Composition

The present invention relates to an agrochemical composition, and to the preparation and use of said composition.

Agrochemical compositions intended for the application on rice paddies typically face a number of technical challenges. In particular, the 'splash application' of formulations onto the paddies tends to lead to particles of the active ingredients settling to the soil underneath the water and thus affects the spread of the formulation and the technical performance. Such an issue currently leads to farmers undertaking water management for a significant amount of time after application.

Application of such compositions by unmanned aerial vehicles (UAVs) typically require low application volume or high dilution ratios to water. However, it is typical to see dilution stability issues at high dilution ratios, such as sedimentation and/or creaming of the active ingredient. It would also be desirous for a formulation to be suitable for a range of applications, e.g., splash, spray, UAV, with only a change in dilution being necessary.

Thus, there is a need for efficacious formulations with a high level of dilution stability, as well as those suitable for a range of applications without modification beyond dilution.

There is therefore provided a composition comprising:

i) one or more agrochemicals;

ii) an oil, and

iii) a structuring agent,

wherein the oil:agrochemical ratio is greater than 20.

It is preferred that components (i), (ii) and (iii) are present in amounts such that the composition forms an Oil-Particle-Complex (OPC) upon dilution in water.

By an Oil-Particle-Complex (OPC) we mean that, upon contact with water, the one or more agrochemicals is/are stabilised in an oil particle, which is itself present in the water phase as an emulsion. This is in contrast to a 'classic' oil dispersion (OD) formulation, in which solid agrochemicals lose association with the oil and adjuvant and thus have a higher tendency to settle out of solution.

The oil:agrochemical ratio is advantageously greater than 25, or even greater than 30. Without wishing to be bound by theory, it is believed that the high ratio serves to control the density of the agrochemical when combined with water. The higher the ratio between oil and the agrochemical the higher the increased likelihood that the agrochemical(s) remain trapped in oil. This ratio also decides the density of OPC which leads to reduced sedimentation.

This has been found to have particular benefits for the application of agrochemical formulations, for example, the strong association of agrochemicals and oil carriers/adjuvant is ideal for both foliar application and rice into water applications. These properties are not demonstrated by existing formulations. As noted, common oil dispersion (OD) formulations contain a solid agrochemical that, after dilution, lose association with the combination of oil and any adjuvant(s) and have a high tendency to settle despite the use of aqueous dispersant.

In contrast, the formulations of the present invention, upon dilution in water and/or application to the surface of water, trap particles of agrochemicals and stabilise them in the OPC. This reduces settling of the agrochemical particles and the creaming of oil drops, as well as enhancing the association between any adjuvants and the agrochemicals. In direct application a solid agrochemical will be thus able to spread on the surface of water with a reduced tendency to settle.

Preferably the OPC complex has a mean diameter of less than 100, such as less than 60 microns, less than 30 microns, less than 20 microns, most preferably 10 microns, or even less than 5 microns.

One or more agrochemicals, or a salt of the agrochemical(s), selected from those given below is/are suitable for the present invention. The term agrochemical and active ingredient are used interchangeably.

Suitable herbicides or plant growth regulators may be selected from acetochlor, acifluorfen (including acifluorfen-sodium), aclonifen, ametryn, amicarbazone, aminopyralid, aminotriazole, atrazine, beflubutamid-M, benquitrione, bensulfuron (including bensulfuron-methyl), bentazone, bicyclopyrone, bilanafos, bipyrazone, bispyribac-sodium, bixlozone, bromacil, bromoxynil, butachlor, butafenacil, carfentrazone (including carfentrazone-ethyl), cloransulam (including cloransulam-methyl), chlorimuron (including chlorimuron-ethyl), chlorotoluron, chlorsulfuron, cinmethylin, clacyfos, clethodim, clodinafop (including clodinafop-propargyl), clomazone, clopyralid, cyclopyranil, cyclopyrimorate, cyclosulfamuron, cyhalofop (including cyhalofop-butyl), 2,4-D (including the choline salt and 2-ethylhexyl ester thereof),

2,4-DB, desmedipham, dicamba (including the aluminium, aminopropyl, bis-aminopropylmethyl, choline, dichloroprop, diglycolamine, dimethylamine, dimethylammonium, potassium and sodium salts thereof) diclosulam, diflufenican, diflufenzopyr, dimethachlor, dimethenamid-P, dioxopyritrione, diquat dibromide, diuron, epyrifenacil, ethalfluralin, ethofumesate, fenoxaprop (including fenoxaprop-P-ethyl), fenoxasulfone, fenpyrazone, fenquinotrione, fentrazamide, flazasulfuron, florasulam, florpyrauxifen (including florpyrauxifen-benzyl), fluazifop (including fluazifop-P-butyl), flucarbazone (including flucarbazone-sodium), flufenacet, flumetsulam, flumioxazin, fluometuron, fomesafen flupyrsulfuron (including flupyrsulfuron-methyl-sodium), fluroxypyr (including fluroxypyr-meptyl), fomesafen, foramsulfuron, glufosinate (including L-glufosinate and the ammonium salts of both), glyphosate (including the diammonium, isopropylammonium and potassium salts thereof), halauxifen (including halauxifen-methyl), haloxyfop (including haloxyfop-methyl), hexazinone, hydantocidin, imazamox (including R-imazamox), imazapic, imazapyr, imazethapyr, indaziflam, iodosulfuron (including iodosulfuron-methyl-sodium), iofensulfuron (including iofensulfuron-sodium), ioxynil, isoproturon, isoxaflutole, lancotrione, MCPA, MCPB, mecoprop-P, mesosulfuron (including mesosulfuron-methyl), mesotrione, metamitron, metazachlor, methiozolin, metolachlor, metosulam, metribuzin, metsulfuron, napropamide, nicosulfuron, norflurazon, oxadiazon, oxasulfuron, oxyfluorfen, paraquat dichloride, pendimethalin, penoxsulam, phenmedipham, picloram, pinoxaden, pretilachlor, primisulfuron-methyl, prometryne, propanil, propaquizafop, propyrisulfuron, propyzamide, prosulfocarb, prosulfuron, pyraclonil, pyraflufen (including pyraflufen-ethyl), pyrasulfotole, pyridate, pyriftalid, pyrimisulfan, pyroxasulfone, pyroxsulam, quinclorac, quinmerac, quizalofop (including quizalofop-P-ethyl and quizalofop-P-tefuryl), rimisoxafen, rimsulfuron, saflufenacil, sethoxydim, simazine, S-metalochlor, sulfentrazone, sulfosulfuron, tebuthiuron, tefuryltrione, tembotrione, terbuthylazine, terbutryn, tetflupyrolimet, thiencarbazone, thifensulfuron, tiafenacil, tolpyralate, topramezone, tralkoxydim, triafamone, triallate, triasulfuron, tribenuron (including tribenuron-methyl), triclopyr, trifloxysulfuron (including trifloxysulfuron-sodium), trifludimoxazin, trifluralin, triflusulfuron, tripyrasulfone, [(E)-[2-(trifluoromethyl)phenyl]methyleneamino] 2,6-bis[(4,6-dimethoxypyrimidin-2-yl)oxy]benzoate, 3-(2-chloro-4-fluoro-5-(3-methyl-2,6-dioxo-4-trifluoromethyl-3,6-dihydropyrimidin-1(2H)-yl)phenyl)-5-methyl-4,5-dihydroisoxazole-5-carboxylic acid ethyl ester,4-hydroxy-1-methoxy-5-methyl-3-[4-(trifluoromethyl)-2-pyridyl]imidazolidin-2-one, 4-hydroxy-1,5-dimethyl-3-[4-(trifluoromethyl)-2-pyridyl]imidazolidin-2-one, 5-ethoxy-4-hydroxy-1-methyl-3-[4-(trifluoromethyl)-2-pyridyl]imidazolidin-2-one, 4-hydroxy-1-methyl-3-[4-(trifluoromethyl)-2-pyridyl]imidazolidin-2-one, 4-hydroxy-1,5-dimethyl-3-[1-methyl-5-(trifluoromethyl)pyrazol-3-yl]imidazolidin-2-one, (4R)1-(5-tert-butylisoxazol-3-yl)-4-ethoxy-5-hydroxy-3-methyl-imidazolidin-2-one, 4-amino-3-chloro-5-fluoro-6-(7-fluoro-1H-indol-6-yl)pyridine-2-carboxylic

acid (including agrochemically acceptable esters thereof, for example, methyl 4-amino-3-chloro-5-fluoro-6-(7-fluoro-1H-indol-6-yl)pyridine-2-carboxylate, prop-2-ynyl 4-amino-3-chloro-5-fluoro-6-(7-fluoro-1H-indol-6-yl)pyridine-2-carboxylate and cyanomethyl 4-amino-3-chloro-5-fluoro-6-(7-fluoro-1H-indol-6-yl)pyridine-2-carboxylate), 3-ethylsulfanyl-N-(1,3,4-oxadiazol-2-yl)-5-(trifluoromethyl)-[1,2,4]triazolo[4,3-a]pyridine-8-carboxamide, 3-(isopropylsulfanylmethyl)-N-(5-methyl-1,3,4-oxadiazol-2-yl)-5-(trifluoromethyl)-[1,2,4]triazolo[4,3-a]pyridine-8-carboxamide, 3-(isopropylsulfonylmethyl)-N-(5-methyl-1,3,4-oxadiazol-2-yl)-5-(trifluoromethyl)-[1,2,4]triazolo[4,3-a]pyridine-8-carboxamide, 3-(ethylsulfonylmethyl)-N-(5-methyl-1,3,4-oxadiazol-2-yl)-5-(trifluoromethyl)-[1,2,4]triazolo[4,3-a]pyridine-8-carboxamide, ethyl-2-[[3-[[3-chloro-5-fluoro-6-[3-methyl-2,6-dioxo-4-(trifluoromethyl)pyrimidin-1-yl]-2-pyridyl]oxy]acetate,6-chloro-4-(2,7-dimethyl-1-naphthyl)-5-hydroxy-2-methyl-pyridazin-3-one, tetrahydrofuran-2-ylmethyl (2R)-2-[(4-amino-3,5-dichloro-6-fluoro-2-pyridyl)oxy]propanoate, (2R)-2-[(4-amino-3,5-dichloro-6-fluoro-2-pyridyl)oxy]propanoic acid, tetrahydrofuran-2-ylmethyl 2-[(4-amino-3,5-dichloro-6-fluoro-2-pyridyl)oxy]propanoate, 2-[(4-amino-3,5-dichloro-6-fluoro-2-pyridyl)oxy]propanoic acid, 2-fluoro-N-(5-methyl-1,3,4-oxadiazol-2-yl)-3-[(R)-propylsulfinyl]-4-(trifluoromethyl)benzamide, 2-fluoro-N-(5-methyl-1,3,4-oxadiazol-2-yl)-3-propylsulfinyl-4-(trifluoromethyl)benzamide, (2-fluorophenyl)methyl 6-amino-5-chloro-2-(4-chloro-2-fluoro-3-methoxy-phenyl)pyrimidine-4-carboxylate, 6-amino-5-chloro-2-(4-chloro-2-fluoro-3-methoxy-phenyl)pyrimidine-4-carboxylic acid, 3-(3-chlorophenyl)-6-(5-hydroxy-1,3-dimethyl-pyrazole-4-carbonyl)-1,5-dimethyl-quinazoline-2,4-dione and [4-[3-(3-chlorophenyl)-1,5-dimethyl-2,4-dioxo-quinazoline-6-carbonyl]-2,5-dimethyl-pyrazol-3-yl] N,N-diethylcarbamate, methyl 2-[(E)-[2-chloro-4-fluoro-5-[3-methyl-2,6-dioxo-4-(trifluoromethyl)pyrimidin-1-yl]phenyl] methyleneamino]oxypropanoate and methyl (2R)-2-[(E)-[2-chloro-4-fluoro-5-[3-methyl-2,6-dioxo-4-(trifluoromethyl)pyrimidin-1-yl]phenyl]methyleneamino] oxypropanoate.

The above compounds or mixtures can also be used in combination with one or more herbicide safeners. Examples of such safeners include benoxacor, cloquintocet (including cloquintocet-mexyl), cyprosulfamide, dichlormid, fenchlorazole (including fenchlorazole-ethyl), fenclorim, fluxofenim, furilazole, isoxadifen (including isoxadifen-ethyl), mefenpyr (including mefenpyr-diethyl), metcamifen and oxabetrinil.

Suitable insecticides may be selected from abamectin, acequinocyl, acetamiprid, acetoprole, acrinathrin, acynonapyr, afidopyropen, afoxolaner, alanycarb, allethrin, alpha-cypermethrin, alphamethrin, amidoflumet, aminocarb, azocyclotin, bensultap, benzoximate, benzpyrimoxan, betacyfluthrin, beta-cypermethrin, bifenazate, bifenthrin, binapacryl, bioallethrin, S-bioallethrin, bioresmethrin, bistrifluron, broflanilide, brofluthrinate, bromophos-ethyl,

buprofezine, butocarboxim, cadusafos, carbaryl, carbosulfan, cartap, CAS number: 1632218-00-8, CAS number: 1808115-49-2, CAS number: 2032403-97-5, CAS number: 2044701-44-0, CAS number: 2128706-05-6, CAS number: 2095470-94-1, CAS number: 2377084-09-6, CAS number: 1445683-71-5, CAS number: 2408220-94-8, CAS number: 2408220-91-5, CAS number: 1365070-72-9, CAS number: 2171099-09-3, CAS number: 2396747-83-2, CAS number: 2133042-31-4, CAS number: 2133042-44-9, CAS number: 1445684-82-1, CAS number: 1922957-45-6, CAS number: 1922957-46-7, CAS number: 1922957-47-8, CAS number: 1922957-48-9, CAS number: 2415706-16-8, CAS number: 1594624-87-9, CAS number: 1594637-65-6, CAS number: 1594626-19-3, CAS number: 1990457-52-7, CAS number: 1990457-55-0, CAS number: 1990457-57-2, CAS number: 1990457-77-6, CAS number: 1990457-66-3, CAS number: 1990457-85-6, CAS number: 2220132-55-6, CAS number: 1255091-74-7, CAS number: RNA (Leptinotarsa decemlineata-specific recombinant double-stranded interfering GS2), CAS number: 2719848-60-7, CAS number: 1956329-03-5, chlorantraniliprole, chlordane, chlorfenapyr, chloroprallethrin, chromafenozide, clenpirin, cloethocarb, clothianidin, 2-chlorophenyl N-methylcarbamate (CPMC), cyanofenphos, cyantraniliprole, cyclaniliprole, cyclobutrifluram, cycloprothrin, cycloxaprid, cyenopyrafen, cyetpyrafen (or etpyrafen), cyflumetofen, cyfluthrin, cyhalodiamide, cyhalothrin, cypermethrin, cyphenothrin, cyproflanilide, cyromazine, deltamethrin, diafenthiuron, dialifos, dibrom, dicloromezotiaz, diflovidazine, diflubenzuron, dimpropyridaz, dinactin, dinocap, dinotefuran, dioxabenzofos, emamectin (or emamectin benzoate), empenthrin, epsilon - momfluorothrin, epsilon-metofluthrin, esfenvalerate, ethion, ethiprole, etofenprox, etoxazole, famphur, fenazaquin, fenfluthrin, fenitrothion, fenmezoditiaz, fenobucarb, fenothiocarb, fenoxycarb, fenpropathrin, fenpyroximate, fensulfothion, fenthion, fentinacetate, fenvalerate, fipronil, flometoquin, flonicamid, fluacrypyrim, fluazaindolizine, fluazuron, flubendiamide, flubenzimine, fluchlordiniliprole, flucitrinate, flucycloxuron, flucythrinate, fluensulfone, flufenerim, flufenprox, flufiprole, fluhexafon, flumethrin, fluopyram, flupentiofenox flupyradifurone, , flupyrimin, fluralaner, fluvalinate, fluxametamide, fosthiazate, gamma-cyhalothrin, guadipyr, halofenozide, halfenprox, heptafluthrin, hexythiazox, hydramethylnon, imicyafos, imidacloprid, imiprothrin, Indazapyroxamet, indoxacarb, iodomethane, iprodione, isocycloseram, isothioate, ivermectin, kappa-bifenthrin, kappa-tefluthrin, lambda-cyhalothrin, lepimectin, lotilaner, lufenuron, metaflumizone, metaldehyde, metam, methomyl, methoxyfenozide, metofluthrin, metolcarb, mexacarbate, milbemectin, momfluorothrin, niclosamide, nicofluprole, nitenpyram, nithiazine, omethoate, oxamyl, oxazosulfyl, parathion-ethyl, permethrin, phenothrin, phosphocarb, piperonylbutoxide, pirimicarb, pirimiphos-ethyl, pirimiphos-methyl, Polyhedrosis virus, prallethrin, profenofos, profluthrin, propargite, propetamphos, propoxur, prothiophos, protrifenbute, pyflubumide, pymetrozine, pyraclofos, pyrafluprole, pyridaben, pyridalyl, pyrifluquinazon, pyrimidifen, pyriminostrobin, pyriprole,

pyriproxyfen, resmethrin, sarolaner, selamectin, silafluofen, spinetoram, spinosad, spirobudifen, spirodiclofen, spiromesifen, spiropidion, spirotetramat, spidoxamat, sulfoxaflor, tebufenozide, tebufenpyrad, tebupirimiphos, tefluthrin, temephos, tetrachlorantraniliprole, tetradiphon, tetramethrin, tetramethylfluthrin, tetranactin, tetraniliprole, theta-cypermethrin, thiacloprid, thiamethoxam, thiocyclam, thiodicarb, thiofanox, thiometon, thiosultap, tigolaner, tiorantraniliprole, tioxazafen, tolfenpyrad, toxaphene, tralomethrin, transfluthrin, triazamate, triazophos, trichlorfon, trichloronate, trichlorphon, trifluenfuronate, triflumezopyrim, tyclopyrazoflor, zeta-Cypermethrin, Extract of seaweed and fermentation product derived from melasse, Extract of seaweed and fermentation product derived from melasse comprising urea, amino acids, potassium and molybdenum and EDTA-chelated manganese, Extract of seaweed and fermented plant products, Extract of seaweed and fermented plant products comprising phytohormones, vitamins, EDTA-chelated copper, zinc, and iron, azadirachtin, Bacillus aizawai, Bacillus chitinosporus AQ746 (NRRL Accession No B-21 618), Bacillus firmus, Bacillus kurstaki, Bacillus mycoides AQ726 (NRRL Accession No. B-21664), Bacillus pumilus (NRRL Accession No B-30087), Bacillus pumilus AQ717 (NRRL Accession No. B-21662), Bacillus sp. AQ178 (ATCC Accession No. 53522), Bacillus sp. AQ175 (ATCC Accession No. 55608), Bacillus sp. AQ177 (ATCC Accession No. 55609), Bacillus subtilis unspecified, Bacillus subtilis AQ153 (ATCC Accession No. 55614), Bacillus subtilis AQ30002 (NRRL Accession No. B-50421), Bacillus subtilis AQ30004 (NRRL Accession No. B- 50455), Bacillus subtilis AQ713 (NRRL Accession No. B-21661), Bacillus subtilis AQ743 (NRRL Accession No. B-21665), Bacillus thuringiensis AQ52 (NRRL Accession No. B-21619), Bacillus thuringiensis BD#32 (NRRL Accession No B-21530), Bacillus thuringiensis subspec. kurstaki BMP 123, Beauveria bassiana, D-limonene, Granulovirus, Harpin, Helicoverpa armigera Nucleopolyhedrovirus, Helicoverpa zea Nucleopolyhedrovirus, Heliothis virescens Nucleopolyhedrovirus, Heliothis punctigera Nucleopolyhedrovirus, Metarhizium spp., Muscodor albus 620 (NRRL Accession No. 30547), Muscodor roseus A3-5 (NRRL Accession No. 30548), Neem tree based products, Paecilomyces fumosoroseus, Paecilomyces lilacinus, Pasteuria nishizawae, Pasteuria penetrans, Pasteuria ramosa, Pasteuria thornei, Pasteuria usgae, P-cymene, Plutella xylostella Granulosis virus, Plutella xylostella Nucleopolyhedrovirus, Polyhedrosis virus, pyrethrum, QRD 420 (a terpenoid blend), QRD 452 (a terpenoid blend), QRD 460 (a terpenoid blend), Quillaja saponaria, Rhodococcus globerulus AQ719 (NRRL Accession No B-21663), Spodoptera frugiperda Nucleopolyhedrovirus, Streptomyces galbus (NRRL Accession No. 30232), Streptomyces sp. (NRRL Accession No. B-30145), terpenoid blend, and Verticillium spp.;

an algicide selected from the group of substances consisting of bethoxazin, copper dioctanoate (170), copper sulfate (172), cybutryne, dichlone (1052), dichlorophen (232),

endothal (295), fentin (347), hydrated lime, nabam (566), quinoclamine (714), quinonamid (1379), simazine (730), triphenyltin acetate (347) and triphenyltin hydroxide (347);

an anthelmintic selected from the group of substances consisting of abamectin (1), crufomate (1011), doramectin , emamectin (291), emamectin benzoate (291), eprinomectin , ivermectin , milbemycin oxime , moxidectin , piperazine, selamectin , spinosad (737) and thiophanate (1435);

an avicide selected from the group of substances consisting of chloralose (127), endrin (1122), fenthion (346), pyridin-4-amine (23) and strychnine (745);

a bactericide selected from the group of substances consisting of 1-hydroxy-1H-pyridine-2-thione (1222), 4-(quinoxalin-2-ylamino)benzenesulfonamide (748), 8-hydroxyquinoline sulfate (446), bronopol (97), copper dioctanoate (170), copper hydroxide (169), cresol, dichlorophen (232), dipyrithione (1105), dodicin (1112), fenaminosulf (1144), formaldehyde (404), hydrargaphen , kasugamycin (483), kasugamycin hydrochloride hydrate (483), nickel bis(dimethyldithiocarbamate) (1308), nitrapyrin (580), octhilinone (590), oxolinic acid (606), oxytetracycline (611), potassium hydroxyquinoline sulfate (446), probenazole (658), streptomycin (744), streptomycin sesquisulfate (744), tecloftalam (766), and thiomersal ;

a biological agent selected from the group of substances consisting of Adoxophyes orana GV (12), Agrobacterium radiobacter (13), Amblyseius spp. (19), Anagrapha falcifera NPV (28), Anagrus atomus (29), Aphelinus abdominalis (33), Aphidius colemani (34), Aphidoletes aphidimyza (35), Autographa californica NPV (38), Bacillus firmus (48), Bacillus sphaericus Neide (scientific name) (49), Bacillus thuringiensis Berliner (scientific name) (51), Bacillus thuringiensis subsp. aizawai (scientific name) (51), Bacillus thuringiensis subsp. israelensis (scientific name) (51), Bacillus thuringiensis subsp. japonensis (scientific name) (51), Bacillus thuringiensis subsp. kurstaki (scientific name) (51), Bacillus thuringiensis subsp. tenebrionis (scientific name) (51), Beauveria bassiana (53), Beauveria brongniartii (54), Chrysoperla carnea (151), Cryptolaemus montrouzieri (178), Cydia pomonella GV (191), Dacnusa sibirica (212), Diglyphus isaea (254), Encarsia formosa (scientific name) (293), Eretmocerus eremicus (300), Helicoverpa zea NPV (431), Heterorhabditis bacteriophora and H. megidis (433), Hippodamia convergens (442), Leptomastix dactylopii (488), Macrolophus caliginosus (491), Mamestra brassicae NPV (494), Metaphycus helvolus (522), Metarhizium anisopliae var. acridum (scientific name) (523), Metarhizium anisopliae var. anisopliae (scientific name) (523), Neodiprion sertifer NPV and N. lecontei NPV (575),

Orius spp. (596), Paecilomyces fumosoroseus (613), Phytoseiulus persimilis (644), Spodoptera exigua multicapsid nuclear polyhedrosis virus (scientific name) (741), Steinernema bibionis (742), Steinernema carpocapsae (742), Steinernema feltiae (742), Steinernema glaseri (742), Steinernema riobrave (742), Steinernema riobravis (742), Steinernema scapterisci (742), Steinernema spp. (742), Trichogramma spp. (826), Typhlodromus occidentalis (844) and Verticillium lecanii (848);

a soil sterilant selected from the group of substances consisting of iodomethane (542) and methyl bromide (537);

a chemosterilant selected from the group of substances consisting of apholate, bisazir , busulfan , diflubenzuron (250), dimatif , hemel, hempa, metepa, methiotepa, methyl apholate, morzid, penfluron , tepa, thiohempa , thiotepa , tretamine and uredepa ;

an insect pheromone selected from the group of substances consisting of (E)-dec-5-en-1-yl acetate with (E)-dec-5-en-1-ol (222), (E)-tridec-4-en-1-yl acetate (829), (E)-6-methylhept-2-en-4-ol (541), (E,Z)-tetradeca-4,10-dien-1-yl acetate (779), (Z)-dodec-7-en-1-yl acetate (285), (Z)-hexadec-11-enal (436), (Z)-hexadec-11-en-1-yl acetate (437), (Z)-hexadec-13-en-11-yn-1-yl acetate (438), (Z)-icos-13-en-10-one (448), (Z)-tetradec-7-en-1-al (782), (Z)-tetradec-9-en-1-ol (783), (Z)-tetradec-9-en-1-yl acetate (784), (7E,9Z)-dodeca-7,9-dien-1-yl acetate (283), (9Z,11E)-tetradeca-9,11-dien-1-yl acetate (780), (9Z,12E)-tetradeca-9,12-dien-1-yl acetate (781), 14-methyloctadec-1-ene (545), 4-methylnonan-5-ol with 4-methylnonan-5-one (544), alpha-multistriatin , brevicomin , codlelure , codlemone (167), cuelure (179), disparlure (277), dodec-8-en-1-yl acetate (286), dodec-9-en-1-yl acetate (287), dodeca-8, 10-dien-1-yl acetate (284), dominicalure , ethyl 4-methyloctanoate (317), eugenol , frontalin , Gossyplure® (alternative name; 1:1 mixture of the (Z,E) and (Z,Z) isomers of hexadeca-7,11-dien-1-yl-acetate) (420), grandlure (421), grandlure I (421), grandlure II (421), grandlure III (421), grandlure IV (421), hexalure, ipsdienol , ipsenol , japonilure (481), lineatin , litlure , looplure , medlure, megatomoic acid , methyl eugenol (540), muscalure (563), octadeca-2,13-dien-1-yl acetate (588), octadeca-3,13-dien-1-yl acetate (589), orfralure , oryctalure (317), ostramone , siglure, sordidin (736), sulcatol , tetradec-11-en-1-yl acetate (785), trimedlure (839), trimedlure A (839), trimedlure B1 (839), trimedlure B2 (839), trimedlure C (839) and trunc-call ;

an insect repellent selected from the group of substances consisting of 2-(octylthio)ethanol (591), butopyronoxyl (933), butoxy(polypropylene glycol) (936), dibutyl adipate (1046), dibutyl phthalate (1047), dibutyl succinate (1048), diethyltoluamide, dimethyl carbate,

dimethyl phthalate, ethyl hexanediol (1137), hexamide, methoquin-butyl (1276), methylneodecanamide, oxamate and picaridin;

a molluscicide selected from the group of substances consisting of bis(tributyltin) oxide (913), bromoacetamide, calcium arsenate, cloethocarb (999), copper acetoarsenite, copper sulfate (172), fentin (347), ferric phosphate (352), metaldehyde (518), methiocarb (530), niclosamide (576), niclosamide-olamine (576), pentachlorophenol (623), sodium pentachlorophenoxide (623), tazimcarb (1412), thiodicarb (799), tributyltin oxide (913), trifenmorph (1454), trimethacarb (840), triphenyltin acetate (347) and triphenyltin hydroxide (347), pyriprole [394730-71-3];

a nematicide selected from the group of substances consisting of AKD-3088 (compound code), 1,2-dibromo-3-chloropropane (1045), 1,2-dichloropropane (IUPAC/ Chemical Abstracts name) (1062), 1,2-dichloropropane with 1,3-dichloropropene (1063), 1,3-dichloropropene (233), 3,4-dichlorotetrahydrothiophene 1,1-dioxide (1065), 3-(4-chlorophenyl)-5-methylrhodanine (980), 5-methyl-6-thioxo-1,3,5-thiadiazinan-3-ylacetic acid (1286), 6-isopentenylaminopurine (210), abamectin (1), acetoprole, alanycarb (15), aldicarb (16), aldoxycarb (863), AZ 60541 (compound code), benclothiaz, benomyl (62), butylpyridaben, cadusafos (109), carbofuran (118), carbon disulfide (945), carbosulfan (119), chloropicrin (141), chlorpyrifos (145), cloethocarb (999), cytokinins (210), dazomet (216), DBCP (1045), DCIP (218), diamidafos (1044), dichlofenthion (1051), dicliphos, dimethoate (262), doramectin , emamectin (291), emamectin benzoate (291), eprinomectin , ethoprophos (312), ethylene dibromide (316), fenamiphos (326), fenpyrad, fensulfothion (1158), fosthiazate (408), fosthietan (1196), furfural , GY-81 (development code) (423), heterophos, iodomethane (542), isamidofos (1230), isazofos (1231), ivermectin , kinetin (210), mecarphon (1258), metam (519), metam-potassium (519), metam-sodium (519), methyl bromide (537), methyl isothiocyanate (543), milbemycin oxime , moxidectin , Myrothecium verrucaria composition (565), NC-184 (compound code), oxamyl (602), phorate (636), phosphamidon (639), phosphocarb, sebufos, selamectin , spinosad (737), terbam, terbufos (773), tetrachlorothiophene (IUPAC/ Chemical Abstracts name) (1422), thiafenox, thionazin (1434), triazophos (820), triazuron, xylenols, YI-5302 (compound code) and zeatin (210), fluensulfone [318290-98-1], fluopyram;

a nitrification inhibitor selected from the group of substances consisting of potassium ethylxanthate and nitrapyrin (580);

a plant activator selected from the group of substances consisting of acibenzolar (6), acibenzolar-S-methyl (6), probenazole (658) and Reynoutria sachalinensis extract (720);

a rodenticide selected from the group of substances consisting of 2-isovalerylindan-1,3-dione (1246), 4-(quinoxalin-2-ylamino)benzenesulfonamide (748), alpha-chlorohydrin, aluminium phosphide (640), antu (880), arsenous oxide (882), barium carbonate (891), bisthiosemi (912), brodifacoum (89), bromadiolone (or alpha-bromadiolone), bromethalin (92), calcium cyanide (444), chloralose (127), chlorophacinone (140), cholecalciferol (850), coumachlor (1004), coumafuryl (1005), coumatetralyl (175), crimidine (1009), difenacoum (246), difethialone (249), diphacinone (273), ergocalciferol (301), flocoumafen (357), fluoroacetamide (379), flupropadine (1183), flupropadine hydrochloride (1183), gamma-HCH (430), HCH (430), hydrogen cyanide (444), iodomethane (542), lindane (430), magnesium phosphide (640), methyl bromide (537), norbormide (1318), phosacetim (1336), phosphine (640), phosphorus, pindone (1341), potassium arsenite, pyrinuron (1371), scilliroside (1390), sodium arsenite, sodium cyanide (444), sodium fluoroacetate (735), strychnine (745), thallium sulfate, warfarin (851) and zinc phosphide (640);

a synergist selected from the group of substances consisting of 2-(2-butoxyethoxy)ethyl piperonylate (934), 5-(1,3-benzodioxol-5-yl)-3-hexylcyclohex-2-enone (903), farnesol with nerolidol (324), MB-599 (development code) (498), MGK 264 (development code) (296), piperonyl butoxide (649), piprotal (1343), propyl isomer (1358), S421 (development code) (724), sesamex (1393), sesasmolin (1394) and sulfoxide (1406),

an animal repellent selected from the group of substances consisting of anthraquinone (32), chloralose (127), copper naphthenate, copper oxychloride (171), diazinon (227), dicyclopentadiene (chemical name) (1069), guazatine (422), guazatine acetates (422), methiocarb (530), pyridin-4-amine (23), thiram (804), trimethacarb (840), zinc naphthenate and ziram (856);

a virucide selected from the group of substances consisting of imanin and ribavirin ;

a wound protectant selected from the group of substances consisting of mercuric oxide (512), octhilinone (590) and thiophanate-methyl (802);

a biologically active substance selected from 1,1-bis(4-chloro-phenyl)-2-ethoxyethanol, 2,4-dichlorophenyl benzenesulfonate, 2-fluoro-N-methyl-N-1-naphthylacetamide, 4-chlorophenyl phenyl sulfone, acetoprole, aldoxycarb, amidithion, amidothioate, amiton, amiton hydrogen

oxalate, amitraz, aramite, arsenous oxide, azobenzene, azothoate, benomyl, benoxa-fos, benzyl benzoate, bixafen, brofenvalerate, bromo-cyclen, bromophos, bromopropylate, buprofezin, butocarboxim, butoxycarboxim, butylpyridaben, calcium polysulfide, camphechlor, carbanolate, carbophenothion, cymiazole, chino-methionat, chlorbenside, chlordimeform, chlordimeform hydrochloride, chlorfenethol, chlorfenson, chlorfensulfide, chlorobenzilate, chloromebuform, chloromethiuron, chloropropylate, chlorthiophos, cinerin I, cinerin II, cinerins, closantel, coumaphos, crotamiton, crotoxyphos, cufraneb, cyanthoate, DCPM, DDT, demephion, demephion-O, demephion-S, demeton-methyl, demeton-O, demeton-O-methyl, demeton-S, demeton-S-methyl, demeton-S-methylsulfon, dichlofluanid, dichlorvos, dicliphos, dienochlor, dimefox, dinex, dinex-diclexine, dinocap-4, dinocap-6, dinocton, dino-penton, dinosulfon, dinoterbon, dioxathion, diphenyl sulfone, disulfiram, DNOC, dofenapyn, doramectin, endothion, eprinomectin, ethoate-methyl, etrimfos, fenazaflor, fenbutatin oxide, fenothiocarb, fenpyrad, fen-pyroximate, fenpyrazamine, fenson, fentrifanil, flubenzimine, flucycloxuron, fluenetil, fluorbenside, FMC 1137, formetanate, formetanate hydrochloride, formparanate, gamma-HCH, glyodin, halfenprox, hexadecyl cyclopropanecarboxylate, isocarbophos, jasmolin I, jasmolin II, jodfenphos, lindane, malonoben, mecarbam, mephosfolan, mesulfen, methacrifos, methyl bromide, metolcarb, mexacarbate, milbemycin oxime, mipafox, monocrotophos, morphothion, moxidectin, naled, 4-chloro-2-(2-chloro-2-methyl-propyl)-5-[(6-iodo-3-pyridyl)methoxy]pyridazin-3-one, nifluridide, nikkomycins, nitrilacarb, nitrilacarb 1:1 zinc chloride complex, omethoate, oxydeprofos, oxydisulfoton, pp'-DDT, parathion, permethrin, phenkapton, phosalone, phosfolan, phosphamidon, polychloroterpenes, polynactins, proclonol, promacyl, propoxur, prothidathion, prothoate, pyrethrin I, pyrethrin II, pyrethrins, pyridaphenthion, pyrimitate, quinalphos, quintiofos, R-1492, phosglycin, rotenone, schradan, sebufos, selamectin, sophamide, SSI-121, sulfiram, sulfluramid, sulfotep, sulfur, diflovidazin, tau-fluvalinate, TEPP, terbam, tetradifon, tetrasul, thiafenox, thiocarboxime, thiofanox, thiometon, thioquinox, thuringiensin, triamiphos, triarathene, triazophos, triazuron, trifenofos, trinactin, vamidothion, vaniliprole, bethoxazin, copper dioctanoate, copper sulfate, cybutryne, dichlone, dichlorophen, endothal, fentin, hydrated lime, nabam, quinoclamine, quinonamid, simazine, triphenyltin acetate, triphenyltin hydroxide, crufomate, piperazine, thiophanate, chloralose, fenthion, pyridin-4-amine, strychnine, 1-hydroxy-1H-pyridine-2-thione, 4-(quinoxalin-2-ylamino)benzenesulfonamide, 8-hydroxyquinoline sulfate, bronopol, copper hydroxide, cresol, dipyrithione, dodicin, fenaminosulf, formaldehyde, hydrargaphen, kasugamycin, kasugamycin hydrochloride hydrate, nickel bis(dimethyldithiocarbamate), nitrapyrin, octhilinone, oxolinic acid, oxytetracycline, potassium hydroxyquinoline sulfate, probenazole, streptomycin, streptomycin sesquisulfate, tecloftalam, thiomersal, Adoxophyes orana GV, Agrobacterium radiobacter, Amblyseius spp., Anagrapha falcifera NPV, Anagrus atomus, Aphelinus abdominalis, Aphidius

colemani, Aphidoletes aphidimyza, Autographa californica NPV, Bacillus sphaericus Neide, Beauveria brongniartii, Chrysoperla carnea, Cryptolaemus montrouzieri, Cydia pomonella GV, Dacnusa sibirica, Diglyphus isaea, Encarsia formosa, Eretmocerus eremicus, Heterorhabditis bacteriophora and H. megidis, Hippodamia convergens, Leptomastix dactylopii, Macrolophus caliginosus, Mamestra brassicae NPV, Metaphycus helvolus, Metarhizium anisopliae var. acridum, Metarhizium anisopliae var. anisopliae, Neodiprion sertifer NPV and N. lecontei NPV, Orius spp., Paecilomyces fumosoroseus, Phytoseiulus persimilis, Steinernema bibionis, Steinernema carpocapsae, Steinernema feltiae, Steinernema glaseri, Steinernema riobrave, Steinernema riobravis, Steinernema scapterisci, Steinernema spp., Trichogramma spp., Typhlodromus occidentalis, Verticillium lecanii, apholate, bisazir, busulfan, dimatif, hemel, hempa, metepa, methiotepa, methyl apholate, morzid, penfluron, tepa, thiohempa, thiotepa, tretamine, uredepa, (E)-dec-5-en-1-yl acetate with (E)-dec-5-en-1-ol, (E)-tridec-4-en-1-yl acetate, (E)-6-methylhept-2-en-4-ol, (E,Z)-tetradeca-4,10-dien-1-yl acetate, (Z)-dodec-7-en-1-yl acetate, (Z)-hexadec-11-enal, (Z)-hexadec-11-en-1-yl acetate, (Z)-hexadec-13-en-11-yn-1-yl acetate, (Z)-icos-13-en-10-one, (Z)-tetradec-7-en-1-al, (Z)-tetradec-9-en-1-ol, (Z)-tetradec-9-en-1-yl acetate, (7E,9Z)-dodeca-7,9-dien-1-yl acetate, (9Z,11E)-tetradeca-9,11-dien-1-yl acetate, (9Z,12E)-tetradeca-9,12-dien-1-yl acetate, 14-methyloctadec-1-ene, 4-methylnonan-5-ol with 4-methylnonan-5-one, alpha-multistriatin, brevicomin, codlelure, codlemone, cuelure, disparlure, dodec-8-en-1-yl acetate, dodec-9-en-1-yl acetate, dodeca-8, 10-dien-1-yl acetate, dominicalure, ethyl 4-methyloctanoate, eugenol, frontalin, grandlure, grandlure I, grandlure II, grandlure III, grandlure IV, hexalure, ipsdienol, ipsenol, japonilure, lineatin, litlure, looplure, medlure, megatomoic acid, methyl eugenol, muscalure, octadeca-2,13-dien-1-yl acetate, octadeca-3,13-dien-1-yl acetate, orfralure, oryctalure, ostramone, siglure, sordidin, sulcatol, tetradec-11-en-1-yl acetate, trimedlure, trimedlure A, trimedlure B1, trimedlure B2, trimedlure C, trunc-call, 2-(octylthio)-ethanol, butopyronoxyl, butoxy(polypropylene glycol), dibutyl adipate, dibutyl phthalate, dibutyl succinate, diethyltoluamide, dimethyl carbate, dimethyl phthalate, ethyl hexanediol, hexamide, methoquin-butyl, methylneodecanamide, oxamate, picaridin, 1-dichloro-1-nitroethane, 1,1-dichloro-2,2-bis(4-ethylphenyl)-ethane, 1,2-dichloropropane with 1,3-dichloropropene, 1-bromo-2-chloroethane, 2,2,2-trichloro-1-(3,4-dichloro-phenyl)ethyl acetate, 2,2-dichlorovinyl 2-ethylsulfinylethyl methyl phosphate, 2-(1,3-dithiolan-2-yl)phenyl dimethylcarbamate, 2-(2-butoxyethoxy)ethyl thiocyanate, 2-(4,5-dimethyl-1,3-dioxolan-2-yl)phenyl methylcarbamate, 2-(4-chloro-3,5-xylyloxy)ethanol, 2-chlorovinyl diethyl phosphate, 2-imidazolidone, 2-isovalerylindan-1,3-dione, 2-methyl(prop-2-ynyl)aminophenyl methylcarbamate, 2-thiocyanatoethyl laurate, 3-bromo-1-chloroprop-1-ene, 3-methyl-1-phenylpyrazol-5-yl dimethyl-carbamate, 4-methyl(prop-2-ynyl)amino-3,5-xylyl methylcarbamate, 5,5-dimethyl-3-oxocyclohex-1-enyl dimethylcarbamate, acethion, acrylonitrile, aldrin, allosamidin, allyxycarb,

alpha-ecdysone, aluminium phosphide, aminocarb, anabasine, athidathion, azamethiphos, Bacillus thuringiensis delta endotoxins, barium hexafluorosilicate, barium polysulfide, barthrin, Bayer 22/190, Bayer 22408, beta-cyfluthrin, beta-cypermethrin, bioethanomethrin, biopermethrin, bis(2-chloroethyl) ether, borax, bromfenvinfos, bromo-DDT, bufencarb, butacarb, butathiofos, butonate, calcium arsenate, calcium cyanide, carbon disulfide, carbon tetrachloride, cartap hydrochloride, cevadine, chlorbicyclen, chlordane, chlordecone, chloroform, chloropicrin, chlorphoxim, chlorprazophos, cis-resmethrin, cismethrin, clocythrin, copper acetoarsenite, copper arsenate, copper oleate, coumithoate, cryolite, CS 708, cyanofenphos, cyanophos, cyclethrin, cythioate, d-tetramethrin, DAEP, dazomet, decarbofuran, diamidafos, dicapthon, dichlofenthion, dicresyl, dicyclanil, dieldrin, diethyl 5-methylpyrazol-3-yl phosphate, dilor, dimefluthrin, dimetan, dimethrin, dimethylvinphos, dimetilan, dinoprop, dinosam, dinoseb, diofenolan, dioxabenzofos, dithicrofos, DSP, ecdysterone, EI 1642, EMPC, EPBP, etaphos, ethiofencarb, ethyl formate, ethylene dibromide, ethylene dichloride, ethylene oxide, EXD, fenchlorphos, fenethacarb, fenitrothion, fenoxacrim, fenpirithrin, fensulfothion, fenthion-ethyl, flucofuron, fosmethilan, fospirate, fosthietan, furathiocarb, furethrin, guazatine, guazatine acetates, sodium tetrathiocarbonate, halfenprox, HCH, HEOD, heptachlor, heterophos, HHDN, hydrogen cyanide, hyquincarb, IPSP, isazofos, isobenzan, isodrin, isofenphos, isolane, isoprothiolane, isoxathion, juvenile hormone I, juvenile hormone II, juvenile hormone III, kelevan, kinoprene, lead arsenate, leptophos, lirimfos, lythidathion, m-cumenyl methylcarbamate, magnesium phosphide, mazidox, mecarphon, menazon, mercurous chloride, mesulfenfos, metam, metam-potassium, metam-sodium, methanesulfonyl fluoride, methocrotophos, methoprene, methothrin, methoxychlor, methyl isothiocyanate, methylchloroform, methylene chloride, metoxadiazone, mirex, naftalofos, naphthalene, NC-170, nicotine, nicotine sulfate, nithiazine, nornicotine, O-5-dichloro-4-iodophenyl O-ethyl ethylphosphonothioate, O,O-diethyl O-4-methyl-2-oxo-2H-chromen-7-yl phosphorothioate, O,O-diethyl O-6-methyl-2-propylpyrimidin-4-yl phosphorothioate, O,O,O',O'-tetrapropyl dithiopyrophosphate, oleic acid, para-dichlorobenzene, parathion-methyl, pentachlorophenol, pentachlorophenyl laurate, PH 60-38, phenkapton, phosnichlor, phosphine, phoxim-methyl, pirimetaphos, polychlorodicyclopentadiene isomers, potassium arsenite, potassium thiocyanate, precocene I, precocene II, precocene III, primidophos, profluthrin, promecarb, prothiofos, pyrazophos, pyresmethrin, quassia, quinalphos-methyl, quinothion, rafoxanide, resmethrin, rotenone, kadethrin, ryania, ryanodine, sabadilla, schradan, sebufos, SI-0009, thiapronil, sodium arsenite, sodium cyanide, sodium fluoride, sodium hexafluorosilicate, sodium pentachlorophenoxide, sodium selenate, sodium thiocyanate, sulcofuron, sulcofuron-sodium, sulfuryl fluoride, sulprofos, tar oils, tazimcarb, TDE, tebupirimfos, temephos, terallethrin, tetrachloroethane, thicrofos, thiocyclam, thiocyclam hydrogen oxalate, thionazin, thiosultap,

thiosultap-sodium, tralomethrin, transpermethrin, triazamate, trichlormetaphos-3, trichloronat, trimethacarb, tolprocarb, triclopyricarb, triprene, veratridine, veratrine, XMC, zetamethrin, zinc phosphide, zolaprofos, meperfluthrin, tetramethylfluthrin, bis(tributyltin) oxide, bromoacetamide, ferric phosphate, niclosamide-olamine, tributyltin oxide, pyrimorph, trifenmorph, 1,2-dibromo-3-chloropropane, 1,3-dichloropropene, 3,4-dichlorotetrahydrothio-phene 1,1-dioxide, 3-(4-chlorophenyl)-5-methylrhodanine, 5-methyl-6-thioxo-1,3,5-thiadiazinan-3-ylacetic acid, 6-isopentenylaminopurine, anisiflupurin, benclothiaz, cytokinins, DCIP, furfural, isamidofos, kinetin, Myrothecium verrucaria composition, tetrachlorothiophene, xylenols, zeatin, potassium ethylxanthate, acibenzolar, acibenzolar-S-methyl, Reynoutria sachalinensis extract, alpha-chlorohydrin, antu, barium carbonate, bisthiosemi, brodifacoum, bromadiolone, bromethalin, chlorophacinone, cholecalciferol, coumachlor, coumafuryl, coumatetralyl, crimidine, difenacoum, difethialone, diphacinone, ergocalciferol, flocoumafen, fluoroacetamide, flupropadine, flupropadine hydrochloride, norbormide, phosacetim, phosphorus, pindone, pyrinuron, scilliroside, sodium fluoro-acetate, thallium sulfate, warfarin, 2-(2-butoxyethoxy)-ethyl piperonylate, 5-(1,3-benzodioxol-5-yl)-3-hexylcyclohex-2-enone, farnesol with nerolidol, verbutin, MGK 264, piperonyl butoxide, piprotal, propyl isomer, S421, sesamex, sesasmolin, sulfoxide, anthraquinone, copper naphthenate, copper oxychloride, dicyclopentadiene, thiram, zinc naphthenate, ziram, imanin, ribavirin, chloroinconazide, mercuric oxide, thiophanate-methyl, azaconazole, bitertanol, bromuconazole, cyproconazole, difenoconazole, diniconazole, epoxicon-azole, fenbuconazole, fluquinconazole, flusilazole, flutriafol, furametpyr, hexaconazole, imazalil, imiben-con-azole, ipconazole, metconazole, myclobutanil, paclobutrazole, pefurazoate, penconazole, prothioconazole, pyrifenox, prochloraz, propiconazole, pyrisoxazole, simeconazole, tebucon-azole, tetraconazole, triadimefon, triadime-nol, triflumizole, triticonazole, ancymidol, fenarimol, nuarimol, bupirimate, dimethirimol, ethirimol, dodemorph, fenpropidin, fenpropimorph, spiroxamine, tridemorph, cyprodinil, mepanipyrim, pyrimethanil, fenpiclonil, fludioxonil, benalaxyl, furalaxyl, meta-laxyl, R-metalaxyl, ofurace, oxadixyl, carbendazim, debacarb, fuberidazole, thiaben-dazole, chlozolinate, dichlozoline, myclozoline, procymi-done, vinclozoline, boscalid, carboxin, fenfuram, flutolanil, mepronil, oxycarboxin, penthiopyrad, thifluzamide, dodine, iminoctadine, azoxystrobin, dimoxystrobin, enestroburin, fenaminstrobin, flufenoxystrobin, fluoxastrobin, kresoxim-methyl, metomi-nostrobin, trifloxystrobin, orysastrobin, picoxystrobin, pyraclostrobin, pyrametostrobin, pyraoxystrobin, ferbam, mancozeb, maneb, metiram, propineb, zineb, captafol, captan, fluoroimide, folpet, tolylfluanid, bordeaux mixture, copper oxide, mancopper, oxine-copper, nitrothal-isopropyl, edifenphos, iprobenphos, phosdiphen, tolclofos-methyl, anilazine, benthiavalicarb, blasticidin-S, chloroneb, chloro-tha-lo-nil, cyflufenamid, cymoxanil, cyclobutrifluram, diclocymet, diclomezine, dicloran, diethofencarb,

dimetho-morph, flumorph, dithianon, ethaboxam, etridiazole, famoxa-done, fenamidone, fenoxanil, ferimzone, fluazinam, flumetylsulforim, fluopicolide, fluoxytioconazole, flusulfamide, fluxapyroxad, fenhexamid, fos-etyl-aluminium, hymexazol, iprovalicarb, cyazofamid, methasulfo-carb, metrafenone, pencycuron, phthalide, polyoxins, propamocarb, pyribencarb, proquinazid, pyroquilon, pyriofenone, quinoxyfen, quintozene, tiadinil, triazoxide, tricyclazole, triforine, validamycin, valifenalate, zoxamide, mandipropamid, flubeneteram, isopyrazam, sedaxane, benzovindiflupyr, pydiflumetofen, 3-difluoromethyl-1-methyl-1H-pyrazole-4-carboxylic acid (3',4',5'-trifluoro-biphenyl-2-yl)-amide, isoflucypram, isotianil, dipymetitrone, 6-ethyl-5,7-dioxo-pyrrolo[4,5][1,4]dithiino[1,2-c]isothiazole-3-carbonitrile, 2-(difluoromethyl)-N-[3-ethyl-1,1-dimethyl-indan-4-yl]pyridine-3-carboxamide, 4-(2,6-difluorophenyl)-6-methyl-5-phenyl-pyridazine-3-carbonitrile, (R)-3-(difluoromethyl)-1-methyl-N-[1,1,3-trimethylindan-4-yl]pyrazole-4-carboxamide, 4-(2-bromo-4-fluoro-phenyl)-N-(2-chloro-6-fluoro-phenyl)-2,5-dimethyl-pyrazol-3-amine, 4- (2- bromo- 4- fluorophenyl) - N- (2- chloro- 6- fluorophenyl) - 1, 3- dimethyl- 1H- pyrazol- 5- amine, fluindapyr, coumethoxystrobin (jiaxiangjunzhi), Ivbenmixianan, dichlobentiazox, mandestrobin, 3-(4,4-difluoro-3,4-dihydro-3,3-dimethylisoquinolin-1-yl)quinolone, 2-[2-fluoro-6-[(8-fluoro-2-methyl-3-quinolyl)oxy]phenyl]propan-2-ol, oxathiapiprolin, tert-butyl N-[6-[[[(1-methyltetrazol-5-yl)-phenyl-methylene]amino]oxymethyl]-2-pyridyl]carbamate, pyraziflumid, inpyrfluxam, trolprocarb, mefentrifluconazole, ipfentrifluconazole, 2-(difluoromethyl)-N-[(3R)-3-ethyl-1,1-dimethyl-indan-4-yl]pyridine-3-carboxamide, N'-(2,5-dimethyl-4-phenoxy-phenyl)-N-ethyl-N-methyl-formamidine, N'-[4-(4,5-dichlorothiazol-2-yl)oxy-2,5-dimethyl-phenyl]-N-ethyl-N-methyl-formamidine, [2-[3-[2-[1-[2-[3,5-bis(difluoromethyl)pyrazol-1-yl]acetyl]-4-piperidyl]thiazol-4-yl]-4,5-dihydroisoxazol-5-yl]-3-chloro-phenyl] methanesulfonate, but-3-ynyl N-[6-[[(Z)-[(1-methyltetrazol-5-yl)-phenyl-methylene]amino]oxymethyl]-2-pyridyl]carbamate, methyl N-[[5-[4-(2,4-dimethylphenyl)triazol-2-yl]-2-methyl-phenyl]methyl]carbamate, 3-chloro-6-methyl-5-phenyl-4-(2,4,6-trifluorophenyl)pyridazine, pyridachlometyl, 3-(difluoromethyl)-1-methyl-N-[1,1,3-trimethylindan-4-yl]pyrazole-4-carboxamide, 1-[2-[[1-(4-chlorophenyl)pyrazol-3-yl]oxymethyl]-3-methyl-phenyl]-4-methyl-tetrazol-5-one, 1-methyl-4-[3-methyl-2-[[2-methyl-4-(3,4,5-trimethylpyrazol-1-yl)phenoxy]methyl]phenyl]tetrazol-5-one, aminopyrifen, ametoctradin, amisulbrom, penflufen, (Z,2E)-5-[1-(4-chlorophenyl)pyrazol-3-yl]oxy-2-methoxyimino-N,3-dimethyl-pent-3-enamide, florylpicoxamid, fenpicoxamid, metarylpicoxamid, tebufloquin, ipflufenoquin, quinofumelin, isofetamid, ethyl 1-[[4-[[2-(trifluoromethyl)-1,3-dioxolan-2-yl]methoxy]phenyl]methyl]pyrazole-3-carboxylate (may be prepared from the methods described in WO 2020/056090), ethyl 1-[[4-[(Z)-2-ethoxy-3,3,3-trifluoro-prop-1-enoxy]phenyl]methyl]pyrazole-3-carboxylate (may be prepared from the methods described in WO 2020/056090), methyl N-[[4-[1-(4-cyclopropyl-2,6-difluoro-phenyl)pyrazol-4-yl]-2-methyl-phenyl]methyl]carbamate (may be prepared from the methods

described in WO 2020/097012), methyl N-[[4-[1-(2,6-difluoro-4-isopropyl-phenyl)pyrazol-4-yl]-2-methyl-phenyl]methyl]carbamate (may be prepared from the methods described in WO 2020/097012), 6-chloro-3-(3-cyclopropyl-2-fluoro-phenoxy)-N-[2-(2,4-dimethylphenyl)-2,2-difluoro-ethyl]-5-methyl-pyridazine-4-carboxamide (may be prepared from the methods described in WO 2020/109391), 6-chloro-N-[2-(2-chloro-4-methyl-phenyl)-2,2-difluoro-ethyl]-3-(3-cyclopropyl-2-fluoro-phenoxy)-5-methyl-pyridazine-4-carboxamide (may be prepared from the methods described in WO 2020/109391), 6-chloro-3-(3-cyclopropyl-2-fluoro-phenoxy)-N-[2-(3,4-dimethylphenyl)-2,2-difluoro-ethyl]-5-methyl-pyridazine-4-carboxamide (may be prepared from the methods described in WO 2020/109391), N-[2-[2,4-dichloro-phenoxy]phenyl]-3-(difluoromethyl)-1-methyl-pyrazole-4-carboxamide, N-[2-[2-chloro-4-(trifluoromethyl)phenoxy]phenyl]-3-(difluoromethyl)-1-methyl-pyrazole-4-carboxamide, benzothiostrobin, phenamacril, 5-amino-1,3,4-thiadiazole-2-thiol zinc salt (2:1), fluopyram, flufenoxadiazam, flutianil, fluopimomide, pyrapropoyne, picarbutrazox, 2-(difluoromethyl)-N-(3-ethyl-1,1-dimethyl-indan-4-yl)pyridine-3-carboxamide, 2- (difluoromethyl) - N- ((3R) - 1, 1, 3- trimethylindan- 4-yl) pyridine- 3- carboxamide, 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy]benzonitrile, metyltetraprole, 2-(difluoromethyl) - N- ((3R) - 1, 1, 3- trimethylindan- 4- yl) pyridine- 3- carboxamide, α- (1, 1-dimethylethyl) - α- [4'- (trifluoromethoxy) [1, 1'- biphenyl] - 4- yl] -5- pyrimidinemethanol, fluoxapiprolin, enoxastrobin, methyl (Z)-3-methoxy-2-[2-methyl-5-[4-(trifluoromethyl)triazol-2-yl]phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(4-propyltriazol-2-yl)phenoxy]prop-2-enoate, methyl (Z)-2-[5-(3-isopropylpyrazol-1-yl)-2-methyl-phenoxy]-3-methoxy-prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-(3-propylpyrazol-1-yl)phenoxy]prop-2-enoate, methyl (Z)-3-methoxy-2-[2-methyl-5-[3-(trifluoromethyl)pyrazol-1-yl]phenoxy]prop-2-enoate (these compounds may be prepared from the methods described in WO2020/079111), methyl (Z)-2-(5-cyclohexyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate, methyl (Z)-2-(5-cyclopentyl-2-methyl-phenoxy)-3-methoxy-prop-2-enoate (these compounds may be prepared from the methods described in WO2020/193387), 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy] benzonitrile, 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(5-sulfanyl-1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy] benzonitrile, 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(5-thioxo-4H-1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy]benzonitrile, trinexapac, coumoxystrobin, zhongshengmycin, thiodiazole copper, zinc thiazole, amectotractin, iprodione, seboctylamine, N'-[5-bromo-2-methyl-6-[(1S)-1-methyl-2-propoxy-ethoxy]-3-pyridyl]-N-ethyl-N-methyl-formamidine, N'-[5-bromo-2-methyl-6-[(1R)-1-methyl-2-propoxy-ethoxy]-3-pyridyl]-N-ethyl-N-methyl-formamidine, N'-[5-bromo-2-methyl-6-(1-methyl-2-propoxy-ethoxy)-3-pyridyl]-N-ethyl-N-methyl-formamidine, N'-[5-chloro-2-methyl-6-(1-methyl-2-propoxy-ethoxy)-3-pyridyl]-N-ethyl-N-methyl-formamidine, N'-[5-bromo-2-methyl-6-(1-methyl-2-propoxy-ethoxy)-3-pyridyl]-

N-isopropyl-N-methyl-formamidine (these compounds may be prepared from the methods described in WO2015/155075); N'-[5-bromo-2-methyl-6-(2-propoxypropoxy)-3-pyridyl]-N-ethyl-N-methyl-formamidine (this compound may be prepared from the methods described in IPCOM000249876D); N-isopropyl-N'-[5-methoxy-2-methyl-4-(2,2,2-trifluoro-1-hydroxy-1-phenyl-ethyl)phenyl]-N-methyl-formamidine, N'-[4-(1-cyclopropyl-2,2,2-trifluoro-1-hydroxy-ethyl)-5-methoxy-2-methyl-phenyl]-N-isopropyl-N-methyl-formamidine (these compounds may be prepared from the methods described in WO2018/228896); N-ethyl-N'-[5-methoxy-2-methyl-4-[(2-trifluoromethyl)oxetan-2-yl]phenyl]-N-methyl-formamidine, N-ethyl-N'-[5-methoxy-2-methyl-4-[(2-trifuoromethyl)tetrahydrofuran-2-yl]phenyl]-N-methyl-formamidine (these compounds may be prepared from the methods described in WO2019/110427); N-[(1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-3,3,3-trifluoro-1-methyl-propyl]-8-fluoro-quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-7,8-difluoro-quinoline-3-carboxamide, 8-fluoro-N-[(1R)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, 8-fluoro-N-[(1S)-1-[(3-fluorophenyl)methyl]-1,3-dimethyl-butyl]quinoline-3-carboxamide, N-[(1R)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-[(1S)-1-benzyl-1,3-dimethyl-butyl]-8-fluoro-quinoline-3-carboxamide, N-((1R)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide, N-((1S)-1-benzyl-3-chloro-1-methyl-but-3-enyl)-8-fluoro-quinoline-3-carboxamide (these compounds may be prepared from the methods described in WO2017/153380); 1-(6,7-dimethylpyrazolo[1,5-a]pyridin-3-yl)-4,4,5-trifluoro-3,3-dimethyl-isoquinoline, 1-(6,7-dimethylpyrazolo[1,5-a]pyridin-3-yl)-4,4,6-trifluoro-3,3-dimethyl-isoquinoline, 4,4-difluoro-3,3-dimethyl-1-(6-methylpyrazolo[1,5-a]pyridin-3-yl)isoquinoline, 4,4-difluoro-3,3-dimethyl-1-(7-methylpyrazolo[1,5-a]pyridin-3-yl)isoquinoline, 1-(6-chloro-7-methyl-pyrazolo[1,5-a]pyridin-3-yl)-4,4-difluoro-3,3-dimethyl-isoquinoline (these compounds may be prepared from the methods described in WO2017/025510); 1-(4,5-dimethylbenzimidazol-1-yl)-4,4,5-trifluoro-3,3-dimethyl-isoquinoline, 1-(4,5-dimethylbenzimidazol-1-yl)-4,4-difluoro-3,3-dimethyl-isoquinoline, 6-chloro-4,4-difluoro-3,3-dimethyl-1-(4-methylbenzimidazol-1-yl)isoquinoline, 4,4-difluoro-1-(5-fluoro-4-methyl-benzimidazol-1-yl)-3,3-dimethyl-isoquinoline, 3-(4,4-difluoro-3,3-dimethyl-1-isoquinolyl)-7,8-dihydro-6H-cyclopenta[e]benzimidazole (these compounds may be prepared from the methods described in WO2016/156085); N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, N-ethyl-2-methyl-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 1,3-

dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, 3-ethyl-1-methoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, 4,4-dimethyl-2-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]isoxazolidin-3-one, 5,5-dimethyl-2-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]isoxazolidin-3-one, ethyl 1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]pyrazole-4-carboxylate, N,N-dimethyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]-1,2,4-triazol-3-amine (these compounds may be prepared from the methods described in WO 2017/055473, WO 2017/055469, WO 2017/093348 and WO 2017/118689); 2-[6-(4-chlorophenoxy)-2-(trifluoromethyl)-3-pyridyl]-1-(1,2,4-triazol-1-yl)propan-2-ol (this compound may be prepared from the methods described in WO 2017/029179); 2-[6-(4-bromophenoxy)-2-(trifluoromethyl)-3-pyridyl]-1-(1,2,4-triazol-1-yl)propan-2-ol (this compound may be prepared from the methods described in WO 2017/029179); 3-[2-(1-chlorocyclopropyl)-3-(2-fluorophenyl)-2-hydroxy-propyl]imidazole-4-carbonitrile (this compound may be prepared from the methods described in WO 2016/156290); 3-[2-(1-chlorocyclopropyl)-3-(3-chloro-2-fluoro-phenyl)-2-hydroxy-propyl]imidazole-4-carbonitrile (this compound may be prepared from the methods described in WO 2016/156290); (4-phenoxyphenyl)methyl 2-amino-6-methyl-pyridine-3-carboxylate (this compound may be prepared from the methods described in WO 2014/006945); 2,6-Dimethyl-1H,5H-[1,4]dithiino[2,3-c:5,6-c']dipyrrole-1,3,5,7(2H,6H)-tetrone (this compound may be prepared from the methods described in WO 2011/138281) N-methyl-4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]benzenecarbothioamide; N-methyl-4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]benzamide; (Z,2E)-5-[1-(2,4-dichlorophenyl)pyrazol-3-yl]oxy-2-methoxyimino-N,3-dimethyl-pent-3-enamide (this compound may be prepared from the methods described in WO 2018/153707); N'-(2-chloro-5-methyl-4-phenoxy-phenyl)-N-ethyl-N-methyl-formamidine; N'-[2-chloro-4-(2-fluorophenoxy)-5-methyl-phenyl]-N-ethyl-N-methyl-formamidine (this compound may be prepared from the methods described in WO 2016/202742); 2-(difluoromethyl)-N-[(3S)-3-ethyl-1,1-dimethyl-indan-4-yl]pyridine-3-carboxamide (this compound may be prepared from the methods described in WO 2014/095675); (5-methyl-2-pyridyl)-[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methanone, (3-methylisoxazol-5-yl)-[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methanone (these compounds may be prepared from the methods described in WO 2017/220485); 2-oxo-N-propyl-2-[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]acetamide (this compound may be prepared from the methods described in WO 2018/065414); ethyl 1-[[5-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]-2-thienyl]methyl]pyrazole-4-carboxylate (this compound may be prepared from the methods described in WO 2018/158365); 2,2-difluoro-N-methyl-2-[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]acetamide, N-[(E)-methoxyiminomethyl]-4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]benzamide, N-[(Z)-

methoxyiminomethyl]-4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]benzamide, N-[N-methoxy-C-methyl-carbonimidoyl]-4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]benzamide (these compounds may be prepared from the methods described in WO 2018/202428);

microbials including: Acinetobacter lwoffii, Acremonium alternatum, Acremonium cephalosporium, Acremonium diospyri, Acremonium obclavatum, Adoxophyes orana granulovirus (AdoxGV) (Capex®), Agrobacterium radiobacter strain K84 (Galltrol-A®), Alternaria alternate, Alternaria cassia, Alternaria destruens (Smolder®), Ampelomyces quisqualis (AQ10®), Aspergillus flavus AF36 (AF36®), Aspergillus flavus NRRL 21882 (Aflaguard®), Aspergillus spp., Aureobasidium pullulans, Azospirillum, (MicroAZ®, TAZO B®), Azotobacter, Azotobacter chroocuccum (Azotomeal®), Azotobacter cysts (Bionatural Blooming Blossoms®), Bacillus amyloliquefaciens, Bacillus cereus, Bacillus chitinosporus strain CM-1, Bacillus chitinosporus strain AQ746, Bacillus licheniformis strain HB-2 (Biostart™ Rhizoboost®), Bacillus licheniformis strain 3086 (EcoGuard®, Green Releaf®), Bacillus circulans, Bacillus firmus (BioSafe®, BioNem-WP®, VOTiVO®), Bacillus firmus strain I-1582, Bacillus macerans, Bacillus marismortui, Bacillus megaterium, Bacillus mycoides strain AQ726, Bacillus papillae (Milky Spore Powder®), Bacillus pumilus spp., Bacillus pumilus strain GB34 (Yield Shield®), Bacillus pumilus strain AQ717, Bacillus pumilus strain QST 2808 (Sonata®, Ballad Plus®), Bacillus sphaericus (VectoLex®), Bacillus spp., Bacillus spp. strain AQ175, Bacillus spp. strain AQ177, Bacillus spp. strain AQ178, Bacillus subtilis strain QST 713 (CEASE®, Serenade®, Rhapsody®), Bacillus subtilis strain QST 714 (JAZZ®), Bacillus subtilis strain AQ153, Bacillus subtilis strain AQ743, Bacillus subtilis strain QST3002, Bacillus subtilis strain QST3004, Bacillus subtilis var. amyloliquefaciens strain FZB24 (Taegro®, Rhizopro®), Bacillus thuringiensis Cry 2Ae, Bacillus thuringiensis Cry1Ab, Bacillus thuringiensis aizawai GC 91 (Agree®), Bacillus thuringiensis israelensis (BMP123®, Aquabac®, VectoBac®), Bacillus thuringiensis kurstaki (Javelin®, Deliver®, CryMax®, Bonide®, Scutella WP®, Turilav WP ®, Astuto®, Dipel WP®, Biobit®, Foray®), Bacillus thuringiensis kurstaki BMP 123 (Baritone®), Bacillus thuringiensis kurstaki HD-1 (Bioprotec-CAF / 3P®), Bacillus thuringiensis strain BD#32, Bacillus thuringiensis strain AQ52, Bacillus thuringiensis var. aizawai (XenTari®, DiPel®), bacteria spp. (GROWMEND®, GROWSWEET®, Shootup®), bacteriophage of Clavipacter michiganensis (AgriPhage®), Bakflor®, Beauveria bassiana (Beaugenic®, Brocaril WP®), Beauveria bassiana GHA (Mycotrol ES®, Mycotrol O®, BotaniGuard®), Beauveria brongniartii (Engerlingspilz®, Schweizer Beauveria®, Melocont®), Beauveria spp., Botrytis cineria, Bradyrhizobium japonicum (TerraMax®), Brevibacillus brevis, Bacillus thuringiensis tenebrionis (Novodor®), BtBooster, Burkholderia cepacia (Deny®, Intercept®, Blue Circle®), Burkholderia gladii, Burkholderia gladioli, Burkholderia spp., Canadian thistle fungus (CBH Canadian

Bioherbicide®), Candida butyri, Candida famata, Candida fructus, Candida glabrata, Candida guilliermondii, Candida melibiosica, Candida oleophila strain O, Candida parapsilosis, Candida pelliculosa, Candida pulcherrima, Candida reukaufii, Candida saitoana (Bio-Coat®, Biocure®), Candida sake, Candida spp., Candida tenius, Cedecea dravisae, Cellulomonas flavigena, Chaetomium cochliodes (Nova-Cide®), Chaetomium globosum (Nova-Cide®), Chromobacterium subtsugae strain PRAA4-1T (Grandevo®), Cladosporium cladosporioides, Cladosporium oxysporum, Cladosporium chlorocephalum, Cladosporium spp., Cladosporium tenuissimum, Clonostachys rosea (EndoFine®), Colletotrichum acutatum, Coniothyrium minitans (Cotans WG®), Coniothyrium spp., Cryptococcus albidus (YIELDPLUS®), Cryptococcus humicola, Cryptococcus infirmo-miniatus, Cryptococcus laurentii, Cryptophlebia leucotreta granulovirus (Cryptex®), Cupriavidus campinensis, Cydia pomonella granulovirus (CYD-X®), Cydia pomonella granulovirus (Madex®, Madex Plus®, Madex Max/ Carpovirusine®), Cylindrobasidium laeve (Stumpout®), Cylindrocladium, Debaryomyces hansenii, Drechslera hawaiinensis, Enterobacter cloacae, Enterobacteriaceae, Entomophtora virulenta (Vektor®), Epicoccum nigrum, Epicoccum purpurascens, Epicoccum spp., Filobasidium floriforme, Fusarium acuminatum, Fusarium chlamydosporum, Fusarium oxysporum (Fusaclean® / Biofox C®), Fusarium proliferatum, Fusarium spp., Galactomyces geotrichum, Gliocladium catenulatum (Primastop®, Prestop®), Gliocladium roseum, Gliocladium spp. (SoilGard®), Gliocladium virens (Soilgard®), Granulovirus (Granupom®), Halobacillus halophilus, Halobacillus litoralis, Halobacillus trueperi, Halomonas spp., Halomonas subglaciescola, Halovibrio variabilis, Hanseniaspora uvarum, Helicoverpa armigera nucleopolyhedrovirus (Helicovex®), Helicoverpa zea nuclear polyhedrosis virus (Gemstar®), Isoflavone – formononetin (Myconate®), Kloeckera apiculata, Kloeckera spp., Lagenidium giganteum (Laginex®), Lecanicillium longisporum (Vertiblast®), Lecanicillium muscarium (Vertikil®), Lymantria Dispar nucleopolyhedrosis virus (Disparvirus®), Marinococcus halophilus, Meira geulakonigii, Metarhizium anisopliae (Met52®), Metarhizium anisopliae (Destruxin WP®), Metschnikowia fruticola (Shemer®), Metschnikowia pulcherrima, Microdochium dimerum (Antibot®), Micromonospora coerulea, Microsphaeropsis ochracea, Muscodor albus 620 (Muscudor®), Muscodor roseus strain A3-5, Mycorrhizae spp. (AMykor®, Root Maximizer®), Myrothecium verrucaria strain AARC-0255 (DiTera®), BROS PLUS®, Ophiostoma piliferum strain D97 (Sylvanex®), Paecilomyces farinosus, Paecilomyces fumosoroseus (PFR-97®, PreFeRal®), Paecilomyces linacinus (Biostat WP®), Paecilomyces lilacinus strain 251 (MeloCon WG®), Paenibacillus polymyxa, Pantoea agglomerans (BlightBan C9-1®), Pantoea spp., Pasteuria spp. (Econem®), Pasteuria nishizawae, Penicillium aurantiogriseum, Penicillium billai (Jumpstart®, TagTeam®), Penicillium brevicompactum, Penicillium frequentans, Penicillium griseofulvum, Penicillium purpurogenum, Penicillium spp., Penicillium viridicatum, Phlebiopsis gigantean (Rotstop®),

phosphate solubilizing bacteria (Phosphomeal®), Phytophthora cryptogea, Phytophthora palmivora (Devine®), Pichia anomala, Pichia guilermondii, Pichia membranaefaciens, Pichia onychis, Pichia stipites, Pseudomonas aeruginosa, Pseudomonas aureofasciens (Spot-Less Biofungicide®), Pseudomonas cepacia, Pseudomonas chlororaphis (AtEze®), Pseudomonas corrugate, Pseudomonas fluorescens strain A506 (BlightBan A506®), Pseudomonas putida, Pseudomonas reactans, Pseudomonas spp., Pseudomonas syringae (Bio-Save®), Pseudomonas viridiflava, Pseudomons fluorescens (Zequanox®), Pseudozyma flocculosa strain PF-A22 UL (Sporodex L®), Puccinia canaliculata, Puccinia thlaspeos (Wood Warrior®), Pythium paroecandrum, Pythium oligandrum (Polygandron®, Polyversum®), Pythium periplocum, Rhanella aquatilis, Rhanella spp., Rhizobia (Dormal®, Vault®), Rhizoctonia, Rhodococcus globerulus strain AQ719, Rhodosporidium diobovatum, Rhodosporidium toruloides, Rhodotorula spp., Rhodotorula glutinis, Rhodotorula graminis, Rhodotorula mucilagnosa, Rhodotorula rubra, Saccharomyces cerevisiae, Salinococcus roseus, Sclerotinia minor, Sclerotinia minor (SARRITOR®), Scytalidium spp., Scytalidium uredinicola, Spodoptera exigua nuclear polyhedrosis virus (Spod-X®, Spexit®), Serratia marcescens, Serratia plymuthica, Serratia spp., Sordaria fimicola, Spodoptera littoralis nucleopolyhedrovirus (Littovir®), Sporobolomyces roseus, Stenotrophomonas maltophilia, Streptomyces ahygroscopicus, Streptomyces albaduncus, Streptomyces exfoliates, Streptomyces galbus, Streptomyces griseoplanus, Streptomyces griseoviridis (Mycostop®), Streptomyces lydicus (Actinovate®), Streptomyces lydicus WYEC-108 (ActinoGrow®), Streptomyces violaceus, Tilletiopsis minor, Tilletiopsis spp., Trichoderma asperellum (T34 Biocontrol®), Trichoderma gamsii (Tenet®), Trichoderma atroviride (Plantmate®), Trichoderma hamatum TH 382, Trichoderma harzianum rifai (Mycostar®), Trichoderma harzianum T-22 (Trianum-P®, PlantShield HC®, RootShield®, Trianum-G®), Trichoderma harzianum T-39 (Trichodex®), Trichoderma inhamatum, Trichoderma koningii, Trichoderma spp. LC 52 (Sentinel®), Trichoderma lignorum, Trichoderma longibrachiatum, Trichoderma polysporum (Binab T®), Trichoderma taxi, Trichoderma virens, Trichoderma virens (formerly Gliocladium virens GL-21) (SoilGuard®), Trichoderma viride, Trichoderma viride strain ICC 080 (Remedier®), Trichosporon pullulans, Trichosporon spp., Trichothecium spp., Trichothecium roseum, Typhula phacorrhiza strain 94670, Typhula phacorrhiza strain 94671, Ulocladium atrum, Ulocladium oudemansii (Botry-Zen®), Ustilago maydis, various bacteria and supplementary micronutrients (Natural II®), various fungi (Millennium Microbes®), Verticillium chlamydosporium, Verticillium lecanii (Mycotal®, Vertalec®), Vip3Aa20 (VIPtera®), Virgibaclillus marismortui, Xanthomonas campestris pv. Poae (Camperico®), Xenorhabdus bovienii, Xenorhabdus nematophilus;

Plant extracts including: pine oil (Retenol®), azadirachtin (Plasma Neem Oil®, AzaGuard®, MeemAzal®, Molt-X®, Botanical IGR (Neemazad®, Neemix®), canola oil (Lilly Miller Vegol®), Chenopodium ambrosioides near ambrosioides (Requiem®), Chrysanthemum extract (Crisant®), extract of neem oil (Trilogy®), essentials oils of Labiatae (Botania®), extracts of clove rosemary peppermint and thyme oil (Garden insect killer®), Glycinebetaine (Greenstim®), garlic, lemongrass oil (GreenMatch®), neem oil, Nepeta cataria (Catnip oil), Nepeta catarina, nicotine, oregano oil (MossBuster®), Pedaliaceae oil (Nematon®), pyrethrum, Quillaja saponaria (NemaQ®), Reynoutria sachalinensis (Regalia®, Sakalia®), rotenone (Eco Roten®), Rutaceae plant extract (Soleo®), soybean oil (Ortho ecosense®), tea tree oil (Timorex Gold®), thymus oil, AGNIQUE® MMF, BugOil®, mixture of rosemary sesame pepermint thyme and cinnamon extracts (EF 300®), mixture of clove rosemary and peppermint extract (EF 400®), mixture of clove pepermint garlic oil and mint (Soil Shot®), kaolin (Screen®), storage glucam of brown algae (Laminarin®);

pheromones including: blackheaded fireworm pheromone (3M Sprayable Blackheaded Fireworm Pheromone®), Codling Moth Pheromone (Paramount dispenser-(CM)/ Isomate C-Plus®), Grape Berry Moth Pheromone (3M MEC-GBM Sprayable Pheromone®), Leafroller pheromone (3M MEC – LR Sprayable Pheromone®), Muscamone (Snip7 Fly Bait®, Starbar Premium Fly Bait®), Oriental Fruit Moth Pheromone (3M oriental fruit moth sprayable pheromone®), Peachtree Borer Pheromone (Isomate-P®), Tomato Pinworm Pheromone (3M Sprayable pheromone®), Entostat powder (extract from palm tree) (Exosex CM®), (E,Z,Z)-3,8,11 Tetradecatrienyl acetate, (Z,Z,E)-7,11,13-Hexadecatrienal, (E,Z)-7,9-Dodecadien-1-yl acetate, 2-Methyl-1-butanol, Calcium acetate, Scenturion®, Biolure®, Check-Mate®, Lavandulyl senecioate;

Macrobials including: Aphelinus abdominalis, Aphidius ervi (Aphelinus-System®), Acerophagus papaya, Adalia bipunctata (Adalia-System®), Adalia bipunctata (Adaline®), Adalia bipunctata (Aphidalia®), Ageniaspis citricola, Ageniaspis fuscicollis, Amblyseius andersoni (Anderline®, Andersoni-System®), Amblyseius californicus (Amblyline®, Spical®), Amblyseius cucumeris (Thripex®, Bugline cucumeris®), Amblyseius fallacis (Fallacis®), Amblyseius swirskii (Bugline swirskii®, Swirskii-Mite®), Amblyseius womersleyi (WomerMite®), Amitus hesperidum, Anagrus atomus, Anagyrus fusciventris, Anagyrus kamali, Anagyrus loecki, Anagyrus pseudococci (Citripar®), Anicetus benefices, Anisopteromalus calandrae, Anthocoris nemoralis (Anthocoris-System®), Aphelinus abdominalis (Apheline®, Aphiline®), Aphelinus asychis, Aphidius colemani (Aphipar®), Aphidius ervi (Ervipar®), Aphidius gifuensis, Aphidius matricariae (Aphipar-M®), Aphidoletes aphidimyza (Aphidend®), Aphidoletes aphidimyza (Aphidoline®), Aphytis lingnanensis,

Aphytis melinus, Aprostocetus hagenowii, Atheta coriaria (Staphyline®), Bombus spp., Bombus terrestris (Natupol Beehive®), Bombus terrestris (Beeline®, Tripol®), Cephalonomia stephanoderis, Chilocorus nigritus, Chrysoperla carnea (Chrysoline®), Chrysoperla carnea (Chrysopa®), Chrysoperla rufilabris, Cirrospilus ingenuus, Cirrospilus quadristriatus, Citrostichus phyllocnistoides, Closterocerus chamaeleon, Closterocerus spp., Coccidoxenoides perminutus (Planopar®), Coccophagus cowperi, Coccophagus lycimnia, Cotesia flavipes, Cotesia plutellae, Cryptolaemus montrouzieri (Cryptobug®, Cryptoline®), Cybocephalus nipponicus, Dacnusa sibirica, Dacnusa sibirica (Minusa®), Diglyphus isaea (Diminex®), Delphastus catalinae (Delphastus®), Delphastus pusillus, Diachasmimorpha krausii, Diachasmimorpha longicaudata, Diaparsis jucunda, Diaphorencyrtus aligarhensis, Diglyphus isaea, Diglyphus isaea (Miglyphus®, Digline®), Dacnusa sibirica (DacDigline®, Minex®), Diversinervus spp., Encarsia citrina, Encarsia formosa (Encarsia max®, Encarline®, En-Strip®), Eretmocerus eremicus (Enermix®), Encarsia guadeloupae, Encarsia haitiensis, Episyrphus balteatus (Syrphidend®), Eretmoceris siphonini, Eretmocerus californicus, Eretmocerus eremicus (Ercal®, Eretline e®), Eretmocerus eremicus (Bemimix®), Eretmocerus hayati, Eretmocerus mundus (Bemipar®, Eretline m®), Eretmocerus siphonini, Exochomus quadripustulatus, Feltiella acarisuga (Spidend®), Feltiella acarisuga (Feltiline®), Fopius arisanus, Fopius ceratitivorus, Formononetin (Wirless Beehome®), Franklinothrips vespiformis (Vespop®), Galendromus occidentalis, Goniozus legneri, Habrobracon hebetor, Harmonia axyridis (HarmoBeetle®), Heterorhabditis spp. (Lawn Patrol®), Heterorhabditis bacteriophora (NemaShield HB®, Nemaseek®, Terranem-Nam®, Terranem®, Larvanem®, B-Green®, NemAttack ®, Nematop®), Heterorhabditis megidis (Nemasys H®, BioNem H®, Exhibitline hm®, Larvanem-M®), Hippodamia convergens, Hypoaspis aculeifer (Aculeifer-System®, Entomite-A®), Hypoaspis miles (Hypoline m®, Entomite-M®), Lbalia leucospoides, Lecanoideus floccissimus, Lemophagus errabundus, Leptomastidea abnormis, Leptomastix dactylopii (Leptopar®), Leptomastix epona, Lindorus lophanthae, Lipolexis oregmae, Lucilia caesar (Natufly®), Lysiphlebus testaceipes, Macrolophus caliginosus (Mirical-N®, Macroline c®, Mirical®), Mesoseiulus longipes, Metaphycus flavus, Metaphycus lounsburyi, Micromus angulatus (Milacewing®), Microterys flavus, Muscidifurax raptorellus and Spalangia cameroni (Biopar®), Neodryinus typhlocybae, Neoseiulus californicus, Neoseiulus cucumeris (THRYPEX®), Neoseiulus fallacis, Nesideocoris tenuis (NesidioBug®, Nesibug®), Ophyra aenescens (Biofly®), Orius insidiosus (Thripor-I®, Oriline i®), Orius laevigatus (Thripor-L®, Oriline l®), Orius majusculus (Oriline m®), Orius strigicollis (Thripor-S®), Pauesia juniperorum, Pediobius foveolatus, Phasmarhabditis hermaphrodita (Nemaslug®), Phymastichus coffea, Phytoseiulus macropilus, Phytoseiulus persimilis (Spidex®, Phytoline p®), Podisus maculiventris (Podisus®), Pseudacteon curvatus, Pseudacteon obtusus, Pseudacteon tricuspis, Pseudaphycus maculipennis, Pseudleptomastix mexicana,

Psyllaephagus pilosus, Psyttalia concolor (complex), Quadrastichus spp., Rhyzobius lophanthae, Rodolia cardinalis, Rumina decollate, Semielacher petiolatus, Sitobion avenae (Ervibank®), Steinernema carpocapsae (Nematac C®, Millenium®, BioNem C®, NemAttack®, Nemastar®, Capsanem®), Steinernema feltiae (NemaShield®, Nemasys F®, BioNem F®, Steinernema-System®, NemAttack®, Nemaplus®, Exhibitline sf®, Scia-rid®, Entonem®), Steinernema kraussei (Nemasys L®, BioNem L®, Exhibitline srb®), Steinernema riobrave (BioVector®, BioVektor®), Steinernema scapterisci (Nematac S®), Steinernema spp., Steinernematid spp. (Guardian Nematodes®), Stethorus punctillum (Stethorus®), Tamarixia radiate, Tetrastichus setifer, Thripobius semiluteus, Torymus sinensis, Trichogramma brassicae (Tricholine b®), Trichogramma brassicae (Tricho-Strip®), Trichogramma evanescens, Trichogramma minutum, Trichogramma ostriniae, Trichogramma platneri, Trichogramma pretiosum, Xanthopimpla stemmator;

other biologicals including: abscisic acid, bioSea®, Chondrostereum purpureum (Chontrol Paste®), Colletotrichum gloeosporioides (Collego®), Copper Octanoate (Cueva®), Delta traps (Trapline d®), Erwinia amylovora (Harpin) (ProAct®, Ni-HIBIT Gold CST®), fatty acids derived from a natural by-product of extra virgin olive oil (FLIPPER®), Ferri-phosphate (Ferramol®), Funnel traps (Trapline y®), Gallex®, Grower's Secret®, Homo-brassonolide, Iron Phosphate (Lilly Miller Worry Free Ferramol Slug & Snail Bait®), MCP hail trap (Trapline f®), Microctonus hyperodae, Mycoleptodiscus terrestris (Des-X®), BioGain®, Aminomite®, Zenox®, Pheromone trap (Thripline ams®), potassium bicarbonate (MilStop®), potassium salts of fatty acids (Sanova®), potassium silicate solution (Sil-Matrix®), potassium iodide + potassiumthiocyanate (Enzicur®), SuffOil-X®, Spider venom, Nosema locustae (Semaspore Organic Grasshopper Control®), Sticky traps (Trapline YF®, Rebell Amarillo®) and Traps (Takitrapline y + b®);

a safener, such as benoxacor, cloquintocet (including cloquintocet-mexyl), cyprosulfamide, dichlormid, fenchlorazole (including fenchlorazole-ethyl), fenclorim, fluxofenim, furilazole, isoxadifen (including isoxadifen-ethyl), mefenpyr (including mefenpyr-diethyl), metcamifen and oxabetrinil.

Suitable fungicides may be selected from etridiazole, fluazinam, benalaxyl, benalaxyl-M (kiralaxyl), furalaxyl, metalaxyl, metalaxyl-M (mefenoxam), dodicin, N'-(2,5-dimethyl-4-phenoxy-phenyl)-N-ethyl-N-methyl-formamidine, N'-[4-(4,5-dichloro-thiazol-2-yloxy)-2,5-dimethyl-phenyl]-N-ethyl-N-methyl-formamidine, N'-[4-[[3-[(4-chlorophenyl)methyl]-1,2,4-thiadiazol-5-yl]oxy]-2,5-dimethyl-phenyl]-N-ethyl-N-methyl-formamidine, ethirimol, 3′-chloro-2-methoxy-N-[(3RS)-tetrahydro-2-oxofuran-3-yl]acet-2′,6′-xylidide (clozylacon), cyprodinil,

mepanipyrim, pyrimethanil, dithianon, aureofungin, blasticidin-S, biphenyl, chloroneb, dicloran, benzovindiflupyr, pydiflumetofen, hexachlorobenzene, quintozene, tecnazene, (TCNB), tolclofos-methyl, metrafenone, 2,6-dichloro-N-(4-trifluoromethylbenzyl)-benzamide, fluopicolide (flupicolide), tioxymid, flusulfamide, benomyl, carbendazim, carbendazim chlorhydrate, chlorfenazole, fuberidazole, thiabendazole, thiophanate-methyl, benthiavalicarb, chlobenthiazone, probenazole, acibenzolar, bethoxazin, pyriofenone (IKF-309), acibenzolar-S-methyl, pyribencarb (KIF-7767), butylamine, 3-iodo-2-propinyl n-butylcarbamate (IPBC), iodocarb (isopropanyl butylcarbamate), isopropanyl butylcarbamate (iodocarb), picarbutrazox, polycarbamate, propamocarb, tolprocarb, 3-(difluoromethyl)-N-(7-fluoro-1,1,3,3-tetramethyl-indan-4-yl)-1-methyl-pyrazole-4-carboxamide diclocymet, N-[(5-chloro-2-isopropyl-phenyl)methyl]-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-pyrazole-4-carboxamide N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-[(2-isopropylphenyl)methyl]-1-methyl-pyrazole-4-carboxamide carpropamid, chlorothalonil, flumorph, oxine-copper, cymoxanil, phenamacril, cyazofamid, flutianil, thicyofen, chlozolinate, iprodione, procymidone, vinclozolin, bupirimate, dinocton, dinopenton, dinobuton, dinocap, meptyldinocap, diphenylamine, phosdiphen, 2,6-dimethyl-[1,4]dithiino[2,3-c:5,6-c']dipyrrole-1,3,5,7(2H,6H)-tetraone, azithiram, etem, ferbam, mancozeb, maneb, metam, metiram (polyram), metiram-zinc, nabam, propineb, thiram, vapam (metam sodium), zineb, ziram, dithioether, isoprothiolane, ethaboxam, fosetyl, phosetyl-Al (fosetyl-al), methyl bromide, methyl iodide, methyl isothiocyanate, cyclafuramid, fenfuram, validamycin, streptomycin, (2RS)-2-bromo-2-(bromomethyl)glutaronitrile (bromothalonil), dodine, doguadine, guazatine, iminoctadine, iminoctadine triacetate, 2,4-D, 2,4-DB, kasugamycin, dimethirimol, fenhexamid, hymexazole, hydroxyisoxazole imazalil, imazalil sulphate, oxpoconazole, pefurazoate, prochloraz, triflumizole, fenamidone, Bordeaux mixture, calcium polysulfide, copper acetate, copper carbonate, copper hydroxide, copper naphthenate, copper oleate, copper oxychloride, copper oxyquinolate, copper silicate, copper sulphate, copper tallate, cuprous oxide, sulphur, carbaryl, phthalide (fthalide), dingjunezuo (Jun Si Qi), oxathiapiprolin, fluoroimide, mandipropamid, KSF-1002, benzamorf, dimethomorph, fenpropimorph, tridemorph, dodemorph, diethofencarb, fentin acetate, fentin hydroxide, carboxin, oxycarboxin, drazoxolon, famoxadone, m-phenylphenol, p-phenylphenol, tribromophenol (TBP), 2-[2-[(7,8-difluoro-2-methyl-3-quinolyl)oxy]-6-fluoro-phenyl]propan-2-ol 2-[2-fluoro-6-[(8-fluoro-2-methyl-3-quinolyl)oxy]phenyl]propan-2-ol cyflufenamid, ofurace, oxadixyl, flutolanil, mepronil, isofetamid, fenpiclonil, fludioxonil, pencycuron, edifenphos, iprobenfos, pyrazophos, phosphorus acids, tecloftalam, captafol, captan, ditalimfos, triforine, fenpropidin, piperalin, osthol, 1-methylcyclopropene, 4-CPA, chlormequat, clofencet, dichlorprop, dimethipin, endothal, ethephon, flumetralin, forchlorfenuron, gibberellic acid, gibberellins, hymexazol,

maleic hydrazide, mepiquat, naphthalene acetamide, paclobutrazol, prohexadione, prohexadione-calcium, thidiazuron, tribufos (tributyl phosphorotrithioate), trinexapac, uniconazole, α-naphthalene acetic acid, polyoxin D (polyoxrim), BLAD, chitosan, fenoxanil, folpet, 3-(difluoromethyl)-N-methoxy-1-methyl-N-[1-methyl-2-(2,4,6-trichlorophenyl)ethyl]pyrazole-4-carboxamide, bixafen, fluxapyroxad, furametpyr, isopyrazam, penflufen, penthiopyrad, sedaxane, fenpyrazamine, diclomezine, pyrifenox, boscalid, fluopyram, diflumetorim, fenarimol, 5-fluoro-2-(p-tolylmethoxy)pyrimidin-4-amine ferimzone, dimetachlone (dimethaclone), pyroquilon, proquinazid, ethoxyquin, quinoxyfen, 4,4,5-trifluoro-3,3-dimethyl-1-(3-quinolyl)isoquinoline, 4,4-difluoro-3,3-dimethyl-1-(3-quinolyl)isoquinoline 5-fluoro-3,3,4,4-tetramethyl-1-(3-quinolyl)isoquinoline 9-fluoro-2,2-dimethyl-5-(3-quinolyl)-3H-1,4-benzoxazepine, tebufloquin, oxolinic acid, chinomethionate (oxythioquinox, quinoxymethionate), spiroxamine, (E)-N-methyl-2- [2- (2, 5-dimethylphenoxymethyl) phenyl]-2-methoxy-iminoacetamide, (mandestrobin), azoxystrobin, coumoxystrobin, dimoxystrobin, enestroburin, enoxastrobin, fenamistrobin, flufenoxystrobin, fluoxastrobin, kresoxim-methyl, mandestrobin, metaminostrobin, metominostrobin, orysastrobin, picoxystrobin, pyraclostrobin, pyrametostrobin, pyraoxystrobin, triclopyricarb, trifloxystrobin, amisulbrom, dichlofluanid, tolylfluanid, but-3-ynyl N-[6-[[(Z)-[(1-methyltetrazol-5-yl)-phenyl-methylene]amino]oxymethyl]-2-pyridyl]carbamate, dazomet, isotianil, tiadinil, thifluzamide, benthiazole (TCMTB), silthiofam, zoxamide, anilazine, tricyclazole, (.+-.)-cis-1-(4-chlorophenyl)-2-(1H-1,2,4-triazol-1-yl)-cycloheptanol (huanjunzuo), 1-(5-bromo-2-pyridyl)-2-(2,4-difluorophenyl)-1,1-difluoro-3-(1,2,4-triazol-1-yl)propan-2-ol 2-(1-tert-butyl)-1-(2-chlorophenyl)-3-(1,2,4-triazol-1-yl)-propan-2-ol (TCDP), azaconazole, bitertanol (biloxazol), bromuconazole, climbazole, cyproconazole, difenoconazole, dimetconazole, diniconazole, diniconazole-M, epoxiconazole, etaconazole, fenbuconazole, fluquinconazole, flusilazole, flutriafol, hexaconazole, imibenconazole, ipconazole, ipfentrifluconazole, metconazole, myclobutanil, penconazole, propiconazole, prothioconazole, simeconazole, tebuconazole, tetraconazole, triadimefon, triadimenol, triazoxide, triticonazole, mefentrifluconazole, 2-[[(1R,5S)-5-[(4-fluorophenyl)methyl]-1-hydroxy-2,2-dimethyl-cyclopentyl]methyl]-4H-1,2,4-triazole-3-thione, 2-[[3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl]-4H-1,2,4-triazole-3-thione, ametoctradin (imidium), iprovalicarb, valifenalate, 2-benzyl-4-chlorophenol (Chlorophene), allyl alcohol, azafenidin, benzalkonium chloride, chloropicrin, cresol, daracide, dichlorophen (dichlorophene), difenzoquat, dipyrithione, N-(2-p-chlorobenzoylethyl)-hexaminium chloride, NNF-0721, octhilinone, oxasulfuron, propamidine and propionic acid.

The agrochemical may be in mesomeric forms, as well as stereoisomers or enantiomers and, where applicable, various polymorphic modifications.

More preferably, suitable herbicides include pinoxaden, bicyclopyrone, mesotrione, fomesafen, tralkoxydim, napropamide, amitraz, propanil, pyrimethanil, dicloran, tecnazene, toclofos methyl, flamprop M, 2,4-D, MCPA, mecoprop, clodinafop-propargyl, cyhalofop-butyl, diclofop methyl, haloxyfop, quizalofop-P, indol-3-ylacetic acid, 1-naphthylacetic acid, isoxaben, tebutam, chlorthal dimethyl, benomyl, benfuresate, dicamba, dichlobenil, benazolin, triazoxide, fluazuron, teflubenzuron, phenmedipham, acetochlor, alachlor, metolachlor, pretilachlor, thenylchlor, alloxydim, butroxydim, clethodim, cyclodim, sethoxydim, tepraloxydim, pendimethalin, dinoterb, bifenox, oxyfluorfen, acifluorfen, fluazifop, S-metolachlor, glyphosate, glufosinate, paraquat, diquat, fluoroglycofen-ethyl, bromoxynil, ioxynil, imazamethabenz-methyl, imazapyr, imazaquin, imazethapyr, imazapic, imazamox, flumioxazin, flumiclorac-pentyl, picloram, amodosulfuron, chlorsulfuron, nicosulfuron, rimsulfuron, triasulfuron, triallate, pebulate, prosulfocarb, molinate, atrazine, simazine, cyanazine, ametryn, prometryn, terbuthylazine, terbutryn, sulcotrione, isoproturon, linuron, fenuron, chlorotoluron, metoxuron, iodosulfuron, mesosulfuron, diflufenican, flufenacet, fluroxypyr, aminopyralid, pyroxsulam, XDE-848 Rinskor and halauxifen-methyl.

Suitable fungicides include isopyrazam, mandipropamid, azoxystrobin, trifloxystrobin, kresoxim methyl, mefenoxam, famoxadone, metominostrobin, picoxystrobin, cyprodanil, carbendazim, thiabendazole, dimethomorph, vinclozolin, iprodione, dithiocarbamate, imazalil, prochloraz, fluquinconazole, epoxiconazole, flutriafol, azaconazole, bitertanol, bromuconazole, cyproconazole, difenoconazole, hexaconazole, paclobutrazole, propiconazole, tebuconazole, triadimefon, trtiticonazole, fenpropimorph, tridemorph, fenpropidin, mancozeb, metiram, chlorothalonil, thiram, ziram, captafol, captan, folpet, fluazinam, flutolanil, carboxin, metalaxyl, bupirimate, ethirimol, dimoxystrobin, fluoxastrobin, orysastrobin, metominostrobin, prothioconazole, adepidyn, bixafen, fluxapyroxad, prothioconazole, pyraclostrobin, revysol, solatenol and xemium.

Suitable insecticides include thiamethoxam, imidacloprid, acetamiprid, clothianidin, dinotefuran, nitenpyram, fipronil, abamectin, emamectin, tefluthrin, emamectin benzoate, bendiocarb, carbaryl, fenoxycarb, isoprocarb, pirimicarb, propoxur, xylylcarb, asulam, chlorpropham, endosulfan, heptachlor, tebufenozide, bensultap, diethofencarb, pirimiphos methyl, aldicarb, methomyl, cyprmethrin, bioallethrin, deltamethrin, lambda cyhalothrin, cyhalothrin, cyfluthrin, fenvalerate, imiprothrin, permethrin, halfenprox, oxamyl, flupyradifurone, sedaxane, inscalis, rynaxypyr, cyantraniliprole, sulfoxaflor and spinetoram.

Suitable plant growth regulators include paclobutrazole, trinexapac-ethyl and 1 methylcyclopropene.

Suitable safeners include benoxacor, cloquintocet-mexyl, cyometrinil, dichlormid, fenchlorazole-ethyl, fenclorim, flurazole, fluxofenim, mefenpyr-diethyl, MG-191, naphthalic anhydride and oxabetrinil.

Suitably, the agrochemical is selected from bicyclopyrone, mesotrione, pinoxaden, fomesafen, tralkoxydim, napropamide, amitraz, propanil, pyrimethanil, dicloran, tecnazene, toclofos methyl, flamprop M, 2,4-D, MCPA, mecoprop, clodinafop-propargyl, cyhalofop-butyl, diclofop methyl, haloxyfop, quizalofop-P, indol-3-ylacetic acid, 1-naphthylacetic acid, isoxaben, tebutam, chlorthal dimethyl, benomyl, benfuresate, dicamba, dichlobenil, benazolin, triazoxide, fluazuron, teflubenzuron, phenmedipham, acetochlor, alachlor, metolachlor, pretilachlor, thenylchlor, alloxydim, butroxydim, clethodim, cyclodim, sethoxydim, tepraloxydim, pendimethalin, dinoterb, bifenox, oxyfluorfen, acifluorfen, fluoroglycofen-ethyl, bromoxynil, ioxynil, imazamethabenz-methyl, imazapyr, imazaquin, imazethapyr, imazapic, imazamox, flumioxazin, flumiclorac-pentyl, picloram, amodosulfuron, chlorsulfuron, nicosulfuron, rimsulfuron, triasulfuron, triallate, pebulate, prosulfocarb, molinate, atrazine, simazine, cyanazine, ametryn, prometryn, terbuthylazine, terbutryn, sulcotrione, isoproturon, linuron, fenuron, chlorotoluron, metoxuron, isopyrazam, mandipropamid, azoxystrobin, trifloxystrobin, kresoxim methyl, famoxadone, metominostrobin and picoxystrobin, cyprodanil, carbendazim, thiabendazole, dimethomorph, vinclozolin, iprodione, dithiocarbamate, imazalil, prochloraz, fluquinconazole, epoxiconazole, flutriafol, azaconazole, bitertanol, bromuconazole, cyproconazole, difenoconazole, hexaconazole, paclobutrazole, propiconazole, tebuconazole, triadimefon, trtiticonazole, fenpropimorph, tridemorph, fenpropidin, mancozeb, metiram, chlorothalonil, thiram, ziram, captafol, captan, folpet, fluazinam, flutolanil, carboxin, metalaxyl, bupirimate, ethirimol, dimoxystrobin, fluoxastrobin, orysastrobin, metominostrobin, prothioconazole, thiamethoxam, imidacloprid, acetamiprid, clothianidin, dinotefuran, nitenpyram, fipronil, abamectin, emamectin, bendiocarb, carbaryl, fenoxycarb, isoprocarb, pirimicarb, propoxur, xylylcarb, asulam, chlorpropham, endosulfan, heptachlor, tebufenozide, bensultap, diethofencarb, pirimiphos methyl, aldicarb, methomyl, cyprmethrin, bioallethrin, deltamethrin, lambda cyhalothrin, cyhalothrin, cyfluthrin, fenvalerate, imiprothrin, permethrin, halfenprox, paclobutrazole, 1-methylcyclopropene, benoxacor, cloquintocet-mexyl, cyometrinil, dichlormid, fenchlorazole-ethyl, fenclorim, flurazole, fluxofenim, mefenpyr-diethyl, MG-191, naphthalic anhydride and oxabetrinil.

Preferably the one or more agrochemical is/are present in an amount of from 5 to 50% by weight, such as from 9 to 45% by weight, from 15 to 40% by weight, from 20 to 39% by weight, from 24 to 38% by weight, or even from 30 to 37% by weight. The one or more agrochemical is/are in the form of a solid, such as a solid particulate. The smaller the agrochemical particles, the higher ratio of trapped particles in oil.

Advantageously, the agrochemicals possess a high level of hydrophobicity, such as a Log K_{ow} of greater than 2, as a lower aqueous solubility increases the stability of the structure.

The agrochemical may have a melting point higher or lower than 54 °C. An example of an agrochemical having a melting point above 54 °C is bensulfuron-methyl. An example of an agrochemical having a melting point equal or lower than 54 °C is pretilachlor.

It is particularly preferred to have at least one agrochemical with a melting point above 54 °C and at least one agrochemical having a melting point equal or lower than 54 °C, such as a combination of pretilachlor and bensulfuron-methyl,

Furthermore, bensulfuron is typically known to be unstable in water and in combination with pretilachlor. The present formulation has been found to stabilise bensulfuron-methyl in the presence of Pretilachlor.

The structuring agent (iii) advantageously comprises an alkyl (meth)acrylate-based polymer, styrene-based polymer and/or silica, preferably an alkyl (meth)acrylate-based polymer.

Advantageously the alkyl (meth)acrylate-based polymer is obtainable by co-polymerising a monomer mixture comprising at least one alkyl (meth)acrylate and at least one of the following monomers: a bicyclic (meth)acrylate ester different from the alkyl (meth)acryiate, and an aromatic vinyl monomer.

Preferably wherein alkyl (meth)acrylate-based polymer comprises:
20 to 70 wt.%, preferably 25 to 60 wt.% and more preferably 30 to 55 wt.% bicyclic (meth)acrylate ester, and 30 to 80 wt.%, preferably 40 to 75 wt.%, and more preferably 45 to 70 wt.% alkyl (meth)acrylate, up to a total of 100 wt.%, wherein the weight percentages of the monomer are based on the total weight of ail the monomers. Such a polymer can be obtained commercially under the trade name *Agrilon ODS®*.

Alternatively or additionally, the styrene-based polymer is a Styrene-Ethylene/Butylene-Styrene Polymer (SEBS). Such a polymer can be obtained commercially under the trade name *Kraton G*®.

The silica may be hydrophilic or hydrophobic, preferably hydrophobic fumed silica, such as Aerosil R974®.

Preferably the oil (ii) is present in an amount of from 10 to 95% by weight, such as from 20 to 60% by weight.

Advantageously the oil is selected from:

1) one or more of saturated or unsaturated fatty acid is selected from the group consisting of lauric acid, oleic acid, linoleic acid, linolenic acid and capric acid. The saturated or unsaturated fatty acid preferably comprises a chain of at least 8 carbon atoms;
2) Vegetable oil and/or a mineral oil. Examples of vegetable oils include, for example, olive oil, kapok oil, castor oil, papaya oil, camellia oil, coconut oil, sesame oil, corn oil, rice bran oil, peanut oil, rapeseed oil, cottonseed oil, soybean oil, linseed oil, sunflower and safflower oil and fatty acids originated therefrom and alkyl esters of the fatty acids. Rape seed oil methyl ester (MRSO), and methyl Oleate are particularly preferred. Mineral oils include, for example, paraffin such as liquid paraffin and paraffin petroleum;
3) 1,2-Cyclohexanedicarboxylic acid, diisononyl ester, CAS Number: 166412-78-8 (Commercially available as Agnique AE829); and/or
4) Triglycerides comprising a chain of at least 8 carbon atoms.

The compositions as described herein may further comprise one or more surfactants(iv).

Preferably the one or more surfactants are selected from alkyl sulfonates, alkylbenzene sulfonate salts, alkylnaphthalenesulfonate salts, lignin sulfonates, polyarylphenols polyoxyethylene glycol alkyl ethers, polyarylphenyl ether phosphates and sulphates, polyoxyethylene lauryl ethers, polyoxyethylene alkyl ethers, polyoxyethylene alkylaryl ethers, polyoxyetylene fatty acid esters, polyoxypropylene fatty acid esters, polyoxyethylene sorbitan fatty acid esters; polyoxyethylene styryl phenyl ethers, polycarboxylates; dialkyl-sulfosuccinates, alkyl diglycol ether sulfates, polyoxyethylene alkylaryl ether sulfates, phosphoric acid esters, polyoxyethylene hydrogenated castor oils, benzoates, fatty acid polyglycerides, glycerine fatty acid esters, sorbitan monooleates, polyoxyethylene sorbitan

monolaurates, fatty acid alcohol polyglycol ethers, salts of alkyl sulfates, soaps, dialkyl esters of sulfosuccinate salts, alkyl polyglycoside, quaternary amines, block copolymers of ethylene oxide and propylene oxide, salts of mono and dialkyl hosphate esters, alkylene glycol alkyl ethers, and in particular polyoxyethylene (50) sorbitol hexaoleate (Commercially available as Atlas G 1096), and/or alkylbenzene sulfonate Calcium salts (Commercially available as Ninate 100L which is a pure product without solvent, Rhodacal 60-BE-C).

In suspo-emulsions the particles are separated outside of oil drops which requires aqueous dispersant to stabilize. In contrast, the OPC of the present invention eliminates the need for an aqueous dispersant due to the particle being “encapsulated” in oil drops. Thus, advantageously, the compositions contain no or substantially no aqueous dispersants. By ‘substantially no’ we mean less than 0.5% by weight.

There is also provided a composition comprising water and a composition as described herein, wherein the composition has a viscosity of 1 to 2000 cps, such as from 10 to 1500 cps, or even from 100 to 1000 cps.

There is also provided a method of preparing a composition as defined herein.

There is provided the use of a composition as defined herein as a pesticide, preferably a herbicide.

It has surprisingly been found that the compositions as defined herein can be used in any type of applicator depending on dilution level.

The application of the compositions may be by unmanned aerial vehicle (UAV) or sprayer.

The present invention showed excellent dilution stability, especially for low application volumes (e.g., 15 or 30 L), which are suitable for UAV applications. UAV application requires low application volume 15~45 Litres /ha or high dilution ratios to water, for example 5 or 10% dilution into water before application. UAV application commonly also faces spray drift issues due to fine drops and a lower application volume reduces drift.

Unless otherwise stated, percentages are given as percentages by total weight and all embodiments and preferred features may be combined in any combination.

The invention is described by the following non-limiting Examples.

Examples

Compositions 1 and 2 according to the present invention were prepared with components as set out in Table 1. All values are percentage by weight.

Table 1

Composition	**1**	**2**	**3**
Pretilachlor	30	30	30
Bensulfuron-methyl	3	3	3
Stepfac 8181 PT3K	2	-	-
Agrimer AL-22	-	-	0.9
Atlas G-1096	8	8	-
Atlas G-1086	-	-	7.5
Atlox 4914	-	-	5
Tween 22	-	-	2.5
Rhodacal 60-BE	6	6	-
Agrilan ODS	3	3	
Kraton A1536	-	-	0.9
Aerosil R974	-	-	2
Soyabean oil	4.41	4.41	
Agnique ME181 U	43.59	45.59	
Oleic acid	-	-	48.2

Stepfac 8181 PT3K is a surfactant blend contains mainly Potassium salt of phosphate ester

Atlas G-1096 is a PEG-50 Sorbitan Hexaoleate emulsifier

Atlas G-1086 is a PEG-40 Sorbitan Hexaoleate emulsifier

Rhodacal 60-BE is a CaDDBS emulsifier

Agrilan ODS is an acrylate styrene copolymer

Agnique ME181 U is methyl oleate

Agrimer AL-22 is 2-Pyrrolidinone, 1-ethenylhexadecyl-, homopolymer, CAS 63231-81-2

Atlox 4914 is a polyisobutylene succinic anhydride-polyethylene glycol-based emulsifier .

Tween 22 is a Polyoxyethylene (8) sorbitan monolaurate

Kraton A1536 is a Styrene-Ethylene/Butylene-Styrene Polymer (SEBS), 66070-58-4

Aerosil R974 is a hydrophobic fumed silica

OPC Formation

Figure 1 shows Composition 3 at 5% dilution under polarised light and under a microscope. The OPC particle size distribution D_{50} = 45.3 microns and shows the excellent dilution stability despite a large OPC complex being formed. This proves that the OPC structure improves dilution stability.

Dilution Stability

A 240 mL dispersion of the prescribed concentration in Standard Water is prepared and aliquots are placed in a graduated 250 mL emulsion tube, which are inverted 30 times (taking 2 seconds per inversion) at a constant temperature. The dispersion characteristics are observed after 30 minutes.

The results in millimetres (mL) of sediment or creaming are set out in Table 2.

Table 2

Dilution stability	**1**	**2**	**3**
Dilution stability at 1%			
30 mins, Sediments	-	0	-
30 mins, Cream or oil	-	0	-
Dilution stability at 2%			
30 mins, Sediments	-	-	0.01
30 mins, Cream or oil	-	-	0
Dilution stability at 10%			
30 mins, Sediments	0	0	-
30 mins, Cream or oil	0	0	-
Dilution stability at 10%			
30 mins, Sediments	0	0.5	-
30 mins, Cream or oil	0	0	-

Chemical Stability

The quantity of active ingredient loss after storage at 54 °C for two weeks was measured for compositions 1 and 2 by HPLC. The results are set out in Table 3.

Table 3

Chemical stability	**1**	**2**
Pretilachlor loss % w/w	0	0.27
Bensulfuron-methyl loss % w/w	4	3.8

It can be seen that the compositions according to the invention demonstrate, by virtue of their novel physical structure, remarkable dilution and chemical stability.

The invention is defined by the claims.

Claims

1. A composition comprising:

i) one or more agrochemicals;

ii) an oil, and

iii) a structuring agent,

wherein the oil:agrochemical ratio is greater than 20.

2. A composition according to claim 1 wherein components (i), (ii) and (iii) are present in amounts such that the composition forms an Oil-Particle-Complex (OPC) upon dilution in water.

3. A composition according to claim 2, wherein the OPC complex has a mean diameter of less than 30 microns.

4. A composition according to claims 1 or 2, wherein the structuring agent comprises a alkyl (meth)acrylate-based polymer, styrene-based polymer and/or silica.

5. A composition according to any of the preceding claims, wherein the one or more agrochemical is/are present in an amount of from 5 to 50% by weight.

6. A composition according to any of the preceding claims, wherein the one or more agrochemical is in the form of a solid particulate.

7. A composition according to any of the preceding claims wherein the oil is present in an amount of from 20 to 60% by weight.

8. A composition according to any of the preceding claims, wherein the oil is selected from one or more of vegetable or mineral oils.

9. A composition according to any of the preceding claim comprising (iv) one or more surfactants.

10. A composition according to claim 8, wherein the surfactant is selected from one or more surfactants derived from sorbitol.

11. A composition according to any of the preceding claims that contains no or substantially no aqueous dispersants.

12. A composition comprising water and a composition according to any of claims 1 to 10, wherein the composition has a viscosity of 1 to 2000 cps.

13. A method of preparing a composition according to any of the preceding claims.

14. Use of a composition according to any of claims 1 to 12 as a pesticide, preferably a herbicide.

15. Use according to claim 14, wherein the composition can be used in any type of applicator depending on dilution level.

16. Use according to claim 14 or 15, where the application is by unmanned aerial vehicle or sprayer.