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Tobler et al.

(54) FUNGICIDAL COMPOSITIONS

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(57) ABSTRACT

A composition suitable for control of diseases caused by phytopathogens comprising (A) a compound of formula I

(I)



wherein R_1 is diffuoromethyl or trifluoromethyl and X is chloro, fluoro or bromo; and (B) at least one compound selected from compounds known for their fungicidal activity; and a method of controlling diseases on useful plants, especially rust diseases on soybean plants.

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FUNGICIDAL COMPOSITIONS

This application is a divisional of U.S. patent application Ser. No. 12/597,221 filed Mar. 10, 2010, which was a 371 of International Application No. PCT/EP2008/003279 filed ⁵ Apr. 23, 2008, which claims priority to EP 07008370.4 filed Apr. 25, 2007, the contents of which are all incorporated herein by reference.

The present invention relates to novel fungicidal compositions suitable for control of diseases caused by phytopathogens, especially phytopathogenic fungi and to a method of controlling diseases on useful plants, especially rust diseases on soybean plants.

It is known from WO 04/35589 and WO 06/37632 that 15 certain tricyclic amine derivatives and mixtures comprising said amine 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. For example, in the past in the most important regions for soybean 25 cultures no economically significant phytopathogens were known. However, recently there has been an increase in severe rust infections of soybean crops in South America by the harmful fungus Phakopsora pachyrhizi resulting in considerable yield losses. Most customary fungicides are unsuitable for controlling rust in soybeans or their action against Phakopsora pachyrhizi is unsatisfactory.

Out of the above-mentioned needs of agricultural practice for increased crop tolerance and/or increased activity against 35 phytopathogenic fungi, such as *Phakopsora pachyrhizi*, there is therefore proposed in accordance with the present invention a novel composition suitable for control of diseases caused by phytopathogens comprising

a composition suitable for control of diseases caused by 40 phytopathogens comprising

(A) a compound of formula I



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anilazine, arsenates, benalaxyl, benalaxyl-M, benodanil, benomyl, benthiavalicarb, benthiavalicarb-isopropyl, biphenyl, bitertanol, blasticidin-S, bordeaux mixture, boscalid, bupirimate, cadmium chloride, captafol, captan, carbendazim, carbon disulfide, carboxin, carpropamid, cedar leaf oil, chinomethionat, chlorine, chloroneb, chlorothalonil, chlozolinate, cinnamaldehyde, copper, copper ammoniumcarbonate, copper hydroxide, copper octanoate, copper oleate, copper sulphate, cyazofamid, cycloheximide, cymoxanil, dichlone, dichloropropene, diclocymet, dichlofluanid, diclomezine, dicloran, diethofencarb, diflumetorim, dimethirimol, dimethomorph, dinocap, dithianon, dodine, edifenphos, ethaboxam, ethirimol, etridiazole, famoxadone, fenamidone, fenaminosulf, fenamiphos, fenarimol, fenfuram, fenhexamid, fenoxanil, fenpiclonil, fentin acetate, fentin chloride, fentin hydroxide, ferbam, ferimzone, fluazinam, fludioxonil, flusulfamide, flusulfamide, flutolanil, folpet, formaldehyde, fosetyl-aluminium, fthalide, fuberidazole, furalaxyl, furametpyr, flyodin, fuazatine, hexachlorobenzene, hymexazole, iminoctadine, iodocarb, iprobenfos, iprodione, iprovalicarb, isoprothiolane, kasugamycin, mancozeb, maneb, manganous dimethyldithiocarbamate, mefenoxam, mepronil, mercuric chloride, mercury, metalaxyl, methasulfocarb, metiram, metrafenone, nabam, neem oil (hydrophobic extract), nuarimol, octhilinone, ofurace, oxadixyl, oxine copper, oxolinic acid, oxycarboxin, oxytetracycline, paclobutrazole, paraffin oil, paraformaldehyde, pencycuron, pentachloronitrobenzene, pentachlorophenol, penthiopyrad, perfurazoate, phosphoric acid, polyoxin, polyoxin D zinc salt, potassium bicarbonate, probenazole, procymidone, propamocarb, propineb, proquinazid, prothiocarb, pyrazophos, pyrifenox, pyroquilon, quinoxyfen, quintozene, silthiofam, sodium bicarbonate, sodium diacetate, sodium propionate, streptomycin, sulphur, TCMTB, tecloftalam, tecnazene, thiabendazole, thifluzamide, thiophanate, thiophanate-methyl, thiram, tolclofos-methyl, tolyfluanid, triazoxide, trichoderma harzianum, tricyclazole, triforine, triphenyltin hydroxide, validamycin, vinclozolin, zineb, ziram, zoxamide, 1,1-bis(4-chlorophenyl)-2-ethoxyethanol, 2,4-dichlorophenyl benzenesulfonate, 2-fluoro-N-methyl-N-1-naphthylacetamide, 4-chlorophenyl phenyl sulfone,

⁵⁰ a compound of formula B-5.1



wherein R_1 is diffuoromethyl or trifluoromethyl and X is chloro, fluoro or bromo; and

- (B) at least one compound selected from the group consisting of
 - (B1) a strobilurin fungicide,
 - (B2) an azole fungicide,
 - (B3) a morpholine fungicide,

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(B-5.4)

(B-5.5)

4







a compound of formula B-5.3



a compound of formula B-5.4



a compound of formula B-5.5





a compound of formula B-5.7



(B-5.7)

3-difluoromethyl-1-methyl-1H-pyrazole-4-carboxylic acid (2-bicyclopropyl-2-yl-phenyl)-amide (compound 40 B-5.8), 3-difluoromethyl-1-methyl-1H-pyrazole-4-carboxylic acid (9-isopropyp-1,2,3,4-tetrahydro-1,4-methano-naphthalen-5-yl)-amide (compound B-5.9), 1,3-dimethyl-5fluoro-1H-pyrazole-4-carboxylic acid [2-(1,3-⁴⁵ dimethylbutyl)phenyl]-amide B-5.10), (compound 3-difluoromethyl-1-methyl-1H-pyrazole-4-carboxylic acid (3',4'-dichloro-5-fluoro-1,1'-biphenyl-2-yl)-amide (compound B-5.11), N-{2-[3-chloro-5-(trifluoromethyl)pyridin-50 2-yl]ethyl}-2-(trifluoromethyl)benzamid (compound 3-difluoromethyl-1-methyl-1H-pyrazole-4-car-B-5.12), boxylic acid N-[2-(1,1,2,2-tetrafluoroethoxy)phenyl]-amide (compound B-5.13), 3-difluoromethyl-1-methyl-1H-pyrazole-4-carboxylic acid N-[2-(1,1,2,3,3,3-hexafluoropro-55 poxy)phenyl]-amide (compound B-5.14), 3-difluoromethyl-1-methyl-1H-pyrazole-4-carboxylic acid N-[2-(2-chloro-1, 1,2-trifluoroethoxy)phenyl]-amide (compound B-5.15), 3-difluoromethyl-1-methyl-1H-pyrazole-4-carboxylic acid 60 N-(4'-trifluoromethyl-biphen-2-yl)-amide (compound B-5.16), 3-difluoromethyl-1-methyl-1H-pyrazole-4-caracid N-(2'-trifluoromethyl-biphen-2-yl)-amide boxylic (compound B-5.17) and 3-diffuoromethyl-1-methyl-1H-65 pyrazole-4-carboxylic acid N-(2'-trifluoromethyl-biphen-2-1 D E 10). (D() - --1--+1.'----

(IV)

acibenzolar-S-methyl, chlormequat chloride, ethephon, mepiquat chloride and trinexapc-ethyl;

(B7) an insecticide selected from the group consisting of abamectin, clothianidin, emamectin benzoate, imidacloprid, tefluthrin, thiamethoxam,

and a compound of formula IV



wherein X is a bivalent group selected from













^(X1) 30 wherein

 (X_2)

 (X_4)

55

a) R_1 is cyclopropyl substituted by cyclopropyl at the 1-position, R_2 is bromine, R_3 is methyl, R_4 is CN and X is X_1 ;

b) R_1 is methyl substituted by cyclopropyl, R_2 is CF_3 , R_3 is 35 methyl, R_4 is Cl and X is X_1 ;

c) R_1 is cyclopropyl substituted by cyclopropyl at the 1-position, R_2 is CF₃, R_3 is methyl, R_4 is Cl and X is X_1 ;

d) R_1 is cyclopropyl substituted by cyclopropyl at the 1-position, R_2 is CF_3 , R_3 is methyl, R_4 is CN and X is X_1 ;

e) R_1 is cyclopropyl substituted by cyclopropyl at the 1-position, R_2 is OCH₂CF₃, R_3 is methyl, R_4 is ON and X is X_1 ;

g) R_1 is isopropyl, R_2 is trifluoromethyl, R_3 is chlorine, R_4 is hydrogen and X is X_8 ;

h) R_1 is isopropyl, R_2 is trifluoromethyl, R_3 is methyl, R_4 is hydrogen and X is X_8 ;

 $_{50}$ $_{50}$ $_{10$

j) R_1 is methyl, R_2 is bromine, R_3 is methyl, R_4 is Cl and X is $X_1;$ and (B8) glyphosate, a compound of formula V



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