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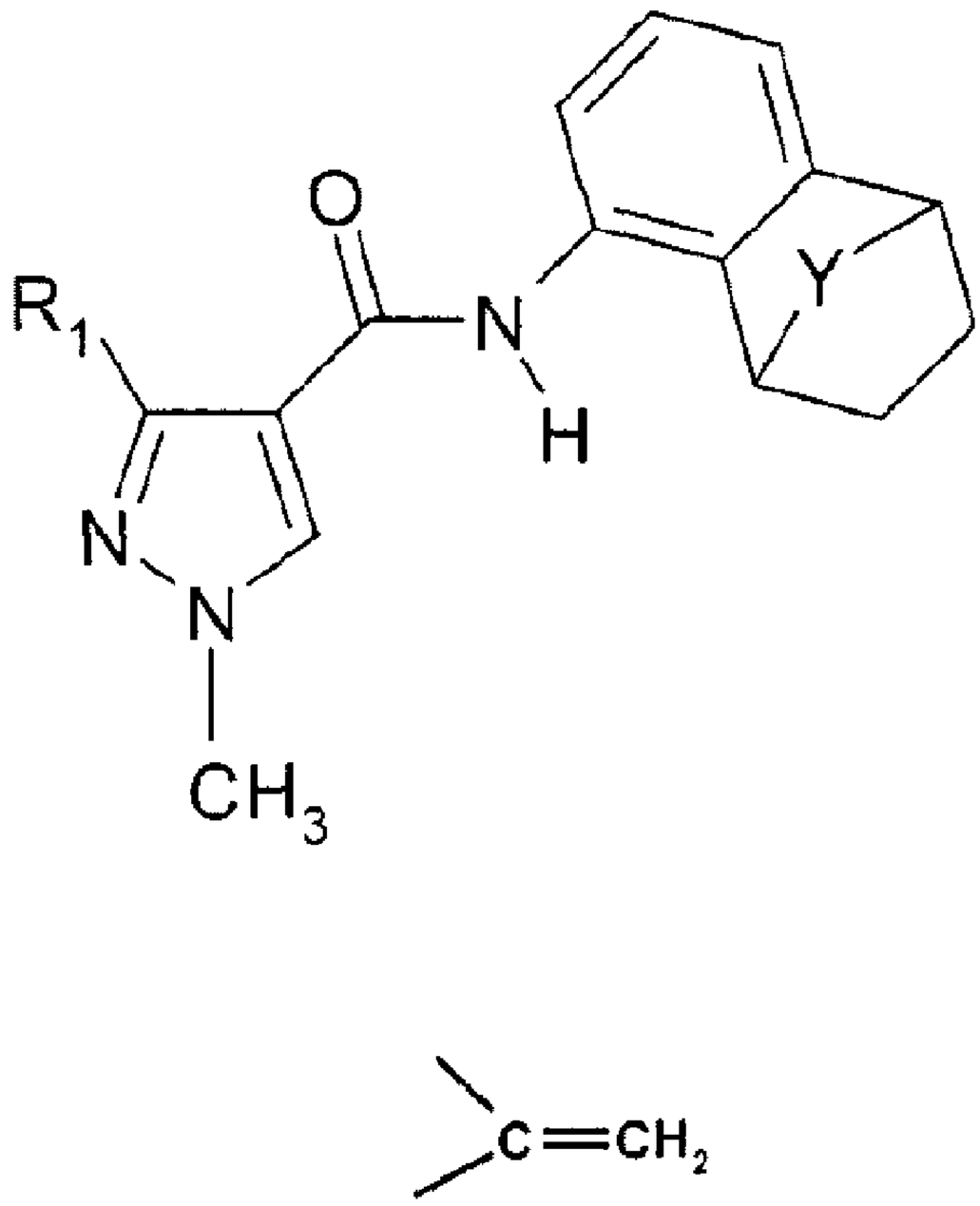
(54) **Titre : COMBINAISONS FONGICIDES SYNERGETIQUES RENFERMANT DES DERIVES DE CARBOXAMIDE TRICYCLIQUE**
(54) **Title: SYNERGISTIC FUNGICIDAL COMBINATIONS COMPRISING TRICYCLIC CARBOXAMIDE DERIVATIVES**



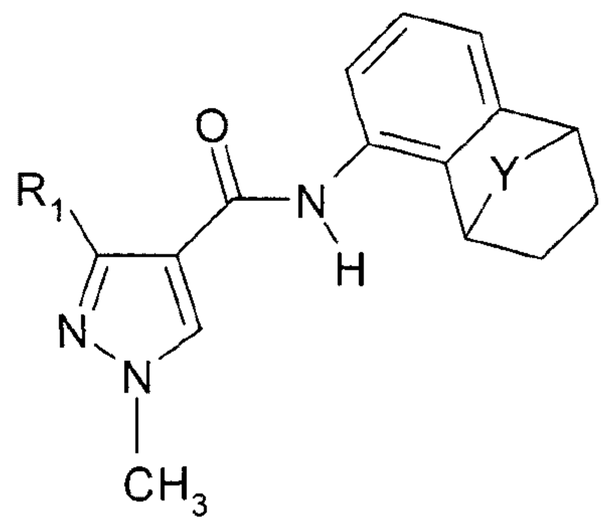
(I)

(57) **Abrégé/Abstract:**
The invention provides a method of controlling fungi on useful plants or on propagation material thereof, which comprises applying to the useful plants, the locus thereof or propagation material thereof a combination of components A) and B) in a synergistically effective amount, wherein component A) is a compound of formula I (see formula I), wherein R_1 is difluoromethyl or trifluoromethyl; Y is -CHR_2- or (see diagram) and R_2 is hydrogen or C_1-C_6alkyl; or a tautomer of such a compound; and component B) is Chlorothalonil.

Abstract

The invention provides a method of controlling fungi on useful plants or on propagation material thereof, which comprises applying to the useful plants, the locus thereof or propagation material thereof a combination of components A) and B) in a synergistically effective amount, wherein

component A) is a compound of formula I



(I),

wherein

R_1 is difluoromethyl or trifluoromethyl; Y is $-CHR_2-$ or $>C=CH_2$ and R_2 is hydrogen or C_1-C_6alkyl; or a tautomer of such a compound; and

component B) is Chlorothalonil.

Synergistic Fungicidal Combinations Comprising Tricyclic Carboxamide Derivatives

This is a divisional application of Canadian Patent Application No. 2,790,890, which is a divisional application of Canadian Patent Application No. 2,580,245 filed October 6, 2005.

The present invention relates to novel fungicidal compositions for the treatment of phytopathogenic diseases of useful plants, especially phytopathogenic fungi, and to a method of controlling phytopathogenic diseases on useful plants.

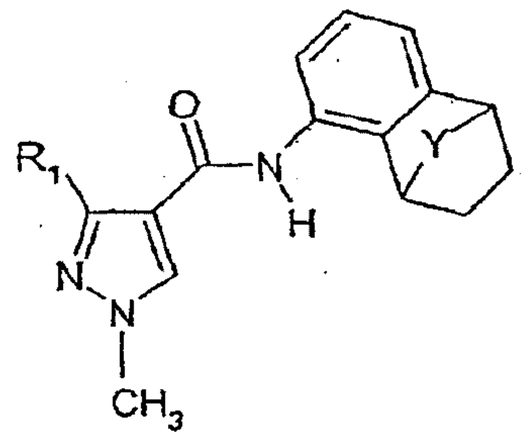
The subject matter of this divisional application is directed towards a method of controlling phytopathogenic fungi comprising applying a combination of components A) and B) in a synergistically effective amount, wherein component A) is a compound of formula I and component B) is a phenyl pyrrole fungicide, an anilino-pyrimidine fungicide, a morpholine fungicide, a compound of formula F-1, a compound of formula B-1, chlorothalonil, fluazinim, dithianon, metrafenone, tricyclazole, mefenoxam, acibenzolar-S-methyl, chlorantraniliprole or a compound of formula A-10. In an embodiment, component B) is a strobilurin fungicide. Also included are compositions comprising components A) and B).

The subject matter of the first divisional application is directed towards a method of controlling phytopathogenic fungi comprising applying a combination of components A) and B) in a synergistically effective amount, wherein component A) is a compound of formula I and component B) is a strobilurin fungicide and to a composition comprising components A) and B).

The subject matter of the parent application has been restricted to a method for controlling phytopathogenic fungi comprising applying a combination of components A) and B) in a synergistically effective amount, wherein component A) is a compound of formula I and component B) is an azole fungicide and to a composition comprising components A) and B). However, it should be understood that the expression "the invention" and the like when used herein, encompasses the subject matter of the parent and divisional applications.

It is known from WO 04/035589 that certain tricyclic carboxamide derivatives have biological activity against phytopathogenic fungi. On the other hand various fungicidal compounds of different chemical classes are widely known as plant fungicides for application in various crops of cultivated plants. However, crop tolerance and activity against phytopathogenic plant fungi do not always satisfy the needs of agricultural practice in many incidents and aspects.

There is therefore proposed in accordance with the present invention a method of controlling phytopathogenic diseases on useful plants or on propagation material thereof, which comprises applying to the useful plants, the locus thereof or propagation material thereof a combination of components A) and B) in a synergistically effective amount, wherein component A) is a compound of formula I



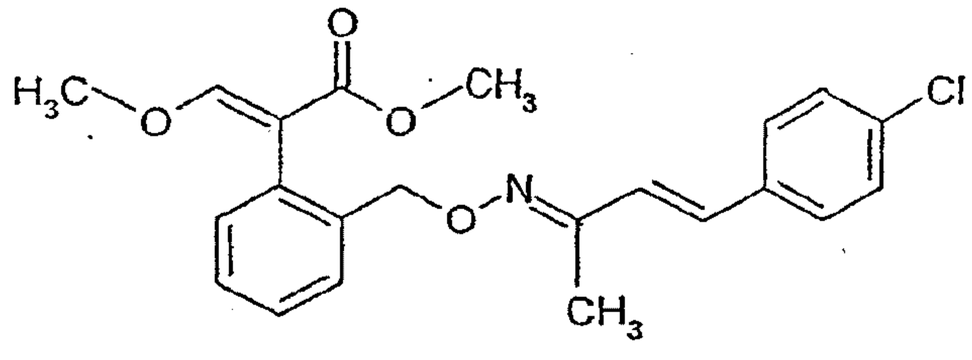
(I),

wherein

R_1 is difluoromethyl or trifluoromethyl; Y is $-CHR_2-$ or $>C=CH_2$ and R_2 is hydrogen or C_1-C_6alkyl; or a tautomer of such a compound; and

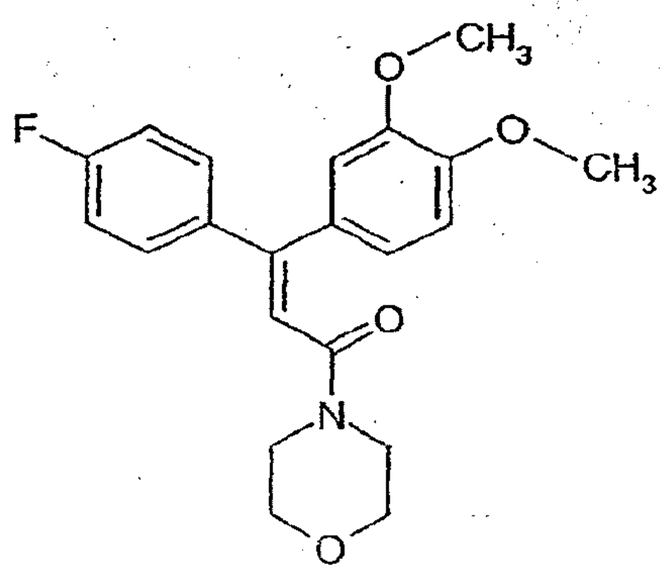
component B) is a compound selected from the group consisting of

a strobilurin fungicide, such as Azoxystrobin (47), Dimoxystrobin (226), Fluoxastrobin (382), Kresoxim-methyl (485), Metominostrobin (551), Orysastrobin, Picoxystrobin (647), Pyraclostrobin (690); Trifloxystrobin (832); and a compound of formula B-6



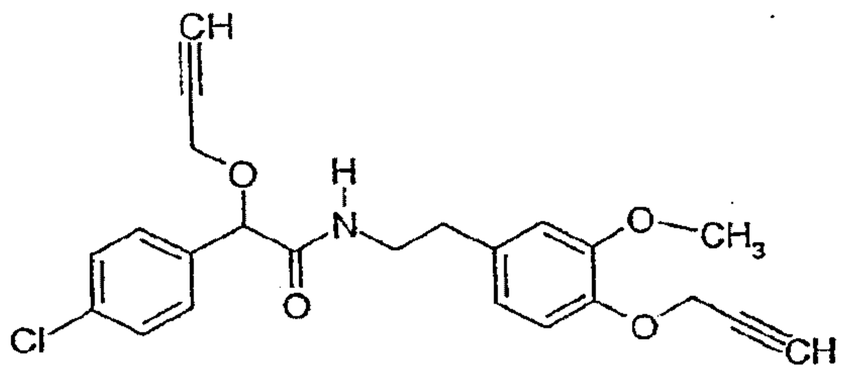
(B-6);

an azole fungicide, such as Azaconazole (40), Bromuconazole (96), Cyproconazole (207), Difenoconazole (247), Diniconazole (267), Diniconazole-M (267), Epoxiconazole (298), Fenbuconazole (329), Fluquinconazole (385), Flusilazole (393), Flutriafol (397), Hexaconazole (435), Imazalil (449), Imibenconazole (457), Ipconazole (468), Metconazole (525), Myclobutanil (564), Oxpoconazole (607), Pefurazoate (618), Penconazole (619), Prochloraz (659), Propiconazole (675), Prothioconazole (685), Simeconazole (731), Tebuconazole (761), Tetraconazole (778), Triadimefon (814), Triadimenol (815), Triflumizole (834) Triticonazole (842), Diclobutrazol (1068), Etaconazole (1129), Furconazole (1198), Furconazole-cis (1199) and Quinconazole (1378);
a phenyl pyrrole fungicide, such as Fenpiclonil (341) and Fludioxonil (368);
an anilino-pyrimidine fungicide, such as Cyprodinil (208), Mepanipyrim (508) and Pyrimethanil (705);
a morpholine fungicide, such as Aldimorph, Dodemorph (288), Fenpropimorph (344), Tridemorph (830), Fenpropidin (343), Spiroxamine (740); Piperalin (648); and a compound of formula B-7



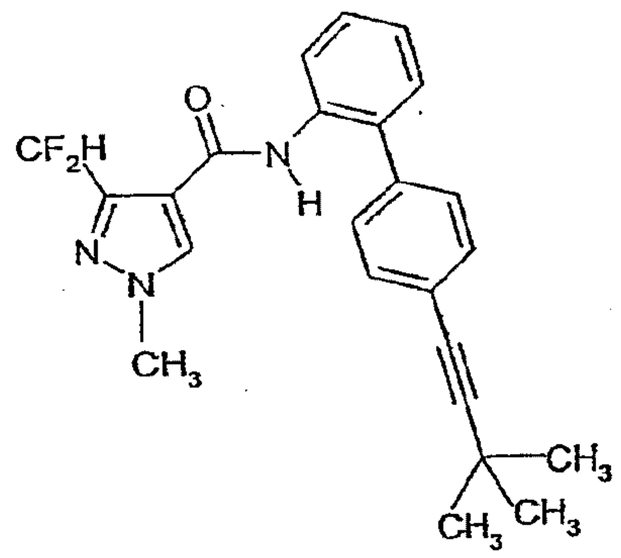
(B-7);

a compound of formula F-1



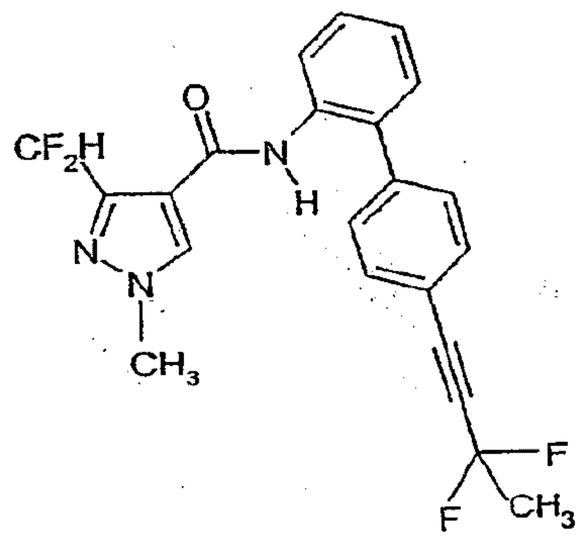
(F-1);

a compound of formula F-2



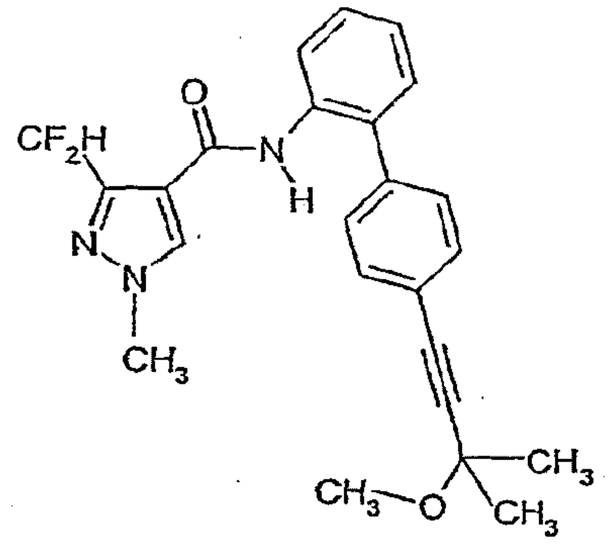
(F-2);

a compound of formula F-3



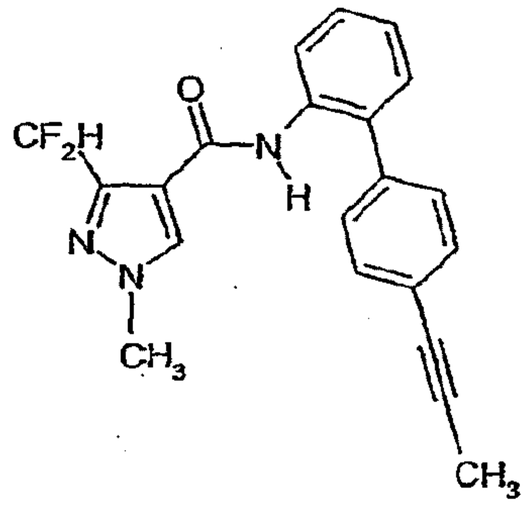
(F-3);

a compound of formula F-4



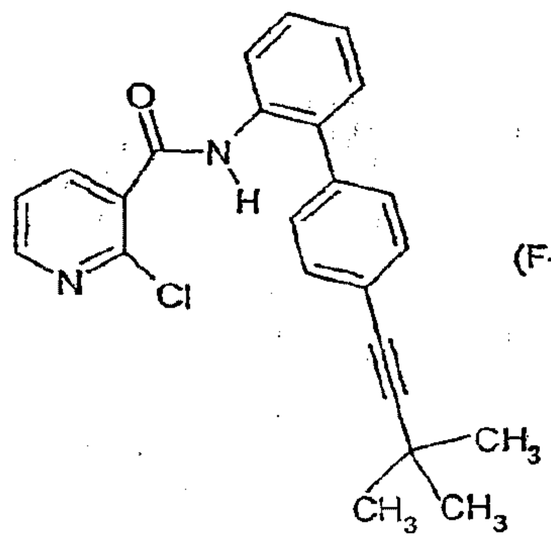
(F-4);

a compound of formula F-5



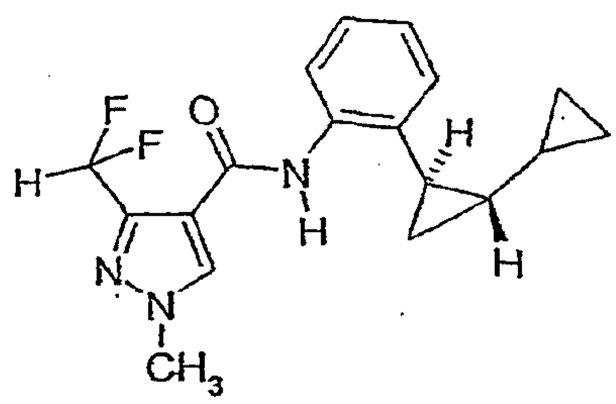
(F-5);

a compound of formula F-6



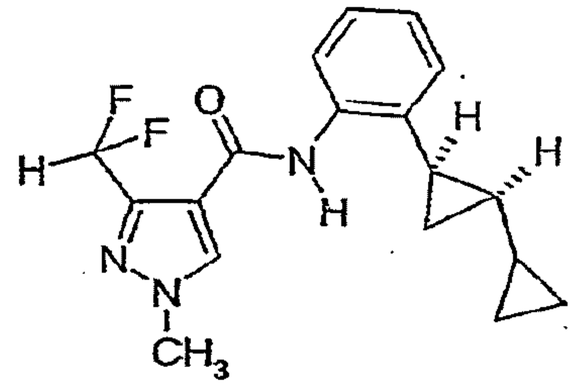
(F-6);

a racemic compound of formula F-7 (trans)



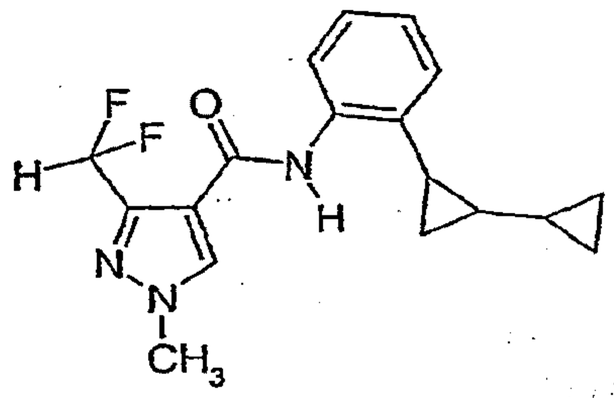
(F-7);

a racemic compound of formula F-8 (cis)



(F-8);

a compound of formula F-9



(F-9),

which represents a mixture of racemic compounds of formula F-7 (trans) and F-8 (cis), wherein the ratio of racemic compounds of formula F-7 (trans) to racemic compounds of formula F-8 (cis) is from 2 : 1 to 100 : 1;

Trinexapac-Ethyl (841); Chlormequat chloride (137); Ethephon (307); Prohexadione calcium (664); Mepiquat chloride (509); Proquinazid (682); Chlorothalonil (142); Famoxadone (322); Fenamidone (325); Benomyl (62); Carbendazim (116); Fuberidazole (419); Thiabendazole (790); Thiophanate (1435); Thiophanate-methyl (802); Chlozolinate (149); Iprodione (470); Procymidone (660); Vinclozolin (849); Bitertanol (84); Fenarimol (327); Nuarimol (587); Pyrifenox (703); Triforine (838); Benalaxyl (56); Furalaxyl (410); Metalaxyl (516); Mefenoxam (Metalaxyl-M) (517); Ofurace (592); Oxadixyl (601); Edifenphos (290); Iprobenfos (IBP) (469); Isoprothiolane (474); Pyrazophos (693); Benodanil (896); Carboxin (120); Fenfuram (333); Flutolanil (396); Furametpyr (411); Mepronil (510); Oxycarboxin (608); Thifluzamide

(796); Bupirimate (98); Dimethirimol (1082); Ethirimol (1133); Diethofencarb (245); Quinoxyfen (715); Biphenyl (81); Chloroneb (139); Dicloran (240); Etridiazole (321); Quintozene (PCNB) (716); Tecnazene (TCNB) (767); Tolclofos-methyl (808); Dimethomorph (263); Carpropamid (122); Diclocymet (237); Fenoxanil (338); Fthalide (643); Pyroquilon (710); Tricyclazole (828); Fenhexamid (334); Polyoxin (654); Pencycuron (620); Cyazofamid (185); Zoxamide (857); Blasticidin-S (85); Kasugamycin (483); Streptomycin (744); Validamycin (846); Cymoxanil (200); Iodocarb (3-Iodo-2-propynyl butyl carbamate); Propamocarb (668); Prothiocarb (1361); Dinocap (270); Fluazinam (363); Fentin acetate (347); Fentin chloride; Fentin hydroxide (347); Oxolinic acid (606); Hymexazole; Octhilinone (590); Fosetyl-Aluminium (407); Phosphoric acid; Tecloftalam; Triazoxide (821); Flusulfamide (394); Ferimzone (351); Diclomezine (239); Anilazine (878); Arsenates; Captafol (113); Captan (114); Chlorothalonil (142); Copper (diverse salts); Copper Ammoniumcarbonate; Copper octanoate (170); Copper oleate; Copper sulphate (87; 172; 173); Copper hydroxide (169); Dichlofluanid (230); Dithianon (279); Dodine (289); Ferbam (350); Folpet (400); Guazatine (422); Iminoctadine (459); Mancozeb (496); Maneb (497); Mercury; Metiram (546); Propineb (676); Sulphur (754); Thiram (804); Tolylfluanid (810); Zineb (855); Ziram (856); Acibenzolar-S-methyl (6); Probenazole (658); Benthiavalicarb; Benthiavalicarb-isopropyl (68); Iprovalicarb (471); Diflumetorim (253); Ethaboxam (304); Flusulfamide (394); Methasulfocarb (528); Silthiofam (729); Bacillus pumilus GB34; Bacillus pumilus strain QST 2808; Bacillus subtilis (50); Bacilus subtilis + PCNB + Metalaxyl (50; 716; 516); Cadmium chloride; Carbon disulfide (945); Bordeaux mixture (87); Cedar leaf oil; Chlorine; Cinnamaldehyde; Cycloheximide (1022); Fenaminosulf (1144); Fenamiphos (326); Dichloropropene (233); Dichlone (1052); Formaldehyde (404); Gliocladium virens GL-21 (417); Glyodin (1205); Hexachlorobenzene (434); Iprovalicarb (471); Manganous dimethyldithiocarbamate; Mercuric chloride (511); Nabam (566); Neem oil (hydrophobic extract); Oxytetracycline (611); Chinomethionat (126); Paraformaldehyde; Pentachloronitrobenzene (716); Pentachlorophenol (623); paraffin oil (628); Polyoxin D zinc salt (654); Sodium bicarbonate; Potassium bicarbonate; Sodium diacetate; Sodium propionate;TCMTB; Benalaxyl -M; Boscalid (88); Hexaconazole (435); Metrafenone; Oxine Copper (605); Penthiopyrad; Perfurazoate; Tolyfluanid; Trichoderma harzianum (825); Triphenyltin hydroxide (347); Xanthomonas campestris (852); Paclobutrazol (612); 1,1-bis(4-chlorophenyl)-2-ethoxyethanol (IUPAC-Name) (910); 2,4-dichlorophenyl benzenesulfonate (IUPAC- / Chemical Abstracts-Name) (1059); 2-fluoro-*N*-methyl-*N*-1-naphthylacetamide (IUPAC-Name) (1295); 4-chlorophenyl phenyl sulfone (IUPAC-Name) (981); abamectin (1);

acequinocyl (3); acetoprole [CCN]; acrinathrin (9); aldicarb (16); aldoxycarb (863); alpha-cypermethrin (202); amidithion (870); amidoflumet [CCN]; amidothioate (872); amiton (875); amiton hydrogen oxalate (875); amitraz (24); aramite (881); arsenous oxide (882); AVI 382 (compound code); AZ 60541 (compound code); azinphos-ethyl (44); azinphos-methyl (45); azobenzene (IUPAC-Name) (888); azocyclotin (46); azothoate (889); benomyl (62); benoxafos (alternative name) [CCN]; benzoximate (71); benzyl benzoate (IUPAC-Name) [CCN]; bifenazate (74); bifenthrin (76); binapacryl (907); brofenvalerate (alternative name); bromocyclen (918); bromophos (920); bromophos-ethyl (921); bromopropylate (94); buprofezin (99); butocarboxim (103); butoxycarboxim (104); butylpyridaben (alternative name); calcium polysulfide (IUPAC-Name) (111); camphechlor (941); carbanolate (943); carbaryl (115); carbofuran (118); carbophenothion (947); CGA 50'439 (development code) (125); chinomethionat (126); chlorbenside (959); chlordimeform (964); chlordimeform hydrochloride (964); chlorfenapyr (130); chlorfenethol (968); chlorfenson (970); chlorfensulphide (971); chlorfenvinphos (131); chlorobenzilate (975); chloromebuform (977); chloromethiuron (978); chloropropylate (983); chlorpyrifos (145); chlorpyrifos-methyl (146); chlorthiophos (994); cinerin I (696); cinerin II (696); cinerins (696); clofentezine (158); closantel (alternative name) [CCN]; coumaphos (174); crotamiton (alternative name) [CCN]; crotoxyphos (1010); cufraneb (1013); cyanthoate (1020); cyhalothrin (196); cyhexatin (199); cypermethrin (201); DCPM (1032); DDT (219); demephion (1037); demephion-O (1037); demephion-S (1037); demeton (1038); demeton-methyl (224); demeton-O (1038); demeton-O-methyl (224); demeton-S (1038); demeton-S-methyl (224); demeton-S-methylsulphon (1039); diafenthiuron (226); dialifos (1042); diazinon (227); dichlofluanid (230); dichlorvos (236); diciiphos (alternative name); dicofol (242); dicrotophos (243); dienochlor (1071); dimefox (1081); dimethoate (262); dinactin (alternative name) (653); dinex (1089); dinex-diclexine (1089); dinobuton (269); dinocap (270); dinocap-4 [CCN]; dinocap-6 [CCN]; dinocton (1090); dinopenton (1092); dinosulfon (1097); dinoterbon (1098); dioxathion (1102); diphenyl sulfone (IUPAC-Name) (1103); disulfiram (alternative name) [CCN]; disulfoton (278); DNOC (282); dofenapyn (1113); doramectin (alternative name) [CCN]; endosulfan (294); endothion (1121); EPN (297); eprinomectin (alternative name) [CCN]; ethion (309); ethoate-methyl (1134); etoxazole (320); etrimfos (1142); fenazaflor (1147); fenazaquin (328); fenbutatin oxide (330); fenothiocarb (337); fenpropathrin (342); fenpyrad (alternative name); fenpyroximate (345); fenson (1157); fentrifanil (1161); fenvalerate (349); fipronil (354); fluacrypyrim (360); fluazuron (1166); flubenzimine (1167); flucycloxuron (366); flucythrinate (367); fluenetil (1169); flufenoxuron (370); flumethrin (372); fluorbenside (1174); fluvalinate (1184);

FMC 1137 (development code) (1185); formetanate (405); formetanate hydrochloride (405); formothion (1192); formparanate (1193); gamma-HCH (430); glyodin (1205); halfenprox (424); heptenophos (432); hexadecyl cyclopropanecarboxylate (IUPAC- / Chemical Abstracts-Name) (1216); hexythiazox (441); iodomethane (IUPAC-Name) (542); isocarbophos (alternative name) (473); isopropyl O-(methoxyaminothiophosphoryl)salicylate (IUPAC-Name) (473); ivermectin (alternative name) [CCN]; jasmolin I (696); jasmolin II (696); jodfenphos (1248); lindane (430); lufenuron (490); malathion (492); malonoben (1254); mecarbam (502); mephosfolan (1261); mesulfen (alternative name) [CCN]; methacrifos (1266); methamidophos (527); methidathion (529); methiocarb (530); methomyl (531); methyl bromide (537); metolcarb (550); mevinphos (556); mexacarbate (1290); milbemectin (557); milbemycin oxime (alternative name) [CCN]; mipafox (1293); monocrotophos (561); morphothion (1300); moxidectin (alternative name) [CCN]; naled (567); NC-184 (compound code); nifluridide (1309); nikkomycins (alternative name) [CCN]; nitrilacarb (1313); nitrilacarb 1:1 zinc chloride complex (1313); NNI-0101 (compound code); NNI-0250 (compound code); omethoate (594); oxamyl (602); oxydeprofos (1324); oxydisulfoton (1325); pp'-DDT (219); parathion (615); permethrin (626); petroleum oils (alternative name) (628); phenkapton (1330); phenthoate (631); phorate (636); phosalone (637); phosfolan (1338); phosmet (638); phosphamidon (639); phoxim (642); pirimiphos-methyl (652); polychloroterpenes (traditional name) (1347); polynactins (alternative name) (653); proclonol (1350); profenofos (662); promacyl (1354); propargite (671); propetamphos (673); propoxur (678); prothidathion (1360); prothoate (1362); pyrethrin I (696); pyrethrin II (696); pyrethrins (696); pyridaben (699); pyridaphenthion (701); pyrimidifen (706); pyrimitate (1370); quinalphos (711); quintiofos (1381); R-1492 (development code) (1382); RA-17 (development code) (1383); rotenone (722); schradan (1389); sebufos (alternative name); selamectin (alternative name) [CCN]; SI-0009 (compound code); sophamide (1402); spirodiclofen (738); spiromesifen (739); SSI-121 (development code) (1404); sulfiram (alternative name) [CCN]; sulfluramid (750); sulfotep (753); sulfur (754); SZI-121 (development code) (757); tau-fluvalinate (398); tebufenpyrad (763); TEPP (1417); terbam (alternative name); tetrachlorvinphos (777); tetradifon (786); tetranactin (alternative name) (653); tetrasul (1425); thiafenox (alternative name); thiocarboxime (1431); thiofanox (800); thiometon (801); thioquinox (1436); thuringiensin (alternative name) [CCN]; triamiphos (1441); triarathene (1443); triazophos (820); triazuron (alternative name); trichlorfon (824); trifenofos (1455); trinactin (alternative name) (653); vamidothion (847); vaniliprole [CCN]; YI-5302 (compound code); bethoxazin [CCN]; copper dioctanoate (IUPAC-Name)

(170);copper sulfate (172); cybutryne [CCN]; dichlone (1052); dichlorophen (232); endothal (295); fentin (347); hydrated lime [CCN]; nabam (566); quinoclamine (714); quinonamid (1379); simazine (730); triphenyltin acetate (IUPAC-Name) (347); triphenyltin hydroxide (IUPAC-Name) (347); abamectin (1); crufomate (1011); doramectin (alternative name) [CCN]; emamectin (291); emamectin benzoate (291); eprinomectin (alternative name) [CCN]; ivermectin (alternative name) [CCN]; milbemycin oxime (alternative name) [CCN]; moxidectin (alternative name) [CCN]; piperazine [CCN]; selamectin (alternative name) [CCN]; spinosad (737); thiophanate (1435); chloralose (127); endrin (1122); fenthion (346); pyridin-4-amine (IUPAC-Name) (23); strychnine (745);1-hydroxy-1*H*-pyridine-2-thione (IUPAC-Name) (1222); 4-(quinoxalin-2-ylamino)benzenesulfonamide (IUPAC-Name) (748); 8-hydroxyquinoline sulfate (446); bronopol (97); copper dioctanoate (IUPAC-Name) (170); copper hydroxide (IUPAC-Name) (169); cresol [CCN]; dichlorophen (232); dipyrithione (1105); dodicin (1112); fenaminosulf (1144); formaldehyde (404); hydrargaphen (alternative name) [CCN]; kasugamycin (483); kasugamycin hydrochloride hydrate (483); nickel bis(dimethyldithiocarbamate) (IUPAC-Name) (1308); nitrapyrin (580); octhilinone (590); oxolinic acid (606); oxytetracycline (611); potassium hydroxyquinoline sulfate (446); probenazole (658); streptomycin (744); streptomycin sesquisulfate (744); tecloftalam (766); thiomersal (alternative name) [CCN]; methyl bromide (537); apholate [CCN]; bisazir (alternative name) [CCN]; busulfan (alternative name) [CCN]; diflubenzuron (250); dimatif (alternative name) [CCN]; hemel [CCN]; hempa [CCN]; metepa [CCN]; methiotepa [CCN]; methyl apholate [CCN]; morzid [CCN]; penfluron (alternative name) [CCN]; tepa [CCN]; thiohempa (alternative name) [CCN]; thiotepa (alternative name) [CCN]; tretamine (alternative name) [CCN]; uredepa (alternative name) [CCN]; (*E*)-dec-5-en-1-yl acetate with (*E*)-dec-5-en-1-ol (IUPAC-Name) (222); (*E*)-tridec-4-en-1-yl acetate (IUPAC-Name) (829); (*E*)-6-methylhept-2-en-4-ol (IUPAC-Name) (541); (*E*,*Z*)-tetradeca-4,10-dien-1-yl acetate (IUPAC-Name) (779); (*Z*)-dodec-7-en-1-yl acetate (IUPAC-Name) (285); (*Z*)-hexadec-11-enal (IUPAC-Name) (436); (*Z*)-hexadec-11-en-1-yl acetate (IUPAC-Name) (437); (*Z*)-hexadec-13-en-11-yn-1-yl acetate (IUPAC-Name) (438); (*Z*)-icos-13-en-10-one (IUPAC-Name) (448); (Z)-tetradec-7-en-1-al (IUPAC-Name) (782); (*Z*)-tetradec-9-en-1-ol (IUPAC-Name) (783); (Z)-tetradec-9-en-1-yl acetate (IUPAC-Name) (784); (7*E*,9*Z*)-dodeca-7,9-dien-1-yl acetate (IUPAC-Name) (283); (9*Z*,11*E*)-tetradeca-9,11-dien-1-yl acetate (IUPAC-Name) (780); (9*Z*,12*E*)-tetradeca-9,12-dien-1-yl acetate (IUPAC-Name) (781); 14-methyloctadec-1-ene (IUPAC-Name) (545); 4-methylnonan-5-ol with 4-methylnonan-5-one (IUPAC-Name) (544); alpha-multistriatin (alternative name) [CCN]; brevicomin (alternative

name) [CCN]; codlelure (alternative name) [CCN]; codlemone (alternative name) (167); cuelure (alternative name) (179); disparlure (277); dodec-8-en-1-yl acetate (IUPAC-Name) (286); dodec-9-en-1-yl acetate (IUPAC-Name) (287); dodeca-8,10-dien-1-yl acetate (IUPAC-Name) (284); dominicalure (alternative name) [CCN]; ethyl 4-methyloctanoate (IUPAC-Name) (317); eugenol (alternative name) [CCN]; frontalin (alternative name) [CCN]; gossyplure (alternative name) (420); grandlure (421); grandlure I (alternative name) (421); grandlure II (alternative name) (421); grandlure III (alternative name) (421); grandlure IV (alternative name) (421); hexalure [CCN]; ipsdienol (alternative name) [CCN]; ipsenol (alternative name) [CCN]; japonilure (alternative name) (481); lineatin (alternative name) [CCN]; litlure (alternative name) [CCN]; looplure (alternative name) [CCN]; medlure [CCN]; megatomoic acid (alternative name) [CCN]; methyl eugenol (alternative name) (540); muscalure (563); octadeca-2,13-dien-1-yl acetate (IUPAC-Name) (588); octadeca-3,13-dien-1-yl acetate (IUPAC-Name) (589); orfralure (alternative name) [CCN]; oryctalure (alternative name) (317); ostramone (alternative name) [CCN]; siglure [CCN]; sordidin (alternative name) (736); sulcatol (alternative name) [CCN]; tetradec-11-en-1-yl acetate (IUPAC-Name) (785); trimedlure (839); trimedlure A (alternative name) (839); trimedlure B_1 (alternative name) (839); trimedlure B_2 (alternative name) (839); trimedlure C (alternative name) (839); trunc-call (alternative name) [CCN]; 2-(octylthio)ethanol (IUPAC-Name) (591); butopyronoxyl (933); butoxy(polypropylene glycol) (936); dibutyl adipate (IUPAC-Name) (1046); dibutyl phthalate (1047); dibutyl succinate (IUPAC-Name) (1048); diethyltoluamide [CCN]; dimethyl carbate [CCN]; dimethyl phthalate [CCN]; ethyl hexanediol (1137); hexamide [CCN]; methoquin-butyl (1276); methylneodecanamide [CCN]; oxamate [CCN]; picaridin [CCN]; 1,1-dichloro-1-nitroethane (IUPAC- / Chemical Abstracts-Name) (1058); 1,1-dichloro-2,2-bis(4-ethylphenyl)ethane (IUPAC-Name) (1056); 1,2-dichloropropane (IUPAC- / Chemical Abstracts-Name) (1062); 1,2-dichloropropane with 1,3-dichloropropene (IUPAC-Name) (1063); 1-bromo-2-chloroethane (IUPAC- / Chemical Abstracts-Name) (916); 2,2,2-trichloro-1-(3,4-dichlorophenyl)ethyl acetate (IUPAC-Name) (1451); 2,2-dichlorovinyl 2-ethylsulfinylethyl methyl phosphate (IUPAC-Name) (1066); 2-(1,3-dithiolan-2-yl)phenyl dimethylcarbamate (IUPAC- / Chemical Abstracts-Name) (1109); 2-(2-butoxyethoxy)ethyl thiocyanate (IUPAC- / Chemical Abstracts-Name) (935); 2-(4,5-dimethyl-1,3-dioxolan-2-yl)phenyl methylcarbamate (IUPAC- / Chemical Abstracts-Name) (1084); 2-(4-chloro-3,5-xylyloxy)-ethanol (IUPAC-Name) (986); 2-chlorovinyl diethyl phosphate (IUPAC-Name) (984); 2-imidazolidone (IUPAC-Name) (1225); 2-isovalerylindan-1,3-dione (IUPAC-Name) (1246); 2-methyl(prop-2-ynyl)aminophenyl methylcarbamate (IUPAC-Name) (1284); 2-thiocyanatoethyl

laurate (IUPAC-Name) (1433); 3-bromo-1-chloroprop-1-ene (IUPAC-Name) (917); 3-methyl-1-phenylpyrazol-5-yl dimethylcarbamate (IUPAC-Name) (1283); 4-methyl(prop-2-ynyl)amino-3,5-xylyl methylcarbamate (IUPAC-Name) (1285); 5,5-dimethyl-3-oxocyclohex-1-enyl dimethylcarbamate (IUPAC-Name) (1085); abamectin (1); acephate (2); acetamiprid (4); acethion (alternative name) [CCN]; acetoprole [CCN]; acrinathrin (9); acrylonitrile (IUPAC-Name) (861); alanycarb (15); aldicarb (16); aldoxycarb (863); aldrin (864); allethrin (17); allosamidin (alternative name) [CCN]; allyxycarb (866); alpha-cypermethrin (202); alpha-ecdysone (alternative name) [CCN]; aluminium phosphide (640); amidithion (870); amidothioate (872); aminocarb (873); amiton (875); amiton hydrogen oxalate (875); amitraz (24); anabasine (877); athidathion (883); AVI 382 (compound code); AZ 60541 (compound code); azadirachtin (alternative name) (41); azamethiphos (42); azinphos-ethyl (44); azinphos-methyl (45); azothoate (889); *Bacillus thuringiensis* delta endotoxins (alternative name) (52); barium hexafluorosilicate (alternative name) [CCN]; barium polysulfide (IUPAC- / Chemical Abstracts-Name) (892); barthrin [CCN]; BAS 320 I (compound code); Bayer 22/190 (development code) (893); Bayer 22408 (development code) (894); bendiocarb (58); benfuracarb (60); bensultap (66); beta-cyfluthrin (194); beta-cypermethrin (203); bifenthrin (76); bioallethrin (78); bioallethrin *S*-cyclopentenyl isomer (alternative name) (79); bioethanomethrin [CCN]; biopermethrin (908); bioresmethrin (80); bis(2-chloroethyl) ether (IUPAC-Name) (909); bistrifluron (83); borax (86); brofenvalerate (alternative name); bromfenvinfos (914); bromocyclen (918); bromo-DDT (alternative name) [CCN]; bromophos (920); bromophos-ethyl (921); bufencarb (924); buprofezin (99); butacarb (926); butathiofos (927); butocarboxim (103); butonate (932); butoxycarboxim (104); butylpyridaben (alternative name); cadusafos (109); calcium arsenate [CCN]; calcium cyanide (444); calcium polysulfide (IUPAC-Name) (111); camphechlor (941); carbanolate (943); carbaryl (115); carbofuran (118); carbon disulfide (IUPAC- / Chemical Abstracts-Name) (945); carbon tetrachloride (IUPAC-Name) (946); carbophenothion (947); carbosulfan (119); cartap (123); cartap hydrochloride (123); cevadine (alternative name) (725); chlorbicyclen (960); chlordane (128); chlordecone (963); chlordimeform (964); chlordimeform hydrochloride (964); chlorethoxyfos (129); chlorfenapyr (130); chlorfenvinphos (131); chlorfluazuron (132); chlormephos (136); chloroform [CCN]; chloropicrin (141); chlorphoxim (989); chlorprazophos (990); chlorpyrifos (145); chlorpyrifos-methyl (146); chlorthiophos (994); chromafenozide (150); cinerin I (696); cinerin II (696); cinerins (696); cis-resmethrin (alternative name); cismethrin (80); clocythrin (alternative name); cloethocarb (999); closantel (alternative name) [CCN]; clothianidin (165); copper acetoarsenite [CCN]; copper arsenate [CCN];

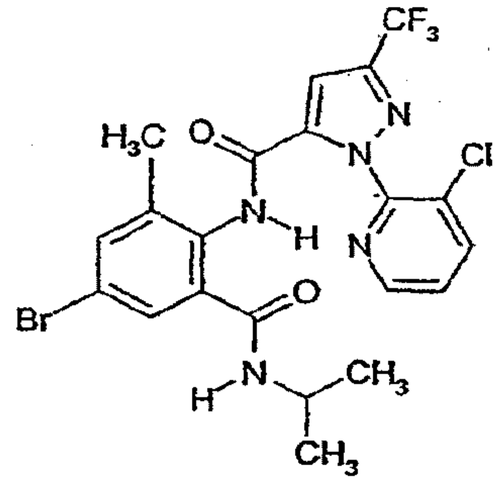
copper oleate [CCN]; coumaphos (174); coumithoate (1006); crotamiton (alternative name) [CCN]; crotoxyphos (1010); crufomate (1011); cryolite (alternative name) (177); CS 708 (development code) (1012); cyanofenphos (1019); cyanophos (184); cyanthoate (1020); cyclethrin [CCN]; cycloprothrin (188); cyfluthrin (193); cyhalothrin (196); cypermethrin (201); cyphenothrin (206); cyromazine (209); cythioate (alternative name) [CCN]; *d*-limonene (alternative name) [CCN]; *d*-tetramethrin (alternative name) (788); DAEP (1031); dazomet (216); DDT (219); decarbofuran (1034); deltamethrin (223); demephion (1037); demephion-O (1037); demephion-S (1037); demeton (1038); demeton-methyl (224); demeton-O (1038); demeton-O-methyl (224); demeton-S (1038); demeton-S-methyl (224); demeton-S-methylsulphon (1039); diafenthiuron (226); dialifos (1042); diamidafos (1044); diazinon (227); dicapthon (1050); dichlofenthion (1051); dichlorvos (236); dicliphos (alternative name); dicresyl (alternative name) [CCN]; dicrotophos (243); dicyclanil (244); dieldrin (1070); diethyl 5-methylpyrazol-3-yl phosphate (IUPAC-Name) (1076); diflubenzuron (250); dilor (alternative name) [CCN]; dimefluthrin [CCN]; dimefox (1081); dimetan (1085); dimethoate (262); dimethrin (1083); dimethylvinphos (265); dimetilan (1086); dinex (1089); dinex-diclexine (1089); dinoprop (1093); dinosam (1094); dinoseb (1095); dinotefuran (271); diofenolan (1099); dioxabenzofos (1100); dioxacarb (1101); dioxathion (1102); disulfoton (278); dithicrofos (1108); DNOC (282); doramectin (alternative name) [CCN]; DSP (1115); ecdysterone (alternative name) [CCN]; EI 1642 (development code) (1118); emamectin (291); emamectin benzoate (291); EMPC (1120); empenthrin (292); endosulfan (294); endothion (1121); endrin (1122); EPBP (1123); EPN (297); epofenonane (1124); eprinomectin (alternative name) [CCN]; esfenvalerate (302); etaphos (alternative name) [CCN]; ethiofencarb (308); ethion (309); ethiprole (310); ethoate-methyl (1134); ethoprophos (312); ethyl formate (IUPAC-Name) [CCN]; ethyl-DDD (alternative name) (1056); ethylene dibromide (316); ethylene dichloride (chemical name) (1136); ethylene oxide [CCN]; etofenprox (319); etrimfos (1142); EXD (1143); famphur (323); fenamiphos (326); fenazaflor (1147); fenchlorphos (1148); fenethacarb (1149); fenfluthrin (1150); fenitrothion (335); fenobucarb (336); fenoxacrim (1153); fenoxycarb (340); fenpirithrin (1155); fenpropathrin (342); fenpyrad (alternative name); fensulfothion (1158); fenthion (346); fenthion-ethyl [CCN]; fenvalerate (349); fipronil (354); flonicamid (358); flucofuron (1168); flucycloxuron (366); flucythrinate (367); fluenetil (1169); flufenerim [CCN]; flufenoxuron (370); flufenprox (1171); flumethrin (372); fluvalinate (1184); FMC 1137 (development code) (1185); fonofos (1191); formetanate (405); formetanate hydrochloride (405); formothion (1192); formparanate (1193); fosmethilan (1194); fospirate (1195); fosthiazate (408); fosthietan (1196); furathio-

carb (412); furethrin (1200); gamma-cyhalothrin (197); gamma-HCH (430); guazatine (422); guazatine acetates (422); GY-81 (development code) (423); halfenprox (424); halofenozide (425); HCH (430); HEOD (1070); heptachlor (1211); heptenophos (432); heterophos [CCN]; hexaflumuron (439); HHDN (864); hydramethylnon (443); hydrogen cyanide (444); hydroprene (445); hyquincarb (1223); imidacloprid (458); imiprothrin (460); indoxacarb (465); IPSP (1229); isazofos (1231); isobenzan (1232); isocarbophos (alternative name) (473); isodrin (1235); isofenphos (1236); isolane (1237); isoprocarb (472); isopropyl O-(methoxyaminothiophosphoryl)salicylate (IUPAC-Name) (473); isoprothiolane (474); isothioate (1244); isoxathion (480); ivermectin (alternative name) [CCN]; jasmolin I (696); jasmolin II (696); jodfenphos (1248); juvenile hormone I (alternative name) [CCN]; juvenile hormone II (alternative name) [CCN]; juvenile hormone III (alternative name) [CCN]; kelevan (1249); kinoprene (484); lambda-cyhalothrin (198); lead arsenate [CCN]; leptophos (1250); lindane (430); lirimfos (1251); lufenuron (490); lythidathion (1253); *m*-cumenyl methylcarbamate (IUPAC-Name) (1014); magnesium phosphide (IUPAC-Name) (640); malathion (492); malonoben (1254); mazidox (1255); mecarbam (502); mecarphon (1258); menazon (1260); mephosfolan (1261); mercurous chloride (513); mesulfenfos (1263); metam (519); metam-potassium (alternative name) (519); metam-sodium (519); methacrifos (1266); methamidophos (527); methanesulfonyl fluoride (IUPAC- / Chemical Abstracts-Name) (1268); methidathion (529); methiocarb (530); methocrotophos (1273); methomyl (531); methoprene (532); methoquin-butyl (1276); methothrin (alternative name) (533); methoxychlor (534); methoxyfenozide (535); methyl bromide (537); methyl isothiocyanate (543); methylchloroform (alternative name) [CCN]; methylene chloride [CCN]; metofluthrin [CCN]; metolcarb (550); metoxadiazone (1288); mevinphos (556); mexacarbate (1290); milbemectin (557); milbemycin oxime (alternative name) [CCN]; mipafox (1293); mirex (1294); monocrotophos (561); morphothion (1300); moxidectin (alternative name) [CCN]; naftalofos (alternative name) [CCN]; naled (567); naphthalene (IUPAC- / Chemical Abstracts-Name) (1303); NC-170 (development code) (1306); NC-184 (compound code); nicotine (578); nicotine sulfate (578); nifluridide (1309); nitenpyram (579); nithiazine (1311); nitrilacarb (1313); nitrilacarb 1:1 zinc chloride complex (1313); NNI-0101 (compound code); NNI-0250 (compound code); nornicotine (traditional name) (1319); novaluron (585); noviflumuron (586); O-2,5-dichloro-4-iodophenyl *O*-ethyl ethylphosphonothioate (IUPAC-Name) (1057); *O,O*-diethyl *O*-4-methyl-2-oxo-2*H*-chromen-7-yl phosphorothioate (IUPAC-Name) (1074); O,O-diethyl O-6-methyl-2-propylpyrimidin-4-yl phosphorothioate (IUPAC-Name) (1075); *O,O,O',O'*-tetrapropyl dithiopyrophosphate (IUPAC-Name) (1424); oleic acid (IUPAC-

Name) (593); omethoate (594); oxamyl (602); oxydemeton-methyl (609); oxydeprofos (1324); oxydisulfoton (1325); pp'-DDT (219); para-dichlorobenzene [CCN]; parathion (615); parathion-methyl (616); penfluron (alternative name) [CCN]; pentachlorophenol (623); pentachlorophenyl laurate (IUPAC-Name) (623); permethrin (626); petroleum oils (alternative name) (628); PH 60-38 (development code) (1328); phenkapton (1330); phenothrin (630); phenthoate (631); phorate (636); phosalone (637); phosfolan (1338); phosmet (638); phosnichlor (1339); phosphamidon (639); phosphine (IUPAC-Name) (640); phoxim (642); phoximmethyl (1340); pirimetaphos (1344); pirimicarb (651); pirimiphos-ethyl (1345); pirimiphosmethyl (652); polychlorodicyclopentadiene isomers (IUPAC-Name) (1346); polychloroterpenes (traditional name) (1347); potassium arsenite [CCN]; potassium thiocyanate [CCN]; prallethrin (655); precocene I (alternative name) [CCN]; precocene II (alternative name) [CCN]; precocene III (alternative name) [CCN]; primidophos (1349); profenofos (662); profluthrin [CCN]; promacyl (1354); promecarb (1355); propaphos (1356); propetamphos (673); propoxur (678); prothidathion (1360); prothiofos (686); prothoate (1362); protrifenbute [CCN]; pymetrozine (688); pyraclofos (689); pyrazophos (693); pyresmethrin (1367); pyrethrin I (696); pyrethrin II (696); pyrethrins (696); pyridaben (699); pyridalyl (700); pyridaphenthion (701); pyrimidifen (706); pyrimitate (1370); pyriproxyfen (708); quassia (alternative name) [CCN]; quinalphos (711); quinalphos-methyl (1376); quinothion (1380); quintiofos (1381); R-1492 (development code) (1382); rafoxanide (alternative name) [CCN]; resmethrin (719); rotenone (722); RU 15525 (development code) (723); RU 25475 (development code) (1386); ryania (alternative name) (1387); ryanodine (traditional name) (1387); sabadilla (alternative name) (725); schradan (1389); sebufos (alternative name); selamectin (alternative name) [CCN]; SI-0009 (compound code); silafluofen (728); SN 72129 (development code) (1397); sodium arsenite [CCN]; sodium cyanide (444); sodium fluoride (IUPAC- / Chemical Abstracts-Name) (1399); sodium hexafluorosilicate (1400); sodium pentachlorophenoxide (623); sodium selenate (IUPAC-Name) (1401); sodium thiocyanate [CCN]; sophamide (1402); spinosad (737); spiromesifen (739); sulcofuron (746); sulcofuron-sodium (746); sulfluramid (750); sulfotep (753); sulfuryl fluoride (756); sulprofos (1408); tar oils (alternative name) (758); tau-fluvalinate (398); tazimcarb (1412); TDE (1414); tebufenozide (762); tebufenpyrad (763); tebupirimfos (764); teflubenzuron (768); tefluthrin (769); temephos (770); TEPP (1417); terallethrin (1418); terbam (alternative name); terbufos (773); tetrachloroethane [CCN]; tetrachlorvinphos (777); tetramethrin (787); theta-cypermethrin (204); thiacloprid (791); thiafenox (alternative name); thiamethoxam (792); thicrofos (1428); thiocarboxime (1431); thiocyclam (798); thiocyclam hydrogen oxalate (798); thiodi-

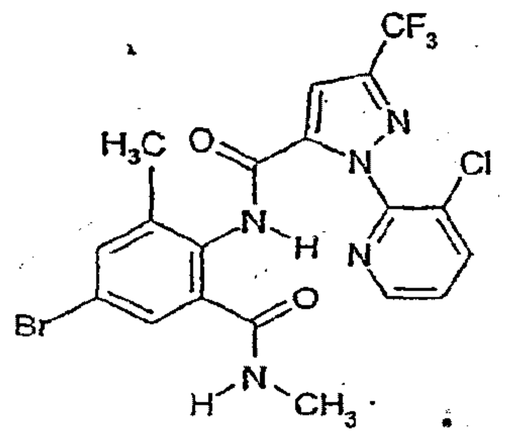
carb (799); thiofanox (800); thiometon (801); thionazin (1434); thiosultap (803); thiosultap-sodium (803); thuringiensin (alternative name) [CCN]; tolfenpyrad (809); tralomethrin (812); transfluthrin (813); transpermethrin (1440); triamiphos (1441); triazamate (818); triazophos (820); triazuron (alternative name); trichlorfon (824); trichlormetaphos-3 (alternative name) [CCN]; trichloronat (1452); trifenofos (1455); triflumuron (835); trimethacarb (840); triprene (1459); vamidothion (847); vaniliprole [CCN]; veratridine (alternative name) (725); veratrine (alternative name) (725); XMC (853); xylylcarb (854); YI-5302 (compound code); zeta-cypermethrin (205); zetamethrin (alternative name); zinc phosphide (640); zolaprofos (1469) und ZXI 8901 (development code) (858);

a compound of formula A-1



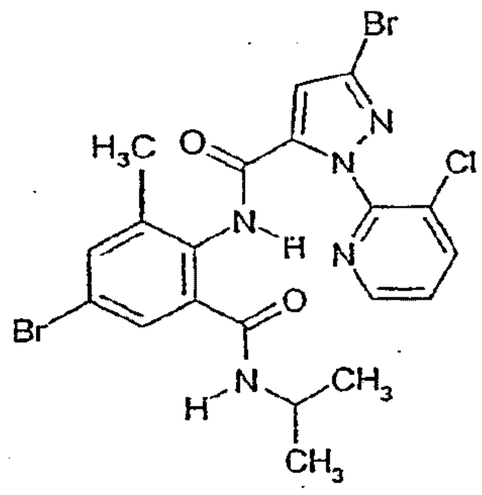
(A-1);

a compound of formula A-2



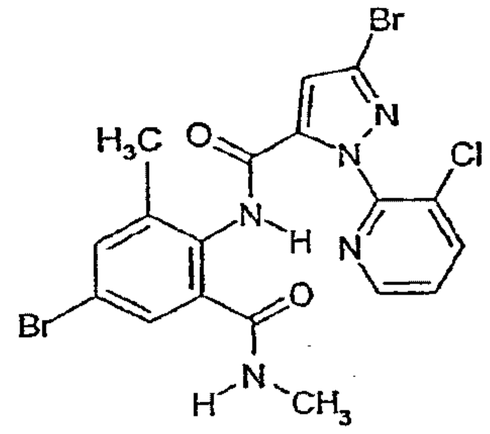
(A-2);

a compound of formula A-3



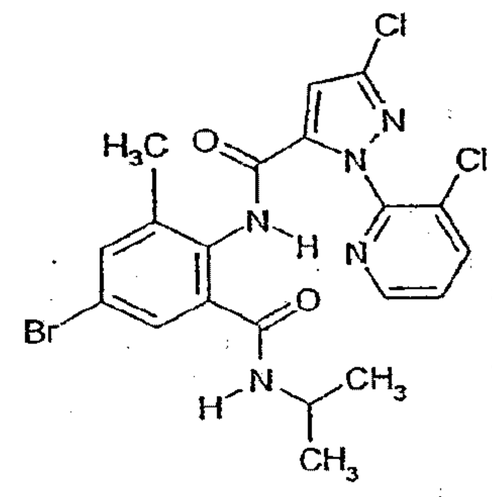
(A-3);

a compound of formula A-4



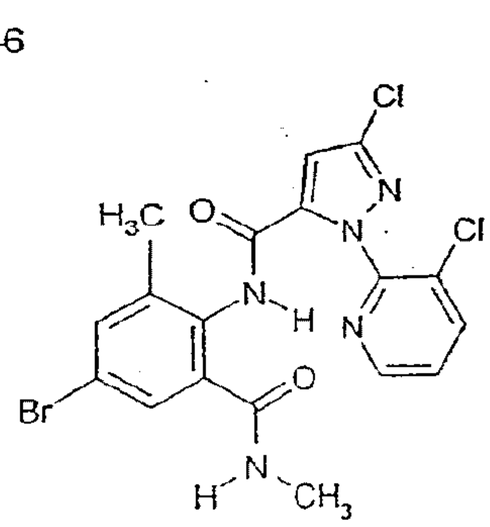
(A-4);

a compound of formula A-5



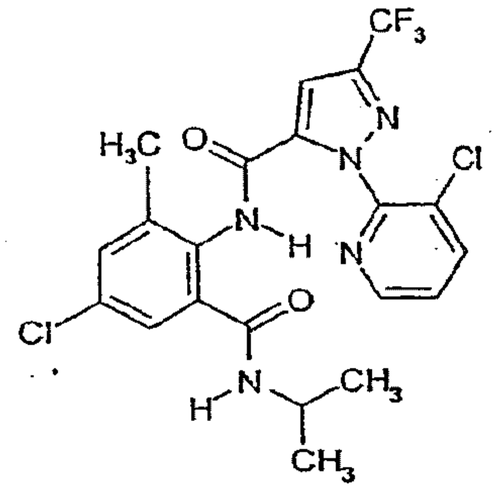
(A-5);

a compound of formula A-6



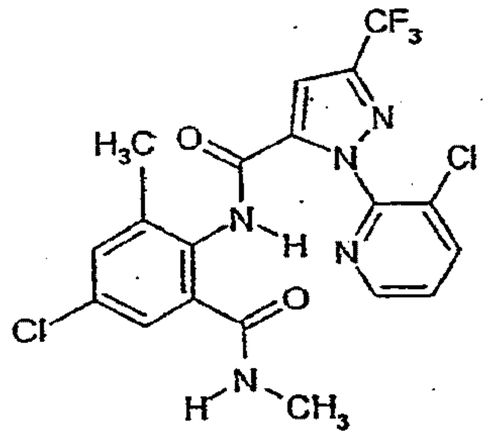
(A-6);

a compound of formula A-7



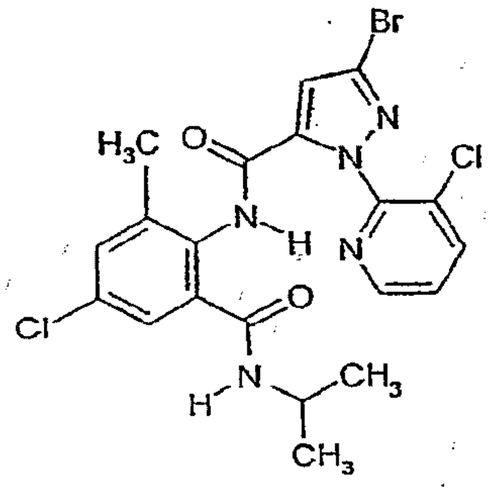
(A-7);

a compound of formula A-8



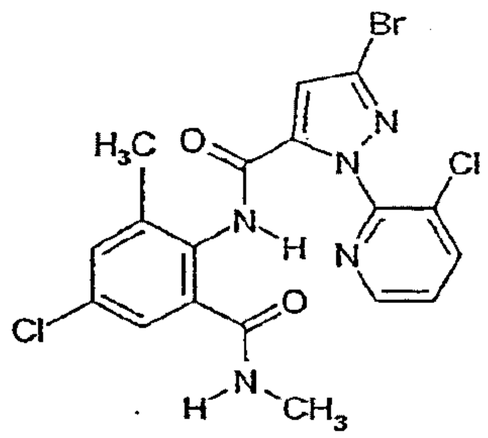
(A-8);

a compound of formula A-9



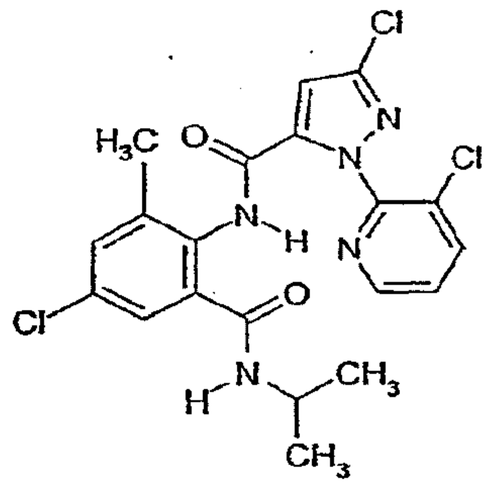
(A-9);

a compound of formula A-10



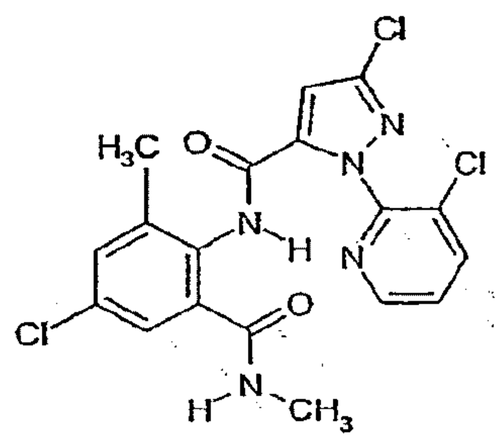
(A-10);

a compound of formula A-11



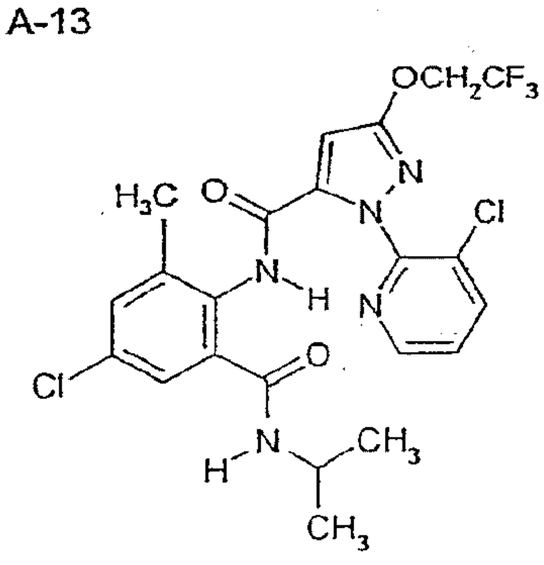
(A-11);

a compound of formula A-12



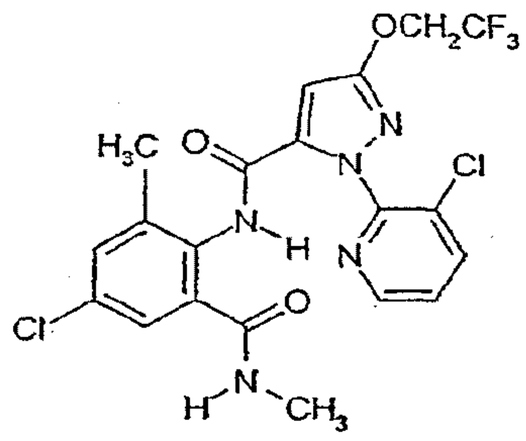
(A-12);

a compound of formula A-13



(A-13);

a compound of formula A-14



(A-14);

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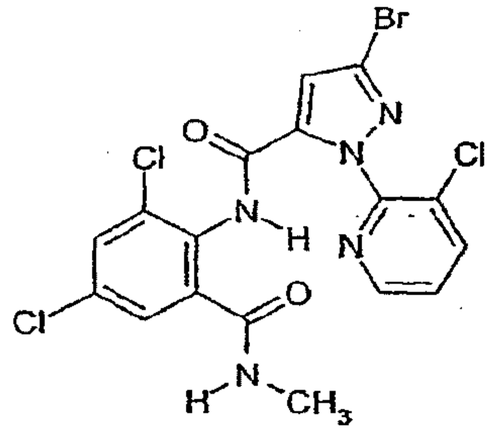
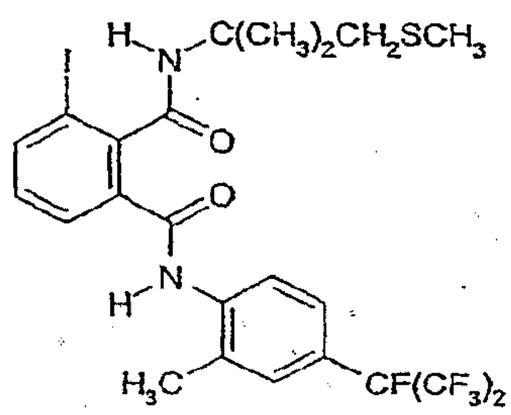


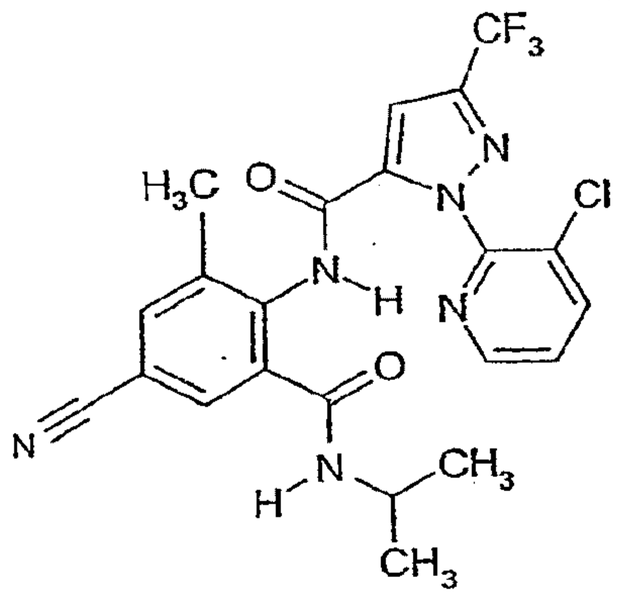
(A-15);

a compound of formula A-15A



(A-15A);

a compound of formula (A-16)



(A-16);

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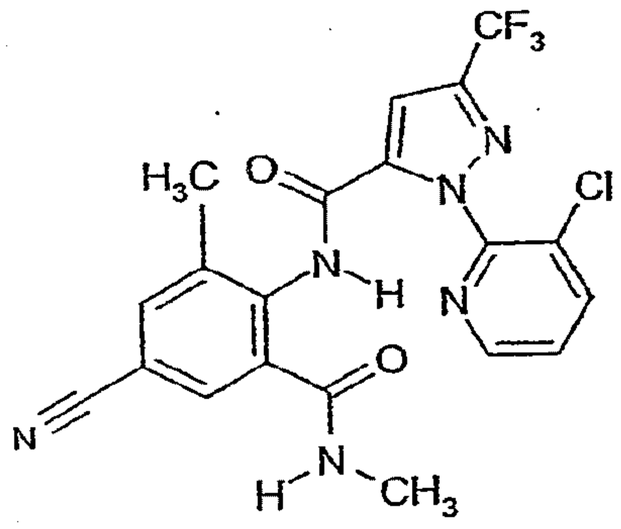
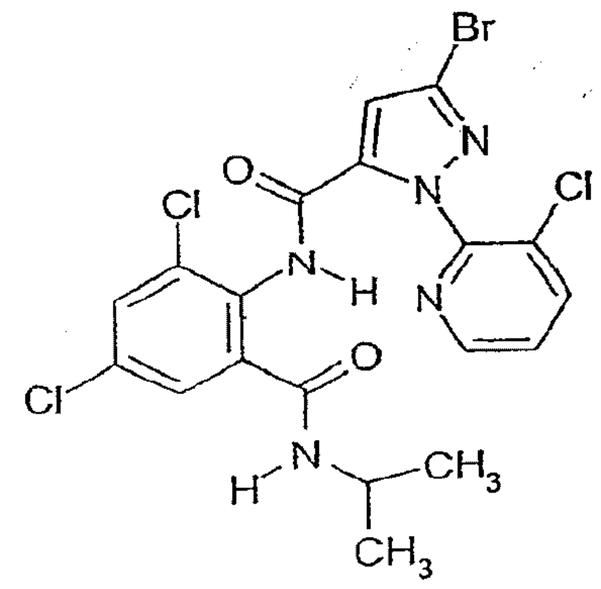


(A-17);

a compound of formula (A-18)



(A-18);

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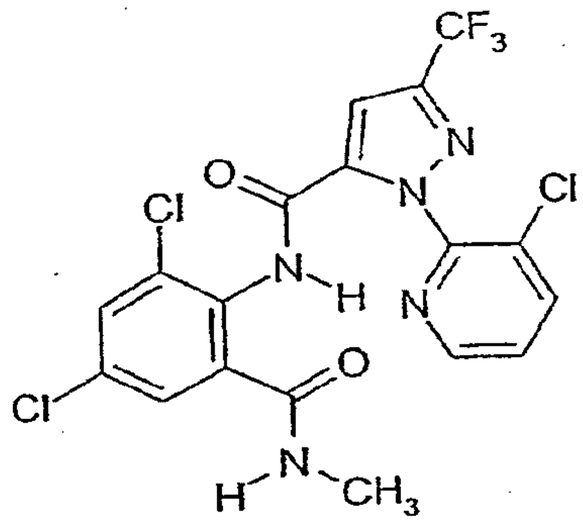

(A-19);

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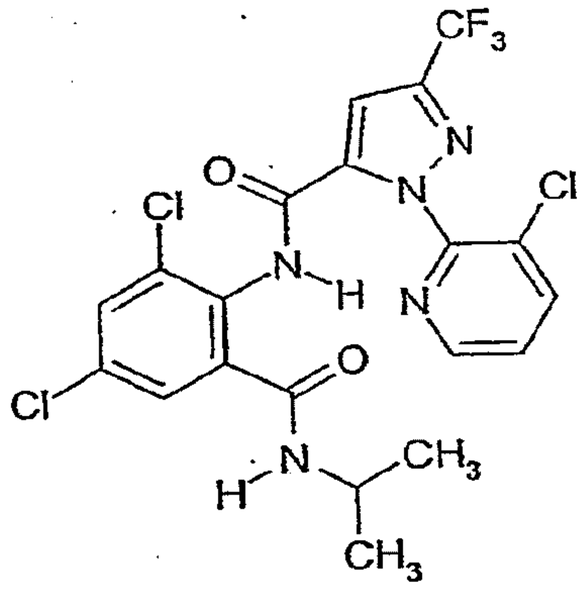

(A-20);

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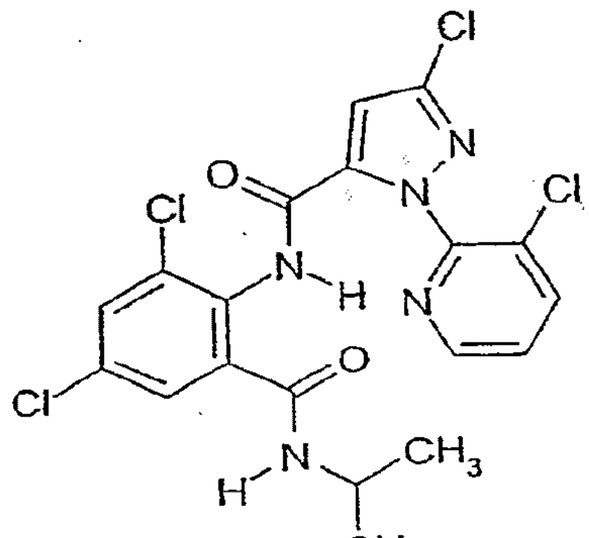

(A-21);

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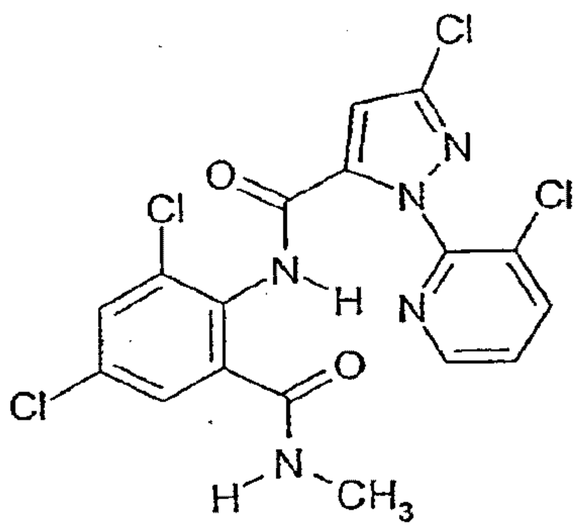

(A-22);

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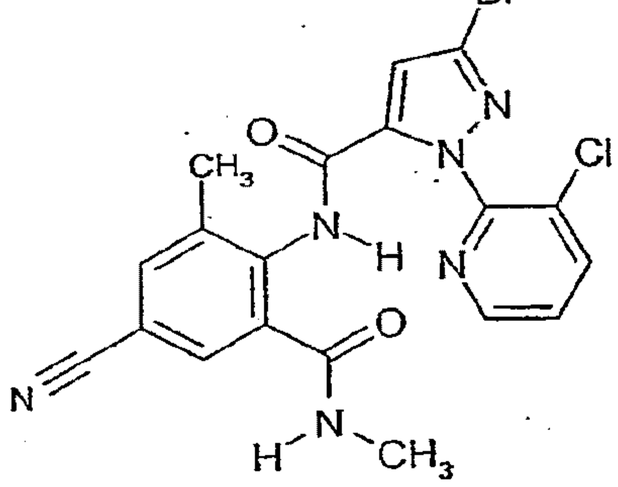

(A-23);

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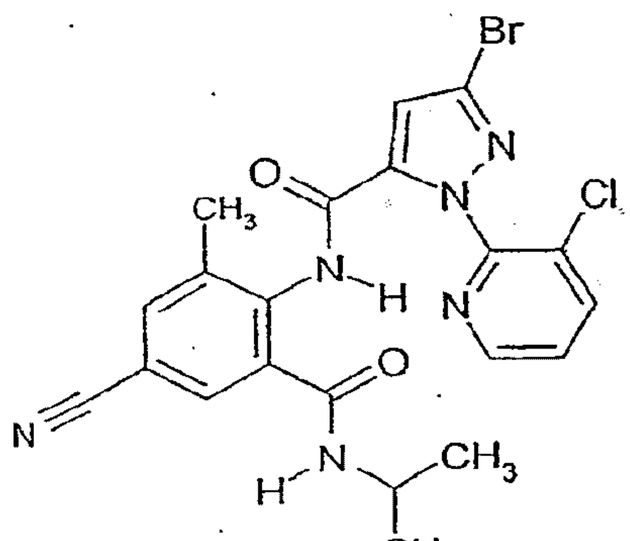

(A-24);

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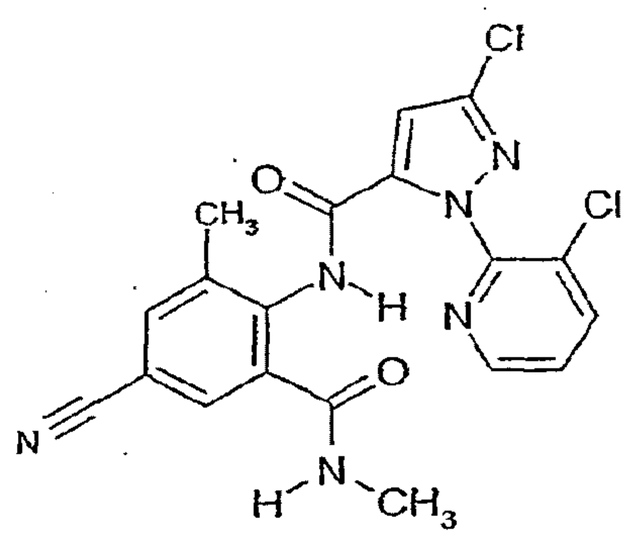

(A-25);

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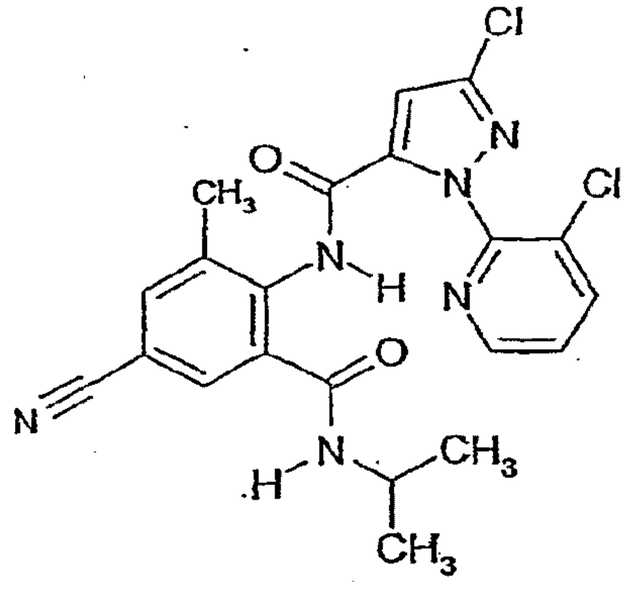


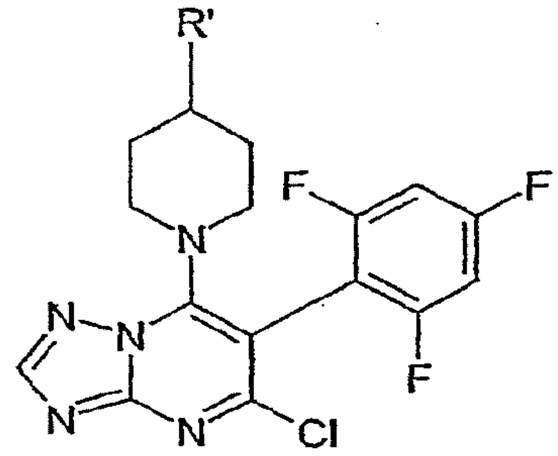
(A-26);

bis(tributyltin) oxide (IUPAC-Name) (913); bromoacetamide [CCN]; calcium arsenate [CCN]; cloethocarb (999); copper acetoarsenite [CCN]; copper sulfate (172); fentin (347); ferric phosphate (IUPAC-Name) (352); metaldehyde (518); methiocarb (530); niclosamide (576); niclosamide-olamine (576); pentachlorophenol (623); sodium pentachlorophenoxide (623); tazimcarb (1412); thiodicarb (799); tributyltin oxide (913); trifenmorph (1454); trimethacarb (840); triphenyltin acetate (IUPAC-Name) (347); triphenyltin hydroxide (IUPAC-Name) (347); 1,2-dibromo-3-chloropropane (IUPAC- / Chemical Abstracts-Name) (1045); 1,2-dichloropropane (IUPAC- / Chemical Abstracts-Name) (1062); 1,2-dichloropropane with 1,3-dichloropropene (IUPAC-Name) (1063); 1,3-dichloropropene (233); 3,4-dichlorotetrahydro-thiophene 1,1-dioxide (IUPAC- / Chemical Abstracts-Name) (1065); 3-(4-chlorophenyl)-5-methylrhodanine (IUPAC-Name) (980); 5-methyl-6-thioxo-1,3,5-thiadiazinan-3-ylacetic acid (IUPAC-Name) (1286); 6-isopentenylaminopurine (alternative name) (210); abamectin (1); acetoprole [CCN]; alanycarb (15); aldicarb (16); aldoxycarb (863); AZ 60541 (compound code); benclothiaz [CCN]; benomyl (62); butylpyridaben (alternative name); cadusafos (109); carbofuran (118); carbon disulfide (945); carbosulfan (119); chloropicrin (141);

chlorpyrifos (145); cloethocarb (999); cytokinins (alternative name) (210); dazomet (216); DBCP (1045); DCIP (218); diamidafos (1044); dichlofenthion (1051); dicliphos (alternative name); dimethoate (262); doramectin (alternative name) [CCN]; emamectin (291); emamectin benzoate (291); eprinomectin (alternative name) [CCN]; ethoprophos (312); ethylene dibromide (316); fenamiphos (326); fenpyrad (alternative name); fensulfothion (1158); fosthiazate (408); fosthietan (1196); furfural (alternative name) [CCN]; GY-81 (development code) (423); heterophos [CCN]; isamidofos (1230); isazofos (1231); ivermectin (alternative name) [CCN]; kinetin (alternative name) (210); mecarphon (1258); metam (519); metam-potassium (alternative name) (519); metam-sodium (519); methyl bromide (537); methyl isothiocyanate (543); milbemycin oxime (alternative name) [CCN]; moxidectin (alternative name) [CCN]; *Myrothecium verrucaria* composition (alternative name) (565); NC-184 (compound code); oxamyl (602); phorate (636); phosphamidon (639); phosphocarb [CCN]; sebufos (alternative name); selamectin (alternative name) [CCN]; spinosad (737); terbam (alternative name); terbufos (773); tetrachlorothiophene (IUPAC- / Chemical Abstracts-Name) (1422); thiafenox (alternative name); thionazin (1434); triazophos (820); triazuron (alternative name); xylenols [CCN]; YI-5302 (compound code); zeatin (alternative name) (210); potassium ethylxanthate [CCN]; nitrapyrin (580); acibenzolar (6); acibenzolar-S-methyl (6); probenazole (658); *Reynoutria sachalinensis* extract (alternative name) (720); 2-isovalerylindan-1,3-dione (IUPAC-Name) (1246); 4-(quinoxalin-2-ylamino)benzenesulfonamide (IUPAC-Name) (748); alpha-chlorohydrin [CCN]; aluminium phosphide (640); antu (880); arsenous oxide (882); barium carbonate (891); bisthiosemi (912); brodifacoum (89); bromadiolone (91); bromethalin (92); calcium cyanide (444); chloralose (127); chlorophacinone (140); cholecalciferol (alternative name) (850); coumachlor (1004); coumafuryl (1005); coumatetralyl (175); crimidine (1009); difenacoum (246); difethialone (249); diphacinone (273); ergocalciferol (301); flocoumafen (357); fluoroacetamide (379); flupropadine (1183); flupropadine hydrochloride (1183); gamma-HCH (430); HCH (430); hydrogen cyanide (444); lindane (430); magnesium phosphide (IUPAC-Name) (640); methyl bromide (537); norbormide (1318); phosacetim (1336); phosphine (IUPAC-Name) (640); phosphorus [CCN]; pindone (1341); potassium arsenite [CCN]; pyrinuron (1371); scilliroside (1390); sodium arsenite [CCN]; sodium cyanide (444); sodium fluoroacetate (735); strychnine (745); thallium sulfate [CCN]; warfarin (851); zinc phosphide (640); 2-(2-butoxyethoxy)ethyl piperonylate (IUPAC-Name) (934); 5-(1,3-benzodioxol-5-yl)-3-hexylcyclohex-2-enone (IUPAC-Name) (903); farnesol with nerolidol (alternative name) (324); MB-599 (development code) (498); MGK 264 (development code) (296); piperonyl butoxide (649);

piprotal (1343); propyl isome (1358); S421 (development code) (724); sesamex (1393); sesasmolin (1394); sulfoxide (1406); anthraquinone (32); chloralose (127); copper naphthenate [CCN]; copper oxychloride (171); diazinon (227); dicyclopentadiene (chemical name) (1069); guazatine (422); guazatine acetates (422); methiocarb (530); pyridin-4-amine (IUPAC-Name) (23); thiram (804); trimethacarb (840); zinc naphthenate [CCN]; ziram (856); imanin (alternative name) [CCN]; ribavirin (alternative name) [CCN]; mercuric oxide (512); octhilinone (590); thiophanate-methyl (802);

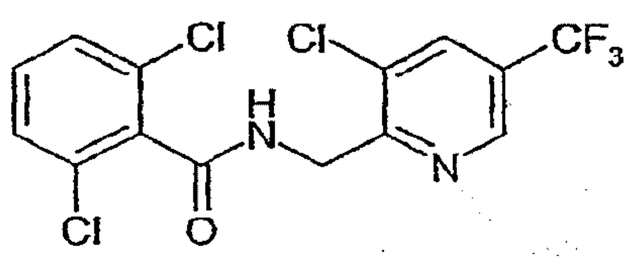
a compound of formula B-1A



(B-1A);

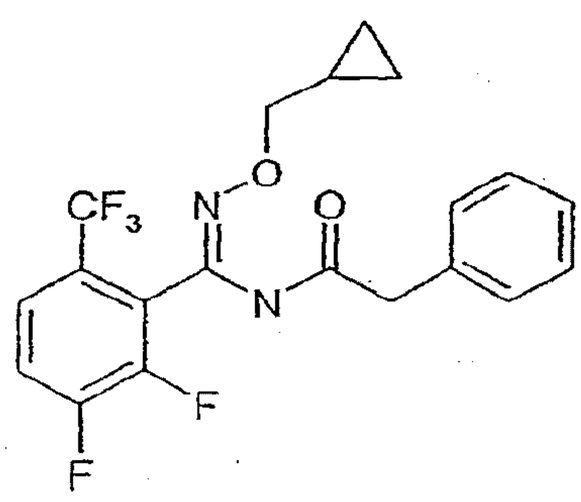
wherein R' is hydrogen, C_{1-4}alkyl or C_{1-4}haloalkyl;

a compound of formula B-2



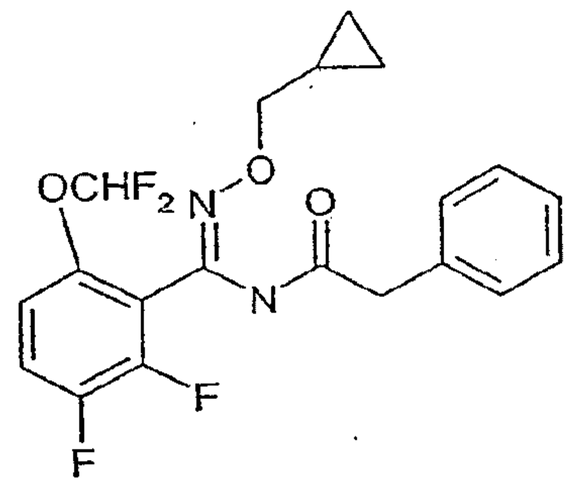
(B-2);

a compound of formula B-3



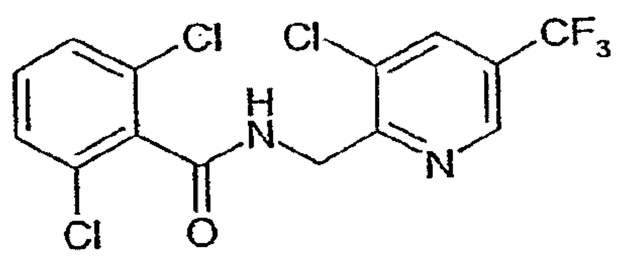
(B-3);

a compound of formula B-4



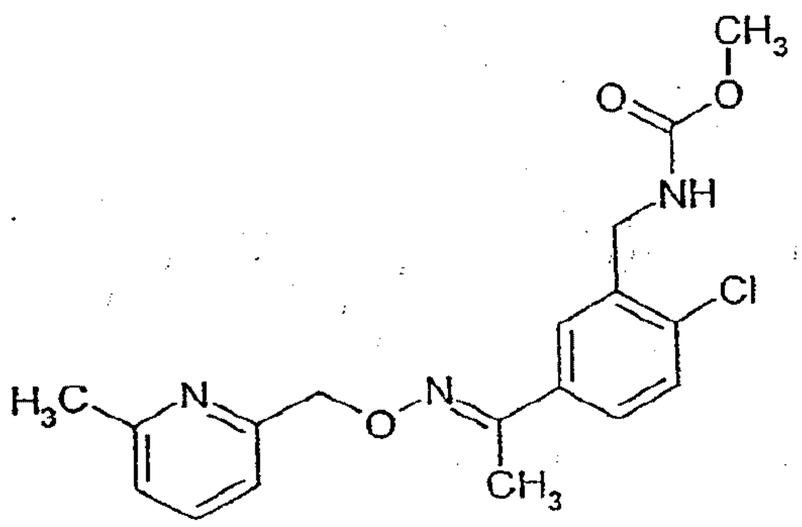
(B-4);

a compound of formula B-5



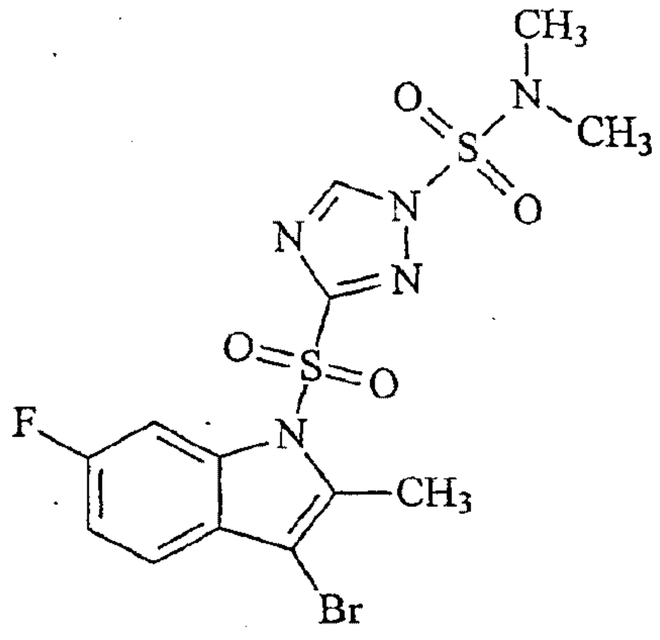
(B-5);

a compound of formula B-8



(B-8);

And a compound of formula B-9

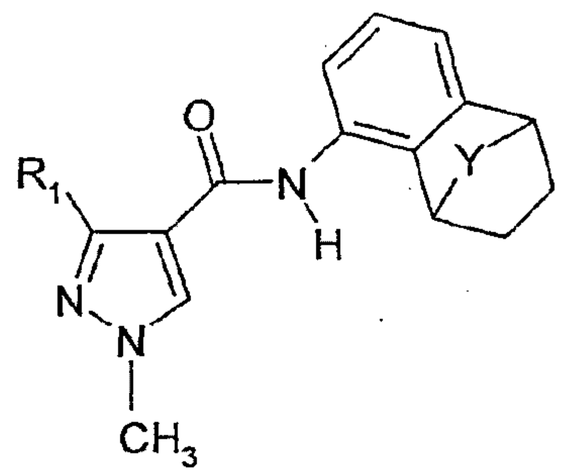


(B-9).

It has now been found, surprisingly, that the active ingredient mixture according to the invention not only brings about the additive enhancement of the spectrum of action with respect to the phytopathogen to be controlled that was in principle to be expected but achieves a synergistic effect which extends the range of action of the component (A) and of the component (B) in two ways. Firstly, the rate of application of the component (A) and of the component (B) are lowered whilst the action remains equally good. Secondly, the active ingredient mixture still achieves a high degree of phytopathogen control even where the two individual components have become totally ineffective in such a low application rate range. This allows, on the one hand, a substantial broadening of the spectrum of phytopathogens that can be controlled and, on the other hand, increased safety in use.

According to one aspect of the invention of the present divisional application, there is provided a method of controlling phytopathogenic fungi on useful plants or on propagation material thereof, which comprises applying to the useful plants, the locus thereof or propagation material thereof a combination of components A) and B) in a synergistically effective amount, wherein

component A) is a compound of formula I



(I),

wherein

R_1 is difluoromethyl or trifluoromethyl; Y is $-CHR_2-$ or $>C=CH_2$ and R_2 is hydrogen or C_1-C_6alkyl; or a tautomer of such a compound; and

component B) is a compound selected from the group consisting of

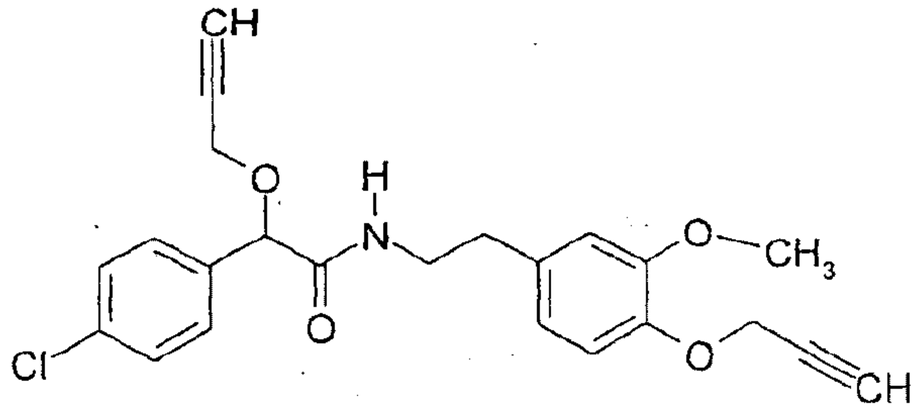
a strobilurin fungicide;

a phenyl pyrrole fungicide;

an anilino-pyrimidine fungicide;

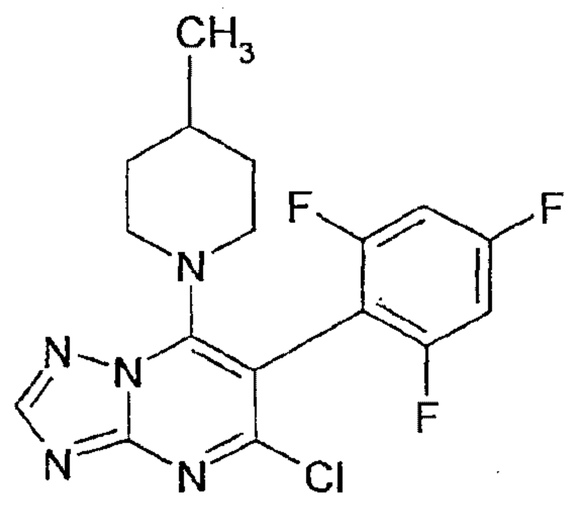
a morpholine fungicide;

a compound of formula F-1



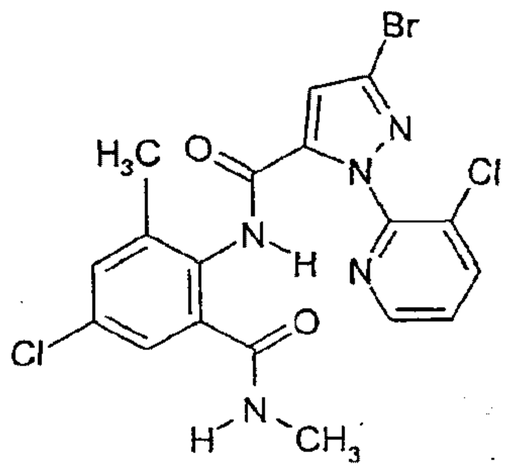
(F-1);

a compound of formula B-1



(B-1)

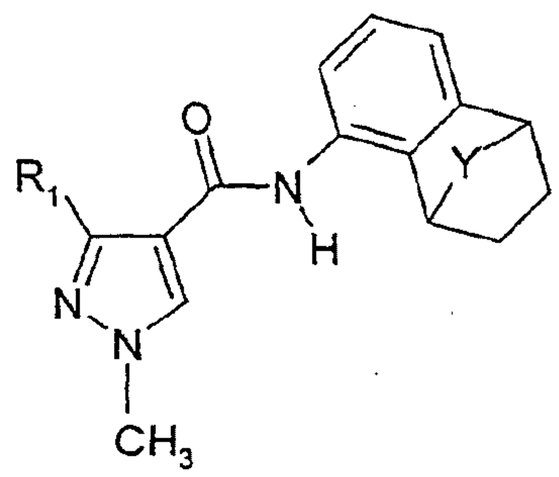
Chlorothalonil, Fluazinam, Dithianon, Metrafenone, Tricyclazole, Mefenoxam, Acibenzolar-S-methyl, and a compound of formula A-10



(A-10).

According to one aspect of the invention of the parent application, there is provided a method of controlling phytopathogenic fungi on useful plants or on propagation material thereof, which comprises applying to the useful plants, the locus thereof or propagation material thereof a combination of components A) and B) in a synergistically effective amount, wherein

component A) is a compound of formula I



(I),

wherein

R_1 is difluoromethyl or trifluoromethyl; Y is $-CHR_2-$ or $>C=CH_2$ and R_2 is hydrogen or C_1-C_6alkyl; or a tautomer of such a compound; and

component B) is an azole fungicide.

According to another aspect of the present invention, there is provided a fungicidal composition comprising a combination of components A) and B) as described herein in a synergistically fungicidally effective amount, together with an agriculturally acceptable carrier, and optionally a surfactant.

According to still another aspect of the present invention, there is provided a fungicidal composition comprising a combination of components A) and B) as described herein together with an agriculturally acceptable carrier, and optionally a surfactant, wherein the weight ratio of A) to B) is between 2000:1 and 1:1000.

According to yet another aspect of the present invention, there is provided a method of protecting natural substances of plant and/or animal origin, which have been taken from the natural life cycle, and/or their processed forms, against attack of fungi, which comprises applying to said natural substances of plant and/or animal origin or their

processed forms a combination of components A) and B) as described herein in a synergistically fungicidally effective amount.

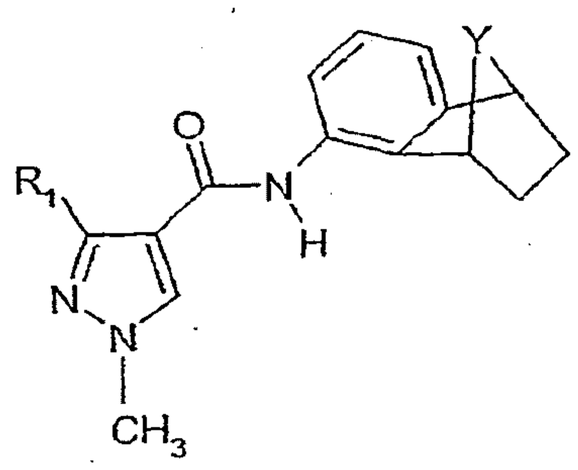
According to a further aspect of the present invention, there is provided a use of a combination of components A) and B) as described herein in a synergistically fungicidally effective amount for protecting a natural substance of animal origin, which has been taken from the natural life cycle, and/or a processed form thereof, against attack of fungi.

However, besides the actual synergistic action with respect to fungicidal activity, the pesticidal compositions according to the invention also have further surprising advantageous properties which can also be described, in a wider sense, as synergistic activity. Examples of such advantageous properties that may be mentioned are: a broadening of the spectrum of fungicidal activity to other phytopathogens, for example to resistant strains; a reduction in the rate of application of the active ingredients; synergistic activity against animal pests, such as insects or representatives of the order Acarina; a broadening of the spectrum of pesticidal activity to other animal pests, for example to resistant animal pests; adequate pest control with the aid of the compositions according to the invention, even at a rate of application at which the individual compounds are totally ineffective; advantageous behavior during formulation and/or upon application, for example upon grinding, sieving, emulsifying, dissolving or dispensing; increased storage stability; improved stability to light; more advantageous degradability; improved toxicological and/or ecotoxicological behaviour; improved characteristics of the useful plants including: emergence, crop yields, more

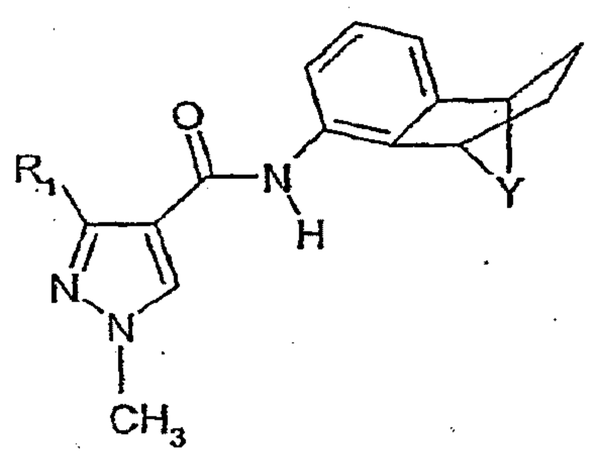
developed root system, tillering increase, increase in plant height, bigger leaf blade, less dead basal leaves, stronger tillers, greener leaf colour, less fertilizers needed, less seeds needed, more productive tillers, earlier flowering, early grain maturity, less plant verse (lodging), increased shoot growth, improved plant vigor, and early germination; or any other advantages familiar to a person skilled in the art.

The alkyl groups appearing in the substituent definitions may be straight-chain or branched and are, for example, methyl, ethyl, n-propyl, isopropyl, n-butyl, sec-butyl, isobutyl, tert-butyl, pentyl, hexyl and the branched isomers of pentyl and hexyl, preferred alkyl groups are methyl, isopropyl and tert-butyl, the most preferred alkyl group is isopropyl.

The compounds of formula I occur in different stereoisomeric forms, which are described in formulae I_I and I_{II}:



I_I



I_{II}

wherein R_1 and Y are as defined under formula I. The invention covers all such stereoisomers and mixtures thereof in any ratio.

Since compounds of formula I may also contain asymmetric carbon atoms in the definition of the substituent Y, all the stereoisomers, all syn- and anti-forms and all chiral <R> and <S> forms are also included.

The components (B) are known. Where the components (B) are included in "The Pesticide Manual" [The Pesticide Manual - A World Compendium; Thirteenth Edition; Editor: C. D. S. Tomlin; The British Crop Protection Council], they are described therein under the entry

number given in round brackets hereinabove for the particular component (B); for example, the compound "abamectin" is described under entry number (1). Where "[CCN]" is added hereinabove to the particular component (B), the component (B) in question is included in the "Compendium of Pesticide Common Names", which is accessible on the internet [A. Wood; Compendium of Pesticide Common Names, Copyright © 1995-2004]; for example, the compound "acetoprole" is accessible on the internet.

Most of the components (B) are referred to hereinabove by a so-called "common name", the relevant "ISO common name" or another "common name" being used in individual cases. If the designation is not a "common name", the nature of the designation used instead is given in round brackets for the particular component (B); in that case, the IUPAC name, the IUPAC/Chemical Abstracts name, a "chemical name", a "traditional name", a "compound name" or a "develoment code" is used or, if neither one of those designations nor a "common name" is used, an "alternative name" is employed.

The following components B) are registered under a CAS-Reg. No.: Aldimorph (CAS 91315-15-0); Iodocarb (3-Iodo-2-propynyl butyl carbamate) (CAS 55406-53-6); Fentin chloride (CAS 668-34-8); Hymexazole (CAS 10004-44-1); Phosphoric acid (CAS 7664-38-2); Tecloftalam (CAS 76280-91-6); Arsenates (CAS 1327-53-3); Copper Ammoniumcarbonate (CAS 33113-08-5); Copper oleate (CAS 1120-44-1); Mercury (CAS 7487-94-7; 21908-53-2; 7546-30-7); Benthiavalicarb (CAS 413615-35-7); Cadmium chloride (CAS 10108-64-2); Cedar leaf oil (CAS 8007-20-3); Chlorine (CAS 7782-50-5); Cinnamaldehyde (CAS: 104-55-2); Manganous dimethyldithiocarbamate (CAS 15339-36-3); Neem oil (hydrophobic extract) (CAS 8002-65-1); Paraformaldehyde (CAS 30525-89-4); Sodium bicarbonate (CAS 144-55-8); Potassium bicarbonate (CAS 298-14-6); Sodium diacetate (CAS 127-09-3); Sodium propionate (CAS 137-40-6);TCMTB (CAS 21564-17-0); Benalaxyl -M (CAS 98243-83-5); Metrafenone (CAS 220899-03-6); Penthiopyrad (CAS 183675-82-3) and Tolyfluanid (CAS 731-27-1).

The compounds of formulae F-2, F-3, F-4, F-5 and F-6 are described in WO 04/058723. The compounds of formulae F-7, F-8 and F-9 are described in WO 03/074491.

The compounds of formulae A-1, A-2, A-3, A-4, A-5, A-6, A-7, A-8, A-9, A-10, A-11, A-12, A-13, A-14, A-15, A-18, A-19, A-20, A-21 and A-22 are described in WO-03/015519. The

compound of formula A-15A is described in EP-A-1 006 107. The compounds of formulae A-16, A-17, A-23, A-24, A-25 and A-26 are described in WO-04/067528.
Bacillus pumilus GB34 and Bacillus pumilus strain QST are described at the U.S. Environmental Protection Agency, U.S. EPA PC Code 006493 and U.S. EPA PC Code 006485, respectively .
The compound of formula F-1 is described in WO 01/87822. Compounds of formula B-1A and the compound of formula B-1 are described in WO 98/46607. The compound of formula B-2 is described in WO 99/042447. The compound of formula B-3 is described in WO 96/19442. The compound of formula B-4 is described in WO 99/14187. The compound of formula B-5 is described in US-5,945,423 and WO 94/26722. The compound of formula B-6 is described in EP-0-936-213. The compound of formula B-7 is described in US-6,020,332, CN-1-167-568, CN-1-155-977 and EP-0-860-438. The compound of formula B-8 is registered under CAS-Reg. No.: 325156-49-8 and is also known as Pyribencarb. The compound of formula B-9 is registered under CAS-Reg. No.: 348635-87-0 and is also known as Ambromdole or Amisulbrom.

According to the instant invention, a "racemic compound" means a mixture of two enantiomers in a ratio of substantially 50 : 50 of the two enantiomers.

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

The combinations according to the invention may also comprise more than one of the active components B), if, for example, a broadening of the spectrum of phytopathogenic disease control is desired. For instance, it may be advantageous in the agricultural practice to combine two or three components B) with any of the compounds of formula I, or with any preferred member of the group of compounds of formula I.

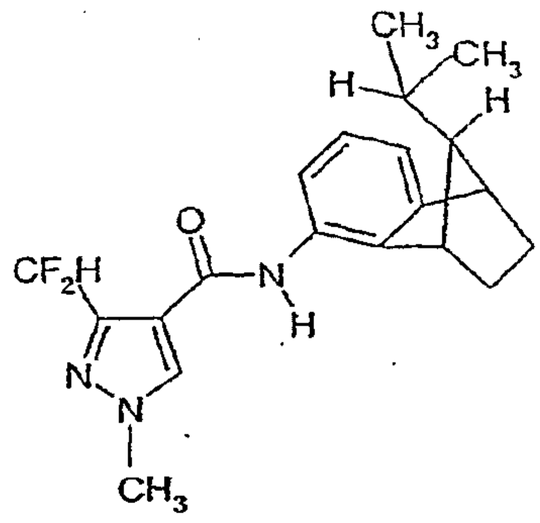
A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl or trifluoromethyl; Y is $-CHR_2-$ and R_2 is hydrogen or C_1-C_6alkyl; and one component B) as described above.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is trifluoromethyl; and one component B) as described above.

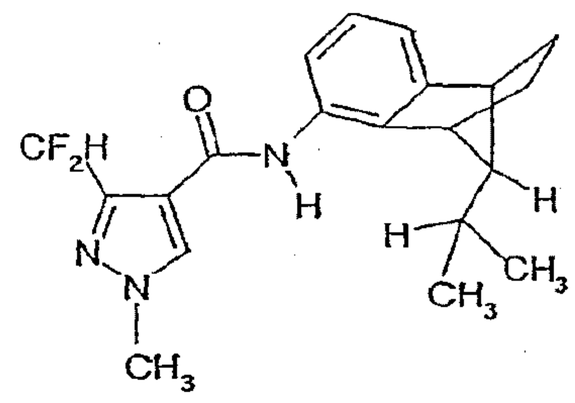
A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl; and one component B) as described above.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl; and R_2 is C_1-C_6alkyl, and one component B) as described above.

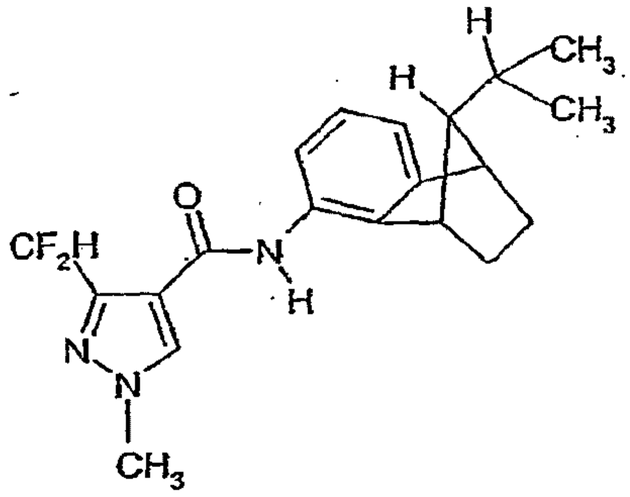
A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl, Y is $-CHR_2-$ and R_2 is isopropyl; and one component B) as described above. Within this embodiment of the present invention compounds of formula I occur in different stereoisomeric forms, which are described as the single enantiomers of formulae I_{III}, I_{IV}, I_V and I_{VI}:



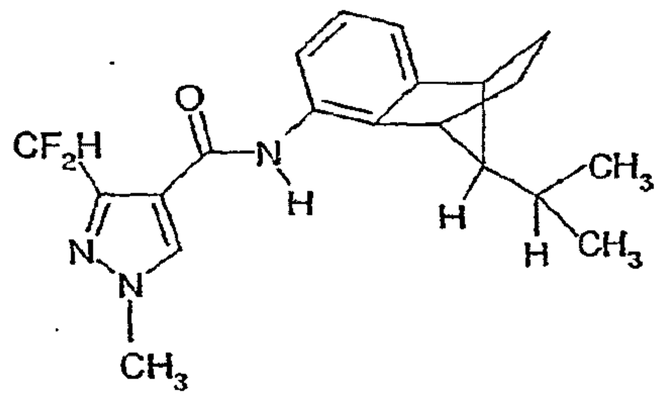
I_{III}



I_{IV}



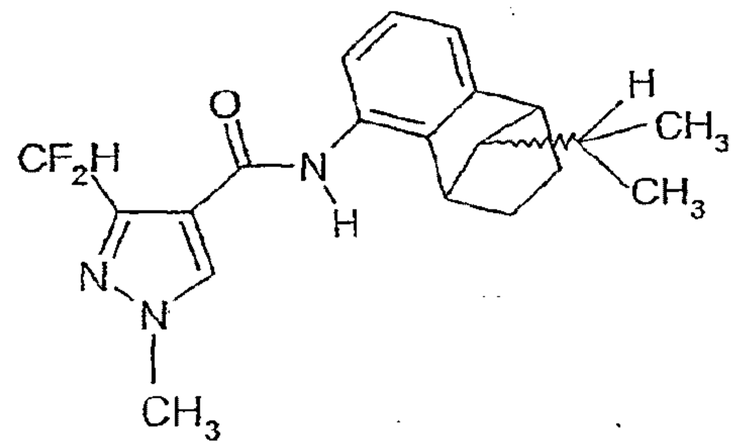
I_V



I_{VI}

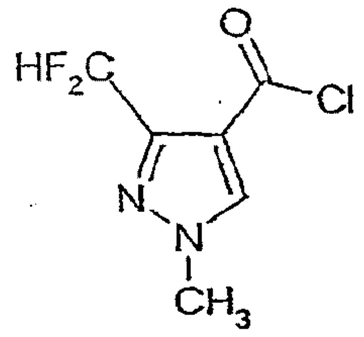
The invention covers all such single enantiomers and mixtures thereof in any ratio.

The compounds of formula I and their manufacturing processes starting from known and commercially available compounds are described in WO 04/035589. In particular it is described in WO 04/035589 that the preferred compound of formula I, wherein R_1 is difluoromethyl, Y is $-CHR_2-$ and R_2 is isopropyl, which is represented by the structure I^a,



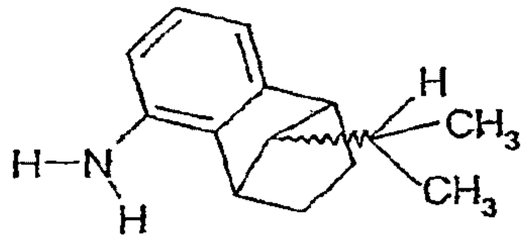
(I^a),

can be prepared by reacting an acid chloride of formula II



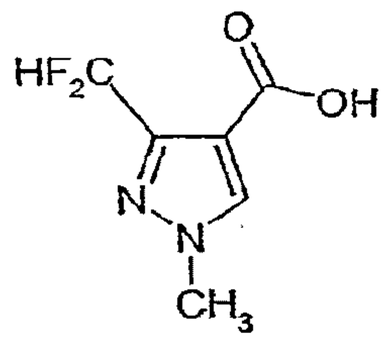
(II)

with an amine of formula III



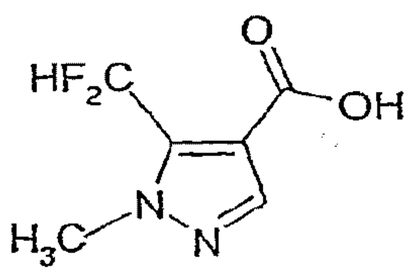
(III).

Acids of formula IV

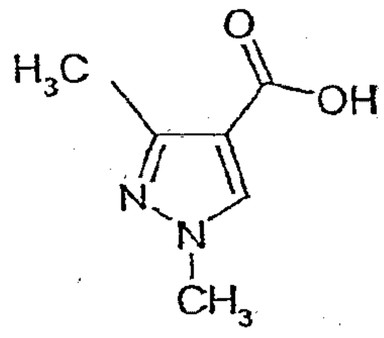


(IV),

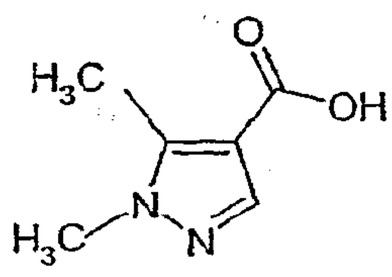
are used for the production of the acid chlorides of formula II, via reaction steps as described in WO 04/035589. When producing the acids of the formula IV using said methology impurities of formula IVA, IVB and/or IVC may be formed:



(IVA)

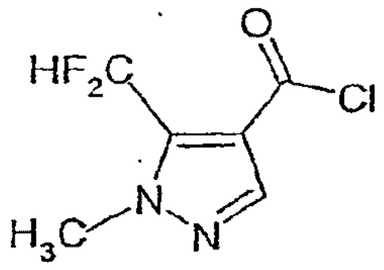


(IVB)

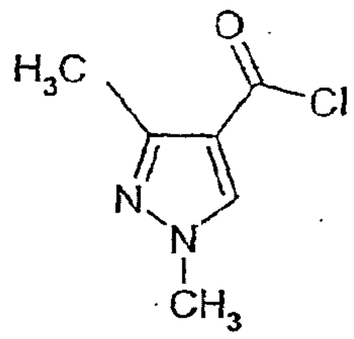


(IVC)

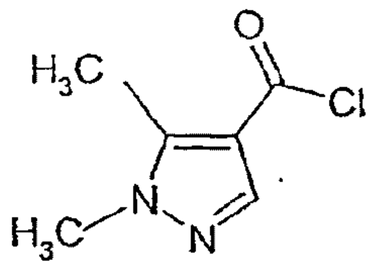
When applying the described manufacturing processes for compounds of formula I[a], some/all of those impurities may be carried through different steps of said manufacturing processes. This then can lead to the formation of the corresponding acid chlorides (IIA, IIB and/or IIC)



(IIA)

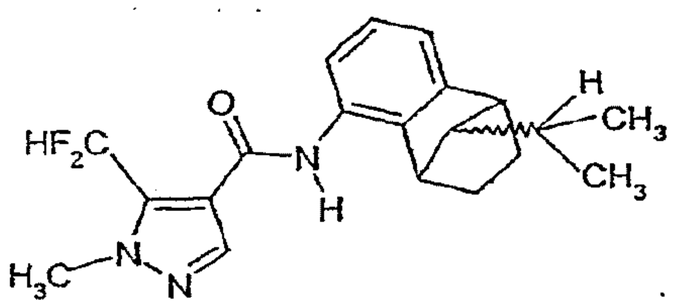


(IIB)

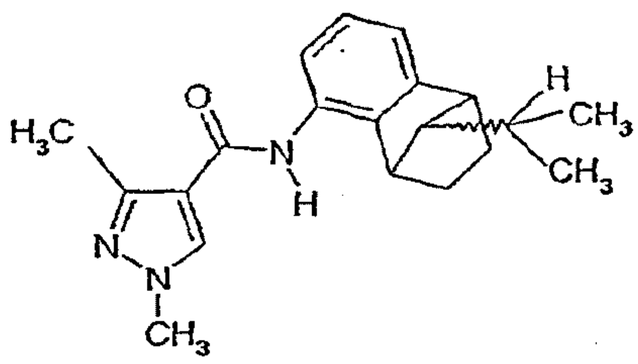


(IIC)

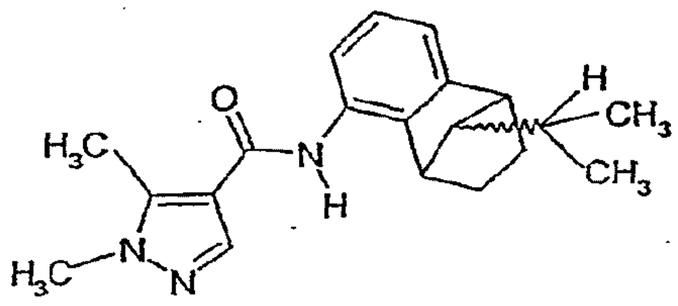
and to the formation of the corresponding amides (VA, VB and/or VC)



(VA)



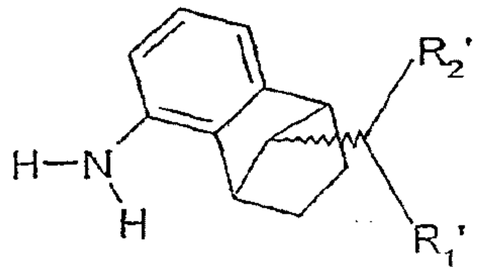
(VB)



(VC)

as further impurities of compounds of formula I[a]. The presence/amount of said impurities in preparations of said compounds of formula I[a] varies dependent on purification steps used.

Amines of formula III_B

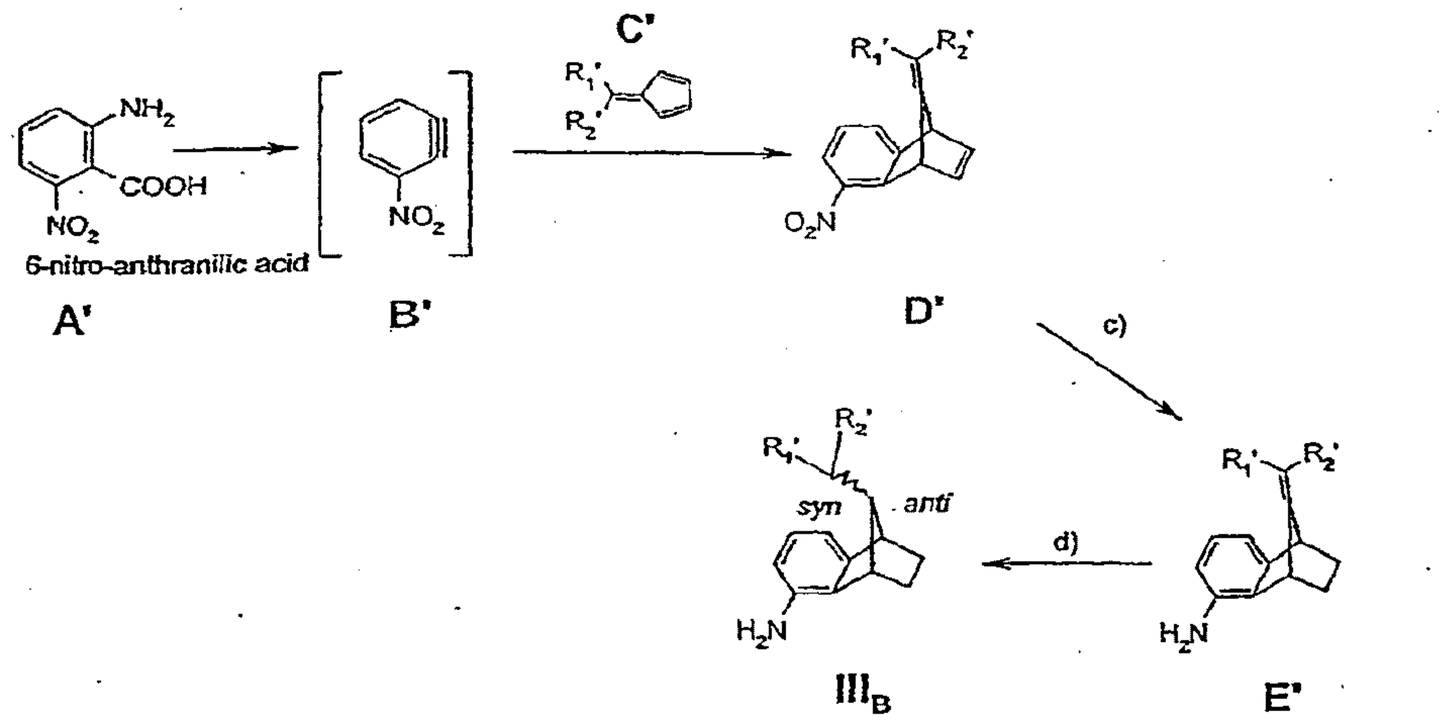


(III_B),

wherein R_1' and R_2' are both independently hydrogen or C_1-C_5alkyl, but R_1' and R_2' are both chosen in a way that the grouping –$CHR_1'R_2'$ altogether is a C_1-C_6alkyl group. Said grouping -$CHR_1'R_2'$ represents a preferred definition of the substituent R_2 of compounds of formula I.

Said amines of formula III_B can be produced according to scheme 1.

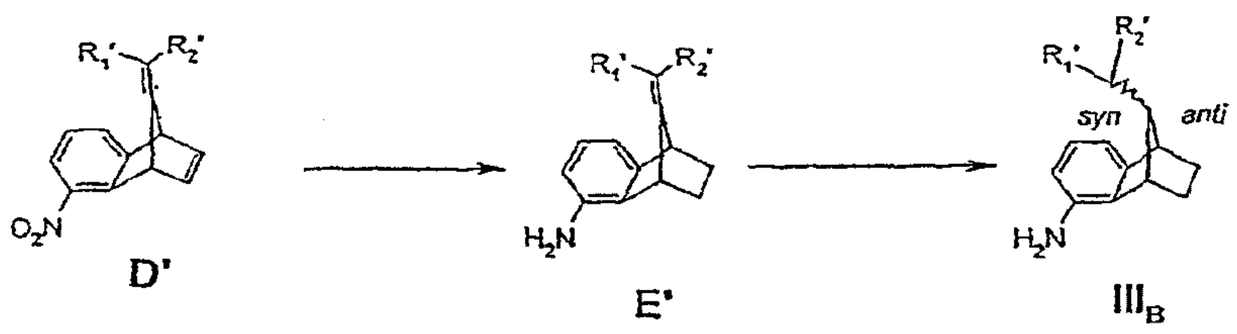
Scheme 1: Synthesis of III_B using 6-nitroanthranilic acid



9-Alkylidene-5-nitro-benzonorbornadienes of formula D', wherein R_1' and R_2' are as defined for compounds of formula III_B, can be synthesized through *Diels-Alder* addition of an *in situ* generated benzyne B' [for example starting from a 6-nitroanthranilic acid of formula (A') by diazotation with *i*-amyl or *t*-butyl nitrite], as described by L.Paquette et al, *J. Amer. Chem. Soc. 99*, 3734 (1977) or from other suitable precursors (see H. Pellissier et al. *Tetrahedron, 59*, 701 (2003), R. Muneyuki and H. Tanida, *J. Org. Chem. 31*, 1988 (1966)] to a 6-alkyl- or 6,6-dialkylfulvene according to or by analogy to R. Muneyuki and H. Tanida, *J. Org. Chem. 31*, 1988 (1966), P. Knochel et al, *Angew. Chem. 116*, 4464 (2004), J.W. Coe et al, *Organic Letters 6*, 1589 (2004), L. Paquette et al, *J. Amer. Chem. Soc. 99*, 3734 (1977), R.N. Warrener et al. *Molecules, 6*, 353 (2001), R.N. Warrener et al. *Molecules, 6*, 194 (2001). Suitable aprotic solvents for this step are for example diethyl ether, butyl methyl ether, ethyl acetate, dichloromethane, acetone, tetrahydrofurane, toluene, 2-butanone or dimethoxyethane. Reaction temperatures range from room temperature to 100 °C, preferably 35-80 °C.

6-Alkyl- or 6,6-dialkylfulvenes of formula C' are available according to M. Neuenschwander et al, *Helv. Chim. Acta, 54*, 1037 (1971), ibid *48*, 955 (1965). R.D. Little et al, *J. Org. Chem. 49*, 1849 (1984), I. Erden et al, *J. Org. Chem. 60*, 813 (1995) and S. Collins et al, *J. Org. Chem. 55*, 3395 (1990).

Scheme 2: Two-step hydrogenation



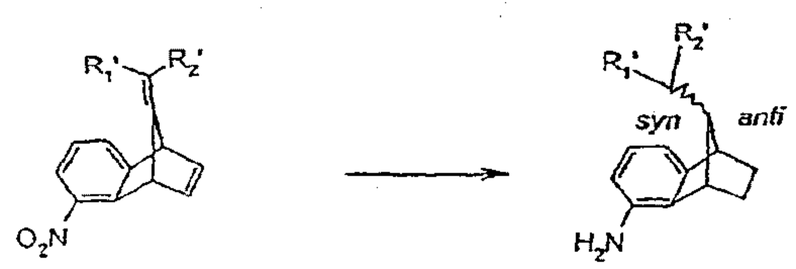
D' E' III_B

Anilines of formula E' may be obtained according to scheme 2 by partial hydrogenolysis of D', for example by interrupting H_2 uptake after 4 equivalents. Suitable solvents include tetrahydrofurane, ethyl acetate, methanol, ethanol, toluene or benzene and others. Catalysts are for example Ra/Ni, Rh/C or Pd/C. Pressure: atmospheric pressure or pressure up to 6 bar, preferentially atmospheric pressure. Temperatures range from room temperature or up to 50 °C, preferentially 20-30 °C.

Anilines of formula III_B may be obtained from anilines of formula E' by hydrogenation. Suitable solvents are for example tetrahydrofurane, methanol, ethanol, toluene, dichloromethane, ethyl acetate. Preferred solvents are tetrahydrofurane and methanol. Temperatures range from 10 to 50 °C, preferentially 20-30 °C, more preferred room temperature. Pressure: atmospheric pressure to 150 bar, preferred is atmospheric pressure to 100 bar. The choice of catalyst influences the syn/anti-ratio. Catalysts such as Rh/C, Rh/Al_2O_3, Rh_2O_3, Pt/C or PtO_2 result in syn-enrichment (preferred Rh/C). Catalysts such as Ra/Ni, Ir(COD)Py(Pcy) or Pd/C result in anti-enrichment (preferred Pd/C).

Anilines of formula III_B may also be produced according to scheme 3.

Scheme 3: One-pot hydrogenation

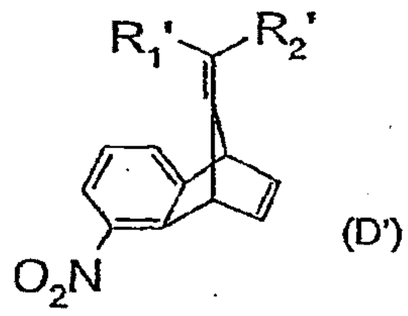


D' III_B

Anilines III_B may be obtained by a one-pot reaction from compounds of formula D' via exhaustive hydrogenation (scheme 3). Suitable solvents are for example tetrahydrofurane, methanol, ethanol, toluene or ethyl acetate. Preferred solvents are tetrahydrofurane or methanol. Temperatures range from room temperature to 50 °C, preferred is room temperature to 30 °C, most preferred room temperature. Pressure: atmospheric pressure to 100 bar, more preferred 50 bar, even more preferred 20 bar, most preferred atmospheric pressure to 4-6 bar. Likewise, as described for scheme 2 above, the choice of catalyst influences the syn/anti-ratio. Catalysts such as Rh/C, Rh/Al_2O_3, Rh_2O_3, Pt/C or PtO_2 result in syn-enrichment. Catalysts such as Pd/C, Ir(COD)Py(Pcy) or Ra/Ni result in anti-enrichment (preferred catalyst is Pd/C).

The following compounds of formula D' are useful for manufacturing preferred compounds of formula I.

Table 1: Compounds of formula D'



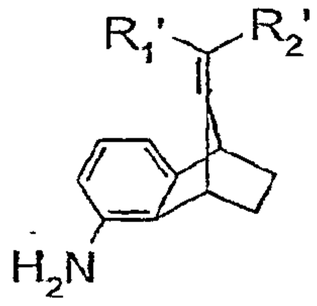
(D')

Cpd No.	R_1'	R_2'	Remarks
Z1.01	H	CH_3	*E/Z*-mixture
Z1.02	H	C_2H_5	*E/Z*-mixture
Z1.03	H	*n*-C_3H_7	*E/Z*-mixture
Z1.04	H	*i*-C_3H_7	*E/Z*-mixture
Z1.05	H	*c*-C_3H_5	*E/Z*-mixture
Z1.06	H	*n*-C_4H_9	*E/Z*-mixture
Z1.07	H	*i*-C_4H_9	*E/Z*-mixture
Z1.08	H	*sec*-C_4H_9	*E/Z*-mixture
Z1.09	H	*t*-C_4H_9	*E/Z*-mixture
Z1.10	H	*n*-C_5H_{11}	*E/Z*-mixture
Z1.11	CH_3	CH_3	
Z1.12	C_2H_5	C_2H_5	

Z1.13	CH_3	C_2H_5	*E/Z*-mixture
Z1.14	CH_3	*n*-C_3H_7	*E/Z*-mixture
Z1.15	CH_3	*i*-C_3H_7	*E/Z*-mixture
Z1.16	CH_3	*c*-C_3H_5	*E/Z*-mixture
Z1.17	H	H	

The following compounds of formula E' are useful for manufacturing preferred compounds of formula I.

Table 2: Compounds of formula E'

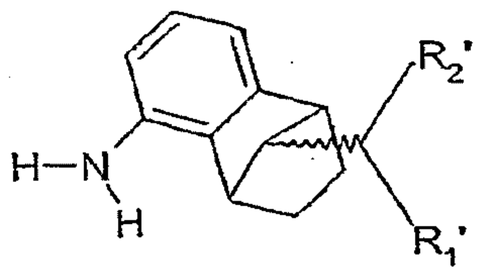


(E')

Cpd No.	R_1'	R_2'	Remarks
Z2.01	H	CH_3	*E/Z*-mixture
Z2.02	H	C_2H_5	*E/Z*-mixture
Z2.03	H	*n*-C_3H_7	*E/Z*-mixture
Z2.04	H	*i*-C_3H_7	*E/Z*-mixture
Z2.05	H	*c*-C_3H_5	*E/Z*-mixture
Z2.06	H	*n*-C_4H_9	*E/Z*-mixture
Z2.07	H	*i*-C_4H_9	*E/Z*-mixture
Z2.08	H	*sec*-C_4H_9	*E/Z*-mixture
Z2.09	H	*t*-C_4H_9	*E/Z*-mixture
Z2.10	H	*n*-C_5H_{11}	*E/Z*-mixture
Z2.11	CH_3	CH_3	
Z2.12	C_2H_5	C_2H_5	
Z2.13	CH_3	C_2H_5	*E/Z*-mixture
Z2.14	CH_3	*n*-C_3H_7	*E/Z*-mixture
Z2.15	CH_3	*i*-C_3H_7	*E/Z*-mixture
Z2.16	CH_3	*c*-C_3H_5	*E/Z*-mixture
Z2.17	H	H	

The following compounds of formula III_B are useful for manufacturing preferred compounds of formula I.

Table 3: Compounds of formula III_B



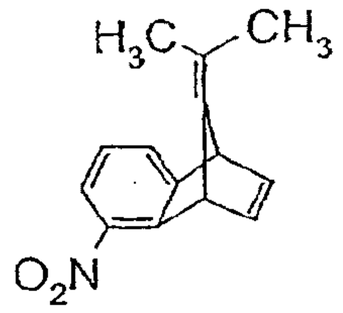
(III_B),

Cpd No.	R_1'	R_2'	Remarks
Z3.01	H	CH_3	syn/anti-mixture
Z3.02	H	C_2H_5	syn/anti-mixture
Z3.03	H	*n*-C_3H_7	syn/anti-mixture
Z3.04	H	*i*-C_3H_7	syn/anti-mixture
Z3.05	H	*c*-C_3H_5	syn/anti-mixture
Z3.06	H	*n*-C_4H_9	syn/anti-mixture
Z3.07	H	*i*-C_4H_9	syn/anti-mixture
Z3.08	H	*sec*-C_4H_9	syn/anti-mixture
Z3.09	H	*t*-C_4H_9	syn/anti-mixture
Z3.10	H	*n*-C_5H_{11}	syn/anti-mixture
Z3.11	CH_3	CH_3	syn/anti-mixture
Z3.12	C_2H_5	C_2H_5	syn/anti-mixture
Z3.13	CH_3	C_2H_5	syn/anti-mixture
Z3.14	CH_3	*n*-C_3H_7	syn/anti-mixture
Z3.15	CH_3	*i*-C_3H_7	syn/anti-mixture
Z3.16	CH_3	*c*-C_3H_5	syn/anti-mixture
Z3.17	H	H	syn/anti-mixture

The following examples illustrate the production of compounds of formula III_B.

a) Benzyne adduct

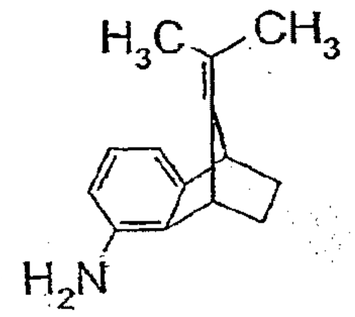
Example H1: 9-Isopropylidene-5-nitro-benzonorbornadiene (Cpd No. Z1.11):



A mixture of 6-nitroanthranilic acid (110.4 g, 0.6 mol) and 6,6-dimethylfulvene (98.5g, 1.5 eq.) in 700 ml dimethoxyethane was added dropwise to a solution of *t*-butyl nitrite (96.3g, 1.4 eq.) in 2 litre 1,2-dimethoxyethane under N_2-atmosphere at 72 °C within 20 minutes. A vigorous formation of gas started immediately and the temperature rose to 79 °C. Gas formation ceased after 30 min. After 3h at reflux temperature the mixture was cooled to room temperature, evaporated and purified on silica gel in hexane-ethyl acetate 95:5 resulting in 76.7 g of 9-isopropylidene-5-nitro-benzonorbornadiene as a yellow solid (m.p. 94-95 °C). ^{1}H-NMR (CDCl3), ppm: 7.70 (d, 1H), 7.43 (d, 1H), 7.06 (t, 1H), 6.99 (m, 2H), 5.34 (brd s, 1H), 4.47 (brd s, 1H), 1.57 (2 d, 6H). ^{13}C-NMR ($CDCl_3$), ppm: 159.83, 154.30, 147.33, 144.12, 142.89, 141.93, 125.23 (2x), 119.32, 105.68, 50.51, 50.44, 19.05, 18.90.

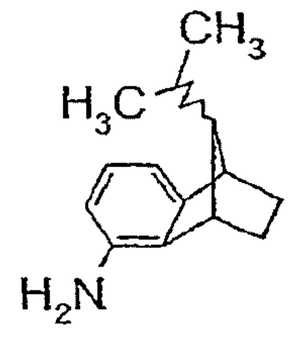
b) Two-step hydrogenation

Example H2: 9-Isopropylidene-5-amino-benzonorbornene (Cpd No. Z2.11):



5.0 g 9-isopropylidene-5-nitro-benzonorbornadiene (Cpd No. Z1.11) (22 mmol) were hydrogenated in 50 ml tetrahydrofurane in the presence of 1.5 g 5% Rh/C at 25 °C and atmospheric pressure. After uptake of 4 equivalents of hydrogen (2.01 litre or 102% of theory) the mixture was filtered, evaporated and purified on silica gel in hexane-ethyl acetate-6:1 giving 2.76 g 9-isopropylidene-5-amino-benzonorbornene as a solid (m.p. 81-82 °C; yield: 62.9% of theory). ^{1}H-NMR (CDCl3), ppm: 6.90 (t, 1H), 6.67 (d, 1H), 6.46 (d, 1H), 3.77 (m, 1H), 3.73 (m, 1H), 3.35 (brd, exchangeable with D_2O, 2H), 1.89 (m, 2H), 1.63 (2 s, 6H), 1.26 (m, 2H). ^{13}C-NMR ($CDCl_3$), ppm: 148.73, 147.65, 138.30, 131.75, 126.19, 113.12, 110.89, 110.19, 43.97, 39.44, 26.98, 26.06, 19.85, 19.75.

Example H3: 9-Isopropyl-5-amino-benzonorbornene (Cpd No. Z3.11):



200 mg 9-isopropylidene-5-amino-benzonorbornene (Cpd No. Z2.11) were hydrogenated in the presence of 100 mg 5 % Rh/C in 40 ml tetrahydrofurane in a stainless steel autoclave at room temperature at 100 bar resulting in 9-isopropyl-5-amino-benzonorbornene in the form of an oil (syn/anti-ratio 9 : 1). syn-Epimer : ^{1}H-NMR ($CDCl_3$), ppm: 6.91 (t, 1H), 6.64 (d, 1H), 6.48 (d, 1H), 3.54 (brd, exchangeable with D_2O, 2H), 3.20 (m, 1H), 3.15 (m, 1H), 1.92 (m, 2H), 1.53 (d, 1H), 1.18 (m, 2H), 1.02 (m, 1H), 0.81 (m, 6H); ^{13}C-NMR (CDCl3), ppm: 147.73, 140.03, 130.15, 126.41, 113.35, 112.68, 69.00, 46.62, 42.06, 27.74, 26.83, 25.45, 22.32, 22.04; anti-epimer : ^{1}H-NMR ($CDCl_3$), ppm: 6.89 (t, 1H), 6.63 (d, 1H), 6.46 (d, 1H), 3.55 (brd, exchangeable with D_2O, 2H), 3.16 (m, 1H), 3.13 (m, 1H), 1.87 (m, 2H), 1.48 (d, 1H), 1.42 (m, 1H), 1.12 (m, 2H), 0.90 (m, 6H); ^{13}C-NMR ($CDCl_3$), ppm: 150.72, 138.74, 133.63, 126.15, 112.94, 111.53, 68.05, 45.21, 40.61, 26.25, 24.47, 23.55, 20.91 (2x). Assignments were made on the basis of NOE-NMR-experiments.

c) One-pot hydrogenation:

Example H4: 9-Isopropyl-5-amino-benzonorbornene (Cpd No. Z3.11): syn-enrichment

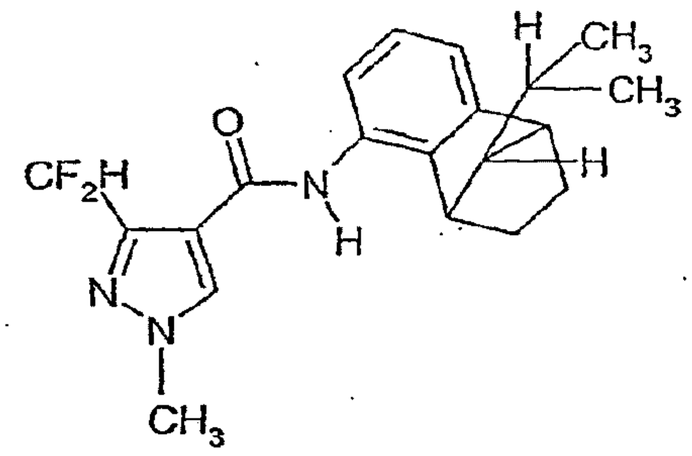
35.9 g 9-isopropylidene-5-nitro-benzonorbornadiene (Cpd No. Z1.11) in 400 ml tetrahydrofurane were exhaustively hydrogenated in the presence of 25 g 5 % Rh/C over 106 h. Filtration and evaporation of the solvent resulted in 32.15 g 9-isopropyl-5-amino-benzonorbornene (Cpd No. Z3.11) in the form of an oil (syn/anti-ratio 9 : 1; yield: 97.4% of theory). NMR data: see above.

Example H5: 9-Isopropyl-5-amino-benzonorbornene (Cpd No. Z3.11): anti-enrichment

41.41 g 9-isopropylidene-5-nitro-benzonorbornadiene (Cpd No. Z1.11) in 1 litre tetrahydrofurane were exhaustively hydrogenated for four hours in the presence of 22 g 5% Pd/C at room temperature and atmospheric pressure. Filtration and evaporatation follwed by purification on silica gel in hexane-ethyl acetate-7:1 gave 29.91g 9-isopropyl-5-amino-

benzonorbornene (Cpd No. Z3.11) (syn/anti-ratio 3 : 7; yield: 81.5%) in the form of an oil. NMR data: see above.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ia (syn)

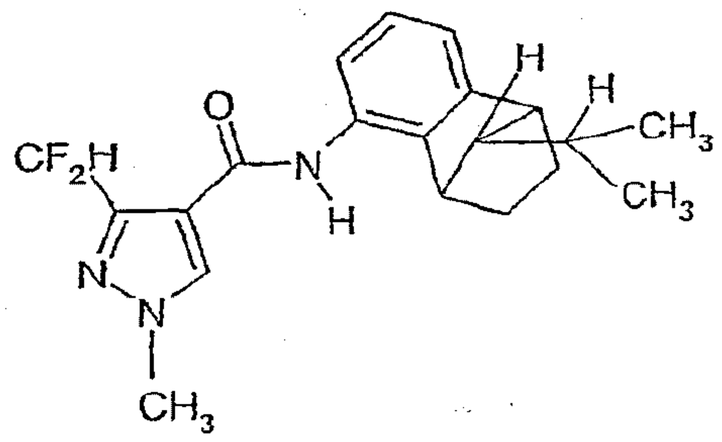


(Ia),

which represents a single enantiomer of formula I_{III}, a single enantiomer of formula I_{IV} or a mixture in any ratio of the single enantiomers of formulae I_{III} and I_{IV}; and one component B) as described above.

Among this embodiment of the invention preference is given to those combinations which comprise as component A) a racemic compound of the formula Ia (syn), which represents a racemic mixture of the single enantiomers of formulae I_{III} and I_{IV}; and one component B) as described above.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ib (anti)

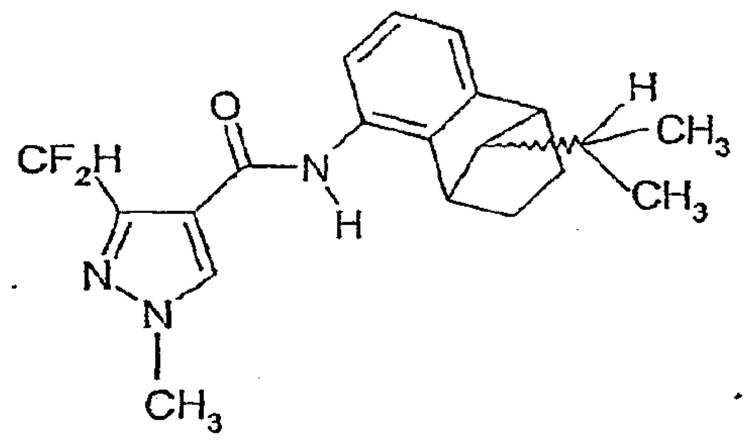


(Ib),

which represents a single enantiomer of formula I_V, a single enantiomer of formula I_{VI} or a mixture in any ratio of the single enantiomers of formulae I_V and I_{VI}; and one component B) as described above.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a racemic compound of the formula Ib (anti), which represents a racemic mixture of the single enantiomers of formulae I_V and I_{VI}; and one component B) as described above.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ic



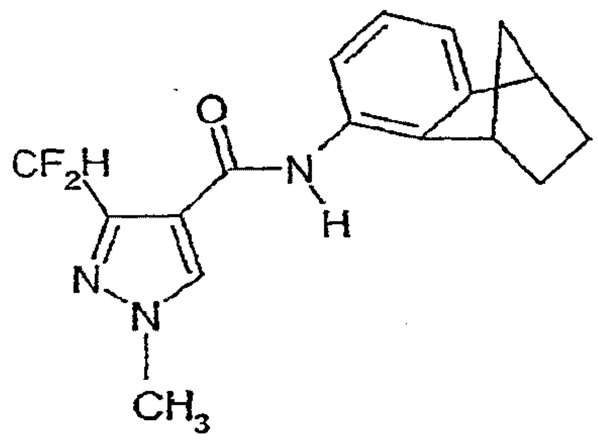
(Ic),

which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the ratio of the racemic compound of formula Ia (syn), which represents a racemic mixture of the single enantiomers of formulae I_{III} and I_{IV}, to the racemic compound of formula Ib (anti), which represents a racemic mixture of the single enantiomers of formulae I_V and I_{VI}, is from 1000 : 1 to 1 : 1000; and one component B) as described above.

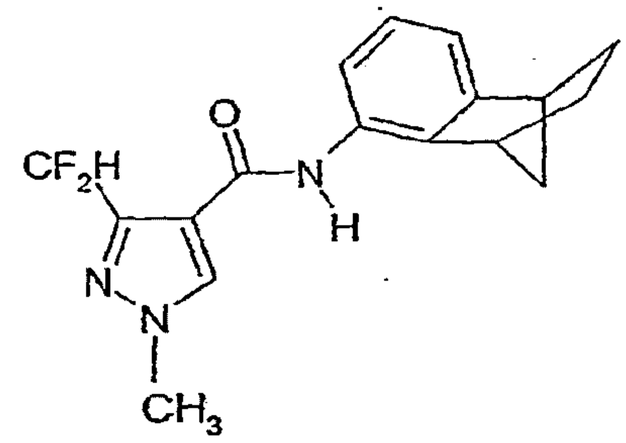
A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ic, which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the content of the racemic compound of formula Ia (syn), which represents a racemic mixture of the single enantiomers of formulae I_{III} and I_{IV}, is from 80 to 99 % by weight, preferrably 85 to 90 % by weight; and one component B) as described above.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ic, which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the content of the racemic compound of formula Ib (anti), which represent a racemic mixture of the single enantiomers of formulae I_V and I_{VI}, is from 60 to 99 % by weight, preferrably 64 to 70 % by weight; and one component B) as described above.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl and R_2 is hydrogen; and one component B) as described above. Within this embodiment of the present invention compounds of formula I occur in two enantiomeric forms, which are described as the single enantiomers of formulae I_{VII} and I_{VIII}:



I_{VII}



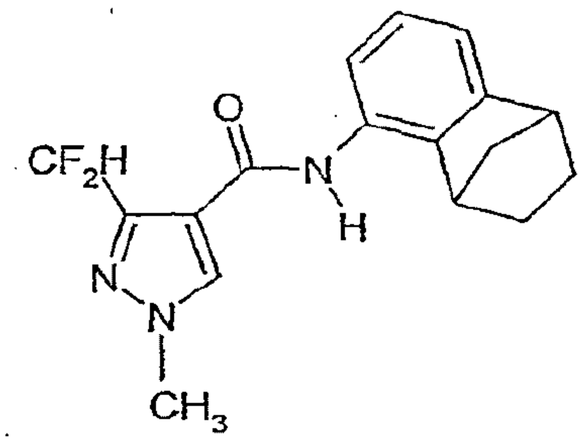
I_{VIII}

The invention covers all such single enantiomers and mixtures thereof in any ratio.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a single enantiomer of formula I_{VII}; and one component B) as described above.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a single enantiomer of formula I_{VIII}; and one component B) as described above.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Id

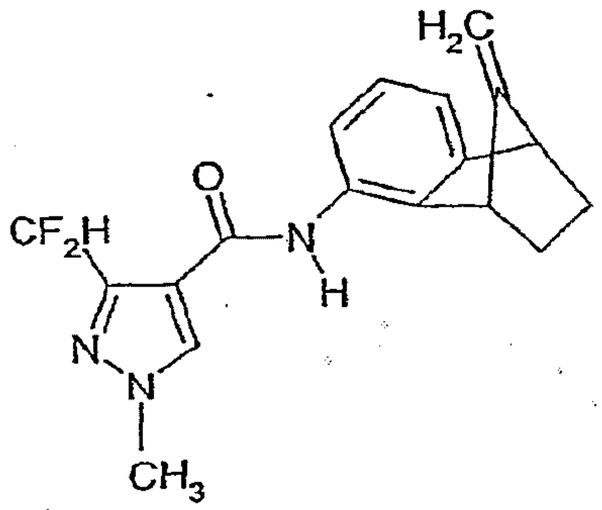


(Id),

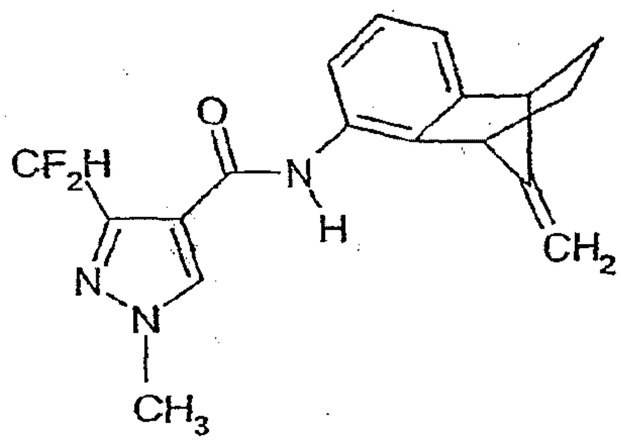
which represents a mixture of the single enantiomers of formulae I_{VII} and I_{VIII},

wherein the ratio of the single enantiomer of formula I_{VII} to the single enantiomer of formula I_{VIII} is from 1000 : 1 to 1 : 1000; and one component B) as described above.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein Y is $>C=CH_2$ and R_1 is difluoromethyl; and one component B) as described above. Within this embodiment of the present invention compounds of formula I occur in two enantiomeric forms, which are described as the single enantiomers of formulae I_{IX} and I_X:



I_{IX}

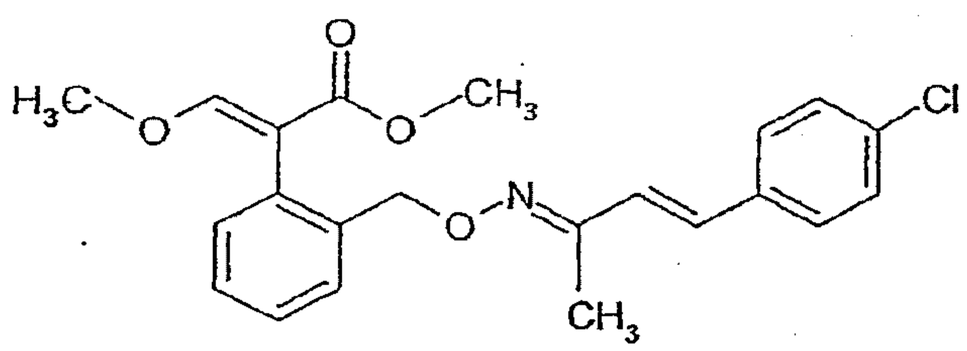


I_X

The invention covers all such single enantiomers and mixtures thereof in any ratio.

According to the instant invention, a "racemic mixture" of two enantiomers or a "racemic compound" means a mixture of two enantiomers in a ratio of substantially 50 : 50 of the two single enantiomers.

Preferred components B) are selected from the group consisting of strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6



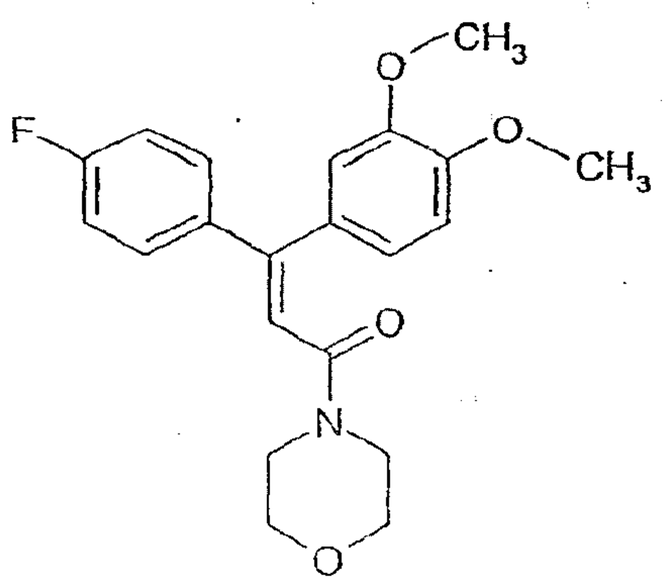
(B-6);

an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole, Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole, Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;

a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;

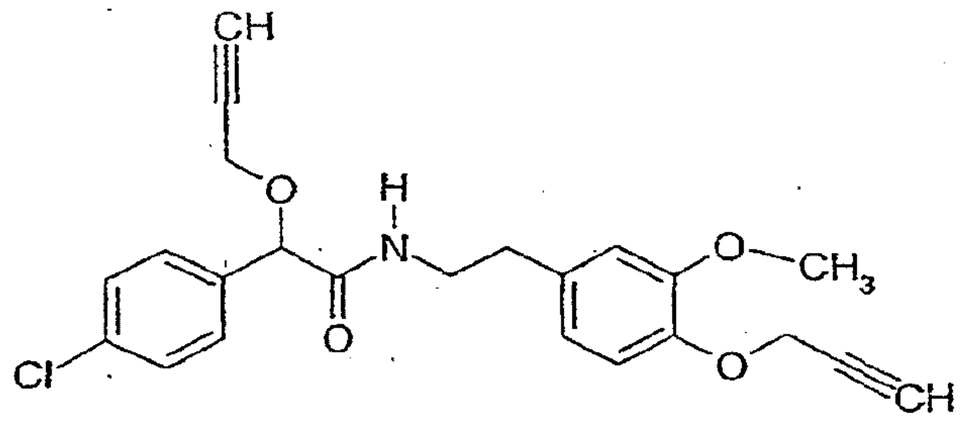
an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;

a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7



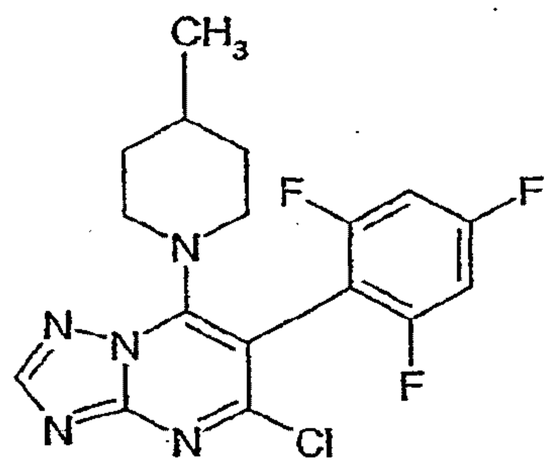
(B-7);

a compound of formula F-1



(F-1);

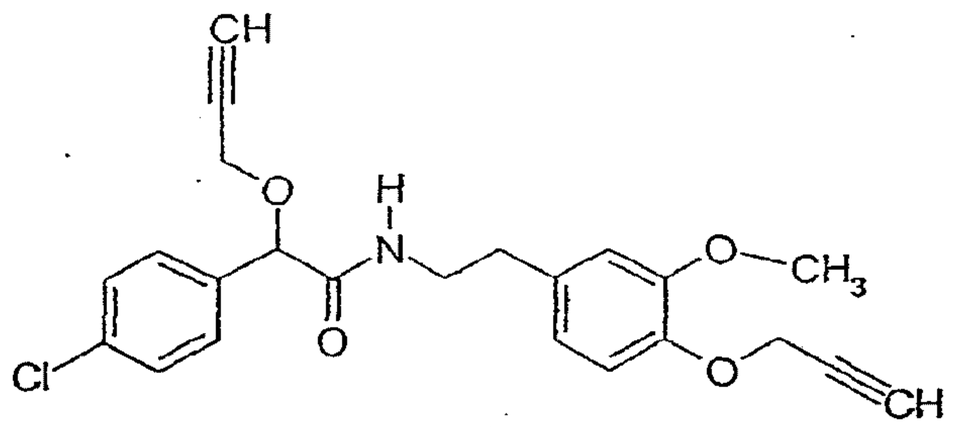
a compound of formula B-1



(B-1);

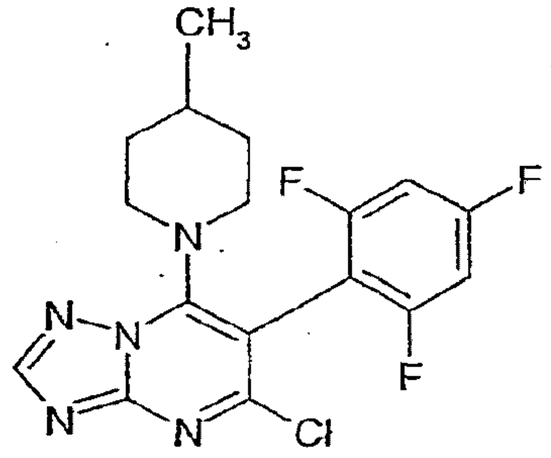
Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide; Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron; Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole; Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

Preferred components B) are selected from the group consisting of
a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole;
Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1



(F-1);

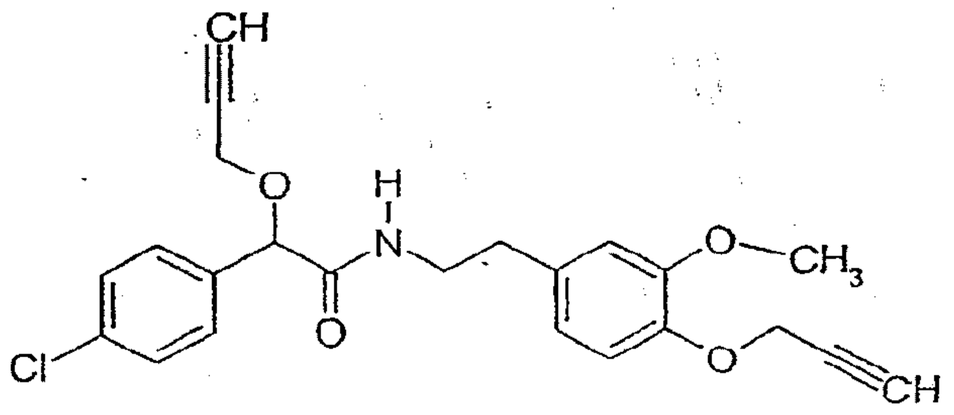
a compound of formula B-1



(B-1);

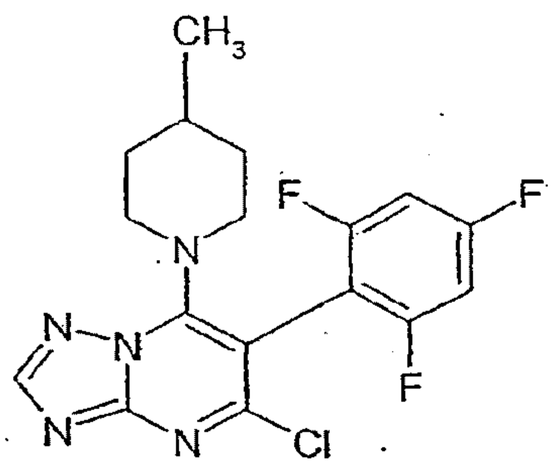
and Chlorothalonil.

A more preferred component B) is Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1



(F-1);

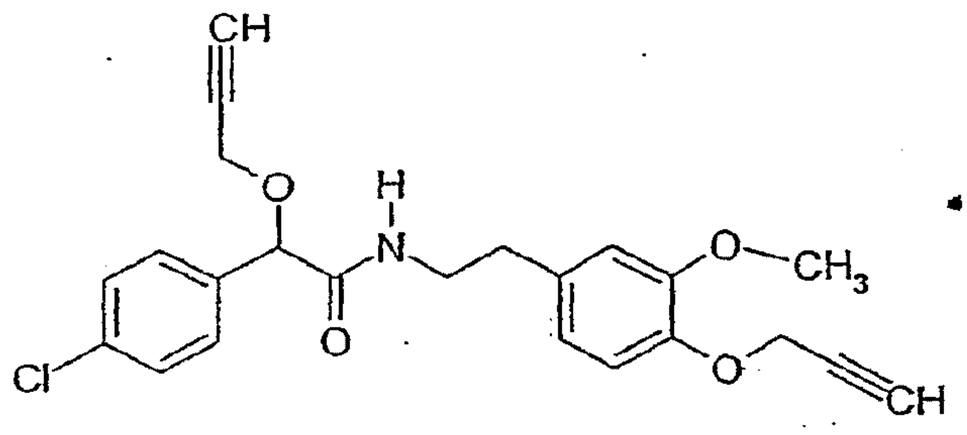
a compound of formula B-1



(B-1);

Chlorothalonil, Epoxiconazole or Prothioconazole.

A further more preferred component B) is Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1



(F-1);

or Chlorothalonil.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is trifluoromethyl; and one component B) selected from the group consisting of strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6;

an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole, Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole,

Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;
a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;
an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;
a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7;
a compound of formula F-1; a compound of formula B-1; Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide; Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron; Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole; Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl; and one component B) selected from the group consisting of
strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6;
an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole, Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole, Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;
a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;
an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;

a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7;
a compound of formula F-1; a compound of formula B-1; Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide; Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron; Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole; Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

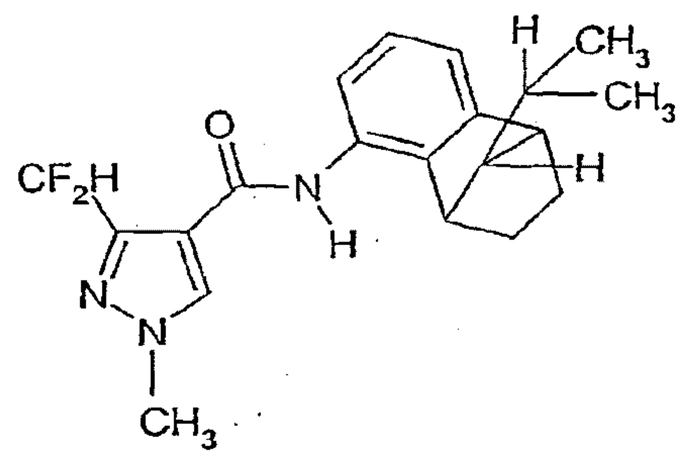
A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl; and R_2 is C_1-C_6alkyl, and one component B) selected from the group consisting of
strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6;
an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole, Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole, Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;
a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;
an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;
a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7;
a compound of formula F-1; a compound of formula B-1; Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide;

Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron; Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole; Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl, Y is $-CHR_2-$ and R_2 is isopropyl; and one component B) selected from the group consisting of

strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6;
an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole, Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole, Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;
a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;
an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;
a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7;
a compound of formula F-1; a compound of formula B-1; Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide; Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron; Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole; Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ia (syn)



(Ia),

which represents a single enantiomer of formula I_{III}, a single enantiomer of formula I_{IV} or a mixture in any ratio of the single enantiomers of formulae I_{III} and I_{IV}; and one component B) selected from the group consisting of

strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6;

an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole, Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole, Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;

a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;

an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;

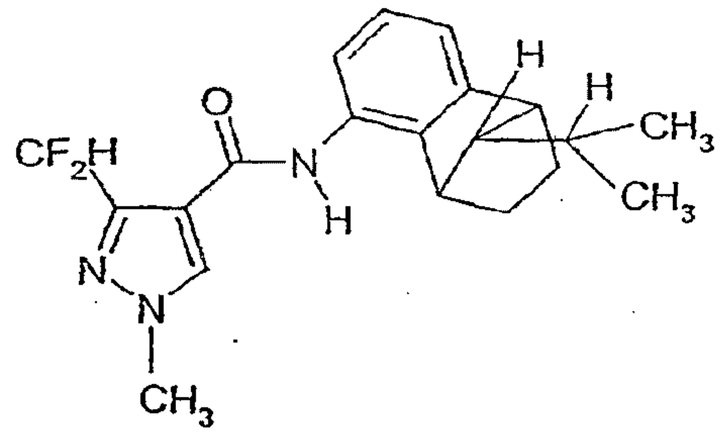
a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7;

a compound of formula F-1; a compound of formula B-1; Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide; Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron;

Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole; Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a racemic compound of the formula Ia (syn), which represents a racemic mixture of the single enantiomers of formulae I_{III} and I_{IV}; and one component B) selected from the group consisting of
strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6;
an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole, Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole, Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;
a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;
an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;
a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7;
a compound of formula F-1; a compound of formula B-1; Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide; Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron; Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole; Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ib (anti)



(Ib),

which represents a single enantiomer of formula I_V, a single enantiomer of formula I_{VI} or a mixture in any ratio of the single enantiomers of formulae I_V and I_{VI}; and one component B) selected from the group consisting of

strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6;

an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole, Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole, Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;

a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;

an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;

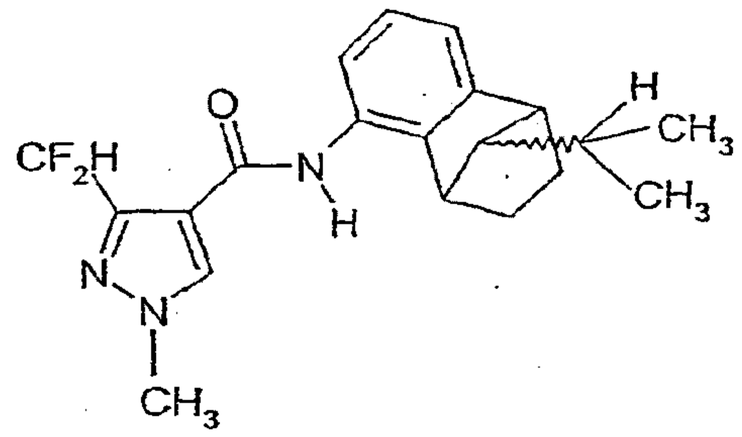
a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7;

a compound of formula F-1; a compound of formula B-1; Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide; Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron; Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole;

Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

A further preferred embodiment of the present invention is represented by those combinations which comprise component A) a racemic compound of the formula Ib (anti), which represents a racemic mixture of the single enantiomers of formulae I_V and I_{VI}; and one component B) selected from the group consisting of
strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6;
an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole, Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole, Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;
a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;
an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;
a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7;
a compound of formula F-1; a compound of formula B-1; Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide; Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron; Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole; Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ic



(Ic),

which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the ratio of the racemic compound of formula Ia (syn), which represents a racemic mixture of the single enantiomers of formulae I_{III} and I_{IV}, to the racemic compound of formula Ib (anti), which represents a racemic mixture of the single enantiomers of formulae I_V and I_{VI}, is from 1000 : 1 to 1 : 1000; and one component B)selected from the group consisting of

strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6;

an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole, Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole, Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;

a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;

an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;

a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7;

a compound of formula F-1; a compound of formula B-1; Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide; Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron;

Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole; Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

A further preferred embodiment of the present invention is represented by those combinations which comprise component A) a compound of formula Ic, which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the content of the racemic compound of formula Ia (syn), which represents a racemic mixture of the single enantiomers of formulae I_{III} and I_{IV}, is from 80 to 99 % by weight, preferrably 85 to 90 % by weight; and one component B) selected from the group consisting of strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6;
an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole, Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole, Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;
a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;
an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;
a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7;
a compound of formula F-1; a compound of formula B-1; Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide; Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron; Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole; Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ic, which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the content of the racemic compound of formula Ib (anti), which represent a racemic mixture of the single enantiomers of formulae I_V and I_{VI}, is from 60 to 99 % by weight, preferrably 64 to 70 % by weight; and one component B) selected from the group consisting of strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6;
an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole, Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole, Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;
a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;
an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;
a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7;
a compound of formula F-1; a compound of formula B-1; Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide; Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron; Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole; Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is

difluoromethyl and R_2 is hydrogen; and one component B) selected from the group consisting of

strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6;

an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole, Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole, Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;

a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;

an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;

a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7;

a compound of formula F-1; a compound of formula B-1; Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide; Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron; Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole; Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a single enantiomer of formula I_{VII}; and one component B) selected from the group consisting of

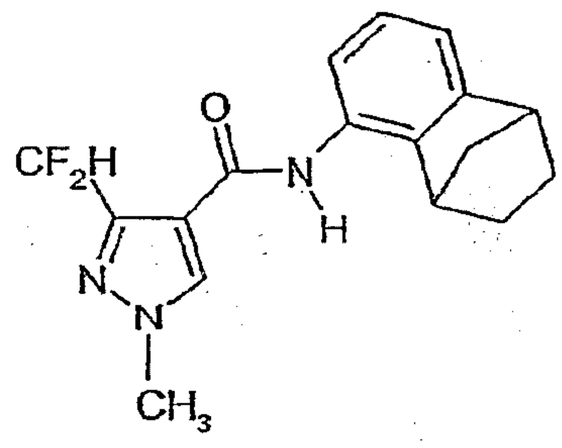
strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6;

an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole, Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole, Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;
a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;
an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;
a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7;
a compound of formula F-1; a compound of formula B-1; Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide; Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron; Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole; Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a single enantiomer of formula I_{VIII}; and one component B) selected from the group consisting of
strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6;
an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole, Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole,

Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;
a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;
an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;
a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7;
a compound of formula F-1; a compound of formula B-1; Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide; Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron; Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole; Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Id



(Id),

which represents a mixture of the single enantiomers of formulae I_{VII} and I_{VIII},
wherein the ratio of the single enantiomer of formula I_{VII} to the single enantiomer of formula I_{VIII} is from 1000 : 1 to 1 : 1000; and one component B) selected from the group consisting of strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6;
an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole,

Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole, Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;
a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;
an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;
a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7;
a compound of formula F-1; a compound of formula B-1; Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide; Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron; Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole; Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein Y is $>C{=}CH_2$ and R_1 is difluoromethyl; and one component B) selected from the group consisting of strobilurin fungicide, selected from the group consisting of Azoxystrobin, Dimoxystrobin, Fluoxastrobin, Kresoxim-methyl, Metominostrobin, Orysastrobin, Picoxystrobin, Pyraclostrobin; Trifloxystrobin; and a compound of formula B-6;
an azole fungicide, selected from the group consisting of Azaconazole, Bromuconazole, Cyproconazole, Difenoconazole, Diniconazole, Diniconazole-M, Epoxiconazole, Fenbuconazole, Fluquinconazole, Flusilazole, Flutriafol, Hexaconazole, Imazalil, Imibenconazole, Ipconazole, Metconazole, Myclobutanil, Oxpoconazole, Pefurazoate, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Simeconazole, Tebuconazole, Tetraconazole, Triadimefon, Triadimenol, Triflumizole, Triticonazole, Diclobutrazol, Etaconazole, Furconazole, Furconazole-cis and Quinconazole;

a phenyl pyrrole fungicide, selected from the group consisting of Fenpiclonil and Fludioxonil;
an anilino-pyrimidine fungicide, selected from the group consisting of Cyprodinil, Mepanipyrim and Pyrimethanil;
a morpholine fungicide, selected from the group consisting of Aldimorph, Dodemorph, Fenpropimorph, Tridemorph, Fenpropidin, Spiroxamine; Piperalin and a compound of formula B-7;
a compound of formula F-1; a compound of formula B-1; Chlorothalonil; Famoxadone; Fenamidone; Acibenzolar; Benalaxyl; Benalaxyl-M; Benomyl; Bitertanol; Boscalid; Carboxin; Carpropamid ; Copper; Cyazofamid; Cymoxanil; Diethofencarb; Dithianon; Fenhexamide; Fenoxycarb; Fluazinam; Flutolanil; Folpet; Guazatine; Hymexazole; Iprodione; Lufenuron; Mancozeb; Metalaxyl; Mefenoxam; Metrafenone; Nuarimol; Paclobutrazol; Pencycuron; Penthiopyrad; Procymidone; Pyroquilon; Quinoxyfen; Silthiofam; Sulfur; Thiabendazole; Thiram; Triazoxide; Tricyclazole; Abamectin; Emamectin benzoate; Tefluthrin and Thiamethoxam.

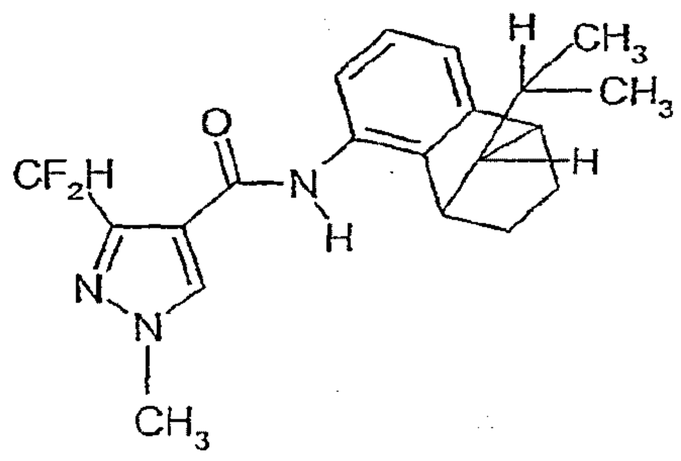
A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is trifluoromethyl; and one component B) selected from the group consisting of
a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole; Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1; a compound of formula B-1 and Chlorothalonil.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl; and one component B) selected from the group consisting of
a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole; Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1; a compound of formula B-1 and Chlorothalonil.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl; and R_2 is C_1-C_6alkyl, and one component B) selected from the group consisting of a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole; Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1; a compound of formula B-1 and Chlorothalonil.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl, Y is $-CHR_2-$ and R_2 is isopropyl; and one component B) selected from the group consisting of
a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole; Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1; a compound of formula B-1 and Chlorothalonil.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ia (syn)



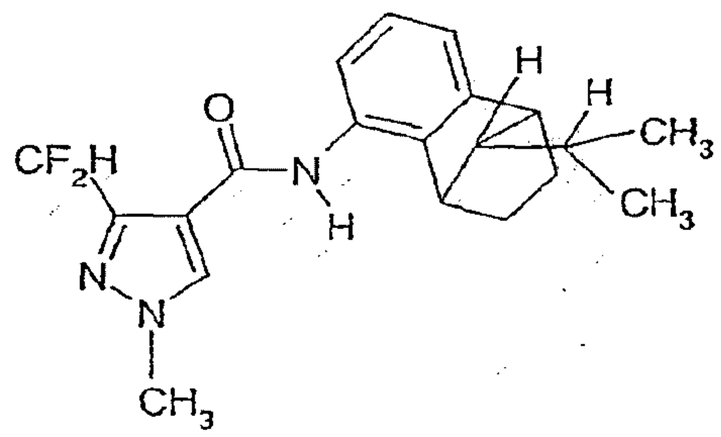
(Ia),

which represents a single enantiomer of formula I_{III}, a single enantiomer of formula I_{IV} or a mixture in any ratio of the single enantiomers of formulae I_{III} and I_{IV}; and one component B) selected from the group consisting of

a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole; Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1; a compound of formula B-1 and Chlorothalonil.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a racemic compound of the formula Ia (syn), which represents a racemic mixture of the single enantiomers of formulae I_{III} and I_{IV}; and one component B) selected from the group consisting of
a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole; Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1; a compound of formula B-1 and Chlorothalonil.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ib (anti)



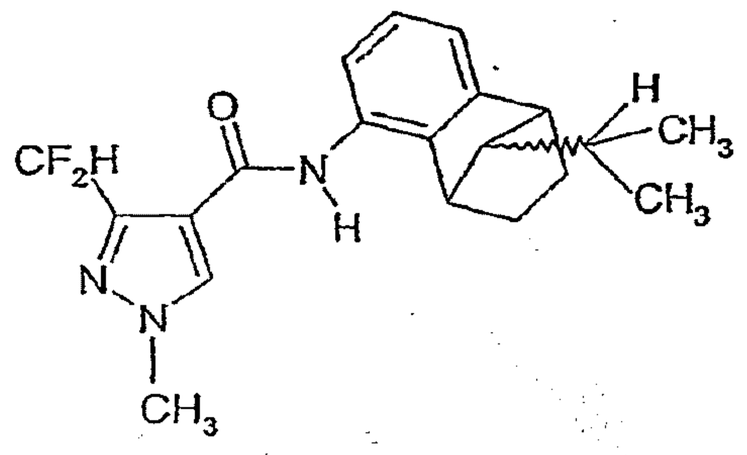
(Ib),

which represents a single enantiomer of formula I_V, a single enantiomer of formula I_{VI} or a mixture in any ratio of the single enantiomers of formulae I_V and I_{VI}; and one component B) selected from the group consisting of
a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole;

Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1; a compound of formula B-1 and Chlorothalonil.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a racemic compound of the formula Ib (anti), which represents a racemic mixture of the single enantiomers of formulae I_V and I_{VI}; and one component B) selected from the group consisting of
a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole;
Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1; a compound of formula B-1 and Chlorothalonil.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ic



(Ic),

which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the ratio of the racemic compound of formula Ia (syn), which represents a racemic mixture of the single enantiomers of formulae I_{III} and I_{IV}, to the racemic compound of formula Ib (anti), which represents a racemic mixture of the single enantiomers of formulae I_V and I_{VI}, is from 1000 : 1 to 1 : 1000; and one component B) selected from the group consisting of
a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole;

Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1; a compound of formula B-1 and Chlorothalonil.

A further preferred embodiment of the present invention is represented by those combinations which comprise component A) a compound of formula Ic, which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the content of the racemic compound of formula Ia (syn), which represents a racemic mixture of the single enantiomers of formulae I_{III} and I_{IV}, is from 80 to 99 % by weight, preferrably 85 to 90 % by weight; and one component B) selected from the group consisting of
a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole;
Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1; a compound of formula B-1 and Chlorothalonil.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ic, which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the content of the racemic compound of formula Ib (anti), which represent a racemic mixture of the single enantiomers of formulae I_V and I_{VI}, is from 60 to 99 % by weight, preferrably 64 to 70 % by weight; and one component B) selected from the group consisting of
a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole;
Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1; a compound of formula B-1 and Chlorothalonil.

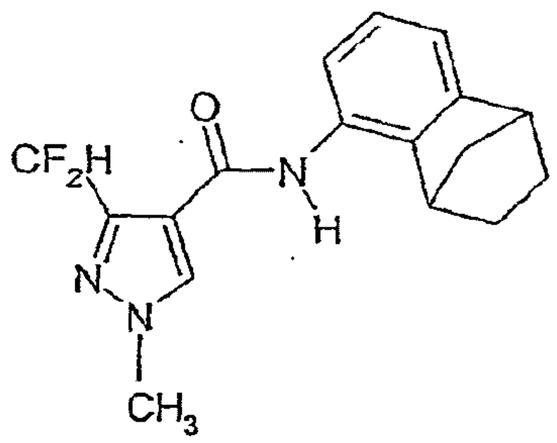
A further preferred embodiment of the present invention is represented by those combinations which comprise component A) a compound of the formula I, wherein R_1 is difluoromethyl and R_2 is hydrogen; and one component B) selected from the group consisting of

a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole; Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1; a compound of formula B-1 and Chlorothalonil.

A further preferred embodiment of the present invention is represented by those combinations which comprise component A) a single enantiomer of formula I_{VII}; and one component B) selected from the group consisting of
a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole; Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1; a compound of formula B-1 and Chlorothalonil.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a single enantiomer of formula I_{VIII}; and one component B) selected from the group consisting of
a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole; Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1; a compound of formula B-1 and Chlorothalonil.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Id



(Id),

which represents a mixture of the single enantiomers of formulae I_{VII} and I_{VIII},
wherein the ratio of the single enantiomer of formula I_{VII} to the single enantiomer of formula I_{VIII} is from 1000 : 1 to 1 : 1000; and one component B) selected from the group consisting of a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole; Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1; a compound of formula B-1 and Chlorothalonil.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein Y is $>C=CH_2$, and R_1 is difluoromethyl; and one component B) selected from the group consisting of a strobilurin fungicide, selected from the group consisting of Azoxystrobin, Fluoxastrobin, Picoxystrobin and Pyraclostrobin;
an azole fungicide, selected from the group consisting of Cyproconazole, Difenoconazole, Epoxiconazole, Flutriafol, Metconazole, Propiconazole, Prothioconazole, Tetraconazole; Fludioxonil, Cyprodinil, Fenpropimorph, Fenpropidin, a compound of formula F-1; a compound of formula B-1 and Chlorothalonil.

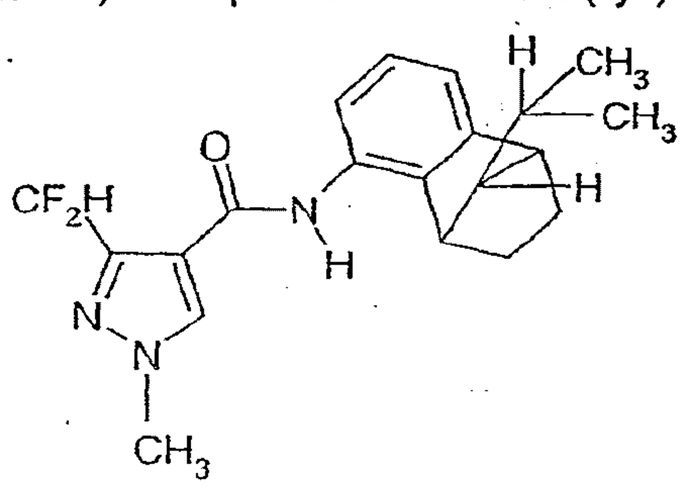
A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is trifluoromethyl; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1; a compound of formula B-1; Chlorothalonil, Epoxiconazole and Prothioconazole.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1; a compound of formula B-1; Chlorothalonil, Epoxiconazole and Prothioconazole.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl; and R_2 is C_1-C_6alkyl, and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1; a compound of formula B-1; Chlorothalonil, Epoxiconazole and Prothioconazole.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl, Y is $-CHR_2-$ and R_2 is isopropyl; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1; a compound of formula B-1; Chlorothalonil, Epoxiconazole and Prothioconazole.

A preferred embodiment of the present invention is represented by those combinations which comprise component A) a compound of formula Ia (syn)

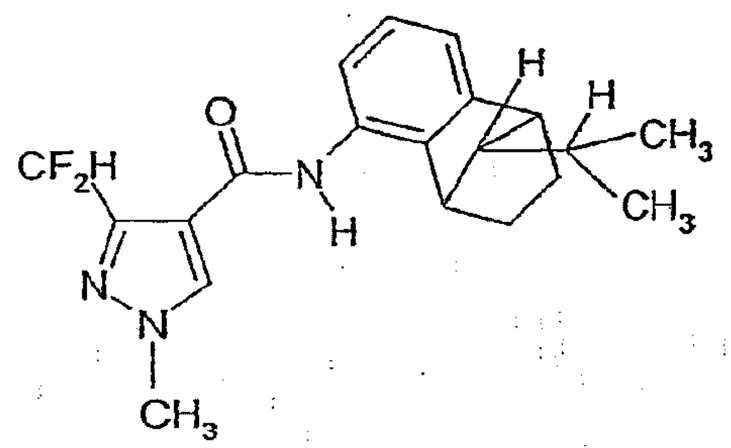


(Ia).

which represents a single enantiomer of formula I_{III}, a single enantiomer of formula I_{IV} or a mixture in any ratio of the single enantiomers of formulae I_{III} and I_{IV}; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1; a compound of formula B-1; Chlorothalonil, Epoxiconazole and Prothioconazole.

A preferred embodiment of the present invention is represented by those combinations which comprise component A) a racemic compound of the formula Ia (syn), which represents a racemic mixture of the single enantiomers of formulae I_{III} and I_{IV}; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1; a compound of formula B-1; Chlorothalonil, Epoxiconazole and Prothioconazole.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ib (anti)



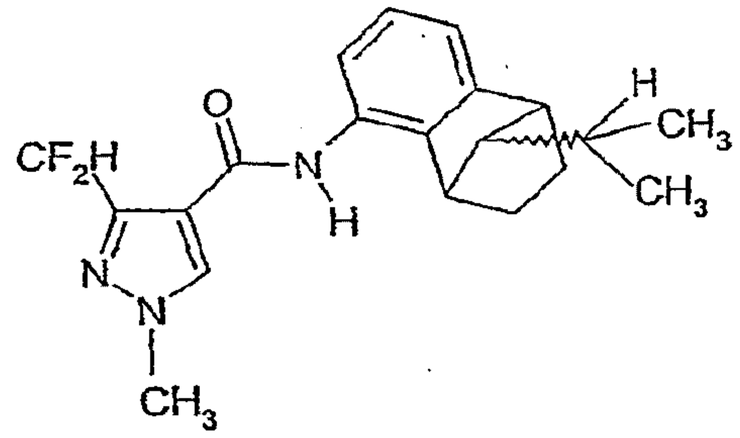
(Ib),

which represents a single enantiomer of formula I_V, a single enantiomer of formula I_{VI} or a mixture in any ratio of the single enantiomers of formulae I_V and I_{VI}; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1; a compound of formula B-1; Chlorothalonil, Epoxiconazole and Prothioconazole.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a racemic compound of the formula Ib (anti),

which represents a racemic mixture of the single enantiomers of formulae I_V and I_{VI}; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1; a compound of formula B-1; Chlorothalonil, Epoxiconazole and Prothioconazole.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ic



(Ic),

which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the ratio of the racemic compound of formula Ia (syn), which represents a racemic mixture of the single enantiomers of formulae I_{III} and I_{IV}, to the racemic compound of formula Ib (anti), which represents a racemic mixture of the single enantiomers of formulae I_V and I_{VI}, is from 1000 : 1 to 1 : 1000; and one component B)selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1; a compound of formula B-1; Chlorothalonil, Epoxiconazole and Prothioconazole.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ic, which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the content of the racemic compound of formula Ia (syn), which represents a racemic mixture of the single enantiomers of formulae I_{III} and I_{IV}, is from 80 to 99 % by weight, preferrably 85 to 90 % by weight; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1; a compound of formula B-1; Chlorothalonil, Epoxiconazole and Prothioconazole.

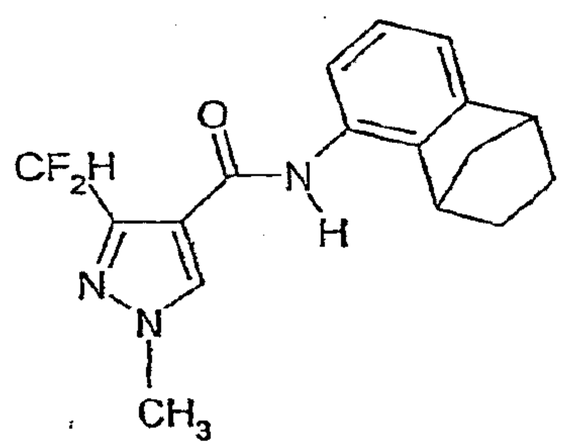
A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ic, which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the content of the racemic compound of formula Ib (anti), which represent a racemic mixture of the single enantiomers of formulae I_V and I_{VI}, is from 60 to 99 % by weight, preferrably 64 to 70 % by weight; and one component B) selected from the group consisting of Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1; a compound of formula B-1; Chlorothalonil, Epoxiconazole and Prothioconazole.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl and R_2 is hydrogen; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1; a compound of formula B-1; Chlorothalonil, Epoxiconazole and Prothioconazole.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a single enantiomer of formula I_{VII}; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1; a compound of formula B-1; Chlorothalonil, Epoxiconazole and Prothioconazole.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a single enantiomer of formula I_{VIII}; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1; a compound of formula B-1; Chlorothalonil, Epoxiconazole and Prothioconazole.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Id



(Id),

which represents a mixture of the single enantiomers of formulae I_{VII} and I_{VIII}, wherein the ratio of the single enantiomer of formula I_{VII} to the single enantiomer of formula I_{VIII} is from 1000 : 1 to 1 : 1000; and one component B) selected from the group consisting of Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1; a compound of formula B-1; Chlorothalonil, Epoxiconazole and Prothioconazole.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein Y is $>C=CH_2$ and R_1 is difluoromethyl; and one component B) selected from the group consisting of Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1; a compound of formula B-1; Chlorothalonil, Epoxiconazole and Prothioconazole.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is trifluoromethyl; and one component B) selected from the group consisting of Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1 and Chlorothalonil.

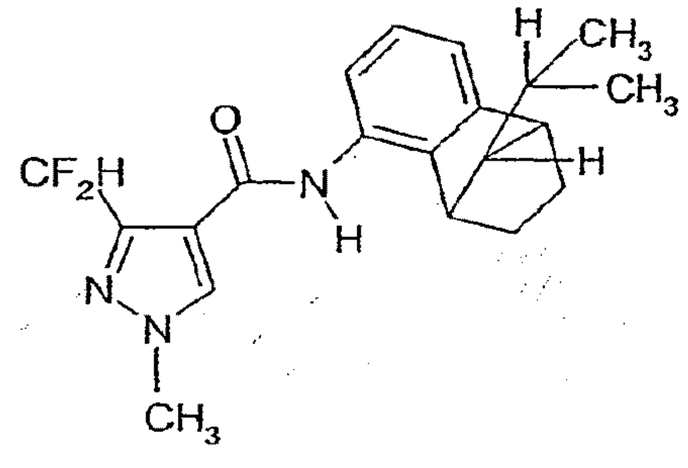
A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl; and one component B) selected from the group consisting of

Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1 and Chlorothalonil.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl; and R_2 is C_1-C_6alkyl, and one component B) selected from the group consisting of Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1 and Chlorothalonil.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl, Y is $-CHR_2-$ and R_2 is isopropyl; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1 and Chlorothalonil.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ia (syn)



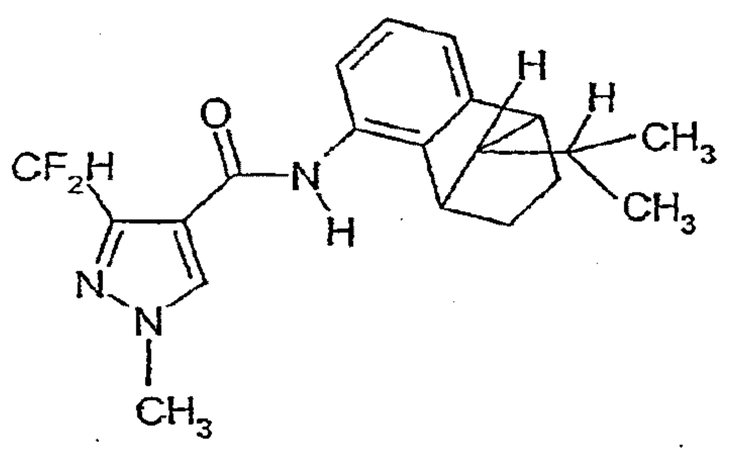
(Ia),

which represents a single enantiomer of formula I_{III}, a single enantiomer of formula I_{IV} or a mixture in any ratio of the single enantiomers of formulae I_{III} and I_{IV}; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1 and Chlorothalonil.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a racemic compound of the formula Ia (syn), which

represents a racemic mixture of the single enantiomers of formulae I_{III} and I_{IV}; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1 and Chlorothalonil.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ib (anti)

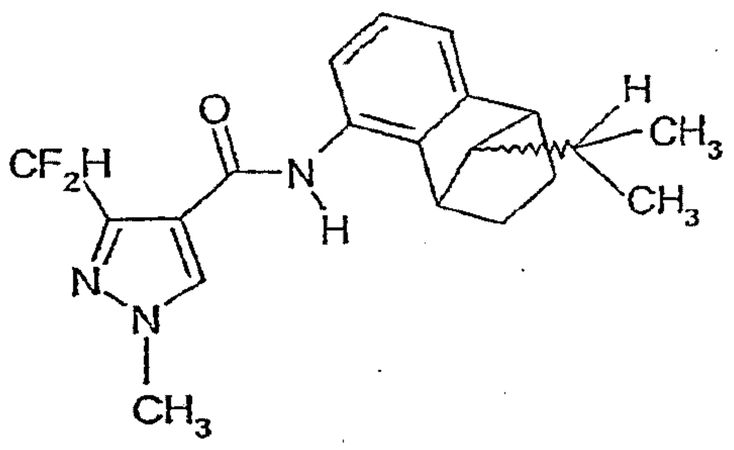


(Ib),

which represents a single enantiomer of formula I_V, a single enantiomer of formula I_{VI} or a mixture in any ratio of the single enantiomers of formulae I_V and I_{VI}; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1 and Chlorothalonil.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a racemic compound of the formula Ib (anti), which represents a racemic mixture of the single enantiomers of formulae I_V and I_{VI}; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1 and Chlorothalonil.

A further preferred embodiment of the present invention is represented by those combinations which comprise component A) a compound of formula Ic



(Ic),

which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the ratio of the racemic compound of formula Ia (syn), which represents a racemic mixture of the single enantiomers of formulae I_{III} and I_{IV}, to the racemic compound of formula Ib (anti), which represents a racemic mixture of the single enantiomers of formulae I_V and I_{VI}, is from 1000 : 1 to 1 : 1000; and one component B)selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1 and Chlorothalonil.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ic, which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the content of the racemic compound of formula Ia (syn), which represents a racemic mixture of the single enantiomers of formulae I_{III} and I_{IV}, is from 80 to 99 % by weight, preferrably 85 to 90 % by weight; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1 and Chlorothalonil.

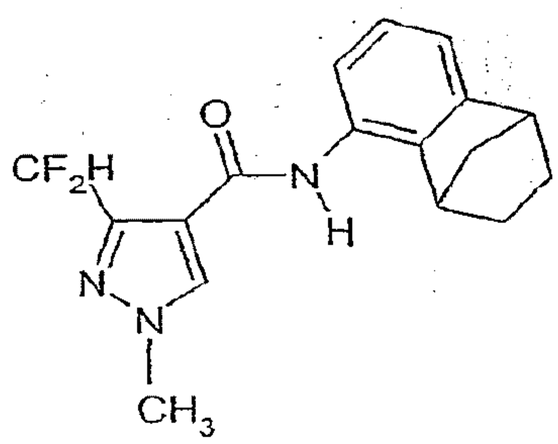
A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Ic, which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the content of the racemic compound of formula Ib (anti), which represent a racemic mixture of the single enantiomers of formulae I_V and I_{VI}, is from 60 to 99 % by weight, preferrably 64 to 70 % by weight; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1 and Chlorothalonil.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein R_1 is difluoromethyl and R_2 is hydrogen; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1 and Chlorothalonil.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a single enantiomer of formula I_{VII}; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1 and Chlorothalonil.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a single enantiomer of formula I_{VIII}; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1 and Chlorothalonil.

A further preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of formula Id



(Id).

which represents a mixture of the single enantiomers of formulae I_{VII} and I_{VIII}, wherein the ratio of the single enantiomer of formula I_{VII} to the single enantiomer of formula I_{VIII} is from 1000 : 1 to 1 : 1000; and one component B) selected from the group consisting of
Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1 and Chlorothalonil.

A preferred embodiment of the present invention is represented by those combinations which comprise as component A) a compound of the formula I, wherein Y is $>C=CH_2$ and R_1 is difluoromethyl; and one component B) selected from the group consisting of Azoxystrobin; Picoxystrobin; Cyproconazole; Difenoconazole; Propiconazole; Fludioxonil; Cyprodinil; Fenpropimorph; Fenpropidin; a compound of formula F-1 and Chlorothalonil.

The active ingredient combinations are effective against harmful microorganisms, such as microorganisms, that cause phytopathogenic diseases, in particular against phytopathogenic fungi and bacteria.

The active ingredient combinations are effective especially against phytopathogenic fungi belonging to the following classes: Ascomycetes (e.g. Venturia, Podosphaera, Erysiphe, Monilinia, Mycosphaerella, Uncinula); Basidiomycetes (e.g. the genus Hemileia, Rhizoctonia, Phakopsora, Puccinia, Ustilago, Tilletia); Fungi imperfecti (also known as Deuteromycetes; e.g. Botrytis, Helminthosporium, Rhynchosporium, Fusarium, Septoria, Cercospora, Alternaria, Pyricularia and Pseudocercosporella); Oomycetes (e.g. Phytophthora, Peronospora, Pseudoperonospora, Albugo, Bremia, Pythium, Pseudosclerospora, Plasmopara).

According to the invention "useful plants" typically comprise the following species of plants: grape vines; cereals, such as wheat, barley, rye or oats; beet, such as sugar beet or fodder beet; fruits, such as pomes, stone fruits or soft fruits, for example apples, pears, plums, peaches, almonds, cherries, strawberries, raspberries or blackberries; leguminous plants, such as beans, lentils, peas or soybeans; oil plants, such as rape, mustard, poppy, olives, sunflowers, coconut, castor oil plants, cocoa beans or groundnuts; cucumber plants, such as marrows, cucumbers or melons; fibre plants, such as cotton, flax, hemp or jute; citrus fruit, such as oranges, lemons, grapefruit or mandarins; vegetables, such as spinach, lettuce, asparagus, cabbages, carrots, onions, tomatoes, potatoes, cucurbits or paprika; lauraceae, such as avocados, cinnamon or camphor; maize; tobacco; nuts; coffee; sugar cane; tea; vines; hops; durian; bananas; natural rubber plants; turf or ornamentals, such as flowers, shrubs, broad-leaved trees or evergreens, for example conifers. This list does not represent any limitation.

The term "useful plants" is to be understood as including also useful plants that have been rendered tolerant to herbicides like bromoxynil or classes of herbicides (such as, for example, HPPD inhibitors, ALS inhibitors, for example primisulfuron, prosulfuron and trifloxysulfuron, EPSPS (5-enol-pyrovyl-shikimate-3-phosphate-synthase) inhibitors, GS (glutamine synthetase) inhibitors) as a result of conventional methods of breeding or genetic engineering. An example of a crop that has been rendered tolerant to imidazolinones, e.g. imazamox, by conventional methods of breeding (mutagenesis) is Clearfield® summer rape (Canola). Examples of crops that have been rendered tolerant to herbicides or classes of herbicides by genetic engineering methods include glyphosate- and glufosinate-resistant maize varieties commercially available under the trade names RoundupReady® , Herculex I ® and LibertyLink®.

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

Toxins that can be expressed by such transgenic plants include, for example, insecticidal proteins, for example insecticidal proteins from Bacillus cereus or Bacillus popliae; or insecticidal proteins from Bacillus thuringiensis, such as δ-endotoxins, e.g. CryIA(b), CryIA(c), CryIF, CryIF(a2), CryIIA(b), CryIIIA, CryIIIB(b1) or Cry9c, or vegetative insecticidal proteins (VIP), e.g. VIP1, VIP2, VIP3 or VIP3A; or insecticidal proteins of bacteria colonising nematodes, for example Photorhabdus spp. or Xenorhabdus spp., such as Photorhabdus luminescens, Xenorhabdus nematophilus; toxins produced by animals, such as scorpion toxins, arachnid toxins, wasp toxins and other insect-specific neurotoxins; toxins produced by fungi, such as Streptomycetes toxins, plant lectins, such as pea lectins, barley lectins or snowdrop lectins; agglutinins; proteinase inhibitors, such as trypsine inhibitors, serine protease inhibitors, patatin, cystatin, papain inhibitors; ribosome-inactivating proteins (RIP), such as ricin, maize-RIP, abrin, luffin, saporin or bryodin; steroid metabolism enzymes, such as 3-hydroxysteroidoxidase, ecdysteroid-UDP-glycosyl-transferase, cholesterol oxidases, ecdysone inhibitors, HMG-COA-reductase, ion channel blockers, such as blockers of sodium or calcium channels, juvenile hormone esterase, diuretic hormone receptors, stilbene synthase, bibenzyl synthase, chitinases and glucanases.

In the context of the present invention there are to be understood by δ-endotoxins, for example CryIA(b), CryIA(c), CryIF, CryIF(a2), CryIIA(b), CryIIIA, CryIIIB(b1) or Cry9c, or vegetative insecticidal proteins (VIP), for example VIP1, VIP2, VIP3 or VIP3A, expressly also hybrid toxins, truncated toxins and modified toxins. Hybrid toxins are produced recombinantly by a new combination of different domains of those proteins (see, for example, WO 02/15701). An example for a truncated toxin is a truncated CryIA(b), which is expressed in the Bt11 maize from Syngenta Seed SAS, as described below. In the case of modified toxins, one or more amino acids of the naturally occurring toxin are replaced. In such amino acid replacements, preferably non-naturally present protease recognition sequences are inserted into the toxin, such as, for example, in the case of CryIIIA055, a cathepsin-D-recognition sequence is inserted into a CryIIIA toxin (see WO 03/018810)

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

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

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

Transgenic plants containing one or more genes that code for an insecticidal resistance and express one or more toxins are known and some of them are commercially available. Examples of such plants are: YieldGard® (maize variety that expresses a CryIA(b) toxin); YieldGard Rootworm® (maize variety that expresses a CryIIIB(b1) toxin); YieldGard Plus® (maize variety that expresses a CryIA(b) and a CryIIIB(b1) toxin); Starlink® (maize variety that expresses a Cry9(c) toxin); Herculex I® (maize variety that expresses a CryIF(a2) toxin and the enzyme phosphinothricine N-acetyltransferase (PAT) to achieve tolerance to the herbicide glufosinate ammonium); NuCOTN 33B® (cotton variety that expresses a CryIA(c)

toxin); Bollgard I® (cotton variety that expresses a CryIA(c) toxin); Bollgard II® (cotton variety that expresses a CryIA(c) and a CryIIA(b) toxin); VIPCOT® (cotton variety that expresses a VIP toxin); NewLeaf® (potato variety that expresses a CryIIIA toxin); Nature-Gard® and Protecta®.

Further examples of such transgenic crops are:

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

2. **Bt176 Maize** from Syngenta Seeds SAS, Chemin de l'Hobit 27, F-31 790 St. Sauveur, France, registration number C/FR/96/05/10. Genetically modified *Zea mays* which has been rendered resistant to attack by the European corn borer (*Ostrinia nubilalis* and *Sesamia nonagrioides*) by transgenic expression of a CryIA(b) toxin. Bt176 maize also transgenically expresses the enzyme PAT to achieve tolerance to the herbicide glufosinate ammonium.

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

4. **MON 863 Maize** from Monsanto Europe S.A. 270-272 Avenue de Tervuren, B-1150 Brussels, Belgium, registration number C/DE/02/9. MON 863 expresses a CryIIIB(b1) toxin and has resistance to certain Coleoptera insects.

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

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

7. **NK603 × MON 810 Maize** from Monsanto Europe S.A. 270-272 Avenue de Tervuren, B-1150 Brussels, Belgium, registration number C/GB/02/M3/03. Consists of conventionally bred hybrid maize varieties by crossing the genetically modified varieties NK603 and MON

810. NK603 × MON 810 Maize transgenically expresses the protein CP4 EPSPS, obtained from *Agrobacterium sp.* strain CP4, which imparts tolerance to the herbicide Roundup® (contains glyphosate), and also a CrylA(b) toxin obtained from *Bacillus thuringiensis subsp. kurstaki* which brings about tolerance to certain Lepidoptera, include the European corn borer.
Transgenic crops of insect-resistant plants are also described in BATS (Zentrum für Biosicherheit und Nachhaltigkeit, Zentrum BATS, Clarastrasse 13, 4058 Basel, Switzerland) Report 2003, (http://bats.ch).

The term "useful plants" is to be understood as including also useful plants which have been so transformed by the use of recombinant DNA techniques that they are capable of synthesising antipathogenic substances having a selective action, such as, for example, the so-called "pathogenesis-related proteins" (PRPs, see e.g. EP-A-0 392 225). Examples of such antipathogenic substances and transgenic plants capable of synthesising such antipathogenic substances are known, for example, from EP-A-0 392 225, WO 95/33818, and EP-A-0 353 191. The methods of producing such transgenic plants are generally known to the person skilled in the art and are described, for example, in the publications mentioned above.

Antipathogenic substances which can be expressed by such transgenic plants include, for example, ion channel blockers, such as blockers for sodium and calcium channels, for example the viral KP1, KP4 or KP6 toxins; stilbene synthases; bibenzyl synthases; chitinases; glucanases; the so-called "pathogenesis-related proteins" (PRPs; see e.g. EP-A-0 392 225); antipathogenic substances produced by microorganisms, for example peptide antibiotics or heterocyclic antibiotics (see e.g. WO 95/33818) or protein or polypeptide factors involved in plant pathogen defence (so-called "plant disease resistance genes", as described in WO 03/000906).

Useful plants of elevated interest in connection with present invention are cereals; soybean; rice; oil seed rape; pome fruits; stone fruits; peanuts; coffee; tea; strawberries; turf; vines and vegetables, such as tomatoes, potatoes, cucurbits and lettuce.

The term "locus" of a useful plant as used herein is intended to embrace the place on which the useful plants are growing, where the plant propagation materials of the useful plants are

sown or where the plant propagation materials of the useful plants will be placed into the soil. An example for such a locus is a field, on which crop plants are growing.

The term "plant propagation material" is understood to denote generative parts of a plant, such as seeds, which can be used for the multiplication of the latter, and vegetative material, such as cuttings or tubers, for example potatoes. There may be mentioned for example seeds (in the strict sense), roots, fruits, tubers, bulbs, rhizomes and parts of plants. Germinated plants and young plants which are to be transplanted after germination or after emergence from the soil, may also be mentioned. These young plants may be protected before transplantation by a total or partial treatment by immersion. Preferably "plant propagation material" is understood to denote seeds.

A futher aspect of the instant invention is a method of protecting natural substances of plant and/or animal origin, which have been taken from the natural life cycle, and/or their processed forms against attack of fungi, which comprises applying to said natural substances of plant and/or animal origin or their processed forms a combination of components A) and B) in a synergistically effective amount.

According to the instant invention, the term "natural substances of plant origin, which have been taken from the natural life cycle" denotes plants or parts thereof which have been harvested from the natural life cycle and which are in the freshly harvested form. Examples of such natural substances of plant origin are stalks, leafs, tubers, seeds, fruits or grains. According to the instant invention, the term "processed form of a natural substance of plant origin" is understood to denote a form of a natural substance of plant origin that is the result of a modification process. Such modification processes can be used to transform the natural substance of plant origin in a more storable form of such a substance (a storage good). Examples of such modification processes are pre-drying, moistening, crushing, comminuting, grounding, compressing or roasting. Also falling under the definition of a processed form of a natural substance of plant origin is timber, whether in the form of crude timber, such as construction timber, electricity pylons and barriers, or in the form of finished articles, such as furniture or objects made from wood.

According to the instant invention, the term "natural substances of animal origin, which have been taken from the natural life cycle and/or their processed forms" is understood to denote material of animal origin such as skin, hides, leather, furs, hairs and the like.

The combinations according the present invention can prevent disadvantageous effects such as decay, discoloration or mold.

A preferred embodiment is a method of protecting natural substances of plant origin, which have been taken from the natural life cycle, and/or their processed forms against attack of fungi, which comprises applying to said natural substances of plant and/or animal origin or their processed forms a combination of components A) and B) in a synergistically effective amount.

A further preferred embodiment is a method of protecting fruits, preferably pomes, stone fruits, soft fruits and citrus fruits, which have been taken from the natural life cycle, and/or their processed forms, which comprises applying to said fruits and/or their processed forms a combination of components A) and B) in a synergistically effective amount.

The combinations of the present invention may also be used in the field of protecting industrial material against attack of fungi. According to the instant invention, the term "industrial material" denotes non-live material which have been prepared for use in industry. For example, industrial materials which are intended to be protected against attack of fungi can be glues, sizes, paper, board, textiles, carpets, leather, wood, constructions, paints, plastic articles, cooling lubricants, aquaeous hydraulic fluids and other materials which can be infested with, or decomposed by, microorganisms. Cooling and heating systems, ventilation and air conditioning systems and parts of production plants, for example cooling-water circuits, which may be impaired by multiplication of microorganisms may also be mentioned from amongst the materials to be protected. The combinations according the present invention can prevent disadvantageous effects such as decay, discoloration or mold.

The combinations of the present invention may also be used in the field of protecting technical material against attack of fungi. According to the instant invention, the term "technical material" includes paper; carpets; constructions; cooling and heating systems;

ventilation and air conditioning systems and the like. The combinations according the present invention can prevent disadvantageous effects such as decay, discoloration or mold.

The combinations according to the present invention are particularly effective against powdery mildews; rusts; leafspot species; early blights and molds; especially against Septoria, Puccinia, Erysiphe, Pyrenophora and Tapesia in cereals; Phakopsora in soybeans; Hemileia in coffee; Phragmidium in roses; Alternaria in potatoes, tomatoes and cucurbits; Sclerotinia in turf, vegetables, sunflower and oil seed rape; black rot, red fire, powdery mildew, grey mold and dead arm disease in vine; Botrytis cinerea in fruits; Monilinia spp. in fruits and Penicillium spp. in fruits.
The combinations according to the present invention are furthermore particularly effective against seedborne and soilborne diseases, such as Alternaria spp., Ascochyta spp., Botrytis cinerea, Cercospora spp., Claviceps purpurea, Cochliobolus sativus, Colletotrichum spp., Epicoccum spp., Fusarium graminearum, Fusarium moniliforme, Fusarium oxysporum, Fusarium proliferatum, Fusarium solani, Fusarium subglutinans, Gäumannomyces graminis , Helminthosporium spp., Microdochium nivale, Phoma spp., Pyrenophora graminea, Pyricularia oryzae, Rhizoctonia solani, Rhizoctonia cerealis, Sclerotinia spp., Septoria spp., Sphacelotheca reilliana, Tilletia spp., Typhula incarnata, Urocystis occulta, Ustilago spp. or Verticillium spp.; in particular against pathogens of cereals, such as wheat, barley, rye or oats; maize; rice; cotton; soybean; turf; sugarbeet; oil seed rape; potatoes; pulse crops, such as peas, lentils or chickpea; and sunflower.
The combinations according to the present invention are furthermore particularly effective against post harvest diseasese such as Botrytis cinerea, Colletotrichum musae, Curvularia lunata, Fusarium semitecum, Geotrichum candidum, Monilinia fructicola, Monilinia fructigena, Monilinia laxa, Mucor piriformis, Penicilium italicum, Penicilium solitum, Penicillium digitatum or Penicillium expansum in particular against pathogens of fruits, such as pomefruits, for example apples and pears, stone fruits, for example peaches and plums, citrus, melons, papaya, kiwi, mango, berries, for example strawberries, avocados, pomegranates and bananas, and nuts.

The amount of a combination of the invention to be applied, will depend on various factors, such as the compounds employed; the subject of the treatment, such as, for example plants, soil or seeds; the type of treatment, such as, for example spraying, dusting or seed dressing;

the purpose of the treatment, such as, for example prophylactic or therapeutic; the type of fungi to be controlled or the application time.

It has been found that the use of components B) in combination with the compound of formula I surprisingly and substantially enhance the effectiveness of the latter against fungi, and vice versa. Additionally, the method of the invention is effective against a wider spectrum of such fungi that can be combated with the active ingredients of this method, when used solely.

The weight ratio of A):B) is so selected as to give a synergistic activity. In general the weight ratio of A) : B) is between 2000 : 1 and 1 : 1000, preferably between 100 : 1 and 1: 100, more preferably between 20 : 1 and 1: 50.

The synergistic activity of the combination is apparent from the fact that the fungicidal activity of the composition of A) + B) is greater than the sum of the fungicidal activities of A) and B).

The method of the invention comprises applying to the useful plants, the locus thereof or propagation material thereof in admixture or separately, a synergistically effective aggregate amount of a compound of formula I and a compound of component B).

Some of said combinations according to the invention have a systemic action and can be used as foliar, soil and seed treatment fungicides.

With the combinations according to the invention it is possible to inhibit or destroy the phytopathogenic microorganisms which occur in plants or in parts of plants (fruit, blossoms, leaves, stems, tubers, roots) in different useful plants, while at the same time the parts of plants which grow later are also protected from attack by phytopathogenic microorganisms.

The combinations of the present invention are of particular interest for controlling a large number of fungi in various useful plants or their seeds, especially in field crops such as potatoes, tobacco and sugarbeets, and wheat, rye, barley, oats, rice, maize, lawns, cotton, soybeans, oil seed rape, pulse crops, sunflower, coffee, sugarcane, fruit and ornamentals in horticulture and viticulture, in vegetables such as cucumbers, beans and cucurbits.

The combinations according to the invention are applied by treating the fungi, the useful plants, the locus thereof, the propagation material thereof, the natural substances of plant and/or animal origin, which have been taken from the natural life cycle, and/or their processed forms, or the industrial materials threatened by fungus attack with a combination of components A) and B) in a synergistically effective amount.

The combinations according to the invention may be applied before or after infection of the useful plants, the propagation material thereof, the natural substances of plant and/or animal origin, which have been taken from the natural life cycle, and/or their processed forms, or the industrial materials by the fungi.

The combinations according to the invention are particularly useful for controlling the following plant diseases:

Alternaria species in fruit and vegetables,

Ascochyta species in pulse crops,

Botrytis cinerea in strawberries, tomatoes, sunflower, pulse crops, vegetables and grapes,

Cercospora arachidicola in peanuts,

Cochliobolus sativus in cereals,

Colletotrichum species in pulse crops,

Erysiphe species in cereals,

Erysiphe cichoracearum and Sphaerotheca fuliginea in cucurbits,

Fusarium species in cereals and maize,

Gäumannomyces graminis in cereals and lawns,

Helminthosporium species in maize, rice and potatoes,

Hemileia vastatrix on coffee,

Microdochium species in wheat and rye,

Phakopsora species in soybean,

Puccinia species in cereals, broadleaf crops and perrenial plants,

Pseudocercosporella species in cereals,

Phragmidium mucronatum in roses,

Podosphaera species in fruits,

Pyrenophora species in barley,

Pyricularia oryzae in rice,

Ramularia collo-cygni in barley,

Rhizoctonia species in cotton, soybean, cereals, maize, potatoes, rice and lawns,
Rhynchosporium secalis in barley and rye,
Sclerotinia species in lawns, lettuce, vegetables and oil seed rape,
Septoria species in cereals, soybean and vegetables,
Sphacelotheca reilliana in maize,
Tilletia species in cereals,
Uncinula necator, Guignardia bidwellii and Phomopsis viticola in vines,
Urocystis occulta in rye,
Ustilago species in cereals and maize,
Venturia species in fruits,
Monilinia species on fruits,
Penicillium species on citrus and apples.

The combinations according to the invention are preventively and/or curatively valuable active ingredients in the field of pest control, even at low rates of application, which have a very favorable biocidal spectrum and are well tolerated by warm-blooded species, fish and plants. The active ingredients according to the invention which are partially known for their insecticidal action act against all or individual developmental stages of normally sensitive, but also resistant, animal pests, such as insects or representatives of the order Acarina. The insecticidal or acaricidal activity of the combinations according to the invention can manifest itself directly, i.e. in destruction of the pests, which takes place either immediately or only after some time has elapsed, for example during ecdysis, or indirectly, for example in a reduced oviposition and/or hatching rate, a good activity corresponding to a destruction rate (mortality) of at least 50 to 60%.

Examples of the abovementioned animal pests are:
from the order *Acarina*, for example,
Acarus siro, Aceria sheldoni, Aculus schlechtendali, Amblyomma spp., Argas spp., Boophilus spp., Brevipalpus spp., Bryobia praetiosa, Calipitrimerus spp., Chorioptes spp., Dermanyssus gallinae, Eotetranychus carpini, Eriophyes spp., Hyalomma spp., Ixodes spp., Oligonychus pratensis, Omithodoros spp., Panonychus spp., Phyllocoptruta oleivora, Polyphagotarsonemus latus, Psoroptes spp., Rhipicephalus spp., Rhizoglyphus spp., Sarcoptes spp., Tarsonemus spp. and Tetranychus spp.;
from the order *Anoplura*, for example,

Haematopinus spp., Linognathus spp., Pediculus spp., Pemphigus spp. and Phylloxera spp.;
from the order *Coleoptera*, for example,
Agriotes spp., Anthonomus spp., Atomaria linearis, Chaetocnema tibialis, Cosmopolites spp., Curculio spp., Dermestes spp., Diabrotica spp., Epilachna spp., Eremnus spp., Leptinotarsa decemlineata, Lissorhoptrus spp., Melolontha spp., Orycaephilus spp., Otiorhynchus spp., Phlyctinus spp., Popillia spp., Psylliodes spp., Rhizopertha spp., Scarabeidae, Sitophilus spp., Sitotroga spp., Tenebrio spp., Tribolium spp. and Trogoderma spp.;
from the order *Diptera*, for example,
Aedes spp., Antherigona soccata, Bibio hortulanus, Calliphora erythrocephala, Ceratitis spp., Chrysomyia spp., Culex spp., Cuterebra spp., Dacus spp., Drosophila melanogaster, Fannia spp., Gastrophilus spp., Glossina spp., Hypoderma spp., Hyppobosca spp., Liriomyza spp., Lucilia spp., Melanagromyza spp., Musca spp., Oestrus spp., Orseolia spp., Oscinella frit, Pegomyia hyoscyami, Phorbia spp., Rhagoletis pomonella, Sciara spp., Stomoxys spp., Tabanus spp., Tannia spp. and Tipula spp.;
from the order *Heteroptera*, for example,
Cimex spp., Distantiella theobroma, Dysdercus spp., Euchistus spp., Eurygaster spp., Leptocorisa spp., Nezara spp., Piesma spp., Rhodnius spp., Sahlbergella singularis, Scotinophara spp. and Triatoma spp.;
from the order *Homoptera*, for example,
Aleurothrixus floccosus, Aleyrodes brassicae, Aonidiella spp., Aphididae, Aphis spp., Aspidiotus spp., Bemisia tabaci, Ceroplaster spp., Chrysomphalus aonidium, Chrysomphalus dictyospermi, Coccus hesperidum, Empoasca spp., Eriosoma larigerum, Erythroneura spp., Gascardia spp., Laodelphax spp., Lecanium corni, Lepidosaphes spp., Macrosiphus spp., Myzus spp., Nephotettix spp., Nilaparvata spp., Parlatoria spp., Pemphigus spp., Planococcus spp., Pseudaulacaspis spp., Pseudococcus spp., Psylla spp., Pulvinaria aethiopica, Quadraspidiotus spp., Rhopalosiphum spp., Saissetia spp., Scaphoideus spp., Schizaphis spp., Sitobion spp., Trialeurodes vaporariorum, Trioza erytreae and Unaspis citri;
from the order *Hymenoptera*, for example,
Acromyrmex, Atta spp., Cephus spp., Diprion spp., Diprionidae, Gilpinia polytoma, Hoplocampa spp., Lasius spp., Monomorium pharaonis, Neodiprion spp., Solenopsis spp. and Vespa spp.;
from the order *Isoptera*, for example,
Reticulitermes spp.;
from the order *Lepidoptera*, for example,

Acleris spp., Adoxophyes spp., Aegeria spp., Agrotis spp., Alabama argillaceae, Amylois spp., Anticarsia gemmatalis, Archips spp., Argyrotaenia spp., Autographa spp., Busseola fusca, Cadra cautella, Carposina nipponensis, Chilo spp., Choristoneura spp., Clysia ambiguella, Cnaphalocrocis spp., Cnephasia spp., Cochylis spp., Coleophora spp., Crocidolomia binotalis, Cryptophlebia leucotreta, Cydia spp., Diatraea spp., Diparopsis castanea, Earias spp., Ephestia spp., Eucosma spp., Eupoecilia ambiguella, Euproctis spp., Euxoa spp., Grapholita spp., Hedya nubiferana, Heliothis spp., Hellula undalis, Hyphantria cunea, Keiferia lycopersicella, Leucoptera scitella, Lithocollethis spp., Lobesia botrana, Lymantria spp., Lyonetia spp., Malacosoma spp., Mamestra brassicae, Manduca sexta, Operophtera spp., Ostrinia nubilalis, Pammene spp., Pandemis spp., Panolis flammea, Pectinophora gossypiella, Phthorimaea operculella, Pieris rapae, Pieris spp., Plutella xylostella, Prays spp., Scirpophaga spp., Sesamia spp., Sparganothis spp., Spodoptera spp., Synanthedon spp., Thaumetopoea spp., Tortrix spp., Trichoplusia ni and Yponomeuta spp.;

from the order *Mallophaga*, for example,

Damalinea spp. and Trichodectes spp.;

from the order *Orthoptera*, for example,

Blatta spp., Blattella spp., Gryllotalpa spp., Leucophaea maderae, Locusta spp., Periplaneta spp. and Schistocerca spp.;

from the order *Psocoptera*, for example,

Liposcelis spp.;

from the order *Siphonaptera*, for example,

Ceratophyllus spp., Ctenocephalides spp. and Xenopsylla cheopis;

from the order *Thysanoptera*, for example,

Frankliniella spp., Hercinothrips spp., Scirtothrips aurantii, Taeniothrips spp., Thrips palmi and Thrips tabaci;

from the order *Thysanura*, for example,

Lepisma saccharina;

nematodes, for example root knot nematodes, stem eelworms and foliar nematodes; especially Heterodera spp., for example Heterodera schachtii, Heterodora avenae and Heterodora trifolii; Globodera spp., for example Globodera rostochiensis; Meloidogyne spp., for example Meloidogyne incoginita and Meloidogyne javanica; Radopholus spp., for example Radopholus similis; Pratylenchus, for example Pratylenchus neglectans and Pratylenchus penetrans; Tylenchulus, for example Tylenchulus semipenetrans; Longidorus, Trichodorus, Xiphinema, Ditylenchus, Aphelenchoides and Anguina;

crucifer flea beetles (Phyllotreta spp.);
root maggots (Delia spp.) and
cabbage seedpod weevil (Ceutorhynchus spp.).

The combinations according to the invention can be used for controlling, i. e. containing or destroying, animal pests of the abovementioned type which occur on useful plants in agriculture, in horticulture and in forests, or on organs of useful plants, such as fruits, flowers, foliage, stalks, tubers or roots, and in some cases even on organs of useful plants which are formed at a later point in time remain protected against these animal pests.

When applied to the useful plants the compound of formula I is applied at a rate of 5 to 2000 g a.i./ha, particularly 10 to 1000 g a.i./ha, e.g. 50, 75, 100 or 200 g a.i./ha, in association with 1 to 5000 g a.i./ha, particularly 2 to 2000 g a.i./ha, e.g. 100, 250, 500, 800, 1000, 1500 g a.i./ha of a compound of component B), depending on the class of chemical employed as component B).

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

When the combinations of the present invention are used for treating seed, rates of 0.001 to 50 g of a compound of formula I per kg of seed, preferably from 0.01 to 10g per kg of seed, and 0.001 to 50 g of a compound of component B), per kg of seed, preferably from 0.01 to 10g per kg of seed, are generally sufficient.

The invention also provides fungicidal compositions comprising a compound of formula I and a compound of component B) in a synergistically effective amount.

The composition of the invention may be employed in any conventional form, for example in the form of a twin pack, a powder for dry seed treatment (DS), an emulsion for seed treatment (ES), a flowable concentrate for seed treatment (FS), a solution for seed treatment (LS), a water dispersible powder for seed treatment (WS), a capsule suspension for seed treatment (CF), a gel for seed treatment (GF), an emulsion concentrate (EC), a suspension concentrate (SC), a suspo-emulsion (SE), a capsule suspension (CS), a water dispersible

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

Such compositions may be produced in conventional manner, e.g. by mixing the active ingredients with appropriate formulation inerts (diluents, solvents, fillers and optionally other formulating ingredients such as surfactants, biocides, anti-freeze, stickers, thickeners and compounds that provide adjuvancy effects). Also conventional slow release formulations may be employed where long lasting efficacy is intended. Particularly formulations to be applied in spraying forms, such as water dispersible concentrates (e.g. EC, SC, DC, OD, SE, EW, EO and the like), wettable powders and granules, may contain surfactants such as wetting and dispersing agents and other compounds that provide adjuvancy effects, e.g. the condensation product of formaldehyde with naphthalene sulphonate, an alkylarylsulphonate, a lignin sulphonate, a fatty alkyl sulphate, and ethoxylated alkylphenol and an ethoxylated fatty alcohol.

A seed dressing formulation is applied in a manner known per se to the seeds employing the combination of the invention and a diluent in suitable seed dressing formulation form, e.g. as an aqueous suspension or in a dry powder form having good adherence to the seeds. Such seed dressing formulations are known in the art. Seed dressing formulations may contain the single active ingredients or the combination of active ingredients in encapsulated form, e.g. as slow release capsules or microcapsules.

In general, the formulations include from 0.01 to 90% by weight of active agent, from 0 to 20% agriculturally acceptable surfactant and 10 to 99.99% solid or liquid formulation inerts and adjuvant(s), the active agent consisting of at least the compound of formula I together with a compound of component B), and optionally other active agents, particularly microbiocides or conservatives or the like. Concentrated forms of compositions generally contain in between about 2 and 80%, preferably between about 5 and 70% by weight of active agent. Application forms of formulation may for example contain from 0.01 to 20% by weight, preferably from 0.01 to 5% by weight of active agent. Whereas commercial products

will preferably be formulated as concentrates, the end user will normally employ diluted formulations.

The Examples which follow serve to illustrate the invention, "active ingredient" denoting a mixture of compound I and a compound of component B) in a specific mixing ratio.

Formulation Examples

Wettable powders	a)	b)	c)
active ingredient [I : comp B) = 1:3(a), 1:2(b), 1:1(c)]	25 %	50 %	75 %
sodium lignosulfonate	5 %	5 %	-
sodium lauryl sulfate	3 %	-	5 %
sodium diisobutylnaphthalenesulfonate	-	6 %	10 %
phenol polyethylene glycol ether (7-8 mol of ethylene oxide)	-	2 %	-
highly dispersed silicic acid	5 %	10 %	10 %
Kaolin	62 %	27 %	-

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

Powders for dry seed treatment	a)	b)	c)
active ingredient [I : comp B) = 1:3(a), 1:2(b), 1:1(c)]	25 %	50 %	75 %
light mineral oil	5 %	5 %	5 %
highly dispersed silicic acid	5 %	5 %	-
Kaolin	65 %	40 %	-
Talcum	-		20

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

Emulsifiable concentrate	
active ingredient (I : comp B) = 1:6)	10 %
octylphenol polyethylene glycol ether (4-5 mol of ethylene oxide)	3 %

calcium dodecylbenzenesulfonate	3 %
castor oil polyglycol ether (35 mol of ethylene oxide)	4 %
Cyclohexanone	30 %
xylene mixture	50 %

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

Dusts	a)	b)	c)
Active ingredient [I : comp B) = 1:6(a), 1:2(b), 1:10(c)]	5 %	6 %	4 %
talcum	95 %	-	-
Kaolin	-	94 %	-
mineral filler	-	-	96 %

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

Extruder granules	
Active ingredient (I : comp B) = 2:1)	15 %
sodium lignosulfonate	2 %
carboxymethylcellulose	1 %
Kaolin	82 %

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

Coated granules	
Active ingredient (I :comp B) = 1:10)	8 %
polyethylene glycol (mol. wt. 200)	3 %
Kaolin	89 %

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

Suspension concentrate	
active ingredient (I : comp B) = 1:8)	40 %
propylene glycol	10 %

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

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

Flowable concentrate for seed treatment

active ingredient (I : comp B) = 1:8)	40 %
propylene glycol	5 %
copolymer butanol PO/EO	2 %
tristyrenephenole with 10-20 moles EO	2 %
1,2-benzisothiazolin-3-one (in the form of a 20% solution in water)	0.5 %
monoazo-pigment calcium salt	5 %
Silicone oil (in the form of a 75 % emulsion in water)	0.2 %
Water	45.3 %

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

Slow Release Capsule Suspension

28 parts of a combination of the compound of formula I and a compound of component B), or of each of these compounds separately, are mixed with 2 parts of an aromatic solvent and 7 parts of toluene diisocyanate/polymethylene-polyphenylisocyanate-mixture (8:1). This mixture is emulsified in a mixture of 1.2 parts of polyvinylalcohol, 0.05 parts of a defoamer and 51.6 parts of water until the desired particle size is achieved. To this emulsion a mixture

of 2.8 parts 1,6-diaminohexane in 5.3 parts of water is added. The mixture is agitated until the polymerization reaction is completed.
The obtained capsule suspension is stabilized by adding 0.25 parts of a thickener and 3 parts of a dispersing agent. The capsule suspension formulation contains 28% of the active ingredients. The medium capsule diameter is 8-15 microns.
The resulting formulation is applied to seeds as an aqueous suspension in an apparatus suitable for that purpose.

Biological Examples

A synergistic effect exists whenever the action of an active ingredient combination is greater than the sum of the actions of the individual components.

The action to be expected E for a given active ingredient combination obeys the so-called COLBY formula and can be calculated as follows (COLBY, S.R. "Calculating synergistic and antagonistic responses of herbicide combination". Weeds, Vol. 15, pages 20-22; 1967):
ppm = milligrams of active ingredient (= a.i.) per liter of spray mixture
X = % action by active ingredient A) using p ppm of active ingredient
Y = % action by active ingredient B) using q ppm of active ingredient.

According to COLBY, the expected (additive) action of active ingredients A)+B) using p+q ppm of active ingredient is $E = X + Y - \frac{X \cdot Y}{100}$

If the action actually observed (O) is greater than the expected action (E), then the action of the combination is super-additive, i.e. there is a synergistic effect. In mathematical terms the synergism factor SF corresponds to O/E. In the agricultural practice an SF of ≥1.2 indicates significant improvement over the purely complementary addition of activities (expected activity), while an SF of ≤0.9 in the practical application routine signals a loss of activity compared to the expected activity.

Example B-1: Action against Botrytis cinerea on grapes

a) Fungal growth assay

Conidia of the fungus from cryogenic storage were directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of the test compounds into a microtiter plate (96-well format) the nutrient broth containing the fungal spores was added.

The test plates were incubated at 24°C and the inhibition of growth was determined photometrically after 48-72hrs. The fungicide interactions in the combinations are calculated according to COLBY method.

Control of *Botrytis cinerea*				
Dosage in mg active ingredient / liter final medium				
Cpd Ic in ppm	Azoxystrobin in ppm	Expected control in % ($\%C_{exp}$)	Observed control in % ($\%C_{obs}$)	Synergy Factor SF= $\%C_{obs}/\%C_{exp}$
[mg/L]	[mg/L]	expected	observed	Factor
0.0222	-	-	23	-
0.0074	-	-	10	-
0.0025	-	-	0	-
-	1.80	-	14	-
-	0.60	-	7	-
0.0222	1.80	34	54	1.6
0.0074	1.80	22	34	1.5
0.0025	1.80	14	27	1.9
0.0222	0.60	28	43	1.5
0.0074	0.60	16	31	1.9
0.0025	0.60	7	16	2.2

Control of *Botrytis cinerea*				
Dosage in mg active ingredient / liter final medium				
Cpd Ic in ppm	Prothio-conazole in ppm	Expected control in % ($\%C_{exp}$)	Observed control in % ($\%C_{obs}$)	Synergy Factor SF= $\%C_{obs}/\%C_{exp}$
[mg/L]	[mg/L]	expected	observed	Factor
-	0.2000	-	52	-
-	0.0667	-	17	-
-	0.0222	-	8	-
0.0667	-	-	35	-
0.0222	-	-	18	-
0.0222	0.2000	60	94	1.5

Control of *Botrytis cinerea*

Dosage in mg active ingredient / liter final medium				
Cpd Ic in ppm	Picoxystrobin in ppm	Expected control in % ($\%C_{exp}$)	Observed control in % ($\%C_{obs}$)	Synergy Factor SF= $\%C_{obs}/\%C_{exp}$
[mg/L]	[mg/L]	expected	observed	Factor
-	0.6000	-	20	-
-	0.2000	-	12	-
-	0.0667	-	6	-
-	0.0222	-	0	-
0.2000	-	-	71	-
0.0667	-	-	28	-
0.0222	-	-	12	-
0.0222	0.6000	29	88	3.0
0.0222	0.2000	22	88	4.0
0.0222	0.0667	17	85	4.9

In comparative examples B-1 to B-8 as component A) a specific compound of formula Ic was used. Said compound of formula Ic was a compound of formula Ic, which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the ratio of the racemic compound of formula Ia (syn), which represents a racemic mixture of the single enantiomers of formulae I_{III} and I_{IV}, to the racemic compound of formula Ib (anti), which represents a racemic mixture of the single enantiomers of formula I_V and I_{VI}, was 9 : 1.

b) Protective Treatment

5 week old grape seedlings cv. Gutedel are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. Two days after application, the grape plants are inoculated by spraying a spore suspension ($1x10^6$ conidia/ml) on the test plants. After an incubation period of 4 days at 21°C and 95% relative humidity in a greenhouse the disease incidence is assessed. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-2: Action against Septoria tritici on wheat

a) Fungal growth assay

Conidia of the fungus from cryogenic storage were directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of the test compounds into a microtiter plate (96-well format) the nutrient broth containing the fungal spores was added.

The test plates were incubated at 24°C and the inhibition of growth was determined photometrically after 72 hrs. The fungicide interactions in the combinations are calculated according to COLBY method.

Control of *Septoria tritici*				
Cpd Ic in ppm	Propi-conazole in ppm	Expected control in % ($\%C_{exp}$)	Observed control in % ($\%C_{obs}$)	Synergy Factor SF= $\%C_{obs}/\%C_{exp}$
[mg/L]	[mg/L]	expected	observed	Factor
0.0008	-	-	13	-
0.0001	-	-	1	-
-	0.067	-	7	-
-	0.007	-	0	-
0.0008	0.067	19	34	1.8
0.0001	0.007	1	8	6.4

b) Protective Treatment

2 week old wheat plants cv. Riband are treated with the formulated test compound (0.2% active ingredient) in a spray chamber. One day after application, wheat plants are inoculated by spraying a spore suspension ($10x10^5$conidia/ml) on the test plants. After an incubation period of 1 day at 23°C and 95% relative humidity, the plants are kept for 16 days at 23°C and 60% relative humidity in a greenhouse. The disease incidence is assessed 18 days after inoculation. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-3: Action against Pyricularia oryzae on rice

a) Fungal growth assay

Conidia of the fungus from cryogenic storage were directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of the test compounds into a microtiter plate (96-well format) the nutrient broth containing the fungal spores was added. The test plates were incubated at 24°C and the inhibition of growth was determined photometrically after 72 hrs. The fungicide interactions in the combinations are calculated according to COLBY method.

Control of *Pyricularia oryzae*
Dosage in mg active ingredient / liter final medium

Cpd Ic in ppm	Cyprodinil in ppm	Expected control in % ($\%C_{exp}$)	Observed control in % ($\%C_{obs}$)	Synergy Factor SF= $\%C_{obs}/\%C_{exp}$
[mg/L]	[mg/L]	expected	observed	Factor
0.0222	-	-	59	-
0.0074	-	-	33	-
0.0025	-	-	13	-
-	0.067	-	0	-
-	0.007	-	0	-
-	0.002	-	0	-
0.0074	0.067	33	42	1.3
0.0074	0.007	33	40	1.2
0.0074	0.002	33	41	1.3

Control of *Pyricularia oryzae*				
Dosage in mg active ingredient / liter final medium				
Cpd Ic in ppm	Chloro-thalonil in ppm	Expected control in % ($\%C_{exp}$)	Observed control in % ($\%C_{obs}$)	Synergy Factor SF= $\%C_{obs}/\%C_{exp}$
[mg/L]	[mg/L]	expected	observed	Factor
0.0222	-	-	59	-
0.0074	-	-	33	-
0.0025	-	-	13	-
-	0.067	-	0	-
-	0.007	-	0	-
-	0.002	-	0	-
0.0074	0.067	33	42	1.3
0.0074	0.007	33	40	1.2
0.0074	0.002	33	41	1.3

Control of *Pyricularia oryzae*				
Cpd Ic in ppm	Cyprocona-zole in ppm	Expected control in % ($\%C_{exp}$)	Observed control in % ($\%C_{obs}$)	Synergy Factor SF= $\%C_{obs}/\%C_{exp}$

[mg/L]	[mg/L]	expected	observed	Factor
0.0025	-	-	6	-
0.0008	-	-	3	-
0.0001	-	-	2	-
-	0.200	-	0	-
-	0.022	-	0	-
0.0025	0.200	6	11	1.8
0.0008	0.200	3	9	3.2
0.0001	0.200	2	4	2.0
0.0025	0.022	6	16	2.7
0.0008	0.022	3	5	1.7
0.0001	0.022	2	3	1.2

b) Protective Treatment

Rice leaf segments are placed on agar in multiwell plates (24-well format) and sprayed with test solutions. After drying, the leaf disks are inoculated with a spore suspension of the fungus. After appropriate incubation the activity of a compound is assessed 96 hrs after inoculation as preventive fungicidal activity. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-4: Action against Altemaria solani (early blight)

a) Fungal growth assay

Conidia -harvested from a freshly grown colony- of the fungus were directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of the test compounds into a microtiter plate (96-well format) the nutrient broth containing the fungal spores was added. The test plates were incubated at 24°C and the inhibition of growth was determined photometrically after 48 hrs. The fungicide interactions in the combinations are calculated according to COLBY method.

Control of *Alternaria solani*				
Dosage in mg active ingredient / liter final medium				
Cpd Ic in ppm	Fludioxonil in ppm	Expected control in % ($\%C_{exp}$)	Observed control in % ($\%C_{obs}$)	Synergy Factor SF= $\%C_{obs}/\%C_{exp}$
[mg/L]	[mg/L]	expected	observed	Factor
0.0074	-	-	27	-
0.0025	-	-	8	-

-	0.067	-	24	-
-	0.022	-	1	-
0.0074	0.067	44	62	1.4
0.0025	0.067	30	45	1.5
0.0074	0.022	27	37	1.3
0.0025	0.022	9	11	1.3

b) Protective Treatment

4 week old tomato plants cv. Roter Gnom are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. Two days after application, the tomato plants are inoculated by spraying a spore suspension ($2x10^5$conidia/ml) on the test plants. After an incubation period of 3 days at 20°C and 95% relative humidity in a growth chamber the disease incidence is assessed. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-5: Action against Pyrenophora teres (Net blotch)

a) Fungal growth assay

Conidia of the fungus from cryogenic storage were directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of the test compounds into a microtiter plate (96-well format) the nutrient broth containing the fungal spores was added. The test plates were incubated at 24°C and the inhibition of growth was determined photometrically after 48 hrs. The fungicide interactions in the combinations are calculated according to COLBY method.

Control of *Pyrenophora teres*				
Cpd Ic in ppm	Cpd F-1 in ppm	Expected control in % ($\%C_{exp}$)	Observed control in % ($\%C_{obs}$)	Synergy Factor SF= $\%C_{obs}/\%C_{exp}$
[mg/L]	[mg/L]	expected	observed	Factor
-	16.2	-	6	-
-	5.4	-	2	-
0.2000	-	-	55	-
0.0667	-	-	37	-
0.2000	16.2	58	73	1.3
0.2000	5.4	56	72	1.3
0.0667	16.2	41	56	1.4

0.0667	5.4	38	57	1.5

b) Protective Treatment

Barley leaf segments are placed on agar in multiwell plates (24-well format) and sprayed with test solutions. After drying, the leaf disks are inoculated with a spore suspension of the fungus. After appropriate incubation the activity of a compound is assessed 96 hrs after inoculation as preventive fungicidal activity. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-6: Action against Venturia inaequalis on apple

a) Fungal growth assay

Conidia of the fungus from cryogenic storage were directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of the test compounds into a microtiter plate (96-well format) the nutrient broth containing the fungal spores was added. The test plates were incubated at 24°C and the inhibition of growth was determined photometrically after 144 hrs. The fungicide interactions in the combinations are calculated according to COLBY method.

Control of *Venturia inaequalis*				
Cpd Ic in ppm	Cpd B-1 in ppm	Expected control in % ($\%C_{exp}$)	Observed control in % ($\%C_{obs}$)	Synergy Factor SF= $\%C_{obs}/\%C_{exp}$
[mg/L]	[mg/L]	expected	observed	Factor
-	0.0074	-	61	-
-	0.0025	-	32	-
-	0.0008	-	17	-
0.2000	-	-	59	-
0.0667	-	-	18	-
0.0222	-	-	6	-
0.0667	0.0025	44	55	1.2
0.0667	0.0008	32	57	1.8

Control of *Venturia inaequalis*

Cpd Ic in ppm	Fenpropi-morph in ppm	Expected control in % ($\%C_{exp}$)	Observed control in % ($\%C_{obs}$)	Synergy Factor SF= $\%C_{obs}/\%C_{exp}$
[mg/L]	[mg/L]	expected	observed	Factor
-	0.0222	-	33	-
-	0.0025	-	0	-
0.0667	-	-	18	-
0.0222	-	-	10	-
0.0222	0.0222	39	53	1.3
0.0222	0.0025	10	33	3.4

b) Protective Treatment

4 week old apple seedlings cv. McIntosh are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. One day after application, the apple plants are inoculated by spraying a spore suspension ($4x10^5$conidia/ml) on the test plants. After an incubation period of 4 days at 21°C and 95% relative humidity the plants are placed for 4 days at 21°C and 60% relative humidity in a greenhouse. After another 4 day incubation period at 21°C and 95% relative humidity the disease incidence is assessed. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-7: Action against Pythium ultimum (Damping off) - fungal growth assay

Mycelial fragments of the fungus, prepared from a fresh liquid culture, were directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of the test compounds into a microtiter plate (96-well format) the nutrient broth containing the fungal spores was added. The test plates were incubated at 24°C and the inhibition of growth was determined photometrically after 48 hrs. The fungicide interactions in the combinations are calculated according to COLBY method.

Control of *Pythium ultimum*				
Cpd Ic in ppm	Fenpro-pidin in ppm	Expected control in % ($\%C_{exp}$)	Observed control in % ($\%C_{obs}$)	Synergy Factor SF= $\%C_{obs}/\%C_{exp}$
[mg/L]	[mg/L]	expected	observed	Factor

-	16.2000	-	34	-
-	5.4000	-	11	-
0.6000	-	-	0	-
0.2000	-	-	0	-
0.0667	-	-	0	-
0.2000	16.2000	34	48	1.4

Example B-8: Action against Leptosphaeria nodorum (glume blotch) - fungal growth assay

Conidia of the fungus from cryogenic storage were directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of the test compounds into a microtiter plate (96-well format) the nutrient broth containing the fungal spores was added. The test plates were incubated at 24°C and the inhibition of growth was determined photometrically after 48 hrs. The fungicide interactions in the combinations are calculated according to COLBY method.

Control of *Leptosphaeria nodorum*				
Cpd Ic in ppm	Epoxi-conazole in ppm	Expected control in % ($\%C_{exp}$)	Observed control in % ($\%C_{obs}$)	Synergy Factor SF= $\%C_{obs}/\%C_{exp}$
[mg/L]	[mg/L]	expected	observed	Factor
-	0.0222	-	39	-
-	0.0025	-	9	-
0.0667	-	-	0	-
0.0222	-	-	0	-
0.0222	0.0222	39	91	2.3
0.0222	0.0025	9	21	2.3

Control of *Leptosphaeria nodorum*				
Cpd Ic in ppm	Difeno-conazole in ppm	Expected control in % ($\%C_{exp}$)	Observed control in % ($\%C_{obs}$)	Synergy Factor SF= $\%C_{obs}/\%C_{exp}$
[mg/L]	[mg/L]	expected	observed	Factor
-	0.0074	-	73	-
-	0.0025	-	16	-
-	0.0008	-	5	-

0.2000	-	-	0	-
0.0667	-	-	0	-
0.2000	0.0025	16	88	5.5
0.2000	0.0008	5	74	13.8
0.0667	0.0025	16	21	1.3
0.0667	0.0008	5	10	1.8

Example B-9: Action against Pseudocercosporella herpotrichoides var. acuformis (eyespot/cereals) - fungal growth assay

Conidia of the fungus from cryogenic storage were directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of the test compounds into a microtiter plate (96-well format) the nutrient broth containing the fungal spores was added. The test plates were incubated at 24°C and the inhibition of growth was determined photometrically after 72 hrs. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-10: Action against Ustilago maydis (corn smut) - fungal growth assay

Conidia of the fungus from cryogenic storage were directly mixed into nutrient broth (PDB potato dextrose broth). After placing a (DMSO) solution of the test compounds into a microtiter plate (96-well format) the nutrient broth containing the fungal spores was added. The test plates were incubated at 24°C and the inhibition of growth was determined photometrically after 48 hrs. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-11: Action against Phytophthora infestans (late blight) on tomato – protective treatment

Tomato leaf disks are placed on water agar in multiwell plates (24-well format) and sprayed with test solutions. After drying, the leaf disks are inoculated with a spore suspension of the fungus. After appropriate incubation the activity of a compound is assessed 96 hrs after inoculation as preventive fungicidal activity. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-12: Action against Plasmopara viticola (downy mildew) on grape vines – protective treatment

Grape vine leaf disks are placed on agar in multiwell plates (24-well format) and sprayed with test solutions. After drying, the leaf disks are inoculated with a spore suspension of the fungus. After appropriate incubation the activity of a compound is assessed 7 days after

inoculation as preventive fungicidal activity. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-13: Action against Botrytis cinerea (Grey mould) on beans – protective treatment

Bean leaf disks are placed on agar in multiwell plates (24-well format) and sprayed with test solutions. After drying, the leaf disks are inoculated with a spore suspension of the fungus. After appropriate incubation the activity of a compound is assessed 96 hrs after inoculation as preventive fungicidal activity. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-14: Action against Erysiphe graminis f.sp. hordei (Barley powdery mildew) on barley – protective treatment

Barley leaf segments are placed on agar in multiwell plates (24-well format) and sprayed with test solutions. After drying, the leaf disks are inoculated with a spore suspension of the fungus. After appropriate incubation the activity of a compound is assessed 96 hrs after inoculation as preventive fungicidal activity. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-15: Action against Erysiphe graminis f.sp. tritici (Wheat powdery mildew) on barley – protective treatment

Barley leaf segments are placed on agar in multiwell plates (24-well format) and sprayed with test solutions. After drying, the leaf disks are inoculated with a spore suspension of the fungus. After appropriate incubation the activity of a compound is assessed 96 hrs after inoculation as preventive fungicidal activity. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-16: Action against Puccinia recondita (Brown rust) on wheat

a) Protective Treatment of leaf segments

Wheat leaf segments are placed on agar in multiwell plates (24-well format) and sprayed with test solutions. After drying, the leaf disks are inoculated with a spore suspension of the fungus. After appropriate incubation the activity of a compound is assessed 9 days after inoculation as preventive fungicidal activity. The fungicide interactions in the combinations are calculated according to COLBY method.

b) Protective Treatment of plants

1 week old wheat plants cv. Arina are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. One day after application, the wheat plants

are inoculated by spraying a spore suspension (1x10^{5}uredospores/ml) on the test plants. After an incubation period of 2 days at 20°C and 95% relative humidity the plants are kept in a greenhouse for 8 days at 20°C and 60% relative humidity. The disease incidence is assessed 10 days after inoculation. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-17: Action against Septoria nodorum on wheat

a) Protective Treatment of leaf segments

Wheat leaf segments are placed on agar in multiwell plates (24-well format) and sprayed with test solutions. After drying, the leaf disks are inoculated with a spore suspension of the fungus. After appropriate incubation the activity of a compound is assessed 96 hrs after inoculation as preventive fungicidal activity. The fungicide interactions in the combinations are calculated according to COLBY method.

b) Protective Treatment of plants

1 week old wheat plants cv. Arina are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. One day after application, the wheat plants are inoculated by spraying a spore suspension (5x10^{5}conidia/ml) on the test plants. After an incubation period of 1 day at 20°C and 95% relative humidity the plants are kept for 10 days at 20°C and 60% relative humidity in a greenhouse. The disease incidence is assessed 11 days after inoculation. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-18: Action against Podosphaera leucotricha (Powdery mildew) on apple – protective treatment

5 week old apple seedlings cv. McIntosh are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. One day after, the application apple plants are inoculated by shaking plants infected with apple powdery mildew above the test plants. After an incubation period of 12 days at 22°C and 60% relative humidity under a light regime of 14/10hours (light/dark) the disease incidence is assessed. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-19: Action against Erysiphe graminis (Powdery mildew) on barley – protective treatment

1 week old barley plants cv. Regina are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. One day after application, the barley plants

are inoculated by shaking powdery mildew infected plants above the test plants. After an incubation period of 6 days at 20°C / 18°C (day/night) and 60% relative humidity in a greenhouse the disease incidence is assessed. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-20: Action against Botrytis cinerea on tomatoes – protective treatment

4 week old tomato plants cv. Roter Gnom are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. Two days after application, the tomato plants are inoculated by spraying a spore suspension ($1x10^5$conidia/ml) on the test plants. After an incubation period of 4 days at 20°C and 95% relative humidity in a growth chamber the disease incidence is assessed. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-21: Action against Helminthosporium teres (Net blotch) on barley – protective treatment

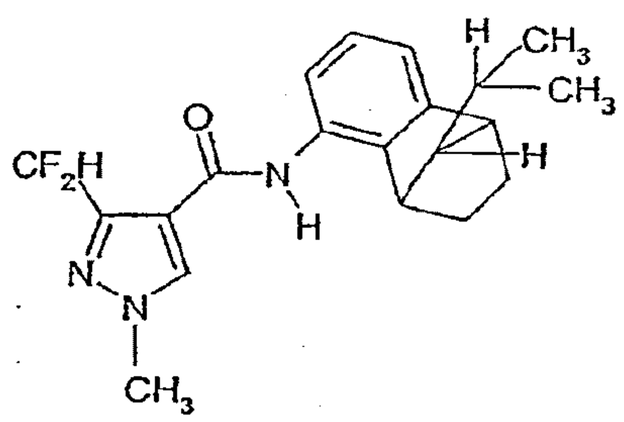
1 week old barley plants cv. Regina are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. Two days after application, the barley plants are inoculated by spraying a spore suspension ($3x10^4$conidia/ml) on the test plants. After an incubation period of 4 days at 20°C and 95% relative humditiy in a greenhouse the disease incidence is assessed. The fungicide interactions in the combinations are calculated according to COLBY method.

Example B-22: Action against Uncinula necator (Powdery mildew) on grapes – protective treatment

5 week old grape seedlings cv. Gutedel are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. One day after application, the grape plants are inoculated by shaking plants infected with grape powdery mildew above the test plants. After an incubation period of 7 days at 26°C and 60% relative humidity under a light regime of 14/10hours (light/dark) the disease incidence is assessed. The fungicide interactions in the combinations are calculated according to COLBY method.

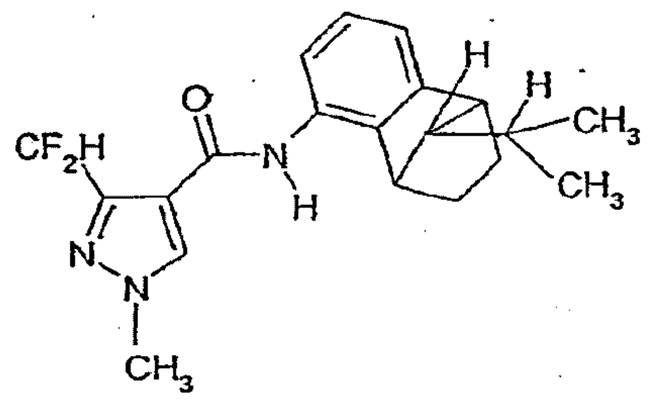
The combinations according to the invention exhibit good activity in all of the above examples.

A further aspect of the instant invention is a method of controlling phytopathogenic diseases on useful plants or plant propagation material thereof, which comprises applying to said plant propagation material, preferrably seeds, a fungicidally effective amount of a compound of formula I; especially a racemic compound of formula Ia (syn)



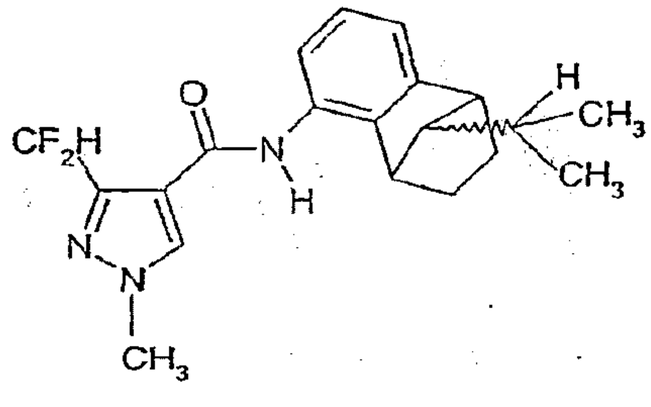
(Ia);

a racemic compound of formula Ib (anti)



(Ib);

a compound of formula Ic

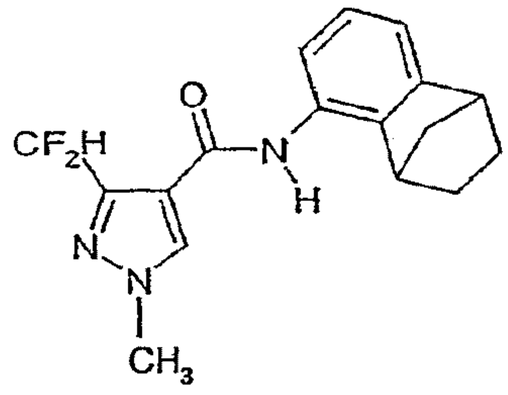


(Ic),

which represents an epimeric mixture of the racemic compounds of formula Ia (syn) and Ib (anti), wherein the ratio of racemic compounds of formula Ia (syn) to racemic compounds of formula Ib (anti) is from 1000 : 1 to 1 : 1000;

a compound of formula I, wherein R_1 is difluoromethyl and Y is $>C{=}CH_2$;

a compound of formula Id

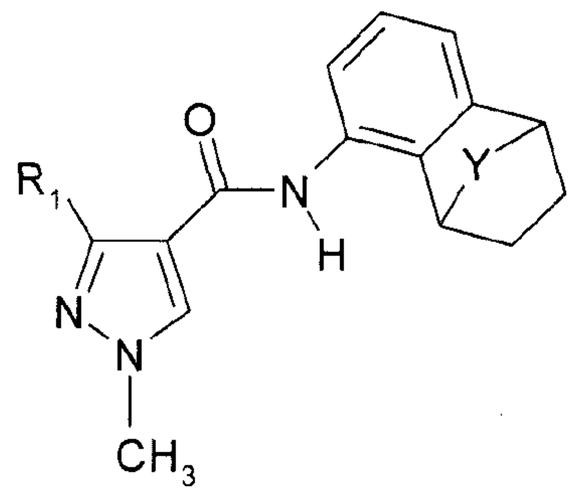


(Id);

or a tautomer of such a compound.

WHAT IS CLAIMED IS:

1. A method of controlling fungi on useful plants or on propagation material thereof, which comprises applying to the useful plants, the locus thereof or propagation material thereof a combination of components A) and B) in a synergistically effective amount, wherein component A) is a compound of formula I



(I),

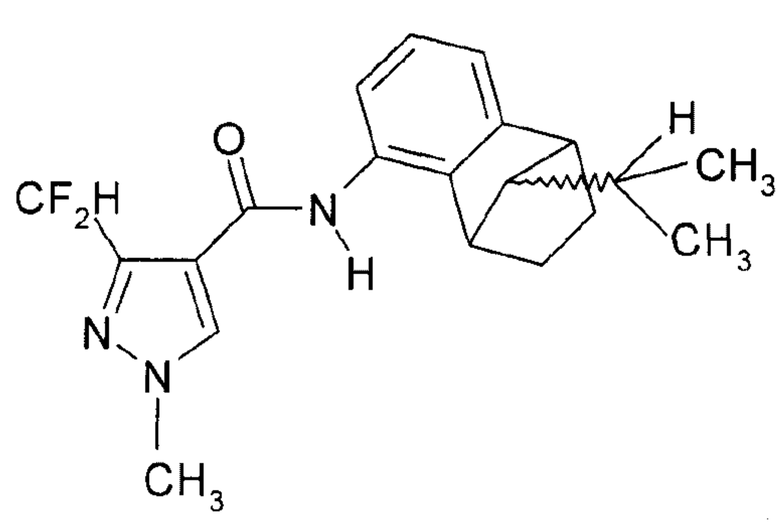
wherein

R_1 is difluoromethyl or trifluoromethyl; Y is $-CHR_2-$ or $>C=CH_2$ and R_2 is hydrogen or C_1-C_6alkyl; or a tautomer of such a compound; and
component B) is Chlorothalonil.

2. The method according to claim 1, wherein component A) is a compound of formula I, wherein R_1 is difluoromethyl or trifluoromethyl; Y is $-CHR_2-$ and R_2 is hydrogen or C_1-C_6alkyl.

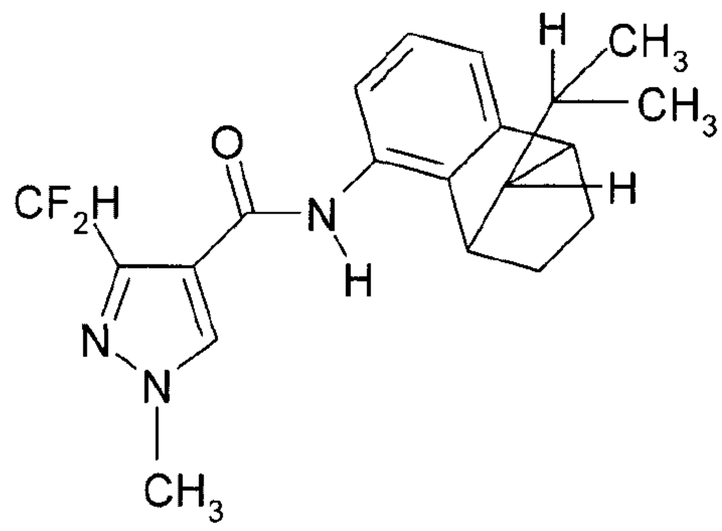
3. The method according to claim 1, wherein component A) is a compound of formula I, wherein R_1 is difluoromethyl, Y is $-CHR_2-$ and R_2 is isopropyl.

4. The method according to claim 3, wherein component A) is a compound of formula Ic



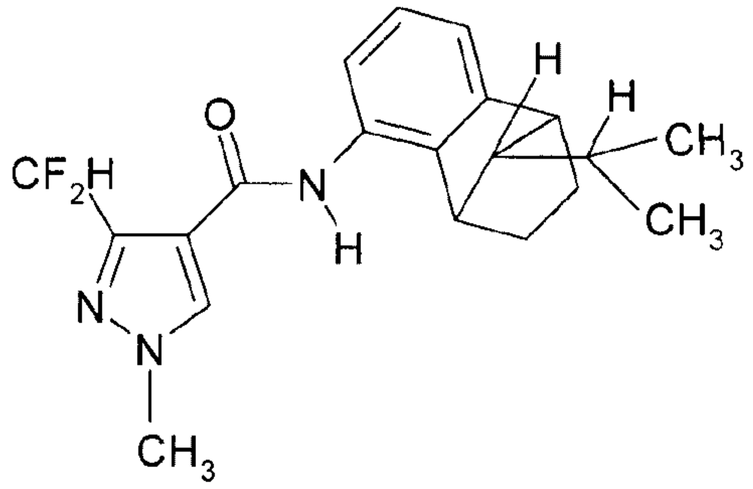
(Ic),

which represents an epimeric mixture of the racemic compounds of formula Ia (syn)



(Ia)

and the racemic compounds of formula Ib (anti)



(Ib),

wherein the ratio of the racemic compound of formula Ia (syn) to the racemic compound of formula Ib (anti) is from 1000 : 1 to 1 : 1000.

5. The method according to claim 4, wherein the content of the racemic compound of formula Ia (syn) is from 80 to 99 % by weight.

6. The method according to claim 1, wherein component A) is a compound of formula I, wherein R_1 is difluoromethyl and R_2 is hydrogen.

7. The method according to claim 1, wherein component A) is a compound of formula I, wherein R_1 is difluoromethyl and Y is $\diagdown\!\!\diagup C{=}CH_2$.

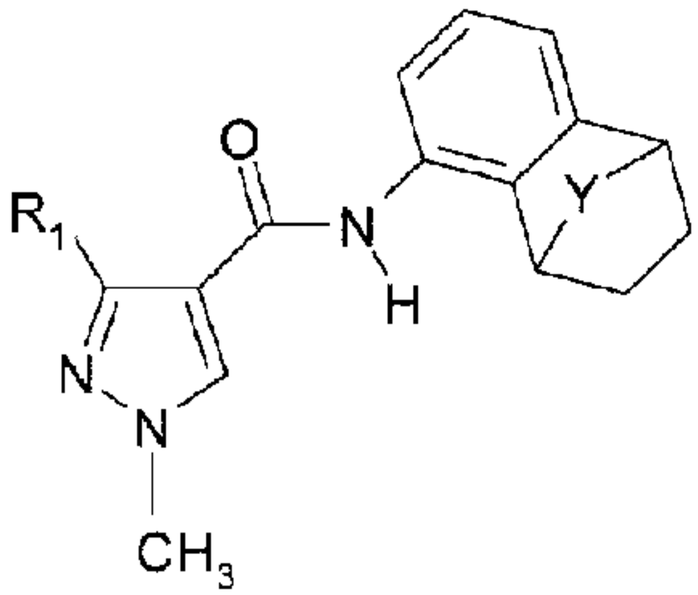
8. A fungicidal composition comprising a combination of components A) and B) as defined in any one of claims 1 to 7 in a synergistically fungicidally effective amount, together with an agriculturally acceptable carrier, and optionally a surfactant.

9. A fungicidal composition comprising a combination of components A) and B) as defined in any one of claims 1 to 7 together with an agriculturally acceptable carrier, and optionally a surfactant, wherein the weight ratio of A) to B) is between 2000 : 1 and 1 : 1000.

10. A method of protecting natural substances of plant origin, which have been taken from the natural life cycle, and/or their processed forms, which comprises applying to said natural substances of plant origin or their processed forms a combination of components A) and B) as defined in any one of claims 1 to 7 in a synergistically fungicidally effective amount.

11. A use of a combination of components A) and B) as defined in any one of claims 1 to 7 in a synergistically fungicidally effective amount in production of a composition for protecting a natural substance of animal origin, which has been taken from the natural life cycle, and/or a processed form thereof, against attack of fungi.

12. A use of a combination of components A) and B) as defined in any one of claims 1 to 7 in a synergistically fungicidally effective amount for protecting a natural substance of animal origin, which has been taken from the natural life cycle, and/or a processed form thereof, against attack of fungi.



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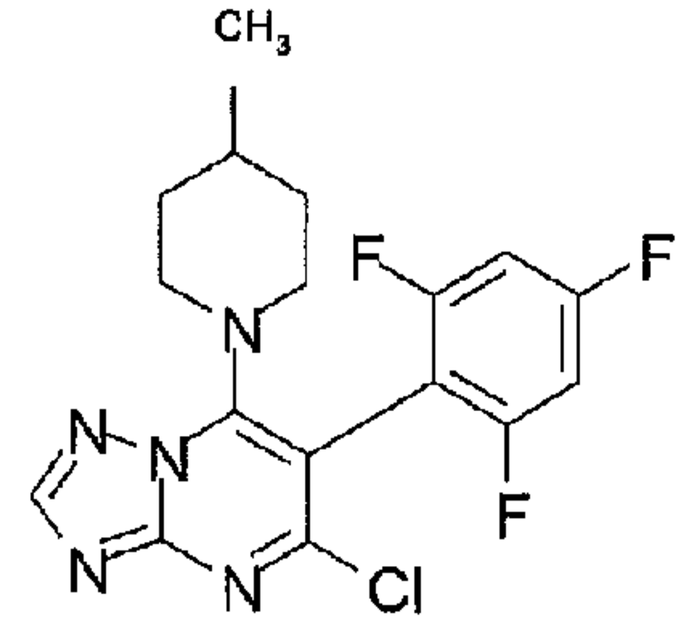
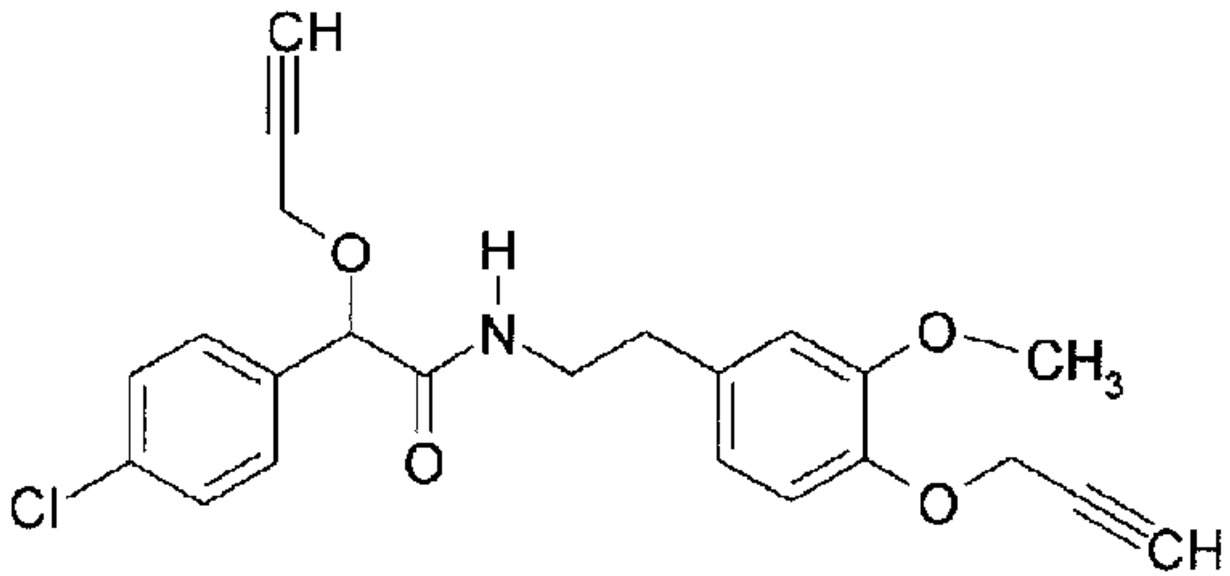
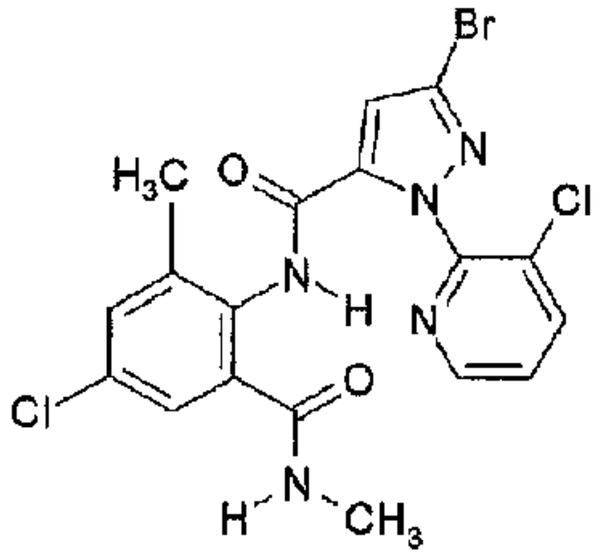


(B-1);



(F-1);



(A-10).