides. The person skilled in the art knows if and in which positions compounds of the

present invention, i.e. of the formula I, may form N-oxides.

Salts of the compounds of the present invention are preferably agriculturally acceptable salts. They can be formed in a customary method, e.g. by reacting the compound with an acid if the compound of the present invention has a basic functionality or by reacting the compound with a suitable base if the compound of the present invention has an acidic functionality. In general, suitable "agriculturally useful salts" or "agriculturally acceptable salts" are especially the salts of those cations or the acid addition salts of those acids whose cations and anions, respectively, do not have any adverse effect on the action of the compounds according to the present invention.

Suitable cations are in particular the ions of the alkali metals, preferably lithium, sodium and potassium, of the alkaline earth metals, preferably calcium, magnesium and barium, and of the transition metals, preferably manganese, copper, zinc and iron, and also ammonium (NhV) and substituted ammonium in which one to four of the hydrogen atoms are replaced by **Ci**-C4 -alkyl, **Ci**-C4 -hydroxyalkyl, **Ci**-C4 -alkoxy, **Ci**-C4 -alkoxy**-Ci**-C4 -alkyl, hydroxy**-Ci**-C4 -alkoxy**-Ci**-C4 -alkyl, phenyl or benzyl. Examples of substituted ammonium ions comprise methylammonium, isopropylammonium, dimethylammonium, diisopropylammonium, trimethylammonium, tetramethylammonium, tetraethylammonium, tetrabutylammonium, 2-hydroxyethylammonium, 2-(2-hydroxyethoxy)ethyl-ammonium, bis(2-hydroxyethyl)ammonium, benzyltrimethylammonium and benzyltriethylammonium, furthermore phosphonium ions, sulfonium ions, preferably **tri(Ci-**C 4-alkyl)sulfonium, and sulfoxonium ions, preferably tri**(Ci**-C4 -alkyl)sulfoxonium.

Anions of useful acid addition salts are primarily chloride, bromide, fluoride, hydrogen sulfate, sulfate, dihydrogen phosphate, hydrogen phosphate, phosphate, nitrate, hydrogen carbonate, carbonate, hexafluorosilicate, hexafluorophosphate, benzoate, and the anions of **Ci**-C4 -alkanoic acids, preferably formate, acetate, propionate and butyrate. They can be formed by reacting the compounds of the formulae I with an acid of the corresponding anion, preferably of hydrochloric acid, hydrobromic acid, sulfuric acid, phosphoric acid or nitric acid.

Preferred compounds of the present invention are compounds of formula I or a stereoisomer, N-oxide or salt thereof, wherein the salt is an agriculturally acceptable salt.

The compounds of of the formula I may be amorphous or may exist in one ore more different crystalline states (polymorphs) which may have a different macroscopic properties such as stability or show different biological properties such as activities. The present invention includes both amorphous and crystalline compounds of the formula I, mixtures of different crystalline states of the respective compound I, as well as amorphous or crystalline salts thereof.

Biopesticides have been defined as a form of pesticides based on micro-organisms (bacteria, fungi, viruses, nematodes, etc.) or natural products (compounds, such as metabolites, proteins, or extracts from biological or other natural sources) (U.S. Environmental Protection Agency: http://www.epa.gov/pesticides/biopesticides/). Biopesticides fall into two major classes, microbial and biochemical pesticides:

(1) Microbial pesticides consist of bacteria, fungi or viruses (and often include the metabolites that bacteria and fungi produce). Entomopathogenic nematodes are also classified as microbial pesticides, even though they are multi-cellular.

(2) Biochemical pesticides are naturally occurring substances or or structurally-similar and functionally identical to a naturally-occurring substance and extracts from biological sources that

control pests or provide other crop protection uses as defined below, but have non-toxic mode of actions (such as growth or developmental regulation, attractents, repellents or defence activators (e.g. induced resistance) and are relatively non-toxic to mammals.

The biopesticides from group L1) and/or L2) may also have insecticidal, acaricidal, molluscidal, pheromone, nematicidal, plant stress reducing, plant growth regulator, plant growth promoting and/or yield enhancing activity. The biopesticides from group L3) and/or L4) may also have fungicidal, bactericidal, viricidal, plant defense activator, plant stress reducing, plant growth regulator, plant growth promoting and/or yield enhancing activity. The biopesticides from group L5) may also have fungicidal, bactericidal, viricidal, plant defense activator, insecticidal, acaricidal, molluscidal, pheromone and/or nematicidal activity.

Many of these biopesticides have been deposited under deposition numbers mentioned herein (the prefices such as ATCC or DSM refer to the acronym of the respective culture collection, for details see e. g. here: http://www. wfcc.info/ccinfo/collection/by_acronym/), are referred to in literature, registered and/or are commercially available: mixtures of *Aureobasidium pullulans* DSM 14940 and DSM 14941 isolated in 1989 in Konstanz, Germany (e. g. blastospores in Blossom Protect® from bio-ferm GmbH, Austria), *Bacillus amyloliquefaciens* strain AP-188 (NRRL B-50615 and B-50331 ; US 8,445,255); *B. amyloliquefaciens* spp. *plantarum* D747 isolated from air in Kikugawa-shi, Japan (US 20130236522 A 1; FERM BP-8234; e. g. Double Nickel™ 55 WDG from Certis LLC, USA), *B. amyloliquefaciens* spp. *plantarum* FZB24 isolated from soil in Brandenburg, Germany (also called SB3615; DSM 96-2; J. Plant Dis. Prot. 105, 181-197, 1998; e. g. Taegro® from Novozyme Biologicals, Inc., USA), *B. amyloliquefaciens* ssp. *plantarum* FZB42 isolated from soil in Brandenburg, Germany (DSM 231 17; J. Plant Dis. Prot. 105, 181-197, 1998; e. g. RhizoVital® 42 from AbiTEP GmbH, Germany), *B. amyloliquefaciens* ssp. *plantarum* MBI600 isolated from faba bean in Sutton Bonington, Nottinghamshire, U.K. at least before 1988 (also called 1430; NRRL B-50595; US 2012/0149571 A 1; e. g. Integral® from BASF Corp., USA), *B. amyloliquefaciens* spp. *plantarum* QST-713 isolated from peach orchard in 1995 in California, U.S.A. (NRRL B-21661 ; e. g. Serenade® MAX from Bayer Crop Science LP, USA), *B. amyloliquefaciens* spp. *plantarum* TJ1000 isolated in 1992 in South Dakoda, U.S.A. (also called 1BE; ATCC BAA-390; CA 2471555 A 1; e. g. QuickRoots™ from TJ Technologies, Watertown, SD, USA), *B. firmus* CNCM 1-1582, a variant of parental strain EIP-N1 (CNCM 1-1556) isolated from soil of central plain area of Israel (WO 2009/126473, US 6,406,690; e. g. Votivo® from Bayer CropScience LP, USA), *B. pumilus* GHA 180 isolated from apple tree rhizosphere in Mexico (IDAC 260707-01 ; e. g. PRO-MIX® BX from Premier Horticulture, Quebec, Canada), *B. pumilus* INR-7 otherwise referred to as BU-F22 and BU-F33 isolated at least before 1993 from cucumber infested by *Erwinia tracheiphila* (NRRL B-501 85, NRRL B-501 53; US 8,445,255), *B. pumilus* QST 2808 was isolated from soil collected in Pohnpei, Federated States of Micronesia, in 1998 (NRRL B-30087; e. g. Sonata® or Ballad® Plus from Bayer Crop Science LP, USA), *B. simplex* ABU 288 (NRRL B-50304; US 8,445,255), *B. subtilis* FB1 7 also called UD 1022 or UD1 0-22 isolated from red beet roots in North America (ATCC PTA-1 1857; System. Appl. Microbiol. 27, 372-379, 2004; US 2010/0260735; WO 201 1/109395); *B. thuringiensis* ssp. *aizawai* ABTS-1857 isolated from soil taken from a lawn in Ephraim, Wisconsin, U.S.A., in 1987 (also called ABG-6346; ATCC SD-1372; e. g. XenTari® from BioFa AG, Munsingen, Germany), *B. t.* ssp. *kurstaki*

ABTS-351 identical to HD-1 isolated in 1967 from diseased Pink Bollworm black larvae in Brownsville, Texas, U.S.A. (ATCC SD-1275; e.g. Dipel® DF from Valent Biosciences, IL, USA), *B. t.* ssp. *tenebrionis* NB-176-1 , a mutant of strain NB-125, a wild type strain isolated in 1982 from a dead pupa of the beetle Tenebrio molitor (DSM 5480; EP 585 215 B1; e.g. Novodor® from Valent Biosciences, Switzerland), *Beauveria bassiana* GHA (ATCC 74250; e.g. BotaniGard® 22WGP from Laverlam Int. Corp., USA), *B. bassiana* JW-1 (ATCC 74040; e.g. Naturalis® from CBC (Europe) S.r.l., Italy), *Burkholderia sp.* A396 isolated from soil in Nikko, Japan, in 2008 (NRRL B-50319; WO 2013/032693; Marrone Bio Innovations, Inc., USA), *Coniothyrium m/n/tans* CON/*M*/91-08 isolated from oilseed rape (WO 1996/021358; DSM 9660; e.g. Contans® WG, Intercept® WG from Bayer CropScience AG, Germany), harpin (alpha-beta) protein (Science 257, 85-88, 1992; e.g. Messenger™ or HARP-N-Tek from Plant Health Care pic, U.K.), *Helicoverpa armigera* nucleopolyhedrovirus (HearNPV) (J. Invertebrate Pathol. 107, 112-126, 201 1; e.g. Helicovex® from Adermatt Biocontrol, Switzerland; Diplomata® from Koppert, Brazil; Vivus® Max from AgBiTech Pty Ltd., Queensland, Australia), *Helicoverpa zea* single capsid nucleopolyhedrovirus (HzSNPV) (e. g. Gemstar® from Certis LLC, USA), *Helicoverpa zea* nucleopolyhedrovirus ABA-NPV-U (e. g. Heligen® from AgBiTech Pty Ltd., Queensland, Australia), *Heterorhabditis bacteriophora* (e. g. Nemasys® G from BASF Agricultural Specialities Limited, UK), *Isaria fumosorosea* Apopka-97 isolated from mealy bug on gynura in Apopka, Florida, U.S.A. (ATCC 20874; Biocontrol Science Technol. 22(7), 747-761 , 2012; e.g. PFR-97™ or PreFeRal® from Certis LLC, USA), *Metarhizium anisopliae* var. *anisopliae* F52 also called 275 or V275 isolated from codling moth in Austria (DSM 3884, ATCC 90448; e.g. Met52® Novozymes Biologicals BioAg Group, Canada), *Metschnikowia fructicola* 277 isolated from grapes in the central part of Israel (US 6,994,849; NRRL Y-30752; e.g. formerly Shemer® from Agrogreen, Israel), *Paecilomyces ilacinus* 251 isolated from infected nematode eggs in the Philippines (AGAL 89/030550; W01 991/02051 ; Crop Protection 27, 352-361 , 2008; e.g. BioAct®from Bayer CropScience AG, Germany and MeloCon® from Certis, USA), *Pasteuria nishizawae* Pn1 isolated from a soybean field in the mid-2000s in Illinois, U.S.A. (ATCC SD-5833; Federal Register 76(22), 5808, February 2, 201 1; e.g. Clariva™ PN from Syngenta Crop Protection, LLC, USA), *Penicillium bilaiae* (also called *P. bilaii)* strains ATCC 18309 (= ATCC 7431 9), ATCC 20851 and/or ATCC 22348 (= ATCC 7431 8) originally isolated from soil in Alberta, Canada (Fertilizer Res. 39, 97-103, 1994; Can. J. Plant Sci. 78(1), 91-102, 1998; US 5,026,417, WO 1995/017806; e.g. Jump Start®, Provide® from Novozymes Biologicals BioAg Group, Canada), *Reynoutria sachalinensis* extract (EP 0307510 B1; e.g. Regalia® SC from Marrone Biolnnovations, Davis, CA, USA or Milsana® from BioFa AG, Germany), *Steinernema carpocapsae* (e. g. Millenium® from BASF Agricultural Specialities Limited, UK), *S. feltiae {e.* g. Nemashield® from BioWorks, Inc., USA; Nemasys® from BASF Agricultural Specialities Limited, UK), *Streptomyces microflavus* NRRL B-50550 (WO 2014/124369; Bayer CropScience, Germany), *T. harzianum* T-*22* also called KRL-AG2 (ATCC 20847; BioControl 57, 687-696, 2012; e.g. Plantshield® from BioWorks Inc., USA or SabrEx™ from Advanced Biological Marketing Inc., Van Wert, OH, USA).

Preferred biopesticides, which have been deposited under deposition numbers mentioned herein (the prefices such as ATCC or DSM refer to the acronym of the respective culture collection, for details see e.g. here: http://www. wfcc.info/ccinfo/collection/by_acronym/), are

referred to in literature, registered and/or are commercially available: mixtures of *Aureobasidium pu/lu/ans DSM* 14940 and DSM 14941 isolated in 1989 in Konstanz, Germany (e. g. blastospores in Blossom Protect® from bio-ferm GmbH, Austria), *Bacillus amyloliquefaciens* strain AP-188 (NRRL B-50615 and B-50331 ; US 8,445,255); *B. amyloliquefaciens* spp. *plantarum* D747 isolated from air in Kikugawa-shi, Japan (US 20130236522 A 1; FERM BP-8234; e. g. Double Nickel™ 55 WDG from Certis LLC, USA), *B. amyloliquefaciens* spp. *plantarum* FZB24 isolated from soil in Brandenburg, Germany (also called SB3615; DSM 96-2; J. Plant Dis. Prot. 105, 181-197, 1998; e. g. Taegro® from Novozyme Biologicals, Inc., USA), *B. amyloliquefaciens* ssp. *plantarum* FZB42 isolated from soil in Brandenburg, Germany (DSM 231 17; J. Plant Dis. Prot. 105, 181-197, 1998; e. g. RhizoVital® 42 from AbiTEP GmbH, Germany), *B. amyloliquefaciens* ssp. *plantarum* MBI600 isolated from faba bean in Sutton Bonington, Nottinghamshire, U.K. at least before 1988 (also called 1430; NRRL B-50595; US 2012/0149571 A 1; e. g. Integral® from BASF Corp., USA), *B. amyloliquefaciens* s*pp. plantarum* QST-713 isolated from peach orchard in 1995 in California, U.S.A. (NRRL B-21661 ; e. g. Serenade® MAX from Bayer Crop Science LP, USA), *B. amyloliquefaciens* spp. *plantarum* TJ1000 isolated in 1992 in South Dakoda, U.S.A. (also called 1BE; ATCC BAA-390; CA 2471555 A 1; e. g. QuickRoots™ from TJ Technologies, Watertown, SD, USA), *B. firmus* CNCM 1-1582, a variant of parental strain EIP-N1 (CNCM 1-1556) isolated from soil of central plain area of Israel (WO 2009/126473, US 6,406,690; e. g. Votivo® from Bayer CropScience LP, USA), *B. pumilus* GHA 180 isolated from apple tree rhizosphere in Mexico (IDAC 260707-01 ; e. g. PRO-MIX® BX from Premier Horticulture, Quebec, Canada), *B. pumilus* INR-7 otherwise referred to as BU-F22 and BU-F33 isolated at least before 1993 from cucumber infested by *Erwinia tracheiphila* (NRRL B-501 85, NRRL B-501 53; US 8,445,255), *B. pumilus* QST 2808 was isolated from soil collected in Pohnpei, Federated States of Micronesia, in 1998 (NRRL B-30087; e. g. Sonata® or Ballad® Plus from Bayer Crop Science LP, USA), *B. simplex* ABU 288 (NRRL B-50304; US 8,445,255), *B. subtilis* FB17 also called UD 1022 or UD10-22 isolated from red beet roots in North America (ATCC PTA-1 1857; System. Appl. Microbiol. 27, 372-379, 2004; US 2010/0260735; WO 201 1/109395); *B. thuringiensis* ssp. *aizawai* ABTS-1857 isolated from soil taken from a lawn in Ephraim, Wisconsin, U.S.A., in 1987 (also called ABG-6346; ATCC SD-1372; e. g. XenTari® from BioFa AG, Munsingen, Germany), *B. t.* ssp. *kurstaki* ABTS-351 identical to HD-1 isolated in 1967 from diseased Pink Bollworm black larvae in Brownsville, Texas, U.S.A. (ATCC SD-1275; e. g. Dipel® DF from Valent Biosciences, IL, USA), *B. t.* ssp. *tenebrionis* NB-176-1 , a mutant of strain NB-125, a wild type strain isolated in 1982 from a dead pupa of the beetle Tenebrio molitor (DSM 5480; EP 585 215 B 1; e. g. Novodor® from Valent Biosciences, Switzerland), *Beauveria bass/ana* GHA (ATCC 74250; e. g. BotaniGard® 22WGP from Laverlam Int. Corp., USA), *B. bassianaJW-* λ (ATCC 74040; e. g. Naturalis® from CBC (Europe) S.r.l., Italy), *Burkholderia sp.* A396 isolated from soil in Nikko, Japan, in 2008 (NRRL B-50319; WO 2013/032693; Marrone Bio Innovations, Inc., USA), *Coniothyrium m/n/tans* CON/*M*/91-08 isolated from oilseed rape (WO 1996/021358; DSM 9660; e. g. Contans® WG, Intercept® WG from Bayer CropScience AG, Germany), harpin (alpha-beta) protein (Science 257, 85-88, 1992; e. g. Messenger™ or HARP-N-Tek from Plant Health Care pic, U.K.), *Helicoverpa armigera* nucleopolyhedrovirus (HearNPV) (J. Invertebrate Pathol. 107, 112-126, 201 1; e. g. Helicovex® from Adermatt Biocontrol, Switzerland; Diplomata® from Koppert, Brazil; Vivus® Max from AgBiTech Pty Ltd., Queensland, Australia), *Helicoverpa zea*

single capsid nucleopolyhedrovirus (HzSNPV) (e. g. Gemstar® from Certis LLC, USA), *Helicoverpa zea* nucleopolyhedrovirus ABA-NPV-U (e. g. Heligen® from AgBiTech Pty Ltd., Queensland, Australia), *Heterorhabditis bacteriophora* (e. g. Nemasys® G from BASF Agricultural Specialities Limited, UK), *Isaria fumosorosea* Apopka-97 isolated from mealy bug on gynura in Apopka, Florida, U.S.A. (ATCC 20874; Biocontrol Science Technol. 22(7), 747-761 , 2012; e. g. PFR-97™ or PreFeRal® from Certis LLC, USA), *Metarhizium anisopliae*'var. *anisopliae* F52 also called 275 or V275 isolated from codling moth in Austria (DSM 3884, ATCC 90448; e. g. Met52® Novozymes Biologicals BioAg Group, Canada), *Metschnikowia fructicola* 277 isolated from grapes in the central part of Israel (US 6,994,849; NRRL Y-30752; e. g. formerly Shemer® from Agrogreen, Israel), *Paecilomyces ilacinus2b*\ isolated from infected nematode eggs in the Philippines (AGAL 89/030550; W0 1991/02051 ; Crop Protection 27, 352-361 , 2008; e. g. BioAct®from Bayer CropScience AG, Germany and MeloCon® from Certis, USA), *Pasteur/a nishizawae* Pn1 isolated from a soybean field in the mid-2000s in Illinois, U.S.A. (ATCC SD-5833; Federal Register 76(22), 5808, February 2, 201 1; e.g. Clariva™ PN from Syngenta Crop Protection, LLC, USA), *Penicillium bilaiae* (also called *P. bilaii)* strains ATCC 18309 (= ATCC 74319), ATCC 20851 and/or ATCC 22348 (= ATCC 74318) originally isolated from soil in Alberta, Canada (Fertilizer Res. 39, 97-103, 1994; Can. J. Plant Sci. 78(1), 91-102, 1998; US 5,026,417, WO 1995/017806; e. g. Jump Start®, Provide® from Novozymes Biologicals BioAg Group, Canada), *Reynoutria sachalinensis* extract (EP 0307510 B 1; e. g. Regalia® SC from Marrone Biolnnovations, Davis, CA, USA or Milsana® from BioFa AG, Germany), *Steinernema carpocapsae* (e. g. Millenium® from BASF Agricultural Specialities Limited, UK), *S. feltiae {e.* g. Nemashield® from BioWorks, Inc., USA; Nemasys® from BASF Agricultural Specialities Limited, UK), *Streptomyces microflavus* NRRL B-50550 (WO 2014/124369; Bayer CropScience, Germany), *T. harzianum* T-*22* also called KRL-AG2 (ATCC 20847; BioControl 57, 687-696, 2012; e. g. Plantshield® from BioWorks Inc., USA or SabrEx™ from Advanced Biological Marketing Inc., Van Wert, OH, USA).

Preferred biopesticides on strain level are selected from the following groups L1) to L5):

L1) Microbial pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: *Aureobasidium pullulans* DSM 14940 and DSM 14941 (L1 .1), *Bacillus amy/o-liquefaciens* AP-188 (L.1 .2), *B. amyloliquefaciens* ssp. *plantarum* D747 (L.1 .3), *B. amylo-liquefaciens* ssp. *plantarum* FZB24 (L.1 .4), *B. amyloliquefaciens* ssp. *plantarum* FZB42 (L.1 .5), *B. amyloliquefaciens* ssp. *plantarum* MBI600 (L.1.6), *B. amyloliquefaciens* ssp. *plantarum* QST-7'13 (L.1 .7), *B. amyloliquefaciens* ssp. *plantarum* TJ1000 (L.1 .8), *B. pum/ius* GB34 (L.1 .9), *B. pum/ius* GH*A* 180 (L.1 .10), *B. pumilus* INR-7 (L.1 .11), *B. pum/ius QSJ 2808* (L.1. 13), *B. simplex* ABU 288 (L.1 .14), *B. subtilis* FB17 (L.1 .15), *Coniothyrium minitans* CON/M/91-08 (L.1 .16), *Metschnikowia fructicola* NRRL Y-30752 (L.1 .17), *Penicillium bilaiae* ATCC 22348 (L.1 .19), *P. bilaiae* ATCC 20851 (L.1 .20), *Penicillium bilaiae* ATCC 18309 (L.1 .21), *Streptomyces microflavus* NRRL B-50550 (L.1 .22), *T. harzianum* T-22 (L.1 .24);

L2) Biochemical pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: harpin protein (L.2.1), *Reynoutria sachalinensis* extract (L.2.2);

L3) Microbial pesticides with insecticidal, acaricidal, molluscidal and/or nematicidal activity: *Bacillus firmus* \-1582 (L.3.1); *B. thuringiensis* ssp. *aizawai* ABTS-1857 (L.3.2), *B. t.* ssp.

kurstaki ABTS-351 (L.3.3), *B. t.* ssp. *tenebrionis* NB-1 76-1 (L.3.5), *Beauveria bassiana* GHA (L.3.6), *B. bassiana* JW-1 (L.3.7), *Burkholderia* sp. A396 (L.3.9), *Helicoverpa armigera* nucleopolyhedrovirus (HearNPV) (L.3.10), *Helicoverpa zea* nucleopolyhedrovirus (HzNPV) ABA-NPV-U (L.3.1 1), *Helicoverpa zea* single capsid nucleopolyhedrovirus (HzSNPV) (L.3.12), *Heterohabditis bacteriophora* (L.3.1 3), *Isaria fumosorosea* Apopka-97 (L.3.1 4), *Metarhizium anisop/iae* var. *anisop/iae* F52 (L.3.1 5), *Paecilomyces lilacinus* 251 (L.3.16), *Pasteuria nishizawae Pn*1 (L.3.17), *Steinernema carpocapsae* (L.3.18), *S. feltiae* (L.3.19);

L4) Biochemical pesticides with insecticidal, acaricidal, molluscidal, pheromone and/or nematicidal activity: cis-jasmone (L.4.1), methyl jasmonate (L.4.2), Quillay extract (L.4.3);

in particular from

L1) Microbial pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: *Aureobasidium pullulans* DSM 14940 and DSM 14941 (L1 .1), *Bacillus amyloliquefaciens* AP-1 88 (L.1 .2), *B. amyloliquefaciens* ssp. *plantarum* D747 (L.1 .3), *B. amyloliquefaciens* ssp. *plantarum* FZB24 (L.1 .4), *B. amyloliquefaciens* ssp. *plantarum* FZB42 (L.1 .5), *B. amyloliquefaciens* ssp. *plantarum* MBI600 (L.1 .6), *B. amyloliquefaciens* ssp. *plantarum* QST-71 3 (L.1 .7), *B. amyloliquefaciens* ssp. *plantarum* TJ1 000 (L.1 .8), *B. pumilus* GB34 (L.1 .9), *B. pumilus* GHA 180 (L.1 .10), *B. pumilus* INR-7 (L.1 .11), *B. pumilus* QST 2808 (L. 1.13), *B. simplex* ABU 288 (L. 1.14), *B. subtilis* FB17 (L.1 .15), *Coniothyrium minitans* CON/M/91 -08 (L.1 .16), *Metschnikowia fructicola* NRRL Y-30752 (L.1 .17), *Penicillium bilaiae* ATCC 22348 (L.1 .19), P. *bilaiae ATCC* 20851 (L.1 .20), *Penicillium bilaiae* ATCC 18309 (L.1 .21), *Streptomyces microti avus* NRRL B-50550 (L.1 .22), *T. harzianum* T-*22* (L.1 .24);

L2) Biochemical pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: harpin protein (L.2.1), *Reynoutria sachalinensis* extract (L.2.2);

L3) Microbial pesticides with insecticidal, acaricidal, molluscidal and/or nematicidal activity: *Bacillus firmus* I-1582 (L.3.1); *B. thuringiensis* ssp. *aizawai* ABTS-1857 (L.3.2), *B. t.* ssp. *kurstaki* ABTS-351 (L.3.3), *B. t.* ssp. *tenebrionis* NB-1 76-1 (L.3.5), *Beauveria bassiana* GHA (L.3.6), *B. bassiana* JW-1 (L.3.7), *Burkholderia* sp. A396 (L.3.9), *Helicoverpa armigera* nucleopolyhedrovirus (HearNPV) (L.3.10), *Helicoverpa zea* nucleopolyhedrovirus (HzNPV) ABA-NPV-U (L.3.1 1), *Helicoverpa zea* single capsid nucleopolyhedrovirus (HzSNPV) (L.3.12), *Heterohabditis bacteriophora* (L.3AS), *Isaria fumosorosea* Apopka-97 (L.3. 14), *Metarhizium anisop/iae* var. *anisop/iae* F52 (L.3. 15), *Paeci/omyces ///acinus* 251 (L.3.16), *Pasteur/a nishizawae Pn*1 (L.3.17), *Steinernema carpocapsae* (L.3. 18), *S. feltiae* (L.3. 19);

L4) Biochemical pesticides with insecticidal, acaricidal, molluscidal, pheromone and/or nematicidal activity: cis-jasmone (L.4.1), methyl jasmonate (L.4.2), Quillay extract (L.4.3).

Preference is also given to mixtures comprising as pesticide II (component 2) a biopesticide selected from the groups L1), L3) and L5), preferably selected from strains denoted above as (L.1 .2), (L.1 .3), (L.1 .4), (L.1 .5), (L.1 .6), (L.1 .7), (L.1 .8), (L.1 .10), (L.1 .11), (L.1 .12), (L.1 .13), (L.1 .14), (L.1 .15), (L.1 .17), (L.1 .18), (L.1 .19), (L.1 .20), (L.1 .21), (L.3.1); (L.3.9), (L.3.16),

(L.3.17), (L.5.1), (L.5.2), (L.5.3), (L.5.4), (L.5.5), (L.5.6), (L.5.7), (L.5.8); (L.4.2), and (L.4.1); even more preferably selected from (L.1 .2), (L.1 .6), (L.1 .7), (L.1 .8), (L.1 .11), (L.1 .12), (L.1 .13), (L.1 .14), (L.1 .15), (L.1 .18), (L.1 .19), (L.1 .20), (L.1 .21), (L.3.1); (L.3.9), (L.3.16), (L.3.17), (L.5.1), (L.5.2), (L.5.5), (L.5.6), (L.4.2), and (L.4.1). Preference is also fiven to mixtures comprising as pesticide II (component 2) a biopesticide selected from strains (L.1 .2), (L.1 .3), (L.1 .4), (L.1 .5), (L.1 .6), (L.1 .7), (L.1 .8), (L.1 .10), (L.1 .11), (L.1 .13), (L.1 .14), (L.1 .15), (L.1 .17), (L.1 .19), (L.1 .20), (L.1 .21), (L.3.1); (L.3.9), (L.3.16), (L.3.17), (L.4.2), and (L.4.1); even more preferably selected from (L.1 .2), (L.1 .6), (L.1 .7), (L.1 .8), (L.1 .11), (L.1 .13), (L.1 .14), (L.1 .15), (L.1 .19), (L.1 .20), (L.1 .21), (L.3.1); (L.3.9), (L.3.16), (L.3.17), (L.4.2), and (L.4.1). These mixtures are particularly suitable for treatment of propagation mateials, i. e. seed treatment purposes and likewise for soil treatment. These seed treatment mixtures are particularly suitable for crops such as cereals, corn and leguminous plants such as soybean.

Preference is also given to mixtures comprising as pesticide II (component 2) a biopesticide selected from the groups L1), L3) and L5), preferably selected from strains denoted above as (L1 .1), (L.1 .2), (L.1 .3), (L.1 .6), (L.1 .7), (L.1 .9), (L.1 .11), (L.1 .12), (L.1 .13), (L.1 .14), (L.1 .15), (L.1 .17), (L.1 .18), (L.1 .22), (L.1 .23), (L.1 .24), (L.2.2); (L.3.2), (L.3.3), (L.3.4), (L.3.5), (L.3.6), (L.3.7), (L.3.8), (L.3.10), (L.3.11), (L.3.12), (L.3.13), (L.3.14), (L.3.15), (L.3.18), (L.3.19); (L.4.2), even more preferably selected from (L.1 .2), (L.1 .7), (L.1 .11), (L.1 .13), (L.1 .14), (L.1 .15), (L.1 .18), (L.1 .23), (L.3.3), (L.3.4), (L.3.6), (L.3.7), (L.3.8), (L.3.10), (L.3.11), (L.3.12), (L.3.15), and (L.4.2). Preference is also fiven to mixtures comprising as pesticide II (component 2) a biopesticide selected from strains (L1 .1), (L.1 .2), (L.1 .3), (L.1 .6), (L.1 .7), (L.1 .9), (L.1 .11), (L.1 .13), (L.1 .14), (L.1 .15), (L.1 .17), (L.1 .22), (L.1 .24), (L.2.2); (L.3.2), (L.3.3), (L.3.5), (L.3.6), (L.3.7), (L.3.10), (L.3.11), (L.3.12), (L.3.13), (L.3.14), (L.3.15), (L.3.18), (L.3.19); (L.4.2), even more preferably selected from (L.1 .2), (L.1 .7), (L.1 .11), (L.1 .13), (L.1 .14), (L.1 .15), (L.3.3), (L.3.6), (L.3.7), (L.3.10), (L.3.11), (L.3.12), (L.3.15), and (L.4.2).These mixtures are particularly suitable for foliar treatment. These mixtures for foliar treatment are particularly suitable for vegetables, fruits, vines, cereals, corn, leguminous crops such as soybeans.

For biopesticides II selected from groups L1, L3, and L5, the mixtures of the invention embrace not only the isolated, pure cultures of the respective microorganisms as defined herein, but also its cell-free extract having pesticidal activity, preferably a ketone-based extract, its suspensions in a whole broth culture or as a metabolite-containing supernatant or a purified metabolite obtained from a whole broth culture of the microorganism or microorganism strain.

"Whole broth culture" refers to a liquid culture containing both cells and media.

"Supernatant" or "culture medium" refers to the liquid broth remaining when cells grown in broth are removed by centrifugation, filtration, sedimentation, or other means well known in the art.

The term "metabolite" refers to any compound, substance or byproduct (including but not limited to small molecule secondary metabolites, polyketides, fatty acid synthase products, non-ribosomal peptides, ribosomal peptides, proteins and enzymes) produced by a microorganism (such as fungi and bacteria) that has pesticidal activity or improves plant growth, water use efficiency of the plant, plant health, plant appearance, or the population of beneficial microorganisms in the soil around the plant activity.

The term "mutant" refers to a microorganism, obtained by direct mutant selection but also includes microorganisms that have been further mutagenized or otherwise manipulated (e. g., via the introduction of a plasmid). Accordingly, embodiments include mutants, variants, and or derivatives of the respective microorganism, both naturally occurring and artificially induced mutants. For example, mutants may be induced by subjecting the microorganism to known mutagens, such as N-methyl-nitrosoguanidine, using conventional methods. Preferably such mutants retain the pesticidal activity of the respective microorganism.

The remarks made below as to preferred embodiments of the variables (substituents) of the compounds of formula I are to be understood as preferred on their own as well as preferably in combination with each other, as well as in combination with the stereoisomers, tautomers, N-oxides or salts thereof, and in combination with the preferred embodiments of the biopesticides II of the pesticidal mixtures as defined herein, and, where applicable, as well as concerning the uses and methods according to the invention and the compositions according to the invention.

The preferred embodiments of the variables of the compounds of formula I are defined hereinafter.

In one embodiment, R^1 is H, CH3, C2H5, or CH2OCH3, preferably CH3, or C2H5.

In one embodiment, R^2 is CH3.

In one embodiment, R^3 is Ci-C6-alkyl, Ci-C6-haloalkyl, $_{C3-C6}$ -cycloalkyl, wherein the C-atoms may be unsubstituted, or partially or fully substituted by halogen, or CN.

In a preferred embodiment, R^3 is CH_3, C_2H_5, $CH(CH_3)_2$, CH2CH2CH3, CF_3, CHFCH3, cyclopropyl, wherein the ring is substituted by halogen, or CN.

In a further preferred embodiment, R^3 is CH_3, $CH(CH_3)_2$, CF_3, CHFCH3, 1-CN-c-C_3H_4.

In one embodiment, R^4 is Ci-C4-alkyl, preferably CH3.

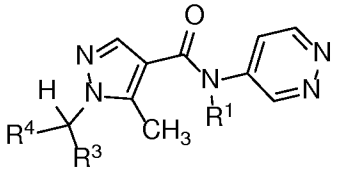
In another embodiment R^3 and R^4 together form Cs-Ce-cycloalkyl, wherein the C-atoms may be unsubstituted, or partially or fully substituted by halogen, or CN.

In one embodiment, R^5 is H.

In another embodiment, R^5 is H, and R^4 is CH3.

In a further embodiment, R^1 is CH_3 or C_2H_5, R^2 is CH_3, R^5 is H, and R^4 is CH_3, and R^3 is selected from CH_3, $CH(CH_3)_2$, CF_3, CHFCH3, and 1-CN-c-C_3H_4.

In one embodiment, the compound of formula I is a compound of formula IA as depicted below, wherein R^2 is CH3 and R^5 is H.



IA

For the compounds of formula IA, it is particularly preferred that R^1 is H, CH3, C2H5, or CH_2OCH_3.

Furthermore, it is preferred for the compounds of formula IA that R^3 is CH3, C2H5, CH(CH3)2, CH2CH2CH3, CF3, CHFCH3, cyclopropyl, wherein the ring is substituted by halogen, or CN, and that R^4 is Ci-C4-alkyl, or that R^3 and R^4 together form Cs-Ce-cycloalkyl, which is unsubstituted, or partially or fully substituted by halogen, or CN.

Particularly preferred compounds of formula I are compounds of formula IA, wherein the variables R^1, R^3, and R^4 correspond to one row of table I below. Said compounds are referred to

as compounds 1-1 to 1-18 in accordance with each row of table I.

Table I

No	R^1	R^3	R^4
I-1	CH_3	CH_3	CH_3
I-2	CH_3	CF_3	CH_3
I-3	CH_3	$CH(CH_3)_2$	CH_3
I-4	CH_3	1-CN-c-C_3H_4	CH_3
I-5	CH_3	$CHFCH_3$	CH_3
I-6	CH_3	$CH_2CH_2CF_2CH_2CH_2$	
I-7	CH_2CH_3	CH_3	CH_3
I-8	CH_2CH_3	CF_3	CH_3
I-9	CH_2CH_3	$CH(CH_3)_2$	CH_3

No	R^1	R^3	R^4
I-10	CH_2CH_3	1-CN-c-C_3H_4	CH_3
I-11	CH_2CH_3	$CHFCH_3$	CH_3
I-12	CH_2CH_3	$CH_2CH_2CF_2CH_2CH_2$	
I-13	CH_2OCH_3	CH_3	CH_3
I-14	CH_2OCH_3	CF_3	CH_3
I-15	CH_2OCH_3	$CH(CH_3)_2$	CH_3
I-16	CH_2OCH_3	1-CN-c-C_3H_4	CH_3
I-17	CH_2OCH_3	$CHFCH_3$	CH_3
I-18	CH_2OCH_3	$CH_2CH_2CF_2CH_2CH_2$	

With regard to the compounds I-2, I-3, I-4, I-5, I-8, I-9, 1-10, 1-11, 1-14, 1-15, 1-16, 1-17, it is to be understood, as explained above, that the compounds may be present in two enantiomeric forms, which are all understood to be encompassed by the present invention, either in isolated form or as a mixture.

In addition to the above defined compound of formula I, i.e. component 1), the pesticidal mixtures of the invention comprise a component 2), which is a biopesticide II, which is selected from the groups L1 to L5 as defined above. Preferred biopesticides II are defined hereinafter.

The preferred embodiments regarding biopesticides II, which may be selected as component 2) of the mixtures of the invention, are to be understood as preferred on their own as well as preferably in combination with the preferred embodiments of the compounds of formula I, i.e. component 1) of the mixture of the invention, and, where applicable, as well as concerning the uses and methods according to the invention and the compositions according to the invention.

Preference is given to mixtures comprising as biopesticide II (component 2) a biopesticide selected from group L1, preferably selected from *Bacillus amyloliquefaciens* herein even more preferably from strains AP-136, AP-188, AP-218, AP-219, AP-295, IN937a, IT-45; *B. amyloliquefaciens* ssp. *plantarum* (formerly called *B. subtilis* or *B. subtilis* spp. *amyloliquefaciens)* herein even more preferably from strains MBI600, D747, FZB24, FZB42, GB03, QST-713 and TJ1000; *B. mojavensis* AP-209; *B. pumilus* herein even more preferably from strains GHA 180, INR-7, and QST 2808; *B. simplexhere ṁ* more preferably strain ABU 288; *B. so/isa/si* herein more preferably strain AP-217; *B. subtilis* herein even more preferably selected from strains CX-9060, FB17 and GB07; *Muscodor a/bus* herein more preferably strains QST 20799 and SA-13; *Paenibacillus polymyxa* herein more preferably strain PKB1 , *Penicillium bilaiae* herein more preferably strains ATCC 22348, ATCC 20581 and ATCC 18309; *Pseudomonas fluorescens* herein more preferably strain A506; *Sphaerodes mycoparasitica* herein more preferably strain SMCD2220; ; *Trichoderma harzianum* herein more preferably strain T-22; *Trichoderma virens* herein more preferably strais GI-3 and G-41 .

Preference is also given to mixtures comprising as biopesticide II (component 2) a biopesticide

selected from group L1, even more preferably selected from *B. amyloliquefaciens* AP-188, *B. amyloliquefaciens* ssp. *plantarum* MBI600, *B. amyloliquefaciens* ssp. *plantarum* QST-713, *B. pumilus* INR-7, *B. pumilus* QST 2808, *B. simplex* ABU 288, and *B. subtilis* FB17.

According to one embodiment of the inventive mixtures, the at least one biopesticide II is *Bacillus amyloliquefaciens* ssp. *plantarum* MBI600. These mixtures are particularly suitable in soybean.

According to another embodiment of the inventive mixtures, the at least one biopesticide II is *B. pumilus* INR-7. These mixtures are particularly suitable in soybean and corn.

According to a further embodiment, the at least one biopesticide II is Bacillus simplex, preferably *B. simplex* ABU 288. These mixtures are particularly suitable in soybean and corn.

According to a further embodiment, the at least one biopesticide II is *Bacillus subtilis,* preferably *B. subtilis* strain FB17.

According to one embodiment of the inventive mixtures, the at least one biopesticide II is selected from *Bacillus amyloliquefaciens* AP-136, *B. amyloliquefaciens* AP-188, *B. amyloliquefaciens* AP-218, *B. amyloliquefaciens* AP-219, *B. amyloliquefaciens* AP-295, *B. amyloliquefaciens* spp. *plantarum* FZB24, *B. amyloliquefaciens* ssp. *plantarum* FZB42, *B. amyloliquefaciens* ssp. *plantarum* TJ1000, *B. amyloliquefaciens* ssp. *plantarum* D747, *B. amyloliquefaciens* ssp. *plantarum* MBI600, *B. amyloliquefaciens* spp. *plantarum* GB03, *B. amyloliquefaciens* spp. *plantarum* QST-713, *B. mojavensis* AP-209, *B. pumilus* GB34, *B. pumilus* INR-7, *B. pumilus* QST 2808, *B. pumilus* GHA 180, *B. simplex* ABU 288, *B. solisalsi* AP-217, *B. subtilis* CX-9060, *B. subtilis* FB17 and *B. subtilis* GB07. These mixtures are particularly suitable in soybean and corn, in particular for seed treatment.

According to a further embodiment, the at least one pesticide II is selected from *Streptomyces* spp., preferably from *S. griseoviridis, S. lydicus* and *S. violaceusniger,* in particular from strains *S. griseoviridis* K61, *S. lydicus* WYEC 108, *S. violaceusniger* XL-2 and *S. violaceusniger* YCED-9.

According to one embodiment of the inventive mixtures, the at least one biopesticide II is selected from the following fungi *Coniothyrium minitans* CON/M/91-08, *T. harzianum* T-22, *T. virens* GI-3, *T. virens* GL-21, *T. virens* G-41. These mixtures are particularly suitable for seed and/or soil treatment.

According to a further embodiment, the at least one biopesticide II is selected from *Pseudomonas* spp., preferably selected from *P. chloraphis* herein more preferably strain MA 342 and *Pseudomonas sp.* DSM 13134; *P. fluorescens* herein more preferably selected from strains A506, WCS 374 and Pf-5; and *P. putida* herein more preferably strain ATCC 202153.

The present invention also relates to mixtures wherein the at least one biopesticide II is selected from the fungal genus *Trichoderma,* preferably from the strains *T. asperellum* T34, *T. asperellum* SKT-1, *T. asperellum* ICC 012, *T. asperellum* TV1, *T. atroviride LC52, T. atroviride* CNCM 1-1237, *T. gamsii* ICC 080, *T. harmatum* TH 382, *T. harzianum* T-22, *T. harzianum* T-35, *T. harzianum* T-39, *T. harzianum* T-315; mixture of *T. harzianum* ICC012 and *T. gamsii* ICC080; mixture of *T. polysporum* and *T. harzianum, T. stromaticum, T. virens* GI-3, *T. virens* GL-21, *T. virens* G-41.

The present invention also relates to mixtures wherein the at least one biopesticide II is selected from the fungal species *Muscodor albus* preferably from the strains SA-13 and QST 20799, which are particularly suiable for soil and seed treatment against soil-borne pathogens

and/or nematodes.

Preference is given to mixtures comprising as biopesticide II (component 2) a biopesticide selected from group L3), preferably selected from *Bacillus firmus* herein preferably strain 1-1582, *Beauveria bass/ana* herein preferably selected from strains GHA, H123, and DSM 12256; *Burkholderia* sp. and herein preferably strain A396, *Metarhizium anisopliae* var. *acr/dum* herein preferably strain IMI 330189, *M. anisopliae* herein preferably selected from strains FI-985, FI-1045, F52 and ICIPE 69; *Paecilomyces ///acinus* herein preferably selected from strains 251 , DSM 15169 and BCP2, *Paenibacillus popilliae* herein preferably selected from strains Dutky-1940, KLN 3 and Dutky 1; *Pasteur/a nishazawa* and herein preferably strain Pn1 .

Preference is also given to mixtures comprising as biopesticide II (component 2) a biopesticide selected from group L3), even more preferably from *B. bass/ana* DSM 12256, *Metarhizium anisopliae var. acr/dum* \M\ 330189, *M. anisopliae* FI-985, *M. anisopliae* FI-1045, *Paecilomyces lilacinus* DSM 15169, *P. niacinus* BCP2, *P. lilacinus* 251 , *Paenibacillus popilliae* Dutky-1940, *P. popilliae* KLN 3 and *P. popilliae* Dutky 1.

According to a further embodiment, the at least one biopesticide II is *Beauveria brongniartii.*

According to a further embodiment, the at least one biopesticide II is *Metarhizium anisopliae* or *M. anisopliae var. acridium,* preferably selected from *M. anisopliae* FI-1045, *M. anisopliae* F52, *M. anisopliae var. acr/dum* strains FI-985 and IMI 330189; in particular strain IMI 330189. These mixtures are particularly suitable for control of arthropod pests in soybean and corn.

According to a further embodiment, the at least one biopesticide II is *Paecilomyces fumoso-roseus,* preferably strain FE 9901 especially for white fly control.

According to a further embodiment, the at least one biopesticide II is selected from *Nomuraea rileyi,* preferably strains SA86101 , GU87401 , SR86151 , CG128 and VA9101 ; and *P. lilacinus,* preferably strains 251 , DSM 15169 or BCP2, in particular BCP2, which strains especially control the growth of plant-pathogenic nematodes.

According to a further embodiment, the at least one biopesticide II is *Bacillus firmus,* preferably spores of strain CNCM 1-1582, preferably useful for seed treatment of cereals, soybean, cotton, sugarbeets and corn against nematodes and insects.

According to a further embodiment, the at least one biopesticide II is *Pasteur/a nishizawae,* preferably spores of strain Pn1 , preferably useful for seed treatment of cereals, soybean, cotton, sugarbeets and corn against nematodes and insects.

According to a further embodiment, the at least one biopesticide II is *Flavobacterium sp.,* preferably spores of strain H492, preferably useful for seed treatment of cereals, soybean, cotton, sugarbeets and corn against nematodes and insects.

According to a further embodiment, the at least one biopesticide II is *Bacillus cereus,* preferably spores of CNCM 1-1562, preferably useful for seed treatment of soybean, cotton, cereals, and corn against nematodes and insects.

According to a further embodiment, the at least one biopesticide II is *Burkholderia* sp., preferably strain A396, preferably useful for seed treatment of soybean, cotton, cereals, and corn.

According to a further embodiment, the at least one biopesticide II is *Paecilomyces lilacinus* 251 , preferably useful for seed treatment of soybean, cotton, cereals, and corn.

According to a further embodiment, the at least one biopesticide II is a mixture of spores of *B. firmus* and *B. cereus,* preferably mixtures spores of above mentioned strains CNCM 1-1582 and CNCM 1-1562, preferably useful for seed treatment of soybean, cotton, cereals, and corn against nematodes and insects.

According to one preferred embodiment of the inventive mixtures, the at least one pesticide II is selected from *Bacillus firmus* CNCM 1-1582, *Paecilomyces lilacinus* 251 , *Pasteuria nishizawa* Pn1 and *Burkholderia sp.* A396 having nematicidal, acaricidal and/or insecticidal activity. These mixtures are particularly suitable in soybean, cotton, cereals, and corn, in particular for seed treatment.

Preference is also given to mixtures comprising as biopesticide II (component 2) a biopesticide selected from group L4), preferably methyl jasmonate.

Preference is also given to mixtures comprising as biopesticide II (component 2) a biopesticide selected from group L5), preferably selected from *Azospirillum amazonense, A. brasilense, A. lipoferum, A. irakense, A. halopraeferens, Bradyrhizobium sp.* (Arachis), *Bradyrhizobium sp.* (Vigna), *B. elkanii, B. japonicum; Paenibacillus alvei, Penicillium bilaiae, Rhizoblum leguminosarum* bv. *phaseo/i, R. l.* bv. *trifolii, R. l.* bv. *viciae,* and *Sinorhizobium meliloti.*

Preference is also given to mixtures comprising as biopesticide II (component 2) a biopesticide selected from group L5) selected from *Azospirillum amazonense* SpY2, *A. brasilense* XOH, *A. brasilense* Cd, *A. lipoferum* Sp31 , *Bradyrhizobium sp.* (Vigna) PNL1 , *B. japonicum* TA-1 1, *Peniciillium bilaiae* strains ATCC 18309, ATCC 20851 and ATCC 22348; *Rhizobium leguminosarum* bv. *phaseoli* RG-B10, *R. l.* bv. *viciae* P 1NP3Cst, *R. l.* bv. *viciae* R^G-P2, *R. l.* bv. *trifolii* RP1 13-7, *R. l.* bv. *viciae* SU303, *R. l.* bv. *viciae* WSM1455, *R. tropic/* SEMIA 4077, *R. tropic/ PRF* 8 1 and *Sinorhizobium meliloti,* even more preferably selected from *Bradyrhizobium sp.* (Vigna) PNL1 , *B. japonicum* TA-1 1.

The present invention also relates to mixtures, wherein the at least one biopesticide II is selected from *Azospirillum amazonense, A. brasilense, A. lipoferum, A. irakense* and *A. halopraeferens,* more preferably from *A. brasilense.* These are particularly suitable in soybean, especially as seed treatment.

In one embodiment, component 2), i.e. the biopesticide II, of the mixtures of the invention is selected from *Azospirillum amazonense, Azospirillum brasilense, Azospirillum lipoferum, Azospirillum irakense, Azospirillum halopraeferens, Bradyrhizobium* spp., *Bradyrhizobium sp.* (Arachis), *Bradyrhizobium* sp. (Vigna), *Bradyrhizobium elkanii, Bradyrhizobium japonicum, Bradyrhizobium liaoningense, Bradyrhizobium lupini, Deift/a ac/dovorans, Glomus intraradices, Mesorhizobium* sp., *Mesorhizobium ciceri, Mesorhizobium huakii, Mesorhizobium lot/, Rhizobium leguminosarum* bv. *phaseoli, Rhizobium leguminosarum* bv. *trifolii, Rhizobium leguminosarum* bv. *viciae, Rhizobium tropic/', Sinorhizobium meliloti, Bacillus altitudinis, Bacillus amyloliquefaciens, Bacillus amyloliquefaciens* ssp. *plantarum, Bacillus firmus, Bacillus megaterium, Bacillus mojavensis, Bacillus mycoides, Bacillus pumilus, Bacillus simplex, Bacillus solisalsi, Bacillus subtilis, Burkholderia sp., Coniothyrium min/tans, Paecilomyces ///acinus, Paenibacillus alvei, Paenibacillus polymyxa, Paenibacillus popilliae, Pasteuria nishizawae, Pasteuria usgae, Penicillium bilaiae, Pseudomonas chloraphis, Pseudomonas fluorescens,*

Pseudomonas put/da, abscisic acid, harpin protein (alpha-beta), jasmonic acid or salts or derivatives thereof, cis-jasmone, methyl jasmonate.

In a preferred embodiment, component 2), i.e. the biopesticide II, of the mixtures of the invention is selected from *Azospirillum amazonense* SpY2, *Azospirillum brasilense* AZ39 also called Az 39, *Azospirillum brasilense* Cd, *Azospirillum brasilense* Sp 245, *Azospirillum brasilense* XOH, *Azospirillum lipoferum* Sp31 , *Bradyrhizobium elkanii* U-1301, *Bradyrhizobium elkanii* U-1302, *Bradyrhizobium elkanii* USDA 3254, *Bradyrhizobium elkanii* USDA 76, *Bradyrhizobium elkanii* USDA 94, *Bradyrhizobium japonicum* G49, *Bradyrhizobium japonicum* SEMIA 566, *Bradyrhizobium japonicum* TA-11 (TA11 NOD+), *Bradyrhizobium japonicum* USDA 110, *Bradyrhizobium japonicum* USDA 121, *Bradyrhizobium japonicum* USDA 3, *Bradyrhizobium japonicum* USDA 31, *Bradyrhizobium japonicum* USDA 76, *Bradyrhizobium* sp. (Arachis) CB1015, *Bradyrhizobium* sp. (Arachis) SEMIA 6144, *Bradyrhizobium* sp. (Arachis) SEMIA 6462, *Bradyrhizobium sp.* (Arachis) SEMIA 6464, *Bradyrhizobium sp.* (Vigna) PNL1 , *Mesorhizobium sp.* WSM1497, *Rhizobium leguminosarum by. phaseoli* RG-B10, *Rhizobium leguminosarum by. trifolii* 095, *Rhizobium leguminosarum* bv. *trifolii CB782, Rhizobium leguminosarum by. trifolii* CC1099, *Rhizobium leguminosarum* bv. *trifolii CC275e, Rhizobium leguminosarum bv. trifolii* CC283b, *Rhizobium leguminosarum bv. trifolii* RP1 13-7, *Rhizobium leguminosarum bv. trifolii!* A 1, *Rhizobium leguminosarum by. trifolii* WSM1 325, *Rhizobium leguminosarum by. trifolii* WSM2304, *Rhizobium leguminosarum* bv. *viciae* P1NP3Cst also referred to as 1435, *Rhizobium leguminosarum* bv. *viciae* RG-P2 also called P2, *Rhizobium leguminosarum* bv. *viciae* SU303, *Rhizobium leguminosarum* bv. *viciae* WSM1455, *Rhizobium tropici* CC51 1, *Rhizobium tropiciC\AJ* 899, *Rhizobium tropiciW\2, Rhizobium tropiciPRF* 81, *Sinorhizobium meliloti* NRG185, *Sinorhizobium meliloti* RCR201 1 also called 201 1 or SU47, *Sinorhizobium meliloti,* RRI128, *Bacillus altitudinis* 41KF2b, *Bacillus amyloliquefaciens* AP-136, *Bacillus amyloliquefaciens* AP-188, *Bacillus amyloliquefaciens* AP-218, *Bacillus amyloliquefaciens* AP-219, *Bacillus amyloliquefaciens* AP-295, *Bacillus amyloliquefaciens ssp. plantarum* 07A7, *Bacillus amyloliquefaciens ssp. plantarum* FZB24 also called SB3651 , *Bacillus amyloliquefaciens ssp. plantarum* FZB42, *Bacillus amyloliquefaciens ssp. plantarum* GB03 also called GB03 formerly *B. subtilis, Bacillus amyloliquefaciens ssp. plantarum* MBI600 also referred to as 1430, formerly *B. subtilis, Bacillus amyloliquefaciens ssp. plantarum* QST-713, formerly *B. subtilis, Bacillus amyloliquefaciens ssp. plantarum* TJ1000, also called 1BE, *Bacillus firmus* CNCM 1-1582, *Bacillus megaterium* H491 , *Bacillus megaterium* J142, *Bacillus megaterium* M018, *Bacillus mojavensis* AP-209, *Bacillus mojavensis* SR1 1, *Bacillus mycoides* AQ726, *Bacillus mycoides* J also called BmJ, *Bacillus pumilus* GB34, *Bacillus pumilus* GHA 180, *Bacillus pumilus* INR-7 otherwise referred to as BU F22 and BU-F33, *Bacillus pumilus* QST 2808, *Bacillus simplex* ABU 288, *Bacillus subtilis CX-9060, Bacillus subtilis* FB17, *Bacillus subtilis* GB07, *Burkholderia sp.* A396, *Coniothyrium minitans* CON/M/91-08, *Paecilomyces lilacinus2b\ , Paecilomyces ///acinus* BCP2, *Paen/bac/i/us polymyxa* PKB1 , *Paenibacillus popilliae* 14F-D80 also called K14F-0080, *Paenibacillus popilliae* KLN 3, *Pasteur/a nishizawae* Pn1 , *Pasteur/a sp.* Ph3, *Pasteur/a sp.* Pr3, *Pasteur/a sp.* ATCC PTA-9643, *Pasteur/a usage* BL1 , *Penic/i/ium b/ia/ae* (also called *P. bilaii*) NRRL 50162, *Penic/i/ium b/ia/ae* (also called *P.* **MM)** NRRL 50169, *Penic/i/ium b/ia/ae* (also called P. **MM)** ATCC 18309 (= ATCC 74319), *Penic/i/ium bilaiae* (also called P. **Ms//)** ATCC 20851 , *Penic/i/ium b/ia/ae* (also called P. **MM)** ATCC 22348 (=ATCC 74318), *Pseudomonas f/uorescens* A506, *Pseudomonas f/uorescens*

ATCC 13525, *Pseudomonas fluorescens* CHAO, *Pseudomonas fluorescens* CL 145A, *Pseudomonas fluorescens* NCIB 12089, *Pseudomonas fluorescens* Pf-5, *Pseudomonas fluorescens* WCS374, *Pseudomonas putida* ATCC 202153.

In one embodiment, component 2), i.e. the biopesticide II, of the mixtures of the invention is selected from

L1) Microbial pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: *Ampelomyces quisqualis, Aspergillus flavus, Aureobasidium pullulans, Bacillus altitudinis, B. amyloliquefaciens, B. megaterium, B. mojavensis, B. mycoides, B. pumilus, B. simplex, B. solisalsi, B. subtilis, B. subtilis* var. *amyloliquefaciens, Candida oleophila, C. saitoana, Clavibacter michiganensis* (bacteriophages), *Coniothyrium minitans, Cryphonectria parasitica, Cryptococcus albidus, Dilophosphora alopecuri, Fusarium oxysporum, Clonostachys rosea* f. *catenulate* (also named *Gliocladium catenulatum), Gliocladium roseum, Lysobacter antibioticus, L. enzymogenes, Metschnikowia fructicola, Microdochium dimerum, Microsphaeropsis ochracea, Muscodor a/bus, Paenibacillus alvei, Paenibacillus polymyxa, Pantoea vagans, Penicillium bilaiae, Psteck/i, Phlebiopsis gigantea, Pseudomonas* sp., *Pseudomonas ch/oraphis, Pseudozyma flocculosa, Pichia anomala, Pythium oligandrum, Sphaerodes mycoparasitica, Streptomyces griseoviridis, S. lydicus, S. violaceusniger, Talaromyces flavus, Trichoderma asperelloides, T. asperellum, T. atroviride, T. gamsii, T. harmatum, T. harzianum, T. polysporum, T. stromaticum, T. virens, T. viride, Typhula phacorrhiza, Ulocladium oudemansii, Verticillium dahlia;*

L2) Biochemical pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: harpin protein, *Reynoutria sachalinensis* extract;

L3) Microbial pesticides with insecticidal, acaricidal, molluscidal and/or nematicidal activity: *Agrobacterium radiobacter, Bacillus cereus, B. firmus, Burkholderia* sp., *Chromobacterium subtsugae, Flavobacterium* sp., *Paecilomyces fumosoroseus, P. niacinus, Paenibacillus popilliae, Pasteur/a sp., P. nishizawae, P. penetrans, P. ramosa, P. thornea, P. usgae, Pseudomonas fluorescens, Streptomyces galbus, S. micro flavus,*

L4) Biochemical pesticides with insecticidal, acaricidal, molluscidal, pheromone and/or nematicidal activity: cis-jasmone, methyl jasmonate, jasmonic acid or salts or derivatives thereof;

L5) Microbial pesticides with plant stress reducing, plant growth regulator, plant growth promoting and/or yield enhancing activity: *Azospirillum amazonense, A. brasilense, A. lipoferum, A. irakense, A. halopraeferens, Bradyrhizobium* sp., *B. elkanii, B. japonicum, B. liaoningense, B. lupini, Deift/a acidovorans, Glomus intraradices, Mesorhizobium* sp., *Rhizobium leguminosarum* bv. *phaseoli, R. I.* bv. *trifolii, R. I.* bv. *viciae, R. tropic/, Sinorhizobium meliloti.*

In a preferred embodiment, component 2), i.e. the biopesticide II, of the mixtures of the invention is selected from the group L1, i.e. microbial pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: *Ampelomyces quisqualis, Aspergillus flavus, Aureobasidium pullulans, Bacillus altitudinis, B. amyloliquefaciens, B. megaterium, B. mojavensis, B. mycoides, B. pumilus, B. simplex, B. solisalsi, B. subtilis, B. subtilis var.*

amyloliquefaciens, Candida oleophila, C. saitoana, Clavibacter michiganensis (bacteriophages), *Coniothyrium minitans, Cryphonectria parasitica, Cryptococcus albidus, Dilophosphora alopecuri, Fusarium oxysporum, Clonostachys rosea* f. *eatenu/ate* (also named *Gliocladium eatenulatum), Gliocladium roseum, Lysobacter antibioticus, L enzymogenes, Metschnikowia fructicola, Microdochium dimerum, Microsphaeropsis ochracea, Muscodor albus, Paenibacillus alvei, Paenibacillus polymyxa, Pantoea vagans, Penicillium bilaiae, P.steckii, Phlebiopsis gigantea, Pseudomonas sp., Pseudomonas ch/oraphis, Pseudozyma flocculosa, Pichia anomala, Pythium oligandrum, Sphaerodes mycoparasitica, Streptomyces griseoviridis, S. lydicus, S. violaceusniger, Talaromyces flavus, Trichoderma asperelloides, T. asperellum, T. atroviride, T. gams/I, T. harmatum, T. harzianum, T. polysporum, T. stromaticum, T. virens, T. viride, Typhula phacorrhiza, Ulocladium oudemansii, Verticillium dahlia.*

In a more preferred embodiment, component 2), i.e. the biopesticide II, of the mixtures of the invention is selected from *Bacillus amyloliquefaciens, Bacillus pumilus, Bacillus simplex,* and *Bacillus subtilis,* in particular from the strains *Bacillus amyloliquefaciens* MBI600, *B. amyloliquefaciens* AP-188, *Bacillus pumilus* INR-7 (otherwise referred to as BU-F22 and BU-F33), *Bacillus simplex* ABU 288, and *Bacillus subtilis* FB17 (also called UD 1022 or UD10-22).

According to one particularly preferred embodiment, the biopesticide II of the mixtures of the invention is *Bacillus pumilus,* preferably spores of strain INR-7.

According to another particularly preferred embodiment, the biopesticide II of the mixtures of the invention is *Bacillus simplex,* preferably spores of strain ABU 288.

According to another particularly preferred embodiment, the biopesticide II of the mixtures of the invention is *Bacillus subtilis,* preferably spores of strain FB17.

In a further preferred embodiment, component 2), i.e. the biopesticide II, of the mixture of the invention is *Penicillium steckii,* preferably *Penicillium steckii* strain IBWF1 04-06 as deposited with DSMZ under the deposit number DSM 27859. Strain IBWF104-06 was determined to have potent antifungal activity, in particular, against infestion with plant pathogens including Phytophthora infestans, Botrytis cinerea and Alternaria solani (PCT/EP201 4/0741 65).

In another preferred embodiment, component 2), i.e. the biopesticide II, of the mixtures of the invention is selected from the group L2, i.e. biochemical pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: harpin protein, *Reynoutria sachalinensis* extract.

According to one particularly preferred embodiment, the biopesticide II of the mixture of the invention is harpin protein (alpha-beta).

In another preferred embodiment, component 2), i.e. the biopesticide II, of the mixtures of the invention is selected from the group L4, i.e. biochemical pesticides with insecticidal, acaricidal, molluscidal, pheromone and/or nematicidal activity: cis-jasmone, methyl jasmonate, jasmonic acid or salts or derivatives thereof.

According to one particularly preferred embodiment, the biopesticide II of the mixtures of the invention is cis-jasmone.

According to another particularly preferred embodiment, the biopesticide II of the mixture of the invention is methyl jasmonate.

According to another particularly preferred embodiment, the biopesticide II of the mixture of the invention is jasmonic acid or a salt or derivative thereof.

In a particularly preferred embodiment, component 2), i.e. the biopesticide II, of the mixtures of the invention is selected from the group L3, i.e. microbial pesticides with insecticidal, acaricidal, molluscidal and/or nematicidal activity: *Agrobacterium radiobacter, Bacillus cereus, B. firmus, Burkholderia sp., Chromobacterium subtsugae, Flavobacterium* sp., *Paecilomyces fumosoroseus, P. lilacinus, Paenibacillus popilliae, Pasteur/a sp., P. nishizawae, P. penetrans, P. ramosa, P. thornea, P. usgae, Pseudomonas fluorescens, Streptomyces galbus, S. microf/avus.*

In a more preferred embodiment, component 2), i.e. the biopesticide II, of the mixtures of the invention is selected from *Bacillus firmus, Pasteur/a nishazawa* sp., *Flavobacterium* sp., *Paecilomyces lilacinus,* and *Burkholderia* sp, in particular from the strains *Burkholderia* sp. A396, *Paecilomyces lilacinus* 251 , *Bacillus firmus* CNCM 1-1582, *Pasteur/a nishizawae*-Pn1 , and *Flavobacterium* sp. H492.

In an even more preferred embodiment, component 2), i.e. the biopesticide II, of the mixtures of the invention is selected from *Bacillus firmus, Pasteur/a nishizawa,* and *Flavobacterium* sp., in particular from the strains *Bacillus firmus* CNCM 1-1582, *Pasteur/a nishizawae* Pn1 , and *Flavobacterium sp.* H492.

According to one particularly preferred embodiment, the biopesticide II of the mixtures of the invention is *Bacillus cereus,* preferably spores of strain CNCM 1-1562.

According to another particularly preferred embodiment, the biopesticide II of the mixtures of the invention is *Burkholderia sp.,* preferably strain A396.

According to another particularly preferred embodiment, the biopesticide II of the mixtures of the invention is *Paecilomyces lilacinus,* preferably strain 251 , DSM 15169 or BCP2, particularly preferably strain 251 .

According to another particularly preferred embodiment, the biopesticide II of the mixtures of the invention is *Bacillus firmus,* preferably spores of strain CNCM 1-1582; e.g. VOTiVO® from Bayer CropScience LP, USA, which is suitable for nematode control.

According to another particularly preferred embodiment, the biopesticide II of the mixtures of the invention is *Pasteur/a nishizawae,* preferably spores of strain Pn1 , e.g. Clariva® PN from Syngenta Crop Protection, LLC, USA, which is suitable for nematode control.

According to yet another particularly preferred embodiment, the biopesticide II of the mixtures of the invention is *Flavobacterium sp.,* preferably spores of strain H492, e.g. MBI-302 from Marrone Bio Innovations, USA, which is suitable for nematode control.

In summary, particularly preferred biopesticides II may be selected from the following biopesticides 11-1 to 11-14 in accordance with each row of table II, of which biopesticides 11-12, II¬ **Is,** and 11-14 are particularly preferred.

Table II

No	biopesticide
11-1	*Bacillus amyloliquefaciens*
II-2	*Bacillus pumilus*
II-3	*Bacillus simplex*
II-4	*Bacillus subtilis*

No	biopesticide
II-5	*Penicillium steckii*
II-6	harpin protein (alpha-beta)
II-7	cis-jasmone
II-8	methyl jasmonate

No	biopesticide
II-9	jasmonic acid or a salt or derivative thereof
11-10	*Burkholderia* sp.
11-11	*Paecilomyces lilacinus*
11-12	*Bacillus firmus*
11-13	*Pasteur/a nishizawae*
11-14	*Flavobacterium sp.*

Furthermore, particularly preferred strains of biopesticides II may be selected from the following biopesticide strains IIa-1 to IIa-11 in accordance with each row of table IIa, of which the biopesticide strains IIa-9, IIa-10, and IIa-11 are particularly preferred.

Table IIa

No	biopesticide
IIa-1	*Bacillus amyloliquefaciens* MBI600
IIa-2	*Bacillus amyloliquefaciens* AP-188
IIa-3	*Bacillus pumilus* INR-7
IIa-4	*Bacillus simplex* ABU 288
IIa-5	*Bacillus subtilis* FB17
IIa-6	*Penicillium steckii* IBWF104-06
IIa-7	*Burkholderia* sp. A396
IIa-8	*Paecilomyces lilacinus* 251
IIa-9	*Bacillus firmus* CNCM I-1582
IIa-10	*Pasteuria nishizawae* Pn1
IIa-11	*Flavobacterium sp.* H492

In the context of the present invention, the following mixtures of compounds I and biopesticides II as in Table A are preferred and represent embodiments of the invention:

Table A

No.	I	II
A-1	I-1	II-1
A-2	I-2	II-1
A-3	I-3	II-1
A-4	I-4	II-1
A-5	I-5	II-1
A-6	I-6	II-1
A-7	I-7	II-1
A-8	I-8	II-1
A-9	I-9	II-1
A-10	I-10	II-1
A-11	I-11	II-1
A-12	I-12	II-1
A-13	I-13	II-1
A-14	I-14	II-1
A-15	I-15	II-1
A-16	I-16	II-1
A-17	I-17	II-1
A-18	I-18	II-1
A-19	I-1	II-2
A-20	I-2	II-2
A-21	I-3	II-2
A-22	I-4	II-2
A-23	I-5	II-2
A-24	I-6	II-2
A-25	I-7	II-2
A-26	I-8	II-2
A-27	I-9	II-2
A-28	I-10	II-2
A-29	I-11	II-2
A-30	I-12	II-2
A-31	I-13	II-2
A-32	I-14	II-2
A-33	I-15	II-2
A-34	I-16	II-2
A-35	I-17	II-2
A-36	I-18	II-2
A-37	I-1	II-3
A-38	I-2	II-3
A-39	I-3	II-3
A-40	I-4	II-3
A-41	I-5	II-3
A-42	I-6	II-3
A-43	I-7	II-3
A-44	I-8	II-3
A-45	I-9	II-3
A-46	I-10	II-3
A-47	I-11	II-3
A-48	I-12	II-3
A-49	I-13	II-3
A-50	I-14	II-3
A-51	I-15	II-3
A-52	I-16	II-3
A-53	I-17	II-3
A-54	I-18	II-3
A-55	I-1	II-4
A-56	I-2	II-4
A-57	I-3	II-4

No.	I	II
A-58	I-4	II-4
A-59	I-5	II-4
A-60	I-6	II-4
A-61	I-7	II-4
A-62	I-8	II-4
A-63	I-9	II-4
A-64	1-10	II-4
A-65	1-11	II-4
A-66	1-12	II-4
A-67	1-13	II-4
A-68	1-14	II-4
A-69	1-15	II-4
A-70	1-16	II-4
A-71	1-17	II-4
A-72	1-18	II-4
A-73	1-1	II-5
A-74	I-2	II-5
A-75	I-3	II-5
A-76	I-4	II-5
A-77	I-5	II-5
A-78	I-6	II-5
A-79	I-7	II-5
A-80	I-8	II-5
A-81	I-9	II-5
A-82	1-10	II-5
A-83	1-11	II-5
A-84	1-12	II-5
A-85	1-13	II-5
A-86	1-14	II-5
A-87	1-15	II-5
A-88	1-16	II-5
A-89	1-17	II-5
A-90	1-18	II-5
A-91	1-1	II-6
A-92	I-2	II-6
A-93	I-3	II-6
A-94	I-4	II-6
A-95	I-5	II-6
A-96	I-6	II-6
A-97	I-7	II-6
A-98	I-8	II-6

No.	I	II
A-99	I-9	II-6
A-100	1-10	II-6
A-101	1-11	II-6
A-102	1-12	II-6
A-103	1-13	II-6
A-104	1-14	II-6
A-105	1-15	II-6
A-106	1-16	II-6
A-107	1-17	II-6
A-108	1-18	II-6
A-109	1-1	II-7
A-110	I-2	II-7
A-111	I-3	II-7
A-112	I-4	II-7
A-113	I-5	II-7
A-114	I-6	II-7
A-115	I-7	II-7
A-116	I-8	II-7
A-117	I-9	II-7
A-118	1-10	II-7
A-119	1-11	II-7
A-120	1-12	II-7
A-121	1-13	II-7
A-122	1-14	II-7
A-123	1-15	II-7
A-124	1-16	II-7
A-125	1-17	II-7
A-126	1-18	II-7
A-127	1-1	II-8
A-128	I-2	II-8
A-129	I-3	II-8
A-130	I-4	II-8
A-131	I-5	II-8
A-132	I-6	II-8
A-133	I-7	II-8
A-134	I-8	II-8
A-135	I-9	II-8
A-136	1-10	II-8
A-137	1-11	II-8
A-138	1-12	II-8
A-139	1-13	II-8

No.	I	II
A-140	1-14	II-8
A-141	1-15	II-8
A-142	1-16	II-8
A-143	1-17	II-8
A-144	1-18	II-8
A-145	1-1	II-9
A-146	I-2	II-9
A-147	I-3	II-9
A-148	I-4	II-9
A-149	I-5	II-9
A-150	I-6	II-9
A-151	I-7	II-9
A-152	I-8	II-9
A-153	I-9	II-9
A-154	1-10	II-9
A-155	1-11	II-9
A-156	1-12	II-9
A-157	1-13	II-9
A-158	1-14	II-9
A-159	1-15	II-9
A-160	1-16	II-9
A-161	1-17	II-9
A-162	1-18	II-9
A-163	1-1	1-10
A-164	I-2	1-10
A-165	I-3	1-10
A-166	I-4	1-10
A-167	I-5	1-10
A-168	I-6	1-10
A-169	I-7	1-10
A-170	I-8	1-10
A-171	I-9	1-10
A-172	1-10	1-10
A-173	1-11	1-10
A-174	1-12	1-10
A-175	1-13	1-10
A-176	1-14	1-10
A-177	1-15	1-10
A-178	1-16	1-10
A-179	1-17	1-10
A-180	1-18	1-10

No.	I	II
A-181	I-1	II-1
A-182	I-2	II-1
A-183	I-3	II-1
A-184	I-4	II-1
A-185	I-5	II-1
A-186	I-6	II-1
A-187	I-7	II-1
A-188	I-8	II-1
A-189	I-9	II-1
A-190	I-10	II-1
A-191	I-11	II-1
A-192	I-12	II-1
A-193	I-13	II-1
A-194	I-14	II-1
A-195	I-15	II-1
A-196	I-16	II-1
A-197	I-17	II-1
A-198	I-18	II-1
A-199	I-1	II-2
A-200	I-2	II-2
A-201	I-3	II-2
A-202	I-4	II-2
A-203	I-5	II-2
A-204	I-6	II-2

No.	I	II
A-205	I-7	II-2
A-206	I-8	II-2
A-207	I-9	II-2
A-208	I-10	II-2
A-209	I-11	II-2
A-210	I-12	II-2
A-211	I-13	II-2
A-212	I-14	II-2
A-213	I-15	II-2
A-214	I-16	II-2
A-215	I-17	II-2
A-216	I-18	II-2
A-217	I-1	II-3
A-218	I-2	II-3
A-219	I-3	II-3
A-220	I-4	II-3
A-221	I-5	II-3
A-222	I-6	II-3
A-223	I-7	II-3
A-224	I-8	II-3
A-225	I-9	II-3
A-226	I-10	II-3
A-227	I-11	II-3
A-228	I-12	II-3

No.	I	II
A-229	I-13	II-3
A-230	I-14	II-3
A-231	I-15	II-3
A-232	I-16	II-3
A-233	I-17	II-3
A-234	I-18	II-3
A-235	I-1	II-4
A-236	I-2	II-4
A-237	I-3	II-4
A-238	I-4	II-4
A-239	I-5	II-4
A-240	I-6	II-4
A-241	I-7	II-4
A-242	I-8	II-4
A-243	I-9	II-4
A-244	I-10	II-4
A-245	I-11	II-4
A-246	I-12	II-4
A-247	I-13	II-4
A-248	I-14	II-4
A-249	I-15	II-4
A-250	I-16	II-4
A-251	I-17	II-4
A-252	I-18	II-4

The mixtures A-1 to A-252 are preferably binary mixtures.

In one embodiment, the mixtures A-199 to A-252 are preferred, e.g. the mixtures A-199 to A-216, or A-217 to A-234, or A-235 to A-252 may be particularly preferred.

Furthermore, the following mixtures of compounds I and biopesticide strains IIa, as in Table B are preferred and represent embodiments of the invention:

Table B

No.	I	IIa
B-1	I-1	IIa-1
B-2	I-2	IIa-1
B-3	I-3	IIa-1
B-4	I-4	IIa-1
B-5	I-5	IIa-1
B-6	I-6	IIa-1
B-7	I-7	IIa-1

No.	I	IIa
B-8	I-8	IIa-1
B-9	I-9	IIa-1
B-10	I-10	IIa-1
B-11	I-11	IIa-1
B-12	I-12	IIa-1
B-13	I-13	IIa-1
B-14	I-14	IIa-1

No.	I	IIa
B-15	I-15	IIa-1
B-16	I-16	IIa-1
B-17	I-17	IIa-1
B-18	I-18	IIa-1
B-19	I-1	IIa-2
B-20	I-2	IIa-2
B-21	I-3	IIa-2

No.	I	IIa
B-22	I-4	IIa-2
B-23	I-5	IIa-2
B-24	I-6	IIa-2
B-25	I-7	IIa-2
B-26	I-8	IIa-2
B-27	I-9	IIa-2
B-28	1-10	IIa-2
B-29	1-1 1	IIa-2
B-30	1-12	IIa-2
B-31	1-13	IIa-2
B-32	1-14	IIa-2
B-33	1-15	IIa-2
B-34	1-16	IIa-2
B-35	1-17	IIa-2
B-36	1-18	IIa-2
B-37	1-1	IIa-3
B-38	I-2	IIa-3
B-39	I-3	IIa-3
B-40	I-4	IIa-3
B-41	I-5	IIa-3
B-42	I-6	IIa-3
B-43	I-7	IIa-3
B-44	I-8	IIa-3
B-45	I-9	IIa-3
B-46	1-10	IIa-3
B-47	1-1 1	IIa-3
B-48	1-12	IIa-3
B-49	1-13	IIa-3
B-50	1-14	IIa-3
B-51	1-15	IIa-3
B-52	1-16	IIa-3
B-53	1-17	IIa-3
B-54	1-18	IIa-3
B-55	1-1	IIa-4
B-56	I-2	IIa-4
B-57	I-3	IIa-4
B-58	I-4	IIa-4
B-59	I-5	IIa-4
B-60	I-6	IIa-4
B-61	I-7	IIa-4
B-62	I-8	IIa-4

No.	I	IIa
B-63	I-9	IIa-4
B-64	1-10	IIa-4
B-65	1-1 1	IIa-4
B-66	1-12	IIa-4
B-67	1-13	IIa-4
B-68	1-14	IIa-4
B-69	1-15	IIa-4
B-70	1-16	IIa-4
B-71	1-17	IIa-4
B-72	1-18	IIa-4
B-73	1-1	IIa-5
B-74	I-2	IIa-5
B-75	I-3	IIa-5
B-76	I-4	IIa-5
B-77	I-5	IIa-5
B-78	I-6	IIa-5
B-79	I-7	IIa-5
B-80	I-8	IIa-5
B-81	I-9	IIa-5
B-82	1-10	IIa-5
B-83	1-1 1	IIa-5
B-84	1-12	IIa-5
B-85	1-13	IIa-5
B-86	1-14	IIa-5
B-87	1-15	IIa-5
B-88	1-16	IIa-5
B-89	1-17	IIa-5
B-90	1-18	IIa-5
B-91	1-1	IIa-6
B-92	I-2	IIa-6
B-93	I-3	IIa-6
B-94	I-4	IIa-6
B-95	I-5	IIa-6
B-96	I-6	IIa-6
B-97	I-7	IIa-6
B-98	I-8	IIa-6
B-99	I-9	IIa-6
B-100	1-10	IIa-6
B-101	1-1 1	IIa-6
B-102	1-12	IIa-6
B-103	1-13	IIa-6

No.	I	IIa
B-104	1-14	IIa-6
B-105	1-15	IIa-6
B-106	1-16	IIa-6
B-107	1-17	IIa-6
B-108	1-18	IIa-6
B-109	1-1	IIa-7
B-1 10	I-2	IIa-7
B-1 11	I-3	IIa-7
B-1 12	I-4	IIa-7
B-1 13	I-5	IIa-7
B-1 14	I-6	IIa-7
B-1 15	I-7	IIa-7
B-1 16	I-8	IIa-7
B-1 17	I-9	IIa-7
B-1 18	1-10	IIa-7
B-1 19	1-1 1	IIa-7
B-120	1-12	IIa-7
B-121	1-13	IIa-7
B-122	1-14	IIa-7
B-123	1-15	IIa-7
B-124	1-16	IIa-7
B-125	1-17	IIa-7
B-126	1-18	IIa-7
B-127	1-1	IIa-8
B-128	I-2	IIa-8
B-129	I-3	IIa-8
B-130	I-4	IIa-8
B-131	I-5	IIa-8
B-132	I-6	IIa-8
B-133	I-7	IIa-8
B-134	I-8	IIa-8
B-135	I-9	IIa-8
B-136	1-10	IIa-8
B-137	1-1 1	IIa-8
B-138	1-12	IIa-8
B-139	1-13	IIa-8
B-140	1-14	IIa-8
B-141	1-15	IIa-8
B-142	1-16	IIa-8
B-143	1-17	IIa-8
B-144	1-18	IIa-8

No.	I	IIa
B-145	I-1	IIa-9
B-146	I-2	IIa-9
B-147	I-3	IIa-9
B-148	I-4	IIa-9
B-149	I-5	IIa-9
B-150	I-6	IIa-9
B-151	I-7	IIa-9
B-152	I-8	IIa-9
B-153	I-9	IIa-9
B-154	I-10	IIa-9
B-155	I-11	IIa-9
B-156	I-12	IIa-9
B-157	I-13	IIa-9
B-158	I-14	IIa-9
B-159	I-15	IIa-9
B-160	I-16	IIa-9
B-161	I-17	IIa-9
B-162	I-18	IIa-9

No.	I	IIa
B-163	I-1	IIa-10
B-164	I-2	IIa-10
B-165	I-3	IIa-10
B-166	I-4	IIa-10
B-167	I-5	IIa-10
B-168	I-6	IIa-10
B-169	I-7	IIa-10
B-170	I-8	IIa-10
B-171	I-9	IIa-10
B-172	I-10	IIa-10
B-173	I-11	IIa-10
B-174	I-12	IIa-10
B-175	I-13	IIa-10
B-176	I-14	IIa-10
B-177	I-15	IIa-10
B-178	I-16	IIa-10
B-179	I-17	IIa-10
B-180	I-18	IIa-10

No.	I	IIa
B-181	I-1	IIa-11
B-182	I-2	IIa-11
B-183	I-3	IIa-11
B-184	I-4	IIa-11
B-185	I-5	IIa-11
B-186	I-6	IIa-11
B-187	I-7	IIa-11
B-188	I-8	IIa-11
B-189	I-9	IIa-11
B-190	I-10	IIa-11
B-191	I-11	IIa-11
B-192	I-12	IIa-11
B-193	I-13	IIa-11
B-194	I-14	IIa-11
B-195	I-15	IIa-11
B-196	I-16	IIa-11
B-197	I-17	IIa-11
B-198	I-18	IIa-11

The mixtures B-1 to B-198 are preferably binary mixtures.

In one embodiment, the mixtures B-145 to B-198 are preferred, e.g. the mixtures B-145 to B-162, or B-163 to B-180, or B-181 to B-198 may be particularly preferred.

According to the invention, the solid material (dry matter) of the biopesticides (with the exception of oils such as Neem oil) are considered as active components (e. g. to be obtained after drying or evaporation of the extraction or suspension medium in case of liquid formulations of the microbial pesticides).

In accordance with the present invention, the weight ratios and percentages used herein for a biological extract such as Quillay extract are based on the total weight of the dry content (solid material) of the respective extract(s).

The total weight ratios of compositions comprising at least one microbial pesticide in the form of viable microbial cells including dormant forms, can be determined using the amount of CFU of the respective microorganism to calclulate the total weight of the respective active component with the following equation that 1×10^{10} CFU equals one gram of total weight of the respective active component. Colony forming unit is measure of viable microbial cells, in particular fungal and bacterial cells. In addition, here "CFU" may also be understood as the number of (juvenile) individual nematodes in case of (entomopathogenic) nematode biopesticides, such as *Steinernema feltiae.*

As already indicated above, component 1) and component 2) of the mixtures of the invention are present in synergistically effective amounts.

In one embodiment, component 1) and component 2) of the mixtures of the invention are present in a total weight ratio of from 100:1 to 1:100, wherein the total weight of component 2) is based on the amount of the solid material (dry mater) of component 2).

In the binary mixtures and compositions according to the invention the weight ratio of the component 1) and the component 2) generally depends from the properties of the active components used, usually it is in the range of from 1:10,000 to 10,000:1 , often it is in the range of from 1:100 to 100:1 , regularly in the range of from 1:50 to 50:1 , preferably in the range of from 1:20 to 20:1 , more preferably in the range of from 1:10 to 10:1 , even more preferably in the range of from 1:4 to 4:1 and in particular in the range of from 1:2 to 2:1 .

According to further embodiments of the binary mixtures and compositions, the weight ratio of the component 1) and the component 2) usually is in the range of from 1000:1 to 1:1, often in the range of from 100: 1 to 1:1, regularly in the range of from 50:1 to 1:1, preferably in the range of from 20:1 to 1:1, more preferably in the range of from 10:1 to 1:1, even more preferably in the range of from 4:1 to 1:1 and in particular in the range of from 2:1 to 1:1.

According to further embodiments of the mixtures and compositions, the weight ratio of the component 1) and the component 2) usually is in the range of from 20,000:1 to 1:10, often in the range of from 10,000:1 to 1:1, regularly in the range of from 5,000:1 to 5:1 , preferably in the range of from 5,000:1 to 10:1 , more preferably in the range of from 2,000:1 to 30:1 , even more preferably in the range of from 2,000:1 to 100:1 and in particular in the range of from 1,000:1 to 100:1 .

According to a further embodiments of the binary mixtures and compositions, the weight ratio of the component 1) and the component 2) usually is in the range of from 1:1 to 1:1000, often in the range of from 1:1 to 1:100, regularly in the range of from 1:1 to 1:50, preferably in the range of from 1:1 to 1:20, more preferably in the range of from 1:1 to 1:10, even more preferably in the range of from 1:1 to 1:4 and in particular in the range of from 1:1 to 1:2.

According to further embodiments of the mixtures and compositions, the weight ratio of the component 1) and the component 2) usually is in the range of from 10:1 to 1:20,000, often in the range of from 1:1 to 1:10,000, regularly in the range of from 1:5 to 1:5,000, preferably in the range of from 1:10 to 1:5,000, more preferably in the range of from 1:30 to 1:2,000, even more preferably in the range of from 1:100 to 1:2,000 to and in particular in the range of from 1:100 to 1:1,000.

In the ternary mixtures, i.e. compositions according to the invention comprising the component 1) and component 2) and a compound III (component 3), the weight ratio of component 1) and component 2) depends from the properties of the active substances used, usually it is in the range of from 1:100 to 100:1 , regularly in the range of from 1:50 to 50: 1, preferably in the range of from 1:20 to 20: 1, more preferably in the range of from 1:10 to 10:1 and in particular in the range of from 1:4 to 4:1 , and the weight ratio of component 1) and component 3) usually it is in the range of from 1:100 to 100:1 , regularly in the range of from 1:50 to 50:1 , preferably in the range of from 1:20 to 20:1 , more preferably in the range of from 1:10 to 10:1 and in particular in the range of from 1:4 to 4:1.

Any further active components are, if desired, added in a ratio of from 20:1 to 1:20 to the component 1).

These ratios are also suitable for inventive mixtures applied by seed treatment.

When mixtures comprising microbial pesticides are employed in crop protection, the application rates preferably range from about 1×10^6 to 5×10^{15} (or more) CFU/ha, preferably from about 1×10^8 to about 1×10^{13} CFU/ha, and even more preferably from about 1×10^9 to about 1×10^{12} CFU/ha. In the case of (entomopathogenic) nematodes as microbial pesticides (e. g. Steinernema feltiae), the application rates preferably range inform about 1×10^5 to 1×10^{12} (or more), more preferably from 1×10^8 to 1×10^{11}, even more preferably from 5×10^8 to 1×10^{10} individuals (e. g. in the form of eggs, juvenile or any other live stages, preferably in an infetive juvenile stage) per ha.

When mixtures comprising microbial pesticides are employed in seed treatment, the application rates with respect to plant propagation material preferably range from about 1×10^6 to 1×10^{12} (or more) CFU/seed. Preferably, the concentration is about 1×10^6 to about 1×10^9 CFU/seed. In the case of the microbial pesticides II, the application rates with respect to plant propagation material also preferably range from about 1×10^7 to 1×10^{14} (or more) CFU per 100 kg of seed, preferably from 1×10^9 to about 1×10^{12} CFU per 100 kg of seed.

In one embodiment, the mixtures of the invention, in particular the mixtures A-1 to A-1 08 or B-1 to B-108, further comprise as active component 3) a further active compound III, which is selected from insecticides or fungicides.

The insecticides, which are hereinafter described by common names, are commercially available and may be found in The Pesticide Manual, 16th Edition, C. MacBean, British Crop Protection Council (2013) among other publications. The online Pesticide Manual is updated regularly and is accessible through http://bcpcdata.com/pesticide-manual.html . Another online data base for pesticides providing the ISO common names is http://www.alanwood.net/pesticides .

he fungicides, which are hereinafter described by common names, are commercially available and may be found in the database http://www.alanwood.net/pesticides .

In one embodiment, the mixtures of the invention further comprise as active component 3) a further active compound III, which is an insecticide, wherein said insecticide is selected from the group consisting of fipronil, clothianidin, thiamethoxam, acetamiprid, dinotefuran, imidacloprid, thiacloprid, sulfoxaflor, methiocarb, tefluthrin, bifenthrin, cypermethrin, alphacypermethrin, spinosad, cyantraniliprole, chlorantraniliprole, triflumezopyrim, flupyradifurone, abamectin, thiodicarb, tetraniliprole, tioxazafen, and broflanilide.

In another embodiment, the mixtures of the invention further comprise as active component 3) a further active compound III, which is a fungicide, wherein said fungicide is selected from the group consisting of azoxstrobin, trifloxystrobin, picoxystrobin, pyraclostrobin, sedaxane, penthiopyrad, penflufen, fluopyram, fluxapyroxad, boscalid, oxathiapiprolin, metalaxyl, metalaxyl-M, ethaboxam, dimethomorph, cyproconazole, difenoconazole, prothioconazole, flutriafol, thiabendazole, ipconazole, tebuconazole, triadimenol, prochloraz, fluquinconazole, triticonazole, fludioxonil, carboxin, silthiofarm, ziram, thiram, carbendazim, thiophanate methyl, fenamidone, hymexazol, and fluazinam.

If the active compound III is an insecticide, said insecticide is preferably selected from the insecticides as defined in the following table IIIa. The insecticides as listed in table IIIa are in the following referred to as insecticides IIIa-1 to IIIa-22.

Table IIIa

No	insecticide
IIIa-1	fipronil
IIIa-2	clothianidin
IIIa-3	thiamethoxam
IIIa-4	acetamiprid
IIIa-5	dinotefuran
IIIa-6	imidacloprid
IIIa-7	thiacloprid
IIIa-8	sulfoxaflor
IIIa-9	methiocarb
IIIa-10	tefluthrin
IIIa-11	bifenthrin
IIIa-12	cypermethrin

No	insecticide
IIIa-13	alphacypermethrin
IIIa-14	spinosad
IIIa-15	cyantraniliprole
IIIa-16	chlorantraniliprole
IIIa-17	triflumezopyrim
IIIa-18	flupyradifurone
IIIa-19	abamectin
IIIa-20	thiodicarb
IIIa-21	tetraniliprole
IIIa-22	tioxazafen
IIIa-23	broflanilide

If the active compound III is a fungicide, said fungicide is preferably selected from the fungicides as defined in the following table IIIb. The fungicides as listed in table IIIb are in the following referred to as fungicides IIIb-1 to IIIb-36.

Table IIIb

No	fungicide
IIIb-1	azoxstrobin
IIIb-2	trifloxystrobin
IIIb-3	picoxystrobin
IIIb-4	pyraclostrobin
IIIb-5	sedaxane
IIIb-6	penthiopyrad
IIIb-7	penflufen
IIIb-8	fluopyram
IIIb-9	fluxapyroxad
IIIb-10	boscalid
IIIb-1 1	oxathiapiprolin
IIIb-12	metalaxyl
IIIb-13	metalaxyl-M
IIIb-14	ethaboxam
IIIb-15	dimethomorph
IIIb-16	cyproconazole
IIIb-17	difenoconazole
IIIb-18	prothioconazole

No	fungicide
IIIb-19	flutriafol
IIIb-20	thiabendazole
IIIb-21	ipconazole
IIIb-22	tebuconazole
IIIb-23	triadimenol
IIIb-24	prochloraz
IIIb-25	fluquinconazole
IIIb-26	triticonazole
IIIb-27	fludioxonil
IIIb-28	carboxin
IIIb-29	silthiofarm
IIIb-30	ziram
IIIb-31	thiram
IIIb-32	carbendazim
IIIb-33	thiophanate methyl
IIIb-34	fenamidone
IIIb-35	hymexazol
IIIb-36	fluazinam

In one embodiment, the present invention relates to mixtures, which comprise at least one compound of formula I, which is selected from the compounds 1-1 to 1-18, as component 1), and at least one biopesticide II, which is selected from the biopesticides 11-1 to 11-14, in particular from the biopesticide strains lla-1 to lla-1 1, and at least one further active compound III, which may be selected from the insecticides llla-1 to llla-23, or the fungicides lllb-1 to lllb-36.

Such mixtures are preferably ternary mixture comprising one compound of formula I, which is selected from the compounds 1-1 to 1-18, as component 1), and one biopesticide II, which is selected from the biopesticides 11-1 to 11-14, in particular from the biopesticide strains lla-1 to lla-11, and one further active compound III, which may be selected from the insecticides llla-1 to llla-23, or the fungicides lllb-1 to lllb-36.

Preference is given to the pesticidal mixtures compiled in the tables below.

Table 1 Pesticidal mixtures, which comprise compound 1-1, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain lla with an active compound III according to one row of Table M

Table 2 Pesticidal mixtures, which comprise compound I-2, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain lla with an active compound III according to one row of Table M

Table 3 Pesticidal mixtures, which comprise compound I-3, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain lla with an active compound III according to one row of Table M

Table 4 Pesticidal mixtures, which comprise compound I-4, and in which combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain lla with an active compound III according to one row of Table M

Table 5 Pesticidal mixtures, which comprise compound I-5, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain lla with an active compound III according to one row of Table M

Table 6 Pesticidal mixtures, which comprise compound I-6, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain lla with an active compound III according to one row of Table M

Table 7 Pesticidal mixtures, which comprise compound I-7, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain lla with an active compound III according to one row of Table M

Table 8 Pesticidal mixtures, which comprise compound I-8, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain lla with an active compound III according to one row of Table M

Table 9 Pesticidal mixtures, which comprise compound I-9, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain lla with an active compound III according to one row of Table M

Table 10 Pesticidal mixtures, which comprise compound 1-10, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain lla with an active compound III according to one row of Table M

Table 11 Pesticidal mixtures, which comprise compound 1-11, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain IIa with an active compound III according to one row of Table M

Table 12 Pesticidal mixtures, which comprise compound 1-12, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain IIa with an active compound III according to one row of Table M

Table 13 Pesticidal mixtures, which comprise compound 1-13, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain IIa with an active compound III according to one row of Table M

Table 14 Pesticidal mixtures, which comprise compound 1-14, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain IIa with an active compound III according to one row of Table M

Table 15 Pesticidal mixtures, which comprise compound 1-15, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain IIa with an active compound III according to one row of Table M

Table 16 Pesticidal mixtures, which comprise compound 1-16, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain IIa with an active compound III according to one row of Table M

Table 17 Pesticidal mixtures, which comprise compound 1-17, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain IIa with an active compound III according to one row of Table M

Table 18 Pesticidal mixtures, which comprise compound 1-18, and in which the combination of components 2) and 3) corresponds in each case to the combination of a biopesticide II or biopesticide strain IIa with an active compound III according to one row of Table M

Table M

No.	II/IIa	III
M-1	11-1	IIIa-1
M-2	M-2	IIIa-1
M-3	M-3	IIIa-1
M-4	M-4	IIIa-1
M-5	M-5	IIIa-1
M-6	M-6	IIIa-1
M-7	M-7	IIIa-1
M-8	M-8	IIIa-1
M-9	M-9	IIIa-1
M-10	11-10	IIIa-1
M-11	11-11	IIIa-1
M-12	11-12	IIIa-1
M-13	11-13	IIIa-1
M-14	11-14	IIIa-1
M-15	11-1	IIIa-2
M-16	M-2	IIIa-2
M-17	M-3	IIIa-2
M-18	M-4	IIIa-2
M-19	M-5	IIIa-2
M-20	M-6	IIIa-2
M-21	M-7	IIIa-2
M-22	M-8	IIIa-2
M-23	M-9	IIIa-2
M-24	11-10	IIIa-2
M-25	11-11	IIIa-2
M-26	11-12	IIIa-2
M-27	11-13	IIIa-2
M-28	11-14	IIIa-2
M-29	11-1	IIIa-3
M-30	M-2	IIIa-3
M-31	M-3	IIIa-3
M-32	M-4	IIIa-3
M-33	M-5	IIIa-3
M-34	M-6	IIIa-3
M-35	M-7	IIIa-3
M-36	M-8	IIIa-3
M-37	M-9	IIIa-3
M-38	11-10	IIIa-3
M-39	11-11	IIIa-3
M-40	11-12	IIIa-3
M-41	11-13	IIIa-3
M-42	11-14	IIIa-3
M-43	11-1	IIIa-4
M-44	M-2	IIIa-4
M-45	M-3	IIIa-4
M-46	M-4	IIIa-4
M-47	M-5	IIIa-4
M-48	M-6	IIIa-4

No.	II/IIa	III
M-49	II-7	IIIa-4
M-50	II-8	IIIa-4
M-51	II-9	IIIa-4
M-52	11-10	IIIa-4
M-53	11-1 1	IIIa-4
M-54	11-12	IIIa-4
M-55	11-13	IIIa-4
M-56	11-14	IIIa-4
M-57	11-1	IIIa-5
M-58	II-2	IIIa-5
M-59	II-3	IIIa-5
M-60	II-4	IIIa-5
M-61	II-5	IIIa-5
M-62	II-6	IIIa-5
M-63	II-7	IIIa-5
M-64	II-8	IIIa-5
M-65	II-9	IIIa-5
M-66	11-10	IIIa-5
M-67	11-1 1	IIIa-5
M-68	11-12	IIIa-5
M-69	11-13	IIIa-5
M-70	11-14	IIIa-5
M-71	11-1	IIIa-6
M-72	II-2	IIIa-6
M-73	II-3	IIIa-6
M-74	II-4	IIIa-6
M-75	II-5	IIIa-6
M-76	II-6	IIIa-6
M-77	II-7	IIIa-6
M-78	II-8	IIIa-6
M-79	II-9	IIIa-6
M-80	11-10	IIIa-6
M-81	11-1 1	IIIa-6
M-82	11-12	IIIa-6
M-83	11-13	IIIa-6
M-84	11-14	IIIa-6
M-85	11-1	IIIa-7
M-86	II-2	IIIa-7
M-87	II-3	IIIa-7
M-88	II-4	IIIa-7
M-89	II-5	IIIa-7

No.	II/IIa	III
M-90	II-6	IIIa-7
M-91	II-7	IIIa-7
M-92	II-8	IIIa-7
M-93	II-9	IIIa-7
M-94	11-10	IIIa-7
M-95	11-1 1	IIIa-7
M-96	11-12	IIIa-7
M-97	11-13	IIIa-7
M-98	11-14	IIIa-7
M-99	11-1	IIIa-8
M-100	II-2	IIIa-8
M-101	II-3	IIIa-8
M-102	II-4	IIIa-8
M-103	II-5	IIIa-8
M-104	II-6	IIIa-8
M-105	II-7	IIIa-8
M-106	II-8	IIIa-8
M-107	II-9	IIIa-8
M-108	11-10	IIIa-8
M-109	11-1 1	IIIa-8
M-1 10	11-12	IIIa-8
M-1 11	11-13	IIIa-8
M-1 12	11-14	IIIa-8
M-1 13	11-1	IIIa-9
M-1 14	II-2	IIIa-9
M-1 15	II-3	IIIa-9
M-1 16	II-4	IIIa-9
M-1 17	II-5	IIIa-9
M-1 18	II-6	IIIa-9
M-1 19	II-7	IIIa-9
M-120	II-8	IIIa-9
M-121	II-9	IIIa-9
M-122	11-10	IIIa-9
M-123	11-1 1	IIIa-9
M-124	11-12	IIIa-9
M-125	11-13	IIIa-9
M-126	11-14	IIIa-9
M-127	11-1	IIIa-10
M-128	II-2	IIIa-10
M-129	II-3	IIIa-10
M-130	II-4	IIIa-10

No.	II/IIa	III
M-131	II-5	IIIa-10
M-132	II-6	IIIa-10
M-133	II-7	IIIa-10
M-134	II-8	IIIa-10
M-135	II-9	IIIa-10
M-136	11-10	IIIa-10
M-137	11-1 1	IIIa-10
M-138	11-12	IIIa-10
M-139	11-13	IIIa-10
M-140	11-14	IIIa-10
M-141	11-1	IIIa-1 1
M-142	II-2	IIIa-1 1
M-143	II-3	IIIa-1 1
M-144	II-4	IIIa-1 1
M-145	II-5	IIIa-1 1
M-146	II-6	IIIa-1 1
M-147	II-7	IIIa-1 1
M-148	II-8	IIIa-1 1
M-149	II-9	IIIa-1 1
M-150	11-10	IIIa-1 1
M-151	11-1 1	IIIa-1 1
M-152	11-12	IIIa-1 1
M-153	11-13	IIIa-1 1
M-154	11-14	IIIa-1 1
M-155	11-1	IIIa-12
M-156	II-2	IIIa-12
M-157	II-3	IIIa-12
M-158	II-4	IIIa-12
M-159	II-5	IIIa-12
M-160	II-6	IIIa-12
M-161	II-7	IIIa-12
M-162	II-8	IIIa-12
M-163	II-9	IIIa-12
M-164	11-10	IIIa-12
M-165	11-1 1	IIIa-12
M-166	11-12	IIIa-12
M-167	11-13	IIIa-12
M-168	11-14	IIIa-12
M-169	11-1	IIIa-13
M-170	II-2	IIIa-1 3
M-171	II-3	IIIa-1 3

No.	II/IIa	III
M-172	II-4	IIIa-13
M-173	II-5	IIIa-13
M-174	II-6	IIIa-13
M-175	II-7	IIIa-13
M-176	II-8	IIIa-13
M-177	II-9	IIIa-13
M-178	11-10	IIIa-13
M-179	11-1 1	IIIa-13
M-180	11-12	IIIa-13
M-181	11-13	IIIa-13
M-182	11-14	IIIa-13
M-183	11-1	IIIa-14
M-184	II-2	IIIa-14
M-185	II-3	IIIa-14
M-186	II-4	IIIa-14
M-187	II-5	IIIa-14
M-188	II-6	IIIa-14
M-189	II-7	IIIa-14
M-190	II-8	IIIa-14
M-191	II-9	IIIa-14
M-192	11-10	IIIa-14
M-193	11-1 1	IIIa-14
M-194	11-12	IIIa-14
M-195	11-13	IIIa-14
M-196	11-14	IIIa-14
M-197	11-1	IIIa-15
M-198	II-2	IIIa-15
M-199	II-3	IIIa-15
M-200	II-4	IIIa-15
M-201	II-5	IIIa-15
M-202	II-6	IIIa-15
M-203	II-7	IIIa-15
M-204	II-8	IIIa-15
M-205	II-9	IIIa-15
M-206	11-10	IIIa-15
M-207	11-1 1	IIIa-15
M-208	11-12	IIIa-15
M-209	11-13	IIIa-15
M-210	11-14	IIIa-15
M-21 1	11-1	IIIa-16
M-212	II-2	IIIa-16

No.	II/IIa	III
M-213	II-3	IIIa-16
M-214	II-4	IIIa-16
M-215	II-5	IIIa-16
M-216	II-6	IIIa-16
M-217	II-7	IIIa-16
M-218	II-8	IIIa-16
M-219	II-9	IIIa-16
M-220	11-10	IIIa-16
M-221	11-1 1	IIIa-16
M-222	11-12	IIIa-16
M-223	11-13	IIIa-16
M-224	11-14	IIIa-16
M-225	11-1	IIIa-17
M-226	II-2	IIIa-17
M-227	II-3	IIIa-17
M-228	II-4	IIIa-17
M-229	II-5	IIIa-17
M-230	II-6	IIIa-17
M-231	II-7	IIIa-17
M-232	II-8	IIIa-17
M-233	II-9	IIIa-17
M-234	11-10	IIIa-17
M-235	11-1 1	IIIa-17
M-236	11-12	IIIa-17
M-237	11-13	IIIa-17
M-238	11-14	IIIa-17
M-239	11-1	IIIa-18
M-240	II-2	IIIa-18
M-241	II-3	IIIa-18
M-242	II-4	IIIa-18
M-243	II-5	IIIa-18
M-244	II-6	IIIa-18
M-245	II-7	IIIa-18
M-246	II-8	IIIa-18
M-247	II-9	IIIa-18
M-248	11-10	IIIa-18
M-249	11-1 1	IIIa-18
M-250	11-12	IIIa-18
M-251	11-13	IIIa-18
M-252	11-14	IIIa-18
M-253	11-1	IIIa-19

No.	II/IIa	III
M-254	II-2	IIIa-19
M-255	II-3	IIIa-19
M-256	II-4	IIIa-19
M-257	II-5	IIIa-19
M-258	II-6	IIIa-19
M-259	II-7	IIIa-19
M-260	II-8	IIIa-19
M-261	II-9	IIIa-19
M-262	11-10	IIIa-19
M-263	11-1 1	IIIa-19
M-264	11-12	IIIa-19
M-265	11-13	IIIa-19
M-266	11-14	IIIa-19
M-267	11-1	IIIa-20
M-268	II-2	IIIa-20
M-269	II-3	IIIa-20
M-270	II-4	IIIa-20
M-271	II-5	IIIa-20
M-272	II-6	IIIa-20
M-273	II-7	IIIa-20
M-274	II-8	IIIa-20
M-275	II-9	IIIa-20
M-276	11-10	IIIa-20
M-277	11-1 1	IIIa-20
M-278	11-12	IIIa-20
M-279	11-13	IIIa-20
M-280	11-14	IIIa-20
M-281	11-1	IIIa-21
M-282	II-2	IIIa-21
M-283	II-3	IIIa-21
M-284	II-4	IIIa-21
M-285	II-5	IIIa-21
M-286	II-6	IIIa-21
M-287	II-7	IIIa-21
M-288	II-8	IIIa-21
M-289	II-9	IIIa-21
M-290	11-10	IIIa-21
M-291	11-1 1	IIIa-21
M-292	11-12	IIIa-21
M-293	11-13	IIIa-21
M-294	11-14	IIIa-21

No.	II/IIa	III
M-295	11-1	IIIa-22
M-296	II-2	IIIa-22
M-297	II-3	IIIa-22
M-298	II-4	IIIa-22
M-299	II-5	IIIa-22
M-300	II-6	IIIa-22
M-301	II-7	IIIa-22
M-302	II-8	IIIa-22
M-303	II-9	IIIa-22
M-304	11-10	IIIa-22
M-305	11-1 1	IIIa-22
M-306	11-12	IIIa-22
M-307	11-13	IIIa-22
M-308	11-14	IIIa-22
M-309	11-1	IIIa-23
M-310	II-2	IIIa-23
M-31 1	II-3	IIIa-23
M-312	II-4	IIIa-23
M-313	II-5	IIIa-23
M-314	II-6	IIIa-23
M-315	II-7	IIIa-23
M-316	II-8	IIIa-23
M-317	II-9	IIIa-23
M-318	11-10	IIIa-23
M-319	11-1 1	IIIa-23
M-320	11-12	IIIa-23
M-321	11-13	IIIa-23
M-322	11-14	IIIa-23
M-323	11-1	IIIb-1
M-324	II-2	IIIb-1
M-325	II-3	IIIb-1
M-326	II-4	IIIb-1
M-327	II-5	IIIb-1
M-328	II-6	IIIb-1
M-329	II-7	IIIb-1
M-330	II-8	IIIb-1
M-331	II-9	IIIb-1
M-332	11-10	IIIb-1
M-333	11-1 1	IIIb-1
M-334	11-12	IIIb-1
M-335	11-13	IIIb-1

No.	II/IIa	III
M-336	11-14	IIIb-1
M-337	11-1	IIIb-2
M-338	II-2	IIIb-2
M-339	II-3	IIIb-2
M-340	II-4	IIIb-2
M-341	II-5	IIIb-2
M-342	II-6	IIIb-2
M-343	II-7	IIIb-2
M-344	II-8	IIIb-2
M-345	II-9	IIIb-2
M-346	11-10	IIIb-2
M-347	11-1 1	IIIb-2
M-348	11-12	IIIb-2
M-349	11-13	IIIb-2
M-350	11-14	IIIb-2
M-351	11-1	IIIb-3
M-352	II-2	IIIb-3
M-353	II-3	IIIb-3
M-354	II-4	IIIb-3
M-355	II-5	IIIb-3
M-356	II-6	IIIb-3
M-357	II-7	IIIb-3
M-358	II-8	IIIb-3
M-359	II-9	IIIb-3
M-360	11-10	IIIb-3
M-361	11-1 1	IIIb-3
M-362	11-12	IIIb-3
M-363	11-13	IIIb-3
M-364	11-14	IIIb-3
M-365	11-1	IIIb-4
M-366	II-2	IIIb-4
M-367	II-3	IIIb-4
M-368	II-4	IIIb-4
M-369	II-5	IIIb-4
M-370	II-6	IIIb-4
M-371	II-7	IIIb-4
M-372	II-8	IIIb-4
M-373	II-9	IIIb-4
M-374	11-10	IIIb-4
M-375	11-1 1	IIIb-4
M-376	11-12	IIIb-4

No.	II/IIa	III
M-377	11-13	IIIb-4
M-378	11-14	IIIb-4
M-379	11-1	IIIb-5
M-380	II-2	IIIb-5
M-381	II-3	IIIb-5
M-382	II-4	IIIb-5
M-383	II-5	IIIb-5
M-384	II-6	IIIb-5
M-385	II-7	IIIb-5
M-386	II-8	IIIb-5
M-387	II-9	IIIb-5
M-388	11-10	IIIb-5
M-389	11-1 1	IIIb-5
M-390	11-12	IIIb-5
M-391	11-13	IIIb-5
M-392	11-14	IIIb-5
M-393	11-1	IIIb-6
M-394	II-2	IIIb-6
M-395	II-3	IIIb-6
M-396	II-4	IIIb-6
M-397	II-5	IIIb-6
M-398	II-6	IIIb-6
M-399	II-7	IIIb-6
M-400	II-8	IIIb-6
M-401	II-9	IIIb-6
M-402	11-10	IIIb-6
M-403	11-1 1	IIIb-6
M-404	11-12	IIIb-6
M-405	11-13	IIIb-6
M-406	11-14	IIIb-6
M-407	11-1	IIIb-7
M-408	II-2	IIIb-7
M-409	II-3	IIIb-7
M-410	II-4	IIIb-7
M-41 1	II-5	IIIb-7
M-412	II-6	IIIb-7
M-413	II-7	IIIb-7
M-414	II-8	IIIb-7
M-415	II-9	IIIb-7
M-416	11-10	IIIb-7
M-417	11-1 1	IIIb-7

No.	II/IIa	III
M-418	11-12	IIIb-7
M-419	11-13	IIIb-7
M-420	11-14	IIIb-7
M-421	11-1	IIIb-8
M-422	II-2	IIIb-8
M-423	II-3	IIIb-8
M-424	II-4	IIIb-8
M-425	II-5	IIIb-8
M-426	II-6	IIIb-8
M-427	II-7	IIIb-8
M-428	II-8	IIIb-8
M-429	II-9	IIIb-8
M-430	11-10	IIIb-8
M-431	11-1 1	IIIb-8
M-432	11-12	IIIb-8
M-433	11-13	IIIb-8
M-434	11-14	IIIb-8
M-435	11-1	IIIb-9
M-436	II-2	IIIb-9
M-437	II-3	IIIb-9
M-438	II-4	IIIb-9
M-439	II-5	IIIb-9
M-440	II-6	IIIb-9
M-441	II-7	IIIb-9
M-442	II-8	IIIb-9
M-443	II-9	IIIb-9
M-444	11-10	IIIb-9
M-445	11-1 1	IIIb-9
M-446	11-12	IIIb-9
M-447	11-13	IIIb-9
M-448	11-14	IIIb-9
M-449	11-1	IIIb-10
M-450	II-2	IIIb-10
M-451	II-3	IIIb-10
M-452	II-4	IIIb-10
M-453	II-5	IIIb-10
M-454	II-6	IIIb-10
M-455	II-7	IIIb-10
M-456	II-8	IIIb-10
M-457	II-9	IIIb-10
M-458	11-10	IIIb-10

No.	II/IIa	III
M-459	11-1 1	IIIb-10
M-460	11-12	IIIb-10
M-461	11-13	IIIb-10
M-462	11-14	IIIb-10
M-463	11-1	IIIb-1 1
M-464	II-2	IIIb-1 1
M-465	II-3	IIIb-1 1
M-466	II-4	IIIb-1 1
M-467	II-5	IIIb-1 1
M-468	II-6	IIIb-1 1
M-469	II-7	IIIb-1 1
M-470	II-8	IIIb-1 1
M-471	II-9	IIIb-1 1
M-472	11-10	IIIb-1 1
M-473	11-1 1	IIIb-1 1
M-474	11-12	IIIb-1 1
M-475	11-13	IIIb-1 1
M-476	11-14	IIIb-1 1
M-477	11-1	IIIb-12
M-478	II-2	IIIb-12
M-479	II-3	IIIb-12
M-480	II-4	IIIb-12
M-481	II-5	IIIb-12
M-482	II-6	IIIb-12
M-483	II-7	IIIb-12
M-484	II-8	IIIb-12
M-485	II-9	IIIb-12
M-486	11-10	IIIb-12
M-487	11-1 1	IIIb-12
M-488	11-12	IIIb-12
M-489	11-13	IIIb-12
M-490	11-14	IIIb-12
M-491	11-1	IIIb-13
M-492	II-2	IIIb-13
M-493	II-3	IIIb-13
M-494	II-4	IIIb-13
M-495	II-5	IIIb-13
M-496	II-6	IIIb-13
M-497	II-7	IIIb-13
M-498	II-8	IIIb-13
M-499	II-9	IIIb-13

No.	II/IIa	III
M-500	11-10	IIIb-13
M-501	11-1 1	IIIb-13
M-502	11-12	IIIb-13
M-503	11-13	IIIb-13
M-504	11-14	IIIb-13
M-505	11-1	IIIb-14
M-506	II-2	IIIb-14
M-507	II-3	IIIb-14
M-508	II-4	IIIb-14
M-509	II-5	IIIb-14
M-510	II-6	IIIb-14
M-51 1	II-7	IIIb-14
M-512	II-8	IIIb-14
M-513	II-9	IIIb-14
M-514	11-10	IIIb-14
M-515	11-1 1	IIIb-14
M-516	11-12	IIIb-14
M-517	11-13	IIIb-14
M-518	11-14	IIIb-14
M-519	11-1	IIIb-15
M-520	II-2	IIIb-15
M-521	II-3	IIIb-15
M-522	II-4	IIIb-15
M-523	II-5	IIIb-15
M-524	II-6	IIIb-15
M-525	II-7	IIIb-15
M-526	II-8	IIIb-15
M-527	II-9	IIIb-15
M-528	11-10	IIIb-15
M-529	11-1 1	IIIb-15
M-530	11-12	IIIb-15
M-531	11-13	IIIb-15
M-532	11-14	IIIb-15
M-533	11-1	IIIb-16
M-534	II-2	IIIb-16
M-535	II-3	IIIb-16
M-536	II-4	IIIb-16
M-537	II-5	IIIb-16
M-538	II-6	IIIb-16
M-539	II-7	IIIb-16
M-540	II-8	IIIb-16

No.	II/IIa	III
M-541	II-9	IIIb-16
M-542	11-10	IIIb-16
M-543	11-1 1	IIIb-16
M-544	11-12	IIIb-16
M-545	11-13	IIIb-16
M-546	11-14	IIIb-16
M-547	11-1	IIIb-17
M-548	II-2	IIIb-17
M-549	II-3	IIIb-17
M-550	II-4	IIIb-17
M-551	II-5	IIIb-17
M-552	II-6	IIIb-17
M-553	II-7	IIIb-17
M-554	II-8	IIIb-17
M-555	II-9	IIIb-17
M-556	11-10	IIIb-17
M-557	11-1 1	IIIb-17
M-558	11-12	IIIb-17
M-559	11-13	IIIb-17
M-560	11-14	IIIb-17
M-561	11-1	IIIb-18
M-562	II-2	IIIb-18
M-563	II-3	IIIb-18
M-564	II-4	IIIb-18
M-565	II-5	IIIb-18
M-566	II-6	IIIb-18
M-567	II-7	IIIb-18
M-568	II-8	IIIb-18
M-569	II-9	IIIb-18
M-570	11-10	IIIb-18
M-571	11-1 1	IIIb-18
M-572	11-12	IIIb-18
M-573	11-13	IIIb-18
M-574	11-14	IIIb-18
M-575	11-1	IIIb-19
M-576	II-2	IIIb-19
M-577	II-3	IIIb-19
M-578	II-4	IIIb-19
M-579	II-5	IIIb-19
M-580	II-6	IIIb-19
M-581	II-7	IIIb-19

No.	II/IIa	III
M-582	II-8	IIIb-19
M-583	II-9	IIIb-19
M-584	11-10	IIIb-19
M-585	11-1 1	IIIb-19
M-586	11-12	IIIb-19
M-587	11-13	IIIb-19
M-588	11-14	IIIb-19
M-589	11-1	IIIb-20
M-590	II-2	IIIb-20
M-591	II-3	IIIb-20
M-592	II-4	IIIb-20
M-593	II-5	IIIb-20
M-594	II-6	IIIb-20
M-595	II-7	IIIb-20
M-596	II-8	IIIb-20
M-597	II-9	IIIb-20
M-598	11-10	IIIb-20
M-599	11-1 1	IIIb-20
M-600	11-12	IIIb-20
M-601	11-13	IIIb-20
M-602	11-14	IIIb-20
M-603	11-1	IIIb-21
M-604	II-2	IIIb-21
M-605	II-3	IIIb-21
M-606	II-4	IIIb-21
M-607	II-5	IIIb-21
M-608	II-6	IIIb-21
M-609	II-7	IIIb-21
M-610	II-8	IIIb-21
M-61 1	II-9	IIIb-21
M-612	11-10	IIIb-21
M-613	11-1 1	IIIb-21
M-614	11-12	IIIb-21
M-615	11-13	IIIb-21
M-616	11-14	IIIb-21
M-617	11-1	IIIb-22
M-618	II-2	IIIb-22
M-619	II-3	IIIb-22
M-620	II-4	IIIb-22
M-621	II-5	IIIb-22
M-622	II-6	IIIb-22

No.	II/IIa	III
M-623	II-7	IIIb-22
M-624	II-8	IIIb-22
M-625	II-9	IIIb-22
M-626	11-10	IIIb-22
M-627	11-1 1	IIIb-22
M-628	11-12	IIIb-22
M-629	11-13	IIIb-22
M-630	11-14	IIIb-22
M-631	11-1	IIIb-23
M-632	II-2	IIIb-23
M-633	II-3	IIIb-23
M-634	II-4	IIIb-23
M-635	II-5	IIIb-23
M-636	II-6	IIIb-23
M-637	II-7	IIIb-23
M-638	II-8	IIIb-23
M-639	II-9	IIIb-23
M-640	11-10	IIIb-23
M-641	11-1 1	IIIb-23
M-642	11-12	IIIb-23
M-643	11-13	IIIb-23
M-644	11-14	IIIb-23
M-645	11-1	IIIb-24
M-646	II-2	IIIb-24
M-647	II-3	IIIb-24
M-648	II-4	IIIb-24
M-649	II-5	IIIb-24
M-650	II-6	IIIb-24
M-651	II-7	IIIb-24
M-652	II-8	IIIb-24
M-653	II-9	IIIb-24
M-654	11-10	IIIb-24
M-655	11-1 1	IIIb-24
M-656	11-12	IIIb-24
M-657	11-13	IIIb-24
M-658	11-14	IIIb-24
M-659	11-1	IIIb-25
M-660	II-2	IIIb-25
M-661	II-3	IIIb-25
M-662	II-4	IIIb-25
M-663	II-5	IIIb-25

No.	II/IIa	III
M-664	II-6	IIIb-25
M-665	II-7	IIIb-25
M-666	II-8	IIIb-25
M-667	II-9	IIIb-25
M-668	11-10	IIIb-25
M-669	11-1 1	IIIb-25
M-670	11-12	IIIb-25
M-671	11-13	IIIb-25
M-672	11-14	IIIb-25
M-673	11-1	IIIb-26
M-674	II-2	IIIb-26
M-675	II-3	IIIb-26
M-676	II-4	IIIb-26
M-677	II-5	IIIb-26
M-678	II-6	IIIb-26
M-679	II-7	IIIb-26
M-680	II-8	IIIb-26
M-681	II-9	IIIb-26
M-682	11-10	IIIb-26
M-683	11-1 1	IIIb-26
M-684	11-12	IIIb-26
M-685	11-13	IIIb-26
M-686	11-14	IIIb-26
M-687	11-1	IIIb-27
M-688	II-2	IIIb-27
M-689	II-3	IIIb-27
M-690	II-4	IIIb-27
M-691	II-5	IIIb-27
M-692	II-6	IIIb-27
M-693	II-7	IIIb-27
M-694	II-8	IIIb-27
M-695	II-9	IIIb-27
M-696	11-10	IIIb-27
M-697	11-1 1	IIIb-27
M-698	11-12	IIIb-27
M-699	11-13	IIIb-27
M-700	11-14	IIIb-27
M-701	11-1	IIIb-28
M-702	II-2	IIIb-28
M-703	II-3	IIIb-28
M-704	II-4	IIIb-28

No.	II/IIa	III
M-705	II-5	IIIb-28
M-706	II-6	IIIb-28
M-707	II-7	IIIb-28
M-708	II-8	IIIb-28
M-709	II-9	IIIb-28
M-710	11-10	IIIb-28
M-71 1	11-1 1	IIIb-28
M-712	11-12	IIIb-28
M-713	11-13	IIIb-28
M-714	11-14	IIIb-28
M-715	11-1	IIIb-29
M-716	II-2	IIIb-29
M-717	II-3	IIIb-29
M-718	II-4	IIIb-29
M-719	II-5	IIIb-29
M-720	II-6	IIIb-29
M-721	II-7	IIIb-29
M-722	II-8	IIIb-29
M-723	II-9	IIIb-29
M-724	11-10	IIIb-29
M-725	11-1 1	IIIb-29
M-726	11-12	IIIb-29
M-727	11-13	IIIb-29
M-728	11-14	IIIb-29
M-729	11-1	IIIb-30
M-730	II-2	IIIb-30
M-731	II-3	IIIb-30
M-732	II-4	IIIb-30
M-733	II-5	IIIb-30
M-734	II-6	IIIb-30
M-735	II-7	IIIb-30
M-736	II-8	IIIb-30
M-737	II-9	IIIb-30
M-738	11-10	IIIb-30
M-739	11-1 1	IIIb-30
M-740	11-12	IIIb-30
M-741	11-13	IIIb-30
M-742	11-14	IIIb-30
M-743	11-1	IIIb-31
M-744	II-2	IIIb-31
M-745	II-3	IIIb-31

No.	II/IIa	III
M-746	II-4	IIIb-31
M-747	II-5	IIIb-31
M-748	II-6	IIIb-31
M-749	II-7	IIIb-31
M-750	II-8	IIIb-31
M-751	II-9	IIIb-31
M-752	11-10	IIIb-31
M-753	11-1 1	IIIb-31
M-754	11-12	IIIb-31
M-755	11-13	IIIb-31
M-756	11-14	IIIb-31
M-757	11-1	IIIb-32
M-758	II-2	IIIb-32
M-759	II-3	IIIb-32
M-760	II-4	IIIb-32
M-761	II-5	IIIb-32
M-762	II-6	IIIb-32
M-763	II-7	IIIb-32
M-764	II-8	IIIb-32
M-765	II-9	IIIb-32
M-766	11-10	IIIb-32
M-767	11-1 1	IIIb-32
M-768	11-12	IIIb-32
M-769	11-13	IIIb-32
M-770	11-14	IIIb-32
M-771	11-1	IIIb-33
M-772	II-2	IIIb-33
M-773	II-3	IIIb-33
M-774	II-4	IIIb-33
M-775	II-5	IIIb-33
M-776	II-6	IIIb-33
M-777	II-7	IIIb-33
M-778	II-8	IIIb-33
M-779	II-9	IIIb-33
M-780	11-10	IIIb-33
M-781	11-1 1	IIIb-33
M-782	11-12	IIIb-33
M-783	11-13	IIIb-33
M-784	11-14	IIIb-33
M-785	11-1	IIIb-34
M-786	II-2	IIIb-34

No.	II/IIa	III
M-787	II-3	IIIb-34
M-788	II-4	IIIb-34
M-789	II-5	IIIb-34
M-790	II-6	IIIb-34
M-791	II-7	IIIb-34
M-792	II-8	IIIb-34
M-793	II-9	IIIb-34
M-794	11-10	IIIb-34
M-795	11-1 1	IIIb-34
M-796	11-12	IIIb-34
M-797	11-13	IIIb-34
M-798	11-14	IIIb-34
M-799	11-1	IIIb-35
M-800	II-2	IIIb-35
M-801	II-3	IIIb-35
M-802	II-4	IIIb-35
M-803	II-5	IIIb-35
M-804	II-6	IIIb-35
M-805	II-7	IIIb-35
M-806	II-8	IIIb-35
M-807	II-9	IIIb-35
M-808	11-10	IIIb-35
M-809	11-1 1	IIIb-35
M-810	11-12	IIIb-35
M-81 1	11-13	IIIb-35
M-812	11-14	IIIb-35
M-813	11-1	IIIb-36
M-814	II-2	IIIb-36
M-815	II-3	IIIb-36
M-816	II-4	IIIb-36
M-817	II-5	IIIb-36
M-818	II-6	IIIb-36
M-819	II-7	IIIb-36
M-820	II-8	IIIb-36
M-821	II-9	IIIb-36
M-822	11-10	IIIb-36
M-823	11-1 1	IIIb-36
M-824	11-12	IIIb-36
M-825	11-13	IIIb-36
M-826	11-14	IIIb-36
M-827	IIa-1	IIIa-1

No.	II/IIa	III
M-828	IIa-2	IIIa-1
M-829	IIa-3	IIIa-1
M-830	IIa-4	IIIa-1
M-831	IIa-5	IIIa-1
M-832	IIa-6	IIIa-1
M-833	IIa-7	IIIa-1
M-834	IIa-8	IIIa-1
M-835	IIa-9	IIIa-1
M-836	IIa-10	IIIa-1
M-837	IIa-1 1	IIIa-1
M-838	IIa-1	IIIa-2
M-839	IIa-2	IIIa-2
M-840	IIa-3	IIIa-2
M-841	IIa-4	IIIa-2
M-842	IIa-5	IIIa-2
M-843	IIa-6	IIIa-2
M-844	IIa-7	IIIa-2
M-845	IIa-8	IIIa-2
M-846	IIa-9	IIIa-2
M-847	IIa-10	IIIa-2
M-848	IIa-1 1	IIIa-2
M-849	IIa-1	IIIa-3
M-850	IIa-2	IIIa-3
M-851	IIa-3	IIIa-3
M-852	IIa-4	IIIa-3
M-853	IIa-5	IIIa-3
M-854	IIa-6	IIIa-3
M-855	IIa-7	IIIa-3
M-856	IIa-8	IIIa-3
M-857	IIa-9	IIIa-3
M-858	IIa-10	IIIa-3
M-859	IIa-1 1	IIIa-3
M-860	IIa-1	IIIa-4
M-861	IIa-2	IIIa-4
M-862	IIa-3	IIIa-4
M-863	IIa-4	IIIa-4
M-864	IIa-5	IIIa-4
M-865	IIa-6	IIIa-4
M-866	IIa-7	IIIa-4
M-867	IIa-8	IIIa-4
M-868	IIa-9	IIIa-4

No.	II/IIa	III
M-869	IIa-10	IIIa-4
M-870	IIa-1 1	IIIa-4
M-871	IIa-1	IIIa-5
M-872	IIa-2	IIIa-5
M-873	IIa-3	IIIa-5
M-874	IIa-4	IIIa-5
M-875	IIa-5	IIIa-5
M-876	IIa-6	IIIa-5
M-877	IIa-7	IIIa-5
M-878	IIa-8	IIIa-5
M-879	IIa-9	IIIa-5
M-880	IIa-10	IIIa-5
M-881	IIa-1 1	IIIa-5
M-882	IIa-1	IIIa-6
M-883	IIa-2	IIIa-6
M-884	IIa-3	IIIa-6
M-885	IIa-4	IIIa-6
M-886	IIa-5	IIIa-6
M-887	IIa-6	IIIa-6
M-888	IIa-7	IIIa-6
M-889	IIa-8	IIIa-6
M-890	IIa-9	IIIa-6
M-891	IIa-10	IIIa-6
M-892	IIa-1 1	IIIa-6
M-893	IIa-1	IIIa-7
M-894	IIa-2	IIIa-7
M-895	IIa-3	IIIa-7
M-896	IIa-4	IIIa-7
M-897	IIa-5	IIIa-7
M-898	IIa-6	IIIa-7
M-899	IIa-7	IIIa-7
M-900	IIa-8	IIIa-7
M-901	IIa-9	IIIa-7
M-902	IIa-10	IIIa-7
M-903	IIa-1 1	IIIa-7
M-904	IIa-1	IIIa-8
M-905	IIa-2	IIIa-8
M-906	IIa-3	IIIa-8
M-907	IIa-4	IIIa-8
M-908	IIa-5	IIIa-8
M-909	IIa-6	IIIa-8

No.	II/IIa	III
M-910	IIa-7	IIIa-8
M-91 1	IIa-8	IIIa-8
M-912	IIa-9	IIIa-8
M-913	IIa-10	IIIa-8
M-914	IIa-1 1	IIIa-8
M-915	IIa-1	IIIa-9
M-916	IIa-2	IIIa-9
M-917	IIa-3	IIIa-9
M-918	IIa-4	IIIa-9
M-919	IIa-5	IIIa-9
M-920	IIa-6	IIIa-9
M-921	IIa-7	IIIa-9
M-922	IIa-8	IIIa-9
M-923	IIa-9	IIIa-9
M-924	IIa-10	IIIa-9
M-925	IIa-1 1	IIIa-9
M-926	IIa-1	IIIa-10
M-927	IIa-2	IIIa-10
M-928	IIa-3	IIIa-10
M-929	IIa-4	IIIa-10
M-930	IIa-5	IIIa-10
M-931	IIa-6	IIIa-10
M-932	IIa-7	IIIa-10
M-933	IIa-8	IIIa-10
M-934	IIa-9	IIIa-10
M-935	IIa-10	IIIa-10
M-936	IIa-1 1	IIIa-10
M-937	IIa-1	IIIa-1 1
M-938	IIa-2	IIIa-1 1
M-939	IIa-3	IIIa-1 1
M-940	IIa-4	IIIa-1 1
M-941	IIa-5	IIIa-1 1
M-942	IIa-6	IIIa-1 1
M-943	IIa-7	IIIa-1 1
M-944	IIa-8	IIIa-1 1
M-945	IIa-9	IIIa-1 1
M-946	IIa-10	IIIa-1 1
M-947	IIa-1 1	IIIa-1 1
M-948	IIa-1	IIIa-12
M-949	IIa-2	IIIa-12
M-950	IIa-3	IIIa-12

No.	II/IIa	III
M-951	IIa-4	IIIa-12
M-952	IIa-5	IIIa-12
M-953	IIa-6	IIIa-12
M-954	IIa-7	IIIa-12
M-955	IIa-8	IIIa-12
M-956	IIa-9	IIIa-12
M-957	IIa-10	IIIa-12
M-958	IIa-1 1	IIIa-12
M-959	IIa-1	IIIa-13
M-960	IIa-2	IIIa-1 3
M-961	IIa-3	IIIa-1 3
M-962	IIa-4	IIIa-1 3
M-963	IIa-5	IIIa-1 3
M-964	IIa-6	IIIa-1 3
M-965	IIa-7	IIIa-1 3
M-966	IIa-8	IIIa-1 3
M-967	IIa-9	IIIa-1 3
M-968	IIa-10	IIIa-1 3
M-969	IIa-1 1	IIIa-1 3
M-970	IIa-1	IIIa-14
M-971	IIa-2	IIIa-14
M-972	IIa-3	IIIa-14
M-973	IIa-4	IIIa-14
M-974	IIa-5	IIIa-14
M-975	IIa-6	IIIa-14
M-976	IIa-7	IIIa-14
M-977	IIa-8	IIIa-14
M-978	IIa-9	IIIa-14
M-979	IIa-10	IIIa-14
M-980	IIa-1 1	IIIa-14
M-981	IIa-1	IIIa-15
M-982	IIa-2	IIIa-1 5
M-983	IIa-3	IIIa-1 5
M-984	IIa-4	IIIa-1 5
M-985	IIa-5	IIIa-1 5
M-986	IIa-6	IIIa-1 5
M-987	IIa-7	IIIa-1 5
M-988	IIa-8	IIIa-1 5
M-989	IIa-9	IIIa-1 5
M-990	IIa-10	IIIa-1 5
M-991	IIa-1 1	IIIa-1 5

No.	II/IIa	III
M-992	IIa-1	IIIa-1 6
M-993	IIa-2	IIIa-1 6
M-994	IIa-3	IIIa-1 6
M-995	IIa-4	IIIa-1 6
M-996	IIa-5	IIIa-1 6
M-997	IIa-6	IIIa-1 6
M-998	IIa-7	IIIa-1 6
M-999	IIa-8	IIIa-1 6
M-1000	IIa-9	IIIa-1 6
M-1001	IIa-10	IIIa-1 6
M-1002	IIa-1 1	IIIa-1 6
M-1003	IIa-1	IIIa-1 7
M-1004	IIa-2	IIIa-1 7
M-1005	IIa-3	IIIa-1 7
M-1006	IIa-4	IIIa-1 7
M-1007	IIa-5	IIIa-1 7
M-1008	IIa-6	IIIa-1 7
M-1009	IIa-7	IIIa-1 7
M-1010	IIa-8	IIIa-1 7
M-101 1	IIa-9	IIIa-1 7
M-1012	IIa-10	IIIa-1 7
M-1013	IIa-1 1	IIIa-1 7
M-1014	IIa-1	IIIa-1 8
M-1015	IIa-2	IIIa-1 8
M-1016	IIa-3	IIIa-1 8
M-1017	IIa-4	IIIa-1 8
M-1018	IIa-5	IIIa-1 8
M-1019	IIa-6	IIIa-1 8
M-1020	IIa-7	IIIa-1 8
M-1021	IIa-8	IIIa-1 8
M-1022	IIa-9	IIIa-1 8
M-1023	IIa-10	IIIa-1 8
M-1024	IIa-1 1	IIIa-1 8
M-1025	IIa-1	IIIa-1 9
M-1026	IIa-2	IIIa-1 9
M-1027	IIa-3	IIIa-1 9
M-1028	IIa-4	IIIa-1 9
M-1029	IIa-5	IIIa-1 9
M-1030	IIa-6	IIIa-1 9
M-1031	IIa-7	IIIa-1 9
M-1032	IIa-8	IIIa-1 9

No.	II/IIa	III
M-1033	IIa-9	IIIa-19
M-1034	IIa-10	IIIa-19
M-1035	IIa-1 1	IIIa-19
M-1036	IIa-1	IIIa-20
M-1037	IIa-2	IIIa-20
M-1038	IIa-3	IIIa-20
M-1039	IIa-4	IIIa-20
M-1040	IIa-5	IIIa-20
M-1041	IIa-6	IIIa-20
M-1042	IIa-7	IIIa-20
M-1043	IIa-8	IIIa-20
M-1044	IIa-9	IIIa-20
M-1045	IIa-10	IIIa-20
M-1046	IIa-1 1	IIIa-20
M-1047	IIa-1	IIIa-21
M-1048	IIa-2	IIIa-21
M-1049	IIa-3	IIIa-21
M-1050	IIa-4	IIIa-21
M-1051	IIa-5	IIIa-21
M-1052	IIa-6	IIIa-21
M-1053	IIa-7	IIIa-21
M-1054	IIa-8	IIIa-21
M-1055	IIa-9	IIIa-21
M-1056	IIa-10	IIIa-21
M-1057	IIa-1 1	IIIa-21
M-1058	IIa-1	IIIa-22
M-1059	IIa-2	IIIa-22
M-1060	IIa-3	IIIa-22
M-1061	IIa-4	IIIa-22
M-1062	IIa-5	IIIa-22
M-1063	IIa-6	IIIa-22
M-1064	IIa-7	IIIa-22
M-1065	IIa-8	IIIa-22
M-1066	IIa-9	IIIa-22
M-1067	IIa-10	IIIa-22
M-1068	IIa-1 1	IIIa-22
M-1069	IIa-1	IIIb-1
M-1070	IIa-2	IIIb-1
M-1071	IIa-3	IIIb-1
M-1072	IIa-4	IIIb-1
M-1073	IIa-5	IIIb-1
M-1074	IIa-6	IIIb-1
M-1075	IIa-7	IIIb-1
M-1076	IIa-8	IIIb-1
M-1077	IIa-9	IIIb-1
M-1078	IIa-10	IIIb-1
M-1079	IIa-1 1	IIIb-1
M-1080	IIa-1	IIIb-2
M-1081	IIa-2	IIIb-2
M-1082	IIa-3	IIIb-2
M-1083	IIa-4	IIIb-2
M-1084	IIa-5	IIIb-2
M-1085	IIa-6	IIIb-2
M-1086	IIa-7	IIIb-2
M-1087	IIa-8	IIIb-2
M-1088	IIa-9	IIIb-2
M-1089	IIa-10	IIIb-2
M-1090	IIa-1 1	IIIb-2
M-1091	IIa-1	IIIb-3
M-1092	IIa-2	IIIb-3
M-1093	IIa-3	IIIb-3
M-1094	IIa-4	IIIb-3
M-1095	IIa-5	IIIb-3
M-1096	IIa-6	IIIb-3
M-1097	IIa-7	IIIb-3
M-1098	IIa-8	IIIb-3
M-1099	IIa-9	IIIb-3
M-1 100	IIa-10	IIIb-3
M-1 101	IIa-1 1	IIIb-3
M-1 102	IIa-1	IIIb-4
M-1 103	IIa-2	IIIb-4
M-1 104	IIa-3	IIIb-4
M-1 105	IIa-4	IIIb-4
M-1 106	IIa-5	IIIb-4
M-1 107	IIa-6	IIIb-4
M-1 108	IIa-7	IIIb-4
M-1 109	IIa-8	IIIb-4
M-1 110	IIa-9	IIIb-4
M-1 111	IIa-10	IIIb-4
M-1 112	IIa-1 1	IIIb-4
M-1 113	IIa-1	IIIb-5
M-1 114	IIa-2	IIIb-5
M-1 115	IIa-3	IIIb-5
M-1 116	IIa-4	IIIb-5
M-1 117	IIa-5	IIIb-5
M-1 118	IIa-6	IIIb-5
M-1 119	IIa-7	IIIb-5
M-1 120	IIa-8	IIIb-5
M-1 121	IIa-9	IIIb-5
M-1 122	IIa-10	IIIb-5
M-1 123	IIa-1 1	IIIb-5
M-1 124	IIa-1	IIIb-6
M-1 125	IIa-2	IIIb-6
M-1 126	IIa-3	IIIb-6
M-1 127	IIa-4	IIIb-6
M-1 128	IIa-5	IIIb-6
M-1 129	IIa-6	IIIb-6
M-1 130	IIa-7	IIIb-6
M-1 131	IIa-8	IIIb-6
M-1 132	IIa-9	IIIb-6
M-1 133	IIa-10	IIIb-6
M-1 134	IIa-1 1	IIIb-6
M-1 135	IIa-1	IIIb-7
M-1 136	IIa-2	IIIb-7
M-1 137	IIa-3	IIIb-7
M-1 138	IIa-4	IIIb-7
M-1 139	IIa-5	IIIb-7
M-1 140	IIa-6	IIIb-7
M-1 141	IIa-7	IIIb-7
M-1 142	IIa-8	IIIb-7
M-1 143	IIa-9	IIIb-7
M-1 144	IIa-10	IIIb-7
M-1 145	IIa-1 1	IIIb-7
M-1 146	IIa-1	IIIb-8
M-1 147	IIa-2	IIIb-8
M-1 148	IIa-3	IIIb-8
M-1 149	IIa-4	IIIb-8
M-1 150	IIa-5	IIIb-8
M-1 151	IIa-6	IIIb-8
M-1 152	IIa-7	IIIb-8
M-1 153	IIa-8	IIIb-8
M-1 154	IIa-9	IIIb-8
M-1 155	IIa-10	IIIb-8

No.	II/IIa	III
M-1 156	IIa-1 1	IIIb-8
M-1 157	IIa-1	IIIb-9
M-1 158	IIa-2	IIIb-9
M-1 159	IIa-3	IIIb-9
M-1 160	IIa-4	IIIb-9
M-1 161	IIa-5	IIIb-9
M-1 162	IIa-6	IIIb-9
M-1 163	IIa-7	IIIb-9
M-1 164	IIa-8	IIIb-9
M-1 165	IIa-9	IIIb-9
M-1 166	IIa-10	IIIb-9
M-1 167	IIa-1 1	IIIb-9
M-1 168	IIa-1	IIIb-10
M-1 169	IIa-2	IIIb-10
M-1 170	IIa-3	IIIb-10
M-1 171	IIa-4	IIIb-10
M-1 172	IIa-5	IIIb-10
M-1 173	IIa-6	IIIb-10
M-1 174	IIa-7	IIIb-10
M-1 175	IIa-8	IIIb-10
M-1 176	IIa-9	IIIb-10
M-1 177	IIa-10	IIIb-10
M-1 178	IIa-1 1	IIIb-10
M-1 179	IIa-1	IIIb-1 1
M-1 180	IIa-2	IIIb-1 1
M-1 181	IIa-3	IIIb-1 1
M-1 182	IIa-4	IIIb-1 1
M-1 183	IIa-5	IIIb-1 1
M-1 184	IIa-6	IIIb-1 1
M-1 185	IIa-7	IIIb-1 1
M-1 186	IIa-8	IIIb-1 1
M-1 187	IIa-9	IIIb-1 1
M-1 188	IIa-10	IIIb-1 1
M-1 189	IIa-1 1	IIIb-1 1
M-1 190	IIa-1	IIIb-12
M-1 191	IIa-2	IIIb-12
M-1 192	IIa-3	IIIb-12
M-1 193	IIa-4	IIIb-12
M-1 194	IIa-5	IIIb-12
M-1 195	IIa-6	IIIb-12
M-1 196	IIa-7	IIIb-12

No.	II/IIa	III
M-1 197	IIa-8	IIIb-12
M-1 198	IIa-9	IIIb-12
M-1 199	IIa-10	IIIb-12
M-1200	IIa-1 1	IIIb-12
M-1201	IIa-1	IIIb-13
M-1202	IIa-2	IIIb-13
M-1203	IIa-3	IIIb-13
M-1204	IIa-4	IIIb-13
M-1205	IIa-5	IIIb-13
M-1206	IIa-6	IIIb-13
M-1207	IIa-7	IIIb-13
M-1208	IIa-8	IIIb-13
M-1209	IIa-9	IIIb-13
M-1210	IIa-10	IIIb-13
M-121 1	IIa-1 1	IIIb-13
M-1212	IIa-1	IIIb-14
M-1213	IIa-2	IIIb-14
M-1214	IIa-3	IIIb-14
M-1215	IIa-4	IIIb-14
M-1216	IIa-5	IIIb-14
M-1217	IIa-6	IIIb-14
M-1218	IIa-7	IIIb-14
M-1219	IIa-8	IIIb-14
M-1220	IIa-9	IIIb-14
M-1221	IIa-10	IIIb-14
M-1222	IIa-1 1	IIIb-14
M-1223	IIa-1	IIIb-15
M-1224	IIa-2	IIIb-15
M-1225	IIa-3	IIIb-15
M-1226	IIa-4	IIIb-15
M-1227	IIa-5	IIIb-15
M-1228	IIa-6	IIIb-15
M-1229	IIa-7	IIIb-15
M-1230	IIa-8	IIIb-15
M-1231	IIa-9	IIIb-15
M-1232	IIa-10	IIIb-15
M-1233	IIa-1 1	IIIb-15
M-1234	IIa-1	IIIb-16
M-1235	IIa-2	IIIb-16
M-1236	IIa-3	IIIb-16
M-1237	IIa-4	IIIb-16

No.	II/IIa	III
M-1238	IIa-5	IIIb-16
M-1239	IIa-6	IIIb-16
M-1240	IIa-7	IIIb-16
M-1241	IIa-8	IIIb-16
M-1242	IIa-9	IIIb-16
M-1243	IIa-10	IIIb-16
M-1244	IIa-1 1	IIIb-16
M-1245	IIa-1	IIIb-17
M-1246	IIa-2	IIIb-17
M-1247	IIa-3	IIIb-17
M-1248	IIa-4	IIIb-17
M-1249	IIa-5	IIIb-17
M-1250	IIa-6	IIIb-17
M-1251	IIa-7	IIIb-17
M-1252	IIa-8	IIIb-17
M-1253	IIa-9	IIIb-17
M-1254	IIa-10	IIIb-17
M-1255	IIa-1 1	IIIb-17
M-1256	IIa-1	IIIb-18
M-1257	IIa-2	IIIb-18
M-1258	IIa-3	IIIb-18
M-1259	IIa-4	IIIb-18
M-1260	IIa-5	IIIb-18
M-1261	IIa-6	IIIb-18
M-1262	IIa-7	IIIb-18
M-1263	IIa-8	IIIb-18
M-1264	IIa-9	IIIb-18
M-1265	IIa-10	IIIb-18
M-1266	IIa-1 1	IIIb-18
M-1267	IIa-1	IIIb-19
M-1268	IIa-2	IIIb-19
M-1269	IIa-3	IIIb-19
M-1270	IIa-4	IIIb-19
M-1271	IIa-5	IIIb-19
M-1272	IIa-6	IIIb-19
M-1273	IIa-7	IIIb-19
M-1274	IIa-8	IIIb-19
M-1275	IIa-9	IIIb-19
M-1276	IIa-10	IIIb-19
M-1277	IIa-1 1	IIIb-19
M-1278	IIa-1	IIIb-20

No.	II/IIa	III
M-1279	IIa-2	IIIb-20
M-1280	IIa-3	IIIb-20
M-1281	IIa-4	IIIb-20
M-1282	IIa-5	IIIb-20
M-1283	IIa-6	IIIb-20
M-1284	IIa-7	IIIb-20
M-1285	IIa-8	IIIb-20
M-1286	IIa-9	IIIb-20
M-1287	IIa-10	IIIb-20
M-1288	IIa-1 1	IIIb-20
M-1289	IIa-1	IIIb-21
M-1290	IIa-2	IIIb-21
M-1291	IIa-3	IIIb-21
M-1292	IIa-4	IIIb-21
M-1293	IIa-5	IIIb-21
M-1294	IIa-6	IIIb-21
M-1295	IIa-7	IIIb-21
M-1296	IIa-8	IIIb-21
M-1297	IIa-9	IIIb-21
M-1298	IIa-10	IIIb-21
M-1299	IIa-1 1	IIIb-21
M-1300	IIa-1	IIIb-22
M-1301	IIa-2	IIIb-22
M-1302	IIa-3	IIIb-22
M-1303	IIa-4	IIIb-22
M-1304	IIa-5	IIIb-22
M-1305	IIa-6	IIIb-22
M-1306	IIa-7	IIIb-22
M-1307	IIa-8	IIIb-22
M-1308	IIa-9	IIIb-22
M-1309	IIa-10	IIIb-22
M-1310	IIa-1 1	IIIb-22
M-131 1	IIa-1	IIIb-23
M-1312	IIa-2	IIIb-23
M-1313	IIa-3	IIIb-23
M-1314	IIa-4	IIIb-23
M-1315	IIa-5	IIIb-23
M-1316	IIa-6	IIIb-23
M-1317	IIa-7	IIIb-23
M-1318	IIa-8	IIIb-23
M-1319	IIa-9	IIIb-23

No.	II/IIa	III
M-1320	IIa-10	IIIb-23
M-1321	IIa-1 1	IIIb-23
M-1322	IIa-1	IIIb-24
M-1323	IIa-2	IIIb-24
M-1324	IIa-3	IIIb-24
M-1325	IIa-4	IIIb-24
M-1326	IIa-5	IIIb-24
M-1327	IIa-6	IIIb-24
M-1328	IIa-7	IIIb-24
M-1329	IIa-8	IIIb-24
M-1330	IIa-9	IIIb-24
M-1331	IIa-10	IIIb-24
M-1332	IIa-1 1	IIIb-24
M-1333	IIa-1	IIIb-25
M-1334	IIa-2	IIIb-25
M-1335	IIa-3	IIIb-25
M-1336	IIa-4	IIIb-25
M-1337	IIa-5	IIIb-25
M-1338	IIa-6	IIIb-25
M-1339	IIa-7	IIIb-25
M-1340	IIa-8	IIIb-25
M-1341	IIa-9	IIIb-25
M-1342	IIa-10	IIIb-25
M-1343	IIa-1 1	IIIb-25
M-1344	IIa-1	IIIb-26
M-1345	IIa-2	IIIb-26
M-1346	IIa-3	IIIb-26
M-1347	IIa-4	IIIb-26
M-1348	IIa-5	IIIb-26
M-1349	IIa-6	IIIb-26
M-1350	IIa-7	IIIb-26
M-1351	IIa-8	IIIb-26
M-1352	IIa-9	IIIb-26
M-1353	IIa-10	IIIb-26
M-1354	IIa-1 1	IIIb-26
M-1355	IIa-1	IIIb-27
M-1356	IIa-2	IIIb-27
M-1357	IIa-3	IIIb-27
M-1358	IIa-4	IIIb-27
M-1359	IIa-5	IIIb-27
M-1360	IIa-6	IIIb-27

No.	II/IIa	III
M-1361	IIa-7	IIIb-27
M-1362	IIa-8	IIIb-27
M-1363	IIa-9	IIIb-27
M-1364	IIa-10	IIIb-27
M-1365	IIa-1 1	IIIb-27
M-1366	IIa-1	IIIb-28
M-1367	IIa-2	IIIb-28
M-1368	IIa-3	IIIb-28
M-1369	IIa-4	IIIb-28
M-1370	IIa-5	IIIb-28
M-1371	IIa-6	IIIb-28
M-1372	IIa-7	IIIb-28
M-1373	IIa-8	IIIb-28
M-1374	IIa-9	IIIb-28
M-1375	IIa-10	IIIb-28
M-1376	IIa-1 1	IIIb-28
M-1377	IIa-1	IIIb-29
M-1378	IIa-2	IIIb-29
M-1379	IIa-3	IIIb-29
M-1380	IIa-4	IIIb-29
M-1381	IIa-5	IIIb-29
M-1382	IIa-6	IIIb-29
M-1383	IIa-7	IIIb-29
M-1384	IIa-8	IIIb-29
M-1385	IIa-9	IIIb-29
M-1386	IIa-10	IIIb-29
M-1387	IIa-1 1	IIIb-29
M-1388	IIa-1	IIIb-30
M-1389	IIa-2	IIIb-30
M-1390	IIa-3	IIIb-30
M-1391	IIa-4	IIIb-30
M-1392	IIa-5	IIIb-30
M-1393	IIa-6	IIIb-30
M-1394	IIa-7	IIIb-30
M-1395	IIa-8	IIIb-30
M-1396	IIa-9	IIIb-30
M-1397	IIa-10	IIIb-30
M-1398	IIa-1 1	IIIb-30
M-1399	IIa-1	IIIb-31
M-1400	IIa-2	IIIb-31
M-1401	IIa-3	IIIb-31

No.	II/IIa	III
M-1402	IIa-4	IIIb-31
M-1403	IIa-5	IIIb-31
M-1404	IIa-6	IIIb-31
M-1405	IIa-7	IIIb-31
M-1406	IIa-8	IIIb-31
M-1407	IIa-9	IIIb-31
M-1408	IIa-10	IIIb-31
M-1409	IIa-1 1	IIIb-31
M-1410	IIa-1	IIIb-32
M-141 1	IIa-2	IIIb-32
M-1412	IIa-3	IIIb-32
M-1413	IIa-4	IIIb-32
M-1414	IIa-5	IIIb-32
M-1415	IIa-6	IIIb-32
M-1416	IIa-7	IIIb-32
M-1417	IIa-8	IIIb-32
M-1418	IIa-9	IIIb-32
M-1419	IIa-10	IIIb-32
M-1420	IIa-1 1	IIIb-32
M-1421	IIa-1	IIIb-33
M-1422	IIa-2	IIIb-33

No.	II/IIa	III
M-1423	IIa-3	IIIb-33
M-1424	IIa-4	IIIb-33
M-1425	IIa-5	IIIb-33
M-1426	IIa-6	IIIb-33
M-1427	IIa-7	IIIb-33
M-1428	IIa-8	IIIb-33
M-1429	IIa-9	IIIb-33
M-1430	IIa-10	IIIb-33
M-1431	IIa-1 1	IIIb-33
M-1432	IIa-1	IIIb-34
M-1433	IIa-2	IIIb-34
M-1434	IIa-3	IIIb-34
M-1435	IIa-4	IIIb-34
M-1436	IIa-5	IIIb-34
M-1437	IIa-6	IIIb-34
M-1438	IIa-7	IIIb-34
M-1439	IIa-8	IIIb-34
M-1440	IIa-9	IIIb-34
M-1441	IIa-10	IIIb-34
M-1442	IIa-1 1	IIIb-34
M-1443	IIa-1	IIIb-35

No.	II/IIa	III
M-1444	IIa-2	IIIb-35
M-1445	IIa-3	IIIb-35
M-1446	IIa-4	IIIb-35
M-1447	IIa-5	IIIb-35
M-1448	IIa-6	IIIb-35
M-1449	IIa-7	IIIb-35
M-1450	IIa-8	IIIb-35
M-1451	IIa-9	IIIb-35
M-1452	IIa-10	IIIb-35
M-1453	IIa-1 1	IIIb-35
M-1454	IIa-1	IIIb-36
M-1455	IIa-2	IIIb-36
M-1456	IIa-3	IIIb-36
M-1457	IIa-4	IIIb-36
M-1458	IIa-5	IIIb-36
M-1459	IIa-6	IIIb-36
M-1460	IIa-7	IIIb-36
M-1461	IIa-8	IIIb-36
M-1462	IIa-9	IIIb-36
M-1463	IIa-10	IIIb-36
M-1464	IIa-1 1	IIIb-36

In a further embodiment, the present invention relates to agriculatural compositions comprising a mixture of the invention, in particular any one of the mixtures A-1 to A-252 or B-1 to B-1 98, or I-1-M-1 to I-1-M-1464, I-2-M-1 to I-2-M-1464, I-3-M-1 to I-3-M-1464, I-4-M-1 to I-4-M-1464, I-5-M-1 to I-5-M-1464, I-6-M-1 to I-6-M-1464, I-7-M-1 to I-7-M-1464, I-8-M-1 to I-8-M-1464, I-9-M-1 to I-9-M-1464, I-10-M-1 to I-10-M-1464, I-1 1-M-1 to 1-1 1-M-1464, I-12-M-1 to I-12-M-1464, 1-13-M-1 to I-13-M-1464, I-14-M-1 to I-14-M-1464, I-15-M-1 to I-15-M-1464, I-16-M-1 to I-16-M-1464, I-17-M-1 to I-17-M-1464, or I-18-M-1 to I-18-M-1464.

The user applies the composition according to the invention usually from a predosage device, a knapsack sprayer, a spray tank, a spray plane, or an irrigation system. Usually, the agrochemical composition is made up with water, buffer, and/or further auxiliaries to the desired application concentration and the ready-to-use spray liquor or the agrochemical composition according to the invention is thus obtained. Usually, 20 to 2000 liters, preferably 50 to 400 liters, of the ready-to-use spray liquor are applied per hectare of agricultural useful area.

Preferences regarding suitable formulations and auxiliaries, which may be present in such agricultural compositions are defined below.

According to one embodiment, individual components of the composition according to the invention such as parts of a kit or parts of a binary or ternary mixture may be mixed by the user himself in a spray tank or any other kind of vessel used for applications (e. g. seed treater

drums, seed pelleting machinery, knapsack sprayer) and further auxiliaries may be added, if appropriate.

When living microorganisms, such as microbial pesticides from groups L1), L3) and L5), form part of such kit, it must be taken care that choice and amounts of the components (e. g. chemical pesticides) and of the further auxiliaries should not influence the viability of the microbial pesticides in the composition mixed by the user. Especially for bactericides and solvents, compatibility with the respective microbial pesticide has to be taken into account.

Consequently, one embodiment of the invention is a kit for preparing a usable pesticidal composition, the kit comprising a) a composition comprising component 1) as defined herein and at least one auxiliary; and b) a composition comprising component 2) as defined herein and at least one auxiliary; and optionally c) a composition comprising at least one auxiliary and optionally a further active component 3) as defined herein.

In a further embodiment, the present invention relates to a seed treatment composition comprising an auxiliary and a mixture of the invention, preferably any one of the mixtures A-1 to A-252 or B-1 to B-198, or I-1-M-1 to I-1-M-1464, I-2-M-1 to I-2-M-1464, I-3-M-1 to I-3-M-1464, I-4-M-1 to I-4-M-1464, I-5-M-1 to I-5-M-1464, I-6-M-1 to I-6-M-1464, I-7-M-1 to I-7-M-1464, I-8-M-1 to I-8-M-1464, I-9-M-1 to I-9-M-1464, I-10-M-1 to I-10-M-1464, I-1 1-M-1 to 1-1 1-M-1464, 1-12-M-1 to I-12-M-1464, I-13-M-1 to I-13-M-1464, I-14-M-1 to I-14-M-1464, I-15-M-1 to I-15-M-1464, I-16-M-1 to I-16-M-1464, I-17-M-1 to I-17-M-1464, or I-18-M-1 to I-18-M-1464, wherein the auxiliary is preferably selected from the group consisting of surfactants, antifreezing agents, binders, and pigments, and is particularly preferably a surfactant or a binder.

In a preferred embodiment, the seed treatment composition is in the form of a flowable concentrate FS, a solution LS, a powder for dry treatment DS, a water dispersible powder for slurry treatment WS, a water-soluble powder SS, an emulsion ES or EC, or a gel formulation, and is preferably in the form of a flowable concentrate.

Further preferences regarding seed treatment compositions of the invention are defined below.

In one embodiment, the present invention relates to the use of a mixture of the invention, in particular a mixture selected from the mixtures A-1 to A-252 or B-1 to B-198, or 1-1-M-1 to 1-1-M-1464, I-2-M-1 to I-2-M-1464, I-3-M-1 to I-3-M-1464, I-4-M-1 to I-4-M-1464, I-5-M-1 to I-5-M-1464, I-6-M-1 to I-6-M-1464, I-7-M-1 to I-7-M-1464, I-8-M-1 to I-8-M-1464, I-9-M-1 to I-9-M-1464, I-10-M-1 to I-10-M-1464, I-1 1-M-1 to 1-1 1-M-1 464, I-12-M-1 to I-12-M-1464, I-13-M-1 to I-13-M-1464, I-14-M-1 to I-14-M-1464, I-15-M-1 to I-15-M-1464, I-16-M-1 to I-16-M-1464, I-17-M-1 to I-17-M-1464, or I-18-M-1 to I-18-M-1464, or a seed treatment composition as defined above, for protecting a plant, plant propagation material, or soil or water, in which the plants are growing, against the attack or infestation by invertebrate pests.

In another embodiment, the present invention relates to a method for controlling invertebrate pests, which method comprises contacting the plant or the plant propagation material or the soil; the pests or their food supply, habitat or breeding grounds, with a pesticidally effective amount of a mixture of the invention, in particular a mixture selected from the mixtures A-1 to A-1 08 or B-1 to B-1 08, or a seed treatment composition as defined above.

Preferences regarding plants, pests and application methods are defined below.

In one embodiment, the present invention relates to seeds comprising the mixture of the invention, in particular a mixture selected from the mixtures A-1 to A-252 or B-1 to B-198, or 1-1-M-1 to I-1-M-1464, I-2-M-1 to I-2-M-1464, I-3-M-1 to I-3-M-1464, I-4-M-1 to I-4-M-1464, I-5-M-1 to I-5-M-1464, I-6-M-1 to I-6-M-1464, I-7-M-1 to I-7-M-1464, I-8-M-1 to I-8-M-1464, I-9-M-1 to I-9-M-1464, I-10-M-1 to I-10-M-1464, I-1 1-M-1 to 1-1 1-M-1464, I-12-M-1 to I-12-M-1464, I-13-M-1 to I-13-M-1464, I-14-M-1 to I-14-M-1464, I-15-M-1 to I-15-M-1464, I-16-M-1 to I-16-M-1464, I-17-M-1 to I-17-M-1464, or I-18-M-1 to I-18-M-1464, or a seed treatment composition as defined above in an amount of from 0.01 g to 10000 g per 100 kg of seeds.

It is noted that the amount per 100 kg seeds is based on the weight of the pesticidal mixture irrespective of whether it is referred to the mixture as such or the seed treatment composition thereof.

Preferred seeds are seeds selected from wheat, maize, barley, oat, rye, rice, soybean, cotton, sugarbeet, rapeseed, and potato.

With regard to all the mixtures of the invention as defined herein, the following embodiments are additionally preferred.

The mixtures of the present invention may be combined and applied in agriculture in mixture with other active ingredients, for example with other pesticides, insecticides, nematicides, fungicides, herbicides, safeners, fertilizers such as ammonium nitrate, urea, potash, and superphosphate, phytotoxicants and plant growth regulators.
These additional ingredients may be used sequentially or in combination with the mixtures of the invention, if appropriate also added only immediately prior to use (tank mix). For example, the plant(s) may be sprayed with a mixture of this invention either before or after being treated with other active ingredients.

The invention also relates to agrochemical compositions comprising an auxiliary and at least one mixture of the present invention.

An agrochemical composition comprises a pesticidally effective amount of a mixture of the present invention. The term "pesticidally effective amount" is defined below.

The mixtures of the present invention can be converted into customary types of agro-chemical compositions, e. g. solutions, emulsions, suspensions, dusts, powders, pastes, granules, pressings, capsules, and mixtures thereof. Examples for composition types are suspensions (e.g. SC, OD, FS), emulsifiable concentrates (e.g. EC), emulsions (e.g. EW, EO, ES, ME), capsules (e.g. CS, ZC), pastes, pastilles, wettable powders or dusts (e.g. WP, SP, WS, DP, DS), pressings (e.g. BR, TB, DT), granules (e.g. WG, SG, GR, FG, GG, MG), insecticidal articles (e.g. LN), as well as gel formulations for the treatment of plant propagation materials such as seeds (e.g. GF). These and further compositions types are defined in the "Catalogue of pesticide formulation types and international coding system", Technical Mono-graph No. 2, 6th Ed. May 2008, CropLife International.

The compositions are prepared in a known manner, such as described by Mollet and Grubemann, Formulation technology, Wiley VCH, Weinheim, 2001 ; or Knowles, New developments in crop protection product formulation, Agrow Reports DS243, T&F Informa, London, 2005.

Examples for suitable auxiliaries are solvents, liquid carriers, solid carriers or fillers, surfactants, dispersants, emulsifiers, wetters, adjuvants, solubilizers, penetration enhancers, protective colloids, adhesion agents, thickeners, humectants, repellents, attractants, feeding stimulants, compatibilizers, bactericides, anti-freezing agents, anti-foaming agents, colorants, tackifiers and binders.

Suitable solvents and liquid carriers are water and organic solvents, such as mineral oil fractions of medium to high boiling point, e.g. kerosene, diesel oil; oils of vegetable or animal origin; aliphatic, cyclic and aromatic hydrocarbons, e. g. toluene, paraffin, tetrahydronaphthalene, alkylated naphthalenes; alcohols, e.g. ethanol, propanol, butanol, benzylalcohol, cyclo^hexanol; glycols; DMSO; ketones, e.g. cyclohexanone; esters, e.g. lactates, carbonates, fatty acid esters, gamma-butyrolactone; fatty acids; phosphonates; amines; amides, e.g. N-methylpyrrolidone, fatty acid dimethylamides; and mixtures thereof.

Suitable solid carriers or fillers are mineral earths, e.g. silicates, silica gels, talc, kaolins, limestone, lime, chalk, clays, dolomite, diatomaceous earth, bentonite, calcium sulfate, magnesium sulfate, magnesium oxide; polysaccharide powders, e.g. cellulose, starch; fertilizers, e.g. ammonium sulfate, ammonium phosphate, ammonium nitrate, ureas; products of vegetable origin, e.g. cereal meal, tree bark meal, wood meal, nutshell meal, and mixtures thereof.

Suitable surfactants are surface-active compounds, such as anionic, cationic, nonionic and amphoteric surfactants, block polymers, polyelectrolytes, and mixtures thereof. Such surfactants can be used as emusifier, dispersant, solubilizer, wetter, penetration enhancer, protective colloid, or adjuvant. Examples of surfactants are listed in McCutcheon's, Vol.1 : Emulsifiers & Detergents, McCutcheon's Directories, Glen Rock, USA, 2008 (International Ed. or North American Ed.).

Suitable anionic surfactants are alkali, alkaline earth or ammonium salts of sulfonates, sulfates, phosphates, carboxylates, and mixtures thereof. Examples of sulfonates are alkylarylsulfonates, diphenylsulfonates, alpha-olefin sulfonates, lignine sulfonates, sulfonates of fatty acids and oils, sulfonates of ethoxylated alkylphenols, sulfonates of alkoxylated arylphenols, sulfonates of condensed naphthalenes, sulfonates of dodecyl- and tridecylbenzenes, sulfonates of naphthalenes and alkyhnaphthalenes, sulfosuccinates or sulfosuccinamates. Examples of sulfates are sulfates of fatty acids and oils, of ethoxylated alkylphenols, of alcohols, of ethoxylated alcohols, or of fatty acid esters. Examples of phosphates are phosphate esters. Examples of carboxylates are alkyl carboxylates, and carboxylated alcohol or alkylphenol ethoxylates.

Suitable nonionic surfactants are alkoxylates, N-subsituted fatty acid amides, amine oxides, esters, sugar-based surfactants, polymeric surfactants, and mixtures thereof. Examples of alkoxylates are compounds such as alcohols, alkylphenols, amines, amides, arylphenols, fatty acids or fatty acid esters which have been alkoxylated with 1 to 50 equivalents. Ethylene oxide and/or propylene oxide may be employed for the alkoxylation, preferably ethylene oxide. Exampies of N-subsititued fatty acid amides are fatty acid glucamides or fatty acid alkanolamides. Examples of esters are fatty acid esters, glycerol esters or monoglycerides. Examples of sugar-based surfactants are sorbitans, ethoxylated sorbitans, sucrose and glucose esters or alkylpolyglucosides. Examples of polymeric surfactants are homo- or copolymers of vinylpyrrolidone, vinylalcohols, or vinylacetate.

Suitable cationic surfactants are quaternary surfactants, for example quaternary ammonium compounds with one or two hydrophobic groups, or salts of long-chain primary amines. Suitable amphoteric surfactants are alkylbetains and imidazolines. Suitable block polymers are block polymers of the A-B or A-B-A type comprising blocks of polyethylene oxide and polypropylene oxide, or of the A-B-C type comprising alkanol, polyethylene oxide and polypropylene oxide. Suitable polyelectrolytes are polyacids or polybases. Examples of polyacids are alkali salts of polyacrylic acid or polyacid comb polymers. Examples of polybases are polyvinylamines or polyethyleneamines.

Suitable adjuvants are compounds, which have a neglectable or even no pesticidal activity themselves, and which improve the biological performance of the mixtures of the present invention on the target. Examples are surfactants, mineral or vegetable oils, and other auxilaries. Further examples are listed by Knowles, Adjuvants and additives, Agrow Reports DS256, T&F Informa UK, 2006, chapter 5.

Suitable thickeners are polysaccharides (e.g. xanthan gum, carboxymethylcellulose), anorganic clays (organically modified or unmodified), polycarboxylates, and silicates.

Suitable bactericides are bronopol and isothiazolinone derivatives such as alkylisothiazolinones and benzisothiazolinones.

Suitable anti-freezing agents are ethylene glycol, propylene glycol, urea and glycerin.

Suitable anti-foaming agents are silicones, long chain alcohols, and salts of fatty acids.

Suitable colorants (e.g. in red, blue, or green) are pigments of low water solubility and water-soluble dyes. Examples are inorganic colorants (e.g. iron oxide, titan oxide, iron hexacyanoferrate) and organic colorants (e.g. alizarin-, azo- and phthalocyanine colorants).

Suitable tackifiers or binders are polyvinylpyrrolidone, polyvinylacetates, polyvinyl alcohols, polyacrylates, biological or synthetic waxes, and cellulose ethers.

Examples for composition types and their preparation are:

i) Water-soluble concentrates (SL, LS)

10-60 wt% of the mixture according to the invention and 5-15 wt% wetting agent (e.g. alcohol alkoxylates) are dissolved in water and/or in a water-soluble solvent (e.g. alcohols) up to 100 wt%. The active substance dissolves upon dilution with water.

ii) Dispersible concentrates (DC)

5-25 wt% of the mixture according to the invention and 1-10 wt% dispersant (e.g. polyvinylpyrrolidone) are dissolved in up to 100 wt% organic solvent (e.g. cyclohexanone). Dilution with water gives a dispersion.

iii) Emulsifiable concentrates (EC)

15-70 wt% of the mixture according to the invention and 5-10 wt% emulsifiers (e.g. calcium dodecylbenzenesulfonate and castor oil ethoxylate) are dissolved in up to 100 wt% water-insoluble organic solvent (e.g. aromatic hydrocarbon). Dilution with water gives an emulsion.

iv) Emulsions (EW, EO, ES)

5-40 wt% of the mixture according to the invention and 1-10 wt% emulsifiers (e.g. calcium dodecylbenzenesulfonate and castor oil ethoxylate) are dissolved in 20-40 wt% water-insoluble organic solvent (e.g. aromatic hydrocarbon). This mixture is introduced into up to 100 wt% water by means of an emulsifying machine and made into a homogeneous emulsion. Dilution with water gives an emulsion.

v) Suspensions (SC, OD, FS)

In an agitated ball mill, 20-60 wt% of the mixture according to the invention are comminuted with addition of 2-10 wt% dispersants and wetting agents (e.g. sodium lignosulfonate and alcohol ethoxylate), 0,1-2 wt% thickener (e.g. xanthan gum) and up to 100 wt% water to give a fine active substance suspension. Dilution with water gives a stable suspension of the active substance. For FS type composition up to 40 wt% binder (e.g. polyvinylalcohol) is added.

vi) Water-dispersible granules and water-soluble granules (WG, SG)

50-80 wt% of the mixture according to the invention are ground finely with addition of up to 100 wt% dispersants and wetting agents (e.g. sodium lignosulfonate and alcohol ethoxylate) and prepared as water-dispersible or water-soluble granules by means of technical appliances (e. g. extrusion, spray tower, fluidized bed). Dilution with water gives a stable dispersion or solution of the active substance.

vii) Water-dispersible powders and water-soluble powders (WP, SP, WS)

50-80 wt% of the mixture according to the invention are ground in a rotor-stator mill with addition of 1-5 wt% dispersants (e.g. sodium lignosulfonate), 1-3 wt% wetting agents (e.g. alcohol ethoxylate) and up to 100 wt% solid carrier, e.g. silica gel. Dilution with water gives a stable dispersion or solution of the active substance.

viii) Gel (GW, GF)

In an agitated ball mill, 5-25 wt% of the mixture according to the invention are comminuted with addition of 3-10 wt% dispersants (e.g. sodium lignosulfonate), 1-5 wt% thickener (e.g. carboxymethylcellulose) and up to 100 wt% water to give a fine suspension of the active substance. Dilution with water gives a stable suspension of the active substance.

ix) Microemulsion (ME)

5-20 wt% of the mixture according to the invention are added to 5-30 wt% organic solvent blend (e.g. fatty acid dimethylamide and cyclohexanone), 10-25 wt% surfactant blend (e.g. alkohol ethoxylate and arylphenol ethoxylate), and water up to 100 %. This mixture is stirred for 1 h to produce spontaneously a thermodynamically stable microemulsion.

x) Microcapsules (CS)

An oil phase comprising 5-50 wt% of the mixture according to the invention, 0-40 wt% water insoluble organic solvent (e.g. aromatic hydrocarbon), 2-15 wt% acrylic monomers (e.g. methylmethacrylate, methacrylic acid and a di- or triacrylate) are dispersed into an aqueous solution of a protective colloid (e.g. polyvinyl alcohol). Radical polymerization initiated by a radical initiator results in the formation of poly(meth)acrylate microcapsules. Alternatively, an oil phase comprising 5-50 wt% of the mixture according to the invention, 0-40 wt% water insolu-ble organic solvent (e.g. aromatic hydrocarbon), and an isocyanate monomer (e.g. diphenylmethene-4,4'-diisocyanatae) are dispersed into an aqueous solution of a protective colloid (e.g. polyvinyl alcohol). The addition of a polyamine (e.g. hexamethylenediamine) results in the formation of a polyurea microcapsule. The monomers amount to 1-10 wt%. The wt% relate to the total CS composition.

xi) Dustable powders (DP, DS)

1-10 wt% of a the mixture according to the invention are ground finely and mixed intimately with up to 100 wt% solid carrier, e.g. finely divided kaolin.

xii) Granules (GR, FG)

0.5-30 wt% of the mixture according to the invention is ground finely and associated with up to

100 wt% solid carrier (e.g. silicate). Granulation is achieved by extrusion, spray-drying or the fluidized bed.

xiii) Ultra-low volume liquids (UL)

1-50 wt% of the mixture according to the invention are dissolved in up to 100 wt% organic solvent, e.g. aromatic hydrocarbon.

The compositions types i) to xi) may optionally comprise further auxiliaries, such as 0.1-1 wt% bactericides, 5-15 wt% anti-freezing agents, 0.1-1 wt% anti-foaming agents, and 0.1-1 wt% colorants.

The agrochemical compositions generally comprise between 0.01 and 95%, preferably between 0.1 and 90%, and most preferably between 0.5 and 75%, by weight of active substance. The active substances are employed in a purity of from 90% to 100%, preferably from 95% to 100% (according to NMR spectrum).

Various types of oils, wetters, adjuvants, fertilizer, or micronutrients, and other pesticides (e.g. herbicides, insecticides, fungicides, growth regulators, safeners) may be added to the active substances or the compositions cormprising them as premix or, if appropriate not until immediately prior to use (tank mix). These agents can be admixed with the compositions according to the invention in a weight ratio of 1:100 to 100:1 , preferably 1:10 to 10:1 .

The user applies the composition according to the invention usually from a predosage de-vice, a knapsack sprayer, a spray tank, a spray plane, or an irrigation system. Usually, the agrochemical composition is made up with water, buffer, and/or further auxiliaries to the desired application concentration and the ready-to-use spray liquor or the agrochemical composition according to the invention is thus obtained. Usually, 20 to 2000 liters, preferably 50 to 400 liters, of the ready-to-use spray liquor are applied per hectare of agricultural useful area.

According to one embodiment, individual components of the composition according to the invention such as parts of a kit or parts of a binary or ternary mixture may be mixed by the user himself in a spray tank and further auxiliaries may be added, if appropriate.

In a further embodiment, either individual components of the composition according to the invention or partially premixed components, e.g. components comprising mixtures of the present invention, may be mixed by the user in a spray tank and further auxiliaries and additives may be added, if appropriate.

In a further embodiment, either individual components of the composition according to the invention or partially premixed components, e. g. components comprising mixtures of the present invention, can be applied jointly (e.g. after tank mix) or consecutively.

The mixtures of the present invention are suitable for use in protecting crops, plants, plant propagation materials, such as seeds, or soil or water, in which the plants are growing, from attack or infestation by animal pests. Therefore, the present invention also relates to a plant protection method, which comprises contacting crops, plants, plant propagation materials, such as seeds, or soil or water, in which the plants are growing, to be protected from attack or infestation by animal pests, with a pesticidally effective amount of a mixture of the present invention.

The mixtures of the present invention are also suitable for use in combating or controlling animal pests. Therefore, the present invention also relates to a method of combating or controlling animal pests, which comprises contacting the animal pests, their habitat, breeding

ground, or food supply, or the crops, plants, plant propagation materials, such as seeds, or soil, or the area, material or environment in which the animal pests are growing or may grow, with a pesticidally effective amount of a mixture of the present invention.

The mixtures of the present invention are effective through both contact and ingestion. Furthermore, the mixtures of the present invention can be applied to any and all developmental stages, such as egg, larva, pupa, and adult.

The mixtures of the present invention can be applied as such or in form of compositions comprising them as defined above. Furthermore, the mixtures of the present invention can be applied together with a mixing partner as defined above or in form of compositions comprising said mixtures as defined above. The components of said mixture can be applied simultaneously, jointly or separately, or in succession, that is immediately one after another and thereby creating the mixture "in situ" on the desired location, e.g. the plant, the sequence, in the case of separate application, generally not having any effect on the result of the control measures.

The application can be carried out both before and after the infestation of the crops, plants, plant propagation materials, such as seeds, soil, or the area, material or environment by the pests.

Suitable application methods include inter alia soil treatment, seed treatment, in furrow application, and foliar application. Soil treatment methods include drenching the soil, drip irrigation (drip application onto the soil), dipping roots, tubers or bulbs, or soil injection. Seed treatment techniques include seed dressing, seed coating, seed dusting, seed soaking, and seed pelleting. In furrow applications typically include the steps of making a furrow in cultivated land, seeding the furrow with seeds, applying the pesticidally active mixture to the furrow, and closing the furrow. Foliar application refers to the application of the pesticidally active mixture to plant foliage, e.g. through spray equipment. For foliar applications, it can be advantageous to modify the behavior of the pests by use of pheromones in combination with the mixtures of the present invention. Suitable pheromones for specific crops and pests are known to a skilled person and publicly available from databases of pheromones and semiochemicals, such as http://www.pherobase.com.

As used herein, the term "contacting" includes both direct contact (applying the mixtures/compositions directly on the animal pest or plant - typically to the foliage, stem or roots of the plant) and indirect contact (applying the mixtures/compositions to the locus, i.e. habitat, breeding ground, plant, seed, soil, area, material or environment in which a pest is growing or may grow, of the animal pest or plant).

The term "animal pest" includes arthropods, gastropods, and nematodes. Preferred animal pests according to the invention are arthropods, preferably insects and arachnids, in particular insects. Insects, which are of particular relevance for crops, are typically referred to as crop insect pests.

The term "crop" refers to both, growing and harvested crops.

The term "plant" includes cereals, e.g. durum and other wheat, rye, barley, triticale, oats, rice, or maize (fodder maize and sugar maize / sweet and field corn); beet, e.g. sugar beet or fodder beet; fruits, such as pomes, stone fruits or soft fruits, e.g. apples, pears, plums, peaches, nectarines, almonds, cherries, papayas, strawberries, raspberries, blackberries or gooseberries; leguminous plants, such as beans, lentils, peas, alfalfa or soybeans; oil plants, such as

rapeseed (oilseed rape), turnip rape, mustard, olives, sunflowers, coconut, cocoa beans, castor oil plants, oil palms, ground nuts or soybeans; cucurbits, such as squashes, pumpkins, cucumber or melons; fiber plants, such as cotton, flax, hemp or jute; citrus fruit, such as oranges, lemons, grapefruits or mandarins; vegetables, such as eggplant, spinach, lettuce (e.g. iceberg lettuce), chicory, cabbage, asparagus, cabbages, carrots, onions, garlic, leeks, tomatoes, potatoes, cucurbits or sweet peppers; lauraceous plants, such as avocados, cinnamon or camphor; energy and raw material plants, such as corn, soybean, rapeseed, sugar cane or oil palm; tobacco; nuts, e.g. walnuts; pistachios; coffee; tea; bananas; vines (table grapes and grape juice grape vines); hop; sweet leaf (also called Stevia); natural rubber plants or ornamental and forestry plants, such as flowers (e.g. carnation, petunias, geranium/pelargoniums, pansies and impatiens), shrubs, broad-leaved trees (e.g. poplar) or evergreens, e.g. conifers; eucalyptus; turf; lawn; grass such as grass for animal feed or ornamental uses. Preferred plants include potatoes sugar beets, tobacco, wheat, rye, barley, oats, rice, corn, cotton, soybeans, rapeseed, legumes, sunflowers, coffee or sugar cane; fruits; vines; ornamentals; or vegetables, such as cucumbers, tomatoes, beans or squashes.

The term "plant" is to be understood as including wild type plants and plants, which have been modified by either conventional breeding, or mutagenesis or genetic engineering, or by a combination thereof.

Plants, which have been modified by mutagenesis or genetic engineering, and are of particular commercial importance, include alfalfa, rapeseed (e.g. oilseed rape), bean, carnation, chicory, cotton, eggplant, eucalyptus, flax, lentil, maize, melon, papaya, petunia, plum, poplar, potato, rice, soybean, squash, sugar beet, sugarcane, sunflower, sweet pepper, tobacco, tomato, and cereals (e.g. wheat), in particular maize, soybean, cotton, wheat, and rice. In plants, which have been modified by mutagenesis or genetic engineering, one or more genes have been mutagenized or integrated into the genetic material of the plant. The one or more mutagenized or integrated genes are preferably selected from pat, epsps, crylAb, bar, cry1 Fa2, crylAc, cry34Ab1 , cry35AB1 , cry3A, cryF, cry1 F, mcry3a, cry2Ab2, cry3Bb1 , cry1A.105, dfr, barnase, vip3Aa20, barstar, als, bxn, bp40, asnl , and ppo5. The mutagenesis or integration of the one or more genes is performed in order to improve certain properties of the plant. Such properties, also known as traits, include abiotic stress tolerance, altered growth/yield, disease resistance, herbicide tolerance, insect resistance, modified product quality, and pollination control. Of these properties, herbicide tolerance, e.g. imidazolinone tolerance, glyphosate tolerance, or glufosinate tolerance, is of particular importance. Several plants have been rendered tolerant to herbicides by mutagenesis, for example Clearfield® oilseed rape being tolerant to imidazolinones, e.g. imazamox. Alternatively, genetic engineering methods have been used to render plants, such as soybean, cotton, corn, beets and oil seed rape, tolerant to herbicides, such as glyphosate and glufosinate, some of which are commercially available under the trade names RoundupReady® (glyphosate) and LibertyLink® (glufosinate). Furthermore, insect resistance is of importance, in particular lepidopteran insect resistance and coleopteran insect resistance. Insect resistance is typically achieved by modifying plants by integrating cry and/or vip genes, which were isolated from *Bacillus thuringiensis* (Bt), and code for the respective Bt toxins. Genetically modified plants with insect resistance are commercially available under trade names including WideStrike®, Bollgard®, Agrisure®, Herculex®, YieldGard®, Genuity®, and Intacta®. Plants may be modified by mutagenesis or genetic engineering either in terms of one

property (singular traits) or in terms of a combination of properties (stacked traits). Stacked traits, e.g. the combination of herbicide tolerance and insect resistance, are of increasing importance. In general, all relevant modified plants in connection with singular or stacked traits as well as detailed information as to the mutagenized or integrated genes and the respective events are available from websites of the organizations "International Service for the Acquisition of Agri-biotech Applications (ISAAA)" (http://www.isaaa.org/gmapprovaldatabase) and "Center for Environmental Risk Assessment (CERA)" (http://cera-gmc.org/GMCropDatabase).

The term "plant propagation material" refers to all the generative parts of the plant such as seeds and vegetative plant material such as cuttings and tubers (e.g. potatoes), which can be used for the multiplication of the plant. This includes seeds, roots, fruits, tubers, bulbs, rhizomes, shoots, sprouts and other parts of plants. Seedlings and young plants, which are to be transplanted after germination or after emergence from soil, may also be included. These plant propagation materials may be treated prophylactically with a plant protection mixture either at or before planting or transplanting.

The term "seed" embraces seeds and plant propagules of all kinds including but not limited to true seeds, seed pieces, suckers, corms, bulbs, fruit, tubers, grains, cuttings, cut shoots and the like, and means in a preferred embodiment true seeds.

In general, "pesticidally effective amount" means the amount of active ingredient needed to achieve an observable effect on growth, including the effects of necrosis, death, retardation, prevention, and removal, destruction, or otherwise diminishing the occurrence and activity of the target organism. The pesticidally effective amount can vary for the various mixtures/compositions used in the invention. A pesticidally effective amount of the compositions will also vary according to the prevailing conditions such as desired pesticidal effect and duration, weather, target species, locus, mode of application, and the like.

In the case of soil treatment, in furrow application or of application to the pests dwelling place or nest, the quantity of active ingredient ranges from 0.0001 to 500 g per 100 m^2, preferably from 0.001 to 20 g per 100 m^2.

For use in treating crop plants, e.g. by foliar application, the rate of application of the active ingredients of this invention may be in the range of 0.0001 g to 4000 g per hectare, e.g. from 1 g to 2 kg per hectare or from 1 g to 750 g per hectare, desirably from 1 g to 100 g per hectare, more desirably from 10 g to 50 g per hectare, e.g., 10 to 20 g per hectare, 20 to 30 g per hectare, 30 to 40 g per hectare, or 40 to 50 g per hectare.

The mixtures of the present invention are particularly suitable for use in the treatment of seeds in order to protect the seeds from insect pests, in particular from soil-living insect pests, and the resulting seedling's roots and shoots against soil pests and foliar insects. The present invention therefore also relates to a method for the protection of seeds from insects, in particular from soil insects, and of the seedling's roots and shoots from insects, in particular from soil and foliar insects, said method comprising treating the seeds before sowing and/or after pregermination with a mixture of the present invention. The protection of the seedling's roots and shoots is preferred. More preferred is the protection of seedling's shoots from piercing and sucking insects, chewing insects and nematodes.

The term "seed treatment" comprises all suitable seed treatment techniques known in the art, such as seed dressing, seed coating, seed dusting, seed soaking, seed pelleting, and in-furrow

application methods. Preferably, the seed treatment application of the active mixture is carried out by spraying or by dusting the seeds before sowing of the plants and before emergence of the plants.

The present invention also comprises seeds coated with or containing the active mixture. The term "coated with and/or containing" generally signifies that the active ingredient is for the most part on the surface of the propagation product at the time of application, although a greater or lesser part of the ingredient may penetrate into the propagation product, depending on the method of application. When the said propagation product is (re)planted, it may absorb the active ingredient.

Suitable seed is for example seed of cereals, root crops, oil crops, vegetables, spices, ornamentals, for example seed of durum and other wheat, barley, oats, rye, maize (fodder maize and sugar maize / sweet and field corn), soybeans, oil crops, crucifers, cotton, sunflowers, bananas, rice, oilseed rape, turnip rape, sugarbeet, fodder beet, eggplants, potatoes, grass, lawn, turf, fodder grass, tomatoes, leeks, pumpkin/squash, cabbage, iceberg lettuce, pepper, cucumbers, melons, Brassica species, melons, beans, peas, garlic, onions, carrots, tuberous plants such as potatoes, sugar cane, tobacco, grapes, petunias, geranium/pelargoniums, pansies and impatiens.

In addition, the active mixture may also be used for the treatment of seeds from plants, which have been modified by mutagenisis or genetic engineering, and which e.g. tolerate the action of herbicides or fungicides or insecticides. Such modified plants have been described in detail above.

Conventional seed treatment formulations include for example flowable concentrates FS, solutions LS, suspoemulsions (SE), powders for dry treatment DS, water dispersible powders for slurry treatment WS, water-soluble powders SS and emulsion ES and EC and gel formulation GF. These formulations can be applied to the seed diluted or undiluted. Application to the seeds is carried out before sowing, either directly on the seeds or after having pregerminated the latter. Preferably, the formulations are applied such that germination is not included.

The active substance concentrations in ready-to-use formulations, which may be obtained after two-to-tenfold dilution, are preferably from 0.01 to 60% by weight, more preferably from 0.1 to 40 % by weight.

In a preferred embodiment a FS formulation is used for seed treatment. Typically, a FS formulation may comprise 1-800 g/l of active ingredient, 1-200 g/l Surfactant, 0 to 200 g/l antifreezing agent, 0 to 400 g/l of binder, 0 to 200 g/l of a pigment and up to 1 liter of a solvent, preferably water.

Especially preferred FS formulations of the mixtures of the present invention for seed treatment usually comprise from 0.1 to 80% by weight (1 to 800 g/l) of the active ingredient, from 0.1 to 20 % by weight (1 to 200 g/l) of at least one surfactant, e.g. 0.05 to 5 % by weight of a wetter and from 0.5 to 15 % by weight of a dispersing agent, up to 20 % by weight, e.g. from 5 to 20 % of an anti-freeze agent, from 0 to 15 % by weight, e.g. 1 to 15 % by weight of a pigment and/or a dye, from 0 to 40 % by weight, e.g. 1 to 40 % by weight of a binder (sticker /adhesion agent), optionally up to 5 % by weight, e.g. from 0.1 to 5 % by weight of a thickener, optionally from 0.1 to 2 % of an anti-foam agent, and optionally a preservative such as a biocide,

antioxidant or the like, e.g. in an amount from 0.01 to 1 % by weight and a filler/vehicle up to 100 % by weight.

In the treatment of seed, the application rates of the mixtures of the invention are generally from 0.1 g to 10 kg per 100 kg of seed, preferably from 1 g to 5 kg per 100 kg of seed, more preferably from 1 g to 1000 g per 100 kg of seed and in particular from 1 g to 200 g per 100 kg of seed, e.g. from 1 g to 100 g or from 5 g to 100 g per 100 kg of seed.

The invention therefore also relates to seed comprising a mixture of the present invention, or an agriculturally useful salt thereof, as defined herein. The amount of the mixture of the present invention or the agriculturally useful salt thereof will in general vary from 0.1 g to 10 kg per 100 kg of seed, preferably from 1 g to 5 kg per 100 kg of seed, in particular from 1 g to 1000 g per 100 kg of seed. For specific crops such as lettuce the rate can be higher.

The mixtures of the present invention may also be used for improving the health of a plant. Therefore, the present invention also relates to a method for improving plant health by treating a plant, plant propagation material and/or the locus where the plant is growing or is to grow with an effective and non-phytotoxic amount of a mixture of the present invention.

As used herein "an effective and non-phytotoxic amount" means that the mixture is used in a quantity which allows to obtain the desired effect but which does not give rise to any phytotoxic symptom on the treated plant or on the plant grown from the treated propagule or treated soil.

The terms "plant" and "plant propagation material" are defined above.

"Plant health" is defined as a condition of the plant and/or its products which is determined by several aspects alone or in combination with each other such as yield (for example increased biomass and/or increased content of valuable ingredients), quality (for example improved content or composition of certain ingredients or shelf life), plant vigour (for example improved plant growth and/or greener leaves ("greening effect"), tolerance to abiotic (for example drought) and/or biotic stress (for example disease) and production efficiency (for example, harvesting efficiency, processability).

The above identified indicators for the health condition of a plant may be interdependent and may result from each other. Each indicator is defined in the art and can be determined by methods known to a skilled person.

The mixtures of the invention are also suitable for use against non-crop insect pests. For use against said non-crop pests, mixtures of the present invention can be used as bait composition, gel, general insect spray, aerosol, as ultra-low volume application and bed net (impregnated or surface applied). Furthermore, drenching and rodding methods can be used.

As used herein, the term "non-crop insect pest" refers to pests, which are particularly relevant for non-crop targets, such as ants, termites, wasps, flies, ticks, mosquitos, crickets, or cockroaches.

The bait can be a liquid, a solid or a semisolid preparation (e.g. a gel). The bait employed in the composition is a product, which is sufficiently attractive to incite insects such as ants, termites, wasps, flies, mosquitos, crickets etc. or cockroaches to eat it. The attractiveness can be manipulated by using feeding stimulants or sex pheromones. Food stimulants are chosen, for example, but not exclusively, from animal and/or plant proteins (meat-, fish- or blood meal, insect parts, egg yolk), from fats and oils of animal and/or plant origin, or mono-, oligo- or

polyorganosaccharides, especially from sucrose, lactose, fructose, dextrose, glucose, starch, pectin or even molasses or honey. Fresh or decaying parts of fruits, crops, plants, animals, insects or specific parts thereof can also serve as a feeding stimulant. Sex pheromones are known to be more insect specific. Specific pheromones are described in the literature (e.g. http://www.pherobase.com), and are known to those skilled in the art.

For use in bait compositions, the typical content of active ingredient is from 0.001 weight % to 15 weight %, desirably from 0.001 weight % to 5% weight % of active mixture.

Formulations of the mixtures of the present invention as aerosols (e.g in spray cans), oil sprays or pump sprays are highly suitable for the non-professional user for controlling pests such as flies, fleas, ticks, mosquitos or cockroaches. Aerosol recipes are preferably composed of the active mixture, solvents, furthermore auxiliaries such as emulsifiers, perfume oils, if appropriate stabilizers, and, if required, propellants.

The oil spray formulations differ from the aerosol recipes in that no propellants are used.

For use in spray compositions, the content of active ingredient is from 0.001 to 80 weights %, preferably from 0.01 to 50 weight % and most preferably from 0.01 to 15 weight %.

The mixtures of the present invention and its respective compositions can also be used in mosquito and fumigating coils, smoke cartridges, vaporizer plates or long-term vaporizers and also in moth papers, moth pads or other heat-independent vaporizer systems.

Methods to control infectious diseases transmitted by insects (e.g. malaria, dengue and yellow fever, lymphatic filariasis, and leishmaniasis) with mixtures of the present invention and its respective compositions also comprise treating surfaces of huts and houses, air spraying and impregnation of curtains, tents, clothing items, bed nets, tsetse-fly trap or the like. Insecticidal compositions for application to fibers, fabric, knitgoods, nonwovens, netting material or foils and tarpaulins preferably comprise a mixture including the insecticide, optionally a repellent and at least one binder.

The mixtures of the present invention and its compositions can be used for protecting wooden materials such as trees, board fences, sleepers, frames, artistic artifacts, etc. and buildings, but also construction materials, furniture, leathers, fibers, vinyl articles, electric wires and cables etc. from ants and/or termites, and for controlling ants and termites from doing harm to crops or human being (e.g. when the pests invade into houses and public facilities).

Customary application rates in the protection of materials are, for example, from 0.001 g to 2000 g or from 0.01 g to 1000 g of active mixture per m^2 treated material, desirably from 0.1 g to 50 g per m^2.

Insecticidal compositions for use in the impregnation of materials typically contain from 0.001 to 95 weight %, preferably from 0.1 to 45 weight %, and more preferably from 1 to 25 weight % of at least one repellent and/or insecticide.

The mixtures of the the present invention are especially suitable for efficiently combating animal pests such as arthropods, gastropods and nematodes including but not limited to:

insects from the order of Lepidoptera, for example *Achroia grisella, Acleris* spp. such as *A. fimbriana, A. gloverana, A. variana; Acrolepiopsis assectella, Acronicta major, Adoxophyes* spp. such as *A. cyrtosema, A. orana; Aedia leucomelas, Agrotis* spp. such as *A. exclamationis, A. fucosa, A. ipsilon, A. orthogoma, A. segetum, A. subterranea; Alabama argillacea, Aleurodicus dispersus, Alsophila pometaria, Ampelophaga rubiginosa, Amyelois transitella, Anacampsis*

sarcitella, Anagasta kuehniella, Anarsia lineatella, Anisota senator/a, Antheraea pernyi, Anticarsia (=Thermesia) spp. such as *A. gemmatalis; Apamea* spp., *Aproaerema modicella, Archips* spp. such as *A. argyrospila, A. fuscocupreanus, A. rosana, A. xyloseanus; Argyresthia conjugella, Argyroploce* spp., *Argyrotaenia* spp. such as *A. velutinana; Athetis mindara, Austroasca viridigrisea, Autographa gamma, Autographa nigrisigna, Barathra brassicae, Bedellia* spp., *Bonagota salubricola, Borbo cinnara, Bucculatrix thurberiella, Bupalus piniarius, Busseola* spp., *Cacoecia* spp. such as *C. murinana, C. podana; Cactoblastis cactorum, Cadra cautella, Calingo braziliensis, Caloptilis theivora, Capua reticulana, Carposina* spp. such as *C niponensis, C sasakii; Cephus* spp., *Chaetocnema aridula, Cheimatobia brumata, Chilo* spp. such as *C Indicus, C suppressalis, C partellus; Choreutis pariana, Choristoneura* spp. such as *C conflictana, C fumiferana, C longicellana, C murinana, C occidentalis, C rosaceana; Chrysodeixis (=Pseudoplusia)* spp. *such as C. eriosoma, C. includens; Cirphis unipuncta, Clysia ambiguella, Cnaphalocerus spp., Cnapha/ocrocis medina/is, Cnephasia spp., Cochy/is hospes, Co/eophora spp., Co/ias eurytheme, Conopomorpha spp., Conotrache/us* spp., *Cop/tarsia* spp., *Corcyra cepha/onica, Crambus caliginosellus, Crambus teterrellus, Crocidosema (=Epinotia) aporema, Cydalima (=Diaphania) perspectalis, Cydia (=Carpocapsa)* spp. such as *C. pomonella, C latiferreana; Dalaca noctuides, Datana integerrima, Dasychira pinicola, Dendrolimus* spp. such as *D. pini, D. spectabilis, D. sibiricus; Desmia funeralis, Diaphania* spp. such as *D. nitidalis, D. hyalinata; Diatraea grandiose/la, Diatraea saccharalis, Diphthera festiva, Ear/as* spp. such as *E. insulana, E. vittella; Ecdytolopha aurantianu, Egira (=Xylomyges) curia/is, Elasmopalpus lignosellus, Eldana saccharina, Endopiza viteana, Ennomos subsignaria, Eoreuma loftini, Ephestia* spp. such as *E. cautella, E. elutella, E. kuehniella; Epinotia aporema, Epiphyas postvittana, Erannis tiliaria, Erionota thrax, Etie/ia spp., Eu/ia* spp., *Eupoecilia ambiguella, Euproctis chrysorrhoea, Euxoa* spp., *Evetria bouliana, Faronta albilinea, Fe/tia spp.* such as *F. subterranean; Galleria mellonella, Gracillaria* spp., *Grapholita spp.* such as *G. funebrana, G molesta, G. inopinata; Halysidota* spp., *Harrisina americana, Hedylepta spp., Helicoverpa spp.* such as *H. armigera (=Heliothis armigera), H. zea (=Heliothis zea); Heliothis spp.* such as *H. assulta, H. subflexa, H. virescens; Hellula spp.* such as *H. undalis, H. rogatalis; Helocoverpa gelotopoeon, Hemileuca oliviae, Herpetogramma licarsisalis, Hibernia defoliaria, Hofmannophila pseudospretella, Homoeosoma electellum, Homona magnanima, Hypena scabra, Hyphantria cunea, Hyponomeuta padella, Hyponomeuta malinellus, Kakivoria flavofasciata, Keiferia lycopersicella, Lambdina fiscellaria fiscellaria, Lambdina fiscellaria lugubrosa, Lamprosema indicata, Laspeyresia molesta, Leguminivora glycinivorella, Lerodea eufala, Leucinodes orbonalis, Leucoma salicis, Leucoptera spp.* such as *L. coffeella, L. scitella; Leuminivora lycinivorella, Lithocolletis blancardella, Lithophane antennata, Llattia octo (=Amyna axis), Lobes/a botrana, Lophocampa spp., Loxagrotis albicosta, Loxostege spp.* such as *L. sticticalis, L. cereralis; Lymantria spp.* such as *L. dispar, L. monacha; Lyonetia clerkella, Lyonetia prunifoliella, Malacosoma spp.* such as *M. americanum, M. californicum, M. constrictum, M. neustria; Mamestra spp.* such as *M. brassicae, M. configurata; Mamstra brassicae, Manduca spp.* such as *M. quinquemaculata, M. sexta; Marasmia spp, Marmara spp., Maruca testulalis, Megalopyge lanata, Melanchra picta, Melanitis leda, Mocis spp.* such as *M. lapites, M. repanda; Mocis latipes, Monochroa fragariae, Mythimna separata, Nemapogon cloacella, Neoleucinodes elegantalis, Nepytia spp., Nymphula spp., Oiketicus spp., Omiodes indicata, Omphisa anastomosalis, Operophtera brumata, Orgy/a pseudotsugata, Or/a spp., Orthaga thyr/sa/is, Ostr/n/a spp.* such

as *O. nubilalis; Oulema oryzae, Paleacrita vernata, Panolis flammea, Parnara spp., Papaipema nebris, Papilio cresphontes, Paramyelois transitella, Paranthrene regalis, Paysandisia archon, Pectinophora* spp. such as *P. gossypiella; Peridroma saucia, Perileucoptera* spp., such as *P. coffeella; Phalera bucephala, Phryganidia californica, Phthorimaea spp.* such as *P. operculella; Phyllocnistis citrella, Phyllonorycter spp.* such as *P. blancardella, P. crataegella, P. issikii, P. ringoniella; Pieris spp.* such as *P. brassicae, P. rapae, P. napi; Pilocrocis tripunctata, Plathypena scabra, Platynota spp.* such as *P. flavedana, P. idaeusalis, P. stultana; Platyptilia carduidactyla, Plebejus argus, Plodia interpunctella, Plusia spp, Plutella maculipennis, Plutella xylostella, Pontia protodica, Prays spp., Prodenia spp., Proxenus /epigone, Pseudaletia spp.* such as *P. sequax, P. unipuncta; Pyrausta nubilalis, Rachiplusia nu, Richia albicosta, Rhizobius ventralis, Rhyacionia frustrana, Sabulodes aegrotata, Schizura concinna, Schoenobius spp., Schreckensteinia festaliella, Scirpophaga spp.* such as *S. incertulas, S. innotata; Scotia segetum, Sesamia spp.* such as *S. inferens, Seudyra subflava, Sitotroga cerealella, Sparganothis pilleriana, Spilonota lechriaspis, S. ocellana, Spodoptera (=Lamphygma) spp.* such as *S. eridania, S. exigua, S. frugiperda, S. latisfascia, S. littoralis, S. litura, S. omithogalli; Stigmella spp., Stomopteryx subsecivella, Strymon bazochii, Sylepta derogata, Synanthedon spp.* such as S. exitiosa, *Tec/a solanivora, Telehin ileus, Thaumatopoea pityocampa, Thaumatotibia (=Cryptophlebia) leucotreta, Thaumetopoea pityocampa, Thecla spp., Theresimima ampelophaga, Thyrinteina spp, Tildenia inconspicuella, Tinea spp.* such as *T. cloacella, T. pellionella; Tineola bisselliella, Tortrix spp.* such as *T. viridana; Trichophaga tapetzella, Trichoplusia spp.* such as *T. ni; Tuta (=Scrobipalpula) absoluta, Udea spp.* such as *U. rubigalis, U. rubigalis; Virachola spp., Yponomeuta padella, and Zeiraphera canadensis;*

insects from the order of Coleoptera, for example *Acalymma vittatum, Acanthoscehdes obtectus, Adoretus spp., Agelastica alni, Agrilus spp.* such as *A. anxius, A. planipennis, A. sinuatus; Agriotes spp.* such as *A. fuscicollis, A. lineatus, A. obscurus; Alphitobius diaperinus, Amphimallus solstitialis, Anisandrus dispar, Anisoplia austriaca, Anobium punctatum, Anomala corpulenta, Anomala rufocuprea, Anoplophora spp.* such as *A. glabripennis; Anthonomus spp.* such as *A. eugenii, A. grandis, A. pomorum; Anthrenus spp., Aphthona euphoridae, Apion spp., Apogonia spp., Athous haemorrhoidalis, Atomaria spp.* such as *A. linearis; Attagenus spp., Aulacophora femora/is, Blastophagus piniperda, Blitophaga undata, Bruchidius obtectus, Bruchus spp.* such as *B. lentis, B. pisorum, B. rufimanus; Byctiscus betulae, Callidiellum rufipenne, Callopistria floridensis, Callosobruchus chinensis, Cameraria ohridella, Cassida nebulosa, Cerotoma trifurcata, Cetonia aurata, Ceuthorhynchus spp.* such as *C. assimilis, C. napi; Chaetocnema tibialis, Cleonus mendicus, Conoderus spp.* such as *C. vespertinus; Conotrachelus nenuphar, Cosmopolites spp., Costelytra zealandica, Crioceris asparagi, Cryptolestes ferrugineus, Cryptorhynchus lapathi, Ctenicera spp.* such as *C. destructor; Curculio spp., Cylindrocopturus spp., Cyclocephala spp., Dactyl/spa ba/yi, Dectes texanus, Dermestes spp., Diabrotica spp.* such as *D. undecimpunctata, D. speciosa, D. longicornis, D. semipunctata, D. virgifera; Diaprepes abbreviates, Dichocrocis spp., Dicladispa armigera, Diloboderus abderus, Diocalandra frumenti (Diocalandra stigmaticollis), Enaphalodes rufulus, Epilachna spp.* such as *E. varivestis, E. vigintioctomaculata; Epitrix spp.* such as *E. hirtipennis, E. similaris; Eutheola humilis, Eutinobothrus brasiliensis, Faustinus cubae, Gibbium psylloides, Gnathocerus cornutus, Hellula undalis, Heteronychus arator, Hylamorpha elegans, Hylobius abietis, Hylotrupes bajulus, Hypera spp.* such

as *H. brunneipennis, H. postica; Hypomeces squamosus, Hypothenemus* spp., *Ips typographus, Lachnosterna consanguinea, Lasioderma serricorne, Latheticus oryzae, Lathridius* spp., *Lema* spp. such as *L bilineata, L. melanopus; Leptinotarsa* spp. such as *L decemlineata; Leptispa pygmaea, Limonius californicus, Lissorhoptrus oryzophilus, Lixus* spp., *Luperodes* spp., *Lyctus* spp. such as *L. bruneus; Liogenys fuscus, Macrodactylus* spp. such as *M. subspinosus; Maladera matrida, Megaplatypus mutates, Megascelis* spp., *Melanotus communis, Meligethes* spp. such as *M. aeneus; Melolontha* spp. such as *M. hippocastani, M. melolontha; Metamasius hemipterus, Microtheca* spp., *Migdolus* spp. such as *M. fryanus, Monochamus* spp. such as *M. alternatus; Naupactus xanthographus, Niptus hololeucus, Oberia brevis, Oemona hirta, Oryctes rhinoceros, Oryzaephilus surinamensis, Oryzaphagus oryzae, Otiorrhynchus sulcatus, Otiorrhynchus ovatus, Otiorrhynchus sulcatus, Oulema melanopus, Oulema oryzae, Oxycetonia jucunda, Phaedon* spp. such as *P. brassicae, P. cochleariae; Phoracantha recurva, Phyllobius pyri, Phyllopertha horticola, Phyllophaga* spp. such as *P. helleri; Phyllotreta* spp. such as *P. chrysocephala, P. nemorum, P. striolata, P. vittula; Phyllopertha horticola, Pop/ilia japonica, Premnotrypes* spp., *Psacothea hilaris, Psylliodes chrysocephala, Prostephanus truncates, Psylliodes* spp., *Ptinus* spp., *Pulga saltona, Rhizopertha dominica, Rhynchophorus* spp. such as *R. billineatus, R. ferrugineus, R. pa/marum, R. phoenicis, R. vulneratus; Saperda Candida, Scolytus schevyrewi, Scyphophorus acupunctatus, Sitona lineatus, Sitophilus* spp. such as *S. granaria, S. oryzae, S. zeamais; Sphenophorus* spp. such as *S. levis; Stegobium paniceum, Sternechus* spp. such as *S. subsignatus; Strophomorphus ctenotus, Symphyletes* spp., *Tanymecus* spp., *Tenebrio molitor, Tenebrioides mauretanicus, Tribolium* spp. such as *T. castaneum; Trogoderma spp., Tych/us spp., Xylotrechus* spp. such as *X. pyrrhoderus; and, Zabrus* spp. *such as Z. tenebrioides;*

insects from the order of Diptera for example *Aedes* spp. such as *A. aegypti, A. albopictus, A. vexans; Anastrepha ludens, Anopheles* spp. such as *A. albimanus, A. crucians, A. freeborni, A. gambiae, A. leucosphyrus, A. maculipennis, A. minimus, A. quadrimaculatus, A. sinensis; Bactrocera invadens, Bibio hortulanus, Calliphora erythrocephala, Calliphora vicina, Ceratitis capitata, Chrysomyia* spp. such as *C. bezziana, C. hominivorax, C. macellaria; Chrysops at/anticus, Chrysops discalis, Chrysops silacea, Cochliomyia* spp. such as *C. hominivorax; Contarinia* spp. such as *C. sorghicola; Cordylobia anthropophaga, Culex* spp. such as *C. nigripalpus, C. pip/ens, C quinquefasciatus, C tarsalis, C tritaeniorhynchus; Culicoides furens, Culiseta inornata, Culiseta melanura, Cuterebra* spp., *Dacus cucurbitae, Dacus oleae, Dasineura brassicae, Dasineura oxycoccana, Delia* spp. such as *D. antique, D. coarctata, D. platura, D. radicum; Dermatobia hominis, Drosophila* spp. such as *D. suzukii, Fannia* spp. such as *F. canicularis; Gastraphilus* spp. such as *G. intestinalis; Geomyza tipunctata, Glossina* spp. such as *G. fuscipes, G. morsitans, G. pa/pa/is, G tach/noides; Haematobia irritans, Haplodiplosis equestris, Hippelates* spp., Hylemyia spp. such as *H. platura; Hypoderma* spp. such as *H. lineata; Hyppobosca* spp., *Hydrellia philippina, Leptoconops torrens, Liriomyza* spp. such as *L. sativae, L. trifolii; Lucilia* spp. such as *L. caprina, L. cuprina, L. sericata; Lycoria pectoralis, Mansonia titillanus, Mayetiola* spp. such as *M. destructor; Musca* spp. such as *M. autumnalis, M. domestical Muscina stabulans, Oestrus* spp. such as *O. ovis; Opomyza florum, Oscinella* spp. such as *O. frit; Orseolia oryzae, Pegomya hysocyami, Phlebotomus argentipes, Phorbia* spp. such as *P. ant/qua, P. brassicae, P. coarctata; Phytomyza gymnostoma, Prosimu/ium mixtum, Psi/a rosae, Psorophora co/umbiae, Psorophora disco/or, Rhago/etis* spp. such as *R. cerasi, R. cingu/ate, R.*

indifferens, R. mendax, R. pomonella; Rivellia quadrifasciata, Sarcophaga spp. such as *S. haemorrhoidalis; Simulium vittatum, Sitodiplosis mosellana, Stomoxys* spp. such as *S. calcitrans; Tabanus* spp. such as *T. atratus, T. bovinus, T. lineola, T. similis; Tannia spp., Thecodiplosis japonensis, Tipula oleracea, Tipula paludosa,* and *Wohlfahrtia* spp;

insects from the order of Thysanoptera for example, *Baliothrips biformis, Dichromothrips corbetti, Dichromothrips ssp., Echinothrips americanus, Enneothrips flavens, Frankliniella* spp. such as *F. fusca, F. occidentalis, F. tritici; Heliothrips spp., Hercinothrips femora/is, Kakothrips* spp., *Microcephalothrips abdominalis, Neohydatothrips samayunkur, Pezothrips kellyanus, Rhipiphorothrips cruentatus, Scirtothrips* spp. such as *S. citri, S. dorsalis, S. perseae; Stenchaetothrips spp, Taeniothrips cardamoni, Taeniothrips inconsequens, Thrips* spp. such as *T. imagines, T. hawaiiensis, T. oryzae, T. pa/mi, T. parvispinus, T. tabaci;*

insects from the order of Hemiptera for example, *Acizzia jamatonica, Acrosternum* spp. such as *A. hilare;* Acyrthosipon spp. such as *A. onobrychis, A. pisum; Adelges laricis, Adelges tsugae, Adelphocoris* spp., such as *A. rapidus, A. superbus; Aeneolamia* spp., *Agonoscena spp., Aulacorthum solani, Aleurocanthus woglumi, Aleurodes* spp., *Aleurodicus disperses, Aleurolobus barodensis, Aleurothrixus* spp., *Amrasca* spp., *Anasa tristis, Antestiopsis* spp., *Anuraphis cardui, Aonidiella* spp., *Aphanostigma piri, Aphidula nasturtii, Aphis* spp. such as *A. craccivora, A. fabae, A. forbesi, A. gossypii, A. grossulariae, A. maidiradicis, A. pom/; A. sambuci, A. schneideri, A. spiraeco/a; Arbor/d/a apica/is, Ari/us cr/tatus, Aspidiella* spp., *Aspidiotus* spp., *Atanus* spp., *Aulacaspis yasumatsui, Aulacorthum solani, Bactericera cockerel// (Paratrioza cockerelli), Bemisia* spp. such as *B. argentifolii, B. tabaci (Aleurodes tabaci); Blissus* spp. such as *B. leucopterus; Brachycaudus* spp. such as *B. cardui, B. helichrysi, B. persicae, B. prunicola; Brachycolus* spp., *Brachycorynella asparagi, Brevicoryne brassicae, Cacopsylla* spp. such as *C fulguralis, C pyricola (Psylla piri); Calligypona marginata, Calocoris* spp., *Campylomma livida, Capitophorus horn/, Carneocephala fulgida, Cavelerius* spp., *Ceraplastes* spp., *Ceratovacuna lanigera, Ceroplastes ceriferus, Cerosipha gossypii, Chaetosiphon fragaefolii, Chionaspis tegalensis, Chlorita onukii, Chromaphis juglandicola, Chrysomphalus ficus, Cicadulina mbila, Cimex* spp. such as *C hemipterus, C lectularius; Coccomytilus halli, Coccus* spp. such as *C hesperidum, C pseudomagno/iarum, Corythucha arcuata, Creont/ades d/iutus, Cryptomyzus ribis, Chrysomphalus aonidum, Cryptomyzus ribis, Ctenarytaina spatulata, Cyrtopeltis notatus, Dalbulus* spp., *Dasynus piperis, Dialeurodes* spp. such as *D. citrifolii; Dalbulus maidis, Diaphorina* spp. such as *D. citri; Diaspis* spp. such as *D. bromeliae; Dichelops furcatus, Diconocoris hewetti, Dora/is* spp., *Dreyfus/a nordmann/anae, Dreyfus/a p/ceae, Drosicha* spp., *Dysaphis* spp. such as *D. plantaginea, D. pyri, D. radicola; Dysaulacorthum pseudoso/ani, Dysdercus* spp. such as *D. cingulatus, D. intermedius; Dysmicoccus* spp., *Edessa* spp., *Geocoris* spp., *Empoasca* spp. such as *E. fabae, E. so/ana; Ep/d/asp/s leperii, Eriosoma* spp. such as *E. lanigerum, E. pyricola; Erythroneura spp., Eurygaster* spp. such as *E. integriceps; Euscelis bilobatus, Euschistus* spp. such as *E. heros, E. impictiventris, E. servus; Fiorinia theae, Geococcus coffeae, Glycaspis brimblecombei, Halyomorpha spp.* such as *H. halys; Heliopeltis* spp., *Homalodisca vitripennis (=H. coagulata), Horcias nobilellus, Hyalopterus pruni, Hyperomyzus lactucae, Icerya* spp. such as *I. purchase; Idiocerus spp., Idioscopus spp., Laodelphax striatellus, Lecanium spp., Lecanoideus floccissimus, Lepidosaphes spp.* such as *L. ulmi; Leptocorisa spp., Leptoglossus phyllopus, Lipaphis erysimi, Lygus spp.* such as *L. hesperus, L. lineo-*

laris, L. pratensis; Maconellicoccus hirsutus, Marchalina hellenica, Macropes excavatus, Macrosiphum spp. such as *M. rosae, M. avenae, M. euphorbiae; Macrosteles quadrilineatus, Mahanarva fimbriolata, Megacopta cribraria, Megoura viciae, Melanaphis pyrarius, Melanaphis sacchari, Melanocallis (=Tinocallis) caryaefoliae, Metcafiella* spp., *Metopolophium dirhodum, Monellia costalis, Monelliopsis pecanis, Myzocallis coryli, Murgantia* spp., *Myzus* spp. such as *M. ascalonicus, M. cerasi, M. nicotianae, M. persicae, M. varians; Nasonovia ribis-nigri, Neotoxoptera formosana, Neomegalotomus spp, Nephotettix spp.* such as *N. malayanus, N. nigropictus, N. parvus, N. virescens; Nezara* spp. such as *N. viridula; NHaparvata lugens, Nysius button/, Oebaius* spp. such as *O. pugnax; Oncometopia* spp., *Orthezia praelonga, Oxycaraenus hyalinipennis, Parabemisia myricae, Parlatoria* spp., *Parthenolecanium* spp. such as *P. corn/; P. persicae; Pemphigus* spp. such as *P. bursarius, P. populivenae; Peregrinus maidis, Perkinsiella saccharic/da, Phenacoccus* spp. such as *P. acer/s, P. gossyp/i; Ph/oeomyzus passer/n/i, Phorodon humu/i, Phylloxera* spp. such as *P. devastatrix, Piesma quadrata, Piezodorus* spp. such as *P. guildinii; Pinnaspis aspidistrae, Planococcus* spp. such as *P. citri, P. ficus; Prosapia bicincta, Protopulvinaria pyriformis, Psallus seriatus, Pseudacysta persea, Pseudaulacaspis pentagona, Pseudococcus* spp. such as *P. comstocki; Psylla* spp. such as *P. mail; Pteroma/us* spp., *Pu/vinar/a amygda/i, Pyr/i/a* spp., *Quadraspidiotus* spp., such as *Q. perniciosus; Quesada gigas, Rastrococcus* spp., *Reduvius senilis, Rhizoecus americanus, Rhodnius* spp., *Rhopalomyzus ascalonicus, Rhopalosiphum* spp. such as *R. pseudobrass/cas, R. insertum, R. maidis, R. pad/; Sagatodes* spp., *Sahlbergella singularis, Saissetia* spp., *Sappaphis mala, Sappaphis mali, Scaptocoris* spp., *Scaphoides titanus, Schizaphis graminum, Schizoneura lanuginosa, Scotinophora* spp., *Selenaspidus articulatus, Sitobion avenae, Sogata spp., Sogatella furcifera, Solubea insularis, Spissistilus festinus (=Stictocephala festina), Stephanitis nashi, Stephanitis pyrioides, Stephanitis takeyai, Tenalaphara malayensis, Tetraleurodes perseae, Therioaphis maculate, Thyanta spp.* such as *T. accerra, T. perditor; Tibraca spp., Tomaspis spp., Toxoptera spp.* such as *T. aurantii; Trialeurodes spp.* such as *T. abutilonea, T. ricini, T. vaporariorum; Triatoma spp., Trioza* spp., *Typhlocyba spp., Unaspis spp.* such as *U. citri, U. yanonensis; and Viteus vitifolii,*

Insects from the order Hymenoptera for example *Acanthomyops interjectus, Athalia rosae, Atta spp. such as A. capiguara, A. cephalotes, A. cephalotes, A. laevigata, A. robusta, A. sexdens, A. texana, Bombus spp., Brachymyrmex spp., Camponotus spp.* such as *C. floridanus, C. pennsylvanicus, C. modoc; Cardiocondyla nuda, Chalibion sp, Crematogaster spp., Dasymutilla occidentalis, Diprion spp., Dolichovespula maculata, Dorymyrmex spp., Dryocosmus kuriphilus, Formica spp., Hoplocampa spp.* such as *H. minuta, H. testudinea; Iridomyrmex humilis,* Lasius spp. such as *L. niger, Linepithema humile, Liometopum spp., Leptocybe invasa, Monomorium spp.* such as *M. pharaonis, Monomorium, Nylandria fulva, Pachycondyla chinensis, Paratrechina longicornis, Paravespula spp.,* such as *P. germanica, P. pennsylvanica, P. vulgaris; Pheidole spp.* such as *P. megacephala; Pogonomyrmex spp.* such as *P. barbatus, P. californicus, Polistes rubiginosa, Prenolepis impairs, Pseudomyrmex gracilis, Schelipron spp., Sirex cyaneus, Solenopsis spp.* such as *S. geminata, S.invicta, S. molesta, S. richteri, S. xyloni, Sphecius speciosus, Sphex spp., Tapinoma spp.* such as *T melanocephalum, T sessile; Tetramorium spp.* such as *T caespitum, T bicarinatum, Vespa spp.* such as *V. crabro; Vespula spp.* such as *V. squamosal; Wasmannia auropunctata, Xylocopa* sp;

Insects from the order Orthoptera for example *Acheta domesticus, Calliptamus italicus, Chortoicetes terminifera, Ceuthophilus* spp., *Diastrammena asynamora, Dociostaurus maroccanus, Gryllotalpa* spp. such as *G. africana, G. gryllotalpa; Gryllus spp., Hieroglyphus daganensis, Kraussaria angulifera, Locusta* spp. such as *L. migratoria, L. pardalina; Melanoplus* spp. such as *M. bivittatus, M. femurrubrum, M. mexicanus, M. sanguinipes, M. spretus; Nomadacris septemfasciata, Oedaleus senegalensis, Scapteriscus* spp., *Schistocerca* spp. such as *S. americana, S. gregaria, Stemopelmatus* spp., *Tachycines asynamorus,* and *Zonozerus variegatus;*

Pests from the Class Arachnida for example Acari,e.g. of the families Argasidae, Ixodidae and Sarcoptidae, such as *Amblyomma* spp. (e.g. *A. americanum, A. variegatum, A. maculatum),* Argas spp. such as *A. persicu), Boophilus* spp. such as *B. annulatus, B. decoloratus, B. microplus, Dermacentor spp.* such as *D.silvarum, D. andersoni, D. variabilis, Hyalomma* spp. such as *H. truncatum, Ixodes* spp. such as *I. ricinus, I. rubicundus, I. scapularis, I. holocyclus, I. pacificus, Rhipicephalus sanguineus, Ornithodorus* spp. such as *O. moubata, O. hermsi, O. turicata, Ornithonyssus bacoti, Otobius megnini, Dermanyssus gallinae, Psoroptes* spp. such as *P. ovis, Rhipicephalus* spp. such as *R. sanguineus, R. appendiculatus, Rhipicephalus everts/, Rhizoglyphus* spp., *Sarcoptes* spp. such as *S. Scabiei,* and Family Eriophyidae including *Acer/a* spp. such as *A. sheldoni A. anthocoptes, Acallitus* spp., *Aculops* spp. such as *A. iycopersici, A. pelekassr, Aculus* spp. such as *A. schlechtendali; Colomerus vltis, Epitrlmerus pyri, Phyllocoptruta oleivora; Eriophytes ribis* and *Eriophyes* spp. such as *Eriophyes sheldonr,* Family Tarsonemidae including *Hemitarsonemus* spp., *Phytonemus pallidus and Polyphagotarsonemus latus, Stenotarsonem us* spp. *Steneotarsonemus spinki,* Family Tenuipalpidae including Brevipalpus spp. such as *B. phoenicis;* Family Tetranychidae including *Eotetranychus* spp., *Eutetranychus* spp., *Oligonychus* spp., *Petrobia latens, Tetranychus* spp. such as *T. cinnabarinus, T. evansi, T. kanzawai, T, pacificus, T. phaseulus, T. telarius* and *T. urticae, Bryobia praetiosa; Panonychus* spp. such as *P. u/mi, P. citri, Metatetranychus* spp. and *Oligonychus* spp. such as *O. pratensis, O. perseae, Vasates lycopersici, Raoiella indica, Ì¾rrl*7yCarpoglyphidae including *Carpoglyphus spp.; Pentha/eidae spp.* such as *Halotydeus destructor,* Family Demodicidae with species such as *Demodexspp.;* Family Trombicidea including *Trombicula spp:,* Family Macronyssidae including *Ornothonyssus spp:,* Family Pyemotidae including *Pyemotes tritici, Tyrophagus putrescentiae;* Family Acaridae including *Acarus siro;* Family Araneida including *Latrodectus mactans, Tegenaria agrestis, Chiracanthium sp, Lycosa sp Achaearanea tepidariorum* and *Loxosceles rec/usa;*

Pests from the Phylum Nematoda, for example, plant parasitic nematodes such as root-knot nematodes, *Meloidogyne spp.* such as *M. hapla, M. incognita, M.javanica;* cyst-forming nematodes, *Globodera spp.* such as *G. rostochiensis; Heterodera spp.* such as *H. avenae, H. glycines, H. schachtii, H. trifolii;* Seed gall nematodes, *Anguina spp:,* Stem and foliar nematodes, *Aphelenchoides spp.* such as *A. besseyi;* Sting nematodes, *Belonolaim us spp.* such as *B. longicaudatus;* Pine nematodes, *Bursaphelenchus spp.* such as *B. lignicolus, B. xylophilus;* Ring nematodes, *Criconema spp., Criconemella spp.* such as *C. xenoplax* and *C. ornata;* and, *Criconemoides spp.* such as *Criconemoides informis; Mesocriconema spp.;* Stem and bulb nematodes, *Ditylench us spp.* such as *D. destructor, D. dipsaci;* Awl nematodes, *Dolichodorus spp.;* Spiral nematodes, *Heliocotylenchus multicinctus;* Sheath and sheathoid nematodes, *Hemicycliophora spp.* and *Hemicriconemoides spp.; Hirshmanniella spp.*/ Lance nematodes, *Hoploaimus spp.;* False rootknot nematodes, *Nacobbus spp.;* Needle nematodes, *Longidorus spp.*

such as *L. elongatus;* Lesion nematodes, *Pratylenchus* spp. such as *P. brachyurus, P. neglectus, P. penetrans, P. curvitatus, P. goodeyi;* Burrowing nematodes, *Radopholus* spp. such as *R. similis; Rhadopholus* spp.; *Rhodopholus* spp.; Reniform nematodes, *Rotylenchus* spp. such as *R. robustus, R. reniformis; Scutellonema* spp.; Stubby-root nematode, *Trichodorus spp.* such as *T. obtusus, T. primitivus; Paratrichodorus* spp. such as *P. minor;* Stunt nematodes, *Tylenchorhynchus* spp. such as *T. c/aytoni, T. dub/us;* Citrus nematodes, *Tylenchulus* spp. such as *T. semipenetrans;* Dagger nematodes, *Xiphinema* spp.; and other plant parasitic nematode species;

Insects from the order Isoptera for example *Calotermes flavicollis, Coptotermes* spp. such as *C. formosanus, C. gestroi, C. acinaciformis; Cornitermes cumulans, Cryptotermes* spp. such as *C. brevis, C. cavifrons; Globitermes sulfureus, Heterotermes* spp. such as *H. aureus, H. longiceps, H. tenuis; Leucotermes flavipes, Odontotermes spp., Incisitermes* spp. such as *I. minor, I. Snyder, Marginitermes hubbardi, Mastotermes* spp. such as *M. darwiniensis Neocapritermes* spp. such as *N. opacus, N. parvus; Neotermes* spp., *Procornitermes* spp., *Zootermopsis* spp. *such as Z. angusticollis, Z. nevadensis, Reticulitermes* spp. such as *R. hesperus, R. tibia/is, R. speratus, R. flavipes, R. grassei, R. lucifugus, R. santonensis, R. virginicus; Termes natalensis,*

Insects from the order Blattaria for example *Blatta spp.* such as *B. orientalis, B. lateralis; Blattella* spp. such as *B. asahinae, B. germanica; Leucophaea maderae, Panchlora nivea, Periplaneta* spp. such as *P. americana, P. australasiae, P. brunnea, P. fuligginosa, P. japonica; Supella longipalpa, Parcoblatta pennsylvanica, Eurycotis floridana, Pycnoscelus surinamensis,*

Insects from the order Siphonoptera for example *Cediopsylla simples, Ceratophyllus* spp., *Ctenocephalides* spp. such as *C. felis, C. canis, Xenopsylla cheopis, Pulex irritans, Trichodectes canis, Tunga penetrans,* and *Nosopsyllus fasciatus,*

Insects from the order Thysanura for example *Lepisma saccharina , Ctenolepisma urbana,* and *Thermobia domestica,*

Pests from the class Chilopoda for example *Geophilus* spp., Scutigera spp. such as *Scutigera coleoptrata;*

Pests from the class Diplopoda for example *Blaniulus guttulatus, Ju/us spp., Narceus spp.,*

Pests from the class Symphyla for example *Scutigerella immaculata,*

Insects from the order Dermaptera, for example *Forficula auricularia,*

Insects from the order Collembola, for example *Onychiurus spp.,* such as *Onychiurus armatus,*

Pests from the order Isopoda for example, *Armadillidium vulgare, Oniscus asellus, Porcellio scaber,*

Insects from the order Phthiraptera, for example *Damalinia spp.,* Pedicuius spp. such as *Pedicuius humanus capitis, Pedicuius humanus corporis, Pedicuius humanus humanus; Pthirus pubis,* Haematopinus spp. such as *Haematopinus eurysternus, Haematopinus suis;* Linognathus spp. such as *Linognathus vituli; Bovicola bovis, Menopon gallinae, Menacanthus stramineus* and *Solenopotes capillatus, Trichodectes spp.,*

Examples of further pest species which may be controlled by mixtures of the invention include: from the Phylum Mollusca, class Bivalvia, for example, *Dreissena spp:,* class Gastropoda, for example, *Arion spp., Biomphalaria spp., Bulinus spp., Deroceras spp., Ga/ba spp., Lymnaea spp., Oncomelania spp., Pomacea canaliclata, Succinea spp.;* from the class of the helminths, for example, *Ancylostoma duodenale, Ancylostoma ceylanicum, Acylostoma braziliensis, Ancylostoma spp., Ascaris lubricoides, Ascaris spp., Brugia malayi, Brugia timori, Bunostomum spp.,*

Chabertia spp., *Clonorchis* spp., *Cooper/a* spp., *Dicrocoelium* spp., *Dictyocaulus filaria, Diphyllobothrium latum, Dracunculus medinensis, Echinococcus granulosus, Echinococcus multilocularis, Enterobius vermicularis, Faciola* spp., Haemonchus spp. such as *Haemonchus contortus; Heterakis* spp., *Hymenolepis nana, Hyostrongulus* spp., *Loa Loa, Nematodirus* spp., *Oesophagostomum* spp., *Opisthorchis* spp., *Onchocerca volvulus, Ostertagia* spp., *Paragonimus* spp., *Schistosomen* spp., *Strongyloides fuelleborni, Strongyloides stercora lis, Stronyloides* spp., *Taenia saginata, Taenia solium, Trichinella spiralis, Trichinella nativa, Trichinella britovi, Trichinella nelsoni, Trichinella pseudopsiralis, Trichostrongulus spp., Trichuris trichuria, Wuchereria bancrofti.*

The mixtures of the present inventon are particularly suitable for controlling the following plant diseases:

Albugo spp. (white rust) on ornamentals, vegetables (e. g. A *Candida)* and sunflowers (e. g. A *tragopogonis); Alternaria* spp. (Alternaria leaf spot) on vegetables, rape (A *brassicola* or *brassicae),* sugar beets (A *tenuis),* fruits, rice, soybeans, potatoes (e. g. A *so/an/or A. alternate),* tomatoes (e. g. A *so/ani* or A *a/ternata)* and wheat; *Aphanomyces* spp. on sugar beets and vegetables; *Ascochyta* spp. on cereals and vegetables, e. g. A *tritici* (anthracnose) on wheat and A *horde/* on barley; *Bipolaris* and *Drechslera* spp. (teleomorph: *Cochliobolus* spp.), e. g. Southern leaf blight (z5. *maydis)* or Northern leaf blight (.5. *zeico/a)* on corn, e. g. spot blotch (z5. *sorokiniana)* on cereals and e. g. *L5. oryzae* on rice and turfs; *Blumeria* (formerly *Erysiphe) graminis* (powdery mildew) on cereals (e. g. on wheat or barley); *Botrytis cinerea* (teleomorph: *Botryotinia fucke/iana:* grey mold) on fruits and berries (e. g. strawberries), vegetables (e. g. lettuce, carrots, celery and cabbages), rape, flowers, vines, forestry plants and wheat; *Bremia lactucae* (downy mildew) on lettuce; *Ceratocystis* (syn. *Ophiostoma)* spp. (rot or wilt) on broad-leaved trees and evergreens, e. g. *C. ulmi* (Dutch elm disease) on elms; *Cercospora* spp. (Cercospora leaf spots) on corn (e. g. Gray leaf spot: *C. zeae-maydis),* rice, sugar beets (e. g. *C. beticola),* sugar cane, vegetables, coffee, soybeans (e. g. *C. sojina* or *C. kikuchii)* and rice; *Cladosporium* spp. on tomatoes (e. g. *C. fulvum.* leaf mold) and cereals, e. g. *C. herbarum* (black ear) on wheat; *Claviceps purpurea* (ergot) on cereals; *Cochliobolus* (anamorph: *Helminthosporium* of *Bipolaris)* spp. (leaf spots) on corn *(C. carbonum),* cereals (e. g. *C. sativus,* anamorph: *B. sorokiniana)* and rice (e. g. *C. miyabeanus,* anamorph: *H. oryzae); Colletotrichum* (teleomorph: *Glomerella)* spp. (anthracnose) on cotton (e. g. *C. gossypii),* corn (e. g. *C. graminico/a: Anthracnose* stalk rot), soft fruits, potatoes (e. g. *C. coccodes:* black dot), beans (e. g. *C. lindemuthianum)* and soybeans (e. g. *C. truncatum* or *C. gloeosporioides); Corticium* spp., e. g. *C. sasak/i (sheath* blight) on rice; *Corynespora cassiicola* (leaf spots) on soybeans and ornamentals; *Cycloconium* spp., e. g. *C. oleaginum* on olive trees; *Cylindrocarpon* spp. (e. g. fruit tree canker or young vine decline, teleomorph: *Nectria* or *Neonectria* spp.) on fruit trees, vines (e. g. *C. liriodendri,* teleomorph: *Neonectria liriodendri.* Black Foot Disease) and ornamentals; *Dematophora* (teleomorph: *Rosellinia) necatrix* (root and stem rot) on soybeans; *Diaporthe* spp., e. g. *D. phaseolorum* (damping off) on soybeans; *Drechslera* (syn. *Helminthosporium,* teleomorph: *Pyrenophora)* spp. on corn, cereals, such as barley (e. g. *D. teres,* net blotch) and wheat (e. g. *D. tritici-repentis:* tan spot), rice and turf; Esca (dieback, apoplexy) on vines, caused by *Formitiporia* (syn. *Phellinus) punctata, F. mediterranea, Phaeomoniella chlamydospora* (earlier *Phaeoacremonium chlamydosporum), Phaeoacremonium aleophilum* and/or

Botryosphaeria obtusa; Elsinoe spp. on pome fruits *{E. pyrl),* soft fruits *{E. veneta:* anthracnose) and vines *{E. ampe/ina:* anthracnose); *Entyloma oryzae* (leaf smut) on rice; *Epicoccum* spp. (black mold) on wheat; *Erysiphe* spp. (powdery mildew) on sugar beets *(E. betae),* vegetables (e. g. *E. pisi),* such as cucurbits (e. g. *E. cichoracearum),* cabbages, rape (e. g. *E. cruciferarum);* *Eutypa lata* (Eutypa canker or dieback, anamorph: *Cytosporina lata,* syn. *Libertella blepharis)* on fruit trees, vines and ornamental woods; *Exserohilum* (syn. *Helminthosporium)* spp. on corn (e. g. *E. turcicum); Fusarium* (teleomorph: *Gibberella)* spp. (wilt, root or stem rot) on various plants, such as *F. graminearum* or *F. culmorum* (root rot, scab or head blight) on cereals (e. g. wheat or barley), *F. oxysporum* on tomatoes, *F. so/ani(t* sp. *glycines* now syn. *F. virguliforme)* and *F. tucumaniae* and *F. brasiliense* each causing sudden death syndrome on soybeans, and *F. verticillioides* on corn; *Gaeumannomyces graminis* (take-all) on cereals (e. g. wheat or barley) and corn; *Gibberella* spp. on cereals (e. g. *G zeae)* and rice (e. g. *G fujikuroi.* Bakanae disease); *Glomerella cingulata* on vines, pome fruits and other plants and *G gossypii* on cotton; Grainstaining complex on rice; *G'uignardia bidwellii* (black rot) on vines; *Gymnosporangium* spp. on rosaceous plants and junipers, e. g. *G. sabinae* (rust) on pears; *Helminthosporium* spp. (syn. *Drechslera,* teleomorph: *Cochliobolus)* on corn, cereals and rice; *Hemileia spp.,* e. g. *H. vastatrix* (coffee leaf rust) on coffee; *Isariopsis clavispora* (syn. *Cladosporium vitis)* on vines; *Macrophomina phaseolina* (syn. *phaseoli)* (root and stem rot) on soybeans and cotton; *Microdochium* (syn. *Fusarium) nivale* (pink snow mold) on cereals (e. g. wheat or barley); *Microsphaera diffusa* (powdery mildew) on soybeans; *Monilinia* spp., e. g. *M. laxa, M. fructicola* and *M. fructigena* (bloom and twig blight, brown rot) on stone fruits and other rosaceous plants; *Mycosphaerella* spp. on cereals, bananas, soft fruits and ground nuts, such as e. g. *M. graminicola* (anamorph: *Septoria tritici,* Septoria blotch) on wheat or *M. fijiensis* (black Sigatoka disease) on bananas; *Peronospora* spp. (downy mildew) on cabbage (e. g. *P. brassicae),* rape (e. g. *P. parasitica),* onions (e. g. *P. destructor),* tobacco (*P. tabacina)* and soybeans (e. g. *P. manshurica); Phakopsora pachyrhizi* and *P. meibomiae* (soybean rust) on soybeans; *Phialophora* spp. e. g. on vines (e. g. *P. tracheiphila* and *P. tetraspora)* and soybeans (e. g. *P. gregata:* stem rot); *Phoma lingam* (root and stem rot) on rape and cabbage and *P. betae* (root rot, leaf spot and damping-off) on sugar beets; *Phomopsis* spp. on sunflowers, vines (e. g. *P. vitico/a:* can and leaf spot) and soybeans (e. g. stem rot: *P. phaseoli,* teleomorph: *Diaporthe phaseolorum); Physoderma maydis* (brown spots) on corn; *Phytophthora* spp. (wilt, root, leaf, fruit and stem root) on various plants, such as paprika and cucurbits (e. g. *P. capsici),* soybeans (e. g. *P. megasperma,* syn. *P. sojae),* potatoes and tomatoes (e. g. *P. infestans:* late blight) and broad-leaved trees (e. g. *P. ramorum.* sudden oak death); *P/asmodiophora brassicae* (club root) on cabbage, rape, radish and other plants; *P/asmopara* spp., e. g. *P. vitico/a* (grapevine downy mildew) on vines and *P. ha/stedii* on sunflowers; *Podosphaera* spp. (powdery mildew) on rosaceous plants, hop, pome and soft fruits, e. g. *P. leucotricha* on apples; *Po/ymyxa spp.,* e. g. on cereals, such as barley and wheat *(P. graminis)* and sugar beets *(P. betae)* and thereby transmitted viral diseases; *Pseudocercosporella herpotrichoides* (eyespot, teleomorph: *Tapes/a yallundae)* on cereals, e. g. wheat or barley; *Pseudoperonospora* (downy mildew) on various plants, e. g. *P. cubensis* on cucurbits or *P. hum/lion* hop; *Pseudopezicu/a tracheiphila* (red fire disease or .rotbrenner', anamorph: *Phialophora)* on vines; *Puccinia spp.* (rusts) on various plants, e. g. *P. triticina* (brown or leaf rust), *P. striiformis* (stripe or yellow rust), *P. horde/* (dwarf rust), *P. graminis* (stem or black rust) or *P. recondita* (brown or leaf rust) on cereals, such as e. g. wheat, barley or rye,

P. kuehn// (orange rust) on sugar cane and *P. asparag/* on asparagus; *Pyrenophora* (anamorph: *Drechslera) tritici-repentis* (tan spot) on wheat or *P. teres* (net blotch) on barley; *Pyricularia* spp., e. g. *P. oryzae* (teleomorph: *Magnaporthe grisea,* rice blast) on rice and *P. grisea* on turf and cereals; *Pythium* spp. (damping-off) on turf, rice, corn, wheat, cotton, rape, sunflowers, soybeans, sugar beets, vegetables and various other plants (e. g. *P. ultimum* or *P. aphanidermatum); Ramularia* spp., e. g. *R. co/lo-cygni (Ramu\ar\a* leaf spots, Physiological leaf spots) on barley and *R. beticola* on sugar beets; *Rhizoctonia* spp. on cotton, rice, potatoes, turf, corn, rape, potatoes, sugar beets, vegetables and various other plants, e. g. *R. so/an/ (root* and stem rot) on soybeans, *R. solan/* (sheath blight) on rice or *R. cerealis* (Rhizoctonia spring blight) on wheat or barley; *Rh/zopus stolonifer* (black mold, soft rot) on strawberries, carrots, cabbage, vines and tomatoes; *Rhynchosporium secalis* (scald) on barley, rye and triticale; *Sarocladium oryzae* and *S. attenuatum* (sheath rot) on rice; *Sclerotinia* spp. (stem rot or white mold) on vegetables and field crops, such as rape, sunflowers (e. g. *S. sclerotiorum)* and soybeans (e. g. *S. rolfsii or S. sclerotiorum); Septoria* spp. on various plants, e. g. *S. glycines* (brown spot) on soybeans, *S. tritici* (Septoria blotch) on wheat and *S.* (syn. *Stagonospora)* nodorum (Stagonospora blotch) on cereals; *Uncinula* (syn. *Erysiphe) necator* (powdery mildew, anamorph: *Oidium tuckeri)* on vines; *Setospaeria* spp. (leaf blight) on corn (e. g. *S. turcicum,* syn. *Helminthosporium turcicum)* and turf; *Sphacelotheca* spp. (smut) on corn, (e. g. *S. reiliana:* head smut), sorghum und sugar cane; *Sphaerotheca fuliginea* (powdery mildew) on cucurbits; *Spongospora subterranea* (powdery scab) on potatoes and thereby transmitted viral diseases; *Stagonospora* spp. on cereals, e. g. *S. nodorum* (Stagonospora blotch, teleomorph: *Leptosphaeria* [syn. *Phaeosphaer/a] nodorum)* on wheat; *Synchytrium endobioticum* on potatoes (potato wart disease); *Taphrina* spp., e. g. *T. deformans* (leaf curl disease) on peaches and *T. pruni* (plum pocket) on plums; *Thielaviopsis* spp. (black root rot) on tobacco, pome fruits, vegetables, soybeans and cotton, e. g. *T. basicola* (syn. *Chalara elegans); Tilletia spp.* (common bunt or stinking smut) on cereals, such as e. g. *T. tritici (syn. T. caries,* wheat bunt) and *T. controversa* (dwarf bunt) on wheat; *Typhula incarnata* (grey snow mold) on barley or wheat; *Urocystis* spp., e. g. *U. occulta* (stem smut) on rye; *Uromyces spp.* (rust) on vegetables, such as beans (e. g. *U. appendiculatus,* syn. *U. phaseoll)* and sugar beets (e. g. *U. betae); Ustilago spp.* (loose smut) on cereals (e. g. *U. nuda* and *U. avaenae),* corn (e. g. *U. maydis.* corn smut) and sugar cane; *Venturia spp.* (scab) on apples (e. g. *V. inaequalis)* and pears; and *Verticillium spp.* (wilt) on various plants, such as fruits and ornamentals, vines, soft fruits, vegetables and field crops, e. g. *V. dahliae* on strawberries, rape, potatoes and tomatoes.

Examples

Synergism can be described as an interaction where the combined effect of two or more compounds is greater than the sum of the individual effects of each of the compounds. The presence of a synergistic effect in terms of percent control, between two mixing partners (X and Y) can be calculated using the Colby equation (Colby, S. R., 1967, Calculating Synergistic and Antagonistic Responses in Herbicide Combinations, *Weeds,* 15, 21-22):

$$E = X + Y - \frac{XY}{\text{Too}}$$

When the observed combined control effect is greater than the expected combined control effect (E), then the combined effect is synergistic.

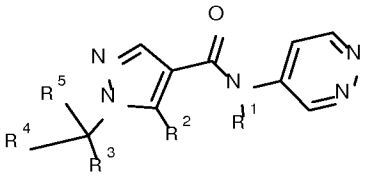
The following tests demonstrate the control efficacy of compounds, mixtures or compositions of this invention on specific pests. However, the pest control protection afforded by the compounds, mixtures or compositions is not limited to these species. In certain instances, combinations of a compound of this invention with other invertebrate pest control compounds or agents are found to exhibit synergistic effects against certain important invertebrate pests.

The analysis of synergism or antagonism between the mixtures or compositions was determined using Colby's equation.

Claims

1. Pesticidal mixtures comprising as active components

1) at least one active compound of formula I:



I

wherein

R^1 is H, Ci-C_2-alkyl, or Ci-C_2-alkoxy-Ci-C_2-alkyl;

R^2 is CH_3, or halomethyl;

R^3 is CN, d-Ce-alkyl, Ci-C_6-haloalkyl, Ci-C_2-alkoxy-Ci-C_2-alkyl, C_2-C_6-alkenyl and C_2-C_6-alkynyl, C3-C6-cycloalkyl, Cs-Ce-cycloalkenyl, Ci-C6-alkoxy, wherein the C-atoms are unsubstituted, or partially or fully substituted by R^a,

R^a is halogen, CN, Ci-C_2-alkyl, Ci-C_2-haloalkyl, Ci-C4-alkoxy, Ci-C_2-haloalkoxy;

R^4 is Ci-C4-alkyl, or a group mentioned for R^3; or

R^3 and R^4 may together form Cs-Ce-cycloalkyl, which is unsubstituted, or partially or fully substituted by R^a;

R^5 is H, or a group mentioned for R^4;

and the stereoisomers, salts, tautomers and N-oxides thereof;

and

2) at least one biopesticide II selected from the groups L1 to L5:

L1) Microbial pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: *Ampelomyces quisqualis, Aspergillus flavus, Aureobasidium pullulans, Bacillus altitudinis, B. amyloliquefaciens, B. megaterium, B. mojavensis, B. mycoides, B. pumilus, B. simplex, B. solisalsi, B. subtilis, B. subtilis* var. *amyloliquefaciens, Candida oleophila, C. saitoana, Clavibacter michiganensis* (bacteriophages), *Coniothyrium minitans, Cryphonectria parasitica, Cryptococcus albidus, Dilophosphora alopecuri, Fusarium oxysporum, Clonostachys rosea* f. *catenulate* (also named *Gliocladium catenulatum), Gliocladium roseum, Lysobacter antibioticus, L. enzymogenes, Metschnikowia fructicola, Microdochium dimerum, Microsphaeropsis ochracea, Muscodor a/bus, Paenibacillus alvei, Paenibacillus polymyxa, Pantoea vagans, Penicillium bilaiae, P.steckii, Phlebiopsis gigantea, Pseudomonas sp., Pseudomonas chloraphis, Pseudozyma flocculosa, Pichia anomala, Pythium oligandrum, Sphaerodes mycoparasitica, Streptomyces griseoviridis, S. lydicus, S. violaceusniger, Talaromyces flavus, Trichoderma asperelloides, T. asperellum, T. atroviride, T. fertile, T. gamsii, T. harmatum, T. harzianum, T. polysporum, T. stromaticum, T. virens, T. viride, Typhula phacorrhiza, Ulocladium oudemansii, Verticillium dahlia,* zucchini yellow mosaic virus (avirulent strain);

L2) Biochemical pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: harpin protein, *Reynoutria sachalinensis* extract;

L3) Microbial pesticides with insecticidal, acaricidal, molluscidal and/or nematicidal

activity: *Agrobacterium radiobacter, Bacillus cereus, B. firmus, B. thuringiensis, B. thuringiensis* ssp. *aizawai, B. t.* ssp. *israelensis, B. t.* ssp. *galleriae, B. t.* ssp. *kurstaki, B. t.* ssp. *tenebrionis, Beauveria bass/ana, B. brongniartii, Burkho/deria* sp., *Chromobacterium subtsugae, Cydia pomonella* granulovirus (CpGV), *Cryptophlebia leucotreta* granulovirus (CrleGV), *Flavobacterium* sp., *Helicoverpa armigera* nucleopolyhedrovirus (HearNPV), *Helicoverpa zea* nucleopolyhedrovirus (HzNPV), *Helicoverpa zea* single capsid nucleopolyhedrovirus (HzSNPV), *Heterorhabditis bacteriophora, Isaria fumosorosea, Lecanicillium longisporum, L muscarium, Metarhizium anisopliae, Metarhizium anisopliae var. anisop/iae, M. anisopliae* var. *acridum, Nomuraea rileyi, Paecilomyces fumosoroseus, P. ///acinus, Paenibacillus popilliae, Pasteur/a sp., P. nishizawae, P. penetrans, P. ramosa, P. thornea, P. usgae, Pseudomonas fluorescens, Spodoptera littoralis* nucleopolyhedrovirus (SpliNPV), *Steinernema carpocapsae, S. feltiae, S. kraussei, Streptomyces galbus, S. micro f/avus;*

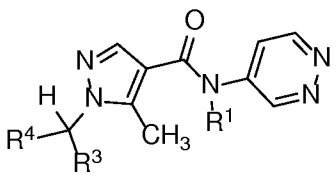
L4) Biochemical pesticides with insecticidal, acaricidal, molluscidal, pheromone and/or nematicidal activity: L-carvone, citral, (E,Z)-7,9-dodecadien-1-yl acetate, ethyl formate, (E,Z)-2,4-ethyl decadienoate (pear ester), (Z,Z,E)-7,1 1,13-hexadecatrienal, heptyl butyrate, isopropyl myristate, lavanulyl senecioate, cis-jasmone, 2-methyl 1-butanol, methyl eugenol, methyl jasmonate, jasmonic acid or salts or derivatives thereof, (E,Z)-2,13-octadecadien-1-ol, (E,Z)-2,13-octadecadien-1-ol acetate, (E,Z)-3,13-octadecadien-1-ol, R-1-octen-3-ol, pentatermanone, (E,Z,Z)-3,8,1 1-tetradeca-trienyl acetate, (Z,E)-9,12-tetradecadien-1-yl acetate, Z-7-tetradecen-2-one, Z-9-tetradecen-1-yl acetate, Z-1 1-tetradecenal, Z-1 1-tetradecen-1-ol, extract of *Chenopodium ambrosiodes,* Neem oil, Quillay extract;

L5) Microbial pesticides with plant stress reducing, plant growth regulator, plant growth promoting and/or yield enhancing activity: *Azospinilum amazonense, A. brasilense, A. lipoferum, A. irakense, A. halopraeferens, Bradyrhizobium* sp., *B. elkanii, B.japonicum, B. liaoningense, B. lupini, Delftia acidovorans, Glomus intraradices, Mesorhizobium* sp., *Rhizobium ieguminosarum bv. phaseoli, R. l.* bv. *trifolii, R. l.* bv. *viciae, R. tropic/, Sinorhizobium meliloti;*

in synergistically effective amounts.

2. The mixtures according to claim 1, wherein component 1) and component 2) are present in a total weight ratio of from 100:1 to 1:100 wherein the total weight of component 2) is based on the amount of the solid material (dry matter) of component 2).

3. The mixtures according to any of the claims 1 or 2, wherein component 1) is selected from compounds of formula I, wherein R^2 is CH3 and R^5 is H, said compounds being compounds of formula IA:



IA

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4. The mixtures according to any one of claims 1 to 3, wherein component 1) is selected from the following formula IA compounds 1-1 to 1-18 listed below:

No	R^1	R^3	R^4
I-1	CH_3	CH_3	CH_3
I-2	CH_3	CF_3	CH_3
I-3	CH_3	$CH(CH_3)_2$	CH_3
I-4	CH_3	1-CN-c-C_3H_4	CH_3
I-5	CH_3	$CHFCH_3$	CH_3
I-6	CH_3	$CH_2CH_2CF_2CH_2CH_2$	
I-7	CH_2CH_3	CH_3	CH_3
I-8	CH_2CH_3	CF_3	CH_3
I-9	CH_2CH_3	$CH(CH_3)_2$	CH_3

No	R^1	R^3	R^4
I-10	CH_2CH_3	1-CN-c-C_3H_4	CH_3
I-11	CH_2CH_3	$CHFCH_3$	CH_3
I-12	CH_2CH_3	$CH_2CH_2CF_2CH_2CH_2$	
I-13	CH_2OCH_3	CH_3	CH_3
I-14	CH_2OCH_3	CF_3	CH_3
I-15	CH_2OCH_3	$CH(CH_3)_2$	CH_3
I-16	CH_2OCH_3	1-CN-c-C_3H_4	CH_3
I-17	CH_2OCH_3	$CHFCH_3$	CH_3
I-18	CH_2OCH_3	$CH_2CH_2CF_2CH_2CH_2$	

5. The mixtures according to any one of claims 1 to 4, wherein component 2) is selected from

L1) Microbial pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: *Ampelomyces quisqualis, Aspergillus flavus, Aureobasidium pullulans, Bacillus altitudinis, B. amyloliquefaciens, B. megaterium, B. mojavensis, B. mycoides, B. pumilus, B. simplex, B. solisalsi, B. subtilis, B. subtilis* var. *amyloliquefaciens, Candida oleophila, C. saitoana, Clavibacter michiganensis* (bacteriophages), *Coniothyrium minitans, Cryphonectria parasitica, Cryptococcus albidus, Dilophosphora alopecuri, Fusarium oxysporum, Clonostachys rosea* f. *catenulate* (also named *Gliocladium catenulatum), Gliocladium roseum, Lysobacter antibioticus, L enzymogenes, Metschnikowia fructicola, Microdochium dimerum, Microsphaeropsis ochracea, Muscodor a/bus, Paenibacillus alvei, Paenibacillus polymyxa, Pantoea vagans, Penicillium bilaiae, P.steckii, Phlebiopsis gigantea, Pseudomonas sp., Pseudomonas ch/oraphis, Pseudozyma flocculosa, Pichia anomala, Pythium oligandrum, Sphaerodes mycoparasitica, Streptomyces griseoviridis, S. lydicus, S. violaceusniger, Talaromyces flavus, Trichoderma asperelloides, T. asperellum, T. atroviride, T. fertile, T. gams/I, T. harmatum, T. harzianum, T. polysporum, T. stromaticum, T. virens, T. viride, Typhula phacorrhiza, Ulocladium oudemansii, Verticillium dahlia;*

L2) Biochemical pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: harpin protein, *Reynoutria sachalinensis* extract;

L3) Microbial pesticides with insecticidal, acaricidal, molluscidal and/or nematicidal activity: *Agrobacterium radiobacter, Bacillus cereus, B. firmus, Burkho/deria sp., Chromobacterium subtsugae, Flavobacterium* sp., *Paecilomyces fumosoroseus, P. lilacinus, Paenibacillus popilliae, Pasteur/a sp., P. nishizawae, P. penetrans, P. ramosa, P. thornea, P. usgae, Pseudomonas fluorescens, Streptomyces galbus, S. microflavus,*

L4) Biochemical pesticides with insecticidal, acaricidal, molluscidal, pheromone and/or nematicidal activity: cis-jasmone, methyl jasmonate, jasmonic acid or salts or

derivatives thereof;

L5) Microbial pesticides with plant stress reducing, plant growth regulator, plant growth promoting and/or yield enhancing activity: *Azospirillum amazonense, A. brasilense, A. lipoferum, A. irakense, A. halopraeferens, Bradyrhizobium* sp., *B. elkanii, B.japonicum, B. liaoningense, B. lupini, Delftia acidovorans, Glomus intraradices, Mesorhizobium* sp., *Rhizobium leguminosarum bv. phaseoli, R. l.* bv. *trifolii, R. l.* bv. *viciae, R. tropici, Sinorhizobium meliloti;*

and is preferably selected from the group L3.

6. The mixtures according to any one of claims 1 to 5, wherein component 2) is selected from *Bacillus firmus, Pasteur/a nishazawa* sp., *Flavobacterium* sp., *Paecilomyces ///acinus,* and *Burkholderia* sp.

7. The mixtures according to any one of claims 1 to 6, wherein component 2) is selected from *Bacillus firmus, Pasteuria nishizawa,* and *F/avobacterium sp.,* in particular from the strains *Bacillus firmus* CNCM 1-1582, *Pasteuria nishizawae* P*n*1, and *Flavobacterium sp.* H492.

8. The mixtures according to any of the claims 1 to 7, further comprising as active component 3) a further active compound III, which is selected from insecticides or fungicides.

9. The mixtures according to claim 8, wherein the active component 3) is an insecticide, wherein said insecticide is selected from the group consisting of fipronil, clothianidin, thiamethoxam, acetamiprid, dinotefuran, imidacloprid, thiacloprid, sulfoxaflor, methiocarb, tefluthrin, bifenthrin, cypermethrin, alphacypermethrin, spinosad, cyantraniliprole, chlorantraniliprole, triflumezopyrim, flupyradifurone, abamectin, thiodicarb, tetraniliprole, and tioxazafen.

10. The mixtures according to claim 8, wherein the active component 3) is a fungicide, wherein said fungicide is selected from the group consisting of azoxstrobin, trifloxystrobin, picoxystrobin, pyraclostrobin, sedaxane, penthiopyrad, penflufen, fluopyram, fluxapyroxad, boscalid, oxathiapiprolin, metalaxyl, metalaxyl-M, ethaboxam, dimethomorph, cyproconazole, difenoconazole, prothioconazole, flutriafol, thiabendazole, ipconazole, tebuconazole, triadimenol, prochloraz, fluquinconazole, triticonazole, fludioxonil, carboxin, silthiofarm, ziram, thiram, carbendazim, thiophanate methyl, fenamidone, hymexazol, and fluazinam.

11. A seed treatment composition comprising an auxiliary and a mixture as defined in any one of claims 1 to 10, wherein the auxiliary is preferably selected from the group consisting of surfactants, antifreezing agents, binders, and pigments, and is particularly preferably a surfactant or a binder.

12. The seed treatment composition according to claim 11, which is in the form of a flowable concentrate FS, a solution LS, a powder for dry treatment DS, a water dispersible powder

for slurry treatment WS, a water-soluble powder SS, an emulsion ES or EC, or a gel formulation, and is preferably in the form of a flowable concentrate.

13. Use of a mixture as defined in any one of claims 1 to 10 or a seed treatment composition as defined in claim 11 or 12 for protecting a plant, plant propagation material, or soil or water, in which the plants are growing, against the attack or infestation by invertebrate pests.

14. A method for controlling invertebrate pests, which method comprises contacting the plant or the plant propagation material or the soil; the pests or their food supply, habitat or breeding grounds, with a pesticidally effective amount of a mixture as defined in any one of claims 1 to 10 or with a seed treatment composition as defined in claim 11 or 12.

15. Seeds comprising the mixture as defined in any one of claims 1 to 10 or the seed treatment composition as defined in 11 or 12 in an amount of from 0.01 g to 10000 g per 100 kg of seeds.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2016/052030

A. CLASSIFICATION OF SUBJECT MATTER
INV. A01N43/56 A01N63/00 A01N63/02 A01N63/04 A01N65/08
A01N65/28 A01P3/00 A01P7/00
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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2013/189801 Al (BASF SE [DE]; BASF SCHWEIZ AG [CH]) 27 December 2013 (2013-12-27) cited in the application page 1, line 8 - page 2, line 13 page 2, line 21 - line 22 page 2, line 30 - 1ine 31 page 4, line 1 - 1ine 3 page 5, line 33 - line 35 page 6, line 24 - line 25 page 7, line 19 - page 8, line 5 page 8, 1ine 19 - line 28 -----	1-5,8-15

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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

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

"L" documentwhich may throw doubts on priority claim(s) orwhich 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
4 April 2016	28/07/2016

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	Molina de Alba, Jose

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2016/052030

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-5, 8-15 (all partially)

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-5, 8-15 (all partially)

   Pesticidal mixture comprising a compound of formula I and a biopesticide selected from the group LI, wherein formula I and the group LI are as defined in claim 1

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2. claims: 1-5, 8-15 (all partially)

   Pesticidal mixture comprising a compound of formula I and a biopesticide selected from the group L2, wherein formula I and the group L2 are as defined in claim 1

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3. claims: 6, 7 (completely) ; 1-5, 8-15 (partially)

   Pesticidal mixture comprising a compound of formula I and a biopesticide selected from the group L3, wherein formula I and the group L3 are as defined in claim 1

   ---

4. claims: 1-5, 8-15 (all partially)

   Pesticidal mixture comprising a compound of formula I and a biopesticide selected from the group L4, wherein formula I and the group L4 are as defined in claim 1

   ---

5. claims: 1-5, 8-15 (all partially)

   Pesticidal mixture comprising a compound of formula I and a biopesticide selected from the group L5, wherein formula I and the group L5 are as defined in claim 1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2016/052030

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2013189801 A1	27-12-2013	AU 2013279540 A1	22-01-2015
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		CL 2014003471 A1	15-05-2015
		CN 104703982 A	10-06-2015
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		WO 2013189801 A1	27-12-2013