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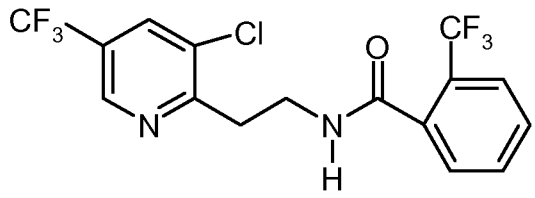
(54) **Title**: SEED DRESSING FOR CONTROLLING PHYTOPATHOGENIC FUNGI

(57) **Abstract**: The present invention relates to the use of Fluopyram for seed treatment, for corresponding seed dressings comprising Fluopyram, to a process for controlling phytopathogenic fungi by treating the seed with Fluopyram, and also to seed which has been treated with Fluopyram.

Seed dressing for controlling phytopathogenic fungi

The present invention relates to the use of Fluopyram for seed treatment, for corresponding fungicides and insecticides seed dressings comprising Fluopyram, to a process for controlling phytopathogenic fungi by treating the seed with Fluopyram, and also to seed which has been treated with Fluopyram.

Fluopyram is defined to be the compound of the formula (I)



(I)

as well as the N-oxides of the compound thereof.

Fluopyram is a broad spectrum fungicide with penetrant and translaminar properties for foliar, drip, drench and seed treatment applications on a wide range of different crops against many economically important plant diseases. It is very effective in preventative applications against powdery mildew species, grey mould and white mould species. It has an efficacy against many other plant diseases. Fluopyram has shown activity in spore germination, germ tube elongation and mycelium growth tests. At the biochemical level, fluopyram inhibits mitochondrial respiration by blocking the electron transport in the respiratory chain of Succinate Dehydrogenase (complex II - SDH inhibitor).

Fluopyram and its manufacturing process starting from known and commercially available compounds is described in EP-A- 1 389 614 and WO 2004/016088.

The use of these compounds for treating seed for protection against attack by seed- borne phytopathogenic fungi has hitherto not been disclosed. In particular, the use of these compounds as seed dressing for protection against attack by Pyrenophora species is new.

It has now been found that Fluopyram is highly suitable for treating (dressing) seed against attack by phytopathogenic fungi.

Surprisingly, by using Fluopyram according to the invention as seed dressing, some phytopathogenic fungi can be controlled considerably more effectively than by spray treatment in the case of foliar application.

The active compounds according to the invention have very good fungicidal properties and, in seed treatment, are particularly suitable for controlling phytopathogenic fungi, such as Ascomycetes and

Deuteromycetes. In seed treatment, the active compounds according to the invention are particularly suitable for controlling seed borne Pyrenophora species.

Some pathogens causing fungal diseases which come under the generic names listed above may be mentioned by way of example, but not by way of limitation:

Seed-borne Pyrenophora species, such as, for example, *P. avenae, P. graminea, P. teres, P. semeniperda, P. tritici-repentis*

The fact that the active compounds which can be used are well tolerated by plants at the concentrations required for controlling plant diseases permits a treatment of the seed. Accordingly, the active compounds according to the invention can be used as seed dressings.

A large part of the damage to crop plants which is caused by phytopathogenic fungi occurs as early as when the seed is attacked during storage and after the seed is introduced into the soil, during and immediately after germination of the plants. This phase is particularly critical since the roots and shoots of the growing plant are particularly sensitive and even minor damage can lead to the death of the whole plant. Protecting the seed and the germinating plant by the use of suitable compositions is therefore of particularly great interest.

The control of phytopathogenic fungi which damage plants post-emergence is carried out primarily by treating the soil and the above-ground parts of plants with crop protection agents. Owing to the concerns regarding a possible impact of crop protection agents on the environment and the health of man and animals, there are efforts to reduce the amount of active compounds applied.

The control of phytopathogenic fungi by treating the seeds of plants has been known for a long time and is subject-matter of continuous improvements. However, the treatment of seed frequently entails a series of problems which cannot always be solved in a satisfactory manner. Thus, it is desirable to develop methods for protecting the seed and the germinating plant which dispense with the additional application of crop protection agents after sowing or after the emergence of the plants or where additional applications are at least reduced. It is furthermore desirable to optimize the amount of active compound employed in such a way as to provide maximum protection for the seed and the germinating plant from attack by phytopathogenic fungi, but without damaging the plant itself by the active compound employed. In particular, methods for the treatment of seed should also take into consideration the intrinsic fungicidal properties of transgenic plants in order to achieve optimum protection of the seed and the germinating plant with a minimum of crop protection agents being employed.

The present invention therefore in particular also relates to a method for the protection of seed and germinating plants from attack by phytopathogenic fungi, by treating the seed with a composition according to the invention.

The invention likewise relates to the use of the compositions according to the invention for the treatment of seed for protecting the seed and the germinating plant from phytopathogenic fungi.

Furthermore, the invention relates to seed which has been treated with a composition according to the invention so as to afford protection from phytopathogenic fungi.

One of the advantages of the present invention is that the particular systemic properties of the compositions according to the invention mean that treatment of the seed with these compositions not only protects the seed itself, but also the resulting seedlings after germination, from phytopathogenic fungi. In this manner, the immediate protection of the crop at the time of sowing or shortly thereafter can be dispensed with.

Furthermore, it must be considered as advantageous that the mixtures according to the invention can also be employed in particular in transgenic seed.

The compositions according to the invention are suitable for protecting seed of any plant variety which is employed in agriculture, in the greenhouse, in forests or in horticulture. In particular, this takes the form of seed of cereals (such as wheat, barley, rye, millet and oats), maize, cotton, soya beans, rice, potatoes, sunflowers, beans, coffee, beet (for example sugar beet and fodder beet), peanuts, vegetables (such as tomatoes, cucumbers, onions and lettuce), lawns and ornamental plants. The treatment of seed of cereals (such as wheat, barley, rye and oats) is of particular importance.

In the context of the present invention, the composition according to the invention is applied to the seed either alone or in mixtures with other compounds (fungicides and/or insecticides and/or biological control agents) in a suitable formulation. The composition according to the invention applied to the seed may contain further components as fertilisers, growth promoters and/or inert carriers in a suitable formulation Preferably, the seed is treated in a state which is stable enough to avoid damage during treatment. In general, the seed may be treated at any point in time between harvest and sowing. The seed usually used has been separated from the plant and freed from cobs, shells, stalks, coats, hairs or the flesh of the fruits. Thus, for example, it is possible to use seed which has been harvested, cleaned and dried to a moisture content of below 15% by weight. Alternatively, it is also possible to use seed which, after drying, has, for example, been treated with water and then dried again.

The following fungicides can be used in combination with the compound according to formula (I) fluopyram:

(1) Inhibitors of the ergosterol biosynthesis, for example (1.1) aldimorph (1704-28-5), (1.2) azaconazole (60207-31-0), (1.3) bitertanol (55179-31-2), (1.4) bromuconazole (116255-48-2), (1.5) cyproconazole (113096-99-4), (1.6) diclobutrazole (75736-33-3), (1.7) difenoconazole (119446-68-3), (1.8) diniconazole (83657-24-3), (1.9) diniconazole-M (83657-18-5), (1.10) dodemorph (1593-77-7), (1.11)

dodemorph acetate (31717-87-0), (1.12) epoxiconazole (106325-08-0), (1.13) etaconazole (60207-93-4), (1.14) fenarimol (60168-88-9), (1.15) fenbuconazole (114369-43-6), (1.16) fenhexamid (126833-17-8), (1.17) fenpropidin (67306-00-7), (1.18) fenpropimorph (67306-03-0), (1.19) fluquinconazole (136426-54-5), (1.20) flurprimidol (56425-91-3), (1.21) flusilazole (85509-19-9), (1.22) flutriafol (76674-21-0), (1.23) furconazole (112839-33-5), (1.24) furconazole-cis (112839-32-4), (1.25) hexaconazole (79983-71-4), (1.26) imazalil (60534-80-7), (1.27) imazalil sulfate (58594-72-2), (1.28) imibenconazole (86598-92-7), (1.29) ipconazole (125225-28-7), (1.30) metconazole (125116-23-6), (1.31) myclobutanil (88671-89-0), (1.32) naftifine (65472-88-0), (1.33) nuarimol (63284-71-9), (1.34) oxpoconazole (174212-12-5), (1.35) paclobutrazol (76738-62-0), (1.36) pefurazoate (101903-30-4), (1.37) penconazole (66246-88-6), (1.38) piperalin (3478-94-2), (1.39) prochloraz (67747-09-5), (1.40) propiconazole (60207-90-1), (1.41) prothioconazole (178928-70-6), (1.42) pyributicarb (88678-67-5), (1.43) pyrifenox (88283-41-4), (1.44) quinconazole (103970-75-8), (1.45) simeconazole (149508-90-7), (1.46) spiroxamine (118134-30-8), (1.47) tebuconazole (107534-96-3), (1.48) terbinafine (91161-71-6), (1.49) tetraconazole (112281-77-3), (1.50) triadimefon (43121-43-3), (1.51) triadimenol (89482-17-7), (1.52) tridemorph (81412-43-3), (1.53) triflumizole (68694-11-1), (1.54) triforine (26644-46-2), (1.55) triticonazole (131983-72-7), (1.56) uniconazole (83657-22-1), (1.57) uniconazole-p (83657-17-4), (1.58) viniconazole (77174-66-4), (1.59) voriconazole (137234-62-9), (1.60) 1-(4-chlorophenyl)-2-(1H-1,2,4-triazol-1-yl)cycloheptanol (129586-32-9), (1.61) methyl 1-(2,2-dimethyl-2,3-dihydro-1H-inden-1-yl)-1H-imidazole-5-carboxylate (110323-95-0), (1.62) N'-{5-(difluoromethyl)-2-methyl-4-[3-(trimethylsilyl)propoxy]phenyl}-N-ethyl-N-methylimidoformamide, (1.63) N-ethyl-N-methyl-N'-{2-methyl-5-(trifluoromethyl)-4-[3-(trimethylsilyl)propoxy]phenyl}imidoformamide and (1.64) O-[1-(4-methoxyphenoxy)-3,3-dimethylbutan-2-yl] 1H-imidazole-1-carbothioate (111226-71-2).

(2) inhibitors of the respiratory chain at complex I or II, for example (2.1) bixafen (581809-46-3), (2.2) boscalid (188425-85-6), (2.3) carboxin (5234-68-4), (2.4) diflumetorim (130339-07-0), (2.5) fenfuram (24691-80-3), (2.7) flutolanil (66332-96-5), (2.8) fluxapyroxad (907204-31-3), (2.9) furametpyr (123572-88-3), (2.10) furmecyclox (60568-05-0), (2.11) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate 1RS,4SR,9SR) (881685-58-1), (2.12) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.13) isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.14) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.15) isopyrazam (syn epimeric racemate 1RS,4SR,9RS), (2.16) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.17) isopyrazam (syn-epimeric enantiomer 1S,4R,9S), (2.18) mepronil (55814-41-0), (2.19) oxycarboxin (5259-88-1), (2.20) penflufen (494793-67-8), (2.21) penthiopyrad (183675-82-3), (2.22) sedaxane (874967-67-6), (2.23) thifluzamide (130000-40-7), (2.24) 1-methyl-N-[2-(1,1,2,2-tetrafluoroethoxy)phenyl]-3-(trifluoromethyl)-1H-pyrazole-4-carboxamide, (2.25) 3-(difluoromethyl)-1-methyl-N-[2-(1,1,2,2-tetrafluoroethoxy)phenyl]-1H-pyrazole-4-carboxamide, (2.26) 3-(difluoromethyl)-N-[4-fluoro-2-(1,1,2,3,3,3-hexafluoropropoxy)phenyl]-1-methyl-1H-pyrazole-4-carboxamide, (2.27) N-[1-(2,4-dichlorophenyl)-1-methoxypropan-2-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide

(1092400-95-7) (WO 2008148570), (2.28) 5,8-difluoro-N-[2-(2-fluoro-4-{[4-(trifluoromethyl)pyridin-2-yl]oxy}phenyl)ethyl]quinazolin-4-amine (1210070-84-0) (WO2010025451), (2.29) N-[9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.30) N-[(1S,4R)-9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide and (2.31) N-[(1R,4S)-9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, N-[9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide.

(3) inhibitors of the respiratory chain at complex III, for example (3.1) ametoctradin (865318-97-4), (3.2) amisulbrom (348635-87-0), (3.3) azoxystrobin (131860-33-8), (3.4) cyazofamid (120116-88-3), (3.5) coumethoxystrobin (850881-30-0), (3.6) coumoxystrobin (850881-70-8), (3.7) dimoxystrobin (141600-52-4), (3.8) enestroburin (238410-11-2) (WO 2004/058723), (3.9) famoxadone (131807-57-3) (WO 2004/058723), (3.10) fenamidone (161326-34-7) (WO 2004/058723), (3.11) fenoxystrobin (918162-02-4), (3.12) fluoxastrobin (361377-29-9) (WO 2004/058723), (3.13) kresoxim-methyl (143390-89-0) (WO 2004/058723), (3.14) metominostrobin (133408-50-1) (WO 2004/058723), (3.15) orysastrobin (189892-69-1) (WO 2004/058723), (3.16) picoxystrobin (117428-22-5) (WO 2004/058723), (3.17) pyraclostrobin (175013-18-0) (WO 2004/058723), (3.18) pyrametostrobin (915410-70-7) (WO 2004/058723), (3.19) pyraoxystrobin (862588-11-2) (WO 2004/058723), (3.20) pyribencarb (799247-52-2) (WO 2004/058723), (3.21) triclopyricarb (902760-40-1), (3.22) trifloxystrobin (141517-21-7) (WO 2004/058723), (3.23) (2E)-2-(2-{[6-(3-chloro-2-methylphenoxy)-5-fluoropyrimidin-4-yl]oxy}phenyl)-2-(methoxyimino)-N-methylethanamide (WO 2004/058723), (3.24) (2E)-2-(methoxyimino)-N-methyl-2-(2-{[({(1E)-1-[3-(trifluoromethyl)phenyl]ethylidene}amino)oxy]-methyl}phenyl)ethanamide (WO 2004/058723), (3.25) (2E)-2-(methoxyimino)-N-methyl-2-{2-[(E)-({1-[3-(trifluoromethyl)phenyl]ethoxy}imino)methyl]phenyl}ethanamide (158169-73-4), (3.26) (2E)-2-{2-[({[(1E)-1-(3-{[(E)-1-fluoro-2-phenylethenyl]oxy}phenyl)ethylidene]amino}oxy)methyl]phenyl}-2-(methoxyimino)-N-methylethanamide (326896-28-0), (3.27) (2E)-2-{2-[({[(2E,3E)-4-(2,6-dichlorophenyl)but-3-en-2-ylidene]amino}oxy)methyl]phenyl}-2-(methoxyimino)-N-methyl-ethanamide, (3.28) 2-chloro-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)pyridine-3-carboxamide (119899-14-8), (3.29) 5-methoxy-2-methyl-4-(2-{[({(1E)-1-[3-(trifluoromethyl)-phenyl]ethylidene}amino)oxy]methyl}phenyl)-2,4-dihydro-3H-1,2,4-triazol-3-one, (3.30) methyl (2E)-2-{2-[({cyclopropyl[(4-methoxyphenyl)imino]methyl}sulfanyl)methyl]phenyl}-3-methoxyprop-2-enoate (149601-03-6), (3.31) N-(3-ethyl-3,5,5-trimethylcyclohexyl)-3-(formylamino)-2-hydroxybenzamide (226551-21-9), (3.32) 2-{2-[(2,5-dimethylphenoxy)methyl]phenyl}-2-methoxy-N-methylacetamide (173662-97-0) and (3.33) (2R)-2-{2-[(2,5-dimethylphenoxy)methyl]phenyl}-2-methoxy-N-methylacetamide (394657-24-0).

(4) Inhibitors of the mitosis and cell division, for example (4.1) benomyl (17804-35-2), (4.2) carbendazim (10605-21-7), (4.3) chlorfenazole (3574-96-7), (4.4) diethofencarb (87130-20-9), (4.5)

ethaboxam (162650-77-3), (4.6) fluopicolide (239110-15-7), (4.7) fuberidazole (3878-19-1), (4.8) pencycuron (66063-05-6), (4.9) thiabendazole (148-79-8), (4.10) thiophanate-methyl (23564-05-8), (4.11) thiophanate (23564-06-9), (4.12) zoxamide (156052-68-5), (4.13) 5-chloro-7-(4-methylpiperidin-1-yl)-6-(2,4,6-trifluorophenyl)[1,2,4]triazolo[1,5-a]pyrimidine (214706-53-3) and (4.14) 3-chloro-5-(6-chloropyridin-3-yl)-6-methyl-4-(2,4,6-trifluorophenyl)pyridazine (1002756-87-7).

(5) Compounds capable to have a multisite action, like for example (5.1) bordeaux mixture (8011-63-0), (5.2) captafol (2425-06-1), (5.3) captan (133-06-2) (WO 02/12172), (5.4) chlorothalonil (1897-45-6), (5.5) copper hydroxide (20427-59-2), (5.6) copper naphthenate (1338-02-9), (5.7) copper oxide (1317-39-1), (5.8) copper oxychloride (1332-40-7), (5.9) copper(2+) sulfate (7758-98-7), (5.10) dichlofluanid (1085-98-9), (5.11) dithianon (3347-22-6), (5.12) dodine (2439-10-3), (5.13) dodine free base, (5.14) ferbam (14484-64-1), (5.15) fluorofolpet (719-96-0), (5.16) folpet (133-07-3), (5.17) guazatine (108173-90-6), (5.18) guazatine acetate, (5.19) iminoctadine (13516-27-3), (5.20) iminoctadine albesilate (169202-06-6), (5.21) iminoctadine triacetate (57520-17-9), (5.22) mancopper (53988-93-5), (5.23) mancozeb (8018-01-7), (5.24) maneb (12427-38-2), (5.25) metiram (9006-42-2), (5.26) metiram zinc (9006-42-2), (5.27) oxine-copper (10380-28-6), (5.28) propamidine (104-32-5), (5.29) propineb (12071-83-9), (5.30) sulphur and sulphur preparations including calcium polysulphide (7704-34-9), (5.31) thiram (137-26-8), (5.32) tolylfluanid (731-27-1), (5.33) zineb (12122-67-7) and (5.34) ziram (137-30-4).

(6) Compounds capable to induce a host defence, for example (6.1) acibenzolar-S-methyl (135158-54-2), (6.2) isotianil (224049-04-1), (6.3) probenazole (27605-76-1) and (6.4) tiadinil (223580-51-6).

(7) Inhibitors of the amino acid and/or protein biosynthesis, for example (7.1) andoprim (23951-85-1), (7.2) blasticidin-S (2079-00-7), (7.3) cyprodinil (121552-61-2), (7.4) kasugamycin (6980-18-3), (7.5) kasugamycin hydrochloride hydrate (19408-46-9), (7.6) mepanipyrim (110235-47-7), (7.7) pyrimethanil (53112-28-0) and (7.8) 3-(5-fluoro-3,3,4,4-tetramethyl-3,4-dihydroisoquinolin-1-yl)quinoline (861647-32-7) (WO2005070917).

(8) Inhibitors of the ATP production, for example (8.1) fentin acetate (900-95-8), (8.2) fentin chloride (639-58-7), (8.3) fentin hydroxide (76-87-9) and (8.4) silthiofam (175217-20-6).

(9) Inhibitors of the cell wall synthesis, for example (9.1) benthiavalicarb (177406-68-7), (9.2) dimethomorph (110488-70-5), (9.3) flumorph (211867-47-9), (9.4) iprovalicarb (140923-17-7), (9.5) mandipropamid (374726-62-2), (9.6) polyoxins (11113-80-7), (9.7) polyoxorim (22976-86-9), (9.8) validamycin A (37248-47-8) and (9.9) valifenalate (283159-94-4; 283159-90-0).

(10) Inhibitors of the lipid and membrane synthesis, for example (10.1) biphenyl (92-52-4), (10.2) chloroneb (2675-77-6), (10.3) dicloran (99-30-9), (10.4) edifenphos (17109-49-8), (10.5) etridiazole (2593-15-9), (10.6) iodocarb (55406-53-6), (10.7) iprobenfos (26087-47-8), (10.8) isoprothiolane

(50512-35-1), (10.9) propamocarb (25606-41-1), (10.10) propamocarb hydrochloride (25606-41-1), (10.11) prothiocarb (19622-08-3), (10.12) pyrazophos (13457-18-6), (10.13) quintozene (82-68-8), (10.14) tecnazene (117-18-0) and (10.15) tolclofos-methyl (57018-04-9).

(11) Inhibitors of the melanine biosynthesis, for example (11.1) carpropamid (104030-54-8), (11.2) diclocymet (139920-32-4), (11.3) fenoxanil (115852-48-7), (11.4) phthalide (27355-22-2), (11.5) pyroquilon (57369-32-1), (11.6) tricyclazole (41814-78-2) and (11.7) 2,2,2-trifluoroethyl {3-methyl-1-[(4-methylbenzoyl)amino]butan-2-yl}carbamate (851524-22-6) (WO2005042474).

(12) Inhibitors of the nucleic acid synthesis, for example (12.1) benalaxyl (71626-11-4), (12.2) benalaxyl-M (kiralaxyl) (98243-83-5), (12.3) bupirimate (41483-43-6), (12.4) clozylacon (67932-85-8), (12.5) dimethirimol (5221-53-4), (12.6) ethirimol (23947-60-6), (12.7) furalaxyl (57646-30-7), (12.8) hymexazol (10004-44-1), (12.9) metalaxyl (57837-19-1), (12.10) metalaxyl-M (mefenoxam) (70630-17-0), (12.11) ofurace (58810-48-3), (12.12) oxadixyl (77732-09-3) and (12.13) oxolinic acid (14698-29-4).

(13) Inhibitors of the signal transduction, for example (13.1) chlozolinate (84332-86-5), (13.2) fenpiclonil (74738-17-3), (13.3) fludioxonil (131341-86-1), (13.4) iprodione (36734-19-7), (13.5) procymidone (32809-16-8), (13.6) quinoxyfen (124495-18-7) and (13.7) vinclozolin (50471-44-8).

(14) Compounds capable to act as an uncoupler, for example (14.1) binapacryl (485-31-4), (14.2) dinocap (131-72-6), (14.3) ferimzone (89269-64-7), (14.4) fluazinam (79622-59-6) and (14.5) meptyldinocap (131-72-6).

(15) Further compounds, for example (15.1) benthiazole (21564-17-0), (15.2) bethoxazin (163269-30-5), (15.3) capsimycin (70694-08-5), (15.4) carvone (99-49-0), (15.5) chinomethionat (2439-01-2), (15.6) pyriofenone (chlazafenone) (688046-61-9), (15.7) cufraneb (11096-18-7), (15.8) cyflufenamid (180409-60-3), (15.9) cymoxanil (57966-95-7), (15.10) cyprosulfamide (221667-31-8), (15.11) dazomet (533-74-4), (15.12) debacarb (62732-91-6), (15.13) dichlorophen (97-23-4), (15.14) diclomezine (62865-36-5), (15.15) difenzoquat (49866-87-7), (15.16) difenzoquat methylsulphate (43222-48-6), (15.17) diphenylamine (122-39-4), (15.18) ecomate, (15.19) fenpyrazamine (473798-59-3), (15.20) flumetover (154025-04-4), (15.21) fluoroimide (41205-21-4), (15.22) flusulfamide (106917-52-6), (15.23) flutianil (304900-25-2), (15.24) fosetyl-aluminium (39148-24-8), (15.25) fosetyl-calcium, (15.26) fosetyl-sodium (39148-16-8), (15.27) hexachlorobenzene (118-74-1), (15.28) irumamycin (81604-73-1), (15.29) methasulfocarb (66952-49-6), (15.30) methyl isothiocyanate (556-61-6), (15.31) metrafenone (220899-03-6), (15.32) mildiomycin (67527-71-3), (15.33) natamycin (7681-93-8), (15.34) nickel dimethyldithiocarbamate (15521-65-0), (15.35) nitrothal-isopropyl (10552-74-6), (15.36) octhilinone (26530-20-1), (15.37) oxamocarb (917242-12-7), (15.38) oxyfenthiin (34407-87-9), (15.39) pentachlorophenol and salts (87-86-5), (15.40) phenothrin, (15.41) phosphorous acid and its salts (13598-36-2), (15.42) propamocarb-fosetylate, (15.43) propanosine-sodium (88498-02-6), (15.44) proquinazid (189278-12-4), (15.45) pyrimorph (868390-90-3), (15.45e) (2E)-3-(4-tert-butylphenyl)-3-

(2-chloropyridin-4-yl)-1-(morpholin-4-yl)prop-2-en-1-one (1231776-28-5), (15.45z) (2Z)-3-(4-tert-butylphenyl)-3-(2-chloropyridin-4-yl)-1-(morpholin-4-yl)prop-2-en-1-one (1231776-29-6), (15.46) pyrrolnitrine (1018-71-9) (EP-A 1 559 320), (15.47) tebufloquin (376645-78-2), (15.48) tecloftalam (76280-91-6), (15.49) tolnifanide (304911-98-6), (15.50) triazoxide (72459-58-6), (15.51) trichlamide (70193-21-4), (15.52) zarilamid (84527-51-5), (15.53) (3S,6S,7R,8R)-8-benzyl-3-[({3-[(isobutyryloxy)methoxy]-4-methoxypyridin-2-yl}carbonyl)amino]-6-methyl-4,9-dioxo-1,5-dioxonan-7-yl 2-methylpropanoate (517875-34-2) (WO2003035617), (15.54) 1-(4-{4-[(5R)-5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone (1003319-79-6) (WO 2008013622), (15.55) 1-(4-{4-[(5S)-5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone (1003319-80-9) (WO 2008013622), (15.56) 1-(4-{4-[5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone (1003318-67-9) (WO 2008013622), (15.57) 1-(4-methoxyphenoxy)-3,3-dimethylbutan-2-yl 1H-imidazole-1-carboxylate (111227-17-9), (15.58) 2,3,5,6-tetrachloro-4-(methylsulfonyl)pyridine (13108-52-6), (15.59) 2,3-dibutyl-6-chlorothieno[2,3-d]pyrimidin-4(3H)-one (221451-58-7), (15.60) 2,6-dimethyl-1H,5H-[1,4]dithiino[2,3-c:5,6-c']dipyrrole-1,3,5,7(2H,6H)-tetrone, (15.61) 2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]-1-(4-{4-[(5R)-5-phenyl-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)ethanone (1003316-53-7) (WO 2008013622), (15.62) 2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]-1-(4-{4-[(5S)-5-phenyl-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl}piperidin-1-yl)ethanone (1003316-54-8) (WO 2008013622), (15.63) 2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]-1-{4-[4-(5-phenyl-4,5-dihydro-1,2-oxazol-3-yl)-1,3-thiazol-2-yl]piperidin-1-yl}ethanone (1003316-51-5) (WO 2008013622), (15.64) 2-butoxy-6-iodo-3-propyl-4H-chromen-4-one, (15.65) 2-chloro-5-[2-chloro-1-(2,6-difluoro-4-methoxyphenyl)-4-methyl-1H-imidazol-5-yl]pyridine, (15.66) 2-phenylphenol and salts (90-43-7), (15.67) 3-(4,4,5-trifluoro-3,3-dimethyl-3,4-dihydroisoquinolin-1-yl)quinoline (861647-85-0) (WO2005070917), (15.68) 3,4,5-trichloropyridine-2,6-dicarbonitrile (17824-85-0), (15.69) 3-[5-(4-chlorophenyl)-2,3-dimethyl-1,2-oxazolidin-3-yl]pyridine, (15.70) 3-chloro-5-(4-chlorophenyl)-4-(2,6-difluorophenyl)-6-methylpyridazine, (15.71) 4-(4-chlorophenyl)-5-(2,6-difluorophenyl)-3,6-dimethylpyridazine, (15.72) 5-amino-1,3,4-thiadiazole-2-thiol, (15.73) 5-chloro-N'-phenyl-N'-(prop-2-yn-1-yl)thiophene-2-sulfonohydrazide (134-31-6), (15.74) 5-fluoro-2-[(4-fluorobenzyl)oxy]pyrimidin-4-amine (1174376-11-4) (WO2009094442), (15.75) 5-fluoro-2-[(4-methylbenzyl)oxy]pyrimidin-4-amine (1174376-25-0) (WO2009094442), (15.76) 5-methyl-6-octyl[1,2,4]triazolo[1,5-a]pyrimidin-7-amine, (15.77) ethyl (2Z)-3-amino-2-cyano-3-phenylprop-2-enoate, (15.78) N'-(4-{[3-(4-chlorobenzyl)-1,2,4-thiadiazol-5-yl]oxy}-2,5-dimethylphenyl)-N-ethyl-N-methylimidoformamide, (15.79) N-(4-chlorobenzyl)-3-[3-methoxy-4-(prop-2-yn-1-yloxy)phenyl]propanamide, (15.80) N-[(4-chlorophenyl)(cyano)methyl]-3-[3-methoxy-4-(prop-2-yn-1-yloxy)phenyl]propanamide, (15.81) N-[(5-bromo-3-chloropyridin-2-yl)methyl]-2,4-dichloropyridine-3-carboxamide, (15.82) N-[1-(5-bromo-3-chloropyridin-2-yl)ethyl]-2,4-dichloropyridine-3-carboxamide, (15.83) N-[1-(5-bromo-3-chloropyridin-2-yl)ethyl]-2-fluoro-4-

iodopyridine-3-carboxamide, (15.84) N-{(E)-[(cyclopropylmethoxy)imino][6-(difluoromethoxy)-2,3-difluorophenyl]methyl}-2-phenylacetamide (221201-92-9), (15.85) N-{(Z)-[(cyclopropylmethoxy)imino][6-(difluoromethoxy)-2,3-difluorophenyl]methyl}-2-phenylacetamide (221201-92-9), (15.86) N'-{4-[(3-tert-butyl-4-cyano-1,2-thiazol-5-yl)oxy]-2-chloro-5-methylphenyl}-N-ethyl-N-methylimidoformamide, (15.87) N-methyl-2-(1-{[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-N-(1,2,3,4-tetrahydronaphthalen-1-yl)-1,3-thiazole-4-carboxamide (922514-49-6) (WO 2007014290), (15.88) N-methyl-2-(1-{[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-N-[(1R)-1,2,3,4-tetrahydronaphthalen-1-yl]-1,3-thiazole-4-carboxamide (922514-07-6) (WO 2007014290), (15.89) N-methyl-2-(1-{[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-N-[(1S)-1,2,3,4-tetrahydronaphthalen-1-yl]-1,3-thiazole-4-carboxamide (922514-48-5) (WO 2007014290), (15.90) pentyl {6-[({[(1-methyl-1H-tetrazol-5-yl)(phenyl)methylidene]amino}oxy)methyl]pyridin-2-yl}carbamate, (15.91) phenazine-1-carboxylic acid, (15.92) quinolin-8-ol (134-31-6), (15.93) quinolin-8-ol sulfate (2:1) (134-31-6) and (15.94) tert-butyl {6-[({[(1-methyl-1H-tetrazol-5-yl)(phenyl)methylene]amino}oxy)methyl]pyridin-2-yl}carbamate.

(16) Further compounds, for example (16.1) 1-methyl-3-(trifluoromethyl)-N-[2'-(trifluoromethyl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide, (16.2) N-(4'-chlorobiphenyl-2-yl)-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (16.3) N-(2',4'-dichlorobiphenyl-2-yl)-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (16.4) 3-(difluoromethyl)-1-methyl-N-[4'-(trifluoromethyl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide, (16.5) N-(2',5'-difluorobiphenyl-2-yl)-1-methyl-3-(trifluoromethyl)-1H-pyrazole-4-carboxamide, (16.6) 3-(difluoromethyl)-1-methyl-N-[4'-(prop-1-yn-1-yl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.7) 5-fluoro-1,3-dimethyl-N-[4'-(prop-1-yn-1-yl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.8) 2-chloro-N-[4'-(prop-1-yn-1-yl)biphenyl-2-yl]pyridine-3-carboxamide (known from WO 2004/058723), (16.9) 3-(difluoromethyl)-N-[4'-(3,3-dimethylbut-1-yn-1-yl)biphenyl-2-yl]-1-methyl-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.10) N-[4'-(3,3-dimethylbut-1-yn-1-yl)biphenyl-2-yl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.11) 3-(difluoromethyl)-N-(4'-ethynylbiphenyl-2-yl)-1-methyl-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.12) N-(4'-ethynylbiphenyl-2-yl)-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.13) 2-chloro-N-(4'-ethynylbiphenyl-2-yl)pyridine-3-carboxamide (known from WO 2004/058723), (16.14) 2-chloro-N-[4'-(3,3-dimethylbut-1-yn-1-yl)biphenyl-2-yl]pyridine-3-carboxamide (known from WO 2004/058723), (16.15) 4-(difluoromethyl)-2-methyl-N-[4'-(trifluoromethyl)biphenyl-2-yl]-1,3-thiazole-5-carboxamide (known from WO 2004/058723), (16.16) 5-fluoro-N-[4'-(3-hydroxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]-1,3-dimethyl-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.17) 2-chloro-N-[4'-(3-hydroxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]pyridine-3-carboxamide (known from WO 2004/058723), (16.18) 3-(difluoromethyl)-N-[4'-(3-methoxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]-1-methyl-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.19) 5-fluoro-N-[4'-(3-

methoxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]-1,3-dimethyl-1H-pyrazole-4-carboxamide (known from WO 2004/058723), (16.20) 2-chloro-N-[4'-(3-methoxy-3-methylbut-1-yn-1-yl)biphenyl-2-yl]pyridine-3-carboxamide (known from WO 2004/058723), (16.21) (5-bromo-2-methoxy-4-methylpyridin-3-yl)(2,3,4-trimethoxy-6-methylphenyl)methanone (known from EP-A 1 559 320), (16.22) N-[2-(4-{[3-(4-chlorophenyl)prop-2-yn-1-yl]oxy}-3-methoxyphenyl)ethyl]-N2-(methylsulfonyl)valinamide (220706-93-4), (16.23) 4-oxo-4-[(2-phenylethyl)amino]butanoic acid and (16.24) but-3-yn-1-yl {6-[({[(Z)-(1-methyl-1H-tetrazol-5-yl)(phenyl)methylene]amino}oxy)methyl]pyridin-2-yl}carbamate.

All named mixing partners of the classes (1) to (16) can, if their functional groups enable this, optionally form salts with suitable bases or acids.

In a preferred embodiment, the fungicides to be used in combination with the compound according to formula (I) fluopyram are selected from the following list:

Azoxystrobin, Boscalid, Penflufen (N-[2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide), Carbendazim, Carboxin, Fenamidone, Fludioxonil, Fluopicolide, Fluxapyrad, Fluoxastrobin, Fluquinconazole, Flutriafol, Ipconazole, Iprodione, Isopyrazam, Isotianil, Mefenoxam, Metalaxyl, Pencycuron, Penthiopyrad, Prochloraz, Prothioconazole, Pyraclostrobin, Pyrimethanil, Sedaxane, Silthiopham, Tebuconazole, Thiram, Tolylfluanid, Triadimenol, Triazoxide, Trifloxystrobin, Triflumuron, Triticonazole, N-[9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, 3-Difluoromethyl-1-methyl-1H-pyrazole-4-carboxylic acid [2-(2,4-dichlorophenyl)-2-methoxy-1-methyl-ethyl]-amide.

In a preferred embodiment, the fungicides to be used in combination with the compound according to formula (I) fluopyram are selected from the following list:

Azoxystrobin, Boscalid, Penflufen (N-[2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide), Carbendazim, Fludioxonil, Fluopicolide, Fluxapyrad, Fluoxastrobin, Fluquinconazole, Ipconazole, Isopyrazam, Isotianil, Metalaxyl, Pencycuron, Penthiopyrad, Prochloraz, Prothioconazole, Pyraclostrobin, Pyrimethanil, Sedaxane, Tebuconazole, Triadimenol, Trifloxystrobin, Triticonazole, N-[9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, 3-Difluoromethyl-1-methyl-1H-pyrazole-4-carboxylic acid [2-(2,4-dichlorophenyl)-2-methoxy-1-methyl-ethyl]-amide.

The following insecticides can be used in combination with the compound according to formula (I) fluopyram:

The active ingredients specified herein by their “common name” are known and described, for example, in the Pesticide Manual (“The Pesticide Manual”, 14th Ed., British Crop Protection Council 2006) or can be searched in the internet (e.g. http://www.alanwood.net/pesticides).

(1) Acetylcholinesterase (AChE) inhibitors, for example

carbamates, e.g. Alanycarb (II-1-1), Aldicarb (II-1-2), Bendiocarb (II-1-3), Benfuracarb (II-1-4), Butocarboxim (II-1-5), Butoxycarboxim (II-1-6), Carbaryl (II-1-7), Carbofuran (II-1-8), Carbosulfan (II-1-9), Ethiofencarb (II-1-10), Fenobucarb (II-1-11), Formetanate (II-1-12), Furathiocarb (II-1-13), Isoprocarb (II-1-14), Methiocarb (II-1-15), Methomyl (II-1-16), Metolcarb (II-1-17), Oxamyl (II-1-18), Pirimicarb (II-1-19), Propoxur (II-1-20), Thiodicarb (II-1-21), Thiofanox (II-1-22), Triazamate (II-1-23), Trimethacarb (II-1-24), XMC (II-1-25), and Xylylcarb (II-1-26); or

organophosphates, e.g. Acephate (II-1-27), Azamethiphos (II-1-28), Azinphos-ethyl (II-1-29), Azinphos-methyl (II-1-30), Cadusafos (II-1-31), Chlorethoxyfos (II-1-32), Chlorfenvinphos (II-1-33), Chlormephos (II-1-34), Chlorpyrifos (II-1-35), Chlorpyrifos-methyl (II-1-36), Coumaphos (II-1-37), Cyanophos (II-1-38), Demeton-S-methyl (II-1-39), Diazinon (II-1-40), Dichlorvos/DDVP (II-1-41), Dicrotophos (II-1-42), Dimethoate (II-1-43), Dimethylvinphos (II-1-44), Disulfoton (II-1-45), EPN (II-1-46), Ethion (II-1-47), Ethoprophos (II-1-48), Famphur (II-1-49), Fenamiphos (II-1-50), Fenitrothion (II-1-51), Fenthion (II-1-52), Fosthiazate (II-1-53), Heptenophos (II-1-54), Imicyafos (II-1-55), Isofenphos (II-1-56), Isopropyl O-(methoxyaminothio-phosphoryl) salicylate (II-1-57), Isoxathion (II-1-58), Malathion (II-1-59), Mecarbam (II-1-60), Methamidophos (II-1-61), Methidathion (II-1-62), Mevinphos (II-1-63), Monocrotophos (II-1-64), Naled (II-1-65), Omethoate (II-1-66), Oxydemeton-methyl (II-1-67), Parathion (II-1-68), Parathion-methyl (II-1-69), Phenthoate (II-1-70), Phorate (II-1-71), Phosalone (II-1-72), Phosmet (II-1-73), Phosphamidon (II-1-74), Phoxim (II-1-75), Pirimiphos-methyl (II-1-76), Profenofos (II-1-77), Propetamphos (II-1-78), Prothiofos (II-1-79), Pyraclofos (II-1-80), Pyridaphenthion (II-1-81), Quinalphos (II-1-82), Sulfotep (II-1-83), Tebupirimfos (II-1-84), Temephos (II-1-85), Terbufos (II-1-86), Tetrachlorvinphos (II-1-87), Thiometon (II-1-88), Triazophos (II-1-89), Triclorfon (II-1-90), and Vamidothion (II-1-91).

(2) GABA-gated chloride channel antagonists, for example

cyclodiene organochlorines, e.g. Chlordane (II-2-1) and Endosulfan (II-2-2); or

phenylpyrazoles (fiproles), e.g. Ethiprole (II-2-3) and Fipronil (II-2-4).

(3) Sodium channel modulators / voltage-dependent sodium channel blockers, for example

pyrethroids, e.g. Acrinathrin (II-3-1), Allethrin (II-3-2), d-cis-trans Allethrin (II-3-3), d-trans Allethrin (II-3-4), Bifenthrin (II-3-5), Bioallethrin (II-3-6), Bioallethrin S-cyclopentenyl isomer (II-3-7), Bioresmethrin (II-3-8), Cycloprothrin (II-3-9), Cyfluthrin (II-3-10), beta-Cyfluthrin (II-3-11), Cyhalothrin (II-3-12), lambda-Cyhalothrin (II-3-13), gamma-Cyhalothrin (II-3-14), Cypermethrin (II-3-15), alpha-Cypermethrin (II-3-16), beta-Cypermethrin (II-3-17), theta-Cypermethrin (II-3-18), zeta-Cypermethrin (II-3-19), Cyphenothrin [(1R)-trans isomers] (II-3-20), Deltamethrin (II-3-21),

Empenthrin [(EZ)-(1R) isomers) (II-3-22), Esfenvalerate (II-3-23), Etofenprox (II-3-24), Fenpropathrin (II-3-25), Fenvalerate (II-3-26), Flucythrinate (II-3-27), Flumethrin (II-3-28), tau-Fluvalinate (II-3-29), Halfenprox (II-3-30), Imiprothrin (II-3-31), Kadethrin (II-3-32), Permethrin (II-3-33), Phenothrin [(1R)-trans isomer) (II-3-34), Prallethrin (II-3-35), Pyrethrine (pyrethrum) (II-3-36), Resmethrin (II-3-37), Silafluofen (II-3-38), Tefluthrin (II-3-39), Tetramethrin (II-3-40), Tetramethrin [(1R) isomers)] (II-3-41), Tralomethrin (II-3-42), and Transfluthrin (II-3-43); or

DDT (II-3-44); or Methoxychlor (II-3-45).

(4) Nicotinic acetylcholine receptor (nAChR) agonists, for example

neonicotinoids, e.g. Acetamiprid (II-4-1), Clothianidin (II-4-2), Dinotefuran (II-4-3), Imidacloprid (II-4-4), Nitenpyram (II-4-5), Thiacloprid (II-4-6), and Thiamethoxam (II-4-7); or

Nicotine (II-4-8).

(5) Nicotinic acetylcholine receptor (nAChR) allosteric activators, for example

spinosyns, e.g. Spinetoram (II-5-1) and Spinosad (II-5-2).

(6) Chloride channel activators, for example

avermectins/milbemycins, e.g. Abamectin (II-6-1), Emamectin benzoate (II-6-2), Lepimectin (II-6-3), and Milbemectin (II-6-4).

(7) Juvenile hormone mimics, for example

juvenile hormon analogues, e.g. Hydroprene (II-7-1), Kinoprene (II-7-2), and Methoprene (II-7-3); or

Fenoxycarb (II-7-4); or Pyriproxyfen (II-7-5).

(8) Miscellaneous non-specific (multi-site) inhibitors, for example

alkyl halides, e.g. Methyl bromide (II-8-1) and other alkyl halides; or

Chloropicrin (II-8-2); or Sulfuryl fluoride (II-8-3); or Borax (II-8-4); or Tartar emetic (II-8-5).

(9) Selective homopteran feeding blockers, e.g. Pymetrozine (II-9-1); or Flonicamid (II-9-2).

(10) Mite growth inhibitors, e.g. Clofentezine (II-10-1), Hexythiazox (II-10-2), and Diflovidazin (II-10-3); or

Etoxazole (II-10-4).

(11) Microbial disruptors of insect midgut membranes, e.g. Bacillus thuringiensis subspecies israelensis (II-11-1), Bacillus sphaericus (II-11-2), Bacillus thuringiensis subspecies aizawai (II-11-3), Bacillus thuringiensis subspecies kurstaki (II-11-4), Bacillus thuringiensis subspecies tenebrionis (II-11-5), and BT crop proteins: Cry1Ab, Cry1Ac, Cry1Fa, Cry2Ab, mCry3A, Cry3Ab, Cry3Bb, Cry34/35Ab1 (II-11-6).

(12) Inhibitors of mitochondrial ATP synthase, for example Diafenthiuron (II-12-1); or

organotin miticides, e.g. Azocyclotin (II-12-2), Cyhexatin (II-12-3), and Fenbutatin oxide (II-12-4); or

Propargite (II-12-5); or Tetradifon (II-12-6).

(13) Uncouplers of oxidative phoshorylation via disruption of the proton gradient, for example Chlorfenapyr (II-13-1), DNOC (II-13-2), and Sulfluramid (II-13-3).

(14) Nicotinic acetylcholine receptor (nAChR) channel blockers, for example Bensultap (II-14-1), Cartap hydrochloride (II-14-2), Thiocyclam (II-14-3), and Thiosultap-sodium (II-14-4).

(15) Inhibitors of chitin biosynthesis, type 0, for example Bistrifluron (II-15-1), Chlorfluazuron (II-15-2), Diflubenzuron (II-15-3), Flucycloxuron (II-15-4), Flufenoxuron (II-15-5), Hexaflumuron (II-15-6), Lufenuron (II-15-7), Novaluron (II-15-8), Noviflumuron (II-15-9), Teflubenzuron (II-15-10), and Triflumuron (II-15-11).

(16) Inhibitors of chitin biosynthesis, type 1, for example Buprofezin (II-16-1).

(17) Moulting disruptors, for example Cyromazine (II-17-1).

(18) Ecdysone receptor agonists, for example Chromafenozide (II-18-1), Halofenozide (II-18-2), Methoxyfenozide (II-18-3), and Tebufenozide (II-18-4).

(19) Octopamine receptor agonists, for example Amitraz (II-19-1).

(20) Mitochondrial complex III electron transport inhibitors, for example Hydramethylnon (II-20-1); or Acequinocyl (II-20-2); or Fluacrypyrim (II-20-3).

(21) Mitochondrial complex I electron transport inhibitors, for example

METI acaricides, e.g. Fenazaquin (II-21-1), Fenpyroximate (II-21-2), Pyrimidifen (II-21-3), Pyridaben (II-21-4), Tebufenpyrad (II-21-5), and Tolfenpyrad (II-21-6); or

Rotenone (Derris) (II-21-7).

(22) Voltage-dependent sodium channel blockers, e.g. Indoxacarb (II-22-1); or Metaflumizone (II-22-2).

(23) Inhibitors of acetyl CoA carboxylase, for example

tetronic and tetramic acid derivatives, e.g. Spirodiclofen (II-23-1), Spiromesifen (II-23-2), and Spirotetramat (II-23-3).

(24) Mitochondrial complex IV electron transport inhibitors, for example

phosphines, e.g. Aluminium phosphide (II-24-1), Calcium phosphide (II-24-2), Phosphine (II-24-3), and Zinc phosphide (II-24-4); or

Cyanide (II-24-5).

(25) Mitochondrial complex II electron transport inhibitors, for example Cyenopyrafen (II-25-1).

(28) Ryanodine receptor modulators, for example

diamides, e.g. Chlorantraniliprole (II-28-1) and Flubendiamide (II-28-2).

Further active ingredients with unknown or uncertain mode of action, for example Amidoflumet (II-29-1), Azadirachtin (II-29-2), Benclothiaz (II-29-3), Benzoximate (II-29-4), Bifenazate (II-29-5), Bromopropylate (II-29-6), Chinomethionat (II-29-7), Cryolite (II-29-8), Cyantraniliprole (Cyazypyr) (II-29-9), Cyflumetofen (II-29-10), Dicofol (II-29-11), Diflovidazin (II-29-12), Fluensulfone (II-29-13), Flufenerim (II-29-14), Flufiprole (II-29-15), Fluopyram (II-29-16), Fufenozide (II-29-17), Imidaclothiz (II-29-18), Iprodione (II-29-19), Meperfluthrin (II-29-20), Pyridalyl (II-29-21), Pyrifluquinazon (II-29-22), Tetramethylfluthrin (II-29-23), and iodomethane (II-29-24); furthermore products based on Bacillus firmus (including but not limited to strain CNCM I-1582, such as, for example,VOTiVO™, BioNem) (II-29-25) or one of the following known active compounds: 3-bromo-N-{2-bromo-4-chloro-6-[(1-cyclopropylethyl)carbamoyl]phenyl}-1-(3-chloropyridin-2-yl)-1H-pyrazole-5-carboxamide (II-29-26) (known from WO2005/077934), 4-{[(6-bromopyridin-3-yl)methyl](2-fluoroethyl)amino}furan-2(5H)-one (II-29-27) (known from WO2007/115644), 4-{[(6-fluoropyridin-3-yl)methyl](2,2-difluoroethyl)amino}furan-2(5H)-one (II-29-28) (known from WO2007/115644), 4-{[(2-chloro-1,3-thiazol-5-yl)methyl](2-fluoroethyl)amino}furan-2(5H)-one (II-29-29) (known from WO2007/115644), 4-{[(6-chlorpyridin-3-yl)methyl](2-fluoroethyl)amino}furan-2(5H)-one (II-29-30) (known from WO2007/115644), Flupyradifurone (II-29-31) (known from WO2007/115644), 4-{[(6-chlor-5-fluoropyridin-3-yl)methyl](methyl)amino}furan-2(5H)-one (II-29-32) (known from WO2007/115643), 4-{[(5,6-dichloropyridin-3-yl)methyl](2-fluoroethyl)amino}furan-2(5H)-one (II-29-33) (known from WO2007/115646), 4-{[(6-chloro-5-fluoropyridin-3-yl)methyl](cyclopropyl)amino}furan-2(5H)-one (II-29-34) (known from WO2007/115643), 4-{[(6-chloropyridin-3-yl)methyl](cyclopropyl)amino}furan-2(5H)-one (II-29-35) (known from EP-A-0 539 588), 4-{[(6-chlorpyridin-3-yl)methyl](methyl)amino}furan-2(5H)-one (II-29-36) (known from EP-A-0 539 588), {[1-(6-chloropyridin-3-yl)ethyl](methyl)oxido-λ4-sulfanylidene}cyanamide (II-29-37) (known from

WO2007/149134) and its diastereomers {[(1R)-1-(6-chloropyridin-3-yl)ethyl](methyl)oxido-λ4-sulfanylidene}cyanamide (A) (II-29-38), and {[(1S)-1-(6-chloropyridin-3-yl)ethyl](methyl)oxido-λ4-sulfanylidene}cyanamide (B) (II-29-39) (also known from WO2007/149134) as well as Sulfoxaflor (II-29-40) (also known from WO2007/149134) and its diastereomers [(R)-methyl(oxido){(1R)-1-[6-(trifluoromethyl)pyridin-3-yl]ethyl}-λ4-sulfanylidene]cyanamide (A1) (II-29-41), and [(S)-methyl(oxido){(1S)-1-[6-(trifluoromethyl)pyridin-3-yl]ethyl}-λ4-sulfanylidene]cyanamide (A2) (II-29-42), referred to as group of diastereomers A (known from WO2010/074747, WO2010/074751), [(R)-methyl(oxido){(1S)-1-[6-(trifluoromethyl)pyridin-3-yl]ethyl}-λ4-sulfanylidene]cyanamide (B1) (II-29-43), and [(S)-methyl(oxido){(1R)-1-[6-(trifluoromethyl)pyridin-3-yl]ethyl}-λ4-sulfanylidene]cyanamide (B2) (II-29-44), referred to as group of diastereomers B (also known from WO2010/074747, WO2010/074751), and 11-(4-chloro-2,6-dimethylphenyl)-12-hydroxy-1,4-dioxa-9-azadispiro[4.2.4.2]tetradec-11-en-10-one (II-29-45) (known from WO2006/089633), 3-(4'-fluoro-2,4-dimethylbiphenyl-3-yl)-4-hydroxy-8-oxa-1-azaspiro[4.5]dec-3-en-2-one (II-29-46) (known from WO2008/067911), 1-{2-fluoro-4-methyl-5-[(2,2,2-trifluorethyl)sulfinyl]phenyl}-3-(trifluoromethyl)-1H-1,2,4-triazol-5-amine (II-29-47) (known from WO2006/043635), [(3S,4aR,12R,12aS,12bS)-3-[(cyclopropylcarbonyl)oxy]-6,12-dihydroxy-4,12b-dimethyl-11-oxo-9-(pyridin-3-yl)-1,3,4,4a,5,6,6a,12,12a,12b-decahydro-2H,11H-benzo[f]pyrano[4,3-b]chromen-4-yl]methyl cyclopropanecarboxylate (II-29-48) (known from WO2008/066153), 2-cyano-3-(difluoromethoxy)-N,N-dimethylbenzenesulfonamide (II-29-49) (known from WO2006/056433), 2-cyano-3-(difluoromethoxy)-N-methylbenzenesulfonamide (II-29-50) (known from WO2006/100288), 2-cyano-3-(difluoromethoxy)-N-ethylbenzenesulfonamide (II-29-51) (known from WO2005/035486), 4-(difluoromethoxy)-N-ethyl-N-methyl-1,2-benzothiazol-3-amine 1,1-dioxide (II-29-52) (known from WO2007/057407), N-[1-(2,3-dimethylphenyl)-2-(3,5-dimethylphenyl)ethyl]-4,5-dihydro-1,3-thiazol-2-amine (II-29-53) (known from WO2008/104503), {1'-[(2E)-3-(4-chlorophenyl)prop-2-en-1-yl]-5-fluorospiro[indole-3,4'-piperidin]-1(2H)-yl}(2-chloropyridin-4-yl)methanone (II-29-54) (known from WO2003/106457), 3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1,8-diazaspiro[4.5]dec-3-en-2-one (II-29-55) (known from WO2009/049851), 3-(2,5-dimethylphenyl)-8-methoxy-2-oxo-1,8-diazaspiro[4.5]dec-3-en-4-yl ethyl carbonate (II-29-56) (known from WO2009/049851), 4-(but-2-yn-1-yloxy)-6-(3,5-dimethylpiperidin-1-yl)-5-fluoropyrimidine (II-29-57) (known from WO2004/099160), (2,2,3,3,4,4,5,5-octafluoropentyl)(3,3,3-trifluoropropyl)malononitrile (II-29-58) (known from WO2005/063094), (2,2,3,3,4,4,5,5-octafluoropentyl)(3,3,4,4,4-pentafluorobutyl)malononitrile (II-29-59) (known from WO2005/063094), 8-[2-(cyclopropylmethoxy)-4-(trifluoromethyl)phenoxy]-3-[6-(trifluoromethyl)pyridazin-3-yl]-3-azabicyclo[3.2.1]octane (II-29-60) (known from WO2007/040280), 2-ethyl-7-methoxy-3-methyl-6-[(2,2,3,3-tetrafluoro-2,3-dihydro-1,4-benzodioxin-6-yl)oxy]quinolin-4-yl methyl carbonate (II-29-61) (known from JP2008/110953), 2-ethyl-7-methoxy-3-methyl-6-[(2,2,3,3-tetrafluoro-2,3-dihydro-1,4-benzodioxin-6-yl)oxy]quinolin-4-yl acetate (II-29-62) (known from JP2008/110953), PF1364 (CAS-Reg.No. 1204776-60-2) (II-29-63) (known from JP2010/018586), 5-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4,5-dihydro-1,2-oxazol-3-yl]-2-(1H-1,2,4-triazol-1-

yl)benzonitrile (II-29-64) (known from WO2007/075459), 5-[5-(2-chloropyridin-4-yl)-5-(trifluoromethyl)-4,5-dihydro-1,2-oxazol-3-yl]-2-(1H-1,2,4-triazol-1-yl)benzonitrile (II-29-65) (known from WO2007/075459), 4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4,5-dihydro-1,2-oxazol-3-yl]-2-methyl-N-{2-oxo-2-[(2,2,2-trifluoroethyl)amino]ethyl}benzamide (II-29-66) (known from WO2005/085216), 4-{[(6-chloropyridin-3-yl)methyl](cyclopropyl)amino}-1,3-oxazol-2(5H)-one (II-29-67), 4-{[(6-chloropyridin-3-yl)methyl](2,2-difluoroethyl)amino}-1,3-oxazol-2(5H)-one (II-29-68), 4-{[(6-chloropyridin-3-yl)methyl](ethyl)amino}-1,3-oxazol-2(5H)-one (II-29-69), 4-{[(6-chloropyridin-3-yl)methyl](methyl)amino}-1,3-oxazol-2(5H)-one (II-29-70) (all known from WO2010/005692), NNI-0711 (II-29-71) (known from WO2002/096882), 1-acetyl-N-[4-(1,1,1,3,3,3-hexafluoro-2-methoxypropan-2-yl)-3-isobutylphenyl]-N-isobutyryl-3,5-dimethyl-1H-pyrazole-4-carboxamide (II-29-72) (known from WO2002/096882), methyl 2-[2-({[3-bromo-1-(3-chloropyridin-2-yl)-1H-pyrazol-5-yl]carbonyl}amino)-5-chloro-3-methylbenzoyl]-2-methylhydrazinecarboxylate (II-29-73) (known from WO2005/085216), methyl 2-[2-({[3-bromo-1-(3-chloropyridin-2-yl)-1H-pyrazol-5-yl]carbonyl}amino)-5-cyano-3-methylbenzoyl]-2-ethylhydrazinecarboxylate (II-29-74) (known from WO2005/085216), methyl 2-[2-({[3-bromo-1-(3-chloropyridin-2-yl)-1H-pyrazol-5-yl]carbonyl}amino)-5-cyano-3-methylbenzoyl]-2-methylhydrazinecarboxylate (II-29-75) (known from WO2005/085216), methyl 2-[3,5-dibromo-2-({[3-bromo-1-(3-chloropyridin-2-yl)-1H-pyrazol-5-yl]carbonyl}amino)benzoyl]-1,2-diethylhydrazinecarboxylate (II-29-76) (known from WO2005/085216), methyl 2-[3,5-dibromo-2-({[3-bromo-1-(3-chloropyridin-2-yl)-1H-pyrazol-5-yl]carbonyl}amino)benzoyl]-2-ethylhydrazinecarboxylate (II-29-77) (known from WO2005/085216), (5RS,7RS;5RS,7SR)-1-(6-chloro-3-pyridylmethyl)-1,2,3,5,6,7-hexahydro-7-methyl-8-nitro-5-propoxyimidazo[1,2-a]pyridine (II-29-78) (known from WO2007/101369), 2-{6-[2-(5-fluoropyridin-3-yl)-1,3-thiazol-5-yl]pyridin-2-yl}pyrimidine (II-29-79) (known from WO2010/006713), 2-{6-[2-(pyridin-3-yl)-1,3-thiazol-5-yl]pyridin-2-yl}pyrimidine (II-29-80) (known from WO2010/006713), 1-(3-chloropyridin-2-yl)-N-[4-cyano-2-methyl-6-(methylcarbamoyl)phenyl]-3-{[5-(trifluoromethyl)-1H-tetrazol-1-yl]methyl}-1H-pyrazole-5-carboxamide (II-29-81) (known from WO2010/069502), 1-(3-chloropyridin-2-yl)-N-[4-cyano-2-methyl-6-(methylcarbamoyl)phenyl]-3-{[5-(trifluoromethyl)-2H-tetrazol-2-yl]methyl}-1H-pyrazole-5-carboxamide (II-29-82) (known from WO2010/069502), N-[2-(tert-butylcarbamoyl)-4-cyano-6-methylphenyl]-1-(3-chloropyridin-2-yl)-3-{[5-(trifluoromethyl)-1H-tetrazol-1-yl]methyl}-1H-pyrazole-5-carboxamide (II-29-83) (known from WO2010/069502), N-[2-(tert-butylcarbamoyl)-4-cyano-6-methylphenyl]-1-(3-chloropyridin-2-yl)-3-{[5-(trifluoromethyl)-2H-tetrazol-2-yl]methyl}-1H-pyrazole-5-carboxamide (II-29-84) (known from WO2010/069502), (1E)-N-[(6-chloropyridin-3-yl)methyl]-N'-cyano-N-(2,2-difluoroethyl)ethanimidamide (II-29-85) (known from WO2008/009360), N-[2-(5-amino-1,3,4-thiadiazol-2-yl)-4-chloro-6-methylphenyl]-3-bromo-1-(3-chloropyridin-2-yl)-1H-pyrazole-5-carboxamide (II-29-86) (known from CN102057925), and methyl 2-[3,5-dibromo-2-({[3-bromo-1-(3-chloropyridin-2-yl)-1H-pyrazol-5-yl]carbonyl}amino)benzoyl]-2-ethyl-1-methylhydrazinecarboxylate (II-29-87) (known from WO2011/049233).

In a preferred embodiment, the insecticide is selected from the group:

Clothianidin, imidacloprid, thiacloprid, thiamethoxam, acetamiprid, methiocarb, thiodicarb, beta-cyfluthrin, cyfluthrin, deltamethrin, tefluthrin, indoxacarb, spinosad, spinetoram, fipronil, ethiprole, emamectin-benzoate, avermectin, spirodiclofen, spiromesifen, spirotetramat, flubendiamide, (R),(S)-3-chloro-N^1-{2-methyl-4-[1,2,2,2-tetrafluoro-1-(trifluoromethyl) ethyl] phenyl}-N^2-(1-methyl-2-methylsulphonylethyl)phthalamide, chlorantraniliprole (Rynaxypyr), or Cyantraniliprole (Cyazypyr), sulfoxaflor, *Bacillus firmus* strain CNCM I-1582.

In another preferred embodiment, the insecticides is selected from the group: 4-{[(6-brompyrid-3-yl)methyl](2-fluorethyl)amino}furan-2(5H)-on (known from WO 2007/115644), 4-{[(6-fluorpyrid-3-yl)methyl](2,2-difluorethyl)amino}furan-2(5H)-on (known from WO 2007/115644), 4-{[(2-chlor-1,3-thiazol-5-yl)methyl](2-fluorethyl)amino}furan-2(5H)-on (known from WO 2007/115644), 4-{[(6-chlorpyrid-3-yl)methyl](2-fluorethyl)amino}furan-2(5H)-on (known from WO 2007/ 115644), 4-{[(6-chlorpyrid-3-yl)methyl](2,2-difluorethyl)amino}furan-2(5H)-on known from WO 2007/115644), 4-{[(6-chlor-5-fluorpyrid-3-yl)methyl](methyl)amino}furan-2(5H)-on (known from WO 2007/115643), 4-{[(5,6-dichlorpyrid-3-yl)methyl](2-fluorethyl)amino}furan-2(5H)-on (known from WO 2007/115646), 4-{[(6-chlor-5-fluorpyrid-3-yl)methyl](cyclopropyl)amino}furan-2(5H)-on (known from WO 2007/115643), 4-{[(6-chlorpyrid-3-yl)methyl](cyclopropyl)amino}furan-2(5H)-on (known from EP-A-0 539 588), 4-{[(6-chlorpyrid-3-yl)methyl](methyl)amino}furan-2(5H)-on (known from EP-A-0 539 588).

The following biological control agents , in particular bacteria, fungi or yeasts, Protozoa, Viruses, Entomopathogenic nematode, Inoculants and Botanicals, can be used in combination with the compound according to formula (I) Fluopyram:

Examples of such bacteria to be used or employed according to the invention are:

(1.1) *Agrobacterium radiobacter*, (1.2) *Bacillus acidocaldarius*, (1.3) *Bacillus acidoterrestris*, (1.4) *Bacillus agri*, (1.5) *Bacillus aizawai*, (1.6) *Bacillus albolactis*, (1.7) *Bacillus alcalophilus*, (1.8) *Bacillus alvei*, (1.9) *Bacillus aminoglucosidicus* , (1.10) *Bacillus aminovorans*, (1.11) *Bacillus amylolyticus* (also known as Paenibacillus amylolyticus) (1.12) *Bacillus amyloliquefaciens*, in particular strain IN937a, or strain FZB42 (product known as RhizoVital®), or strain B3, (1.13) *Bacillus aneurinolyticus*, (1.14) *Bacillus atrophaeus*, (1.15) *Bacillus azotoformans*, (1.16) *Bacillus badius*, (1.17) *Bacillus cereus* (synonyms: *Bacillus endorhythmos*, *Bacillus medusa*), in particular spores of *B. cereus* strain CNCM I-1562 (cf. US 6,406,690), (1.18) *Bacillus chitinosporus*, (1.19) *Bacillus circulans,* (1.20) *Bacillus coagulans*, (1.21) *Bacillus endoparasiticus* (human pathogen!), (1.22) *Bacillus fastidiosus*, (1.23) *Bacillus firmus*, in particular strain I-1582 (products known as Bionem, BioNematicide), (1.24) *Bacillus kurstaki*, (1.25) *Bacillus lacticola*, (1.26) *Bacillus lactimorbus*, (1.27) *Bacillus lactis*, (1.28) *Bacillus laterosporus* (also known as *Brevibacillus laterosporus*), (1.29) *Bacillus lautus*, (1.30) Bacillus

lentimorbus, (1.31) *Bacillus lentus*, (1.32) *Bacillus licheniformis*, (1.33) *Bacillus maroccanus*, (1.34) *Bacillus megaterium* (products known as BioArc), (1.35) *Bacillus metiens*, (1.36) *Bacillus mycoides* isolate J, (1.37) *Bacillus natto*, (1.38) *Bacillus nematocida*, (1.39) *Bacillus nigrificans*, (1.40) *Bacillus nigrum*, (1.41) *Bacillus pantothenticus*, (1.42) *Bacillus popillae* (products known as Cronox), (1.43) *Bacillus psychrosaccharolyticus*, (1.44) *Bacillus pumilus*, in particular strain GB34 (products known as Yield Shield®,) and strain QST2808 (products known as Sonata QST 2808®), (1.45) *Bacillus siamensis*, (1.46) *Bacillus smithii*, (1.47) *Bacillus sphaericus* (products known as VectoLexs®), (1.48) *Bacillus subtilis*, in particular strain GB03 (products known as Kodiak®) and strain QST 713 (products known as Serenade QST 713®), or *B. subtilis var. amyloliquefaciens* strain FZB24 (products known as Taegro®), (1.49) *Bacillus thuringiensis*, in particular *B. thuringiensis var. israelensis* (products known as VectoBac®) or *B. thuringiensis subsp. aizawai* strain ABTS-1857 (products known as XenTari®), or *B. thuringiensis subsp. kurstaki* strain HD-1 (products known as Dipel® ES) or *B. thuringiensis subsp. tenebrionis* strain NB 176 (products known as Novodor® FC), or *B. th. var. aegyptii* (products known as Agerin) , or *B. th. var. colmeri* (products known as TianBaoBTc) , or *B. th. var. darmstadiensis* (products known as Baciturin, Kolepterin) , or *B. th. var. dendrolimus* (products known as Dendrobacillin) , or *B. th. var. galleriae* ((products known as Enterobactin) , or *B. th. var. japonensis* (products known as Buihunter) , or *B.th. subsp. Morrisoni*, or *B. th. var. san diego*, or *B. th. subsp. thuringiensis* strain MPPL002, or *B. th. var. thuringiensis* (products known as Bikol) , *or B. th. var 7216* (products known as Amactic, Pethian) , or *B. th. var T36* (products known as Cahat), (1.50) *Bacillus uniflagellatus*, (1.51) *Bradyrhizobium japonicum* (Symbiont?, products known as SoySelect), (1.52) *Brevibacillus brevis* (formerly *Bacillus brevis*), in particular strains SS86-3, SS86-4, SS86-5, 2904, (1.53) *Brevibacillus laterosporus* (formerly *Bacillus laterosporus*), in particular strains 64, 1111, 1645, 1647, (1.54) *Chromobacterium subtsugae*, in particular strain PRAA4-1T (products known as Gandevo), (1.55) *Delftia acidovorans*, in particular strain RAY209 (products known as BioBoost®), (1.56) *Lactobacillus acidophilus* (products known as Fruitsan), (1.57) *Lysobacter antibioticus*, in particular strain 13-1 (cf. Biological Control 2008, 45, 288-296), (1.58) *Lysobacter enzymogenes*, in particular strain C3 (cf. J Nematol. 2006 June; 38(2): 233–239), (1.59) *Paenibacillus alvei*, in particular strains III3DT-1A, III2E, 46C3, 2771 (Bacillus genetic stock center, Nov 2001), (1.60) *Paenibacillus polymyxa*, (1.61) *Paenibacillus popilliae* (formerly *Bacillus popilliae*), (1.62) *Pantoea agglomerans*, (1.63) *Pasteuria penetrans* (formerly *Bacillus penetrans*), products known as Pasteuria wettable powder, (1.64) *Pasteuria usgae* (products known as Econem™), (1.65) *Pectobacterium carotovorum* (formerly *Erwinia carotovora)* products known as BioKeeper, (1.66) *Pseudomonas aeruginosa* (products known as Guiticid), (1.67) *Pseudomonas aureofaciens* (products known as Agate-25K), (1.68) *Pseudomonas cepacia* (formerly known as Burkholderia cepacia), in particular strains M54 or J82, (1.69) *Pseudomonas chlororaphis*, in particular strain MA 342 (products known as Cedomon), (1.70) *Pseudomonas fluorescens* (products known as Sudozone), (1.71) *Pseudomonas proradix* (products known as Proradix®), (1.72) *Pseudomonas putida* (products known as Nematsid, (1.73*) Pseudomonas resinovorans* (products known as Solanacure), (1.74) *Pseudomonas syringae* (products known as

Biosave), (1.75) *Serratia entomophila* (products known as invade), (1.76) *Serratia marcescens*, in particularstrain SRM (MTCC8708) or strain R35, (1.77) *Streptomyces candidus* (products known as BioAid™), (1.78) *Streptomyces colombiensis* (products known as Mycoside), (1.79) *Streptomyces galbus*, in particular strain K61 (products known as Mycostop®, cf. Crop Protection 2006, 25, 468-475) or strain QST 6047, (1.80) *Streptomyces goshikiensis* (products known as Safegro), (1.81) *Streptomyces griseoviridis* (products known as Mycostop®, cf. Microbial db of Canada), (1.82) *Streptomyces lavendulae* (products known as Phytolavin-300, (1.83) *Streptomyces lydicus*, in particular strain WYCD108 (products known as ActinovateSP) or strain WYEC108 (products known as Actino-iron), (1.84) *Streptomyces prasinus* (cf. "Prasinons A and B: potent insecticides from *Streptomyces prasinus*" Applied microbiology 1973 Nov), (1.85) *Streptomyces rimosus* (products known as Rhitovit), (1.86) *Streptomyces saraceticus* (products known as Clanda), (1.87) *Streptomyces venezuelae,* (1.88) *Xanthomonas campestris* (herbicidal activity), (1.89) *Xenorhabdus luminescens*, (1.90) and *Xenorhabdus nematophila.*

Biological control agents that are summarized under the term "fungi" or "yeasts" are:

(2.1) *Ampelomyces quisqualis*, in particular strain AQ 10 (product known as AQ 10®), (2.2) *Aureobasidium pullulans*, in particular blastospores of strain DSM14940 or blastospores of strain DSM 14941 or mixtures thereof (product known as Blossom Protect®), (2.3) *Aschersonia aleyrodes*, (2.4) *Aspergillus flavus*, in particular strain NRRL 21882 (products known as Afla-Guard®), (2.5) *Arthrobotrys superba* (Corda 1839), (2.6) *Beauveria bassiana*, in particular strain ATCC 74040 (products known as Naturalis®) and strain GHA (products known as Mycotrol, BotaniGard), (2.7) *Beauveria brongniartii* (products known as Beaupro), (2.8) *Candida oleophila*, in particular strain O (products known as Nexy ®, Aspire), (2.9) *Chaetomium cupreum* (products known as Ketocin), (2.10) *Cladosporium cladosporioides*, in particular strain H39, (2.11) *Conidiobolus obscurus*, (2.12) *Coniothyrium minitans*, in particular strain CON/M/91-8 (products known as Contans ®), (2.13) *Dilophosphora alopecuri* (products known as Twist Fungus ®), (2.14) *Entomophthora virulenta* (products known as Vektor), (2.15) *Fusarium oxysporum*, in particular strain Fo47 (non-pathogenic) (products known as Fusaclean), (2.16) *Gliocladium catenulatum*, in particular strain J1446 (products known as Prestop ® or Primastop), (2.17) *Hirsutella thompsonii* (products known as Mycohit or ABTEC), (2.18) *Lagenidium giganteum* (products known as Laginex® by AgraQuest, Inc.), (2.19) *Lecanicillium lecanii* (formerly known as *Verticillium lecanii*), in particular conidia of strain KV01 (products known as Mycotal®, Vertalec®), (2.20) *Metarhizium anisopliae*, in particular strain F52 (products known as BIO 1020 or Met52), or *M. a. var acridum* (products known as Green Muscle), (2.21) *Metarhizium flavoviride*, (2.22) *Metschnikovia fructicola*, in particular the strain NRRL Y-30752 (product known as Shemer ®), (2.23) *Microsphaeropsis ochracea* (products known as Microx®), (2.24) *Mucor haemelis* (product known as BioAvard), (2.25) *Muscodor albus*, in particular strain QST 20799 (products known as Arabesque™ or Andante™), (2.26) *Myrothecium verrucaria*, in particular strain

AARC-0255 (products known as DiTera™), (2.27) *Nomuraea rileyi*, in particular strains SA86101, GU87401, SR86151, CG128 and VA9101 (products known as Kongo®), (2.28) *Ophiostoma piliferum*, in particular strain D97 (products known as Sylvanex), (2.29) *Paecilomyces fumosoreus*, in particular strain apopka 97 (products known as PreFeRal), (2.30) *Paecilomyces lilacinus*, in particular spores of *P. lilacinus* strain 251 (products known as BioAct®, cf. *Crop Protection* 2008, *27*, 352-361), (2.31) *Paecilomyces variotii*, in particular strain Q-09 (products known as Nemaquim), (2.32) *Pandora delphacis,* (2.33) *Penicillium bilaii*, in particular strain ATCC22348 (products known as JumpStart®, PB-50, Provide), (2.34) *Penicillium vermiculatum* (products known as Vermiculen), (2.35) *Phlebiopsis (=Phlebia = Peniophora) gigantea* (products known as Rotstop), (2.36) *Pichia anomala*, in particular strain WRL-076, (2.37) *Pochonia chlamydosporia*, (2.38) *Pseudozyma flocculosa*, in particular strain PF-A22 UL (products known as Sporodex ® L), (2.39) *Pythium oligandrum,* in particular strain DV74 (products known as Polyversum), (2.40) *Sporothrix insectorum* (products known as Sporothrix), (2.41) Talaromyces flavus, (2.42) *Trichoderma album* (products known as Bio-Zeid), (2.43) *Trichoderma asperellum*, in particular strain ICC 012 (products known as Bioten ®), (2.44) *Trichoderma gamsii (*formerly *T. viride*), in particular mycelial fragments,conidia & chlamydospores of strain ICC080 (products known as Bioderma), (2.45) *Trichoderma harmatum,* (2.46) *Trichoderma harzianum*, in particular *T. harzianum T39* (products known as Trichodex ®), (2.47) *Trichoderma koningii* (products known as Trikot-S Plus), (2.48) *Trichoderma lignorum* (products known as Mycobac), (2.49) *Trichoderma polysporum*, in particular strain IMI 206039, (2.50) *Trichoderma* virens (formerly *Gliocladium virens*), (products known as SoilGard), (2.51) *Tsukamurella paurometabola* (products known as HeberNem®), (2.52) *Ulocladium oudemansii* (products known as Botry-Zen), (2.53) *Verticillium albo-atrum*, in particular strain WCS850, (2.54) *Verticillium chlamydosporium* (products known as Varsha), (2.55) *Verticillium dahliae* (products known as Dutch Trig), and (2.56) *Zoophtora radicans.*

Biological control agents that are summarized under the term "protozoas" are:

(3.1) *Nosema locustae* (products known as NoloBait), (3.2) *Thelohania solenopsis* and (3.3) *Vairimorpha spp..*

Biological control agents that are summarized under the term "viruses" are:

(4.1) *Adoxophyes orana* (summer fruit tortrix) granulosis virus (GV), (product known as BIOFA - Capex®), (4.2) *Agrotis segetum* (turnip moth) nuclear polyhedrosis virus (NPV), (4.3) *Anticarsia gemmatalis* (Woolly pyrol moth) mNPV (products known as Polygen), (4.4) *Autographa californica* (Alfalfa Looper) mNPV (products known as VPN80 from Agricola El Sol), (4.5) *Biston suppressaria* (tea looper) NPV, (4.6) *Bombyx mori* (silkworm) NPV, (4.7) *Cryptophlebia leucotreta* (false codling moth) *GV (products known as Cryptex),* (4.8) *Cydia pomonella* (Codling moth) granulosis virus (GV)

(product known as Madex Plus), (4.9) *Dendrolimus punctatus* (Masson pine moth) CPV, (5.0) *Helicoverpa armigera* NPV (product known as AgBiTech - ViVUS Max), (5.1) *Helicoverpa* (previously *Heliothis) zea* (corn earworm) NPV (products known as Elcar), (5.2) *Leucoma salicis* (satin moth) NPV, (5.3) *Lymantria dispar* (gypsy moth) NPV (products known as Gypcheck), (5.4) *Neodiprion abietis* (balsam-fir sawfly) NPV (products known as Abietiv), (5.5) *Neodiprion lecontei* (red-headed pinesawfly) NPV (products known as Lecontvirus), (5.6) *Neodiprion sertifer* (Pine sawfly) NPV (products known as Neocheck-S), (5.7) *Orgyia pseudotsugata* (Douglas-fir tussock moth) NPV (products known as Virtuss), (5.8) *Phthorimaea operculella* (tobacco leaf miner) GV (products known as Matapol), (5.9) *Pieris rapae* (small white) GV , (6.0) *Plutella xylostella* (diamondback moth) GV (products known as Plutec), (6.1) *Spodoptera albula* (gray-streaked armywom moth) mNPV (products known as VPN 82), (6.2) *Spodoptera exempta* (true armyworm) mNPV (products known as Spodec), (6.3) *Spodoptera exigua* (sugarbeet armyworm) mNPV (products known as Spexit from Andermatt Biocontrol), (6.4) *Spodoptera frugiperd*a (fall armyworm) mNPV (products known as Baculovirus VPN), (6.5) *Spodoptera littoralis* (tobacco cutworm) NPV (procucts known as Spodoptrin from NPP Calliope France), and (6.6) *Spodoptera litura* (oriental leafworm moth) NPV (products known as Littovir).

Biological control agents that are summarized under the term "entomopathogenic nematodes" are:

(5.1) *Abbreviata caucasica*, (5.2) *Acuaria spp.*, (5.3) *Agamermis decaudata,* (5.4) *Allantonema spp.*, (5.5) *Amphimermis spp.*, (5.6) *Beddingia (= Deladenus) siridicola*, (5.7) *Bovienema spp.*, (5.7) *Cameronia spp.,* (5.8) *Chitwoodiella ovofilamenta*, (5.9) *Contortylenchus spp.*, (5.10) *Culicimermis spp.,* (5.11) *Diplotriaena spp.*, (5.12) *Empidomermis spp.*, (5.13) *Filipjevimermis leipsandra,* (5.14) *Gastromermis spp.*, (5.15) *Gongylonema spp.*, (5.16) *Gynopoecilia pseudovipara,* (5.17) *Heterorhabditis spp.*, in particular *Heterorhabditis bacteriophora* (products known as B-Green), or *Heterorhabditis baujardi*, or *Heterorhabditis heliothidis* (products known as Nematon), or *Heterorhabditis indica, Heterorhabditis marelatus, Heterorhabditis megidis, Heterorhabditis zealandica,* (5.18) *Hexamermis spp.*, (5.19) *Hydromermis spp.*, (5.20) *Isomermis spp.*, (5.21) *Limnomermis spp.,* (5.22) *Maupasina weissi*, (5.23) *Mermis nigrescens*, (5.24) *Mesomermis spp.*, (5.25) *Neomesomermis spp.*, (5.26) *Neoparasitylenchus rugulosi*, (5.27) *Octomyomermis spp.*, (5.28) *Parasitaphelenchus spp.*, (5.29) *Parasitorhabditis spp.*, (5.30) *Parasitylenchus spp.,* (5.31) *Perutilimermis culicis*, (5.32) *Phasmarhabditis hermaphrodita*, (5.33) Physaloptera spp., (5.34) *Protrellatus spp.*, (5.35) *Pterygodermatites spp.*, (5.36) *Romanomermis spp.*, (5.37) *Seuratum cadarachense*, (5.38) *Sphaerulariopsis spp.*, (5.39) *Spirura guianensis*, (5.40) *Steinernema spp.* (= *Neoaplectana spp.*), in particular *Steinernema carpocapsae* (products known as Biocontrol), or *Steinernema feltiae* (= *Neoaplectana carpocapsae*), (products known as

Nemasys®), or *Steinernema glaseri* (procucts known as Biotopia), or *Steinernema kraussei* (products known as Larvesure), or *Steinernema riobrave* (products known as Biovector), or *Steinernema scapterisci* (products known as Nematac S), or *Steinernema scarabaei, or Steinernema siamkayai,* (5.41) *Strelkovimermis peterseni*, (5.42) *Subulura spp.*, (5.43) *Sulphuretylenchus elongatus*, and (5.44) *Tetrameres spp.*.

Biological control agents that are summarized under the term "inoculants" are:

(C6.1) *Agrobacterium spp.*, (C6.2) *Azorhizobium caulinodans*, (C6.3) *Azospirillum spp.,* (C6.4) *Azotobacter spp.*, (C6.5) *Bradyrhizobium spp.*, (C6.6) *Burkholderia spp.*, in particular *Burkholderia cepacia* (formerly *Pseudomonas cepacia*), (C6.7) *Gigaspora spp.*, in particular *Gigaspora margarita*, or *Gigaspora monosporum*, (C6.8) *Glomus spp.*, in particular *Glomus aggregatum*, or *Glomus brasilianum*, or *Glomus clarum*, or *Glomus deserticola*, or *Glomus etunicatum*, or *Glomus intraradices*, or *Glomus monosporus*, or *Glomus mosseae*, (C6.9) *Laccaria spp.*, in particular *Laccaria bicolor*, or *Laccaria laccata*, (C6.10) *Lactobacillus buchneri*, (C6.11) *Paraglomus spp.,* (C6.12) *Pisolithus tinctorus*, (C6.13) *Pseudomonas spp.,* (C6.14) *Rhizobium spp.*, in particular *Rhizobium fredii*, or *Rhizobium leguminosarum*, or *Rhizobium loti*, or *Rhizobium meliloti*, or *Rhizobium trifolii*, or *Rhizobium tropici*, (C.6.15) *Rhizopogon amylopogon*, or *Rhizopogon fulvigleba*, or *Rhizopogon luteolus*, or *Rhizopogon tinctorus*, or *Rhizopogon villosullus*, or (C.6.16) *Scleroderma spp.,* in particular *Scleroderma cepa*, or *Scleroderma citrinum*, (C6.17) *Suillus spp.*, in particular *Suillus granulates*, or *Suillus punctatapies* and (C6.18) *Streptomyces spp.*.

Biological control agents that are summarized under the term "Botanicals" are:

(C7.1) Thymol, extracted e. g. from thyme *(thymus vulgaris)*, (C7.2) Neem tree (*Azadirachta indica)* oil, and therein Azadirachtin, (C7.3) Pyrethrum, an extract made from the dried flower heads of different species of the genus *Tanacetum*, and therein Pyrethrins (the active components of the extract), (C7.4) extract of *Cassia nigricans*, (C7.5) wood extract of *Quassia amara* (bitterwood), (C7.6) Rotenon, an extract from the roots and stems of several tropical and subtropical plant species, especially those belonging to the genera *Lonchocarpus* and *Derris*, (C7.7) extract of *Allium sativum* (garlic), (C7.8) Quillaja extract, made from the concentrated purified extract of the outer cambium layer of the *Quillaja Saponaria Molina* tree, (C7.9) Sabadilla (*Sabadilla= Schoenocaulon officinale*) seeds, in particular Veratrin (extracted from the seeds), (C7.10) Ryania, an extract made from the ground stems of *Ryania speciosa,* in

particular Ryanodine (the active component of the extract), (C7.11) extract of *Viscum album* (mistletoe), (C7.12) extract of *Tanacetum vulgare* (tansy), (C7.13) extract of *Artemisia absinthium* (wormwood), (C7.14) extract of *Urtica dioica* (stinging nettle), (C7.15) extract of *Symphytum officinale* (common comfrey), (C7.16) extract of *Tropaeulum majus* (monks cress), (C7.17) leaves and bark of *Quercus* (oak tree) (C7.18) Yellow mustard powder, (C7.19) oil of the seeds of *Chenopodium anthelminticum* (wormseed goosefoot), (C7.20) dried leaves of *Dryopteris filix-mas* (male fern), (C7.21) bark of *Celastrus angulatus* (Chinese bittersweet), (C7.22) extract of *Equisetum arvense* (field horsetail), (C7.23) Chitin.

Biological control agents that are "Products produced by microorganisms including proteins or secondary metabolites" are:

(B8.1) Harpin (isolated by *Erwinia amylovora*, products known as Harp-N-Tek™, Messenger® , Employ™, ProAct™).

In a preferred embodiment, the biological control agents are selected from the group:

(1.12) *Bacillus amyloliquefaciens*, in particular strain IN937a, or strain FZB42 (product known as RhizoVital®), or strain B3, (1.17) *Bacillus cereus* (synonyms: *Bacillus endorhythmos*, *Bacillus medusa*), in particular spores of *B. cereus* strain CNCM I-1562 (cf. US 6,406,690), (1.34) *Bacillus megaterium* (products known as BioArc), (1.44) *Bacillus pumilus*, in particular strain GB34 (products known as Yield Shield®,) and strain QST2808 (products known as Sonata QST 2808®), (1.47) *Bacillus sphaericus* (products known as VectoLexs®), (1.48) *Bacillus subtilis*, in particular strain GB03 (products known as Kodiak®) and strain QST 713 (products known as Serenade QST 713®), or *B. subtilis var. amyloliquefaciens* strain FZB24 (products known as Taegro®), (1.49) *Bacillus thuringiensis*, in particular *B. thuringiensis var. israelensis* (products known as VectoBac®) or *B. thuringiensis subsp. aizawai* strain ABTS-1857 (products known as XenTari®), or *B. thuringiensis subsp. kurstaki* strain HD-1 (products known as Dipel® ES) or *B. thuringiensis subsp. tenebrionis* strain NB 176 (products known as Novodor® FC), or *B. th. var. aegyptii* (products known as Agerin) , or *B. th. var. colmeri* (products known as TianBaoBTc) , or *B. th. var. darmstadiensis* (products known as Baciturin, Kolepterin) , or *B. th. var. dendrolimus* (products known as Dendrobacillin) , or *B. th. var. galleriae* ((products known as Enterobactin) , or *B. th. var. japonensis* (products known as Buihunter) , or *B.th. subsp. Morrisoni*, or *B. th. var. san diego*, or *B. th. subsp. thuringiensis* strain MPPL002, or *B. th. var. thuringiensis* (products known as Bikol) , *or B. th. var 7216* (products known as Amactic, Pethian) , or *B. th. var T36* (products known as Cahat), (1.55) *Delftia acidovorans*, in particular strain RAY209 (products known as BioBoost®), (1.56) *Lactobacillus acidophilus* (products known as Fruitsan), (1.57) *Lysobacter antibioticus*, in particular strain 13-1 (cf. Biological Control 2008, 45, 288-296), (1.58) *Lysobacter enzymogenes*, in particular strain C3 (cf. J Nematol. 2006 June; 38(2): 233–239), (1.59) *Paenibacillus alvei*, in particular strains III3DT-1A, III2E, 46C3, 2771 (Bacillus genetic stock center, Nov 2001),

(1.70) *Pseudomonas fluorescens* (products known as Sudozone), (1.71) *Pseudomonas proradix* (products known as Proradix®), (1.72) *Pseudomonas putida* (products known as Nematsid, (1.73) *Pseudomonas resinovorans* (products known as Solanacure), (1.74) *Pseudomonas syringae* (products known as Biosave), (1.75) *Serratia entomophila* (products known as invade), (1.76) *Serratia marcescens*, in particularstrain SRM (MTCC8708) or strain R35, (1.77) *Streptomyces candidus* (products known as BioAid™), (1.78) *Streptomyces colombiensis* (products known as Mycoside), (1.79) *Streptomyces galbus*, in particular strain K61 (products known as Mycostop®, cf. Crop Protection 2006, 25, 468-475) or strain QST 6047,

When treating the seed, care must generally be taken that the amount of the composition according to the invention applied to the seed and/or the amount of further additives is chosen in such a way that the germination of the seed is not adversely affected, or that the resulting plant is not damaged. This must be borne in mind in particular in the case of active compounds which may have phytotoxic effects at certain application rates.

According to the invention all plants and plant parts can be treated. By plants is meant all plants and plant populations such as desirable and undesirable wild plants, cultivars and plant varieties (whether or not protectable by plant variety or plant breeder's rights). Cultivars and plant varieties can be plants obtained by conventional propagation and breeding methods which can be assisted or supplemented by one or more biotechnological methods such as by use of double haploids, protoplast fusion, random and directed mutagenesis, molecular or genetic markers or by bioengineering and genetic engineering methods. By plant parts is meant all above ground and below ground parts and organs of plants such as shoot, leaf, blossom and root, whereby for example leaves, needles, stems, branches, blossoms, fruiting bodies, fruits and seed as well as roots, tubers, corms and rhizomes are listed. Crops and vegetative and generative propagating material, for example cuttings, corms, rhizomes, tubers, runners and seeds also belong to plant parts.

Among the plants that can be protected by the method according to the invention, mention may be made of major field crops like corn, soybean, cotton, *Brassica* oilseeds such as *Brassica napus* (e.g. canola), *Brassica rapa*, *B. juncea* (e.g. mustard) and *Brassica carinata*, rice, wheat, sugarbeet, sugarcane, oats, rye, barley, millet, triticale, flax, vine and various fruits and vegetables of various botanical taxa such as *Rosaceae sp.* (for instance pip fruit such as apples and pears, but also stone fruit such as apricots, cherries, almonds and peaches, berry fruits such as strawberries), *Ribesioidae sp.*, *Juglandaceae sp.*, *Betulaceae sp.*, *Anacardiaceae sp.*, *Fagaceae sp.*, *Moraceae sp.*, *Oleaceae sp.*, *Actinidaceae sp.*, *Lauraceae sp.*, *Musaceae sp.* (for instance banana trees and plantings), *Rubiaceae sp.* (for instance coffee), *Theaceae sp.*, *Sterculiceae sp.*, *Rutaceae sp.* (for instance lemons, oranges and grapefruit) ; *Solanaceae sp.* (for instance tomatoes, potatoes, peppers, eggplant), *Liliaceae sp.*, Compositiae *sp.* (for instance lettuce, artichoke and chicory - including root chicory, endive or common chicory), *Umbelliferae sp.* (for instance carrot, parsley, celery and celeriac), *Cucurbitaceae sp.* (for instance

cucumber – including pickling cucumber, squash, watermelon, gourds and melons), *Alliaceae* sp. (for instance onions and leek), Cruciferae *sp.* (for instance white cabbage, red cabbage, broccoli, cauliflower, brussel sprouts, pak choi, kohlrabi, radish, horseradish, cress, Chinese cabbage), Leguminosae *sp.* (for instance peanuts, peas and beans beans - such as climbing beans and broad beans), *Chenopodiaceae sp.* (for instance mangold, spinach beet, spinach, beetroots), *Malvaceae* (for instance okra), *Asparagaceae* (for instance asparagus); horticultural and forest crops; ornamental plants; as well as genetically modified homologues of these crops.

The method of treatment according to the invention can be used in the treatment of genetically modified organisms (GMOs), e.g. plants or seeds. Genetically modified plants (or transgenic plants) are plants of which a heterologous gene has been stably integrated into genome. The expression "heterologous gene" essentially means a gene which is provided or assembled outside the plant and when introduced in the nuclear, chloroplastic or mitochondrial genome gives the transformed plant new or improved agronomic or other properties by expressing a protein or polypeptide of interest or by downregulating or silencing other gene(s) which are present in the plant (using for example, antisense technology, cosuppression technology or RNA interference – RNAi - technology). A heterologous gene that is located in the genome is also called a transgene. A transgene that is defined by its particular location in the plant genome is called a transformation or transgenic event.

Depending on the plant species or plant cultivars, their location and growth conditions (soils, climate, vegetation period, diet), the treatment according to the invention may also result in superadditive ("synergistic") effects. Thus, for example, reduced application rates and/or a widening of the activity spectrum and/or an increase in the activity of the active compounds and compositions which can be used according to the invention, better plant growth, increased tolerance to high or low temperatures, increased tolerance to drought or to water or soil salt content, increased flowering performance, easier harvesting, accelerated maturation, higher harvest yields, bigger fruits, larger plant height, greener leaf color, earlier flowering, higher quality and/or a higher nutritional value of the harvested products, higher sugar concentration within the fruits, better storage stability and/or processability of the harvested products are possible, which exceed the effects which were actually to be expected.

At certain application rates, the active compound combinations according to the invention may also have a strengthening effect in plants. Accordingly, they are also suitable for mobilizing the defense system of the plant against attack by unwanted microorganisms. This may, if appropriate, be one of the reasons of the enhanced activity of the combinations according to the invention, for example against fungi. Plant-strengthening (resistance-inducing) substances are to be understood as meaning, in the present context, those substances or combinations of substances which are capable of stimulating the defense system of plants in such a way that, when subsequently inoculated with unwanted microorganisms, the treated plants display a substantial degree of resistance to these microorganisms. In the present case, unwanted microorganisms are to be understood as meaning phytopathogenic fungi, bacteria and viruses. Thus, the

substances according to the invention can be employed for protecting plants against attack by the abovementioned pathogens within a certain period of time after the treatment. The period of time within which protection is effected generally extends from 1 to 30 days, preferably 1 to 14 days, after the treatment of the plants with the active compounds.

Plants and plant cultivars which are preferably to be treated according to the invention include all plants which have genetic material which impart particularly advantageous, useful traits to these plants (whether obtained by breeding and/or biotechnological means).

Plants and plant cultivars which are also preferably to be treated according to the invention are resistant against one or more biotic stresses, i.e. said plants show a better defense against animal and microbial pests, such as against nematodes, insects, mites, phytopathogenic fungi, bacteria, viruses and/or viroids.

Examples of nematode resistant plants are described in e.g. US Patent Application Nos 11/765,491, 11/765,494, 10/926,819, 10/782,020, 12/032,479, 10/783,417, 10/782,096, 11/657,964, 12/192,904, 11/396,808, 12/166,253, 12/166,239, 12/166,124, 12/166,209, 11/762,886, 12/364,335, 11/763,947, 12/252,453, 12/209,354, 12/491,396 and 12/497,221.

Plants and plant cultivars which may also be treated according to the invention are those plants which are resistant to one or more abiotic stresses. Abiotic stress conditions may include, for example, drought, cold temperature exposure, heat exposure, osmotic stress, flooding, increased soil salinity, increased mineral exposure, ozone exposure, high light exposure, limited availability of nitrogen nutrients, limited availability of phosphorus nutrients, shade avoidance.

Plants and plant cultivars which may also be treated according to the invention, are those plants characterized by enhanced yield characteristics. Increased yield in said plants can be the result of, for example, improved plant physiology, growth and development, such as water use efficiency, water retention efficiency, improved nitrogen use, enhanced carbon assimilation, improved photosynthesis, increased germination efficiency and accelerated maturation. Yield can furthermore be affected by improved plant architecture (under stress and non-stress conditions), including but not limited to, early flowering, flowering control for hybrid seed production, seedling vigor, plant size, internode number and distance, root growth, seed size, fruit size, pod size, pod or ear number, seed number per pod or ear, seed mass, enhanced seed filling, reduced seed dispersal, reduced pod dehiscence and lodging resistance. Further yield traits include seed composition, such as carbohydrate content, protein content, oil content and composition, nutritional value, reduction in anti-nutritional compounds, improved processability and better storage stability.

Plants that may be treated according to the invention are hybrid plants that already express the characteristic of heterosis or hybrid vigor which results in generally higher yield, vigor, health and resistance towards biotic and abiotic stresses. Such plants are typically made by crossing an inbred male-

sterile parent line (the female parent) with another inbred male-fertile parent line (the male parent). Hybrid seed is typically harvested from the male sterile plants and sold to growers. Male sterile plants can sometimes (e.g. in corn) be produced by detasseling, i.e. the mechanical removal of the male reproductive organs (or males flowers) but, more typically, male sterility is the result of genetic determinants in the plant genome. In that case, and especially when seed is the desired product to be harvested from the hybrid plants it is typically useful to ensure that male fertility in the hybrid plants is fully restored. This can be accomplished by ensuring that the male parents have appropriate fertility restorer genes which are capable of restoring the male fertility in hybrid plants that contain the genetic determinants responsible for male-sterility. Genetic determinants for male sterility may be located in the cytoplasm. Examples of cytoplasmic male sterility (CMS) were for instance described in Brassica species. However, genetic determinants for male sterility can also be located in the nuclear genome. Male sterile plants can also be obtained by plant biotechnology methods such as genetic engineering. A particularly useful means of obtaining male-sterile plants is described in WO 89/10396 in which, for example, a ribonuclease such as barnase is selectively expressed in the tapetum cells in the stamens. Fertility can then be restored by expression in the tapetum cells of a ribonuclease inhibitor such as barstar.

Plants or plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may be treated according to the invention are herbicide-tolerant plants, i.e. plants made tolerant to one or more given herbicides. Such plants can be obtained either by genetic transformation, or by selection of plants containing a mutation imparting such herbicide tolerance.

Herbicide-resistant plants are for example glyphosate-tolerant plants, i.e. plants made tolerant to the herbicide glyphosate or salts thereof. Plants can be made tolerant to glyphosate through different means. For example, glyphosate-tolerant plants can be obtained by transforming the plant with a gene encoding the enzyme 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS). Examples of such EPSPS genes are the AroA gene (mutant CT7) of the bacterium S*almonella typhimurium* (Comai et al., 1983, Science 221, 370-371), the CP4 gene of the bacterium *Agrobacterium sp.* (Barry et al., 1992, Curr. Topics Plant Physiol. 7, 139-145), the genes encoding a Petunia EPSPS (Shah et al., 1986, Science 233, 478-481), a Tomato EPSPS (Gasser et al., 1988, J. Biol. Chem. 263, 4280-4289), or an Eleusine EPSPS (WO 01/66704). It can also be a mutated EPSPS. Glyphosate-tolerant plants can also be obtained by expressing a gene that encodes a glyphosate oxido-reductase enzyme. Glyphosate-tolerant plants can also be obtained by expressing a gene that encodes a glyphosate acetyl transferase enzyme. Glyphosate-tolerant plants can also be obtained by selecting plants containing naturally-occurring mutations of the above-mentioned genes. Plants expressing EPSPS genes that confer glyphosate tolerance are described. Plants comprising other genes that confer glyphosate tolerance, such as decarboxylase genes, are described.

Other herbicide resistant plants are for example plants that are made tolerant to herbicides inhibiting the enzyme glutamine synthase, such as bialaphos, phosphinothricin or glufosinate. Such plants can be obtained by expressing an enzyme detoxifying the herbicide or a mutant glutamine synthase enzyme that is resistant to inhibition. One such efficient detoxifying enzyme is an enzyme encoding a phosphinothricin acetyltransferase (such as the bar or pat protein from Streptomyces species). Plants expressing an exogenous phosphinothricin acetyltransferase are described.

Further herbicide-tolerant plants are also plants that are made tolerant to the herbicides inhibiting the enzyme hydroxyphenylpyruvatedioxygenase (HPPD). Hydroxyphenylpyruvatedioxygenases HPPD is an are enzyme that catalyze the reaction in which para-hydroxyphenylpyruvate (HPP) is transformed into homogentisate. Plants tolerant to HPPD-inhibitors can be transformed with a gene encoding a naturally-occurring resistant HPPD enzyme, or a gene encoding a mutated or chimeric HPPD enzyme as described in WO 96/38567, WO 99/24585, and WO 99/24586, WO 2009/144079, WO 2002/046387, or US 6,768,044. Tolerance to HPPD-inhibitors can also be obtained by transforming plants with genes encoding certain enzymes enabling the formation of homogentisate despite the inhibition of the native HPPD enzyme by the HPPD-inhibitor. Such plants and genes are described in WO 99/34008 and WO 02/36787. Tolerance of plants to HPPD inhibitors can also be improved by transforming plants with a gene encoding an enzyme having prephenate deshydrogenase (PDH) activity in addition to a gene encoding an HPPD-tolerant enzyme, as described in WO 2004/024928. Further, plants can be made more tolerant to HPPD-inhibitor herbicides by adding into their genome a gene encoding an enzyme capable of metabolizing or degrading HPPD inhibitors, such as the CYP450 enzymes shown in WO 2007/103567 and WO 2008/150473.

Still further herbicide resistant plants are plants that are made tolerant to acetolactate synthase (ALS) inhibitors. Known ALS-inhibitors include, for example, sulfonylurea, imidazolinone, triazolopyrimidines, pryimidinyoxy(thio)benzoates, and/or sulfonylaminocarbonyltriazolinone herbicides. Different mutations in the ALS enzyme (also known as acetohydroxyacid synthase, AHAS) are known to confer tolerance to different herbicides and groups of herbicides, as described for example in Tranel and Wright (2002, Weed Science 50:700-712). The production of sulfonylurea-tolerant plants and imidazolinone-tolerant plants is described. Other imidazolinone-tolerant plants are also described. Further sulfonylurea- and imidazolinone-tolerant plants are also described.

Other plants tolerant to imidazolinone and/or sulfonylurea can be obtained by induced mutagenesis, selection in cell cultures in the presence of the herbicide or mutation breeding as described for example for soybeans in U.S. Patent 5,084,082, for rice in WO 97/41218, for sugar beet in U.S. Patent 5,773,702 and WO 99/057965, for lettuce in U.S. Patent 5,198,599, or for sunflower in WO 01/065922.

Plants or plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are insect-resistant transgenic plants, i.e. plants made

resistant to attack by certain target insects. Such plants can be obtained by genetic transformation, or by selection of plants containing a mutation imparting such insect resistance.

An "insect-resistant transgenic plant", as used herein, includes any plant containing at least one transgene comprising a coding sequence encoding:

1) an insecticidal crystal protein from *Bacillus thuringiensis* or an insecticidal portion thereof, such as the insecticidal crystal proteins listed by Crickmore et al. (1998, Microbiology and Molecular Biology Reviews, 62: 807-813), updated by Crickmore et al. (2005) at the *Bacillus thuringiensis* toxin nomenclature, online at: http://www.lifesci.sussex.ac.uk/Home/Neil_Crickmore/Bt/), or insecticidal portions thereof, e.g., proteins of the Cry protein classes Cry1Ab, Cry1Ac, Cry1B, Cry1C, Cry1D, Cry1F, Cry2Ab, Cry3Aa, or Cry3Bb or insecticidal portions thereof (e.g. EP 1999141_and WO 2007/107302), or such proteins encoded by synthetic genes as e.g. described in US Patent Application No 12/249,016 ; or

2) a crystal protein from *Bacillus thuringiensis* or a portion thereof which is insecticidal in the presence of a second other crystal protein from *Bacillus thuringiensis* or a portion thereof, such as the binary toxin made up of the Cry34 and Cry35 crystal proteins (Moellenbeck et al. 2001, Nat. Biotechnol. 19: 668-72; Schnepf et al. 2006, Applied Environm. Microbiol. 71, 1765-1774) or the binary toxin made up of the Cry1A or Cry1F proteins and the Cry2Aa or Cry2Ab or Cry2Ae proteins (US Patent Appl. No. 12/214,022 and EP 08010791.5); or

3) a hybrid insecticidal protein comprising parts of different insecticidal crystal proteins from *Bacillus thuringiensis,* such as a hybrid of the proteins of 1) above or a hybrid of the proteins of 2) above, e.g., the Cry1A.105 protein produced by corn event MON89034 (WO 2007/027777); or

4) a protein of any one of 1) to 3) above wherein some, particularly 1 to 10, amino acids have been replaced by another amino acid to obtain a higher insecticidal activity to a target insect species, and/or to expand the range of target insect species affected, and/or because of changes introduced into the encoding DNA during cloning or transformation, such as the Cry3Bb1 protein in corn events MON863 or MON88017, or the Cry3A protein in corn event MIR604; or

5) an insecticidal secreted protein from *Bacillus thuringiensis* or *Bacillus cereus*, or an insecticidal portion thereof, such as the vegetative insecticidal (VIP) proteins listed at:

http://www.lifesci.sussex.ac.uk/home/Neil_Crickmore/Bt/vip.html, e.g., proteins from the VIP3Aa protein class; or

6) a secreted protein from *Bacillus thuringiensis* or *Bacillus cereus* which is insecticidal in the presence of a second secreted protein from *Bacillus thuringiensis* or *B. cereus*, such as the binary toxin made up of the VIP1A and VIP2A proteins (WO 94/21795); or

7) a hybrid insecticidal protein comprising parts from different secreted proteins from *Bacillus thuringiensis* or *Bacillus cereus,* such as a hybrid of the proteins in 1) above or a hybrid of the proteins in 2) above; or

8) a protein of any one of 5) to 7) above wherein some, particularly 1 to 10, amino acids have been replaced by another amino acid to obtain a higher insecticidal activity to a target insect species, and/or to expand the range of target insect species affected, and/or because of changes introduced into the encoding DNA during cloning or transformation (while still encoding an insecticidal protein), such as the VIP3Aa protein in cotton event COT102; or

9) a secreted protein from *Bacillus thuringiensis* or *Bacillus cereus* which is insecticidal in the presence of a crystal protein from *Bacillus thuringiensis*, such as the binary toxin made up of VIP3 and Cry1A or Cry1F (US Patent Appl. No. 61/126083 and 61/195019), or the binary toxin made up of the VIP3 protein and the Cry2Aa or Cry2Ab or Cry2Ae proteins (US Patent Appl. No. 12/214,022 and EP 08010791.5).

10) a protein of 9) above wherein some, particularly 1 to 10, amino acids have been replaced by another amino acid to obtain a higher insecticidal activity to a target insect species, and/or to expand the range of target insect species affected, and/or because of changes introduced into the encoding DNA during cloning or transformation (while still encoding an insecticidal protein)

Of course, an insect-resistant transgenic plant, as used herein, also includes any plant comprising a combination of genes encoding the proteins of any one of the above classes 1 to 10. In one embodiment, an insect-resistant plant contains more than one transgene encoding a protein of any one of the above classes 1 to 10, to expand the range of target insect species affected when using different proteins directed at different target insect species, or to delay insect resistance development to the plants by using different proteins insecticidal to the same target insect species but having a different mode of action, such as binding to different receptor binding sites in the insect.

An "insect-resistant transgenic plant", as used herein, further includes any plant containing at least one transgene comprising a sequence producing upon expression a double-stranded RNA which upon ingestion by a plant insect pest inhibits the growth of this insect pest..

Plants or plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are tolerant to abiotic stresses. Such plants can be obtained by genetic transformation, or by selection of plants containing a mutation imparting such stress resistance. Particularly useful stress tolerance plants include:

1) plants which contain a transgene capable of reducing the expression and/or the activity of poly(ADP-ribose) polymerase (PARP) gene in the plant cells or plants.

2) plants which contain a stress tolerance enhancing transgene capable of reducing the expression and/or the activity of the PARG encoding genes of the plants or plants cells.

3) plants which contain a stress tolerance enhancing transgene coding for a plant-functional enzyme of the nicotineamide adenine dinucleotide salvage synthesis pathway including nicotinamidase, nicotinate phosphoribosyltransferase, nicotinic acid mononucleotide adenyl transferase, nicotinamide adenine dinucleotide synthetase or nicotine amide phosphorybosyltransferase.

Plants or plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention show altered quantity, quality and/or storage-stability of the harvested product and/or altered properties of specific ingredients of the harvested product such as :

1) transgenic plants which synthesize a modified starch, which in its physical-chemical characteristics, in particular the amylose content or the amylose/amylopectin ratio, the degree of branching, the average chain length, the side chain distribution, the viscosity behaviour, the gelling strength, the starch grain size and/or the starch grain morphology, is changed in comparison with the synthesised starch in wild type plant cells or plants, so that this is better suited for special applications.

2) transgenic plants which synthesize non starch carbohydrate polymers or which synthesize non starch carbohydrate polymers with altered properties in comparison to wild type plants without genetic modification. Examples are plants producing polyfructose, especially of the inulin and levan-type, plants producing alpha-1,4-glucans, plants producing alpha-1,6 branched alpha-1,4-glucans, plants producing alternan,

3) transgenic plants which produce hyaluronan.

4) transgenic plants or hybrid plants, such as onions with characteristics such as 'high soluble solids content', 'low pungency' (LP) and/or 'long storage' (LS).

Plants or plant cultivars (that can be obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are plants, such as cotton plants, with altered fiber characteristics. Such plants can be obtained by genetic transformation, or by selection of plants contain a mutation imparting such altered fiber characteristics and include:

a) Plants, such as cotton plants, containing an altered form of cellulose synthase genes

b) Plants, such as cotton plants, containing an altered form of rsw2 or rsw3 homologous nucleic acids Plants, such as cotton plants, with increased expression of sucrose phosphate synthase

c) Plants, such as cotton plants, with increased expression of sucrose Plants, such as cotton plants, wherein the timing of the plasmodesmatal gating at the basis of the fiber cell is altered, e.g. through downregulation of fiber-selective β-1,3-glucanase

d) Plants, such as cotton plants, having fibers with altered reactivity, e.g. through the expression of N-acetylglucosaminetransferase gene including nodC and chitin synthase genes

Plants or plant cultivars (that can be obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are plants, such as oilseed rape or related Brassica plants, with altered oil profile characteristics. Such plants can be obtained by genetic transformation, or by selection of plants contain a mutation imparting such altered oil profile characteristics and include:

a) Plants, such as oilseed rape plants, producing oil having a high oleic acid content

b) Plants such as oilseed rape plants, producing oil having a low linolenic acid content

c) Plant such as oilseed rape plants, producing oil having a low level of saturated fatty acids

Plants or plant cultivars (that can be obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are plants, such as potatoes which are virus-resistant, e.g. against potato virus Y (event SY230 and SY233 from Tecnoplant, Argentina), which are disease resistant, e.g. against potato late blight (e.g. RB gene), which show a reduction in cold-induced sweetening (carrying the Nt-Inhh, IIR-INV gene) or which possess a dwarf phenotype (Gene A-20 oxidase).

Plants or plant cultivars (that can be obtained by plant biotechnology methods such as genetic engineering) which may also be treated according to the invention are plants, such as oilseed rape or related Brassica plants, with altered seed shattering characteristics. Such plants can be obtained by genetic transformation, or by selection of plants contain a mutation imparting such altered seed shattering characteristics and include plants such as oilseed rape plants with delayed or reduced seed shattering.

Particularly useful transgenic plants which may be treated according to the invention are plants containing transformation events, or combination of transformation events, that are the subject of petitions for non-regulated status, in the United States of America, to the Animal and Plant Health Inspection Service (APHIS) of the United States Department of Agriculture (USDA) whether such petitions are granted or are still pending. At any time this information is readily available from APHIS (4700 River Road Riverdale, MD 20737, USA), for instance on its internet site (URL

http://www.aphis.usda.gov/brs/not_reg.html). On the filing date of this application the petitions for nonregulated status that were pending with APHIS or granted by APHIS were those listed in table B which contains the following information:

- Petition : the identification number of the petition. Technical descriptions of the transformation events can be found in the individual petition documents which are obtainable from APHIS, for example on the APHIS website, by reference to this petition number. These descriptions are herein incorporated by reference.
- Extension of Petition : reference to a previous petition for which an extension is requested.
- Institution : the name of the entity submitting the petition.
- Regulated article : the plant species concerned.
- Transgenic phenotype : the trait conferred to the plants by the transformation event.
- Transformation event or line : the name of the event or events (sometimes also designated as lines or lines) for which nonregulated status is requested.
- APHIS documents : various documents published by APHIS in relation to the Petition and which can be requested with APHIS.

Additional particularly useful plants containing single transformation events or combinations of transformation events are listed for example in the databases from various national or regional regulatory agencies (see for example http://gmoinfo.jrc.it/gmp_browse.aspx and http://cera-gmc.org/index.php?evidcode=&hstIDXCode=&gType=&AbbrCode=&atCode=&stCode=&coIDCode=&action=gm_crop_database&mode=Submit) .

The compositions according to the invention comprises a) Fluopyram, b) optionally one or more active ingredients selected from insecticides, fungicides, biological control agents as disclosed above, c) optionally fertilizer or growth promoters.

The compositions according to the invention can be applied directly, that is to say without comprising further components and without having been diluted. In general, it is preferable to apply the composition to the seed in the form of a suitable formulation. Suitable formulations and methods for the treatment of seed are known to the skilled worker and are described, for example, in the following documents: US

4,272,417 A, US 4,245,432 A, US 4,808,430 A, US 5,876,739 A, US 2003/0176428 A1, WO 2002/080675 A1, WO 2002/028186 A2.

The active compound combinations or compositions which can be used according to the invention can be converted into customary seed dressing formulations, such as solutions, emulsions, suspensions, powders, foams, slurries or other coating materials for seed, and also ULV formulations.

These formulations are prepared in a known manner by mixing the active compounds or active compound combinations or compositiions with customary additives, such as, for example, customary extenders and also solvents or diluents, colorants, wetting agents, dispersants, emulsifiers, defoamers, preservatives, secondary thickeners, adhesives, gibberellins and optionally water as well.

Suitable colorants that may be present in the seed dressing formulations of the invention include all colorants customary for such purposes. Use may be made both of pigments, of sparing solubility in water, and of dyes, which are soluble in water. Examples that may be mentioned include the colorants known under the designations rhodamine B, C.I. Pigment Red 112, and C.I. Solvent Red 1.

Suitable wetting agents that may be present in the seed dressing formulations of the invention include all substances which promote wetting and are customary in the formulation of active agrochemical substances. With preference it is possible to use alkylnaphthalene-sulphonates, such as diisopropyl- or diisobutylnaphthalene-sulphonates.

Suitable dispersants and/or emulsifiers that may be present in the seed dressing formulations of the invention include all nonionic, anionic, and cationic dispersants which are customary in the formulation of active agrochemical substances. With preference, it is possible to use nonionic or anionic dispersants or mixtures of nonionic or anionic dispersants. Particularly suitable nonionic dispersants are ethylene oxide-propylene oxide block polymers, alkylphenol polyglycol ethers, and tristyrylphenol polyglycol ethers, and their phosphated or sulphated derivatives. Particularly suitable anionic dispersants are lignosulphonates, polyacrylic salts, and arylsulphonate-formaldehyde condensates.

Suitable defoamers that may be present in the seed dressing formulations of the invention include all foam-inhibiting substances which are customary in the formulation of active agrochemical substances. With preference it is possible to use silicone defoamers and magnesium stearate.

Suitable preservatives that may be present in the seed dressing formulations of the invention include all substances which can be used for such purposes in agrochemical compositions. By way of example, mention may be made of dichlorophen and benzyl alcohol hemiformal.

Suitable secondary thickeners that may be present in the seed dressing formulations of the invention include all substances which can be used for such purposes in agrochemical compositions. Preferred suitability is

possessed by cellulose derivatives, acrylic acid derivatives, xanthan, modified clays, and highly disperse silica.

Suitable adhesives that may be present in the seed dressing formulations of the invention include all customary binders which can be used in seed dressing. With preference, mention may be made of polyvinylpyrrolidone, polyvinyl acetate, polyvinyl alcohol and tylose.

The seed dressing formulations to be used according to the invention may be used directly or after dilution with water beforehand to treat seed of any of a very wide variety of types. For instance, the concentrates or the preparations obtainable therefrom by dilution with water may be used to dress the seed of cereals, such as wheat, barley, rye, oats, and triticale, and also the seed of maize, rice, oilseed rape, peas, field beans, cotton, sunflowers, and beets, or else vegetable seed of any of a very wide variety of kinds. The suitable seed dressing formulations of the invention or their dilute preparations may also be used to dress seed of transgenic plants. In this context, synergistic effects may also arise in interaction with the substances formed by expression.

Suitable mixing equipment for treating seed with the seed dressing formulations to be used according to the invention or the preparations prepared from them by adding water includes all mixing equipment which can commonly be used for dressing. The specific procedure adopted when dressing comprises introducing the seed into a mixer, adding the particular desired amount of seed dressing formulation, either as it is or following dilution with water beforehand, and carrying out mixing until the formulation is uniformly distributed on the seed. Optionally, a drying operation follows.

The application rate of the seed dressing formulations to be used according to the invention may be varied within a relatively wide range. It depends on the respective content of the active compounds in the formulations and on the seed. In general, the application rates of active compound combination are between 0.001 and 200 g per kilogram of seed, preferably between 0.01 and 15 g per kilogram of seed.

The good fungicidal action of the active compounds to be used according to the invention in the treatment of seed is demonstrated by the examples below.

Use examples

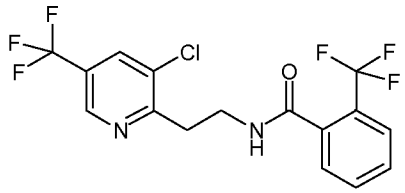
Pyrenophora graminea test (winter barley) / seed treatment field trial

The compound was applied as a standard "SC"-seed treatment formulation in comparison to an untreated control.

The infected seeds and the compound were put with the desired amounts in a seed treatment can and were shaken for 1-2 minutes to ensure a homogenized distribution of the compound onto the seeds. The plot size on the field was 2 m x 1 m (= 2 m^2) and three replicates were used. The soil cultivation, seedbed preparation, fertilization and the application of plant protection products occurred according to the good agricultural practise. The test was evaluated at BBCH 69. 0% means an efficacy which corresponds to that of the control, while an efficacy of 100% means that no disease was observed.

Table

Pyrenophora graminea test (winter barley) / seed treatment

Active compound	Structure	Rate of application of active compound in g a.i./100kg seed	Efficacy in %
Fluopyram		10	100
		5	100
		2,5	99,6
		1	98,7

In vitro *microtest Pyrenophora graminea, Pyrenophora tritici-repentis, Pyrenophora teres.*

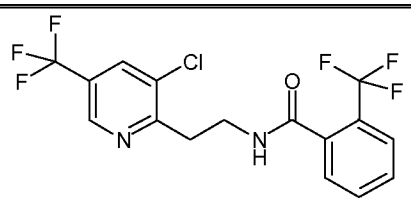
The microtest was performed in liquid medium with potato-dextrose broth (PDB) using microtitre plates.

The active compound is applied as the technical active substance dissolved in methanol and 8 cioncentrations were prepared. The resulting concentration range was 0; 0.0003; 0.001; 0.003; 0.01; 0.03; 0.1 and 0.3 µg a.i. /ml for *Pyrenophora gramininea* and *Pyrenophora teres* as well as

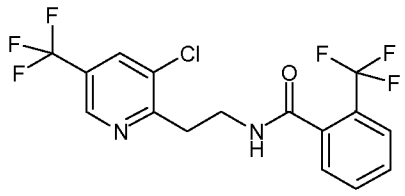
0; 0.03; 0.1; 0.3; 1; 3; 10 and 30 µg a.i. /ml for *Pyrenophora tritici-repentis*.

A mycelium suspension of *Pyrenophora graminea* or a spore suspension in the case of *P. tritici-repentis or P. te*res was used for inoculation. After 5 days of incubation for *Pyrenophora graminea* and *P. teres* or 7 days of incubation for *Pyrenophora tritici-repentis* by darkness under shaking (10 Hrz), the optical density in each cavity was determined photometrically at 620 nm. EC50 values were calculated according to the extinction values (the EC50 is a central characteristic of the isolate - it shows the concentration at which the pathogen growth coverage is reduced by 50%).

Pyrenophora graminea test /in vitro

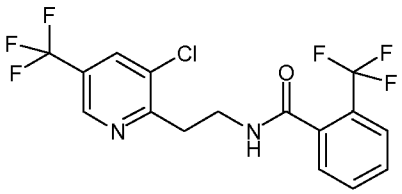
Active compound	Structure		EC50 (ppm)
Fluopyram			0.08

Pyrenophora teres test /in vitro

Active compound	Structure		EC50 (ppm)
Fluopyram			0.07

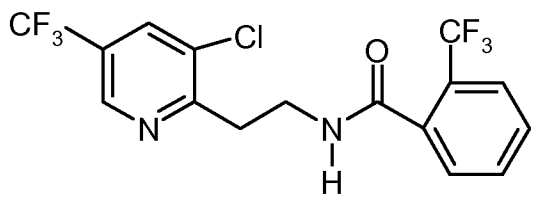
Pyrenophora tritici repentis test /in vitro

Active compound	Structure		EC50 (ppm)

Fluopyram			0.06

Patent claims

1. Use of Fluopyram of the formula (I)



(I)

as well as the N-oxides of the compound thereof

for treating (dressing) seed against attack by seed borne Pyrenophora species.

2 Use according to Claim 1 for treating seed against attack by *Pyrenophora avenae, Pyrenophora graminea, Pyrenophora teres, Pyrenophora semeniperda, Pyrenophora tritici-repentis.*

3 Use according to any of Claims 1 to 2 or treating seed against attack by seed borne *Pyrenophora graminea,* seed-borne *P. tritici-repentis and* seed-borne *P. teres* .

4 Use according to any of Claims 1 to 3 for treating barley seed against attack by seed borne *Pyrenophora graminea and Pyrenophora teres.*

5 Use according to any of Claims 1 to 3 for treating wheat seed against attack by seed borne *Pyrenophora tritici-repentis*

6 Composition for treating seed against attack by phytopathogenic fungi, which composition comprises fluopyram according to the formula (I).

7. Composition according to Claim 6 for treating seed against attack by phytopathogenic fungi, which composition comprises further at least one fungicide.

8. Composition according to Claim 6 for treating seed against attack by phytopathogenic fungi, which composition comprises further at least one insecticide

9. Composition according to any of Claims 6 to 8 for treating seed against attack by seed borne *Pyrenophora graminea,* seed-borne *P. tritici-repentis and* seed-borne *P. teres* .

10. Composition according to any of Claims 6 to 8 for treating barley seed against attack by *Pyrenophora graminea and Pyrenophora teres.*

11. Composition according to any of Claims 6 to 9 for treating wheat seed against attack by seed borne *Pyrenophora tritici-repentis*

12. Method for controlling phytopathogenic fungi, characterized in that seed is treated with Fluopyram according to Claim 1.

13. Method according to Claim 12 for controlling seed borne *Pyrenophora graminea,* seed-borne *P. tritici-repentis and* seed-borne *P. teres* .

14. Seed which has been treated with Fluopyram according to Claim 1 for protection against attack by phytopathogenic fungi.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/064677

A. CLASSIFICATION OF SUBJECT MATTER
INV. A01N43/40 A01N25/00 A01P3/00
ADD.

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A01N

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, BIOSIS, CHEM ABS Data, EMBASE, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2010/106008 A2 (BASF SE [DE]; GROEGER ULF [DE]; GEWEHR MARKUS [DE]; VONEND MICHAEL [DE]) 23 September 2010 (2010-09-23) claims 8, 10 page 3, lines 1-3 page 7, lines 26-27 page 15, lines 20-21 page 16; example 2 -----	1-14
X	EP 1 389 614 A1 (BAYER CROPSCIENCE SA [FR]) 18 February 2004 (2004-02-18) cited in the application paragraph [0014] claim 9 compound 20 examples sentence 30, paragraph 12 ----- -/--	1-14

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

* Special categories of cited documents :

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

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

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

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
25 September 2012	04/10/2012

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/064677

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2011/152078 A1 (ANDERSCH WOLFRAM [DE] ET AL) 23 June 2011 (2011-06-23) example A paragraph [0047] -----	1-14
X	US 2011/003869 A1 (WETCHOLOWSKY INGO [DE] ET AL) 6 January 2011 (2011-01-06) paragraph [0047] claims -----	1-14

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2012/064677

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		WO 2010139410 A2	09-12-2010