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(54) Title: ACTIVE COMPOUND COMBINATIONS

(57) Abstract: The present invention relates to active compound combinations comprising N'-[2-chloro-4-(2-fluorophenoxy)-5-methylphenyl]-N-ethyl-N-methylimidoforamide, at least one fungicide selected from specified inhibitors of the respiratory chain at complex I, II, or III, and at least one additional fungicide selected from inhibitors of the respiratory chain at complex I, II, or III, to compositions comprising such compound combination, and to the use thereof as biologically active agents, especially for control of harmful microorganisms in crop protection and in the protection of industrial materials.



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Active compound combinations

The present invention relates to active compound combinations comprising as compound (A) N'-[2-chloro-4-(2-fluorophenoxy)-5-methylphenyl]-N-ethyl-N-methylimidiformamide, as compound (B) at least one fungicide selected from specified inhibitors of the respiratory chain at complex I, II, or III, and as compound (C) at least one fungicide selected from inhibitors of the respiratory chain at complex I, II, or III. Moreover, the invention relates to fungicide compositions comprising such compound combination and to the use of the compound combinations and the fungicide compositions as biologically active agent, especially for control of phytopathogenic fungi in crop protection and in the protection of industrial materials and as plant growth regulators.

Throughout this application the terms "composition" and "formulation" are used synonymously and refer to mixtures of a compound combination of the invention and at least one agriculturally suitable auxiliary.

N'-[2-chloro-4-(2-fluorophenoxy)-5-methylphenyl]-N-ethyl-N-methylimidiformamide, its preparation and its fungicidal efficacy is known from WO 2016/202742 A1. WO 2018/108977 A1 and WO 2018/109002 A1 disclose active compound combinations comprising certain phenoxyphenylamidine derivatives, including N'-[2-chloro-4-(2-fluorophenoxy)-5-methylphenyl]-N-ethyl-N-methylimidiformamide, and at least one further fungicide.

Albeit N'-[2-chloro-4-(2-fluorophenoxy)-5-methylphenyl]-N-ethyl-N-methylimidiformamide and the known compound combinations comprising this compound provide excellent means in protecting plants from diseases caused by fungi, there is still need to even improve those means in order to address the ever increasing environmental and economic requirements imposed on modern-day crop protection agents and compositions. This includes, for example, improvement to the spectrum of action, safety profile, selectivity, application rate, formation of residues, and favourable preparation ability, and development of new compositions to deal with potential problems, like resistances.

The present invention provides active compound combinations and compositions comprising said combinations which at least in some aspects achieve the stated objective.

Accordingly, the present invention provides active compound combinations comprising

(A) as compound (A) N'-[2-chloro-4-(2-fluorophenoxy)-5-methylphenyl]-N-ethyl-N-methylimidiformamide,

(B) as compound (B) a further active selected from the following groups:

- inhibitors of the respiratory chain at complex I or II selected from the group consisting of (2.001) benzovindiflupyr, (2.002) bixafen, (2.003) boscalid, (2.004) carboxin, (2.005) fluopyram, (2.006) flutolanil, (2.007) fluxapyroxad, (2.008) furametpyr, (2.009) Isofetamid, (2.010)

isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.011) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.012) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.013) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate 1RS,4SR,9SR), (2.014) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.015) isopyrazam (syn-epimeric enantiomer 1S,4R,9S), (2.016) isopyrazam (syn-epimeric racemate 1RS,4SR,9RS), (2.017) penflufen, (2.018) penthiopyrad, (2.019) pydiflumetofen, (2.020) Pyraziflumid, (2.021) sedaxane, (2.022) 1,3-dimethyl-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)-1H-pyrazole-4-carboxamide, (2.023) 1,3-dimethyl-N-[(3R)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazole-4-carboxamide, (2.024) 1,3-dimethyl-N-[(3S)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazole-4-carboxamide, (2.025) 1-methyl-3-(trifluoromethyl)-N-[2'-(trifluoromethyl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide, (2.026) 2-fluoro-6-(trifluoromethyl)-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)benzamide, (2.027) 3-(difluoromethyl)-1-methyl-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)-1H-pyrazole-4-carboxamide, (2.028) inpyrfluxam, (2.029) 3-(difluoromethyl)-1-methyl-N-[(3S)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazole-4-carboxamide, (2.030) fluindapyr, (2.031) 3-(difluoromethyl)-N-[(3R)-7-fluoro-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1-methyl-1H-pyrazole-4-carboxamide, (2.032) 3-(difluoromethyl)-N-[(3S)-7-fluoro-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1-methyl-1H-pyrazole-4-carboxamide, (2.033) 5,8-difluoro-N-[2-(2-fluoro-4-{[4-(trifluoromethyl)pyridin-2-yl]oxy}phenyl)ethyl]quinazolin-4-amine, (2.034) N-(2-cyclopentyl-5-fluorobenzyl)-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.035) N-(2-tert-butyl-5-methylbenzyl)-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.036) N-(2-tert-butylbenzyl)-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.037) N-(5-chloro-2-ethylbenzyl)-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.038) isoflucypram, (2.039) N-[(1R,4S)-9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.040) N-[(1S,4R)-9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.041) N-[1-(2,4-dichlorophenyl)-1-methoxypropan-2-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.042) N-[2-chloro-6-(trifluoromethyl)benzyl]-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.043) N-[3-chloro-2-fluoro-6-(trifluoromethyl)benzyl]-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.044) N-[5-chloro-2-(trifluoromethyl)benzyl]-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.045) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-N-[5-methyl-2-(trifluoromethyl)benzyl]-1H-pyrazole-4-carboxamide, (2.046) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(2-fluoro-6-isopropylbenzyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.047) N-cyclopropyl-3-

- (difluoromethyl)-5-fluoro-N-(2-isopropyl-5-methylbenzyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.048) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(2-isopropylbenzyl)-1-methyl-1H-pyrazole-4-carbothioamide, (2.049) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(2-isopropylbenzyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.050) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(5-fluoro-2-isopropylbenzyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.051) N-cyclopropyl-3-(difluoromethyl)-N-(2-ethyl-4,5-dimethylbenzyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.052) N-cyclopropyl-3-(difluoromethyl)-N-(2-ethyl-5-fluorobenzyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.053) N-cyclopropyl-3-(difluoromethyl)-N-(2-ethyl-5-methylbenzyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.054) N-cyclopropyl-N-(2-cyclopropyl-5-fluorobenzyl)-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.055) N-cyclopropyl-N-(2-cyclopropyl-5-methylbenzyl)-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.056) N-cyclopropyl-N-(2-cyclopropylbenzyl)-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.057) pyrapropoyne, and
- inhibitors of the respiratory chain at complex III selected from the group consisting of (3.001) ametocetradin, (3.002) amisulbrom, (3.003) azoxystrobin, (3.004) coumethoxystrobin, (3.005) coumoxystrobin, (3.006) cyazofamid, (3.007) dimoxystrobin, (3.008) enoxastrobin, (3.009) famoxadone, (3.010) fenamidone, (3.011) flufenoxystrobin, (3.012) fluoxastrobin, (3.013) kresoxim-methyl, (3.014) metominostrobin, (3.015) orysastrobin, (3.016) picoxystrobin, (3.017) pyraclostrobin, (3.018) pyrametostrobin, (3.019) pyraoxystrobin, (3.020) trifloxystrobin, (3.021) (2E)-2-{2-[(1E)-1-(3-{[(E)-1-fluoro-2-phenylvinyl]oxy}phenyl)ethylidene]amino}oxy)methyl]phenyl}-2-(methoxyimino)-N-methylacetamide, (3.022) (2E,3Z)-5-{[1-(4-chlorophenyl)-1H-pyrazol-3-yl]oxy}-2-(methoxyimino)-N,3-dimethylpent-3-enamide, (3.023) (2R)-2-{2-[(2,5-dimethylphenoxy)methyl]phenyl}-2-methoxy-N-methylacetamide, (3.024) (2S)-2-{2-[(2,5-dimethylphenoxy)methyl]phenyl}-2-methoxy-N-methylacetamide, (3.025) fenpicoxamid, (3.026) mandestrobin, (3.027) N-(3-ethyl-3,5,5-trimethylcyclohexyl)-3-formamido-2-hydroxybenzamide, (3.028) (2E,3Z)-5-{[1-(4-chloro-2-fluorophenyl)-1H-pyrazol-3-yl]oxy}-2-(methoxyimino)-N,3-dimethylpent-3-enamide, (3.029) methyl {5-[3-(2,4-dimethylphenyl)-1H-pyrazol-1-yl]-2-methylbenzyl}carbamate, (3.030) metyltetraprole, (3.031) florylpicoxamid,

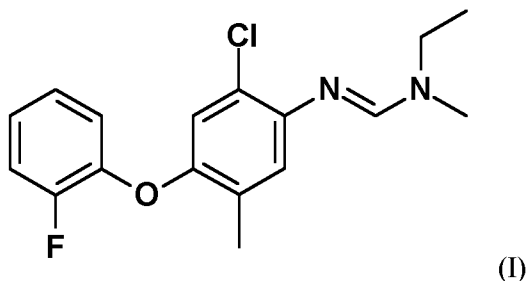
and

(C) as compound (C) at least one further active compound selected from the following groups:

- (1) inhibitors of the respiratory chain at complex I or II, and
- (2) inhibitors of the respiratory chain at complex III,

wherein the at least one further active compound (C) is different from compound (B).

The active compound combinations according to the invention comprise as compound (A) N'-[2-chloro-4-(2-fluorophenoxy)-5-methylphenyl]-N-ethyl-N-methylimidoforamide or a salt or N-oxide thereof. The salts or N-oxides of N'-[2-chloro-4-(2-fluorophenoxy)-5-methylphenyl]-N-ethyl-N-methylimidoforamide also have fungicidal properties. N'-[2-chloro-4-(2-fluorophenoxy)-5-methylphenyl]-N-ethyl-N-methylimidoforamide is depicted by formula (I)



and is denoted in the following also compound (I) or simply (I).

The active compound combinations according to the invention comprise as compound (B) a fungicidally active compound selected from the above indicated inhibitors of the respiratory chain at complex I, II, or III.

Compound (B) is preferably selected from:

(2.001) benzovindiflupyr, (2.002) bixafen, (2.003) boscalid, (2.005) fluopyram, (2.007) fluxapyroxad, (2.009) Isofetamid, (2.010) isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.011) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.012) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.013) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate 1RS,4SR,9SR), (2.014) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.015) isopyrazam (syn-epimeric enantiomer 1S,4R,9S), (2.016) isopyrazam (syn-epimeric racemate 1RS,4SR,9RS), (2.017) penflufen, (2.018) penthiopyrad, (2.019) pydiflumetofen, (2.021) sedaxane, (2.028) inpyrfluxam, (2.030) fluindapyr, (2.038) isoflucypram, (3.003) azoxystrobin, (3.007) dimoxystrobin, (3.012) fluoxastrobin, (3.013) kresoxim-methyl, (3.016) picoxystrobin, (3.017) pyraclostrobin, (3.020) trifloxystrobin, (3.025) fenpicoxamid, (3.026) mandestrobin.

Compound (B) is more preferably selected from:

(2.001) benzovindiflupyr, (2.002) bixafen, (2.005) fluopyram, (2.007) fluxapyroxad, (2.010) isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.011) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.012) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.013) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate 1RS,4SR,9SR), (2.014) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.015) isopyrazam (syn-epimeric enantiomer 1S,4R,9S), (2.016) isopyrazam (syn-epimeric

racemate 1RS,4SR,9RS), (2.017) penflufen, (2.018) penthiopyrad, (2.019) pydiflumetofen, (2.028) inpyrfluxam, (2.030) fluindapyr, (2.038) isoflucypram, (3.003) azoxystrobin, (3.007) dimoxystrobin, (3.012) fluoxastrobin, (3.016) picoxystrobin, (3.017) pyraclostrobin, (3.020) trifloxystrobin, (3.026) mandestrobin.

Compound (B) is even more preferably selected from:

- 5 (2.001) benzovindiflupyr, (2.002) bixafen, (2.005) fluopyram, (2.007) fluxapyroxad, (2.010) isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.011) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.012) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.013) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate 1RS,4SR,9SR), (2.014) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.015) isopyrazam (syn-epimeric enantiomer 1S,4R,9S), (2.016) isopyrazam (syn-epimeric
- 10 racemate 1RS,4SR,9RS), (2.017) penflufen, (2.018) penthiopyrad, (2.019) pydiflumetofen, (2.028) inpyrfluxam, (2.030) fluindapyr, (2.038) isoflucypram, (3.003) azoxystrobin, (3.007) dimoxystrobin, (3.012) fluoxastrobin, (3.016) picoxystrobin, (3.017) pyraclostrobin, (3.020) trifloxystrobin, (3.026) mandestrobin.

Compound (B) is even more preferably selected from:

- (2.002) bixafen, (2.005) fluopyram, (2.017) penflufen, (2.028) inpyrfluxam, (2.038) isoflucypram, (3.012)
- 15 fluoxastrobin, (3.020) trifloxystrobin.

Compound (B) is even more preferably selected from:

(2.002) bixafen, (2.005) fluopyram, (2.017) penflufen, (2.028) inpyrfluxam, (2.038) isoflucypram.

Compound (B) is most preferably selected from:

(2.002) bixafen, (2.028) inpyrfluxam, (2.038) isoflucypram.

- 20 The compound combinations according to the invention may comprise 1, 2 or even more compounds (B). Preferably, the compound combinations according to the invention comprise 1 or 2 compounds (B), more preferred just 1 compound (B).

The active compound combinations according to the invention comprise as compound (C) at least one fungicidally active compound selected from inhibitors of the respiratory chain at complex I, II, or III.

- 25 Compound (C) is preferably selected from:

(2.001) benzovindiflupyr, (2.002) bixafen, (2.003) boscalid, (2.004) carboxin, (2.005) fluopyram, (2.006) flutolanil, (2.007) fluxapyroxad, (2.008) furametpyr, (2.009) Isofetamid, (2.010) isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.011) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.012) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.013) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS

and anti-epimeric racemate 1RS,4SR,9SR), (2.014) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.015) isopyrazam (syn-epimeric enantiomer 1S,4R,9S), (2.016) isopyrazam (syn-epimeric racemate 1RS,4SR,9RS), (2.017) penflufen, (2.018) penthiopyrad, (2.019) pydiflumetofen, (2.020) Pyraziflumid, (2.021) sedaxane, (2.022) 1,3-dimethyl-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)-1H-pyrazole-4-carboxamide, (2.023) 1,3-dimethyl-N-[(3R)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazole-4-carboxamide, (2.024) 1,3-dimethyl-N-[(3S)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazole-4-carboxamide, (2.025) 1-methyl-3-(trifluoromethyl)-N-[2'-(trifluoromethyl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide, (2.026) 2-fluoro-6-(trifluoromethyl)-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)benzamide, (2.027) 3-(difluoromethyl)-1-methyl-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)-1H-pyrazole-4-carboxamide, (2.028) inpyrfluxam, (2.029) 3-(difluoromethyl)-1-methyl-N-[(3S)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazole-4-carboxamide, (2.030) fluindapyr, (2.031) 3-(difluoromethyl)-N-[(3R)-7-fluoro-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1-methyl-1H-pyrazole-4-carboxamide, (2.032) 3-(difluoromethyl)-N-[(3S)-7-fluoro-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1-methyl-1H-pyrazole-4-carboxamide, (2.033) 5,8-difluoro-N-[2-(2-fluoro-4-{[4-(trifluoromethyl)pyridin-2-yl]oxy}phenyl)ethyl]quinazolin-4-amine, (2.034) N-(2-cyclopentyl-5-fluorobenzyl)-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.035) N-(2-tert-butyl-5-methylbenzyl)-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.036) N-(2-tert-butylbenzyl)-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.037) N-(5-chloro-2-ethylbenzyl)-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.038) isoflucypram, (2.039) N-[(1R,4S)-9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.040) N-[(1S,4R)-9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.041) N-[1-(2,4-dichlorophenyl)-1-methoxypropan-2-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.042) N-[2-chloro-6-(trifluoromethyl)benzyl]-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.043) N-[3-chloro-2-fluoro-6-(trifluoromethyl)benzyl]-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.044) N-[5-chloro-2-(trifluoromethyl)benzyl]-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.045) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-N-[5-methyl-2-(trifluoromethyl)benzyl]-1H-pyrazole-4-carboxamide, (2.046) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(2-fluoro-6-isopropylbenzyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.047) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(2-isopropyl-5-methylbenzyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.048) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(2-isopropylbenzyl)-1-methyl-1H-pyrazole-4-carbothioamide, (2.049) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(2-isopropylbenzyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.050) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(5-fluoro-2-isopropylbenzyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.051) N-cyclopropyl-3-(difluoromethyl)-N-(2-ethyl-4,5-dimethylbenzyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.052) N-cyclopropyl-3-(difluoromethyl)-N-(2-ethyl-5-fluorobenzyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.053) N-

cyclopropyl-3-(difluoromethyl)-N-(2-ethyl-5-methylbenzyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.054) N-cyclopropyl-N-(2-cyclopropyl-5-fluorobenzyl)-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.055) N-cyclopropyl-N-(2-cyclopropyl-5-methylbenzyl)-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.056) N-cyclopropyl-N-(2-cyclopropylbenzyl)-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.057) pyrapropoyne,

(3.001) ametocetradin, (3.002) amisulbrom, (3.003) azoxystrobin, (3.004) coumethoxystrobin, (3.005) coumoxystrobin, (3.006) cyazofamid, (3.007) dimoxystrobin, (3.008) enoxastrobin, (3.009) famoxadone, (3.010) fenamidone, (3.011) flufenoxystrobin, (3.012) fluoxastrobin, (3.013) kresoxim-methyl, (3.014) metominostrobin, (3.015) orysastrobin, (3.016) picoxystrobin, (3.017) pyraclostrobin, (3.018) pyrametostrobin, (3.019) pyraoxystrobin, (3.020) trifloxystrobin, (3.021) (2E)-2-{2-[(1E)-1-(3-{[(E)-1-fluoro-2-phenylvinyl]oxy}phenyl)ethylidene]amino}oxy)methyl]phenyl}-2-(methoxyimino)-N-methylacetamide, (3.022) (2E,3Z)-5-{[1-(4-chlorophenyl)-1H-pyrazol-3-yl]oxy}-2-(methoxyimino)-N,3-dimethylpent-3-enamide, (3.023) (2R)-2-{2-[(2,5-dimethylphenoxy)methyl]phenyl}-2-methoxy-N-methylacetamide, (3.024) (2S)-2-{2-[(2,5-dimethylphenoxy)methyl]phenyl}-2-methoxy-N-methylacetamide, (3.025) fempicoxamid, (3.026) mandestrobin, (3.027) N-(3-ethyl-3,5,5-trimethylcyclohexyl)-3-formamido-2-hydroxybenzamide, (3.028) (2E,3Z)-5-{[1-(4-chloro-2-fluorophenyl)-1H-pyrazol-3-yl]oxy}-2-(methoxyimino)-N,3-dimethylpent-3-enamide, (3.029) methyl {5-[3-(2,4-dimethylphenyl)-1H-pyrazol-1-yl]-2-methylbenzyl}carbamate, (3.030) metyltetraprole, (3.031) florylpicoxamid.

Compound (C) is more preferably selected from:

(2.001) benzovindiflupyr, (2.002) bixafen, (2.003) boscalid, (2.005) fluopyram, (2.007) fluxapyroxad, (2.009) Isofetamid, (2.010) isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.011) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.012) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.013) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate 1RS,4SR,9SR), (2.014) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.015) isopyrazam (syn-epimeric enantiomer 1S,4R,9S), (2.016) isopyrazam (syn-epimeric racemate 1RS,4SR,9RS), (2.017) penflufen, (2.018) penhiopyrad, (2.019) pydiflumetofen, (2.021) sedaxane, (2.028) inpyrfluxam, (2.030) fluindapyr, (2.038) isoflucypram, (3.003) azoxystrobin, (3.007) dimoxystrobin, (3.012) fluoxastrobin, (3.013) kresoxim-methyl, (3.016) picoxystrobin, (3.017) pyraclostrobin, (3.020) trifloxystrobin, (3.025) fempicoxamid, (3.026) mandestrobin, (3.030) metyltetraprole, (3.031) florylpicoxamid.

Compound (C) is even more preferably selected from:

(2.001) benzovindiflupyr, (2.002) bixafen, (2.005) fluopyram, (2.007) fluxapyroxad, (2.010) isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.011) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.012)

isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.013) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate 1RS,4SR,9SR), (2.014) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.015) isopyrazam (syn-epimeric enantiomer 1S,4R,9S), (2.016) isopyrazam (syn-epimeric racemate 1RS,4SR,9RS), (2.017) penflufen, (2.018) penthiopyrad, (2.019) pydiflumetofen, (2.028) inpyrfluxam, (2.030) fluindapyr, (2.038) isoflucypram, (3.003) azoxystrobin, (3.007) dimoxystrobin, (3.012) fluoxastrobin, (3.016) picoxystrobin, (3.017) pyraclostrobin, (3.020) trifloxystrobin, (3.025) fenpicoxamid, (3.026) mandestrobin, (3.030) metyltetraprole, (3.031) florylpicoxamid.

Compound (C) is even more preferably selected from:

(2.001) benzovindiflupyr, (2.002) bixafen, (2.005) fluopyram, (2.007) fluxapyroxad, (2.010) isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.011) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.012) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.013) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate 1RS,4SR,9SR), (2.014) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.015) isopyrazam (syn-epimeric enantiomer 1S,4R,9S), (2.016) isopyrazam (syn-epimeric racemate 1RS,4SR,9RS), (2.017) penflufen, (2.018) penthiopyrad, (2.019) pydiflumetofen, (2.028) inpyrfluxam, (2.030) fluindapyr, (2.038) isoflucypram, (3.003) azoxystrobin, (3.007) dimoxystrobin, (3.012) fluoxastrobin, (3.016) picoxystrobin, (3.017) pyraclostrobin, (3.020) trifloxystrobin, (3.025) fenpicoxamid, (3.026) mandestrobin, (3.030) metyltetraprole, (3.031) florylpicoxamid.

Compound (C) is even more preferably selected from:

(2.001) benzovindiflupyr, (2.002) bixafen, (2.005) fluopyram, (2.007) fluxapyroxad, (2.010) isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.011) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.012) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.013) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate 1RS,4SR,9SR), (2.014) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.015) isopyrazam (syn-epimeric enantiomer 1S,4R,9S), (2.016) isopyrazam (syn-epimeric racemate 1RS,4SR,9RS), (2.017) penflufen, (2.018) penthiopyrad, (2.019) pydiflumetofen, (2.028) inpyrfluxam, (2.030) fluindapyr, (2.038) isoflucypram, (3.003) azoxystrobin, (3.007) dimoxystrobin, (3.012) fluoxastrobin, (3.016) picoxystrobin, (3.017) pyraclostrobin, (3.020) trifloxystrobin, (3.025) fenpicoxamid, (3.026) mandestrobin, (3.030) metyltetraprole, (3.031) florylpicoxamid.

Compound (C) is even more preferably selected from:

(2.002) bixafen, (2.005) fluopyram, (2.017) penflufen, (2.019) pydiflumetofen, (2.028) inpyrfluxam, (2.038) isoflucypram, (3.012) fluoxastrobin, (3.016) picoxystrobin, (3.020) trifloxystrobin, (3.025) fenpicoxamid, (3.030) metyltetraprole, (3.031) florylpicoxamid.

Compound (C) is even more preferably selected from:

(2.005) fluopyram, (2.019) pydiflumetofen, (3.020) trifloxystrobin.

Compound (C) is most preferably selected from:

(2.005) fluopyram, (3.020) trifloxystrobin.

The compound combinations according to the invention may comprise 1, 2 or even more compounds (C).

- 5 Preferably, the compound combinations according to the invention comprise 1 or 2 compounds (C), more preferred just 1 compound (C).

Preferred compound combinations are selected from the following mixtures:

(I) + (2.001) + (2.002), (I) + (2.001) + (2.003), (I) + (2.001) + (2.004), (I) + (2.001) + (2.005), (I) + (2.001) + (2.006), (I) + (2.001) + (2.007), (I) + (2.001) + (2.008), (I) + (2.001) + (2.009), (I) + (2.001) + (2.010), (I) + (2.001) + (2.011), (I) + (2.001) + (2.012), (I) + (2.001) + (2.013), (I) + (2.001) + (2.014), (I) + (2.001) + (2.015), (I) + (2.001) + (2.016), (I) + (2.001) + (2.017), (I) + (2.001) + (2.018), (I) + (2.001) + (2.019), (I) + (2.001) + (2.020), (I) + (2.001) + (2.021), (I) + (2.001) + (2.022), (I) + (2.001) + (2.023), (I) + (2.001) + (2.024), (I) + (2.001) + (2.025), (I) + (2.001) + (2.026), (I) + (2.001) + (2.027), (I) + (2.001) + (2.028), (I) + (2.001) + (2.029), (I) + (2.001) + (2.030), (I) + (2.001) + (2.031), (I) + (2.001) + (2.032), (I) + (2.001) + (2.033), (I) + (2.001) + (2.034), (I) + (2.001) + (2.035), (I) + (2.001) + (2.036), (I) + (2.001) + (2.037), (I) + (2.001) + (2.038), (I) + (2.001) + (2.039), (I) + (2.001) + (2.040), (I) + (2.001) + (2.041), (I) + (2.001) + (2.042), (I) + (2.001) + (2.043), (I) + (2.001) + (2.044), (I) + (2.001) + (2.045), (I) + (2.001) + (2.046), (I) + (2.001) + (2.047), (I) + (2.001) + (2.048), (I) + (2.001) + (2.049), (I) + (2.001) + (2.050), (I) + (2.001) + (2.051), (I) + (2.001) + (2.052), (I) + (2.001) + (2.053), (I) + (2.001) + (2.054), (I) + (2.001) + (2.055), (I) + (2.001) + (2.056), (I) + (2.001) + (2.057), (I) + (2.001) + (3.001), (I) + (2.001) + (3.002), (I) + (2.001) + (3.003), (I) + (2.001) + (3.004), (I) + (2.001) + (3.005), (I) + (2.001) + (3.006), (I) + (2.001) + (3.007), (I) + (2.001) + (3.008), (I) + (2.001) + (3.009), (I) + (2.001) + (3.010), (I) + (2.001) + (3.011), (I) + (2.001) + (3.012), (I) + (2.001) + (3.013), (I) + (2.001) + (3.014), (I) + (2.001) + (3.015), (I) + (2.001) + (3.016), (I) + (2.001) + (3.017), (I) + (2.001) + (3.018), (I) + (2.001) + (3.019), (I) + (2.001) + (3.020), (I) + (2.001) + (3.021), (I) + (2.001) + (3.022), (I) + (2.001) + (3.023), (I) + (2.001) + (3.024), (I) + (2.001) + (3.025), (I) + (2.001) + (3.026), (I) + (2.001) + (3.027), (I) + (2.001) + (3.028), (I) + (2.001) + (3.029), (I) + (2.001) + (3.030), (I) + (2.001) + (3.031),

(I) + (2.002) + (2.001), (I) + (2.002) + (2.003), (I) + (2.002) + (2.004), (I) + (2.002) + (2.005), (I) + (2.002) + (2.006), (I) + (2.002) + (2.007), (I) + (2.002) + (2.008), (I) + (2.002) + (2.009), (I) + (2.002) + (2.010), (I) + (2.002) + (2.011), (I) + (2.002) + (2.012), (I) + (2.002) + (2.013), (I) + (2.002) + (2.014), (I) + (2.002) + (2.015), (I) + (2.002) + (2.016), (I) + (2.002) + (2.017), (I) + (2.002) + (2.018), (I) + (2.002) + (2.019), (I) + (2.002) + (2.020), (I) + (2.002) + (2.021), (I) + (2.002) + (2.022), (I) + (2.002) + (2.023), (I) + (2.002) + (2.024), (I) + (2.002) + (2.025), (I) + (2.002) + (2.026), (I) + (2.002) + (2.027), (I) + (2.002) + (2.028), (I) +

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(3.031) + (3.007), (I) + (3.031) + (3.008), (I) + (3.031) + (3.009), (I) + (3.031) + (3.010), (I) + (3.031) + (3.011), (I) + (3.031) + (3.012), (I) + (3.031) + (3.013), (I) + (3.031) + (3.014), (I) + (3.031) + (3.015), (I) + (3.031) + (3.016), (I) + (3.031) + (3.017), (I) + (3.031) + (3.018), (I) + (3.031) + (3.019), (I) + (3.031) + (3.020), (I) + (3.031) + (3.021), (I) + (3.031) + (3.022), (I) + (3.031) + (3.023), (I) + (3.031) + (3.024), (I) + (3.031) + (3.025), (I) + (3.031) + (3.026), (I) + (3.031) + (3.027), (I) + (3.031) + (3.028), (I) + (3.031) + (3.029), (I) + (3.031) + (3.030).

More preferred compound combinations are selected from the following combinations:

(I) + (2.001) + (2.002), (I) + (2.001) + (2.005), (I) + (2.001) + (2.007), (I) + (2.001) + (2.010), (I) + (2.001) + (2.011), (I) + (2.001) + (2.012), (I) + (2.001) + (2.013), (I) + (2.001) + (2.014), (I) + (2.001) + (2.015), (I) + (2.001) + (2.016), (I) + (2.001) + (2.017), (I) + (2.001) + (2.018), (I) + (2.001) + (2.019), (I) + (2.001) + (2.028), (I) + (2.001) + (2.030), (I) + (2.001) + (2.038), (I) + (2.001) + (3.003), (I) + (2.001) + (3.007), (I) + (2.001) + (3.012), (I) + (2.001) + (3.016), (I) + (2.001) + (3.017), (I) + (2.001) + (3.020), (I) + (2.001) + (3.025), (I) + (2.001) + (3.026), (I) + (2.001) + (3.030), (I) + (2.001) + (3.031),

(I) + (2.002) + (2.001), (I) + (2.002) + (2.005), (I) + (2.002) + (2.007), (I) + (2.002) + (2.010), (I) + (2.002) + (2.011), (I) + (2.002) + (2.012), (I) + (2.002) + (2.013), (I) + (2.002) + (2.014), (I) + (2.002) + (2.015), (I) + (2.002) + (2.016), (I) + (2.002) + (2.017), (I) + (2.002) + (2.018), (I) + (2.002) + (2.019), (I) + (2.002) + (2.028), (I) + (2.002) + (2.030), (I) + (2.002) + (2.038), (I) + (2.002) + (3.003), (I) + (2.002) + (3.007), (I) + (2.002) + (3.012), (I) + (2.002) + (3.016), (I) + (2.002) + (3.017), (I) + (2.002) + (3.020), (I) + (2.002) + (3.025), (I) + (2.002) + (3.026), (I) + (2.002) + (3.030), (I) + (2.002) + (3.031),

(I) + (2.005) + (2.001), (I) + (2.005) + (2.002), (I) + (2.005) + (2.007), (I) + (2.005) + (2.010), (I) + (2.005) + (2.011), (I) + (2.005) + (2.012), (I) + (2.005) + (2.013), (I) + (2.005) + (2.014), (I) + (2.005) + (2.015), (I) + (2.005) + (2.016), (I) + (2.005) + (2.017), (I) + (2.005) + (2.018), (I) + (2.005) + (2.019), (I) + (2.005) + (2.028), (I) + (2.005) + (2.030), (I) + (2.005) + (2.038), (I) + (2.005) + (3.003), (I) + (2.005) + (3.007), (I) + (2.005) + (3.012), (I) + (2.005) + (3.016), (I) + (2.005) + (3.017), (I) + (2.005) + (3.020), (I) + (2.005) + (3.025), (I) + (2.005) + (3.026), (I) + (2.005) + (3.030), (I) + (2.005) + (3.031),

(I) + (2.007) + (2.001), (I) + (2.007) + (2.002), (I) + (2.007) + (2.005), (I) + (2.007) + (2.010), (I) + (2.007) + (2.011), (I) + (2.007) + (2.012), (I) + (2.007) + (2.013), (I) + (2.007) + (2.014), (I) + (2.007) + (2.015), (I) + (2.007) + (2.016), (I) + (2.007) + (2.017), (I) + (2.007) + (2.018), (I) + (2.007) + (2.019), (I) + (2.007) + (2.028), (I) + (2.007) + (2.030), (I) + (2.007) + (2.038), (I) + (2.007) + (3.003), (I) + (2.007) + (3.007), (I) + (2.007) + (3.012), (I) + (2.007) + (3.016), (I) + (2.007) + (3.017), (I) + (2.007) + (3.020), (I) + (2.007) + (3.025), (I) + (2.007) + (3.026), (I) + (2.007) + (3.030), (I) + (2.007) + (3.031),

(I) + (2.010) + (2.001), (I) + (2.010) + (2.002), (I) + (2.010) + (2.005), (I) + (2.010) + (2.007), (I) + (2.010) + (2.011), (I) + (2.010) + (2.012), (I) + (2.010) + (2.013), (I) + (2.010) + (2.014), (I) + (2.010) + (2.015), (I)

(I) + (3.017) + (2.001), (I) + (3.017) + (2.002), (I) + (3.017) + (2.005), (I) + (3.017) + (2.007), (I) + (3.017) + (2.010), (I) + (3.017) + (2.011), (I) + (3.017) + (2.012), (I) + (3.017) + (2.013), (I) + (3.017) + (2.014), (I) + (3.017) + (2.015), (I) + (3.017) + (2.016), (I) + (3.017) + (2.017), (I) + (3.017) + (2.018), (I) + (3.017) + (2.019), (I) + (3.017) + (2.028), (I) + (3.017) + (2.030), (I) + (3.017) + (2.038), (I) + (3.017) + (3.003), (I) + (3.017) + (3.007), (I) + (3.017) + (3.012), (I) + (3.017) + (3.016), (I) + (3.017) + (3.020), (I) + (3.017) + (3.025), (I) + (3.017) + (3.026), (I) + (3.017) + (3.030), (I) + (3.017) + (3.031),

(I) + (3.020) + (2.001), (I) + (3.020) + (2.002), (I) + (3.020) + (2.005), (I) + (3.020) + (2.007), (I) + (3.020) + (2.010), (I) + (3.020) + (2.011), (I) + (3.020) + (2.012), (I) + (3.020) + (2.013), (I) + (3.020) + (2.014), (I) + (3.020) + (2.015), (I) + (3.020) + (2.016), (I) + (3.020) + (2.017), (I) + (3.020) + (2.018), (I) + (3.020) + (2.019), (I) + (3.020) + (2.028), (I) + (3.020) + (2.030), (I) + (3.020) + (2.038), (I) + (3.020) + (3.003), (I) + (3.020) + (3.007), (I) + (3.020) + (3.012), (I) + (3.020) + (3.016), (I) + (3.020) + (3.017), (I) + (3.020) + (3.025), (I) + (3.020) + (3.026), (I) + (3.020) + (3.030), (I) + (3.020) + (3.031),

(I) + (3.026) + (2.001), (I) + (3.026) + (2.002), (I) + (3.026) + (2.005), (I) + (3.026) + (2.007), (I) + (3.026) + (2.010), (I) + (3.026) + (2.011), (I) + (3.026) + (2.012), (I) + (3.026) + (2.013), (I) + (3.026) + (2.014), (I) + (3.026) + (2.015), (I) + (3.026) + (2.016), (I) + (3.026) + (2.017), (I) + (3.026) + (2.018), (I) + (3.026) + (2.019), (I) + (3.026) + (2.028), (I) + (3.026) + (2.030), (I) + (3.026) + (2.038), (I) + (3.026) + (3.003), (I) + (3.026) + (3.007), (I) + (3.026) + (3.012), (I) + (3.026) + (3.016), (I) + (3.026) + (3.017), (I) + (3.026) + (3.020), (I) + (3.026) + (3.025), (I) + (3.026) + (3.030), (I) + (3.026) + (3.031).

Even more preferred compound combinations are selected from the following combinations:

(I) + (2.002) + (2.001), (I) + (2.002) + (2.005), (I) + (2.002) + (2.007), (I) + (2.002) + (2.010), (I) + (2.002) + (2.011), (I) + (2.002) + (2.012), (I) + (2.002) + (2.013), (I) + (2.002) + (2.014), (I) + (2.002) + (2.015), (I) + (2.002) + (2.016), (I) + (2.002) + (2.017), (I) + (2.002) + (2.018), (I) + (2.002) + (2.019), (I) + (2.002) + (2.028), (I) + (2.002) + (2.030), (I) + (2.002) + (2.038), (I) + (2.002) + (3.003), (I) + (2.002) + (3.007), (I) + (2.002) + (3.012), (I) + (2.002) + (3.016), (I) + (2.002) + (3.017), (I) + (2.002) + (3.020), (I) + (2.002) + (3.025), (I) + (2.002) + (3.026), (I) + (2.002) + (3.030), (I) + (2.002) + (3.031),

(I) + (2.005) + (2.001), (I) + (2.005) + (2.002), (I) + (2.005) + (2.007), (I) + (2.005) + (2.010), (I) + (2.005) + (2.011), (I) + (2.005) + (2.012), (I) + (2.005) + (2.013), (I) + (2.005) + (2.014), (I) + (2.005) + (2.015), (I) + (2.005) + (2.016), (I) + (2.005) + (2.017), (I) + (2.005) + (2.018), (I) + (2.005) + (2.019), (I) + (2.005) + (2.028), (I) + (2.005) + (2.030), (I) + (2.005) + (2.038), (I) + (2.005) + (3.003), (I) + (2.005) + (3.007), (I) + (2.005) + (3.012), (I) + (2.005) + (3.016), (I) + (2.005) + (3.017), (I) + (2.005) + (3.020), (I) + (2.005) + (3.025), (I) + (2.005) + (3.026), (I) + (2.005) + (3.030), (I) + (2.005) + (3.031),

(I) + (2.017) + (2.001), (I) + (2.017) + (2.002), (I) + (2.017) + (2.005), (I) + (2.017) + (2.007), (I) + (2.017) + (2.010), (I) + (2.017) + (2.011), (I) + (2.017) + (2.012), (I) + (2.017) + (2.013), (I) + (2.017) + (2.014), (I)

+ (2.017) + (2.015), (I) + (2.017) + (2.016), (I) + (2.017) + (2.018), (I) + (2.017) + (2.019), (I) + (2.017) + (2.028), (I) + (2.017) + (2.030), (I) + (2.017) + (2.038), (I) + (2.017) + (3.003), (I) + (2.017) + (3.007), (I) + (2.017) + (3.012), (I) + (2.017) + (3.016), (I) + (2.017) + (3.017), (I) + (2.017) + (3.020), (I) + (2.017) + (3.025), (I) + (2.017) + (3.026), (I) + (2.017) + (3.030), (I) + (2.017) + (3.031),

5 (I) + (2.028) + (2.001), (I) + (2.028) + (2.002), (I) + (2.028) + (2.005), (I) + (2.028) + (2.007), (I) + (2.028) + (2.010), (I) + (2.028) + (2.011), (I) + (2.028) + (2.012), (I) + (2.028) + (2.013), (I) + (2.028) + (2.014), (I) + (2.028) + (2.015), (I) + (2.028) + (2.016), (I) + (2.028) + (2.017), (I) + (2.028) + (2.018), (I) + (2.028) + (2.019), (I) + (2.028) + (2.030), (I) + (2.028) + (2.038), (I) + (2.028) + (3.003), (I) + (2.028) + (3.007), (I) + (2.028) + (3.012), (I) + (2.028) + (3.016), (I) + (2.028) + (3.017), (I) + (2.028) + (3.020), (I) + (2.028) + (3.025), (I) + (2.028) + (3.026), (I) + (2.028) + (3.030), (I) + (2.028) + (3.031),

(I) + (2.038) + (2.001), (I) + (2.038) + (2.002), (I) + (2.038) + (2.005), (I) + (2.038) + (2.007), (I) + (2.038) + (2.010), (I) + (2.038) + (2.011), (I) + (2.038) + (2.012), (I) + (2.038) + (2.013), (I) + (2.038) + (2.014), (I) + (2.038) + (2.015), (I) + (2.038) + (2.016), (I) + (2.038) + (2.017), (I) + (2.038) + (2.018), (I) + (2.038) + (2.019), (I) + (2.038) + (2.028), (I) + (2.038) + (2.030), (I) + (2.038) + (3.003), (I) + (2.038) + (3.007), (I) + (2.038) + (3.012), (I) + (2.038) + (3.016), (I) + (2.038) + (3.017), (I) + (2.038) + (3.020), (I) + (2.038) + (3.025), (I) + (2.038) + (3.026), (I) + (2.038) + (3.030), (I) + (2.038) + (3.031),

(I) + (3.012) + (2.001), (I) + (3.012) + (2.002), (I) + (3.012) + (2.005), (I) + (3.012) + (2.007), (I) + (3.012) + (2.010), (I) + (3.012) + (2.011), (I) + (3.012) + (2.012), (I) + (3.012) + (2.013), (I) + (3.012) + (2.014), (I) + (3.012) + (2.015), (I) + (3.012) + (2.016), (I) + (3.012) + (2.017), (I) + (3.012) + (2.018), (I) + (3.012) + (2.019), (I) + (3.012) + (2.028), (I) + (3.012) + (2.030), (I) + (3.012) + (2.038), (I) + (3.012) + (3.003), (I) + (3.012) + (3.007), (I) + (3.012) + (3.016), (I) + (3.012) + (3.017), (I) + (3.012) + (3.020), (I) + (3.012) + (3.025), (I) + (3.012) + (3.026), (I) + (3.012) + (3.030), (I) + (3.012) + (3.031),

(I) + (3.020) + (2.001), (I) + (3.020) + (2.002), (I) + (3.020) + (2.005), (I) + (3.020) + (2.007), (I) + (3.020) + (2.010), (I) + (3.020) + (2.011), (I) + (3.020) + (2.012), (I) + (3.020) + (2.013), (I) + (3.020) + (2.014), (I) + (3.020) + (2.015), (I) + (3.020) + (2.016), (I) + (3.020) + (2.017), (I) + (3.020) + (2.018), (I) + (3.020) + (2.019), (I) + (3.020) + (2.028), (I) + (3.020) + (2.030), (I) + (3.020) + (2.038), (I) + (3.020) + (3.003), (I) + (3.020) + (3.007), (I) + (3.020) + (3.012), (I) + (3.020) + (3.016), (I) + (3.020) + (3.017), (I) + (3.020) + (3.025), (I) + (3.020) + (3.026), (I) + (3.020) + (3.030), (I) + (3.020) + (3.031).

Even more preferred compound combinations are selected from the following combinations:

30 (I) + (2.002) + (2.001), (I) + (2.002) + (2.005), (I) + (2.002) + (2.007), (I) + (2.002) + (2.010), (I) + (2.002) + (2.011), (I) + (2.002) + (2.012), (I) + (2.002) + (2.013), (I) + (2.002) + (2.014), (I) + (2.002) + (2.015), (I) + (2.002) + (2.016), (I) + (2.002) + (2.017), (I) + (2.002) + (2.018), (I) + (2.002) + (2.019), (I) + (2.002) + (2.028), (I) + (2.002) + (2.030), (I) + (2.002) + (2.038), (I) + (2.002) + (3.003), (I) + (2.002) + (3.007), (I) +

(2.002) + (3.012), (I) + (2.002) + (3.016), (I) + (2.002) + (3.017), (I) + (2.002) + (3.020), (I) + (2.002) + (3.025), (I) + (2.002) + (3.026), (I) + (2.002) + (3.030), (I) + (2.002) + (3.031),

(I) + (2.005) + (2.001), (I) + (2.005) + (2.002), (I) + (2.005) + (2.007), (I) + (2.005) + (2.010), (I) + (2.005) + (2.011), (I) + (2.005) + (2.012), (I) + (2.005) + (2.013), (I) + (2.005) + (2.014), (I) + (2.005) + (2.015), (I) + (2.005) + (2.016), (I) + (2.005) + (2.017), (I) + (2.005) + (2.018), (I) + (2.005) + (2.019), (I) + (2.005) + (2.028), (I) + (2.005) + (2.030), (I) + (2.005) + (2.038), (I) + (2.005) + (3.003), (I) + (2.005) + (3.007), (I) + (2.005) + (3.012), (I) + (2.005) + (3.016), (I) + (2.005) + (3.017), (I) + (2.005) + (3.020), (I) + (2.005) + (3.025), (I) + (2.005) + (3.026), (I) + (2.005) + (3.030), (I) + (2.005) + (3.031),

(I) + (2.017) + (2.001), (I) + (2.017) + (2.002), (I) + (2.017) + (2.005), (I) + (2.017) + (2.007), (I) + (2.017) + (2.010), (I) + (2.017) + (2.011), (I) + (2.017) + (2.012), (I) + (2.017) + (2.013), (I) + (2.017) + (2.014), (I) + (2.017) + (2.015), (I) + (2.017) + (2.016), (I) + (2.017) + (2.018), (I) + (2.017) + (2.019), (I) + (2.017) + (2.028), (I) + (2.017) + (2.030), (I) + (2.017) + (2.038), (I) + (2.017) + (3.003), (I) + (2.017) + (3.007), (I) + (2.017) + (3.012), (I) + (2.017) + (3.016), (I) + (2.017) + (3.017), (I) + (2.017) + (3.020), (I) + (2.017) + (3.025), (I) + (2.017) + (3.026), (I) + (2.017) + (3.030), (I) + (2.017) + (3.031),

(I) + (2.028) + (2.001), (I) + (2.028) + (2.002), (I) + (2.028) + (2.005), (I) + (2.028) + (2.007), (I) + (2.028) + (2.010), (I) + (2.028) + (2.011), (I) + (2.028) + (2.012), (I) + (2.028) + (2.013), (I) + (2.028) + (2.014), (I) + (2.028) + (2.015), (I) + (2.028) + (2.016), (I) + (2.028) + (2.017), (I) + (2.028) + (2.018), (I) + (2.028) + (2.019), (I) + (2.028) + (2.030), (I) + (2.028) + (2.038), (I) + (2.028) + (3.003), (I) + (2.028) + (3.007), (I) + (2.028) + (3.012), (I) + (2.028) + (3.016), (I) + (2.028) + (3.017), (I) + (2.028) + (3.020), (I) + (2.028) + (3.025), (I) + (2.028) + (3.026), (I) + (2.028) + (3.030), (I) + (2.028) + (3.031),

(I) + (2.038) + (2.001), (I) + (2.038) + (2.002), (I) + (2.038) + (2.005), (I) + (2.038) + (2.007), (I) + (2.038) + (2.010), (I) + (2.038) + (2.011), (I) + (2.038) + (2.012), (I) + (2.038) + (2.013), (I) + (2.038) + (2.014), (I) + (2.038) + (2.015), (I) + (2.038) + (2.016), (I) + (2.038) + (2.017), (I) + (2.038) + (2.018), (I) + (2.038) + (2.019), (I) + (2.038) + (2.028), (I) + (2.038) + (2.030), (I) + (2.038) + (3.003), (I) + (2.038) + (3.007), (I) + (2.038) + (3.012), (I) + (2.038) + (3.016), (I) + (2.038) + (3.017), (I) + (2.038) + (3.020), (I) + (2.038) + (3.025), (I) + (2.038) + (3.026), (I) + (2.038) + (3.030), (I) + (2.038) + (3.031).

Even more preferred compound combinations are selected from the following combinations:

(I) + (2.002) + (2.005), (I) + (2.002) + (2.017), (I) + (2.002) + (2.019), (I) + (2.002) + (2.028), (I) + (2.002) + (2.038), (I) + (2.002) + (3.012), (I) + (2.002) + (3.016), (I) + (2.002) + (3.020), (I) + (2.002) + (3.025), (I) + (2.002) + (3.030), (I) + (2.002) + (3.031),

(I) + (2.005) + (2.002), (I) + (2.005) + (2.017), (I) + (2.005) + (2.019), (I) + (2.005) + (2.028), (I) + (2.005) + (2.038), (I) + (2.005) + (3.012), (I) + (2.005) + (3.016), (I) + (2.005) + (3.020), (I) + (2.005) + (3.025), (I) + (2.005) + (3.030), (I) + (2.005) + (3.031),

(I) + (2.017) + (2.002), (I) + (2.017) + (2.005), (I) + (2.017) + (2.019), (I) + (2.017) + (2.028), (I) + (2.017) + (2.038), (I) + (2.017) + (3.012), (I) + (2.017) + (3.016), (I) + (2.017) + (3.020), (I) + (2.017) + (3.025), (I) + (2.017) + (3.030), (I) + (2.017) + (3.031),

(I) + (2.028) + (2.002), (I) + (2.028) + (2.005), (I) + (2.028) + (2.017), (I) + (2.028) + (2.019), (I) + (2.028) + (2.038), (I) + (2.028) + (3.012), (I) + (2.028) + (3.016), (I) + (2.028) + (3.020), (I) + (2.028) + (3.025), (I) + (2.028) + (3.030), (I) + (2.028) + (3.031),

(I) + (2.038) + (2.002), (I) + (2.038) + (2.005), (I) + (2.038) + (2.017), (I) + (2.038) + (2.019), (I) + (2.038) + (2.028), (I) + (2.038) + (3.012), (I) + (2.038) + (3.016), (I) + (2.038) + (3.020), (I) + (2.038) + (3.025), (I) + (2.038) + (3.030), (I) + (2.038) + (3.031).

Even more preferred compound combinations are selected from the following combinations:

(I) + (2.002) + (2.005), (I) + (2.002) + (2.017), (I) + (2.002) + (2.019), (I) + (2.002) + (2.028), (I) + (2.002) + (2.038), (I) + (2.002) + (3.012), (I) + (2.002) + (3.016), (I) + (2.002) + (3.020), (I) + (2.002) + (3.025), (I) + (2.002) + (3.030), (I) + (2.002) + (3.031),

(I) + (2.028) + (2.002), (I) + (2.028) + (2.005), (I) + (2.028) + (2.017), (I) + (2.028) + (2.019), (I) + (2.028) + (2.038), (I) + (2.028) + (3.012), (I) + (2.028) + (3.016), (I) + (2.028) + (3.020), (I) + (2.028) + (3.025), (I) + (2.028) + (3.030), (I) + (2.028) + (3.031),

(I) + (2.038) + (2.002), (I) + (2.038) + (2.005), (I) + (2.038) + (2.017), (I) + (2.038) + (2.019), (I) + (2.038) + (2.028), (I) + (2.038) + (3.012), (I) + (2.038) + (3.016), (I) + (2.038) + (3.020), (I) + (2.038) + (3.025), (I) + (2.038) + (3.030), (I) + (2.038) + (3.031).

Even more preferred compound combinations are selected from the following combinations:

(I) + (2.002) + (2.005), (I) + (2.002) + (2.019), (I) + (2.002) + (3.020),

(I) + (2.028) + (2.005), (I) + (2.028) + (2.019), (I) + (2.028) + (3.020),

(I) + (2.038) + (2.005), (I) + (2.038) + (2.019), (I) + (2.038) + (3.020).

Most preferred compound combinations are selected from the following combinations:

(I) + (2.002) + (3.020),

(I) + (2.028) + (3.020),

(I) + (2.038) + (2.005).

In the combinations according to the invention the compounds (A) and (B) can be present in a broad range of effective weight ratio of A:B, for example in a range of 500:1 to 1:500, 400:1 to 1:400, 300:1 to 1:300, 250:1 to 1:250, 200:1 to 1:200, 150:1 to 1:150, 100:1 to 1:100, preferably in a weight ratio of 50:1 to 1:50, most preferably in a weight ratio of 20:1 to 1:20. Further ratios of A:B which can be used according to the present invention with increasing preference in the order given are: 95:1 to 1:95, 90:1 to 1:90, 85:1 to 1:85, 80:1 to 1:80, 75:1 to 1:75, 70:1 to 1:70, 65:1 to 1:65, 60:1 to 1:60, 55:1 to 1:55, 45:1 to 1:45, 40:1 to 1:40, 35:1 to 1:35, 30:1 to 1:30, 25:1 to 1:25, 15:1 to 1:15, 10:1 to 1:10, 5:1 to 1:5, 4:1 to 1:4, 3:1 to 1:3, 2:1 to 1:2.

Further ratios of A:B which can be used according to the present invention are: 500:1 to 1:1, 250:1 to 1:1, 95:1 to 1:1, 90:1 to 1:1, 85:1 to 1:1, 80:1 to 1:1, 75:1 to 1:1, 70:1 to 1:1, 65:1 to 1:1, 60:1 to 1:1, 55:1 to 1:1, 45:1 to 1:1, 40:1 to 1:1, 35:1 to 1:1, 30:1 to 1:1, 25:1 to 1:1, 15:1 to 1:1, 10:1 to 1:1, 5:1 to 1:1, 4:1 to 1:1, 3:1 to 1:1, 2:1 to 1:1.

Further ratios of A:B which can be used according to the present invention are: 1:1 to 1:500, 1:1 to 1:250, 1:1 to 1:95, 1:1 to 1:90, 1:1 to 1:85, 1:1 to 1:80, 1:1 to 1:75, 1:1 to 1:70, 1:1 to 1:65, 1:1 to 1:60, 1:1 to 1:55, 1:1 to 1:45, 1:1 to 1:40, 1:1 to 1:35, 1:1 to 1:30, 1:1 to 1:25, 1:1 to 1:15, 1:1 to 1:10, 1:1 to 1:5, 1:1 to 1:4, 1:1 to 1:3, 1:1 to 1:2.

In the combinations according to the invention the compounds (A) and (C) can be present in a broad range of effective weight ratio of A:C, for example in a range of 500:1 to 1:500, 400:1 to 1:400, 300:1 to 1:300, 250:1 to 1:250, 200:1 to 1:200, 150:1 to 1:150, 100:1 to 1:100, preferably in a weight ratio of 50:1 to 1:50, most preferably in a weight ratio of 20:1 to 1:20. Further ratios of A:C which can be used according to the present invention with increasing preference in the order given are: 95:1 to 1:95, 90:1 to 1:90, 85:1 to 1:85, 80:1 to 1:80, 75:1 to 1:75, 70:1 to 1:70, 65:1 to 1:65, 60:1 to 1:60, 55:1 to 1:55, 45:1 to 1:45, 40:1 to 1:40, 35:1 to 1:35, 30:1 to 1:30, 25:1 to 1:25, 15:1 to 1:15, 10:1 to 1:10, 5:1 to 1:5, 4:1 to 1:4, 3:1 to 1:3, 2:1 to 1:2.

Further ratios of A:C which can be used according to the present invention are: 500:1 to 1:1, 250:1 to 1:1, 95:1 to 1:1, 90:1 to 1:1, 85:1 to 1:1, 80:1 to 1:1, 75:1 to 1:1, 70:1 to 1:1, 65:1 to 1:1, 60:1 to 1:1, 55:1 to 1:1, 45:1 to 1:1, 40:1 to 1:1, 35:1 to 1:1, 30:1 to 1:1, 25:1 to 1:1, 15:1 to 1:1, 10:1 to 1:1, 5:1 to 1:1, 4:1 to 1:1, 3:1 to 1:1, 2:1 to 1:1.

Further ratios of A:C which can be used according to the present invention are: 1:1 to 1:500, 1:1 to 1:250, 1:1 to 1:95, 1:1 to 1:90, 1:1 to 1:85, 1:1 to 1:80, 1:1 to 1:75, 1:1 to 1:70, 1:1 to 1:65, 1:1 to 1:60, 1:1 to 1:55, 1:1 to 1:45, 1:1 to 1:40, 1:1 to 1:35, 1:1 to 1:30, 1:1 to 1:25, 1:1 to 1:15, 1:1 to 1:10, 1:1 to 1:5, 1:1 to 1:4, 1:1 to 1:3, 1:1 to 1:2.

In the combinations according to the invention also the compounds (B) and (C) can be present in a broad range of effective weight ratio of B:C. The respective weight ratio automatically derives from the chosen weight ratios A:B and A:C.

- 5 If more than one, e.g. 2 or 3, compounds (B) are present, the weight ratio refers to the total amount of compound (B), i.e. to the sum of the amount of each compound (B) present in the combination. This applies mutatis mutandis, if more than one, e.g. 2 or 3, compounds (C) are present, i.e. in such case the weight ratio refers to the total amount of compound (C), i.e. to the sum of the amount of each compound (C) present in the combination.

Isomers

- 10 Depending on the nature of the substituents of compound (A) and the nature of compound (B), those compounds may be present in the compound combinations of the invention in the form of different stereoisomers. These stereoisomers are, for example, enantiomers, diastereomers, atropisomers or geometric isomers. Accordingly, the invention encompasses both pure stereoisomers and any mixture of these isomers. Where a compound can be present in two or more tautomer forms in equilibrium, reference to the compound
15 by means of one tautomeric description is to be considered to include all tautomer forms. Where a compound can be present in isomeric forms and/or tautomeric forms, such a compound is understood hereinabove and hereinbelow also to include, where applicable, corresponding isomeric and/or tautomeric forms or mixtures thereof, even when these are not specifically mentioned in each case.

Salts / N-Oxides

- 20 The compounds present in the compound combination of the invention may independently of one another be present in the form of the free compound and/or, if applicable, an agrochemically active salt and/or a N-oxide thereof.

- Agrochemically active salts include acid addition salts of inorganic and organic acids well as salts of customary bases. Examples of inorganic acids are hydrohalic acids, such as hydrogen fluoride, hydrogen
25 chloride, hydrogen bromide and hydrogen iodide, sulfuric acid, phosphoric acid and nitric acid, and acidic salts, such as sodium bisulfate and potassium bisulfate. Useful organic acids include, for example, formic acid, carbonic acid and alkanolic acids such as acetic acid, trifluoroacetic acid, trichloroacetic acid and propionic acid, and also glycolic acid, thiocyanic acid, lactic acid, succinic acid, citric acid, benzoic acid, cinnamic acid, oxalic acid, saturated or mono- or diunsaturated fatty acids having 6 to 20 carbon atoms,
30 alkylsulphuric monoesters, alkylsulphonic acids (sulphonic acids having straight-chain or branched alkyl radicals having 1 to 20 carbon atoms), arylsulphonic acids or aryldisulphonic acids (aromatic radicals, such as phenyl and naphthyl, which bear one or two sulphonic acid groups), alkylphosphonic acids (phosphonic acids having straight-chain or branched alkyl radicals having 1 to 20 carbon atoms),

arylphosphonic acids or aryldiphosphonic acids (aromatic radicals, such as phenyl and naphthyl, which bear one or two phosphonic acid radicals), where the alkyl and aryl radicals may bear further substituents, for example p-toluenesulphonic acid, salicylic acid, p-aminosalicylic acid, 2-phenoxybenzoic acid, 2-acetoxybenzoic acid.

- 5 N-oxides of compounds present in the compound combination of the invention or intermediates thereof can be obtained in a simple manner by customary processes, for example by N-oxidation with hydrogen peroxide (H_2O_2), peracids, for example peroxy sulfuric acid or peroxy carboxylic acids, such as meta-chloroperoxybenzoic acid or peroxymonosulfuric acid (Caro's acid).

E.g. the corresponding N-oxides may be prepared starting from the respective compounds using
10 conventional oxidation methods, e.g. by treating the compounds with an organic peracid such as metachloroperbenzoic acid (e.g. WO-A 2003/64572 or J. Med. Chem. 38 (11), 1892-1903, 1995); or with inorganic oxidizing agents such as hydrogen peroxide (e.g. J. Heterocyc. Chem. 18 (7), 1305-1308, 1981) or oxone (e.g. J. Am. Chem. Soc. 123 (25), 5962-5973, 2001). The oxidation may lead to pure mono-N-oxides or to a mixture of different N-oxides, which can be separated by conventional methods such as
15 chromatography.

Crystalline Form

The compounds present in the compound combinations of the invention may exist in multiple crystalline and/or amorphous forms. Crystalline forms include unsolvated crystalline forms, solvates and hydrates, in each case of the individual compounds or adducts thereof.

- 20 Solvates of the compounds present in the compound combinations of the invention or their salts are stoichiometric compositions of the compounds with solvents.

Formulations

The present invention further relates to compositions for controlling unwanted microorganisms, comprising the compound combination according to the invention. The compositions may be applied to the
25 microorganisms and/or in their habitat.

The composition comprises the compound combination of the invention and at least one agriculturally suitable auxiliary, e.g. carrier(s) and/or surfactant(s).

- A carrier is a solid or liquid, natural or synthetic, organic or inorganic substance that is generally inert. The carrier generally improves the application of the compounds, for instance, to plants, plants parts or seeds.
30 Examples of suitable *solid carriers* include, but are not limited to, ammonium salts, in particular ammonium sulfates, ammonium phosphates and ammonium nitrates, natural rock flours, such as kaolins, clays, talc,

chalk, quartz, attapulgite, montmorillonite and diatomaceous earth, silica gel and synthetic rock flours, such as finely divided silica, alumina and silicates. Examples of typically useful solid carriers for preparing granules include, but are not limited to crushed and fractionated natural rocks such as calcite, marble, pumice, sepiolite and dolomite, synthetic granules of inorganic and organic flours and granules of organic material such as paper, 5 sawdust, coconut shells, maize cobs and tobacco stalks. Examples of suitable *liquid carriers* include, but are not limited to, water, organic solvents and combinations thereof. Examples of suitable *solvents* include polar and nonpolar organic chemical liquids, for example from the classes of aromatic and nonaromatic hydrocarbons (such as cyclohexane, paraffins, alkylbenzenes, xylene, toluene, tetrahydronaphthalene, alkylnaphthalenes, chlorinated aromatics or chlorinated aliphatic hydrocarbons such as chlorobenzenes, 10 chloroethylenes or methylene chloride), alcohols and polyols (which may optionally also be substituted, etherified and/or esterified, such as ethanol, propanol, butanol, benzylalcohol, cyclohexanol or glycol), ketones (such as acetone, methyl ethyl ketone, methyl isobutyl ketone or cyclohexanone), esters (including fats and oils) and (poly)ethers, unsubstituted and substituted amines, amides (such as dimethylformamide or fatty acid amides) and esters thereof, lactams (such as N-alkylpyrrolidones, in particular N-methylpyrrolidone) and 15 lactones, sulfones and sulfoxides (such as dimethyl sulfoxide), oils of vegetable or animal origin. The carrier may also be a liquefied gaseous extender, i.e. liquid which is gaseous at standard temperature and under standard pressure, for example aerosol propellants such as halohydrocarbons, butane, propane, nitrogen and carbon dioxide.

Preferred solid carriers are selected from clays, talc and silica.

20 Preferred liquid carriers are selected from water, fatty acid amides and esters thereof, aromatic and nonaromatic hydrocarbons, lactams and carbonic acid esters.

The amount of carrier typically ranges from 1 to 99.99%, preferably from 5 to 99.9%, more preferably from 10 to 99.5%, and most preferably from 20 to 99% by weight of the composition.

25 Liquid carriers are typically present in a range of from 20 to 90%, for example 30 to 80% by weight of the composition.

Solid carriers are typically present in a range of from 0 to 50%, preferably 5 to 45%, for example 10 to 30% by weight of the composition.

If the composition comprises two or more carriers, the outlined ranges refer to the total amount of carriers.

30 The surfactant can be an ionic (cationic or anionic), amphoteric or non-ionic surfactant, such as ionic or non-ionic emulsifier(s), foam former(s), dispersant(s), wetting agent(s), penetration enhancer(s) and any mixtures thereof. Examples of suitable surfactants include, but are not limited to, salts of polyacrylic acid, salts of lignosulfonic acid (such as sodium lignosulfonate), salts of phenolsulfonic acid or naphthalenesulfonic acid,

- polycondensates of ethylene oxide and/or propylene oxide with fatty alcohols, fatty acids or fatty amines (for example, polyoxyethylene fatty acid esters such as castor oil ethoxylate, polyoxyethylene fatty alcohol ethers, for example alkylaryl polyglycol ethers), substituted phenols (preferably alkylphenols or arylphenols) and ethoxylates thereof (such as tristyrylphenol ethoxylate), salts of sulfosuccinic esters, taurine derivatives
- 5 (preferably alkyl taurates), phosphoric esters of polyethoxylated alcohols or phenols, fatty esters of polyols (such a fatty acid esters of glycerol, sorbitol or sucrose), sulfates (such as alkyl sulfates and alkyl ether sulfates), sulfonates (for example, alkylsulfonates, arylsulfonates and alkylbenzene sulfonates), phosphate esters, protein hydrolysates, lignosulfite waste liquors and methylcellulose. Any reference to salts in this paragraph refers preferably to the respective alkali, alkaline earth and ammonium salts.
- 10 Preferred surfactants are selected from polyoxyethylene fatty alcohol ethers, polyoxyethylene fatty acid esters, alkylbenzene sulfonates, such as calcium dodecylbenzenesulfonate, castor oil ethoxylate, sodium lignosulfonate and arylphenol ethoxylates, such as tristyrylphenol ethoxylate.

The amount of surfactants typically ranges from 5 to 40%, for example 10 to 20%, by weight of the composition.

- 15 Further examples of suitable auxiliaries include water repellents, siccatives, binders (adhesive, tackifier, fixing agent, such as carboxymethylcellulose, natural and synthetic polymers in the form of powders, granules or latices, such as gum arabic, polyvinyl alcohol and polyvinyl acetate, natural phospholipids such as cephalins and lecithins and synthetic phospholipids, polyvinylpyrrolidone and tylose), thickeners and secondary thickeners (such as cellulose ethers, acrylic acid derivatives, xanthan gum, modified clays, e.g.
- 20 the products available under the name Bentone, and finely divided silica), stabilizers (e.g. cold stabilizers, preservatives (e.g. dichlorophene and benzyl alcohol hemiformal), antioxidants, light stabilizers, in particular UV stabilizers, or other agents which improve chemical and/or physical stability), dyes or pigments (such as inorganic pigments, e.g. iron oxide, titanium oxide and Prussian Blue; organic dyes, e.g. alizarin, azo and metal phthalocyanine dyes), antifoams (e.g. silicone antifoams and magnesium stearate),
- 25 antifreezes, stickers, gibberellins and processing auxiliaries, mineral and vegetable oils, perfumes, waxes, nutrients (including trace nutrients, such as salts of iron, manganese, boron, copper, cobalt, molybdenum and zinc), protective colloids, thixotropic substances, penetrants, sequestering agents and complex formers.

- The choice of the auxiliaries depends on the intended mode of application of the compound combination of the invention and/or on the physical properties of the active compound(s) present in said compound
- 30 combination. Furthermore, the auxiliaries may be chosen to impart particular properties (technical, physical and/or biological properties) to the compositions or use forms prepared therefrom. The choice of auxiliaries may allow customizing the compositions to specific needs.

The composition of the invention may be provided to the end user as ready-for-use formulation, i.e. the compositions may be directly applied to the plants or seeds by a suitable device, such as a spraying or dusting

device. Alternatively, the compositions may be provided to the end user in the form of concentrates which have to be diluted, preferably with water, prior to use.

The composition of the invention can be prepared in conventional manners, for example by mixing the compound combination of the invention with one or more suitable auxiliaries, such as disclosed herein
5 above.

The composition comprises a fungicidally effective amount of a compound combination of the invention. The term "effective amount" denotes an amount, which is sufficient for controlling harmful fungi on cultivated plants or in the protection of materials and which does not result in a substantial damage to the treated plants. Such an amount can vary in a broad range and is dependent on various factors, such as the
10 fungal species to be controlled, the treated cultivated plant or material, the climatic conditions and the specific compound combination of the invention used. Usually, the composition according to the invention contains from 0.01 to 99% by weight, preferably from 0.05 to 98% by weight, more preferred from 0.1 to 95% by weight, even more preferably from 0.5 to 90% by weight, most preferably from 1 to 80% by weight of the compound combination of the invention.

15 The composition of the invention may be in any customary composition type, such as solutions (e.g aqueous solutions), emulsions, water- and oil-based suspensions, powders (e.g. wettable powders, soluble powders), dusts, pastes, granules (e.g. soluble granules, granules for broadcasting), suspoemulsion concentrates, natural or synthetic products impregnated with the compound combination of the invention, fertilizers and also microencapsulations in polymeric substances. The compound combination of the invention may be present
20 in a suspended, emulsified or dissolved form. Examples of particular suitable composition types are solutions, watersoluble concentrates (e.g. SL, LS), dispersible concentrates (DC), suspensions and suspension concentrates (e.g. SC, OD, OF, FS), emulsifiable concentrates (e.g. EC), emulsions (e.g. EW, EO, ES, ME, SE), capsules (e.g. CS, ZC), pastes, pastilles, wettable powders or dusts (e.g. WP, SP, WS, DP, DS), pressings (e.g. BR, TB, DT), granules (e.g. WG, SG, GR, FG, GG, MG), insecticidal articles (e.g. LN),
25 as well as gel formulations for the treatment of plant propagation materials such as seeds (e.g. GW, GF). These and further compositions types are defined by the Food and Agriculture Organization of the United Nations (FAO). An overview is given in the "Catalogue of pesticide formulation types and international coding system", Technical Monograph No. 2, 6th Ed. May 2008, Croplife International.

Preferably, the composition of the invention is in form of one of the following types: EC, SC, FS, SE, OD
30 and WG, more preferred EC, SC, OD and WG.

Further details about examples of composition types and their preparation are given below. The outlined amount of compound combination of the invention refers to the total amount of compounds (A) and (B) present in the compound combination of the present invention. If two or more representatives of any further component of the composition, e.g. wetting agent, binder, are present, the outlined amounts of the respective

component refers to the total amount of all representatives of said component, e.g. all wetting agents, all binders, all solvents and so on.

i) Water-soluble concentrates (SL, LS)

10-60 % by weight of the compound combination of the invention and 5-15 % by weight surfactant (e.g. polyoxyethylene fatty alcohol ether) are dissolved in such amount of water and/or water-soluble solvent (e.g. alcohols such as propylene glycol or carbonates such as propylene carbonate) to result in a total amount of 100 % by weight. Before application the concentrate is diluted with water.

ii) Dispersible concentrates (DC)

5-25 % by weight of the compound combination of the invention and 1-10 % by weight surfactant and/or binder (e.g. polyvinylpyrrolidone) are dissolved in such amount of organic solvent (e.g. cyclohexanone) to result in a total amount of 100 % by weight. Dilution with water gives a dispersion.

iii) Emulsifiable concentrates (EC)

15-70 % by weight of the compound combination of the invention and 5-10 % by weight surfactant (e.g. a mixture of calcium dodecylbenzenesulfonate and castor oil ethoxylate) are dissolved in such amount of water-insoluble organic solvent (e.g. aromatic hydrocarbon or fatty acid amide) and if needed additional water-soluble solvent to result in a total amount of 100 % by weight. Dilution with water gives an emulsion.

iv) Emulsions (EW, EO, ES)

5-40 % by weight of the compound combination of the invention and 1-10 % by weight surfactant (e.g. a mixture of calcium dodecylbenzenesulfonate and castor oil ethoxylate) are dissolved in 20-40 % by weight water-insoluble organic solvent (e.g. aromatic hydrocarbon). This mixture is added to such amount of water by means of an emulsifying machine to result in a total amount of 100 % by weight. The resulting composition is a homogeneous emulsion. Before application the emulsion may be further diluted with water.

v) Suspensions and suspension concentrates

v-1) Water-based (SC, FS)

25 In a suitable grinding equipment, e.g. an agitated ball mill, 20-60 % by weight of the compound combination of the invention are comminuted with addition of 2-10 % by weight surfactant (e.g. sodium lignosulfonate and polyoxyethylene fatty alcohol ether), 0.1-2 % by weight thickener (e.g. xanthan gum) and water to give a fine active substance suspension. Water is added in such amount to result in a total amount of 100 % by weight. Dilution with water gives a stable suspension of the active substances. For FS type compositions up to 40 % by weight binder (e.g. polyvinylalcohol) is added.

v-2) Oil-based(OD, OF)

In a suitable grinding equipment, e.g. an agitated ball mill, 20-60 % by weight of the compound combination of the invention are comminuted with addition of 2-10 % by weight surfactant (e.g. sodium lignosulfonate and polyoxyethylene fatty alcohol ether), 0.1-2 % by weight thickener (e.g. modified clay, in particular
5 Bentone, or silica) and an organic carrier to give a fine active substance oil suspension. The organic carrier is added in such amount to result in a total amount of 100 % by weight. Dilution with water gives a stable dispersion of the active substances.

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

50-80 % by weight of the compound combination of the invention are ground finely with addition of
10 surfactant (e.g. sodium lignosulfonate and polyoxyethylene fatty alcohol ether) and converted to water-dispersible or water-soluble granules by means of technical appliances (e. g. extrusion, spray tower, fluidized bed). The surfactant is used in such amount to result in a total amount of 100 % by weight. Dilution with water gives a stable dispersion or solution of the active substances.

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

15 50-80 % by weight of the compound combination of the invention are ground in a suitable mill, preferably a rotor-stator mill, with addition of 1-8 % by weight surfactant (e.g. sodium lignosulfonate, polyoxyethylene fatty alcohol ether) and such amount of solid carrier, e.g. silica gel, to result in a total amount of 100 % by weight. Dilution with water gives a stable dispersion or solution of the active substances.

viii) Gel (GW, GF)

20 In a suitable mill, e.g. an agitated ball mill, 5-25 % by weight of the compound combination of the invention are comminuted with addition of 3-10 % by weight surfactant (e.g. sodium lignosulfonate), 1-5 % by weight binder (e.g. carboxymethylcellulose) and such amount of water to result in a total amount of 100 % by weight. This results in a fine suspension of the active substance. Dilution with water gives a stable suspension of the active substances.

25 ix) Microemulsion (ME)

5-20 % by weight of the compound combination of the invention are added to 5-30 % by weight organic solvent blend (e.g. fatty acid dimethylamide and cyclohexanone), 10-25 % by weight surfactant blend (e.g. polyoxyethylene fatty alcohol ether and arylphenol ethoxylate), and such amount of water to result in a total amount of 100 % by weight. This mixture is stirred for 1 h to produce spontaneously a thermodynamically
30 stable microemulsion.

x) Microcapsules (CS)

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

xi) Dustable powders (DP, DS)

1-10 % by weight of the compound combination of the invention are ground finely and mixed intimately with such amount of solid carrier, e.g. finely divided kaolin, to result in a total amount of 100 % by weight.

xii) Granules (GR, FG)

0.5-30 % by weight of the compound combination of the invention are ground finely and associated with such amount of solid carrier (e.g. silicate) to result in a total amount of 100 % by weight. Granulation is achieved by extrusion, spray-drying or the fluidized bed.

xiii) Ultra-low volume liquids (UL)

1-50 % by weight of the compound combination of the invention are dissolved in such amount of organic solvent, e.g. aromatic hydrocarbon, to result in a total amount of 100 % by weight.

The compositions types i) to xiii) may optionally comprise further auxiliaries, such as 0.1-1 % by weight preservatives, 0.1-1 % by weight antifoams, 0.1-1 % by weight dyes and/or pigments, and 5-10% by weight antifreezes.

Further active ingredients

Compound combinations according to the invention can be used as such or in compositions / formulations thereof and can be mixed with further known active ingredients, for example further fungicides, biological control agents, bactericides, acaricides, nematocides or insecticides, in order thus to broaden, for example, the activity spectrum or to prevent development of resistance.

Further fungicides may be selected from the following groups:

inhibitors of the ergosterol synthesis selected from the group consisting of (1.001) cyproconazole, (1.002) difenoconazole, (1.003) epoxiconazole, (1.004) fenhexamid, (1.005) fenpropidin, (1.006) fenpropimorph, (1.007) fenpyrazamine, (1.008) fluquinconazole, (1.009) flutriafol, (1.010) imazalil, (1.011) imazalil sulfate, (1.012) ipconazole, (1.013) metconazole, (1.014) myclobutanil, (1.015) paclobutrazol, (1.016) prochloraz, (1.017) propiconazole, (1.018) prothioconazole, (1.019) pyrisoxazole, (1.020) spiroxamine, (1.021) tebuconazole, (1.022) tetraconazole, (1.023) triadimenol, (1.024) tridemorph, (1.025) triticonazole, (1.026) (1R,2S,5S)-5-(4-chlorobenzyl)-2-(chloromethyl)-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol, (1.027) (1S,2R,5R)-5-(4-chlorobenzyl)-2-(chloromethyl)-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol, (1.028) (2R)-2-(1-chlorocyclopropyl)-4-[(1R)-2,2-dichlorocyclopropyl]-1-(1H-1,2,4-triazol-1-yl)butan-2-ol, (1.029) (2R)-2-(1-chlorocyclopropyl)-4-[(1S)-2,2-dichlorocyclopropyl]-1-(1H-1,2,4-triazol-1-yl)butan-2-ol, (1.030) (2R)-2-[4-(4-chlorophenoxy)-2-(trifluoromethyl)phenyl]-1-(1H-1,2,4-triazol-1-yl)propan-2-ol, (1.031) (2S)-2-(1-chlorocyclopropyl)-4-[(1R)-2,2-dichlorocyclopropyl]-1-(1H-1,2,4-triazol-1-yl)butan-2-ol, (1.032) (2S)-2-(1-chlorocyclopropyl)-4-[(1S)-2,2-dichlorocyclopropyl]-1-(1H-1,2,4-triazol-1-yl)butan-2-ol, (1.033) (2S)-2-[4-(4-chlorophenoxy)-2-(trifluoromethyl)phenyl]-1-(1H-1,2,4-triazol-1-yl)propan-2-ol, (1.034) (R)-[3-(4-chloro-2-fluorophenyl)-5-(2,4-difluorophenyl)-1,2-oxazol-4-yl](pyridin-3-yl)methanol, (1.035) (S)-[3-(4-chloro-2-fluorophenyl)-5-(2,4-difluorophenyl)-1,2-oxazol-4-yl](pyridin-3-yl)methanol, (1.036) [3-(4-chloro-2-fluorophenyl)-5-(2,4-difluorophenyl)-1,2-oxazol-4-yl](pyridin-3-yl)methanol, (1.037) 1-({(2R,4S)-2-[2-chloro-4-(4-chlorophenoxy)phenyl]-4-methyl-1,3-dioxolan-2-yl}methyl)-1H-1,2,4-triazole, (1.038) 1-({(2S,4S)-2-[2-chloro-4-(4-chlorophenoxy)phenyl]-4-methyl-1,3-dioxolan-2-yl}methyl)-1H-1,2,4-triazole, (1.039) 1-{[3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-1H-1,2,4-triazol-5-yl thiocyanate, (1.040) 1-{[rel(2R,3R)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-1H-1,2,4-triazol-5-yl thiocyanate, (1.041) 1-{[rel(2R,3S)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-1H-1,2,4-triazol-5-yl thiocyanate, (1.042) 2-[(2R,4R,5R)-1-(2,4-dichlorophenyl)-5-hydroxy-2,6,6-trimethylheptan-4-yl]-2,4-dihydro-3H-1,2,4-triazole-3-thione, (1.043) 2-[(2R,4R,5S)-1-(2,4-dichlorophenyl)-5-hydroxy-2,6,6-trimethylheptan-4-yl]-2,4-dihydro-3H-1,2,4-triazole-3-thione, (1.044) 2-[(2R,4S,5R)-1-(2,4-dichlorophenyl)-5-hydroxy-2,6,6-trimethylheptan-4-yl]-2,4-dihydro-3H-1,2,4-triazole-3-thione, (1.045) 2-[(2R,4S,5S)-1-(2,4-dichlorophenyl)-5-hydroxy-2,6,6-trimethylheptan-4-yl]-2,4-dihydro-3H-1,2,4-triazole-3-thione, (1.046) 2-[(2S,4R,5R)-1-(2,4-dichlorophenyl)-5-hydroxy-2,6,6-trimethylheptan-4-yl]-2,4-dihydro-3H-1,2,4-triazole-3-thione, (1.047) 2-[(2S,4R,5S)-1-(2,4-dichlorophenyl)-5-hydroxy-2,6,6-trimethylheptan-4-yl]-2,4-dihydro-3H-1,2,4-triazole-3-thione, (1.048) 2-[(2S,4S,5R)-1-(2,4-dichlorophenyl)-5-hydroxy-2,6,6-trimethylheptan-4-yl]-2,4-dihydro-3H-1,2,4-triazole-3-thione, (1.049) 2-[(2S,4S,5S)-1-(2,4-dichlorophenyl)-5-hydroxy-2,6,6-trimethylheptan-4-yl]-2,4-dihydro-3H-1,2,4-triazole-3-thione, (1.050) 2-[1-(2,4-dichlorophenyl)-5-hydroxy-2,6,6-trimethylheptan-4-yl]-2,4-dihydro-3H-1,2,4-triazole-3-thione, (1.051) 2-[2-chloro-4-(2,4-dichlorophenoxy)phenyl]-1-(1H-1,2,4-triazol-1-yl)propan-2-ol, (1.052) 2-[2-chloro-4-(4-chlorophenoxy)phenyl]-1-(1H-1,2,4-triazol-1-yl)butan-2-ol, (1.053) 2-[4-(4-chlorophenoxy)-2-(trifluoromethyl)phenyl]-1-(1H-1,2,4-triazol-1-yl)butan-2-

- ol, (1.054) 2-[4-(4-chlorophenoxy)-2-(trifluoromethyl)phenyl]-1-(1H-1,2,4-triazol-1-yl)pentan-2-ol, (1.055) mefentrifluconazole, (1.056) 2-{[3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-2,4-dihydro-3H-1,2,4-triazole-3-thione, (1.057) 2-{[rel(2R,3R)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-2,4-dihydro-3H-1,2,4-triazole-3-thione, (1.058) 2-{[rel(2R,3S)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-2,4-dihydro-3H-1,2,4-triazole-3-thione, (1.059) 5-(4-chlorobenzyl)-2-(chloromethyl)-2-methyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol, (1.060) 5-(allylsulfanyl)-1-{[3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-1H-1,2,4-triazole, (1.061) 5-(allylsulfanyl)-1-{[rel(2R,3R)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-1H-1,2,4-triazole, (1.062) 5-(allylsulfanyl)-1-{[rel(2R,3S)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)oxiran-2-yl]methyl}-1H-1,2,4-triazole, (1.063) N'-(2,5-dimethyl-4-{[3-(1,1,2,2-tetrafluoroethoxy)phenyl]sulfanyl}phenyl)-N-ethyl-N-methylimidoforamide, (1.064) N'-(2,5-dimethyl-4-{[3-(2,2,2-trifluoroethoxy)phenyl]sulfanyl}phenyl)-N-ethyl-N-methylimidoforamide, (1.065) N'-(2,5-dimethyl-4-{[3-(2,2,3,3-tetrafluoropropoxy)phenyl]sulfanyl}phenyl)-N-ethyl-N-methylimidoforamide, (1.066) N'-(2,5-dimethyl-4-{[3-(pentafluoroethoxy)phenyl]sulfanyl}phenyl)-N-ethyl-N-methylimidoforamide, (1.067) N'-(2,5-dimethyl-4-{3-[(1,1,2,2-tetrafluoroethyl)sulfanyl]phenoxy}phenyl)-N-ethyl-N-methylimidoforamide, (1.068) N'-(2,5-dimethyl-4-{3-[(2,2,2-trifluoroethyl)sulfanyl]phenoxy}phenyl)-N-ethyl-N-methylimidoforamide, (1.069) N'-(2,5-dimethyl-4-{3-[(2,2,3,3-tetrafluoropropyl)sulfanyl]phenoxy}phenyl)-N-ethyl-N-methylimidoforamide, (1.070) N'-(2,5-dimethyl-4-{3-[(pentafluoroethyl)sulfanyl]phenoxy}phenyl)-N-ethyl-N-methylimidoforamide, (1.071) N'-(2,5-dimethyl-4-phenoxyphenyl)-N-ethyl-N-methylimidoforamide, (1.072) N'-(4-{[3-(difluoromethoxy)phenyl]sulfanyl}-2,5-dimethylphenyl)-N-ethyl-N-methylimidoforamide, (1.073) N'-(4-{3-[(difluoromethyl)sulfanyl]phenoxy}-2,5-dimethylphenyl)-N-ethyl-N-methylimidoforamide, (1.074) N'-[5-bromo-6-(2,3-dihydro-1H-inden-2-yloxy)-2-methylpyridin-3-yl]-N-ethyl-N-methylimidoforamide, (1.075) N'-{4-[(4,5-dichloro-1,3-thiazol-2-yl)oxy]-2,5-dimethylphenyl}-N-ethyl-N-methylimidoforamide, (1.076) N'-{5-bromo-6-[(1R)-1-(3,5-difluorophenyl)ethoxy]-2-methylpyridin-3-yl}-N-ethyl-N-methylimidoforamide, (1.077) N'-{5-bromo-6-[(1S)-1-(3,5-difluorophenyl)ethoxy]-2-methylpyridin-3-yl}-N-ethyl-N-methylimidoforamide, (1.078) N'-{5-bromo-6-[(cis-4-isopropylcyclohexyl)oxy]-2-methylpyridin-3-yl}-N-ethyl-N-methylimidoforamide, (1.079) N'-{5-bromo-6-[(trans-4-isopropylcyclohexyl)oxy]-2-methylpyridin-3-yl}-N-ethyl-N-methylimidoforamide, (1.080) N'-{5-bromo-6-[1-(3,5-difluorophenyl)ethoxy]-2-methylpyridin-3-yl}-N-ethyl-N-methylimidoforamide, (1.081) ipfentrifluconazole and (1.082) 2-[6-(4-bromophenoxy)-2-(trifluoromethyl)-3-pyridyl]-1-(1,2,4-triazol-1-yl)propan-2-ol,

inhibitors of the mitosis and cell division selected from the group consisting of (4.001) carbendazim, (4.002) diethofencarb, (4.003) ethaboxam, (4.004) fluopicolide, (4.005) pencycuron, (4.006) thiabendazole, (4.007) thiophanate-methyl, (4.008) zoxamide, (4.009) 3-chloro-4-(2,6-difluorophenyl)-6-methyl-5-phenylpyridazine, (4.010) 3-chloro-5-(4-chlorophenyl)-4-(2,6-difluorophenyl)-6-methylpyridazine, (4.011) 3-chloro-5-(6-chloropyridin-3-yl)-6-methyl-4-(2,4,6-trifluorophenyl)pyridazine, (4.012) 4-(2-bromo-4-

fluorophenyl)-N-(2,6-difluorophenyl)-1,3-dimethyl-1H-pyrazol-5-amine, (4.013) 4-(2-bromo-4-fluorophenyl)-N-(2-bromo-6-fluorophenyl)-1,3-dimethyl-1H-pyrazol-5-amine, (4.014) 4-(2-bromo-4-fluorophenyl)-N-(2-bromophenyl)-1,3-dimethyl-1H-pyrazol-5-amine, (4.015) 4-(2-bromo-4-fluorophenyl)-N-(2-chloro-6-fluorophenyl)-1,3-dimethyl-1H-pyrazol-5-amine, (4.016) 4-(2-bromo-4-fluorophenyl)-N-(2-chlorophenyl)-1,3-dimethyl-1H-pyrazol-5-amine, (4.017) 4-(2-bromo-4-fluorophenyl)-N-(2-fluorophenyl)-1,3-dimethyl-1H-pyrazol-5-amine, (4.018) 4-(2-chloro-4-fluorophenyl)-N-(2,6-difluorophenyl)-1,3-dimethyl-1H-pyrazol-5-amine, (4.019) 4-(2-chloro-4-fluorophenyl)-N-(2-chloro-6-fluorophenyl)-1,3-dimethyl-1H-pyrazol-5-amine, (4.020) 4-(2-chloro-4-fluorophenyl)-N-(2-chlorophenyl)-1,3-dimethyl-1H-pyrazol-5-amine, (4.021) 4-(2-chloro-4-fluorophenyl)-N-(2-fluorophenyl)-1,3-dimethyl-1H-pyrazol-5-amine, (4.022) 4-(4-chlorophenyl)-5-(2,6-difluorophenyl)-3,6-dimethylpyridazine, (4.023) N-(2-bromo-6-fluorophenyl)-4-(2-chloro-4-fluorophenyl)-1,3-dimethyl-1H-pyrazol-5-amine, (4.024) N-(2-bromophenyl)-4-(2-chloro-4-fluorophenyl)-1,3-dimethyl-1H-pyrazol-5-amine, (4.025) N-(4-chloro-2,6-difluorophenyl)-4-(2-chloro-4-fluorophenyl)-1,3-dimethyl-1H-pyrazol-5-amine,

compounds capable of having a multisite action selected from the group consisting of (5.001) bordeaux mixture, (5.002) captafol, (5.003) captan, (5.004) chlorothalonil, (5.005) copper hydroxide, (5.006) copper naphthenate, (5.007) copper oxide, (5.008) copper oxychloride, (5.009) copper(2+) sulfate, (5.010) dithianon, (5.011) dodine, (5.012) folpet, (5.013) mancozeb, (5.014) maneb, (5.015) metiram, (5.016) metiram zinc, (5.017) oxine-copper, (5.018) propineb, (5.019) sulfur and sulfur preparations including calcium polysulfide, (5.020) thiram, (5.021) zineb, (5.022) ziram, (5.023) 6-ethyl-5,7-dioxo-6,7-dihydro-5H-pyrrolo[3',4':5,6][1,4]dithiino[2,3-c][1,2]thiazole-3-carbonitrile,

compounds capable of inducing a host defense selected from the group consisting of (6.001) acibenzolar-S-methyl, (6.002) isotianil, (6.003) probenazole, and (6.004) tiadinil,

inhibitors of the amino acid and/or protein biosynthesis selected from the group consisting of (7.001) cyprodinil, (7.002) kasugamycin, (7.003) kasugamycin hydrochloride hydrate, (7.004) oxytetracycline, (7.005) pyrimethanil, and (7.006) 3-(5-fluoro-3,3,4,4-tetramethyl-3,4-dihydroisoquinolin-1-yl)quinolone,

inhibitors of the ATP production selected from the group consisting of (8.001) silthiofam,

inhibitors of the cell wall synthesis selected from the group consisting of (9.001) benthiavalicarb, (9.002) dimethomorph, (9.003) flumorph, (9.004) iprovalicarb, (9.005) mandipropamid, (9.006) pyrimorph, (9.007) valifenalate, (9.008) (2E)-3-(4-tert-butylphenyl)-3-(2-chloropyridin-4-yl)-1-(morpholin-4-yl)prop-2-en-1-one, and (9.009) (2Z)-3-(4-tert-butylphenyl)-3-(2-chloropyridin-4-yl)-1-(morpholin-4-yl)prop-2-en-1-one,

inhibitors of the lipid and membrane synthesis selected from the group consisting of (10.001) propamocarb, (10.002) propamocarb hydrochloride, and (10.003) tolclofos-methyl,

inhibitors of the melanine biosynthesis selected from the group consisting of (11.001) tricyclazole, and (11.002) 2,2,2-trifluoroethyl {3-methyl-1-[(4-methylbenzoyl)amino]butan-2-yl}carbamate,

inhibitors of the nucleic acid synthesis selected from the group consisting of (12.001) benalaxyl, (12.002) benalaxyl-M (kiralaxyl), (12.003) metalaxyl, and (12.004) metalaxyl-M (mefenoxam),

- 5 inhibitors of the signal transduction selected from the group consisting of (13.001) fludioxonil, (13.002) iprodione, (13.003) procymidone, (13.004) proquinazid, (13.005) quinoxifen, and (13.006) vinclozolin,

compounds capable of acting as uncoupler selected from the group consisting of (14.001) fluazinam, and (14.002) meptyldinocap, and

- other fungicides selected from the group consisting of (15.001) abscisic acid, (15.002) benthiazole, (15.003) bethoxazin, (15.004) capsimycin, (15.005) carvone, (15.006) chinomethionat, (15.007) cufraneb, (15.008) cyflufenamid, (15.009) cymoxanil, (15.010) cyprosulfamide, (15.011) flutianil, (15.012) fosetyl-aluminium, (15.013) fosetyl-calcium, (15.014) fosetyl-sodium, (15.015) methyl isothiocyanate, (15.016) metrafenone, (15.017) mildiomyacin, (15.018) natamycin, (15.019) nickel dimethyldithiocarbamate, (15.020) nitrothal-isopropyl, (15.021) oxamocarb, (15.022) oxathiapiprolin, (15.023) oxyfenthiin, (15.024) pentachlorophenol and salts, (15.025) phosphorous acid and its salts, (15.026) propamocarb-fosetylate, (15.027) pyriofenone (chlazafenone), (15.028) tebufloquin, (15.029) tecloftalam, (15.030) tolifenanide, (15.031) 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, (15.032) 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, (15.033) 2-(6-benzylpyridin-2-yl)quinazoline, (15.034) dipymetitrone, (15.035) 2-[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]-1-[4-(4-{5-[2-(prop-2-yn-1-yloxy)phenyl]-4,5-dihydro-1,2-oxazol-3-yl}-1,3-thiazol-2-yl)piperidin-1-yl]ethanone, (15.036) 2-[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]-1-[4-(4-{5-[2-chloro-6-(prop-2-yn-1-yloxy)phenyl]-4,5-dihydro-1,2-oxazol-3-yl}-1,3-thiazol-2-yl)piperidin-1-yl]ethanone, (15.037) 2-[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]-1-[4-(4-{5-[2-fluoro-6-(prop-2-yn-1-yloxy)phenyl]-4,5-dihydro-1,2-oxazol-3-yl}-1,3-thiazol-2-yl)piperidin-1-yl]ethanone, (15.038) 2-[6-(3-fluoro-4-methoxyphenyl)-5-methylpyridin-2-yl]quinazoline, (15.039) 2-{(5R)-3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate, (15.040) 2-{(5S)-3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate, (15.041) ipflufenquin, (15.042) 2-{2-fluoro-6-[(8-fluoro-2-methylquinolin-3-yl)oxy]phenyl}propan-2-ol, (15.043) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate, (15.044) 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}phenyl methanesulfonate, (15.045) 2-phenylphenol and salts, (15.046) 3-(4,4,5-trifluoro-3,3-dimethyl-

3,4-dihydroisoquinolin-1-yl)quinoline, (15.047) quinofumelin, (15.048) 4-amino-5-fluoropyrimidin-2-ol (tautomeric form: 4-amino-5-fluoropyrimidin-2(1H)-one), (15.049) 4-oxo-4-[(2-phenylethyl)amino]butanoic acid, (15.050) 5-amino-1,3,4-thiadiazole-2-thiol, (15.051) 5-chloro-N'-phenyl-N'-(prop-2-yn-1-yl)thiophene-2-sulfonohydrazide, (15.052) 5-fluoro-2-[(4-fluorobenzyl)oxy]pyrimidin-4-amine, (15.053) 5-fluoro-2-[(4-methylbenzyl)oxy]pyrimidin-4-amine, (15.054) 9-fluoro-2,2-dimethyl-5-(quinolin-3-yl)-2,3-dihydro-1,4-benzoxazepine, (15.055) but-3-yn-1-yl {6-[(Z)-(1-methyl-1H-tetrazol-5-yl)(phenyl)methylene]amino}oxy)methyl]pyridin-2-yl} carbamate, (15.056) ethyl (2Z)-3-amino-2-cyano-3-phenylacrylate, (15.057) phenazine-1-carboxylic acid, (15.058) propyl 3,4,5-trihydroxybenzoate, (15.059) quinolin-8-ol, (15.060) quinolin-8-ol sulfate (2:1), (15.061) tert-butyl {6-[(Z)-(1-methyl-1H-tetrazol-5-yl)(phenyl)methylene]amino}oxy)methyl]pyridin-2-yl} carbamate, (15.062) 5-fluoro-4-imino-3-methyl-1-[(4-methylphenyl)sulfonyl]-3,4-dihydropyrimidin-2(1H)-one, (15.063) aminopyrifene, (15.065) (N'-(2-chloro-5-methyl-4-phenoxyphenyl)-N-ethyl-N-methylimidoformamide), (15.066) (2-{2-[(7,8-difluoro-2-methylquinolin-3-yl)oxy]-6-fluorophenyl}propan-2-ol), (15.067) (5-bromo-1-(5,6-dimethylpyridin-3-yl)-3,3-dimethyl-3,4-dihydroisoquinoline), (15.068) (3-(4,4-difluoro-5,5-dimethyl-4,5-dihydrothieno[2,3-c]pyridin-7-yl)quinoline), (15.069) (1-(4,5-dimethyl-1H-benzimidazol-1-yl)-4,4-difluoro-3,3-dimethyl-3,4-dihydroisoquinoline), (15.070) 8-fluoro-3-(5-fluoro-3,3-dimethyl-3,4-dihydroisoquinolin-1-yl)quinolone, (15.071) 8-fluoro-3-(5-fluoro-3,3,4,4-tetramethyl-3,4-dihydroisoquinolin-1-yl)quinolone, (15.072) 3-(4,4-difluoro-3,3-dimethyl-3,4-dihydroisoquinolin-1-yl)-8-fluoroquinoline, (15.073) (N-methyl-N-phenyl-4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]benzamide), (15.074) (methyl{4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl} carbamate), (15.075) (N-{4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]benzyl}-cyclopropanecarboxamide), (15.077) N-(E)-methoxyiminomethyl-4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]benzamide, (15.078) N-[(Z)-methoxyiminomethyl]-4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]benzamide, (15.079) N-[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]cyclopropanecarboxamide, (15.082) N-allyl-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]acetamide, (15.083) N-[(E)-N-methoxy-C-methyl-carbonimidoyl]-4-(5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]benzamide, (15.084) N-[(Z)-N-methoxy-C-methyl-carbonimidoyl]-4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]benzamide, (15.085) N-allyl-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, (15.086) 4,4-dimethyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]pyrrolidin-2-one, (15.088) 5-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]pyrrolidin-2-one, (15.089) N-((2,3-difluoro-4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl)methyl)-3,3,3-trifluoro-propanamide, (15.090) 1-methoxy-1-methyl-3-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, (15.091) 1,1-diethyl-3-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, (15.092) N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, (15.093) N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, (15.094) 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, (15.095) N-methoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]cyclopropanecarboxamide, (15.096) N,2-dimethoxy-N-[[4-[5-(trifluoromethyl)-1,2,4-

- oxadiazol-3-yl]phenyl]methyl]propanamide, (15.097) N-ethyl-2-methyl-N-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]propanamide, (15.098) 1-methoxy-3-methyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, (15.099) 1,3-dimethoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, (15.100) 3-ethyl-1-methoxy-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]urea, (15.101) 1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]piperidin-2-one, (15.102) 4,4-dimethyl-2-[[4-(5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]isooxazolidin-3-one, (15.103) 5,5-dimethyl-2-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]isoxazolidin-3-one, (15.104) 3,3-dimethyl-1-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]piperidin-2-one, (15.105) 1-[[3-fluoro-4-(5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]azepan-2-one, (15.106) 4,4-dimethyl-2-[[4-(5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]isoxazolidin-3-one and (15.107) 5,5-dimethyl-2-[[4-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]phenyl]methyl]isoxazolidin-3-one.

Useful mixing partners include, for example, insecticides, acaricides, nematicides and bactericides (see also Pesticide Manual, 14th ed.).

- 15 A mixture with other known active ingredients, such as herbicides, or with fertilizers and growth regulators, safeners and/or semiochemicals, is also possible.

“Insecticides” as well as the term “insecticidal” refers to the ability of a substance to increase mortality or inhibit growth rate of insects. As used herein, the term “insects” comprises all organisms in the class “Insecta”.

- 20 “Nematicide” and “nematicidal” refers to the ability of a substance to increase mortality or inhibit the growth rate of nematodes. In general, the term “nematode” comprises eggs, larvae, juvenile and mature forms of said organism.

“Acaricide” and “acaricidal” refers to the ability of a substance to increase mortality or inhibit growth rate of ectoparasites belonging to the class Arachnida, sub-class Acari.

- 25 As used herein, the term “biological control” is defined as control of harmful organisms such as a phytopathogenic fungi and/or insects and/or acarids and/or nematodes by the use or employment of a biological control agent.

- As used herein, the term “biological control agent” is defined as an organism other than the harmful organisms and / or proteins or secondary metabolites produced by such an organism for the purpose of biological control. Mutants of the second organism shall be included within the definition of the biological control agent. The term “mutant” refers to a variant of the parental strain as well as methods for obtaining a mutant or variant in which the pesticidal activity is greater than that expressed by the parental strain.
- 30

The "parent strain" is defined herein as the original strain before mutagenesis. To obtain such mutants the parental strain may be treated with a chemical such as N-methyl-N'-nitro-N-nitrosoguanidine, ethylmethanesulfone, or by irradiation using gamma, x-ray, or UV-irradiation, or by other means well known to those skilled in the art. Known mechanisms of biological control agents comprise enteric bacteria that control root rot by out-competing fungi for space on the surface of the root. Bacterial toxins, such as antibiotics, have been used to control pathogens. The toxin can be isolated and applied directly to the plant or the bacterial species may be administered so it produces the toxin *in situ*.

A "variant" is a strain having all the identifying characteristics of the NRRL or ATCC Accession Numbers as indicated in this text and can be identified as having a genome that hybridizes under conditions of high stringency to the genome of the NRRL or ATCC Accession Numbers.

"Hybridization" refers to a reaction in which one or more polynucleotides react to form a complex that is stabilized via hydrogen bonding between the bases of the nucleotide residues. The hydrogen bonding may occur by Watson-Crick base pairing, Hoogsteen binding, or in any other sequence-specific manner. The complex may comprise two strands forming a duplex structure, three or more strands forming a multi-stranded complex, a single self-hybridizing strand, or any combination of these. Hybridization reactions can be performed under conditions of different "stringency". In general, a low stringency hybridization reaction is carried out at about 40 °C in 10 X SSC or a solution of equivalent ionic strength/temperature. A moderate stringency hybridization is typically performed at about 50 °C in 6 X SSC, and a high stringency hybridization reaction is generally performed at about 60 °C in 1 X SSC.

A variant of the indicated NRRL or ATCC Accession Number may also be defined as a strain having a genomic sequence that is greater than 85%, more preferably greater than 90% or more preferably greater than 95% sequence identity to the genome of the indicated NRRL or ATCC Accession Number. A polynucleotide or polynucleotide region (or a polypeptide or polypeptide region) has a certain percentage (for example, 80%, 85%, 90%, or 95%) of "sequence identity" to another sequence means that, when aligned, that percentage of bases (or amino acids) are the same in comparing the two sequences. This alignment and the percent homology or sequence identity can be determined using software programs known in the art, for example, those described in Current Protocols in Molecular Biology (F. M. Ausubel et al., eds., 1987).

NRRL is the abbreviation for the Agricultural Research Service Culture Collection, an international depositary authority for the purposes of depositing microorganism strains under the Budapest treaty on the international recognition of the deposit of microorganisms for the purposes of patent procedure, having the address National Center for Agricultural Utilization Research, Agricultural Research service, U.S. Department of Agriculture, 1815 North university Street, Peroira, Illinois 61604 USA.

ATCC is the abbreviation for the American Type Culture Collection, an international depositary authority for the purposes of depositing microorganism strains under the Budapest treaty on the international recognition of the deposit of microorganisms for the purposes of patent procedure, having the address ATCC Patent Depository, 10801 University Blvd., Manassas, VA 10110 USA.

- 5 Examples of biological control agents which may be combined with the compound combinations of the invention are:

(A) Antibacterial agents selected from the group of:

- (A1) bacteria, such as (A1.1) *Bacillus subtilis*, in particular strain QST713/AQ713 (available as SERENADE OPTI or SERENADE ASO from Bayer CropScience LP, US, having NRRL Accession No. B21661 and described in U.S. Patent No. 6,060,051); (A1.2) *Bacillus amyloliquefaciens*, in particular strain D747 (available as Double Nickel™ from Certis, US, having accession number FERM BP-8234 and disclosed in US Patent No. 7,094,592); (A1.3) *Bacillus pumilus*, in particular strain BU F-33 (having NRRL Accession No. 50185); (A1.4) *Bacillus subtilis* var. *amyloliquefaciens* strain FZB24 (available as Taegro® from Novozymes, US); (A1.5) a *Paenibacillus* sp. strain having Accession No. NRRL B-50972 or Accession No. NRRL B-67129 and described in International Patent Publication No. WO 2016/154297; and

(A2) fungi, such as (A2.1) *Aureobasidium pullulans*, in particular blastospores of strain DSM14940; (A2.2) *Aureobasidium pullulans* blastospores of strain DSM 14941; (A2.3) *Aureobasidium pullulans*, in particular mixtures of blastospores of strains DSM14940 and DSM14941;

(B) Biological fungicides selected from the group of:

- (B1) bacteria, for example (B1.1) *Bacillus subtilis*, in particular strain QST713/AQ713 (available as SERENADE OPTI or SERENADE ASO from Bayer CropScience LP, US, having NRRL Accession No. B21661 and described in U.S. Patent No. 6,060,051); (B1.2) *Bacillus pumilus*, in particular strain QST2808 (available as SONATA® from Bayer CropScience LP, US, having Accession No. NRRL B-30087 and described in U.S. Patent No. 6,245,551); (B1.3) *Bacillus pumilus*, in particular strain GB34 (available as Yield Shield® from Bayer AG, DE); (B1.4) *Bacillus pumilus*, in particular strain BU F-33 (having NRRL Accession No. 50185); (B1.5) *Bacillus amyloliquefaciens*, in particular strain D747 (available as Double Nickel™ from Certis, US, having accession number FERM BP-8234 and disclosed in US Patent No. 7,094,592); (B1.6) *Bacillus subtilis* Y1336 (available as BIOBAC® WP from Bion-Tech, Taiwan, registered as a biological fungicide in Taiwan under Registration Nos. 4764, 5454, 5096 and 5277); (B1.7) *Bacillus amyloliquefaciens* strain MBI 600 (available as SUBTILEX from BASF SE); (B1.8) *Bacillus subtilis* strain GB03 (available as Kodiak® from Bayer AG, DE); (B1.9) *Bacillus subtilis* var. *amyloliquefaciens* strain FZB24 (available from Novozymes Biologicals Inc., Salem, Virginia or Syngenta Crop Protection, LLC, Greensboro, North Carolina as the fungicide TAEGRO® or TAEGRO® ECO (EPA Registration No. 70127-

5); (B1.10) *Bacillus mycoides*, isolate J (available as BmJ TGAI or WG from Certis USA); (B1.11) *Bacillus licheniformis*, in particular strain SB3086 (available as EcoGuard™ Biofungicide and Green Releaf from Novozymes); (B1.12) a *Paenibacillus* sp. strain having Accession No. NRRL B-50972 or Accession No. NRRL B-67129 and described in International Patent Publication No. WO 2016/154297.

- 5 In some embodiments, the biological control agent is a *Bacillus subtilis* or *Bacillus amyloliquefaciens* strain that produces a fengycin or plipastatin-type compound, an iturin-type compound, and/or a surfactin-type compound. For background, see the following review article: Ongena, M., et al., “*Bacillus* Lipopeptides: Versatile Weapons for Plant Disease Biocontrol,” Trends in Microbiology, Vol 16, No. 3, March 2008, pp. 115-125. *Bacillus* strains capable of producing lipopeptides include *Bacillus subtilis* QST713 (available as
- 10 SERENADE OPTI or SERENADE ASO from Bayer CropScience LP, US, having NRRL Accession No. B21661 and described in U.S. Patent No. 6,060,051), *Bacillus amyloliquefaciens* strain D747 (available as Double Nickel™ from Certis, US, having accession number FERM BP-8234 and disclosed in US Patent No. 7,094,592); *Bacillus subtilis* MBI600 (available as SUBTILEX® from Becker Underwood, US EPA Reg. No. 71840-8); *Bacillus subtilis* Y1336 (available as BIOBAC® WP from Bion-Tech, Taiwan,
- 15 registered as a biological fungicide in Taiwan under Registration Nos. 4764, 5454, 5096 and 5277); *Bacillus amyloliquefaciens*, in particular strain FZB42 (available as RHIZOVITAL® from ABiTEP, DE); and *Bacillus subtilis* var. *amyloliquefaciens* FZB24 (available from Novozymes Biologicals Inc., Salem, Virginia or Syngenta Crop Protection, LLC, Greensboro, North Carolina as the fungicide TAEGRO® or TAEGRO® ECO (EPA Registration No. 70127-5); and
- 20 (B2) fungi, for example: (B2.1) *Coniothyrium minitans*, in particular strain CON/M/91-8 (Accession No. DSM-9660; e.g. Contans® from Bayer); (B2.2) *Metschnikowia fructicola*, in particular strain NRRL Y-30752 (e.g. Shemer®); (B2.3) *Microsphaeropsis ochracea* (e.g. Microx® from Prophyta); (B2.5) *Trichoderma* spp., including *Trichoderma atroviride*, strain SC1 described in International Application No. PCT/IT2008/000196); (B2.6) *Trichoderma harzianum* rifai strain KRL-AG2 (also known as strain T-22,
- 25 /ATCC 208479, e.g. PLANTSHIELD T-22G, Rootshield®, and TurfShield from BioWorks, US); (B2.14) *Gliocladium roseum*, strain 321U from W.F. Stoneman Company LLC; (B2.35) *Talaromyces flavus*, strain V117b; (B2.36) *Trichoderma asperellum*, strain ICC 012 from Isagro; (B2.37) *Trichoderma asperellum*, strain SKT-1 (e.g. ECO-HOPE® from Kumiai Chemical Industry); (B2.38) *Trichoderma atroviride*, strain CNCM I-1237 (e.g. Esquive® WP from Agrauxine, FR); (B2.39) *Trichoderma atroviride*, strain no.
- 30 V08/002387; (B2.40) *Trichoderma atroviride*, strain NMI no. V08/002388; (B2.41) *Trichoderma atroviride*, strain NMI no. V08/002389; (B2.42) *Trichoderma atroviride*, strain NMI no. V08/002390; (B2.43) *Trichoderma atroviride*, strain LC52 (e.g. Tenet by Agrimm Technologies Limited); (B2.44) *Trichoderma atroviride*, strain ATCC 20476 (IMI 206040); (B2.45) *Trichoderma atroviride*, strain T11 (IMI352941/ CECT20498); (B2.46) *Trichoderma harmatum*; (B2.47) *Trichoderma harzianum*; (B2.48)
- 35 *Trichoderma harzianum* rifai T39 (e.g. Trichodex® from Makhteshim, US); (B2.49) *Trichoderma harzianum*, in particular, strain KD (e.g. Trichoplus from Biological Control Products, SA (acquired by

Becker Underwood)); (B2.50) *Trichoderma harzianum*, strain ITEM 908 (e.g. Trianum-P from Koppert); (B2.51) *Trichoderma harzianum*, strain TH35 (e.g. Root-Pro by Mycontrol); (B2.52) *Trichoderma virens* (also known as *Gliocladium virens*), in particular strain GL-21 (e.g. SoilGard 12G by Certis, US); (B2.53) *Trichoderma viride*, strain TV1 (e.g. Trianum-P by Koppert); (B2.54) *Ampelomyces quisqualis*, in particular strain AQ 10 (e.g. AQ 10® by IntrachemBio Italia); (B2.56) *Aureobasidium pullulans*, in particular blastospores of strain DSM14940; (B2.57) *Aureobasidium pullulans*, in particular blastospores of strain DSM 14941; (B2.58) *Aureobasidium pullulans*, in particular mixtures of blastospores of strains DSM14940 and DSM 14941 (e.g. Botector® by bio-ferm, CH); (B2.64) *Cladosporium cladosporioides*, strain H39 (by Stichting Dienst Landbouwkundig Onderzoek); (B2.69) *Gliocladium catenulatum* (Synonym: *Clonostachys rosea f. catenulate*) strain J1446 (e.g. Prestop ® by AgBio Inc. and also e.g. Primastop® by Kemira Agro Oy); (B2.70) *Lecanicillium lecanii* (formerly known as *Verticillium lecanii*) conidia of strain KV01 (e.g. Vertalec® by Koppert/Arysta); (B2.71) *Penicillium vermiculatum*; (B2.72) *Pichia anomala*, strain WRL-076 (NRRL Y-30842); (B2.75) *Trichoderma atroviride*, strain SKT-1 (FERM P-16510); (B2.76) *Trichoderma atroviride*, strain SKT-2 (FERM P-16511); (B2.77) *Trichoderma atroviride*, strain SKT-3 (FERM P-17021); (B2.78) *Trichoderma gamsii* (formerly *T. viride*), strain ICC080 (IMI CC 392151 CABI, e.g. BioDerma by AGROBIOSOL DE MEXICO, S.A. DE C.V.); (B2.79) *Trichoderma harzianum*, strain DB 103 (e.g., T-Gro 7456 by Dagut Biolab); (B2.80) *Trichoderma polysporum*, strain IMI 206039 (e.g. Binab TF WP by BINAB Bio-Innovation AB, Sweden); (B2.81) *Trichoderma stromaticum* (e.g. Tricovab by Ceplac, Brazil); (B2.83) *Ulocladium oudemansii*, in particular strain HRU3 (e.g. Botry-Zen® by Botry-Zen Ltd, NZ); (B2.84) *Verticillium albo-atrum* (formerly *V. dahliae*), strain WCS850 (CBS 276.92; e.g. Dutch Trig by Tree Care Innovations); (B2.86) *Verticillium chlamydosporium*; (B2.87) mixtures of *Trichoderma asperellum* strain ICC 012 and *Trichoderma gamsii* strain ICC 080 (product known as e.g. BIO-TAM™ from Bayer CropScience LP, US).

Further examples of biological control agents which may be combined with the compound combination of the invention are:

bacteria selected from the group consisting of *Bacillus cereus*, in particular *B. cereus* strain CNCM I-1562 and *Bacillus firmus*, strain I-1582 (Accession number CNCM I-1582), *Bacillus subtilis* strain OST 30002 (Accession No. NRRL B-50421), *Bacillus thuringiensis*, in particular *B. thuringiensis* subspecies *israelensis* (serotype H-14), strain AM65-52 (Accession No. ATCC 1276), *B. thuringiensis* subsp. *aizawai*, in particular strain ABTS-1857 (SD-1372), *B. thuringiensis* subsp. *kurstaki* strain HD-1, *B. thuringiensis* subsp. *tenebrionis* strain NB 176 (SD-5428), *Pasteuria penetrans*, *Pasteuria* spp. (Rotylenchulus reniformis nematode)-PR3 (Accession Number ATCC SD-5834), *Streptomyces microflavus* strain AQ6121 (= QRD 31.013, NRRL B-50550), and *Streptomyces galbus* strain AQ 6047 (Accession Number NRRL 30232);

fungi and yeasts selected from the group consisting of *Beauveria bassiana*, in particular strain ATCC 74040, *Lecanicillium* spp., in particular strain HRO LEC 12, *Metarhizium anisopliae*, in particular strain F52

(DSM3884 or ATCC 90448), *Paecilomyces fumosoroseus* (now: *Isaria fumosorosea*), in particular strain IFPC 200613, or strain Apopka 97 (Accession No. ATCC 20874), and *Paecilomyces lilacinus*, in particular *P. lilacinus* strain 251 (AGAL 89/030550);

- viruses selected from the group consisting of *Adoxophyes orana* (summer fruit tortrix) granulosus virus (GV),
- 5 *Cydia pomonella* (codling moth) granulosus virus (GV), *Helicoverpa armigera* (cotton bollworm) nuclear polyhedrosis virus (NPV), *Spodoptera exigua* (beet armyworm) mNPV, *Spodoptera frugiperda* (fall armyworm) mNPV, and *Spodoptera littoralis* (African cotton leafworm) NPV.

- bacteria and fungi which can be added as 'inoculant' to plants or plant parts or plant organs and which, by virtue of their particular properties, promote plant growth and plant health. Examples are: *Agrobacterium*
- 10 *spp.*, *Azorhizobium caulinodans*, *Azospirillum spp.*, *Azotobacter spp.*, *Bradyrhizobium spp.*, *Burkholderia spp.*, in particular *Burkholderia cepacia* (formerly known as *Pseudomonas cepacia*), *Gigaspora spp.*, or *Gigaspora monosporum*, *Glomus spp.*, *Laccaria spp.*, *Lactobacillus buchneri*, *Paraglomus spp.*, *Pisolithus tinctorius*, *Pseudomonas spp.*, *Rhizobium spp.*, in particular *Rhizobium trifolii*, *Rhizopogon spp.*, *Scleroderma spp.*, *Suillus spp.*, and *Streptomyces spp.*

- 15 plant extracts and products formed by microorganisms including proteins and secondary metabolites which can be used as biological control agents, such as *Allium sativum*, *Artemisia absinthium*, azadirachtin, Biokeeper WP, *Cassia nigricans*, *Celastrus angulatus*, *Chenopodium anthelminticum*, chitin, Armour-Zen, *Dryopteris filix-mas*, *Equisetum arvense*, Fortune Aza, Fungastop, Heads Up (*Chenopodium quinoa* saponin extract), *Pyrethrum/Pyrethrins*, *Quassia amara*, *Quercus*, *Quillaja*, Regalia, "Requiem TM Insecticide",
- 20 rotenone, *ryania/ryanodine*, *Symphytum officinale*, *Tanacetum vulgare*, thymol, Triact 70, TriCon, *Tropaeolum majus*, *Urtica dioica*, Veratrin, *Viscum album*, *Brassicaceae* extract, in particular oilseed rape powder or mustard powder.

Examples of insecticides, acaricides and nematocides, respectively, which could be mixed with the compound combination of the invention are:

- 25 (1) Acetylcholinesterase (AChE) inhibitors, such as, for example, carbamates, for example alanycarb, aldicarb, bendiocarb, benfuracarb, butocarboxim, butoxycarboxim, carbaryl, carbofuran, carbosulfan, ethiofencarb, fenobucarb, formetanate, furathiocarb, isoprocarb, methiocarb, methomyl, metolcarb, oxamyl, pirimicarb, propoxur, thiodicarb, thiofanox, triazamate, trimethacarb, XMC and xylylcarb; or organophosphates, for example acephate, azamethiphos, azinphos-ethyl, azinphos-methyl, cadusafos,
- 30 chlorethoxyfos, chlorfenvinphos, chlormephos, chlorpyrifos-methyl, coumaphos, cyanophos, demeton-S-methyl, diazinon, dichlorvos/DDVP, dicrotophos, dimethoate, dimethylvinphos, disulfoton, EPN, ethion, ethoprophos, famphur, fenamiphos, fenitrothion, fenthion, fosthiazate, heptenophos, imicyafos, isofenphos, isopropyl O-(methoxyaminothiophosphoryl) salicylate, isoxathion, malathion, mecarbam, methamidophos, methidathion, mevinphos, monocrotophos, naled, omethoate, oxydemeton-methyl, parathion-methyl,

phenthoate, phorate, phosalone, phosmet, phosphamidon, phoxim, pirimiphos-methyl, profenofos, propetamphos, prothiofos, pyraclofos, pyridaphenthion, quinalphos, sulfotep, tebupirimfos, temephos, terbufos, tetrachlorvinphos, thiometon, triazophos, triclofon and vamidothion.

(2) GABA-gated chloride channel blockers, such as, for example, cyclodiene-organochlorines, for example
5 chlordane and endosulfan or phenylpyrazoles (fiproles), for example ethiprole and fipronil.

(3) Sodium channel modulators, such as, for example, pyrethroids, e.g. acrinathrin, allethrin, d-cis-trans allethrin, d-trans allethrin, bifenthrin, bioallethrin, bioallethrin s-cyclopentenyl isomer, bioresmethrin, cycloprothrin, cyfluthrin, beta-cyfluthrin, cyhalothrin, lambda-cyhalothrin, gamma-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, cyphenothrin
10 [(1R)-trans-isomer], deltamethrin, empenthrin [(EZ)-(1R)-isomer], esfenvalerate, etofenprox, fenpropathrin, fenvalerate, flucythrinate, flumethrin, tau-fluvalinate, halfenprox, imiprothrin, kadethrin, momfluorothrin, permethrin, phenothrin [(1R)-trans-isomer], prallethrin, pyrethrins (pyrethrum), resmethrin, silafluofen, tefluthrin, tetramethrin, tetramethrin [(1R)- isomer)], tralomethrin and transfluthrin or DDT or methoxychlor.

(4) Nicotinic acetylcholine receptor (nAChR) competitive modulators, such as, for example, neonicotinoids, e.g. acetamiprid, clothianidin, dinotefuran, imidacloprid, nitenpyram, thiacloprid and thiamethoxam or nicotine or sulfoxaflor or flupyradifurone.
15

(5) Nicotinic acetylcholine receptor (nAChR) allosteric modulators, such as, for example, spinosyns, e.g. spinetoram and spinosad.

(6) Glutamate-gated chloride channel (GluCl) allosteric modulators, such as, for example, avermectins/milbemycins, for example abamectin, emamectin benzoate, lepimectin and milbemectin.
20

(7) Juvenile hormone mimics, such as, for example, juvenile hormone analogues, e.g. hydroprene, kinoprene and methoprene or fenoxycarb or pyriproxyfen.

(8) Miscellaneous non-specific (multi-site) inhibitors, such as, for example, alkyl halides, e.g. methyl
25 bromide and other alkyl halides; or chloropicrine or sulphuryl fluoride or borax or tartar emetic or methyl isocyanate generators, e.g. diazomet and metam.

(9) Modulators of Chordotonal Organs, such as, for example pymetrozine or flonicamid.

(10) Mite growth inhibitors, such as, for example clofentezine, hexythiazox and diflovidazin or etoxazole.

(11) Microbial disruptors of the insect gut membrane, such as, for example *Bacillus thuringiensis* subspecies
30 *israelensis*, *Bacillus sphaericus*, *Bacillus thuringiensis* subspecies *aizawai*, *Bacillus thuringiensis*

subspecies *kurstaki*, *Bacillus thuringiensis* subspecies *tenebrionis*, and *B.t.* plant proteins: Cry1Ab, Cry1Ac, Cry1Fa, Cry1A.105, Cry2Ab, Vip3A, mCry3A, Cry3Ab, Cry3Bb, Cry34Ab1/35Ab1.

(12) Inhibitors of mitochondrial ATP synthase, such as, ATP disruptors such as, for example, diafenthiuron or organotin compounds, for example azocyclotin, cyhexatin and fenbutatin oxide or propargite or tetradifon.

5 (13) Uncouplers of oxidative phosphorylation via disruption of the proton gradient, such as, for example, chlorfenapyr, DNOC and sulfluramid.

(14) Nicotinic acetylcholine receptor channel blockers, such as, for example, bensultap, cartap hydrochloride, thiocylam, and thiosultap-sodium.

10 (15) Inhibitors of chitin biosynthesis, type 0, such as, for example, bistrifluron, chlorfluazuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, teflubenzuron and triflumuron.

(16) Inhibitors of chitin biosynthesis, type 1, for example buprofezin.

(17) Moulting disruptor (in particular for Diptera, i.e. dipterans), such as, for example, cyromazine.

15 (18) Ecdysone receptor agonists, such as, for example, chromafenozide, halofenozide, methoxyfenozide and tebufenozide.

(19) Octopamine receptor agonists, such as, for example, amitraz.

(20) Mitochondrial complex III electron transport inhibitors, such as, for example, hydramethylnone or acequinocyl or fluacrypyrim.

20 (21) Mitochondrial complex I electron transport inhibitors, such as, for example from the group of the METI acaricides, e.g. fenazaquin, fenpyroximate, pyrimidifen, pyridaben, tebufenpyrad and tolfenpyrad or rotenone (Derris).

(22) Voltage-dependent sodium channel blockers, such as, for example indoxacarb or metaflumizone.

(23) Inhibitors of acetyl CoA carboxylase, such as, for example, tetronic and tetramic acid derivatives, e.g. spirodiclofen, spiromesifen and spirotetramat.

25 (24) Mitochondrial complex IV electron transport inhibitors, such as, for example, phosphines, e.g. aluminium phosphide, calcium phosphide, phosphine and zinc phosphide or cyanides, e.g. calcium cyanide, potassium cyanide and sodium cyanide.

(25) Mitochondrial complex II electron transport inhibitors, such as, for example, *beta*-ketonitrile derivatives, e.g. cyenopyrafen and cyflumetofen and carboxanilides, such as, for example, pyflubumide.

(28) Ryanodine receptor modulators, such as, for example, diamides, e.g. chlorantraniliprole, cyantraniliprole and flubendiamide,

- 5 further active compounds such as, for example, Afidopyropen, Afoxolaner, Azadirachtin, Benclothiaz, Benzoximate, Bifenazate, Broflanilide, Bromopropylate, Chinomethionat, Chloroprallethrin, Cryolite, Cyclaniliprole, Cycloxaprid, Cyhalodiamide, Dicloromezotiaz, Dicofol, epsilon-Metofluthrin, epsilon-Momfluthrin, Flometoquin, Fluazaindolizine, Fluensulfone, Flufenerim, Flufenoxystrobin, Flufiprole, Fluhexafon, Fluopyram, Fluralaner, Fluxametamide, Fufenozide, Guadipyr, Heptafluthrin, Imidaclothiz,
- 10 Iprodione, kappa-Bifenthrin, kappa-Tefluthrin, Lotilaner, Meperfluthrin, Paichongding, Pyridalyl, Pyrifluquinazon, Pyriminostrobin, Spirobudiclofen, Tetramethylfluthrin, Tetraniliprole, Tetrachlorantraniliprole, Tigolaner, Tioxazafen, Thiofluoximate, Triflumezopyrim and iodomethane; furthermore preparations based on *Bacillus firmus* (I-1582, BioNeem, Votivo), and also the following compounds: 1-{2-fluoro-4-methyl-5-[(2,2,2-trifluoroethyl)sulfinyl]phenyl}-3-(trifluoromethyl)-1H-1,2,4-
- 15 triazole-5-amine (known from WO2006/043635) (CAS 885026-50-6), {1'-[(2E)-3-(4-chlorophenyl)prop-2-en-1-yl]-5-fluorospiro[indol-3,4'-piperidin]-1(2H)-yl}(2-chloropyridin-4-yl)methanone (known from WO2003/106457) (CAS 637360-23-7), 2-chloro-N-[2-{1-[(2E)-3-(4-chlorophenyl)prop-2-en-1-yl]piperidin-4-yl}-4-(trifluoromethyl)phenyl]isonicotinamide (known from WO2006/003494) (CAS 872999-66-1), 3-(4-chloro-2,6-dimethylphenyl)-4-hydroxy-8-methoxy-1,8-diazaspiro[4.5]dec-3-en-2-one
- 20 (known from WO 2010052161) (CAS 1225292-17-0), 3-(4-chloro-2,6-dimethylphenyl)-8-methoxy-2-oxo-1,8-diazaspiro[4.5]dec-3-en-4-yl ethyl carbonate (known from EP2647626) (CAS 1440516-42-6), 4-(but-2-yn-1-yloxy)-6-(3,5-dimethylpiperidin-1-yl)-5-fluoropyrimidine (known from WO2004/099160) (CAS 792914-58-0), PF1364 (known from JP2010/018586) (CAS 1204776-60-2), N-[(2E)-1-[(6-chloropyridin-3-yl)methyl]pyridin-2(1H)-ylidene]-2,2,2-trifluoroacetamide (known from WO2012/029672) (CAS
- 25 1363400-41-2), (3E)-3-[1-[(6-chloro-3-pyridyl)methyl]-2-pyridylidene]-1,1,1-trifluoro-propan-2-one (known from WO2013/144213) (CAS 1461743-15-6), , N-[3-(benzylcarbamoyl)-4-chlorophenyl]-1-methyl-3-(pentafluoroethyl)-4-(trifluoromethyl)-1H-pyrazole-5-carboxamide (known from WO2010/051926) (CAS 1226889-14-0), 5-bromo-4-chloro-N-[4-chloro-2-methyl-6-(methylcarbamoyl)phenyl]-2-(3-chloro-2-pyridyl)pyrazole-3-carboxamide (known from CN103232431)
- 30 (CAS 1449220-44-3), 4-[5-(3,5-dichlorophenyl)-4,5-dihydro-5-(trifluoromethyl)-3-isoxazolyl]-2-methyl-N-(*cis*-1-oxido-3-thietanyl)-benzamide, 4-[5-(3,5-dichlorophenyl)-4,5-dihydro-5-(trifluoromethyl)-3-isoxazolyl]-2-methyl-N-(*trans*-1-oxido-3-thietanyl)-benzamide and 4-[(5S)-5-(3,5-dichlorophenyl)-4,5-dihydro-5-(trifluoromethyl)-3-isoxazolyl]-2-methyl-N-(*cis*-1-oxido-3-thietanyl)benzamide (known from WO 2013/050317 A1) (CAS 1332628-83-7), N-[3-chloro-1-(3-pyridinyl)-1H-pyrazol-4-yl]-N-ethyl-3-[(3,
- 35 3,3-trifluoropropyl)sulfinyl]-propanamide, (+)-N-[3-chloro-1-(3-pyridinyl)-1H-pyrazol-4-yl]-N-ethyl-3-[(3,3,3-trifluoropropyl)sulfinyl]-propanamide and (-)-N-[3-chloro-1-(3-pyridinyl)-1H-pyrazol-4-yl]-N-

ethyl-3-[(3,3,3-trifluoropropyl)sulfinyl]-propanamide (known from WO 2013/162715 A2, WO 2013/162716 A2, US 2014/0213448 A1) (CAS 1477923-37-7), 5-[[*(2E)*-3-chloro-2-propen-1-yl]amino]-1-[2,6-dichloro-4-(trifluoromethyl)phenyl]-4-[(trifluoromethyl)sulfinyl]-1*H*-pyrazole-3-carbonitrile (known from CN 101337937 A) (CAS 1105672-77-2), 3-bromo-*N*-[4-chloro-2-methyl-6-
5 [(methylamino)thioxomethyl]phenyl]-1-(3-chloro-2-pyridinyl)-1*H*-pyrazole-5-carboxamide, (Liudaibenjiaxuanan, known from CN 103109816 A) (CAS 1232543-85-9); *N*-[4-chloro-2-[(1,1-dimethylethyl)amino]carbonyl]-6-methylphenyl]-1-(3-chloro-2-pyridinyl)-3-(fluoromethoxy)-1*H*-Pyrazole-5-carboxamide (known from WO 2012/034403 A1) (CAS 1268277-22-0), *N*-[2-(5-amino-1,3,4-thiadiazol-2-yl)-4-chloro-6-methylphenyl]-3-bromo-1-(3-chloro-2-pyridinyl)-1*H*-pyrazole-5-carboxamide
10 (known from WO 2011/085575 A1) (CAS 1233882-22-8), 4-[3-[2,6-dichloro-4-[(3,3-dichloro-2-propen-1-yl)oxy]phenoxy]propoxy]-2-methoxy-6-(trifluoromethyl)-pyrimidine (known from CN 101337940 A) (CAS 1108184-52-6); *(2E)*- and *2(Z)*-2-[2-(4-cyanophenyl)-1-[3-(trifluoromethyl)phenyl]ethylidene]-*N*-[4-(difluoromethoxy)phenyl]-hydrazinecarboxamide (known from CN 101715774 A) (CAS 1232543-85-9); 3-(2,2-dichloroethenyl)-2,2-dimethyl-4-(1*H*-benzimidazol-2-yl)phenyl-cyclopropanecarboxylic acid ester
15 (known from CN 103524422 A) (CAS 1542271-46-4); (4*aS*)-7-chloro-2,5-dihydro-2-[[*(methoxycarbonyl)* [4-[(trifluoromethyl)thio]phenyl]amino]carbonyl]-indeno[1,2-*e*][1,3,4]oxadiazine-4*a*(3*H*)-carboxylic acid methyl ester (known from CN 102391261 A) (CAS 1370358-69-2); 6-deoxy-3-*O*-ethyl-2,4-di-*O*-methyl-, 1-[*N*-[4-[1-[4-(1,1,2,2,2-pentafluoroethoxy)phenyl]-1*H*-1,2,4-triazol-3-yl]phenyl]carbamate]- α -*L*-mannopyranose (known from US 2014/0275503 A1) (CAS 1181213-14-8); 8-(2-cyclopropylmethoxy-4-
20 trifluoromethyl-phenoxy)-3-(6-trifluoromethyl-pyridazin-3-yl)-3-aza-bicyclo[3.2.1]octane (CAS 1253850-56-4), (8-*anti*)-8-(2-cyclopropylmethoxy-4-trifluoromethyl-phenoxy)-3-(6-trifluoromethyl-pyridazin-3-yl)-3-aza-bicyclo[3.2.1]octane (CAS 933798-27-7), (8-*syn*)-8-(2-cyclopropylmethoxy-4-trifluoromethyl-phenoxy)-3-(6-trifluoromethyl-pyridazin-3-yl)-3-aza-bicyclo[3.2.1]octane (known from WO 2007040280 A1, WO 2007040282 A1) (CAS 934001-66-8), *N*-[3-chloro-1-(3-pyridinyl)-1*H*-pyrazol-
25 4-yl]-*N*-ethyl-3-[(3,3,3-trifluoropropyl)thio]-propanamide (known from WO 2015/058021 A1, WO 2015/058028 A1) (CAS 1477919-27-9) and *N*-[4-(aminothioxomethyl)-2-methyl-6-[(methylamino)carbonyl]phenyl]-3-bromo-1-(3-chloro-2-pyridinyl)-1*H*-pyrazole-5-carboxamide (known from CN 103265527 A) (CAS 1452877-50-7), 5-(1,3-dioxan-2-yl)-4-[[4-(trifluoromethyl)phenyl]methoxy]-pyrimidine (known from WO 2013/115391 A1) (CAS 1449021-97-9), 3-(4-chloro-2,6-dimethylphenyl)-4-
30 hydroxy-8-methoxy-1-methyl-1,8-diazaspiro[4.5]dec-3-en-2-one (known from WO 2010/066780 A1, WO 2011/151146 A1) (CAS 1229023-34-0), 3-(4-chloro-2,6-dimethylphenyl)-8-methoxy-1-methyl-1,8-diazaspiro[4.5]decane-2,4-dione (known from WO 2014/187846 A1) (CAS 1638765-58-8), 3-(4-chloro-2,6-dimethylphenyl)-8-methoxy-1-methyl-2-oxo-1,8-diazaspiro[4.5]dec-3-en-4-yl-carbonic acid ethyl ester (known from WO 2010/066780 A1, WO 2011/151146 A1) (CAS 1229023-00-0), *N*-[1-[(6-chloro-3-pyridinyl)methyl]-2(1*H*)-pyridinylidene]-2,2,2-trifluoro-acetamide (known from DE 3639877 A1, WO 2012029672 A1) (CAS 1363400-41-2), [N(*E*)]-*N*-[1-[(6-chloro-3-pyridinyl)methyl]-2(1*H*)-pyridinylidene]-2,2,2-trifluoro-acetamide, (known from WO 2016005276 A1) (CAS 1689566-03-7), [N(*Z*)]-*N*-[1-[(6-

chloro-3-pyridinyl)methyl]-2(1H)-pyridinylidene]-2,2,2-trifluoro-acetamide, (CAS 1702305-40-5), 3-*endo*-3-[2-propoxy-4-(trifluoromethyl)phenoxy]-9-[[5-(trifluoromethyl)-2-pyridinyl]oxy]-9-azabicyclo[3.3.1]nonane (known from WO 2011/105506 A1, WO 2016/133011 A1) (CAS 1332838-17-1).

Examples of safeners which could be mixed with the compound combination of the invention are, for example, benoxacor, cloquintocet (-mexyl), cyometrinil, cyprosulfamide, dichlormid, fenchlorazole (-ethyl), fenclorim, flurazole, fluxofenim, furilazole, isoxadifen (-ethyl), mefenpyr (-diethyl), naphthalic anhydride, oxabetrinil, 2-methoxy-N-({4-[(methylcarbamoyl)amino]phenyl}-sulphonyl)benzamide (CAS 129531-12-0), 4-(dichloroacetyl)-1-oxa-4-azaspiro[4.5]decane (CAS 71526-07-3), 2,2,5-trimethyl-3-(dichloroacetyl)-1,3-oxazolidine (CAS 52836-31-4).

10 Examples of herbicides which could be mixed with the compound combination of the invention are:

Acetochlor, acifluorfen, acifluorfen-sodium, aclonifen, alachlor, allidochlor, alloxydim, alloxydim-sodium, ametryn, amicarbazone, amidochlor, amidosulfuron, 4-amino-3-chloro-5-fluoro-6-(7-fluoro-1H-indol-6-yl)pyridine-2-carboxylic acid, aminocyclopyrachlor, aminocyclopyrachlor-potassium, aminocyclopyrachlor-methyl, aminopyralid, amitrole, ammoniumsulfamate, anilofos, asulam, atrazine, azafenidin, azimsulfuron, beflubutamid, benazolin, benazolin-ethyl, benfluralin, benfuresate, bensulfuron, bensulfuron-methyl, bensulide, bentazone, benzobicyclon, benzenofenap, bicyclopyron, bifenox, bilanafos, bilanafos-sodium, bispyribac, bispyribac-sodium, bixlozone, bromacil, bromobutide, bromofenoxim, bromoxynil, bromoxynil-butyrate, -potassium, -heptanoate, and -octanoate, busoxinone, butachlor, butafenacil, butamifos, butenachlor, butralin, butroxydim, butylate, cafenstrole, carbetamide, carfentrazone, carfentrazone-ethyl, chloramben, chlorbromuron, 1-{2-chloro-3-[(3-cyclopropyl-5-hydroxy-1-methyl-1H-pyrazol-4-yl)carbonyl]-6-(trifluoromethyl)phenyl}piperidin-2-on, 4-{2-chloro-3-[(3,5-dimethyl-1H-pyrazol-1-yl)methyl]-4-(methylsulfonyl)benzoyl}-1,3-dimethyl-1H-pyrazol-5-yl-1,3-dimethyl-1H-pyrazol-4-carboxylat, chlorfenac, chlorfenac-sodium, chlorfenprop, chlorflurenol, chlorflurenol-methyl, chloridazon, chlorimuron, chlorimuron-ethyl, 2-[2-chloro-4-(methylsulfonyl)-3-(morpholin-4-ylmethyl)benzoyl]-3-hydroxycyclohex-2-en-1-on, 4-{2-chloro-4-(methylsulfonyl)-3-[(2,2,2-trifluoroethoxy)methyl]benzoyl}-1-ethyl-1H-pyrazol-5-yl-1,3-dimethyl-1H-pyrazol-4-carboxylat, chlorophthalim, chlorotoluron, chlorthal-dimethyl, 3-[5-chloro-4-(trifluoromethyl)pyridine-2-yl]-4-hydroxy-1-methylimidazolidine-2-on, chlorsulfuron, cinidon, cinidon-ethyl, cinmethylin, cinosulfuron, clacyfos, clethodim, clodinafop, clodinafop-propargyl, clomazone, clomeprop, clopyralid, cloransulam, cloransulam-methyl, cumyluron, cyanamide, cyanazine, cycloate, cyclopyranil, cyclopyrimorate, cyclosulfamuron, cycloxydim, cyhalofop, cyhalofop-butyl, cyprazine, 2,4-D, 2,4-D-butotyl, -butyl, -dimethylammonium, -diolamin, -ethyl, -2-ethylhexyl, -isobutyl, -isooctyl, -isopropylammonium, -potassium, -triisopropanolammonium, and -trolamine, 2,4-DB, 2,4-DB-butyl, -dimethylammonium, -isooctyl, -potassium, and -sodium, daimuron (dymron), dalapon, dazomet, n-decanol, desmedipham, detosyl-pyrazolate (DTP), dicamba, dichlobenil, 2-(2,4-dichlorobenzyl)-4,4-dimethyl-1,2-oxazolidin-3-one, 2-(2,5-dichlorobenzyl)-4,4-dimethyl-1,2-

oxazolidin-3-one, dichlorprop, dichlorprop-P, diclofop, diclofop-methyl, diclofop-P-methyl, diclosulam, difenzoquat, diflufenican, diflufenzopyr, diflufenzopyr-sodium, dimefuron, dimepiperate, dimethachlor, dimethametryn, dimethenamid, dimethenamid-P, 3-(2,6-dimethylphenyl)-6-[(2-hydroxy-6-oxocyclohex-1-en-1-yl)carbonyl]-1-methylchinazolin-2,4(1H,3H)-dion, 1,3-dimethyl-4-[2-(methylsulfonyl)-4-(trifluormethyl)benzoyl]-1H-pyrazol-5-yl-1,3-dimethyl-1H-pyrazol-4-carboxylat, dimetrasulfuron, dinitramine, dinoterb, diphenamid, diquat, diquat-dibromid, dithiopyr, diuron, DMPA, DNOC, endothal, EPTC, esprocarb, ethalfluralin, ethametsulfuron, ethametsulfuron-methyl, ethiozin, ethofumesate, ethoxyfen, ethoxyfen-ethyl, ethoxysulfuron, etobenzanid, ethyl-[(3-{2-chloro-4-fluoro-5-[3-methyl-2,6-dioxo-4-(trifluormethyl)-3,6-dihydropyrimidin-1(2H)-yl]phenoxy}pyridine-2-yl)oxy]acetat, F-9960, F-5231, i.e. N-{2-chloro-4-fluoro-5-[4-(3-fluoropropyl)-5-oxo-4,5-dihydro-1H-tetrazol-1-yl]phenyl}ethanesulfonamide, F-7967, i.e. 3-[7-chloro-5-fluoro-2-(trifluoromethyl)-1H-benzimidazol-4-yl]-1-methyl-6-(trifluoromethyl)pyrimidine-2,4(1H,3H)-dione, fenoxaprop, fenoxaprop-P, fenoxaprop-ethyl, fenoxaprop-P-ethyl, fenoxasulfone, fenquinotrine, fentrazamide, flamprop, flamprop-M-isopropyl, flamprop-M-methyl, flazasulfuron, florasulam, fluazifop, fluazifop-P, fluazifop-butyl, fluazifop-P-butyl, flucarbazone, flucarbazone-sodium, flucetosulfuron, fluchloralin, flufenacet, flufenpyr, flufenpyr-ethyl, flumetsulam, flumiclorac, flumiclorac-pentyl, flumioxazin, fluometuron, flurenol, flurenol-butyl, -dimethylammonium and -methyl, fluoroglycofen, fluoroglycofen-ethyl, flupropanate, flupyrsulfuron, flupyrsulfuron-methyl-sodium, fluridone, flurochloridone, fluroxypyr, fluroxypyr-meptyl, flurtamone, fluthiacet, fluthiacet-methyl, fomesafen, fomesafen-sodium, foramsulfuron, fosamine, glufosinate, glufosinate-ammonium, glufosinate-P-sodium, glufosinate-P-ammonium, glufosinate-P-sodium, glyphosate, glyphosate-ammonium, -isopropylammonium, -diammonium, -dimethylammonium, -potassium, -sodium, and -trimesium, H-9201, i.e. O-(2,4-dimethyl-6-nitrophenyl) O-ethyl isopropylphosphoramidothioate, halauxifen, halauxifen-methyl, halosafen, halosulfuron, halosulfuron-methyl, haloxyfop, haloxyfop-P, haloxyfop-ethoxyethyl, haloxyfop-P-ethoxyethyl, haloxyfop-methyl, haloxyfop-P-methyl, hexazinone, HW-02, i.e. 1-(dimethoxyphosphoryl) ethyl-(2,4-dichlorophenoxy)acetate, 4-hydroxy-1-methoxy-5-methyl-3-[4-trifluormethyl]pyridine-2-yl]imidazolidine-2-on, 4-hydroxy-1-methyl-3-[4-trifluormethyl]pyridine-2-yl]imidazolidine-2-on, (5-hydroxy-1-methyl-1H-pyrazol-4-yl)(3,3,4-trimethyl-1,1-dioxido-2,3-dihydro-1-benzothiophen-5-yl)methanon, 6-[(2-hydroxy-6-oxocyclohex-1-en-1-yl)carbonyl]-1,5-dimethyl-3-(2-methylphenyl)chinazolin-2,4(1H,3H)-dion, imazamethabenz, imazamethabenz-methyl, imazamox, imazamox-ammonium, imazapic, imazapic-ammonium, imazapyr, imazapyr-isopropylammonium, imazaquin, imazaquin-ammonium, imazethapyr, imazethapyr-immonium, imazosulfuron, indanofan, indaziflam, iodosulfuron, iodosulfuron-methyl-sodium, ioxynil, ioxynil-octanoate, -potassium and -sodium, ipfencarbazone, isoproturon, isouron, isoxaben, isoxaflutole, karbutilate, KUH-043, i.e. 3-([5-(difluoromethyl)-1-methyl-3-(trifluoromethyl)-1H-pyrazol-4-yl]methyl)sulfonyl)-5,5-dimethyl-4,5-dihydro-1,2-oxazole, ketospiradox, lactofen, lenacil, linuron, MCPA, MCPA-butotyl, -dimethylammonium, -2-ethylhexyl, -isopropylammonium, -potassium, and -sodium, MCPB, MCPB-methyl, -ethyl, and -sodium, mecoprop, mecoprop-sodium, and -butotyl,

mecoprop-P, mecoprop-P-butotyl, -dimethylammonium, -2-ethylhexyl, and -potassium, mefenacet, mefluidide, mesosulfuron, mesosulfuron-methyl, mesotrione, methabenzthiazuron, metam, metamifop, metamitron, metazachlor, metazosulfuron, methabenzthiazuron, methiopyrsulfuron, methiozolin, 2-({2-[(2-methoxyethoxy)methyl]-6-(trifluoromethyl)pyridine-3-yl}carbonyl)cyclohexan-1,3-dion, methyl

5 isothiocyanate, 1-methyl-4-[(3,3,4-trimethyl-1,1-dioxido-2,3-dihydro-1-benzothiophen-5-yl)carbonyl]-1H-pyrazol-5-ylpropan-1-sulfonat, metobromuron, metolachlor, S-metolachlor, metosulam, metoxuron, metribuzin, metsulfuron, metsulfuron-methyl, molinat, monolinuron, monosulfuron, monosulfuron-ester, MT-5950, i.e. N-(3-chloro-4-isopropylphenyl)-2-methylpentan amide, NGGC-011, napropamide, NC-310, i.e. [5-(benzyloxy)-1-methyl-1H-pyrazol-4-yl](2,4-dichlorophenyl)methanone, neburon, nicosulfuron,

10 nonanoic acid (pelargonic acid), norflurazon, oleic acid (fatty acids), orbencarb, orthosulfamuron, oryzalin, oxadiargyl, oxadiazon, oxasulfuron, oxaziclomefon, oxyfluorfen, paraquat, paraquat dichloride, pebulate, pendimethalin, penoxsulam, pentachlorophenol, pentoxazone, pethoxamid, petroleum oils, phenmedipham, picloram, picolinafen, pinoxaden, piperophos, pretilachlor, primisulfuron, primisulfuron-methyl, prodiamine, profoxydim, prometon, prometryn, propachlor, propanil, propaquizafop, propazine, propham,

15 propisochlor, propoxycarbazone, propoxycarbazone-sodium, propyrisulfuron, propyzamide, prosulfocarb, prosulfuron, pyraclostrobin, pyraflufen, pyraflufen-ethyl, pyrasulfotole, pyrazolynate (pyrazolate), pyrazosulfuron, pyrazosulfuron-ethyl, pyrazoxyfen, pyribambenz, pyribambenz-isopropyl, pyribambenz-propyl, pyribenzoxim, pyributicarb, pyridafol, pyridate, pyrifthalid, pyriminobac, pyriminobac-methyl, pyrimisulfan, pyriithiobac, pyriithiobac-sodium, pyroxasulfone, pyroxsulam, quinclorac, quinmerac, quinclamine,

20 quizalofop, quizalofop-ethyl, quizalofop-P, quizalofop-P-ethyl, quizalofop-P-tefuryl, QYM-201, QYR-301, rimsulfuron, saflufenacil, sethoxydim, siduron, simazine, simetryn, SL-261, sulcotrion, sulfentrazone, sulfometuron, sulfometuron-methyl, sulfosulfuron, SYN-523, SYP-249, i.e. 1-ethoxy-3-methyl-1-oxobut-3-en-2-yl 5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoate, SYP-300, i.e. 1-[7-fluoro-3-oxo-4-(prop-2-yn-1-yl)-3,4-dihydro-2H-1,4-benzoxazin-6-yl]-3-propyl-2-thioxoimidazolidine-4,5-dione, 2,3,6-TBA,

25 TCA (trichloroacetic acid), TCA-sodium, tebuthiuron, tefuryltrione, tembotrione, tepraloxydim, terbacil, terbucarb, terbumeton, terbuthylazin, terbutryn, tetflupyrolimet, thenylchlor, thiazopyr, thiencarbazone, thiencarbazone-methyl, thifensulfuron, thifensulfuron-methyl, thiobencarb, tiafenacil, tolpyralate, topramezone, tralkoxydim, triafamone, tri-allate, triasulfuron, triaziflam, tribenuron, tribenuron-methyl, triclopyr, trietazine, trifloxysulfuron, trifloxysulfuron-sodium, trifludimoxazin, trifluralin, triflusulfuron,

30 triflusulfuron-methyl, tritosulfuron, urea sulfate, vemolate, XDE-848, ZJ-0862, i.e. 3,4-dichloro-N-{2-[(4,6-dimethoxypyrimidin-2-yl)oxy]benzyl}aniline.

Examples for plant growth regulators are:

Acibenzolar, acibenzolar-S-methyl, 5-aminolevulinic acid, ancymidol, 6-benzylaminopurine, Brassinolid, catechine, chlormequat chloride, cloprop, cyclanilide, 3-(cycloprop-1-enyl) propionic acid, daminozide,

35 dazomet, n-decanol, dikegulac, dikegulac-sodium, endothal, endothal-dipotassium, -disodium, and -mono(N,N-dimethylalkylammonium), ethephon, flumetralin, flurenol, flurenol-butyl, flurprimidol,

forchlorfenuron, gibberellic acid, inabenfide, indol-3-acetic acid (IAA), 4-indol-3-ylbutyric acid, isoprothiolane, probenazole, jasmonic acid, maleic hydrazide, mepiquat chloride, 1-methylcyclopropene, methyl jasmonate, 2-(1-naphthyl)acetamide, 1-naphthylacetic acid, 2-naphthoxyacetic acid, nitrophenolate-mixture, paclobutrazol, N-(2-phenylethyl)-beta-alanine, N-phenylphthalamic acid, 5 prohexadione, prohexadione-calcium, prohydrojasmon, salicylic acid, strigolactone, tecnazene, thidiazuron, triacontanol, trinexapac, trinexapac-ethyl, tsitodef, uniconazole, uniconazole-P.

Methods and uses

The compound combination and the composition of the invention have potent microbicidal activity and/or plant defense modulating potential. They can be used for controlling unwanted microorganisms, such as 10 unwanted fungi and bacteria, on plants. They can be particularly useful in crop protection (they control microorganisms that cause plants diseases) or for protecting materials (e.g. industrial materials, timber, storage goods) as described in more details herein below. More specifically, compound combination and the composition of the invention can be used to protect seeds, germinating seeds, emerged seedlings, plants, plant parts, fruits, harvest goods and/or the soil in which the plants grow from unwanted microorganisms.

15 Control or controlling as used herein encompasses protective, curative and eradicated treatment of unwanted microorganisms. Unwanted microorganisms may be pathogenic bacteria, pathogenic virus, pathogenic oomycetes or pathogenic fungi, more specifically phytopathogenic bacteria, phytopathogenic virus, phytopathogenic oomycetes or phytopathogenic fungi. As detailed herein below, these phytopathogenic microorganisms are the causal agents of a broad spectrum of plants diseases.

20 More specifically, the compound combination and the composition of the invention can be used as fungicides. For the purpose of the specification, the term “fungicide” refers to a compound or composition that can be used in crop protection for the control of unwanted fungi, such as Plasmodiophoromycetes, Chytridiomycetes, Zygomycetes, Ascomycetes, Basidiomycetes and Deuteromycetes and/or for the control of Oomycetes.

25 The compound combination and the composition of the invention may also be used as antibacterial agent. In particular, they may be used in crop protection, for example for the control of unwanted bacteria, such as Pseudomonadaceae, Rhizobiaceae, Xanthomonadaceae, Enterobacteriaceae, Corynebacteriaceae and Streptomycetaceae.

The present invention also relates to a method for controlling unwanted microorganisms, such as unwanted 30 fungi, oomycetes and bacteria, on plants comprising the step of applying the compound combination or the composition of the invention to the microorganisms and/or their habitat (to the plants, plant parts, seeds, fruits or to the soil in which the plants grow), wherein the compounds (A) and (B) may be applied in a simultaneous, separate or sequential manner. If the single compounds are applied in a sequential manner, i.e.

at different times, they are applied one after the other within a reasonably short period, such as a few hours or days.

Typically, when the compound combination and the composition of the invention are used in curative or protective methods for controlling phytopathogenic fungi and/or phytopathogenic oomycetes, an effective and plant-compatible amount thereof is applied to the plants, plant parts, fruits, seeds or to the soil or substrates in which the plants grow. Suitable substrates that may be used for cultivating plants include inorganic based substrates, such as mineral wool, in particular stone wool, perlite, sand or gravel; organic substrates, such as peat, pine bark or sawdust; and petroleum based substrates such as polymeric foams or plastic beads. Effective and plant-compatible amount means an amount that is sufficient to control or destroy the fungi present or liable to appear on the cropland and that does not entail any appreciable symptom of phytotoxicity for said crops. Such an amount can vary within a wide range depending on the fungus to be controlled, the type of crop, the crop growth stage, the climatic conditions and the respective compound or composition of the invention used. This amount can be determined by systematic field trials that are within the capabilities of a person skilled in the art.

Plants and plant parts

The compound combination and the composition of the invention may be applied to any plants or plant parts.

Plants mean all plants and plant populations, such as desired and undesired wild plants or crop plants (including naturally occurring crop plants). Crop plants may be plants which can be obtained by conventional breeding and optimization methods or by biotechnological and genetic engineering methods or combinations of these methods, including the genetically modified plants (GMO or transgenic plants) and the plant cultivars which are protectable and non-protectable by plant breeders' rights.

Genetically modified plants (GMO)

Genetically modified plants (GMO or transgenic plants) are plants in which a heterologous gene has been stably integrated into the 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. This gene 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, RNA interference – RNAi – technology or microRNA – miRNA - 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.

Plant cultivars are understood to mean plants which have new properties ("traits") and have been obtained by conventional breeding, by mutagenesis or by recombinant DNA techniques. They can be cultivars, varieties, bio- or genotypes.

Plant parts are understood to mean all parts and organs of plants above and below the ground, such as shoots, leaves, needles, stalks, stems, flowers, fruit bodies, fruits, seeds, roots, tubers and rhizomes. The plant parts also include harvested material and vegetative and generative propagation material, for example cuttings, tubers, rhizomes, slips and seeds.

Plants which may be treated in accordance with the methods of the invention include the following: cotton, flax, grapevine, fruit, vegetables, such as *Rosaceae sp.* (for example pome fruits such as apples and pears, but also stone fruits such as apricots, cherries, almonds and peaches, and soft fruits such as strawberries), *Ribesioideae sp.*, *Juglandaceae sp.*, *Betulaceae sp.*, *Anacardiaceae sp.*, *Fagaceae sp.*, *Moraceae sp.*, *Oleaceae sp.*, *Actinidaceae sp.*, *Lauraceae sp.*, *Musaceae sp.* (for example banana trees and plantations), *Rubiaceae sp.* (for example coffee), *Theaceae sp.*, *Sterculiaceae sp.*, *Rutaceae sp.* (for example lemons, oranges and grapefruit); *Solanaceae sp.* (for example tomatoes), *Liliaceae sp.*, *Asteraceae sp.* (for example lettuce), *Umbelliferae sp.*, *Cruciferae sp.*, *Chenopodiaceae sp.*, *Cucurbitaceae sp.* (for example cucumber), *Alliaceae sp.* (for example leek, onion), *Papilionaceae sp.* (for example peas); major crop plants, such as *Gramineae sp.* (for example maize, turf, cereals such as wheat, rye, rice, barley, oats, millet and triticale), *Asteraceae sp.* (for example sunflower), *Brassicaceae sp.* (for example white cabbage, red cabbage, broccoli, cauliflower, Brussels sprouts, pak choi, kohlrabi, radishes, and oilseed rape, mustard, horseradish and cress), *Fabaceae sp.* (for example bean, peanuts), *Papilionaceae sp.* (for example soya bean), *Solanaceae sp.* (for example potatoes), *Chenopodiaceae sp.* (for example sugar beet, fodder beet, swiss chard, beetroot); useful plants and ornamental plants for gardens and wooded areas; and genetically modified varieties of each of these plants.

Plants and plant cultivars which may be treated by the above disclosed methods include plants and plant cultivars which 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.

Plants and plant cultivars which may be treated by the above disclosed methods include 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 be treated by the above disclosed methods include those plants characterized by enhanced yield characteristics. Increased yield in said plants may 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 may 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 and composition for example cotton or starch, protein content, oil content and composition, nutritional value, reduction in anti-nutritional compounds, improved processability and better storage stability.

- 10 Plants and plant cultivars which may be treated by the above disclosed methods include plants and plant cultivars which 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.

- 15 Plants and plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may be treated by the above disclosed methods include plants and plant cultivars which 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.

- 20 Plants and plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may be treated by the above disclosed methods include plants and plant cultivars which 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.

- Plants and plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may be treated by the above disclosed methods include plants and plant cultivars which are disease-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.

- 25 Plants and plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may be treated by the above disclosed methods include plants and plant cultivars which 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.

- 30 Plants and plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may be treated by the above disclosed methods include plants and plant cultivars which show altered quantity, quality and/or storage-stability of the harvested product and/or altered properties of specific ingredients of the harvested product.

Plants and plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may be treated by the above disclosed methods include plants and plant cultivars, 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.

- 5 Plants and plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may be treated by the above disclosed methods include plants and plant cultivars, 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.

- 10 Plants and plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may be treated by the above disclosed methods include plants and plant cultivars, 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.

- 15 Plants and plant cultivars (obtained by plant biotechnology methods such as genetic engineering) which may be treated by the above disclosed methods include plants and plant cultivars, such as Tobacco plants, with altered post-translational protein modification patterns.

Pathogens

Non-limiting examples of pathogens of fungal diseases which may be treated in accordance with the invention include:

- 20 diseases caused by powdery mildew pathogens, for example *Blumeria* species, for example *Blumeria graminis*; *Podosphaera* species, for example *Podosphaera leucotricha*; *Sphaerotheca* species, for example *Sphaerotheca fuliginea*; *Uncinula* species, for example *Uncinula necator*;

- diseases caused by rust disease pathogens, for example *Gymnosporangium* species, for example *Gymnosporangium sabinae*; *Hemileia* species, for example *Hemileia vastatrix*; *Phakopsora* species, for
25 example *Phakopsora pachyrhizi* or *Phakopsora meibomia*; *Puccinia* species, for example *Puccinia recondita*, *Puccinia graminis* oder *Puccinia striiformis*; *Uromyces* species, for example *Uromyces appendiculatus*;

- diseases caused by pathogens from the group of the Oomycetes, for example *Albugo* species, for example *Albugo candida*; *Bremia* species, for example *Bremia lactucae*; *Peronospora* species, for example
30 *Peronospora pisi* or *P. brassicae*; *Phytophthora* species, for example *Phytophthora infestans*; *Plasmopara* species, for example *Plasmopara viticola*; *Pseudoperonospora* species, for example *Pseudoperonospora humuli* or *Pseudoperonospora cubensis*; *Pythium* species, for example *Pythium ultimum*;

leaf blotch diseases and leaf wilt diseases caused, for example, by *Alternaria* species, for example *Alternaria solani*; *Cercospora* species, for example *Cercospora beticola*; *Cladosporium* species, for example *Cladosporium cucumerinum*; *Cochliobolus* species, for example *Cochliobolus sativus* (conidial form: *Drechslera*, syn: *Helminthosporium*) or *Cochliobolus miyabeanus*; *Colletotrichum* species, for example

5 *Colletotrichum lindemuthianum*; *Corynespora* species, for example *Corynespora cassiicola*; *Cycloconium* species, for example *Cycloconium oleaginum*; *Diaporthe* species, for example *Diaporthe citri*; *Elsinoe* species, for example *Elsinoe fawcettii*; *Gloeosporium* species, for example *Gloeosporium laeticolor*; *Glomerella* species, for example *Glomerella cingulata*; *Guignardia* species, for example *Guignardia bidwelli*; *Leptosphaeria* species, for example *Leptosphaeria maculans*; *Magnaporthe* species, for example

10 *Magnaporthe grisea*; *Microdochium* species, for example *Microdochium nivale*; *Mycosphaerella* species, for example *Mycosphaerella graminicola*, *Mycosphaerella arachidicola* or *Mycosphaerella fijiensis*; *Phaeosphaeria* species, for example *Phaeosphaeria nodorum*; *Pyrenophora* species, for example *Pyrenophora teres* or *Pyrenophora tritici repentis*; *Ramularia* species, for example *Ramularia collo-cygni* or *Ramularia areola*; *Rhynchosporium* species, for example *Rhynchosporium secalis*; *Septoria* species, for

15 example *Septoria apii* or *Septoria lycopersici*; *Stagonospora* species, for example *Stagonospora nodorum*; *Typhula* species, for example *Typhula incarnata*; *Venturia* species, for example *Venturia inaequalis*;

root and stem diseases caused, for example, by *Corticium* species, for example *Corticium graminearum*; *Fusarium* species, for example *Fusarium oxysporum*; *Gaeumannomyces* species, for example *Gaeumannomyces graminis*; *Plasmodiophora* species, for example *Plasmodiophora brassicae*; *Rhizoctonia*

20 species, for example *Rhizoctonia solani*; *Sarocladium* species, for example *Sarocladium oryzae*; *Sclerotium* species, for example *Sclerotium oryzae*; *Tapesia* species, for example *Tapesia acuformis*; *Thielaviopsis* species, for example *Thielaviopsis basicola*;

ear and panicle diseases (including corn cobs) caused, for example, by *Alternaria* species, for example *Alternaria spp.*; *Aspergillus* species, for example *Aspergillus flavus*; *Cladosporium* species, for example

25 *Cladosporium cladosporioides*; *Claviceps* species, for example *Claviceps purpurea*; *Fusarium* species, for example *Fusarium culmorum*; *Gibberella* species, for example *Gibberella zeae*; *Monographella* species, for example *Monographella nivalis*; *Stagnospora* species, for example *Stagnospora nodorum*;

diseases caused by smut fungi, for example *Sphacelotheca* species, for example *Sphacelotheca reiliana*; *Tilletia* species, for example *Tilletia caries* or *Tilletia controversa*; *Urocystis* species, for example *Urocystis*

30 *occulta*; *Ustilago* species, for example *Ustilago nuda*;

fruit rot caused, for example, by *Aspergillus* species, for example *Aspergillus flavus*; *Botrytis* species, for example *Botrytis cinerea*; *Monilinia* species, for example *Monilinia laxa*; *Penicillium* species, for example *Penicillium expansum* or *Penicillium purpurogenum*; *Rhizopus* species, for example *Rhizopus stolonifer*;

Sclerotinia species, for example *Sclerotinia sclerotiorum*; *Verticilium* species, for example *Verticilium alboatrum*;

seed- and soil-borne rot and wilt diseases, and also diseases of seedlings, caused, for example, by *Alternaria* species, for example *Alternaria brassicicola*; *Aphanomyces* species, for example *Aphanomyces euteiches*;
5 *Ascochyta* species, for example *Ascochyta lentis*; *Aspergillus* species, for example *Aspergillus flavus*;
Cladosporium species, for example *Cladosporium herbarum*; *Cochliobolus* species, for example
Cochliobolus sativus (conidial form: *Drechslera*, *Bipolaris* Syn: *Helminthosporium*); *Colletotrichum*
species, for example *Colletotrichum coccodes*; *Fusarium* species, for example *Fusarium culmorum*;
Gibberella species, for example *Gibberella zeae*; *Macrophomina* species, for example *Macrophomina*
10 *phaseolina*; *Microdochium* species, for example *Microdochium nivale*; *Monographella* species, for example
Monographella nivalis; *Penicillium* species, for example *Penicillium expansum*; *Phoma* species, for
example *Phoma lingam*; *Phomopsis* species, for example *Phomopsis sojae*; *Phytophthora* species, for
example *Phytophthora cactorum*; *Pyrenophora* species, for example *Pyrenophora graminea*; *Pyricularia*
species, for example *Pyricularia oryzae*; *Pythium* species, for example *Pythium ultimum*; *Rhizoctonia*
15 species, for example *Rhizoctonia solani*; *Rhizopus* species, for example *Rhizopus oryzae*; *Sclerotium* species,
for example *Sclerotium rolfsii*; *Septoria* species, for example *Septoria nodorum*; *Typhula* species, for
example *Typhula incarnata*; *Verticillium* species, for example *Verticillium dahliae*;

cancers, galls and witches' broom caused, for example, by *Nectria* species, for example *Nectria galligena*;

wilt diseases caused, for example, by *Verticillium* species, for example *Verticillium longisporum*; *Fusarium*
20 species, for example *Fusarium oxysporum*;

deformations of leaves, flowers and fruits caused, for example, by *Exobasidium* species, for example
Exobasidium vexans; *Taphrina* species, for example *Taphrina deformans*;

degenerative diseases in woody plants, caused, for example, by *Esca* species, for example *Phaeomoniella*
chlamydospora, *Phaeoacremonium aleophilum* or *Fomitiporia mediterranea*; *Ganoderma* species, for
25 example *Ganoderma boninense*;

diseases of plant tubers caused, for example, by *Rhizoctonia* species, for example *Rhizoctonia solani*;
Helminthosporium species, for example *Helminthosporium solani*;

diseases caused by bacterial pathogens, for example *Xanthomonas* species, for example *Xanthomonas*
campestris pv. *oryzae*; *Pseudomonas* species, for example *Pseudomonas syringae* pv. *lachrymans*; *Erwinia*
30 species, for example *Erwinia amylovora*; *Liberibacter* species, for example *Liberibacter asiaticus*; *Xyella*
species, for example *Xylella fastidiosa*; *Ralstonia* species, for example *Ralstonia solanacearum*; *Dickeya*

species, for example *Dickeya solani*; *Clavibacter* species, for example *Clavibacter michiganensis*; *Streptomyces* species, for example *Streptomyces scabies*.

diseases of soya beans:

Fungal diseases on leaves, stems, pods and seeds caused, for example, by *Alternaria* leaf spot (*Alternaria spec. atrans tenuissima*), Anthracnose (*Colletotrichum gloeosporoides dematium var. truncatum*), brown spot (*Septoria glycines*), cercospora leaf spot and blight (*Cercospora kikuchii*), choanephora leaf blight (*Choanephora infundibulifera trispora* (Syn.)), dactuliophora leaf spot (*Dactuliophora glycines*), downy mildew (*Peronospora manshurica*), drechslera blight (*Drechslera glycini*), frog-eye leaf spot (*Cercospora sojina*), leptosphaerulina leaf spot (*Leptosphaerulina trifolii*), phyllosticta leaf spot (*Phyllosticta sojaecola*), pod and stem blight (*Phomopsis sojiae*), powdery mildew (*Microsphaera diffusa*), pyrenochaeta leaf spot (*Pyrenochaeta glycines*), rhizoctonia aerial, foliage, and web blight (*Rhizoctonia solani*), rust (*Phakopsora pachyrhizi*, *Phakopsora meibomia*), scab (*Sphaceloma glycines*), stemphylium leaf blight (*Stemphylium botryosum*), sudden death syndrome (*Fusarium virguliforme*), target spot (*Corynespora cassicola*).

Fungal diseases on roots and the stem base caused, for example, by black root rot (*Calonectria crotalariae*), charcoal rot (*Macrophomina phaseolina*), fusarium blight or wilt, root rot, and pod and collar rot (*Fusarium oxysporum*, *Fusarium orthoceras*, *Fusarium semitectum*, *Fusarium equiseti*), mycoleptodiscus root rot (*Mycoleptodiscus terrestris*), neocosmospora (*Neocosmospora vasinfecta*), pod and stem blight (*Diaporthe phaseolorum*), stem canker (*Diaporthe phaseolorum var. caulivora*), phytophthora rot (*Phytophthora megasperma*), brown stem rot (*Phialophora gregata*), pythium rot (*Pythium aphanidermatum*, *Pythium irregulare*, *Pythium debaryanum*, *Pythium myriotylum*, *Pythium ultimum*), rhizoctonia root rot, stem decay, and damping-off (*Rhizoctonia solani*), sclerotinia stem decay (*Sclerotinia sclerotiorum*), sclerotinia southern blight (*Sclerotinia rolfii*), thielaviopsis root rot (*Thielaviopsis basicola*).

Mycotoxins

In addition, the compound combination and the composition of the invention may reduce the mycotoxin content in the harvested material and the foods and feeds prepared therefrom. Mycotoxins include particularly, but not exclusively, the following: deoxynivalenol (DON), nivalenol, 15-Ac-DON, 3-Ac-DON, T2- and HT2-toxin, fumonisins, zearalenon, moniliformin, fusarin, diacetoxyscirpenol (DAS), beauvericin, enniatin, fusaroproliferin, fusarenol, ochratoxins, patulin, ergot alkaloids and aflatoxins which can be produced, for example, by the following fungi: *Fusarium spec.*, such as *F. acuminatum*, *F. asiaticum*, *F. avenaceum*, *F. crookwellense*, *F. culmorum*, *F. graminearum* (*Gibberella zeae*), *F. equiseti*, *F. fujikuroi*, *F. musarum*, *F. oxysporum*, *F. proliferatum*, *F. poae*, *F. pseudograminearum*, *F. sambucinum*, *F. scirpi*, *F. semitectum*, *F. solani*, *F. sporotrichoides*, *F. langsethiae*, *F. subglutinans*, *F. tricinctum*, *F. verticillioides*, and also by *Aspergillus spec.*, such as *A. flavus*, *A. parasiticus*, *A. nomius*, *A. ochraceus*, *A. clavatus*, *A. terreus*, *A. versicolor*, *Penicillium spec.*, such as *P. verrucosum*, *P. viridicatum*, *P. citrinum*,

P. expansum, *P. claviforme*, *P. roqueforti*, *Claviceps* spec., such as *C. purpurea*, *C. fusiformis*, *C. paspali*, *C. africana*, *Stachybotrys* spec. and others.

Material Protection

The compound combination and the composition of the invention may also be used in the protection of materials, especially for the protection of industrial materials against attack and destruction by phytopathogenic fungi.

In addition, the compound combination and the composition of the invention may be used as antifouling compositions, alone or in combinations with other active ingredients.

Industrial materials in the present context are understood to mean inanimate materials which have been prepared for use in industry. For example, industrial materials which are to be protected from microbial alteration or destruction may be adhesives, glues, paper, wallpaper and board/cardboard, textiles, carpets, leather, wood, fibers and tissues, paints and plastic articles, cooling lubricants and other materials which can be infected with or destroyed by microorganisms. Parts of production plants and buildings, for example cooling-water circuits, cooling and heating systems and ventilation and air-conditioning units, which may be impaired by the proliferation of microorganisms may also be mentioned within the scope of the materials to be protected. Industrial materials within the scope of the present invention preferably include adhesives, sizes, paper and card, leather, wood, paints, cooling lubricants and heat transfer fluids, more preferably wood.

The compound combination and the composition of the invention may prevent adverse effects, such as rotting, decay, discoloration, decoloration or formation of mould.

In the case of treatment of wood the compound combination and the composition of the invention may also be used against fungal diseases liable to grow on or inside timber.

Timber means all types of species of wood, and all types of working of this wood intended for construction, for example solid wood, high-density wood, laminated wood, and plywood. In addition, the compound and the composition of the invention may be used to protect objects which come into contact with saltwater or brackish water, especially hulls, screens, nets, buildings, moorings and signalling systems, from fouling.

The compound combination and the composition of the invention may also be employed for protecting storage goods. Storage goods are understood to mean natural substances of vegetable or animal origin or processed products thereof which are of natural origin, and for which long-term protection is desired. Storage goods of vegetable origin, for example plants or plant parts, such as stems, leaves, tubers, seeds, fruits, grains, may be protected freshly harvested or after processing by (pre)drying, moistening, comminuting, grinding, pressing or roasting. Storage goods also include timber, both unprocessed, such as construction timber, electricity poles and barriers, or in the form of finished products, such as furniture. Storage goods of animal

origin are, for example, hides, leather, furs and hairs. The compound combination and the composition of the invention may prevent adverse effects, such as rotting, decay, discoloration, decoloration or formation of mould.

Microorganisms capable of degrading or altering industrial materials include, for example, bacteria, fungi, yeasts, algae and slime organisms. The compound combination and the composition of the invention preferably act against fungi, especially moulds, wood-discoloring and wood-destroying fungi (*Ascomycetes*, *Basidiomycetes*, *Deuteromycetes* and *Zygomycetes*), and against slime organisms and algae. Examples include microorganisms of the following genera: *Alternaria*, such as *Alternaria tenuis*; *Aspergillus*, such as *Aspergillus niger*; *Chaetomium*, such as *Chaetomium globosum*; *Coniophora*, such as *Coniophora puetana*; *Lentinus*, such as *Lentinus tigrinus*; *Penicillium*, such as *Penicillium glaucum*; *Polyporus*, such as *Polyporus versicolor*; *Aureobasidium*, such as *Aureobasidium pullulans*; *Sclerophoma*, such as *Sclerophoma pityophila*; *Trichoderma*, such as *Trichoderma viride*; *Ophiostoma* spp., *Ceratocystis* spp., *Humicola* spp., *Petriella* spp., *Trichurus* spp., *Coriolus* spp., *Gloeophyllum* spp., *Pleurotus* spp., *Poria* spp., *Serpula* spp. and *Tyromyces* spp., *Cladosporium* spp., *Paecilomyces* spp. *Mucor* spp., *Escherichia*, such as *Escherichia coli*; *Pseudomonas*, such as *Pseudomonas aeruginosa*; *Staphylococcus*, such as *Staphylococcus aureus*, *Candida* spp. and *Saccharomyces* spp., such as *Saccharomyces cerevisiae*.

Seed Treatment

The compound combination and the composition of the invention may also be used to protect seeds from unwanted microorganisms, such as phytopathogenic microorganisms, for instance phytopathogenic fungi or phytopathogenic oomycetes. The term seed(s) as used herein include dormant seeds, primed seeds, pregerminated seeds and seeds with emerged roots and leaves.

Thus, the present invention also relates to a method for protecting seeds from unwanted microorganisms which comprises the step of treating the seeds with the compound combination or the composition of the invention, wherein the seeds may be treated simultaneously, separately or sequentially with the compounds (A) and (B).

The treatment of seeds with the compound combination or the composition of the invention protects the seeds from phytopathogenic microorganisms, but also protects the germinating seeds, the emerging seedlings and the plants after emergence from the treated seeds. Therefore, the present invention also relates to a method for protecting seeds, germinating seeds and emerging seedlings.

The seeds treatment may be performed prior to sowing, at the time of sowing or shortly thereafter.

When the seeds treatment is performed prior to sowing (e.g. so-called on-seed applications), the seeds treatment may be performed as follows: the seeds may be placed into a mixer with a desired amount of the

compound combination or the composition of the invention, the seeds and the compound combination or the composition of the invention are mixed until an homogeneous distribution on seeds is achieved. If appropriate, the seeds may then be dried.

5 The invention also relates to seeds coated with the compound combination or the composition of the invention.

Preferably, the seeds are treated in a state in which it is sufficiently stable for no damage to occur in the course of treatment. In general, seeds can be treated at any time between harvest and shortly after sowing. It is customary to use seeds which have been separated from the plant and freed from cobs, shells, stalks, coats, hairs or the flesh of the fruits. For example, it is possible to use seeds which have been harvested, cleaned
10 and dried down to a moisture content of less than 15% by weight. Alternatively, it is also possible to use seeds which, after drying, for example, have been treated with water and then dried again, or seeds just after priming, or seeds stored in primed conditions or pre-germinated seeds, or seeds sown on nursery trays, tapes or paper.

The amount of the compound combination or the composition of the invention applied to the seeds is
15 typically such that the germination of the seed is not impaired, or that the resulting plant is not damaged. This must be ensured particularly in case the compounds contained in the compound combination of the invention would exhibit phytotoxic effects at certain application rates. The intrinsic phenotypes of transgenic plants should also be taken into consideration when determining the amount of the compound combination of the invention to be applied to the seed in order to achieve optimum seed and germinating plant protection
20 with a minimum amount of compound being employed.

The compounds contained in the compound combination of the invention can be applied as such, directly to the seeds, i.e. without the use of any other components and without having been diluted. They can be applied in a simultaneous, separate or sequential manner. Also compositions containing the compounds contained in the compound combination of the invention, such as the composition of the invention, can be applied to
25 the seeds.

The compound combination and the composition of the invention are suitable for protecting seeds of any plant variety. Preferred seeds are that of cereals (such as wheat, barley, rye, millet, triticale, and oats), oilseed rape, maize, cotton, soybean, rice, potatoes, sunflower, beans, coffee, peas, beet (e.g. sugar beet and fodder beet), peanut, vegetables (such as tomato, cucumber, onions and lettuce), lawns and ornamental plants. More
30 preferred are seeds of wheat, soybean, oilseed rape, maize and rice.

The compound combination and the composition of the invention may be used for treating transgenic seeds, in particular seeds of plants capable of expressing a polypeptide or protein which acts against pests, herbicidal damage or abiotic stress, thereby increasing the protective effect. Seeds of plants capable of

expressing a polypeptide or protein which acts against pests, herbicidal damage or abiotic stress may contain at least one heterologous gene which allows the expression of said polypeptide or protein. These heterologous genes in transgenic seeds may originate, for example, from microorganisms of the species *Bacillus*, *Rhizobium*, *Pseudomonas*, *Serratia*, *Trichoderma*, *Clavibacter*, *Glomus* or *Gliocladium*. These heterologous genes preferably originate from *Bacillus* sp., in which case the gene product is effective against the European corn borer and/or the Western corn rootworm. Particularly preferably, the heterologous genes originate from *Bacillus thuringiensis*.

Application

The compound combination of the invention can be applied as such, or for example in the form of as ready-to-use solutions, emulsions, water- or oil-based suspensions, powders, wettable powders, pastes, soluble powders, dusts, soluble granules, granules for broadcasting, suspoemulsion concentrates, natural products impregnated with the compound combination of the invention, synthetic substances impregnated with the compound combination of the invention, fertilizers or microencapsulations in polymeric substances.

Application is accomplished in a customary manner, for example by watering, spraying, atomizing, broadcasting, dusting, foaming or spreading-on. It is also possible to deploy the compound combination of the invention by the ultra-low volume method, via a drip irrigation system or drench application, to apply it in-furrow or to inject it into the soil stem or trunk. It is further possible to apply the compound combination of the invention by means of a wound seal, paint or other wound dressing. The effective and plant-compatible amount of the compound combination of the invention which is applied to the plants, plant parts, fruits, seeds or soil will depend on various factors, such as the compound/composition employed, the subject of the treatment (plant, plant part, fruit, seed or soil), the type of treatment (dusting, spraying, seed dressing), the purpose of the treatment (curative and protective), the type of microorganisms, the development stage of the microorganisms, the sensitivity of the microorganisms, the crop growth stage and the environmental conditions.

When the compound combination of the invention is used as a fungicide, the application rates can vary within a relatively wide range, depending on the kind of application. For the treatment of plant parts, such as leaves, the application rate may range from 0.1 to 10 000 g/ha, preferably from 10 to 1000 g/ha, more preferably from 50 to 300 g/ha (in the case of application by watering or dripping, it is even possible to reduce the application rate, especially when inert substrates such as rockwool or perlite are used). For the treatment of seeds, the application rate may range from 0.1 to 200 g per 100 kg of seeds, preferably from 1 to 150 g per 100 kg of seeds, more preferably from 2.5 to 25 g per 100 kg of seeds, even more preferably from 2.5 to 12.5 g per 100 kg of seeds. For the treatment of soil, the application rate may range from 0.1 to 10 000 g/ha, preferably from 1 to 5000 g/ha. The outlined application rates refer to the total application rates of compounds (A) and (B) present in the compound combination of the present invention.

These application rates are merely examples and are not intended to limit the scope of the present invention.

The compound combination of the invention can be used in combination with models e.g. embedded in computer programs for site specific crop management, satellite farming, precision farming or precision agriculture. Such models support the site specific management of agricultural sites with data from various sources such as soils, weather, crops (e.g. type, growth stage, plant health), weeds (e.g. type, growth stage), diseases, pests, nutrients, water, moisture, biomass, satellite data, yield etc. with the purpose to optimize profitability, sustainability and protection of the environment. In particular, such models can help to optimize agronomical decisions, control the precision of pesticide applications and record the work performed.

As an example, the compound of the invention can be applied to a crop plant according to appropriate dose regime if a model models the development of a fungal disease and calculates that a threshold has been reached for which it is recommendable to apply the compound of the invention to the crop plant.

Commercially available systems which include agronomic models are e.g. FieldScripts™ from The Climate Corporation, Xarvio™ from BASF, AGLogic™ from John Deere, etc.

The compounds of the invention can also be used in combination with smart spraying equipment such as e.g. spot spraying or precision spraying equipment attached to or housed within a farm vehicle such as a tractor, robot, helicopter, airplane, unmanned aerial vehicle (UAV) such as a drone, etc. Such an equipment usually includes input sensors (such as e.g. a camera) and a processing unit configured to analyze the input data and configured to provide a decision based on the analysis of the input data to apply the compound of the invention to the crop plants (respectively the weeds) in a specific and precise manner. The use of such smart spraying equipment usually also requires positions systems (e.g. GPS receivers) to localize recorded data and to guide or to control farm vehicles; geographic information systems (GIS) to represent the information on intelligible maps, and appropriate farm vehicles to perform the required farm action such as the spraying.

In an example, fungal diseases can be detected from imagery acquired by a camera. In an example fungal diseases can be identified and/or classified based on that imagery. Such identification and/ classification can make use of image processing algorithms. Such image processing algorithms can utilize machine learning algorithms, such as trained neural networks, decision trees and utilize artificial intelligence algorithms. In this manner, the compounds described herein can be applied only where needed.

Examples

The advanced fungicidal activity of the active compound combinations according to the invention is evident from the examples below. While the individual active compounds exhibit weaknesses with regard to the fungicidal activity, the combinations have an activity which exceeds a simple addition of activities.

- 5 A synergistic effect of fungicides is always present when the fungicidal activity of the active compound combinations exceeds the total of the activities of the active compounds when applied individually. The expected activity for a given combination of two active compounds can be calculated as follows (cf. Colby, S.R., "Calculating Synergistic and Antagonistic Responses of Herbicide Combinations", *Weeds* **1967**, 15, 20-22):

10 If

X is the efficacy when active compound A is applied at an application rate of m ppm (or g/ha),

Y is the efficacy when active compound B is applied at an application rate of n ppm (or g/ha), and

E is the efficacy when the active compounds A and B are applied at application rates of m and n ppm (or g/ha), respectively,

15 then

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

For ternary mixtures the following Colby equation results:

If

X is the efficacy when active compound A is applied at an application rate of m ppm (or g/ha),

20 Y is the efficacy when active compound B is applied at an application rate of n ppm (or g/ha),

Z is the efficacy when active compound C is applied at an application rate of o ppm (or g/ha), and

E is the efficacy when the active compounds A, B and C are applied at application rates of m, n and o ppm (or g/ha), respectively,

then

25

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

The degree of efficacy, expressed in % is denoted. 0 % means an efficacy which corresponds to that of the control while an efficacy of 100 % means that no disease is observed.

If the actual fungicidal activity exceeds the calculated value, then the activity of the combination is superadditive, i.e. a synergistic effect exists. In this case, the efficacy which was actually observed must be greater than the value for the expected efficacy (E) calculated from the abovementioned formula.

A further way of demonstrating a synergistic effect is the method of Tammes (cf. "Isoboles, a graphic representation of synergism in pesticides" in *Neth. J. Plant Path.*, **1964**, 70, 73-80).

Example A: *in vitro*-Test with fungal microorganisms

Wells of 96-well microtiter plates are filled with 30µl of a preparation of test compound or compound combination in methanol + emulsifier alkylaryl-polyglycol-ether. Thereafter, the solvent is evaporated in a hood. At the next step, into each well 200µl of liquid growth medium is given, that has been amended with an appropriate concentration of spores or mycelium suspension of the test fungus.

With the aid of a photometer the extinction in all wells is measured at the wavelength of 600nm.

The microtiter plates are incubated for 3 to 7 days at 20°C and 85% relative humidity. After the incubation inhibition of growth is determined photometrically. Efficacy is calculated in relation to the untreated control, 0% efficacy means fungal growth as high as in untreated control while 100% efficacy means no fungal growth is measured.

The tables below clearly show that the observed efficacy of the active compound combination according to the invention is greater than the calculated activity, i.e. a synergistic effect is present.

Table A: *in vitro* -Test with *Botrytis cinerea*

(I)	(2.002) bixafen (ppm)	(3.020) trifloxy-strobin (ppm)	Ratio	Efficacy %	Colby expected value %
0.08				5.7	
	0.008			0.0	
		1.0		30.0	
		0.2		1.1	
		0.04		0.2	
0.08	0.008	1.0	1:0.1:12.5	54.5	29.7
0.08	0.008	0.2	1:0.1:2.5	14.6	0.8
0.08	0.008	0.04	1:0.1:0.5	4.6	0.0

Table B: *in vitro* -Test with *Cercospora beticola*

(I)	(2.002) bixafen (ppm)	(3.020) trifloxy-strobin (ppm)	Ratio	Efficacy %	Colby expected value %
2.0				16.9	
0.4				4.2	
0.08				8.2	
	0.2			37.2	
	0.04			10.4	
	0.008			12.2	
		0.008		85.4	
2.0	0.2	0.008	1:0.1:0.004	94.9	94.6
0.4	0.04	0.008	1:0.1:0.02	93.1	88.3
0.08	0.008	0.008	1:0.1:0.1	91.9	87.2

Table C: *in vitro* -Test with *Colletotrichum lindemuthianum*

(I)	(2.028) inpyrfluxam (ppm)	(3.020) trifloxy-strobin (ppm)	Ratio	Efficacy %	Colby expected value %
2.0				0.0	
	0.2			1.4	
		1.0		45.3	
		0.2		21.6	
		0.04		0.0	
		0.008		0.0	
2.0	0.2	1.0	1:0.1:0.5	61.4	46.1
2.0	0.2	0.2	1:0.1:0.1	34.1	32.5
2.0	0.2	0.04	1:0.1:0.02	3.1	1.4
2.0	0.2	0.008	1:0.1:0.004	20.7	1.4

Table D: *in vitro* -Test with *Cordana musae*

(I)	(2.028) inpyrfluxam (ppm)	(3.020) trifloxy- strobil (ppm)	Ratio	Efficacy %	Colby expected value %
10.0				10.9	
2.0				6.1	
0.4				1.3	
0.08				2.4	
	1.0			0.0	
	0.2			0.0	
	0.04			6.1	
	0.008			0.0	
		0.2		67.8	
10.0	1.0	0.2	1:0.1:0.02	80.8	71.8
2.0	0.2	0.2	1:0.1:0.1	73.7	68.2
0.4	0.04	0.2	1:0.1:0.5	82.9	70.0
0.08	0.008	0.2	1:0.1:0.25	72.1	69.6

Table E: *in vitro* -Test with *Fusarium culmorum*

(I)	(2.038) isoflu- cypram (ppm)	(2.002) bixafen (ppm)	(3.020) trifloxy- strobil (ppm)	(2.005) fluopyram (ppm)	Ratio	Efficacy %	Colby ex- pected value %
2.0						11.7	
0.4						7.9	
0.08						4.0	
	0.2					7.8	
	0.04					5.4	
		0.2				5.8	
		0.04				12.3	
		0.008				1.1	
			0.2			30.8	
				20.0		43.2	
				4.0		29.3	
2.0		0.2	0.2		1:0.1:0.1	47.5	41.7
0.4		0.04	0.2		1:0.1:0.5	48.2	41.3
0.08		0.008	0.2		1:0.1:2.5	47.5	42.4
0.4	0.2			20.0	1:0.5:50	53.3	50.5
0.4	0.2			4.0	1:0.5:10	39.1	38.4
0.08	0.04			20.0	1:0.5:250	59.2	46.2

0.08	0.04			4.0	1:0.5:50	46.5	33.1
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Table F: *in vitro* -Test with *Parastagonospora nodorum*

(I)	(2.028) inpyrfluxam (ppm)	(2.002) bixafen (ppm)	(3.020) trifloxystrobin (ppm)	Ratio	Efficacy %	Colby ex- pected value %
0.4					0.7	
0.08					0.4	
	0.04				6.7	
	0.008				0.0	
		0.04			10.3	
		0.008			0.0	
			1.0		80.2	
			0.2		71.1	
			0.04		55.6	
			0.008		26.9	
0.4		0.04	0.2	1:0.1:0.5	78.6	74.1
0.4		0.04	0.04	1:0.1:0.1	61.3	60.2
0.4		0.04	0.008	1:0.1:0.02	40.7	34.4
0.08		0.008	0.2	1:0.1:2.5	71.7	71.1
0.08		0.008	0.04	1:0.1:0.5	56.4	55.6
0.08		0.008	0.008	1:0.1:0.1	36.6	26.9
0.4	0.04		1.0	1:1:25	84.9	81.3
0.4	0.04		0.2	1:1:5	77.5	76.3
0.4	0.04		0.008	1:1:0.2	44.0	37.3
0.08	0.008		1.0	1:1:125	81.6	80.2
0.08	0.008		0.2	1:1:25	76.0	74.9
0.08	0.008		0.008	1:1:1	41.1	33.6

Claims

1. Active compound combination comprising

(A) as compound (A) N'-[2-chloro-4-(2-fluorophenoxy)-5-methylphenyl]-N-ethyl-N-methylimidoforamide,

(B) as compound (B) a further active compound selected from the following groups:

- inhibitors of the respiratory chain at complex I or II selected from the group consisting of
 - (2.001) benzovindiflupyr, (2.002) bixafen, (2.003) boscalid, (2.004) carboxin, (2.005) fluopyram, (2.006) flutolanil, (2.007) fluxapyroxad, (2.008) furametpyr, (2.009) Isofetamid, (2.010) isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.011) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.012) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.013) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate 1RS,4SR,9SR), (2.014) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.015) isopyrazam (syn-epimeric enantiomer 1S,4R,9S), (2.016) isopyrazam (syn-epimeric racemate 1RS,4SR,9RS), (2.017) penflufen, (2.018) penthiopyrad, (2.019) pydiflumetofen, (2.020) Pyraziflumid, (2.021) sedaxane, (2.022) 1,3-dimethyl-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)-1H-pyrazole-4-carboxamide, (2.023) 1,3-dimethyl-N-[(3R)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazole-4-carboxamide, (2.024) 1,3-dimethyl-N-[(3S)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazole-4-carboxamide, (2.025) 1-methyl-3-(trifluoromethyl)-N-[2'-(trifluoromethyl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide, (2.026) 2-fluoro-6-(trifluoromethyl)-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)benzamide, (2.027) 3-(difluoromethyl)-1-methyl-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)-1H-pyrazole-4-carboxamide, (2.028) inpyrfluxam, (2.029) 3-(difluoromethyl)-1-methyl-N-[(3S)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazole-4-carboxamide, (2.030) fluindapyr, (2.031) 3-(difluoromethyl)-N-[(3R)-7-fluoro-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1-methyl-1H-pyrazole-4-carboxamide, (2.032) 3-(difluoromethyl)-N-[(3S)-7-fluoro-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1-methyl-1H-pyrazole-4-carboxamide, (2.033) 5,8-difluoro-N-[2-(2-fluoro-4-{[4-(trifluoromethyl)pyridin-2-yl]oxy}phenyl)ethyl]quinazolin-4-amine, (2.034) N-(2-cyclopentyl-5-fluorobenzyl)-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.035) N-(2-tert-butyl-5-methylbenzyl)-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.036) N-(2-tert-butylbenzyl)-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.037) N-(5-chloro-2-ethylbenzyl)-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.038) isoflucypram, (2.039) N-[(1R,4S)-

- 9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.040) N-[(1S,4R)-9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.041) N-[1-(2,4-dichlorophenyl)-1-methoxypropan-2-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.042) N-[2-chloro-6-(trifluoromethyl)benzyl]-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.043) N-[3-chloro-2-fluoro-6-(trifluoromethyl)benzyl]-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.044) N-[5-chloro-2-(trifluoromethyl)benzyl]-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.045) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-N-[5-methyl-2-(trifluoromethyl)benzyl]-1H-pyrazole-4-carboxamide, (2.046) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(2-fluoro-6-isopropylbenzyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.047) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(2-isopropyl-5-methylbenzyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.048) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(2-isopropylbenzyl)-1-methyl-1H-pyrazole-4-carbothioamide, (2.049) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(2-isopropylbenzyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.050) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(5-fluoro-2-isopropylbenzyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.051) N-cyclopropyl-3-(difluoromethyl)-N-(2-ethyl-4,5-dimethylbenzyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.052) N-cyclopropyl-3-(difluoromethyl)-N-(2-ethyl-5-fluorobenzyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.053) N-cyclopropyl-3-(difluoromethyl)-N-(2-ethyl-5-methylbenzyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.054) N-cyclopropyl-N-(2-cyclopropyl-5-fluorobenzyl)-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.055) N-cyclopropyl-N-(2-cyclopropyl-5-methylbenzyl)-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.056) N-cyclopropyl-N-(2-cyclopropylbenzyl)-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.057) pyrapropoyne, and
- inhibitors of the respiratory chain at complex III selected from the group consisting of (3.001) ametocetradin, (3.002) amisulbrom, (3.003) azoxystrobin, (3.004) coumethoxystrobin, (3.005) coumoxystrobin, (3.006) cyazofamid, (3.007) dimoxystrobin, (3.008) enoxastrobin, (3.009) famoxadone, (3.010) fenamidone, (3.011) flufenoxystrobin, (3.012) fluoxastrobin, (3.013) kresoxim-methyl, (3.014) metominostrobin, (3.015) orysastrobin, (3.016) picoxystrobin, (3.017) pyraclostrobin, (3.018) pyrametostrobin, (3.019) pyraoxystrobin, (3.020) trifloxystrobin, (3.021) (2E)-2-{2-[(1E)-1-(3-{[(E)-1-

fluoro-2-phenylvinyl]oxy}phenyl)ethylidene]amino}oxy)methyl]phenyl}-2-(methoxy-
 imino)-N-methylacetamide, (3.022) (2E,3Z)-5-{[1-(4-chlorophenyl)-1H-pyrazol-3-
 yl]oxy}-2-(methoxyimino)-N,3-dimethylpent-3-enamide, (3.023) (2R)-2-{2-[(2,5-
 dimethylphenoxy)methyl]phenyl}-2-methoxy-N-methylacetamide, (3.024) (2S)-2-{2-
 5 [(2,5-dimethylphenoxy)methyl]phenyl}-2-methoxy-N-methylacetamide, (3.025)
 fenpicoxamid, (3.026) mandestrobin, (3.027) N-(3-ethyl-3,5,5-trimethylcyclohexyl)-3-
 formamido-2-hydroxybenzamide, (3.028) (2E,3Z)-5-{[1-(4-chloro-2-fluorophenyl)-1H-
 pyrazol-3-yl]oxy}-2-(methoxyimino)-N,3-dimethylpent-3-enamide, (3.029) methyl {5-[3-
 10 (2,4-dimethylphenyl)-1H-pyrazol-1-yl]-2-methylbenzyl}carbamate, (3.030)
 metyltetraprole, (3.031) florylpicoxamid,

and

(C) as compound (C) at least one further active compound selected from the following groups:

- (1) inhibitors of the respiratory chain at complex I or II, and
- (2) inhibitors of the respiratory chain at complex III,

wherein the at least one further active compound (C) is different from compound (B).

2. Active compound combination according to claim 1, wherein compound (B) is selected from:

(2.001) benzovindiflupyr, (2.002) bixafen, (2.003) boscalid, (2.005) fluopyram, (2.007) fluxapyroxad,
 (2.009) Isofetamid, (2.010) isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.011) isopyrazam
 (anti-epimeric enantiomer 1S,4R,9R), (2.012) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR),
 20 (2.013) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate
 1RS,4SR,9SR), (2.014) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.015) isopyrazam (syn-
 epimeric enantiomer 1S,4R,9S), (2.016) isopyrazam (syn-epimeric racemate 1RS,4SR,9RS), (2.017)
 penflufen, (2.018) penthiopyrad, (2.019) pydiflumetofen, (2.021) sedaxane, (2.028) inpyrfluxam,
 (2.030) fluindapyr, (2.038) isoflucypram, (3.003) azoxystrobin, (3.007) dimoxystrobin, (3.012)
 25 fluoxastrobin, (3.013) kresoxim-methyl, (3.016) picoxystrobin, (3.017) pyraclostrobin, (3.020)
 trifloxystrobin, (3.025) fenpicoxamid, (3.026) mandestrobin.

3. Active compound combination according to claim 1, wherein compound (B) is selected from:

(2.002) bixafen, (2.005) fluopyram, (2.017) penflufen, (2.028) inpyrfluxam, (2.038) isoflucypram.

4. Active compound combination according to claim 1, wherein compound (B) is selected from:

(2.002) bixafen, (2.028) inpyrfluxam, (2.038) isoflucypram.

5. Active compound combination according to any one of claims 1 to 4, wherein compound (C) is selected from:

(2.001) benzovindiflupyr, (2.002) bixafen, (2.003) boscalid, (2.004) carboxin, (2.005) fluopyram, (2.006) flutolanil, (2.007) fluxapyroxad, (2.008) furametpyr, (2.009) Isofetamid, (2.010) isopyrazam (anti-epimeric enantiomer 1R,4S,9S), (2.011) isopyrazam (anti-epimeric enantiomer 1S,4R,9R), (2.012) isopyrazam (anti-epimeric racemate 1RS,4SR,9SR), (2.013) isopyrazam (mixture of syn-epimeric racemate 1RS,4SR,9RS and anti-epimeric racemate 1RS,4SR,9SR), (2.014) isopyrazam (syn-epimeric enantiomer 1R,4S,9R), (2.015) isopyrazam (syn-epimeric enantiomer 1S,4R,9S), (2.016) isopyrazam (syn-epimeric racemate 1RS,4SR,9RS), (2.017) penflufen, (2.018) penthiopyrad, (2.019) pydiflumetofen, (2.020) Pyraziflumid, (2.021) sedaxane, (2.022) 1,3-dimethyl-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)-1H-pyrazole-4-carboxamide, (2.023) 1,3-dimethyl-N-[(3R)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazole-4-carboxamide, (2.024) 1,3-dimethyl-N-[(3S)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazole-4-carboxamide, (2.025) 1-methyl-3-(trifluoromethyl)-N-[2'-(trifluoromethyl)biphenyl-2-yl]-1H-pyrazole-4-carboxamide, (2.026) 2-fluoro-6-(trifluoromethyl)-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)benzamide, (2.027) 3-(difluoromethyl)-1-methyl-N-(1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)-1H-pyrazole-4-carboxamide, (2.028) inpyrfluxam, (2.029) 3-(difluoromethyl)-1-methyl-N-[(3S)-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazole-4-carboxamide, (2.030) fluindapyr, (2.031) 3-(difluoromethyl)-N-[(3R)-7-fluoro-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1-methyl-1H-pyrazole-4-carboxamide, (2.032) 3-(difluoromethyl)-N-[(3S)-7-fluoro-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl]-1-methyl-1H-pyrazole-4-carboxamide, (2.033) 5,8-difluoro-N-[2-(2-fluoro-4-{[4-(trifluoromethyl)pyridin-2-yl]oxy}-phenyl)ethyl]quinazolin-4-amine, (2.034) N-(2-cyclopentyl-5-fluorobenzyl)-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.035) N-(2-tert-butyl-5-methylbenzyl)-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.036) N-(2-tert-butylbenzyl)-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.037) N-(5-chloro-2-ethylbenzyl)-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.038) isoflucypram, (2.039) N-[(1R,4S)-9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.040) N-[(1S,4R)-9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoro-methyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.041) N-[1-(2,4-dichlorophenyl)-1-methoxypropan-2-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.042) N-[2-chloro-6-(trifluoromethyl)benzyl]-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.043) N-[3-chloro-2-fluoro-6-(trifluoromethyl)benzyl]-N-cyclo-propyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.044) N-[5-chloro-2-

- (trifluoromethyl)benzyl]-N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.045) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-1-methyl-N-[5-methyl-2-(trifluoromethyl)benzyl]-1H-pyrazole-4-carboxamide, (2.046) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(2-fluoro-6-isopropylbenzyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.047) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(2-isopropyl-5-methylbenzyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.048) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(2-isopropylbenzyl)-1-methyl-1H-pyrazole-4-carbothioamide, (2.049) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(2-isopropylbenzyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.050) N-cyclopropyl-3-(difluoromethyl)-5-fluoro-N-(5-fluoro-2-isopropylbenzyl)-1-methyl-1H-pyrazole-4-carboxamide, (2.051) N-cyclopropyl-3-(difluoromethyl)-N-(2-ethyl-4,5-dimethylbenzyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.052) N-cyclopropyl-3-(difluoromethyl)-N-(2-ethyl-5-fluorobenzyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.053) N-cyclopropyl-3-(difluoromethyl)-N-(2-ethyl-5-methylbenzyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.054) N-cyclopropyl-N-(2-cyclopropyl-5-fluorobenzyl)-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.055) N-cyclopropyl-N-(2-cyclopropyl-5-methylbenzyl)-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.056) N-cyclopropyl-N-(2-cyclopropylbenzyl)-3-(difluoromethyl)-5-fluoro-1-methyl-1H-pyrazole-4-carboxamide, (2.057) pyrapropoyne, (3.001) ametocetradin, (3.002) amisulbrom, (3.003) azoxystrobin, (3.004) coumethoxystrobin, (3.005) coumoxystrobin, (3.006) cyazofamid, (3.007) dimoxystrobin, (3.008) enoxastrobin, (3.009) famoxadone, (3.010) fenamidone, (3.011) flufenoxystrobin, (3.012) fluoxastrobin, (3.013) kresoxim-methyl, (3.014) metominostrobin, (3.015) orysastrobin, (3.016) picoxystrobin, (3.017) pyraclostrobin, (3.018) pyrametostrobin, (3.019) pyraoxystrobin, (3.020) trifloxystrobin, (3.021) (2E)-2-{2-[(1E)-1-(3-[(E)-1-fluoro-2-phenylvinyl]oxy)phenyl]ethylidene]amino}oxy)methyl]phenyl}-2-(methoxyimino)-N-methylacetamide, (3.022) (2E,3Z)-5-{[1-(4-chlorophenyl)-1H-pyrazol-3-yl]oxy}-2-(methoxyimino)-N,3-dimethylpent-3-enamide, (3.023) (2R)-2-{2-[(2,5-dimethylphenoxy)methyl]phenyl}-2-methoxy-N-methylacetamide, (3.024) (2S)-2-{2-[(2,5-dimethylphenoxy)methyl]phenyl}-2-methoxy-N-methylacetamide, (3.025) fenpicoxamid, (3.026) mandestrobin, (3.027) N-(3-ethyl-3,5,5-trimethylcyclohexyl)-3-formamido-2-hydroxybenzamide, (3.028) (2E,3Z)-5-{[1-(4-chloro-2-fluorophenyl)-1H-pyrazol-3-yl]oxy}-2-(methoxyimino)-N,3-dimethylpent-3-enamide, (3.029) methyl {5-[3-(2,4-dimethylphenyl)-1H-pyrazol-1-yl]-2-methylbenzyl}carbamate, (3.030) metyltetraprole, (3.031) florylpicoxamid.
6. Active compound combination according to any one of claims 1 to 4, wherein compound (C) is selected from:

(2.002) bixafen, (2.005) fluopyram, (2.017) penflufen, (2.019) pydiflumetofen, (2.028) inpyrfluxam, (2.038) isoflucypram, (3.012) fluoxastrobin, (3.016) picoxystrobin, (3.020) trifloxystrobin, (3.025) fenpicoxamid, (3.030) metyltetraprole, (3.031) florylpicoxamid.

7. Active compound combination according to any one of claims 1 to 4, wherein compound (C) is selected from:

(2.005) fluopyram, (2.019) pydiflumetofen, (3.020) trifloxystrobin.

8. Active compound combination according to any one of claims 1 to 4, wherein compound (C) is selected from:

(2.005) fluopyram and (3.020) trifloxystrobin.

9. Active compound combination according to claim 1, wherein the compound combination is selected from the following combinations:

(I) + (2.002) + (2.005), (I) + (2.002) + (2.017), (I) + (2.002) + (2.019), (I) + (2.002) + (2.028), (I) + (2.002) + (2.038), (I) + (2.002) + (3.012), (I) + (2.002) + (3.016), (I) + (2.002) + (3.020), (I) + (2.002) + (3.025), (I) + (2.002) + (3.030), (I) + (2.002) + (3.031),

(I) + (2.005) + (2.002), (I) + (2.005) + (2.017), (I) + (2.005) + (2.019), (I) + (2.005) + (2.028), (I) + (2.005) + (2.038), (I) + (2.005) + (3.012), (I) + (2.005) + (3.016), (I) + (2.005) + (3.020), (I) + (2.005) + (3.025), (I) + (2.005) + (3.030), (I) + (2.005) + (3.031),

(I) + (2.017) + (2.002), (I) + (2.017) + (2.005), (I) + (2.017) + (2.019), (I) + (2.017) + (2.028), (I) + (2.017) + (2.038), (I) + (2.017) + (3.012), (I) + (2.017) + (3.016), (I) + (2.017) + (3.020), (I) + (2.017) + (3.025), (I) + (2.017) + (3.030), (I) + (2.017) + (3.031),

(I) + (2.028) + (2.002), (I) + (2.028) + (2.005), (I) + (2.028) + (2.017), (I) + (2.028) + (2.019), (I) + (2.028) + (2.038), (I) + (2.028) + (3.012), (I) + (2.028) + (3.016), (I) + (2.028) + (3.020), (I) + (2.028) + (3.025), (I) + (2.028) + (3.030), (I) + (2.028) + (3.031),

(I) + (2.038) + (2.002), (I) + (2.038) + (2.005), (I) + (2.038) + (2.017), (I) + (2.038) + (2.019), (I) + (2.038) + (2.028), (I) + (2.038) + (3.012), (I) + (2.038) + (3.016), (I) + (2.038) + (3.020), (I) + (2.038) + (3.025), (I) + (2.038) + (3.030), (I) + (2.038) + (3.031).

10. Active compound combination according to at least one of claims 1 to 8, wherein the weight ratio of compound (A) to compound(s) (B) is from 500:1 to 1:500 and the weight ratio of compound (A) to compound(s) (C) is from 500:1 to 1:500.

11. Composition for controlling harmful microorganisms in crop protection and in the protection of materials, characterized by a content of an active compound combination according to at least one of claims 1 to 10, in addition to at least one carrier and/or surfactant.
- 5 12. Method for controlling harmful microorganisms in crop protection and in the protection of materials, characterized in that an active compound combination according to at least one of claims 1 to 10 or a composition according to claim 11 is applied to the harmful microorganisms and/or their habitat.
13. Use of an active compound combination according to at least one of claims 1 to 10 or a composition according to claim 11 for treatment of a transgenic plant.
- 10 14. Use of an active compound combination according to at least one of claims 1 to 10 or a composition according to claim 11 for treatment of seed.
15. Seed coated with an active compound combination according to at least one of claims 1 to 10 or a composition according to claim 11.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2020/078479

A. CLASSIFICATION OF SUBJECT MATTER INV. A01N37/52 A01P3/00 A01N37/50 A01N43/56 A01N43/40 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, CHEM ABS Data, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 3 335 559 A1 (BAYER CROPSCIENCE AG [DE]) 20 June 2018 (2018-06-20) the whole document -----	1-15
X	WO 2018/109002 A1 (BAYER CROPSCIENCE AG [DE]; BAYER AG [DE]) 21 June 2018 (2018-06-21) the whole document -----	1-15
☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" 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 8 December 2020		Date of mailing of the international search report 18/12/2020
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Bertrand, Franck

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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