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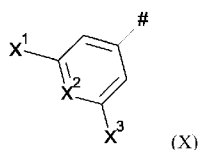
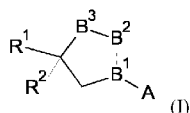
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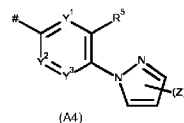
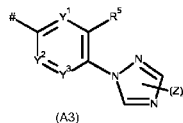
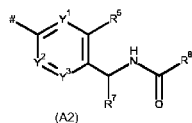
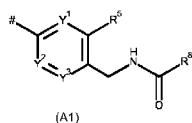
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[Continued on next page]

(54) Title: METHODS OF PEST CONTROL IN SOYBEAN



(57) Abstract: The present invention provides methods comprising applying to a crop of soybean plants, the locus thereof, or propagation material thereof, a compound a compound of formula (I) wherein -B¹-B²-B³- is -C=N-O-, -C=N-CH₂-, -N-CH₂-CH₂-, or -C=C-O-; R¹ is trifluoromethyl, difluoromethyl or chlorodifluoromethyl; R² is group (X) wherein X² is C-X⁶ or nitrogen; X¹, X³ and X⁶ are independently hydrogen, halogen or trihalomethyl, wherein at least one of X¹, X³ and X⁶ is not hydrogen; A is selected from group (A1) to (A4) and Y¹, Y², Y³, R⁵ and R⁸ are as defined in claim 1. The methods are preferably for the control of stinkbugs, in particular *Euschistus*.





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METHODS OF PEST CONTROL IN SOYBEAN

The present invention relates to methods of pest control in soybean crops.

Stink bugs (*Hemiptera Pentatomidae*) are true bugs which can be significant pests when present in large numbers. The nymphs and adults have piercing mouthparts which most use to suck sap from plants. According to Stewart et al., Soybean Insects - Stink bugs, University of Tennessee Institute of Agriculture, W200 09-0098, stink bugs are probably the most common pest problem in soybean. Although they may feed on many parts of the plant, they typically target developing seed including the pods, meaning that injury to soybean seed is the primary problem associated with stink bug infestations.

Of the complex of sucking bugs that occur in cultivation, the brown stinkbug *Euschistus heros* is currently considered to be the most abundant species in northern Paraná to Central Brazil (Corrêa-Ferreira & Panizzi, 1999), and is a significant problem in soybean (Schmidt et al., 2003). The bugs occur in soybeans from the vegetative stage and are harmful from the beginning of pod formation until grain maturity. They cause damage to the seed (Galileo & Heinrichs 1978a, Panizzi & Slansky Jr., 1985) and can also open the way to fungal diseases and cause physiological disorders, such as soybean leaf retention (Galileo & Heinrichs 1978, Todd & Herzog, 1980).

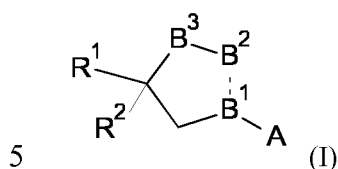
Control of stinkbugs in soybean is often vital to prevent significant economic damage. Insecticides commonly used to control stinkbugs include pyrethroids, neonicotinoids and organophosphates, although pyrethroid insecticides are usually the method of choice for controlling stink bugs in soybean. However, there are increasing problems with insecticide resistance, particularly in brown stink bug populations and particularly to pyrethroids. *Euschistus heros* can also be difficult to manage using organophosphates or endosulfan (Sosa-Gomez et al., 2009). There is therefore a need for effective alternative methods of controlling stinkbugs in soybean.

Compounds that are insecticidally, acaricidally, nematocidally and/or molluscicidally active by antagonism of the gamma-aminobutyric acid (GABA)-gated chloride channel, and which comprise a partially saturated heterocycle that is substituted by a haloalkyl substituent and one or two optionally substituted aromatic or heteroaromatic rings, represent a new class of pesticides that are described for example in Ozoe et al. Biochemical and Biophysical Research Communications, 391 (2010) 744-749. Compounds from this class are broadly described in WO 2005/085216 (EP1731512), WO 2007/123853, WO 2007/075459, WO2009/002809, WO 2008/019760, WO 2008/122375, WO 2008/128711, WO 2009/097992, WO 2010/072781, WO 2010/072781, WO 2008/126665, WO 2007/125984, WO 2008/130651, JP 2008110971, JP2008133273, JP2009108046, WO2009/022746, WO 2009/022746, WO 2010/032437, WO2009/080250, WO2010/020521, WO2010/025998, WO2010/020522, WO2010/084067, WO2010/086225, WO2010/149506 and WO2010/108733.

It has now surprisingly been found that particular insecticides from this new class of gamma-aminobutyric acid (GABA)-gated chloride channel antagonists are highly effective at controlling stinkbugs, and in some cases can provide greater control than the current market standard. It has also surprisingly been found that these compounds exhibit significantly higher activity against stinkbugs than structurally similar compounds. These compounds therefore represent an important new solution for

safeguarding soybean crops from stinkbugs, particularly where stink bugs are resistant to current methods.

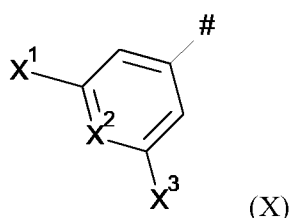
In a first aspect the invention provides a method comprising applying to a crop of soybean plants, the locus thereof, or propagation material thereof, a compound of formula I



wherein -B¹-B²-B³- is -C=N-O-, -C=N-CH₂-, -N-CH₂-CH₂-, or -C=C-O-;

R¹ is trifluoromethyl, difluoromethyl or chlorodifluoromethyl;

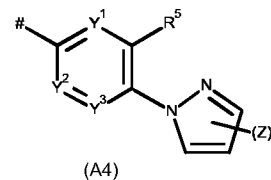
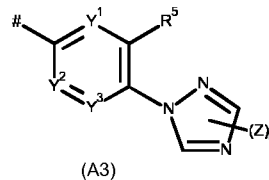
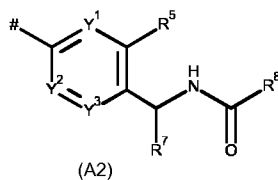
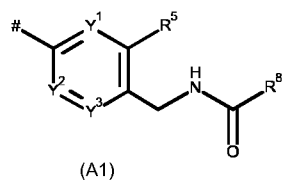
R² is group X



10 X² is C-X⁶ or nitrogen;

X¹, X³ and X⁶ are independently hydrogen, halogen or trihalomethyl, wherein at least one of X¹, X³ and X⁶ is not hydrogen;

A is selected from group A1 to A4



15 Y¹ is C-R⁶, CH or nitrogen;

Y² and Y³ are independently CH or nitrogen;

wherein no more than two of Y¹, Y² and Y³ are nitrogen and wherein Y² and Y³ are not both nitrogen;

R⁵ is hydrogen, halogen, cyano, nitro, NH₂, C₁-C₄alkyl, C₁-C₄haloalkyl, C₃-C₅cycloalkyl, C₃-C₅halocycloalkyl, C₁-C₂alkoxy, or C₁-C₂haloalkoxy;

20 R⁶ when present together with R⁵ forms a -CH=CH-CH=CH- bridge;

R⁷ is C₁-C₄alkyl;

R⁸ is C₁-C₄alkyl, C₁-C₄haloalkyl, C₁-C₄alkoxy(C₁-C₄)alkyl, C₁-C₄alkylthio(C₁-C₄)alkyl, C₁-C₄alkylsulfinyl(C₁-C₄)alkyl, C₁-C₄alkylsulfonyl(C₁-C₄)alkyl, C₃-C₆cycloalkyl, C₃-C₆cycloalkyl(C₁-C₄)alkyl-, or tetrahydrofuran-2-yl;

25 each Z is independently halogen, C₁-C₁₂alkyl or C₁-C₁₂alkyl substituted by one to five R¹², nitro, C₁-C₁₂alkoxy or C₁-C₁₂alkoxy substituted by one to five R¹², cyano, C₁-C₁₂alkylsulfinyl, C₁-C₁₂alkylsulfonyl, C₁-C₁₂haloalkylsulfinyl, C₁-C₁₂haloalkylsulfonyl, hydroxyl or thiol;

each R¹² is halogen, cyano, nitro, hydroxy, C₁-C₈alkoxy-, C₁-C₈haloalkoxy-, mercapto, C₁-C₈alkylthio-, or C₁-C₈haloalkylthio; and

k is 0, 1, 2 or 3.

In a further aspect the invention provides a method of controlling and/or preventing infestation of
5 stinkbugs in soybean comprising applying to a crop of soybean plants, the locus thereof, or propagation material thereof, a compound of formula I. The stinkbugs may be those that are resistant to one or more other insecticides.

In a further aspect the invention provides a method of controlling and/or preventing infestation of
stinkbugs in a crop of useful plants comprising applying to a crop of useful plants, the locus thereof, or
10 propagation material thereof, a compound of formula I. The stinkbugs may be those that are resistant to one or more other insecticides.

In a further aspect the invention provides use of a compound of formula I for control of stinkbugs in a crop of useful plants. The use may be for controlling stinkbugs that are resistant to one or more other insecticides.

15 In a further aspect the invention provides a method of controlling and/or preventing infestation of insects from the genus *Euschistus* in a crop of useful plants comprising applying to a crop of useful plants, the locus thereof, or propagation material thereof, a compound of formula I. The insects from the genus *Euschistus* may be those that are resistant to one or more other insecticides.

In a further aspect the invention provides use of a compound of formula I for control of insects
20 from the genus *Euschistus* in a crop of useful plants. The use may be for controlling insects from the genus *Euschistus* that are resistant to one or more other insecticides.

In a further aspect the invention provides a method of controlling and/or preventing infestation of
insects from the genus *Euschistus* in a crop of soybean plants comprising applying to a crop of soybean,
the locus thereof, or propagation material thereof, a compound of formula I. The insects from the genus
25 *Euschistus* may be those that are resistant to one or more other insecticides.

In a further aspect the invention provides use of a compound of formula I for control of insects from the genus *Euschistus* in a crop of soybean plants. The use may be for controlling insects from the genus *Euschistus* that are resistant to one or more other insecticides.

In a further aspect the invention provides a method of controlling and/or preventing infestation of
30 *Euschistus heros* in a crop of useful plants comprising applying to a crop of useful plants, the locus thereof, or propagation material thereof, a compound of formula I. The *Euschistus heros* may be resistant to one or more other insecticides.

In a further aspect the invention provides use of a compound of formula I for control of
Euschistus heros in a crop of useful plants. The use may be for controlling *Euschistus heros* that is
35 resistant to one or more other insecticides.

In a further aspect the invention provides a method of controlling and/or preventing infestation of
Euschistus heros in a crop of soybean plants comprising applying to a crop of soybean, the locus thereof,

or propagation material thereof, a compound of formula I. The *Euschistus heros* may be resistant to one or more other insecticides.

In a further aspect the invention provides use of a compound of formula I for control of *Euschistus heros* in a crop of soybean plants. The use may be for controlling insects *Euschistus heros* that are is resistant to one or more other insecticides.

Stinkbugs that are resistant to one or more other insecticides are preferably resistant to pyrethroid, neonicotinoids and/or organophosphates, more preferably pyrethroid insecticides.

In a further aspect the invention provides a method for obtaining regulatory approval for the use of one or more of a compound of formula I to control stinkbugs, in particular the genus *Euschistus* and in particular the species *Euschistus heros*, and in particular in soybean plants, comprising at least one step of referring to, submitting or relying on biological data showing that said active ingredient reduces insect pressure.

The compounds of the invention may exist in different geometric or optical isomers or tautomeric forms. This invention covers all such isomers and tautomers and mixtures thereof in all proportions as well as isotopic forms such as deuterated compounds. The compounds of the invention may contain one or more asymmetric carbon atoms, for example, at the C(R¹)R² group, and may exist as enantiomers (or as pairs of diastereoisomers) or as mixtures of such.

Alkyl groups (either alone or as part of a larger group, such as alkoxy-, alkylthio-, alkylsulfinyl-, alkylsulfonyl-, alkylcarbonyl- or alkoxy carbonyl-) can be in the form of a straight or branched chain and are, for example, methyl, ethyl, propyl, prop-2-yl, butyl, but-2-yl, 2-methyl-prop-1-yl or 2-methyl-prop-2-yl. Unless otherwise stated the alkyl groups are preferably C₁-C₆, more preferably C₁-C₄, most preferably C₁-C₃ alkyl groups. Where an alkyl moiety is said to be substituted, the alkyl moiety is preferably substituted by one to four substituents, most preferably by one to three substituents.

Halogen is fluorine, chlorine, bromine or iodine.

Haloalkyl groups (either alone or as part of a larger group, such as haloalkoxy-, haloalkylthio-, haloalkylsulfinyl- or haloalkylsulfonyl-) are alkyl groups which are substituted by one or more of the same or different halogen atoms and are, for example, difluoromethyl, trifluoromethyl, chlorodifluoromethyl or 2,2,2-trifluoro-ethyl.

Cycloalkyl groups or carbocyclic rings can be in mono- or bi-cyclic form and are, for example, cyclopropyl, cyclobutyl, cyclohexyl. The cycloalkyl groups are preferably C₃-C₆ cycloalkyl groups.

The preferences for B¹, B², B³, R¹, R², Y¹, Y², Y³, R⁵, R⁶, R⁷, R⁸, R¹², X¹, X², X³, Z and k are, in any combination, as described below.

Preferably R¹ is trifluoromethyl, or chlorodifluoromethyl, most preferably trifluoromethyl.

Preferably X¹, X³ and X⁶ are independently hydrogen, halogen or trifluoromethyl, wherein at least two of X¹, X³ and X⁶ are not hydrogen. More preferably X¹, X³ and X⁶ are independently hydrogen, chloro, bromo or trifluoromethyl, wherein at least two of X¹, X³ and X⁶ are not hydrogen. Preferably at least two of X¹, X³ and X⁶ are chloro, bromo or trifluoromethyl.

In one group of compounds R^2 is 3,5-dichlorophenyl-, 3-chloro-4-fluorophenyl-, 3-fluoro-4-chlorophenyl-, 3,4-dichlorophenyl-, 3-chloro-4-bromophenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-dichloro-4-iodophenyl-, 3,4,5-trifluorophenyl-, 3-chloro-5-bromophenyl-, 3-chloro-5-fluorophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,4-dichloro-5-(trifluoromethyl)phenyl-, 3,5-bis(trifluoromethyl)phenyl-, 4-chloro-3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, more preferably 3,5-dichlorophenyl-, more preferably 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-, more preferably R^2 is 3,5-dichlorophenyl, 3,5-dichloro-4-fluorophenyl- or 3,4,5-trichloro-phenyl, most preferably 3,5-dichloro-phenyl.

Preferably Y^1 is CH, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is CH, Y^3 is N. Most preferably Y^1 is CH, Y^2 is CH, and Y^3 is CH.

Preferably R^5 is hydrogen, chloro, bromo, fluoro, trifluoromethyl, methyl, ethyl, methoxy, nitro, trifluoromethoxy, cyano, cyclopropyl, more preferably R^5 is hydrogen, chloro, bromo, fluoro, trifluoromethyl, methyl, ethyl, nitro, cyano, cyclopropyl, most preferably R^5 is hydrogen, cyano, chloro, bromo, fluoro, methyl, or trifluoromethyl.

Preferably R^8 is C_1 - C_4 alkyl, C_1 - C_4 haloalkyl, C_1 - C_4 alkyl-O- CH_2 -, C_1 - C_4 haloalkyl-O- CH_2 -, C_3 - C_6 cycloalkyl, C_3 - C_6 cycloalkyl- CH_2 -, C_1 - C_4 alkyl-S(O)- CH_2 -, C_1 - C_4 alkyl-S(O_2)- CH_2 -, more preferably C_1 - C_4 alkyl, C_1 - C_4 alkyl-O- CH_2 -, C_1 - C_4 alkyl-S- CH_2 -, C_1 - C_4 alkyl-SO- CH_2 -, C_1 - C_4 alkyl-SO₂- CH_2 -, C_3 - C_4 cycloalkyl, or C_3 - C_4 cycloalkyl- CH_2 -, most preferably R^8 is methyl, ethyl, isopropyl, CH_3 -O- CH_2 -, CH_3 -S- CH_2 -, CH_3 -S(O)- CH_2 -, CH_3 -SO₂- CH_2 -, cyclobutyl, cyclopropyl or cyclopropyl- CH_2 -.

Preferably each Z is independently halogen, cyano, C_1 - C_4 alkyl, C_1 - C_4 haloalkyl, C_1 - C_4 alkoxy, or C_1 - C_4 haloalkoxy, most preferably each Z is independently hydrogen, cyano, halogen, methyl, halomethyl, methoxy or halomethoxy, most preferably cyano or trifluoromethyl.

Each R^{12} is preferably bromo, chloro, fluoro, methoxy, or methylthio, most preferably chloro, fluoro, or methoxy

Preferably k is 0 or 1.

In one group of compounds $-B^1-B^2-B^3-$ is $-C=N-O-$.

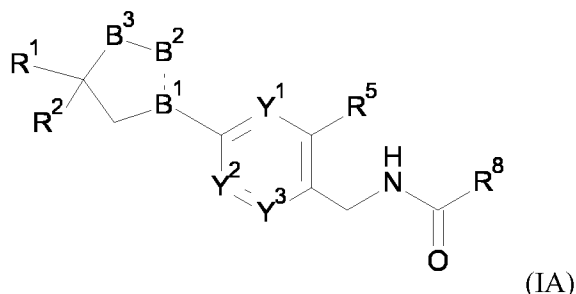
In another group of compounds $-B^1-B^2-B^3-$ is $-C=N-CH_2-$.

In another group of compounds $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$.

In another group of compounds $-B^1-B^2-B-$ is $-C=C-O-$.

In another group of compounds Y^1 is $C-R^6$ and R^6 together with R^5 forms a $-CH=CH-CH=CH-$ bridge.

In one embodiment the compound of formula I is a compound of formula IA



wherein B^1 , B^2 , B^3 , R^1 , R^2 , Y^1 , Y^2 , Y^3 , R^5 and R^8 are as defined for a compound of formula I

In compounds of formula IA preferred definitions of B^1 , B^2 , B^3 , R^1 , R^2 , Y^1 , Y^2 , Y^3 , R^5 and R^8 are, in any combination, as set out below:

- 5 Preferably R^1 is trifluoromethyl, or chlorodifluoromethyl, most preferably trifluoromethyl.
 Preferably X^1 , X^3 and X^6 are independently hydrogen, halogen or trifluoromethyl, wherein at least two of X^1 , X^3 and X^6 are not hydrogen. More preferably X^1 , X^3 and X^6 are independently hydrogen, chloro, bromo or trifluoromethyl, wherein at least two of X^1 , X^3 and X^6 are not hydrogen. Preferably at least two of X^1 , X^3 and X^6 are chloro, bromo or trifluoromethyl.
- 10 In one group of compounds R^2 is 3,5-dichlorophenyl-, 3-chloro-4-fluorophenyl-, 3-fluoro-4-chlorophenyl-, 3,4-dichlorophenyl-, 3-chloro-4-bromophenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-dichloro-4-iodophenyl-, 3,4,5-trifluorophenyl-, 3-chloro-5-bromophenyl-, 3-chloro-5-fluorophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,4-dichloro-5-(trifluoromethyl)phenyl-, 3,5-bis(trifluoromethyl)phenyl-, 4-chloro-3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-
- 15 dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, more preferably 3,5-dichlorophenyl-, more preferably 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-, more preferably R^2 is 3,5-dichloro-
- 20 phenyl or 3,4,5-trichloro-phenyl, most preferably 3,5-dichloro-phenyl.
 Preferably Y^1 is CH, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is CH, Y^3 is N. Most preferably Y^1 is CH, Y^2 is CH, and Y^3 is CH.
- Preferably R^5 is hydrogen, chloro, bromo, fluoro, trifluoromethyl, methyl, ethyl, methoxy, nitro,
- 25 trifluoromethoxy, cyano, cyclopropyl, more preferably R^5 is hydrogen, chloro, bromo, fluoro, trifluoromethyl, methyl, ethyl, nitro, cyano, cyclopropyl, more preferably R^5 is hydrogen, cyano, chloro, bromo, fluoro, methyl, or trifluoromethyl, even more preferably hydrogen, chloro, bromo, methyl or trifluoromethyl, most preferably chloro, bromo, fluoro or methyl.
- Preferably R^8 is C_1 - C_4 alkyl, C_1 - C_4 haloalkyl, C_1 - C_4 alkyl-O- CH_2 -, C_1 - C_4 haloalkyl-O- CH_2 -, C_3 -
- 30 C_6 cycloalkyl, C_3 - C_6 cycloalkyl- CH_2 -, C_1 - C_4 alkyl-S(O)- CH_2 -, C_1 - C_4 alkyl-S(O₂)- CH_2 -, more preferably C_1 - C_4 alkyl, C_1 - C_4 alkyl-O- CH_2 -, C_1 - C_4 alkyl-S- CH_2 -, C_1 - C_4 alkyl-SO- CH_2 -, C_1 - C_4 alkyl-SO₂- CH_2 -, C_3 - C_4 cycloalkyl, or C_3 - C_4 cycloalkyl- CH_2 -, most preferably R^8 is methyl, ethyl, isopropyl, CH_3 -O- CH_2 -, CH_3 -S- CH_2 -, CH_3 -S(O)- CH_2 -, CH_3 -SO₂- CH_2 -, cyclobutyl, cyclopropyl or cyclopropyl- CH_2 -.

In one group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-O-$.

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-O-$ and Y^1 is CH, Y^2 is CH, Y^3 is CH.

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-O-$, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3 .

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-O-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^5 is chloro, bromo, fluoro or methyl.

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-O-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , and R^8 is methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, CH_3-SO_2-
10 CH_2- , cyclobutyl, cyclopropyl or cyclopropyl- CH_2- .

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-O-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , R^5 is chloro, bromo, fluoro or methyl and R^8 is methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl- CH_2- .

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-O-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , R^5 is chloro, bromo, fluoro or methyl, R^8 is methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-
15 CH_2- , $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl- CH_2- and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-,
20 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

In one group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-CH_2-$.

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-CH_2-$ and Y^1 is CH, Y^2 is CH, Y^3 is CH.

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3 .

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^5 is chloro, bromo, fluoro or methyl.

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , and R^8 is methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, CH_3-
30 SO_2-CH_2- , cyclobutyl, cyclopropyl or cyclopropyl- CH_2- .

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , R^5 is chloro, bromo, fluoro or methyl and R^8 is methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl- CH_2- .

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=N-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , R^5 is chloro, bromo, fluoro or methyl and R^8 is methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl- CH_2- and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-,

2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-

In one group of compounds of formula IA $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$.

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH,

5 Y^3 is CH.

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3 .

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^5 is chloro, bromo, fluoro or methyl.

10 In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , and R^8 is methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl- CH_2- .

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , R^5 is chloro, bromo, fluoro or methyl and R^8 is methyl, ethyl, isopropyl, CH_3-O-CH_2- ,
15 CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl- CH_2- .

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-N-CH_2-CH_2-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , R^5 is chloro, bromo, fluoro or methyl, R^8 is methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl- CH_2- and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-,
20 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-

In one group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=C-O-$.

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=C-O-$ and Y^1 is CH, Y^2 is CH, Y^3
25 is CH.

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=C-O-$, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3 .

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=C-O-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^5 is chloro, bromo, fluoro or methyl.

30 In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=C-O-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , and R^8 is methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl- CH_2- .

In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=C-O-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , R^5 is chloro, bromo, fluoro or methyl, R^8 is methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-
35 CH_2- , $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl- CH_2- .

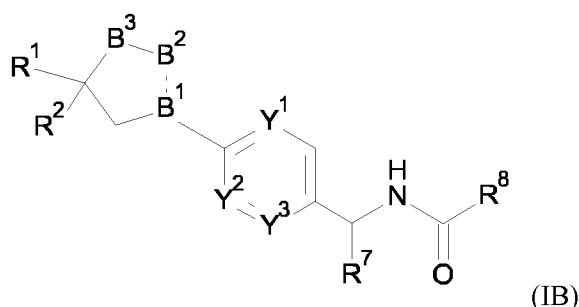
In another group of compounds of formula IA $-B^1-B^2-B^3-$ is $-C=C-O-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , R^5 is chloro, bromo, fluoro or methyl and R^8 is methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl- CH_2- and R^2 is 3-

chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-

- 5 In another group of compounds of formula IA R^5 is chloro, bromo, fluoro or methyl and R^8 methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl- CH_2- .

- In another group of compounds of formula IA R^5 is chloro, bromo, fluoro or methyl; R^8 methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl- CH_2- , R^1 is CF_3 , $-B^1-B^2-B^3$ is $-C=N-O-$ or $-C=N-CH_2-$, Y^1 , Y^2 and Y^3 are CH, and R^5 is chloro or methyl.
- 10

In one embodiment the compound of formula I is a compound of formula IB



wherein B^1 , B^2 , B^3 , R^1 , R^2 , Y^1 , Y^2 , Y^3 , R^7 and R^8 are as defined for a compound of formula I

- 15 In compounds of formula IB preferred definitions of B^1 , B^2 , B^3 , R^1 , R^2 , Y^1 , Y^2 , Y^3 , R^7 and R^8 are, in any combination, as set out below

Preferably R^1 is trifluoromethyl, or chlorodifluoromethyl, most preferably trifluoromethyl.

- Preferably X^1 , X^3 and X^6 are independently hydrogen, halogen or trifluoromethyl, wherein at least two of X^1 , X^3 and X^6 are not hydrogen. More preferably X^1 , X^3 and X^6 are independently hydrogen, chloro, bromo or trifluoromethyl, wherein at least two of X^1 , X^3 and X^6 are not hydrogen. Preferably at least two of X^1 , X^3 and X^6 are chloro, bromo or trifluoromethyl.
- 20

- In one group of compounds R^2 is 3,5-dichlorophenyl-, 3-chloro-4-fluorophenyl-, 3-fluoro-4-chlorophenyl-, 3,4-dichlorophenyl-, 3-chloro-4-bromophenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-dichloro-4-iodophenyl-, 3,4,5-trifluorophenyl-, 3-chloro-5-bromophenyl-, 3-chloro-5-fluorophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,4-dichloro-5-(trifluoromethyl)phenyl-, 3,5-bis(trifluoromethyl)phenyl-, 4-chloro-3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, more preferably 3,5-dichlorophenyl-, more preferably 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-, more preferably R^2 is 3,5-dichlorophenyl or 3,4,5-trichlorophenyl, most preferably 3,5-dichlorophenyl.
- 25
- 30

Preferably Y^1 is CH, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is CH, Y^3 is N. Most preferably Y^1 is CH, Y^2 is CH, and Y^3 is CH.

Preferably R^7 is methyl.

- 5 Preferably R^8 is C_1 - C_4 alkyl, C_1 - C_4 haloalkyl, C_1 - C_4 alkyl-O- CH_2 -, C_1 - C_4 haloalkyl-O- CH_2 -, C_3 - C_6 cycloalkyl, C_3 - C_6 cycloalkyl- CH_2 -, C_1 - C_4 alkyl-S(O)- CH_2 -, C_1 - C_4 alkyl-S(O₂)- CH_2 -, more preferably C_1 - C_4 alkyl, C_1 - C_4 alkyl-O- CH_2 -, C_1 - C_4 alkyl-S- CH_2 -, C_1 - C_4 alkyl-SO- CH_2 -, C_1 - C_4 alkyl-SO₂- CH_2 -, C_3 - C_4 cycloalkyl, or C_3 - C_4 cycloalkyl- CH_2 -, most preferably R^8 is methyl, ethyl, isopropyl, CH_3 -O- CH_2 -, CH_3 -S- CH_2 -, CH_3 -S(O)- CH_2 -, CH_3 -SO₂- CH_2 -, cyclobutyl, cyclopropyl or cyclopropyl- CH_2 -.
- 10 In one group of compounds of formula IB - B^1 - B^2 - B^3 - is -C=N-O-.
- In another group of compounds of formula IB - B^1 - B^2 - B^3 - is -C=N-O- and Y^1 is CH, Y^2 is CH, Y^3 is CH.
- In another group of compounds of formula IB - B^1 - B^2 - B^3 - is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3 .
- 15 In another group of compounds of formula IB - B^1 - B^2 - B^3 - is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^7 is methyl.
- In another group of compounds of formula IB - B^1 - B^2 - B^3 - is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , and R^8 is methyl, ethyl, isopropyl, CH_3 -O- CH_2 -, CH_3 -S- CH_2 -, CH_3 -S(O)- CH_2 -, CH_3 -SO₂- CH_2 -, cyclobutyl, cyclopropyl or cyclopropyl- CH_2 -.
- 20 In another group of compounds of - B^1 - B^2 - B^3 - is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , R^7 is methyl and R^8 is methyl, ethyl, isopropyl, CH_3 -O- CH_2 -, CH_3 -S- CH_2 -, CH_3 -S(O)- CH_2 -, CH_3 -SO₂- CH_2 -, cyclobutyl, cyclopropyl or cyclopropyl- CH_2 -.
- In another group of compounds of formula IB - B^1 - B^2 - B^3 - is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , R^7 is methyl, R^8 is methyl, ethyl, isopropyl, CH_3 -O- CH_2 -, CH_3 -S- CH_2 -, CH_3 -S(O)- CH_2 -, CH_3 -SO₂- CH_2 -, cyclobutyl, cyclopropyl or cyclopropyl- CH_2 - and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-
- 25
- 30 In one group of compounds of formula IB - B^1 - B^2 - B^3 - is -C=N- CH_2 -.
- In another group of compounds of formula IB - B^1 - B^2 - B^3 - is -C=N- CH_2 - and Y^1 is CH, Y^2 is CH, Y^3 is CH.
- In another group of compounds of formula IB - B^1 - B^2 - B^3 - is -C=N- CH_2 -, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3 .
- 35 In another group of compounds of formula IB - B^1 - B^2 - B^3 - is -C=N- CH_2 -, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^7 is methyl.

In another group of compounds of formula IB -B¹-B²-B³- is -C=N-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, and R⁸ is methyl, ethyl, isopropyl, CH₃-O-CH₂-, CH₃-S-CH₂-, CH₃-S(O)-CH₂-, CH₃-SO₂-CH₂-, cyclobutyl, cyclopropyl or cyclopropyl-CH₂-.

In another group of compounds of formula IB -B¹-B²-B³- is -C=N-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, R⁷ is methyl and R⁸ is methyl, ethyl, isopropyl, CH₃-O-CH₂-, CH₃-S-CH₂-, CH₃-S(O)-CH₂-, CH₃-SO₂-CH₂-, cyclobutyl, cyclopropyl or cyclopropyl-CH₂-.

In another group of compounds of formula IB -B¹-B²-B³- is -C=N-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, R⁷ is methyl, R⁸ is methyl, ethyl, isopropyl, CH₃-O-CH₂-, CH₃-S-CH₂-, CH₃-S(O)-CH₂-, CH₃-SO₂-CH₂-, cyclobutyl, cyclopropyl or cyclopropyl-CH₂- and R² is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-

In one group of compounds of formula IB -B¹-B²-B³- is -N-CH₂-CH₂-.

In another group of compounds of formula IB -B¹-B²-B³- is -N-CH₂-CH₂- and Y¹ is CH, Y² is CH, Y³ is CH.

In another group of compounds of formula IB -B¹-B²-B³- is -N-CH₂-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH and R¹ is CF₃.

In another group of compounds of formula IB -B¹-B²-B³- is -N-CH₂-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃ and R⁷ is methyl.

In another group of compounds of formula IB -B¹-B²-B³- is -N-CH₂-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, and R⁸ is methyl, ethyl, isopropyl, CH₃-O-CH₂-, CH₃-S-CH₂-, CH₃-S(O)-CH₂-, CH₃-SO₂-CH₂-, cyclobutyl, cyclopropyl or cyclopropyl-CH₂-.

In another group of compounds of formula IB -B¹-B²-B³- is -N-CH₂-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, R⁷ is methyl and R⁸ is methyl, ethyl, isopropyl, CH₃-O-CH₂-, CH₃-S-CH₂-, CH₃-S(O)-CH₂-, CH₃-SO₂-CH₂-, cyclobutyl, cyclopropyl or cyclopropyl-CH₂-.

In another group of compounds of formula IB -B¹-B²-B³- is -N-CH₂-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, R⁷ is methyl, R⁸ is methyl, ethyl, isopropyl, CH₃-O-CH₂-, CH₃-S-CH₂-, CH₃-S(O)-CH₂-, CH₃-SO₂-CH₂-, cyclobutyl, cyclopropyl or cyclopropyl-CH₂- and R² is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-

In one group of compounds of formula IB -B¹-B²-B³- is -C=C-O-.

In another group of compounds of formula IB -B¹-B²-B³- is -C=C-O- and Y¹ is CH, Y² is CH, Y³ is CH.

In another group of compounds of formula IB -B¹-B²-B³- is -C=C-O-, Y¹ is CH, Y² is CH, Y³ is CH and R¹ is CF₃.

In another group of compounds of formula IB $-B^1-B^2-B^3-$ is $-C=C-O-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^7 is methyl.

In another group of compounds of formula IB $-B^1-B^2-B^3-$ is $-C=C-O-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , and R^8 is methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, CH_3-SO_2-
 5 CH_2- , cyclobutyl, cyclopropyl or cyclopropyl- CH_2- .

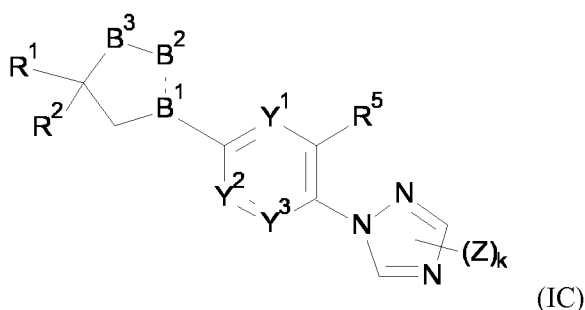
In another group of compounds of formula IB $-B^1-B^2-B^3-$ is $-C=C-O-$, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , R^7 is methyl and R^8 is methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl- CH_2- .

In another group of compounds of formula IB $-B^1-B^2-B^3-$ is $-C=C-O-$, Y^1 is CH, Y^2 is CH, Y^3 is
 10 CH, R^1 is CF_3 , R^7 is methyl, R^8 is methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl- CH_2- and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or
 15 3,4-dichlorophenyl-

In another group of compounds of formula IB R^7 is methyl, and R^8 is methyl, ethyl, isopropyl, CH_3-O-CH_2- , CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl- CH_2- .

In another group of compounds of formula IB R^7 is methyl, R^8 is methyl, ethyl, isopropyl, CH_3-
 20 $O-CH_2-$, CH_3-S-CH_2- , $CH_3-S(O)-CH_2-$, $CH_3-SO_2-CH_2-$, cyclobutyl, cyclopropyl or cyclopropyl- CH_2- , R^1 is CF_3 , $-B^1-B^2-B^3-$ is $-C=N-O-$, $-C=N-CH_2-$ or $-N-CH_2-CH_2-$, and Y^1 , Y^2 and Y^3 are CH.

In one embodiment the compound of formula I is a compound of formula IC



wherein B^1 , B^2 , B^3 , R^1 , R^2 , Y^1 , Y^2 , Y^3 , R^5 , Z and k are as defined for a compound of formula I

25 In compounds of formula IC preferred definitions of B^1 , B^2 , B^3 , R^1 , R^2 , Y^1 , Y^2 , Y^3 , R^5 , Z and k are, in any combination, as set out below

Preferably R^1 is trifluoromethyl, or chlorodifluoromethyl, most preferably trifluoromethyl.

Preferably X^1 , X^3 and X^6 are independently hydrogen, halogen or trifluoromethyl, wherein at least two of X^1 , X^3 and X^6 are not hydrogen. More preferably X^1 , X^3 and X^6 are independently hydrogen,
 30 chloro, bromo or trifluoromethyl, wherein at least two of X^1 , X^3 and X^6 are not hydrogen. Preferably at least two of X^1 , X^3 and X^6 are chloro, bromo or trifluoromethyl.

In one group of compounds R^2 is 3,5-dichlorophenyl-, 3-chloro-4-fluorophenyl-, 3-fluoro-4-chlorophenyl-, 3,4-dichlorophenyl-, 3-chloro-4-bromophenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-

trichlorophenyl-, 3,5-dichloro-4-iodophenyl-, 3,4,5-trifluorophenyl-, 3-chloro-5-bromophenyl-, 3-chloro-5-fluorophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,4-dichloro-5-(trifluoromethyl)phenyl-, 3,5-bis(trifluoromethyl)phenyl-, 4-chloro-3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, more preferably 3,5-dichlorophenyl-, more preferably 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-, more preferably R^2 is 3,5-dichlorophenyl or 3,4,5-trichlorophenyl, most preferably 3,5-dichlorophenyl.

10 Preferably Y^1 is CH, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is CH, Y^3 is N. Most preferably Y^1 is CH, Y^2 is CH, and Y^3 is CH.

Preferably R^5 is hydrogen, chloro, bromo, fluoro, trifluoromethyl, methyl, ethyl, methoxy, nitro, trifluoromethoxy, cyano, cyclopropyl, more preferably R^5 is hydrogen, chloro, bromo, fluoro, trifluoromethyl, methyl, ethyl, nitro, cyano, cyclopropyl, even more preferably R^5 is hydrogen, cyano, chloro, bromo, fluoro, methyl, or trifluoromethyl, most preferably cyano.

Preferably each Z is independently halogen, cyano, C_1 - C_4 alkyl, C_1 - C_4 haloalkyl, C_1 - C_4 alkoxy, or C_1 - C_4 haloalkoxy, more preferably each Z is independently hydrogen, cyano, halogen, methyl, halomethyl, methoxy or halomethoxy, most preferably cyano or trifluoromethyl.

20 Preferably k is 0 or 1.

In one group of compounds of formula IC - B^1 - B^2 - B^3 - is -C=N-O-.

In another group of compounds of formula IC - B^1 - B^2 - B^3 - is -C=N-O- and Y^1 is CH, Y^2 is CH, Y^3 is CH.

In another group of compounds of formula IC - B^1 - B^2 - B^3 - is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3 .

In another group of compounds of formula IC - B^1 - B^2 - B^3 - is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^5 is cyano.

In another group of compounds of formula IC - B^1 - B^2 - B^3 - is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

30 In another group of compounds of formula IC - B^1 - B^2 - B^3 - is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , R^5 is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

In another group of compounds of formula IC - B^1 - B^2 - B^3 - is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , R^5 is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

In one group of compounds of formula IC - B^1 - B^2 - B^3 - is -C=N- CH_2 -.

In another group of compounds of formula IC -B¹-B²-B³- is -C=N-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH.

In another group of compounds of formula IC -B¹-B²-B³- is -C=N-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH and R¹ is CF₃.

5 In another group of compounds of formula IC -B¹-B²-B³- is -C=N-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃ and R⁵ is cyano.

In another group of compounds of formula IC -B¹-B²-B³- is -C=N-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

10 In another group of compounds of formula IC -B¹-B²-B³- is -C=N-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, R⁵ is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

In another group of compounds of formula IC -B¹-B²-B³- is -C=N-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, R⁵ is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl and R² is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

In one group of compounds of formula IC -B¹-B²-B³- is -N-CH₂-CH₂-.

In another group of compounds of formula IC -B¹-B²-B³- is -N-CH₂-CH₂- and Y¹ is CH, Y² is CH, Y³ is CH.

20 In another group of compounds of formula IC -B¹-B²-B³- is -N-CH₂-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH and R¹ is CF₃.

In another group of compounds of formula IC -B¹-B²-B³- is -N-CH₂-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃ and R⁵ is cyano.

25 In another group of compounds of formula IC -B¹-B²-B³- is -N-CH₂-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

In another group of compounds of formula IC -B¹-B²-B³- is -N-CH₂-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, R⁵ is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

30 In another group of compounds of formula IC -B¹-B²-B³- is -N-CH₂-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, R⁵ is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl and R² is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

In one group of compounds of formula IC -B¹-B²-B³- is -C=C-O-.

35 In another group of compounds of formula IC -B¹-B²-B³- is -C=C-O- and Y¹ is CH, Y² is CH, Y³ is CH.

In another group of compounds of formula IC -B¹-B²-B³- is -C=C-O-, Y¹ is CH, Y² is CH, Y³ is CH and R¹ is CF₃.

In another group of compounds of formula IC -B¹-B²-B³- is -C=C-O- , Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃ and R⁵ is cyano.

In another group of compounds of formula IC -B¹-B²-B³- is -C=C-O- , Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

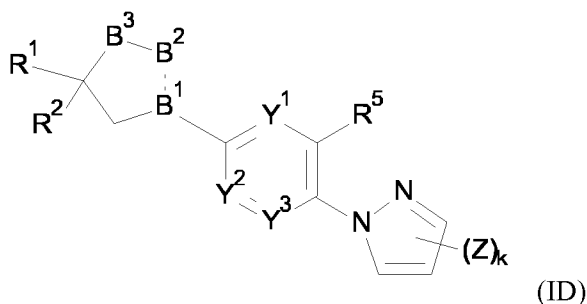
5 In another group of compounds of formula IC -B¹-B²-B³- is -C=C-O- , Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, R⁵ is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

In another group of compounds of formula IC -B¹-B²-B³- is -C=C-O- , Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, R⁵ is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl and R² is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-,
10 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

In another group of compounds of formula IC R⁵ is cyano, k is 0 or 1 and Z is cyano or trifluoromethyl.

15 In another group of compounds of formula IC R⁵ is cyano, R¹ is CF₃, -B¹-B²-B³- is -C=N-O- or -C=N-CH₂-, Y¹, Y² and Y³ are CH, and k is 0.

In one embodiment the compound of formula I is a compound of formula ID



wherein B¹, B², B³, R¹, R², Y¹, Y², Y³, R⁵ Z and k are as defined for a compound of formula I

20 In compounds of formula ID preferred definitions of B¹, B², B³, R¹, R², Y¹, Y², Y³, R⁵ Z and k are, in any combination, as set out below

Preferably R¹ is trifluoromethyl, or chlorodifluoromethyl, most preferably trifluoromethyl.

Preferably X¹, X³ and X⁶ are independently hydrogen, halogen or trifluoromethyl, wherein at least two of X¹, X³ and X⁶ are not hydrogen. More preferably X¹, X³ and X⁶ are independently hydrogen, chloro, bromo or trifluoromethyl, wherein at least two of X¹, X³ and X⁶ are not hydrogen. Preferably at least two of X¹, X³ and X⁶ are chloro, bromo or trifluoromethyl.

In one group of compounds R² is 3,5-dichlorophenyl-, 3-chloro-4-fluorophenyl-, 3-fluoro-4-chlorophenyl-, 3,4-dichlorophenyl-, 3-chloro-4-bromophenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-dichloro-4-iodophenyl-, 3,4,5-trifluorophenyl-, 3-chloro-5-bromophenyl-, 3-chloro-5-fluorophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,4-dichloro-5-(trifluoromethyl)phenyl-, 3,5-bis(trifluoromethyl)phenyl-, 4-chloro-3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, more preferably 3,5-dichlorophenyl-, more preferably 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-,

3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-, more preferably R^2 is 3,5-dichlorophenyl or 3,4,5-trichloro-phenyl, most preferably 3,5-dichloro-phenyl.

- 5 Preferably Y^1 is CH, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is CH, Y^3 is CH, or Y^1 is N, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is N, Y^3 is CH, or Y^1 is CH, Y^2 is CH, Y^3 is N. Most preferably Y^1 is CH, Y^2 is CH, and Y^3 is CH.

- Preferably R^5 is hydrogen, chloro, bromo, fluoro, trifluoromethyl, methyl, ethyl, methoxy, nitro, trifluoromethoxy, cyano, cyclopropyl, more preferably R^5 is hydrogen, chloro, bromo, fluoro,
10 trifluoromethyl, methyl, ethyl, nitro, cyano, cyclopropyl, even more preferably R^5 is hydrogen, cyano, chloro, bromo, fluoro, methyl, or trifluoromethyl, most preferably cyano.

Preferably each Z is independently halogen, cyano, C_1 - C_4 alkyl, C_1 - C_4 haloalkyl, C_1 - C_4 alkoxy, or C_1 - C_4 haloalkoxy, more preferably each Z is independently hydrogen, cyano, halogen, methyl, halomethyl, methoxy or halomethoxy, most preferably cyano or trifluoromethyl.

- 15 Preferably k is 0 or 1.

In one group of compounds of formula ID - B^1 - B^2 - B^3 - is -C=N-O-.

In another group of compounds of formula ID - B^1 - B^2 - B^3 - is -C=N-O- and Y^1 is CH, Y^2 is CH, Y^3 is CH.

- In another group of compounds of formula ID - B^1 - B^2 - B^3 - is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is
20 CH and R^1 is CF_3 .

In another group of compounds of formula ID - B^1 - B^2 - B^3 - is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 and R^5 is cyano.

In another group of compounds of formula ID - B^1 - B^2 - B^3 - is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

- 25 In another group of compounds of formula ID - B^1 - B^2 - B^3 - is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , R^5 is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

- In another group of compounds of formula ID - B^1 - B^2 - B^3 - is -C=N-O-, Y^1 is CH, Y^2 is CH, Y^3 is CH, R^1 is CF_3 , R^5 is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl and R^2 is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-,
30 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

In one group of compounds of formula ID - B^1 - B^2 - B^3 - is -C=N- CH_2 -.

- In another group of compounds of formula ID - B^1 - B^2 - B^3 - is -C=N- CH_2 - and Y^1 is CH, Y^2 is CH,
35 Y^3 is CH.

In another group of compounds of formula ID - B^1 - B^2 - B^3 - is -C=N- CH_2 -, Y^1 is CH, Y^2 is CH, Y^3 is CH and R^1 is CF_3 .

In another group of compounds of formula ID -B¹-B²-B³- is -C=N-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃ and R⁵ is cyano.

In another group of compounds of formula ID -B¹-B²-B³- is -C=N-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

5 In another group of compounds of formula ID -B¹-B²-B³- is -C=N-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, R⁵ is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

In another group of compounds of formula ID -B¹-B²-B³- is -C=N-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, R⁵ is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl and R² is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-,
10 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

In one group of compounds of formula ID -B¹-B²-B³- is -N-CH₂-CH₂-.

In another group of compounds of formula ID -B¹-B²-B³- is -N-CH₂-CH₂- and Y¹ is CH, Y² is CH, Y³ is CH.
15 CH, Y³ is CH.

In another group of compounds of formula ID -B¹-B²-B³- is -N-CH₂-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH and R¹ is CF₃.

In another group of compounds of formula ID -B¹-B²-B³- is -N-CH₂-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃ and R⁵ is cyano.

20 In another group of compounds of formula ID -B¹-B²-B³- is -N-CH₂-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

In another group of compounds of formula ID -B¹-B²-B³- is -N-CH₂-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, R⁵ is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

In another group of compounds of formula ID -B¹-B²-B³- is -N-CH₂-CH₂-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, R⁵ is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl and R² is 3-chloro-5-bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-
25

30 In one group of compounds of formula ID -B¹-B²-B³- is -C=C-O-.

In another group of compounds of formula ID -B¹-B²-B³- is -C=C-O- and Y¹ is CH, Y² is CH, Y³ is CH.

In another group of compounds of formula ID -B¹-B²-B³- is -C=C-O-, Y¹ is CH, Y² is CH, Y³ is CH and R¹ is CF₃.

35 In another group of compounds of formula ID -B¹-B²-B³- is -C=C-O-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃ and R⁵ is cyano.

In another group of compounds of formula ID -B¹-B²-B³- is -C=C-O-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

In another group of compounds of formula ID -B¹-B²-B³- is -C=C-O-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, R⁵ is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl.

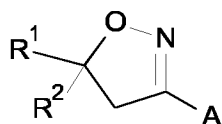
In another group of compounds of formula ID -B¹-B²-B³- is -C=C-O-, Y¹ is CH, Y² is CH, Y³ is CH, R¹ is CF₃, R⁵ is cyano and k is 0 or k is 1 and Z is cyano or trifluoromethyl and R² is 3-chloro-5-

5 bromophenyl-, 3-chloro-5-(trifluoromethyl)phenyl-, 3,5-dichloro-4-fluorophenyl-, 3,4,5-trichlorophenyl-, 3,5-bis(trifluoromethyl)phenyl-, 3-(trifluoromethyl)phenyl-, 2,6-dichloro-4-pyridyl-, 2,6-bis(trifluoromethyl)-4-pyridyl-, 3,5-dichloro-4-bromophenyl-, 3-bromo-5-(trifluoromethyl)phenyl-, 3,5-dibromophenyl-, or 3,4-dichlorophenyl-.

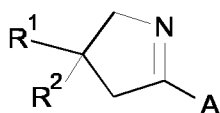
In another group of compounds of formula D R⁵ is cyano, k is 0 or 1 and Z is cyano or trifluoromethyl.

10 In another group of compounds of formula ID R⁵ is cyano, k is 0 or 1 and Z is cyano or trifluoromethyl, R¹ is CF₃, -B¹-B²-B³- is -C=N-O- or -C=N-CH₂-, Y¹, Y² and Y³ are CH.

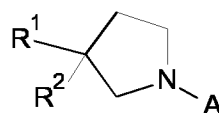
The following compounds of formula I-1, I-2, I-3 and I-4 illustrate the compounds of formula I when -B¹-B²-B³- is -C=N-O-, -C=N-CH₂-, -N-CH₂-CH₂-, or -C=C-O- respectively.



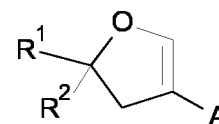
(I-1)



(I-2)

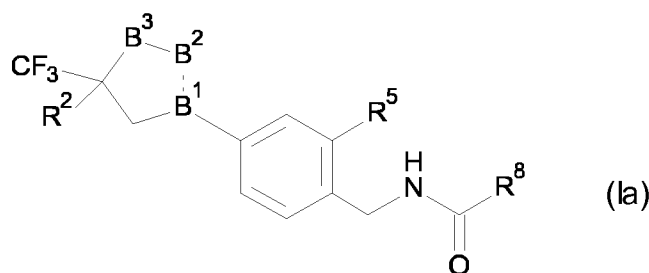


(I-3)



(I-4)

15 Tables 1 to 36 below illustrate compounds of the invention.



(Ia)

Table 1

Table 1 provides 288 compounds of formula Ia wherein R₅ is hydrogen, B₁-B₂-B₃ is C=N-O, and R₂ and R₈ are as defined in Table P.

Table 2

Table 2 provides 288 compounds of formula Ia wherein R₅ is methyl, B₁-B₂-B₃ is C=N-O, and R₂ and R₈ are as defined in Table P.

Table 3

Table 3 provides 288 compounds of formula Ia wherein R₅ is trifluoromethyl, B₁-B₂-B₃ is C=N-O, and R₂ and R₈ are as defined in Table P.

Table 4

Table 4 provides 288 compounds of formula Ia wherein R₅ is chloro, B₁-B₂-B₃ is C=N-O, and R₂ and R₈ are as defined in Table P.

Table 5

Table 5 provides 288 compounds of formula Ia wherein R₅ is bromo, B₁-B₂-B₃ is C=N-O, and R₂ and R₈ are as defined in Table P.

Table 6

Table 6 provides 288 compounds of formula Ia wherein R₅ is hydrogen, B₁-B₂-B₃ is C=N-CH₂, and R₂ and R₈ are as defined in Table P.

Table 7

Table 7 provides 288 compounds of formula Ia wherein R5 is methyl, B1-B2-B3 is C=N-CH2, and R2 and R8 are as defined in Table P.

Table 8

Table 8 provides 288 compounds of formula Ia wherein R5 is trifluoromethyl, B1-B2-B3 is C=N-CH2, and R2 and R8 are as defined in Table P.

Table 9

Table 9 provides 288 compounds of formula Ia wherein R5 is chloro, B1-B2-B3 is C=N-CH2, and R2 and R8 are as defined in Table P.

Table 10

Table 10 provides 288 compounds of formula Ia wherein R5 is bromo, B1-B2-B3 is C=N-CH2, and R2 and R8 are as defined in Table P.

Table 11

Table 11 provides 288 compounds of formula Ia wherein R5 is hydrogen, B1-B2-B3 is N-CH2-CH2, and R2 and R8 are as defined in Table P.

Table 12

Table 12 provides 288 compounds of formula Ia wherein R5 is methyl, B1-B2-B3 is N-CH2-CH2, and R2 and R8 are as defined in Table P.

Table 13

Table 13 provides 288 compounds of formula Ia wherein R5 is trifluoromethyl, B1-B2-B3 is N-CH2-CH2, and R2 and R8 are as defined in Table P.

Table 14

Table 14 provides 288 compounds of formula Ia wherein R5 is chloro, B1-B2-B3 is N-CH2-CH2, and R2 and R8 are as defined in Table P.

Table 15

Table 15 provides 288 compounds of formula Ia wherein R5 is bromo, B1-B2-B3 is N-CH2-CH2, and R2 and R8 are as defined in Table P.

Table 16

Table 16 provides 288 compounds of formula Ia wherein R5 is hydrogen, B1-B2-B3 is C=C-O, and R2 and R8 are as defined in Table P.

Table 17

Table 17 provides 288 compounds of formula Ia wherein R5 is methyl, B1-B2-B3 is C=C-O, and R2 and R8 are as defined in Table P.

Table 18

Table 18 provides 288 compounds of formula Ia wherein R5 is trifluoromethyl, B1-B2-B3 is C=C-O, and R2 and R8 are as defined in Table P.

Table 19

Table 19 provides 288 compounds of formula Ia wherein R5 is chloro, B1-B2-B3 is C=C-O, and R2 and R8 are as defined in Table P.

Table 20

Table 20 provides 288 compounds of formula Ia wherein R5 is bromo, B1-B2-B3 is C=C-O, and R2 and R8 are as defined in Table P.

Table P

	R2	R8
1	3,5-dichlorophenyl	methyl
2	3-chloro-4-fluorophenyl	methyl
3	3-fluoro-4-chlorophenyl	methyl
4	3,4-dichlorophenyl	methyl
5	3-chloro-4-bromophenyl	methyl
6	3,5-dichloro-4-fluorophenyl	methyl
7	3,4,5-trichlorophenyl	methyl
8	3,5-dichloro-4-iodophenyl	methyl

9	3,4,5-trifluorophenyl	methyl
10	3-chloro-5-bromophenyl	methyl
11	3-chloro-5-fluorophenyl	methyl
12	3-chloro-5-(trifluoromethyl)phenyl	methyl
13	3,4-dichloro-5-(trifluoromethyl)phenyl	methyl
14	3,5-bis(trifluoromethyl)phenyl	methyl
15	4-chloro-3,5-bis(trifluoromethyl)phenyl	methyl
16	3-(trifluoromethyl)phenyl	methyl
17	2,6-dichloro-4-pyridyl	methyl
18	2,6-bis(trifluoromethyl)-4-pyridyl	methyl
19	3,5-dichlorophenyl	ethyl
20	3-chloro-4-fluorophenyl	ethyl
21	3-fluoro-4-chlorophenyl	ethyl
22	3,4-dichlorophenyl	ethyl
23	3-chloro-4-bromophenyl	ethyl
24	3,5-dichloro-4-fluorophenyl	ethyl
25	3,4,5-trichlorophenyl	ethyl
26	3,5-dichloro-4-iodophenyl	ethyl
27	3,4,5-trifluorophenyl	ethyl
28	3-chloro-5-bromophenyl	ethyl
29	3-chloro-5-fluorophenyl	ethyl
30	3-chloro-5-(trifluoromethyl)phenyl	ethyl
31	3,4-dichloro-5-(trifluoromethyl)phenyl	ethyl
32	3,5-bis(trifluoromethyl)phenyl	ethyl
33	4-chloro-3,5-bis(trifluoromethyl)phenyl	ethyl
34	3-(trifluoromethyl)phenyl	ethyl
35	2,6-dichloro-4-pyridyl	ethyl
36	2,6-bis(trifluoromethyl)-4-pyridyl	ethyl
37	3,5-dichlorophenyl	propyl
38	3-chloro-4-fluorophenyl	propyl
39	3-fluoro-4-chlorophenyl	propyl
40	3,4-dichlorophenyl	propyl
41	3-chloro-4-bromophenyl	propyl
42	3,5-dichloro-4-fluorophenyl	propyl
43	3,4,5-trichlorophenyl	propyl
44	3,5-dichloro-4-iodophenyl	propyl
45	3,4,5-trifluorophenyl	propyl
46	3-chloro-5-bromophenyl	propyl
47	3-chloro-5-fluorophenyl	propyl
48	3-chloro-5-(trifluoromethyl)phenyl	propyl
49	3,4-dichloro-5-(trifluoromethyl)phenyl	propyl
50	3,5-bis(trifluoromethyl)phenyl	propyl
51	4-chloro-3,5-bis(trifluoromethyl)phenyl	propyl
52	3-(trifluoromethyl)phenyl	propyl
53	2,6-dichloro-4-pyridyl	propyl
54	2,6-bis(trifluoromethyl)-4-pyridyl	propyl
55	3,5-dichlorophenyl	isopropyl

56	3-chloro-4-fluorophenyl	isopropyl
57	3-fluoro-4-chlorophenyl	isopropyl
58	3,4-dichlorophenyl	isopropyl
59	3-chloro-4-bromophenyl	isopropyl
60	3,5-dichloro-4-fluorophenyl	isopropyl
61	3,4,5-trichlorophenyl	isopropyl
62	3,5-dichloro-4-iodophenyl	isopropyl
63	3,4,5-trifluorophenyl	isopropyl
64	3-chloro-5-bromophenyl	isopropyl
65	3-chloro-5-fluorophenyl	isopropyl
66	3-chloro-5-(trifluoromethyl)phenyl	isopropyl
67	3,4-dichloro-5-(trifluoromethyl)phenyl	isopropyl
68	3,5-bis(trifluoromethyl)phenyl	isopropyl
69	4-chloro-3,5-bis(trifluoromethyl)phenyl	isopropyl
70	3-(trifluoromethyl)phenyl	isopropyl
71	2,6-dichloro-4-pyridyl	isopropyl
72	2,6-bis(trifluoromethyl)-4-pyridyl	isopropyl
73	3,5-dichlorophenyl	CH ₃ CH ₂ CH(CH ₃)-
74	3-chloro-4-fluorophenyl	CH ₃ CH ₂ CH(CH ₃)-
75	3-fluoro-4-chlorophenyl	CH ₃ CH ₂ CH(CH ₃)-
76	3,4-dichlorophenyl	CH ₃ CH ₂ CH(CH ₃)-
77	3-chloro-4-bromophenyl	CH ₃ CH ₂ CH(CH ₃)-
78	3,5-dichloro-4-fluorophenyl	CH ₃ CH ₂ CH(CH ₃)-
79	3,4,5-trichlorophenyl	CH ₃ CH ₂ CH(CH ₃)-
80	3,5-dichloro-4-iodophenyl	CH ₃ CH ₂ CH(CH ₃)-
81	3,4,5-trifluorophenyl	CH ₃ CH ₂ CH(CH ₃)-
82	3-chloro-5-bromophenyl	CH ₃ CH ₂ CH(CH ₃)-
83	3-chloro-5-fluorophenyl	CH ₃ CH ₂ CH(CH ₃)-
84	3-chloro-5-(trifluoromethyl)phenyl	CH ₃ CH ₂ CH(CH ₃)-
85	3,4-dichloro-5-(trifluoromethyl)phenyl	CH ₃ CH ₂ CH(CH ₃)-
86	3,5-bis(trifluoromethyl)phenyl	CH ₃ CH ₂ CH(CH ₃)-
87	4-chloro-3,5-bis(trifluoromethyl)phenyl	CH ₃ CH ₂ CH(CH ₃)-
88	3-(trifluoromethyl)phenyl	CH ₃ CH ₂ CH(CH ₃)-
89	2,6-dichloro-4-pyridyl	CH ₃ CH ₂ CH(CH ₃)-
90	2,6-bis(trifluoromethyl)-4-pyridyl	CH ₃ CH ₂ CH(CH ₃)-
91	3,5-dichlorophenyl	CH ₃ OCH ₂ -
92	3-chloro-4-fluorophenyl	CH ₃ OCH ₂ -
93	3-fluoro-4-chlorophenyl	CH ₃ OCH ₂ -
94	3,4-dichlorophenyl	CH ₃ OCH ₂ -
95	3-chloro-4-bromophenyl	CH ₃ OCH ₂ -
96	3,5-dichloro-4-fluorophenyl	CH ₃ OCH ₂ -
97	3,4,5-trichlorophenyl	CH ₃ OCH ₂ -
98	3,5-dichloro-4-iodophenyl	CH ₃ OCH ₂ -
99	3,4,5-trifluorophenyl	CH ₃ OCH ₂ -
100	3-chloro-5-bromophenyl	CH ₃ OCH ₂ -
101	3-chloro-5-fluorophenyl	CH ₃ OCH ₂ -
102	3-chloro-5-(trifluoromethyl)phenyl	CH ₃ OCH ₂ -

103	3,4-dichloro-5-(trifluoromethyl)phenyl	CH ₃ OCH ₂ -
104	3,5-bis(trifluoromethyl)phenyl	CH ₃ OCH ₂ -
105	4-chloro-3,5-bis(trifluoromethyl)phenyl	CH ₃ OCH ₂ -
106	3-(trifluoromethyl)phenyl	CH ₃ OCH ₂ -
107	2,6-dichloro-4-pyridyl	CH ₃ OCH ₂ -
108	2,6-bis(trifluoromethyl)-4-pyridyl	CH ₃ OCH ₂ -
109	3,5-dichlorophenyl	CH ₃ OCH ₂ CH ₂ -
110	3-chloro-4-fluorophenyl	CH ₃ OCH ₂ CH ₂ -
111	3-fluoro-4-chlorophenyl	CH ₃ OCH ₂ CH ₂ -
112	3,4-dichlorophenyl	CH ₃ OCH ₂ CH ₂ -
113	3-chloro-4-bromophenyl	CH ₃ OCH ₂ CH ₂ -
114	3,5-dichloro-4-fluorophenyl	CH ₃ OCH ₂ CH ₂ -
115	3,4,5-trichlorophenyl	CH ₃ OCH ₂ CH ₂ -
116	3,5-dichloro-4-iodophenyl	CH ₃ OCH ₂ CH ₂ -
117	3,4,5-trifluorophenyl	CH ₃ OCH ₂ CH ₂ -
118	3-chloro-5-bromophenyl	CH ₃ OCH ₂ CH ₂ -
119	3-chloro-5-fluorophenyl	CH ₃ OCH ₂ CH ₂ -
120	3-chloro-5-(trifluoromethyl)phenyl	CH ₃ OCH ₂ CH ₂ -
121	3,4-dichloro-5-(trifluoromethyl)phenyl	CH ₃ OCH ₂ CH ₂ -
122	3,5-bis(trifluoromethyl)phenyl	CH ₃ OCH ₂ CH ₂ -
123	4-chloro-3,5-bis(trifluoromethyl)phenyl	CH ₃ OCH ₂ CH ₂ -
124	3-(trifluoromethyl)phenyl	CH ₃ OCH ₂ CH ₂ -
125	2,6-dichloro-4-pyridyl	CH ₃ OCH ₂ CH ₂ -
126	2,6-bis(trifluoromethyl)-4-pyridyl	CH ₃ OCH ₂ CH ₂ -
127	3,5-dichlorophenyl	CH ₃ OCH(CH ₃)CH ₂ -
128	3-chloro-4-fluorophenyl	CH ₃ OCH(CH ₃)CH ₂ -
129	3-fluoro-4-chlorophenyl	CH ₃ OCH(CH ₃)CH ₂ -
130	3,4-dichlorophenyl	CH ₃ OCH(CH ₃)CH ₂ -
131	3-chloro-4-bromophenyl	CH ₃ OCH(CH ₃)CH ₂ -
132	3,5-dichloro-4-fluorophenyl	CH ₃ OCH(CH ₃)CH ₂ -
133	3,4,5-trichlorophenyl	CH ₃ OCH(CH ₃)CH ₂ -
134	3,5-dichloro-4-iodophenyl	CH ₃ OCH(CH ₃)CH ₂ -
135	3,4,5-trifluorophenyl	CH ₃ OCH(CH ₃)CH ₂ -
136	3-chloro-5-bromophenyl	CH ₃ OCH(CH ₃)CH ₂ -
137	3-chloro-5-fluorophenyl	CH ₃ OCH(CH ₃)CH ₂ -
138	3-chloro-5-(trifluoromethyl)phenyl	CH ₃ OCH(CH ₃)CH ₂ -
139	3,4-dichloro-5-(trifluoromethyl)phenyl	CH ₃ OCH(CH ₃)CH ₂ -
140	3,5-bis(trifluoromethyl)phenyl	CH ₃ OCH(CH ₃)CH ₂ -
141	4-chloro-3,5-bis(trifluoromethyl)phenyl	CH ₃ OCH(CH ₃)CH ₂ -
142	3-(trifluoromethyl)phenyl	CH ₃ OCH(CH ₃)CH ₂ -
143	2,6-dichloro-4-pyridyl	CH ₃ OCH(CH ₃)CH ₂ -
144	2,6-bis(trifluoromethyl)-4-pyridyl	CH ₃ OCH(CH ₃)CH ₂ -
145	3,5-dichlorophenyl	cyclopropyl
146	3-chloro-4-fluorophenyl	cyclopropyl
147	3-fluoro-4-chlorophenyl	cyclopropyl
148	3,4-dichlorophenyl	cyclopropyl
149	3-chloro-4-bromophenyl	cyclopropyl

150	3,5-dichloro-4-fluorophenyl	cyclopropyl
151	3,4,5-trichlorophenyl	cyclopropyl
152	3,5-dichloro-4-iodophenyl	cyclopropyl
153	3,4,5-trifluorophenyl	cyclopropyl
154	3-chloro-5-bromophenyl	cyclopropyl
155	3-chloro-5-fluorophenyl	cyclopropyl
156	3-chloro-5-(trifluoromethyl)phenyl	cyclopropyl
157	3,4-dichloro-5-(trifluoromethyl)phenyl	cyclopropyl
158	3,5-bis(trifluoromethyl)phenyl	cyclopropyl
159	4-chloro-3,5-bis(trifluoromethyl)phenyl	cyclopropyl
160	3-(trifluoromethyl)phenyl	cyclopropyl
161	2,6-dichloro-4-pyridyl	cyclopropyl
162	2,6-bis(trifluoromethyl)-4-pyridyl	cyclopropyl
163	3,5-dichlorophenyl	Cyclopropyl-CH2-
164	3-chloro-4-fluorophenyl	Cyclopropyl-CH2-
165	3-fluoro-4-chlorophenyl	Cyclopropyl-CH2-
166	3,4-dichlorophenyl	Cyclopropyl-CH2-
167	3-chloro-4-bromophenyl	Cyclopropyl-CH2-
168	3,5-dichloro-4-fluorophenyl	Cyclopropyl-CH2-
169	3,4,5-trichlorophenyl	Cyclopropyl-CH2-
170	3,5-dichloro-4-iodophenyl	Cyclopropyl-CH2-
171	3,4,5-trifluorophenyl	Cyclopropyl-CH2-
172	3-chloro-5-bromophenyl	Cyclopropyl-CH2-
173	3-chloro-5-fluorophenyl	Cyclopropyl-CH2-
174	3-chloro-5-(trifluoromethyl)phenyl	Cyclopropyl-CH2-
175	3,4-dichloro-5-(trifluoromethyl)phenyl	Cyclopropyl-CH2-
176	3,5-bis(trifluoromethyl)phenyl	Cyclopropyl-CH2-
177	4-chloro-3,5-bis(trifluoromethyl)phenyl	Cyclopropyl-CH2-
178	3-(trifluoromethyl)phenyl	Cyclopropyl-CH2-
179	2,6-dichloro-4-pyridyl	Cyclopropyl-CH2-
180	2,6-bis(trifluoromethyl)-4-pyridyl	Cyclopropyl-CH2-
181	3,5-dichlorophenyl	cyclobutyl
182	3-chloro-4-fluorophenyl	cyclobutyl
183	3-fluoro-4-chlorophenyl	cyclobutyl
184	3,4-dichlorophenyl	cyclobutyl
185	3-chloro-4-bromophenyl	cyclobutyl
186	3,5-dichloro-4-fluorophenyl	cyclobutyl
187	3,4,5-trichlorophenyl	cyclobutyl
188	3,5-dichloro-4-iodophenyl	cyclobutyl
189	3,4,5-trifluorophenyl	cyclobutyl
190	3-chloro-5-bromophenyl	cyclobutyl
191	3-chloro-5-fluorophenyl	cyclobutyl
192	3-chloro-5-(trifluoromethyl)phenyl	cyclobutyl
193	3,4-dichloro-5-(trifluoromethyl)phenyl	cyclobutyl
194	3,5-bis(trifluoromethyl)phenyl	cyclobutyl
195	4-chloro-3,5-bis(trifluoromethyl)phenyl	cyclobutyl
196	3-(trifluoromethyl)phenyl	cyclobutyl

197	2,6-dichloro-4-pyridyl	cyclobutyl
198	2,6-bis(trifluoromethyl)-4-pyridyl	cyclobutyl
199	3,5-dichlorophenyl	CH ₃ -S-CH ₂ -
200	3-chloro-4-fluorophenyl	CH ₃ -S-CH ₂ -
201	3-fluoro-4-chlorophenyl	CH ₃ -S-CH ₂ -
202	3,4-dichlorophenyl	CH ₃ -S-CH ₂ -
203	3-chloro-4-bromophenyl	CH ₃ -S-CH ₂ -
204	3,5-dichloro-4-fluorophenyl	CH ₃ -S-CH ₂ -
205	3,4,5-trichlorophenyl	CH ₃ -S-CH ₂ -
206	3,5-dichloro-4-iodophenyl	CH ₃ -S-CH ₂ -
207	3,4,5-trifluorophenyl	CH ₃ -S-CH ₂ -
208	3-chloro-5-bromophenyl	CH ₃ -S-CH ₂ -
209	3-chloro-5-fluorophenyl	CH ₃ -S-CH ₂ -
210	3-chloro-5-(trifluoromethyl)phenyl	CH ₃ -S-CH ₂ -
211	3,4-dichloro-5-(trifluoromethyl)phenyl	CH ₃ -S-CH ₂ -
212	3,5-bis(trifluoromethyl)phenyl	CH ₃ -S-CH ₂ -
213	4-chloro-3,5-bis(trifluoromethyl)phenyl	CH ₃ -S-CH ₂ -
214	3-(trifluoromethyl)phenyl	CH ₃ -S-CH ₂ -
215	2,6-dichloro-4-pyridyl	CH ₃ -S-CH ₂ -
216	2,6-bis(trifluoromethyl)-4-pyridyl	CH ₃ -S-CH ₂ -
217	3,5-dichlorophenyl	CH ₃ -S(O)-CH ₂ -
218	3-chloro-4-fluorophenyl	CH ₃ -S(O)-CH ₂ -
219	3-fluoro-4-chlorophenyl	CH ₃ -S(O)-CH ₂ -
220	3,4-dichlorophenyl	CH ₃ -S(O)-CH ₂ -
221	3-chloro-4-bromophenyl	CH ₃ -S(O)-CH ₂ -
222	3,5-dichloro-4-fluorophenyl	CH ₃ -S(O)-CH ₂ -
223	3,4,5-trichlorophenyl	CH ₃ -S(O)-CH ₂ -
224	3,5-dichloro-4-iodophenyl	CH ₃ -S(O)-CH ₂ -
225	3,4,5-trifluorophenyl	CH ₃ -S(O)-CH ₂ -
226	3-chloro-5-bromophenyl	CH ₃ -S(O)-CH ₂ -
227	3-chloro-5-fluorophenyl	CH ₃ -S(O)-CH ₂ -
228	3-chloro-5-(trifluoromethyl)phenyl	CH ₃ -S(O)-CH ₂ -
229	3,4-dichloro-5-(trifluoromethyl)phenyl	CH ₃ -S(O)-CH ₂ -
230	3,5-bis(trifluoromethyl)phenyl	CH ₃ -S(O)-CH ₂ -
231	4-chloro-3,5-bis(trifluoromethyl)phenyl	CH ₃ -S(O)-CH ₂ -
232	3-(trifluoromethyl)phenyl	CH ₃ -S(O)-CH ₂ -
233	2,6-dichloro-4-pyridyl	CH ₃ -S(O)-CH ₂ -
234	2,6-bis(trifluoromethyl)-4-pyridyl	CH ₃ -S(O)-CH ₂ -
235	3,5-dichlorophenyl	CH ₃ -S(O ₂)-CH ₂ -
236	3-chloro-4-fluorophenyl	CH ₃ -S(O ₂)-CH ₂ -
237	3-fluoro-4-chlorophenyl	CH ₃ -S(O ₂)-CH ₂ -
238	3,4-dichlorophenyl	CH ₃ -S(O ₂)-CH ₂ -
239	3-chloro-4-bromophenyl	CH ₃ -S(O ₂)-CH ₂ -
240	3,5-dichloro-4-fluorophenyl	CH ₃ -S(O ₂)-CH ₂ -
241	3,4,5-trichlorophenyl	CH ₃ -S(O ₂)-CH ₂ -
242	3,5-dichloro-4-iodophenyl	CH ₃ -S(O ₂)-CH ₂ -
243	3,4,5-trifluorophenyl	CH ₃ -S(O ₂)-CH ₂ -

244	3-chloro-5-bromophenyl	CH3-S(O2)-CH2-
245	3-chloro-5-fluorophenyl	CH3-S(O2)-CH2-
246	3-chloro-5-(trifluoromethyl)phenyl	CH3-S(O2)-CH2-
247	3,4-dichloro-5-(trifluoromethyl)phenyl	CH3-S(O2)-CH2-
248	3,5-bis(trifluoromethyl)phenyl	CH3-S(O2)-CH2-
249	4-chloro-3,5-bis(trifluoromethyl)phenyl	CH3-S(O2)-CH2-
250	3-(trifluoromethyl)phenyl	CH3-S(O2)-CH2-
251	2,6-dichloro-4-pyridyl	CH3-S(O2)-CH2-
252	2,6-bis(trifluoromethyl)-4-pyridyl	CH3-S(O2)-CH2-
253	3,5-dichlorophenyl	tetrahydrofuran-2-yl
254	3-chloro-4-fluorophenyl	tetrahydrofuran-2-yl
255	3-fluoro-4-chlorophenyl	tetrahydrofuran-2-yl
256	3,4-dichlorophenyl	tetrahydrofuran-2-yl
257	3-chloro-4-bromophenyl	tetrahydrofuran-2-yl
258	3,5-dichloro-4-fluorophenyl	tetrahydrofuran-2-yl
259	3,4,5-trichlorophenyl	tetrahydrofuran-2-yl
260	3,5-dichloro-4-iodophenyl	tetrahydrofuran-2-yl
261	3,4,5-trifluorophenyl	tetrahydrofuran-2-yl
262	3-chloro-5-bromophenyl	tetrahydrofuran-2-yl
263	3-chloro-5-fluorophenyl	tetrahydrofuran-2-yl
264	3-chloro-5-(trifluoromethyl)phenyl	tetrahydrofuran-2-yl
265	3,4-dichloro-5-(trifluoromethyl)phenyl	tetrahydrofuran-2-yl
266	3,5-bis(trifluoromethyl)phenyl	tetrahydrofuran-2-yl
267	4-chloro-3,5-bis(trifluoromethyl)phenyl	tetrahydrofuran-2-yl
268	3-(trifluoromethyl)phenyl	tetrahydrofuran-2-yl
269	2,6-dichloro-4-pyridyl	tetrahydrofuran-2-yl
270	2,6-bis(trifluoromethyl)-4-pyridyl	tetrahydrofuran-2-yl
271	3,5-dichlorophenyl	tetrahydrofuran-3-yl
272	3-chloro-4-fluorophenyl	tetrahydrofuran-3-yl
273	3-fluoro-4-chlorophenyl	tetrahydrofuran-3-yl
274	3,4-dichlorophenyl	tetrahydrofuran-3-yl
275	3-chloro-4-bromophenyl	tetrahydrofuran-3-yl
276	3,5-dichloro-4-fluorophenyl	tetrahydrofuran-3-yl
277	3,4,5-trichlorophenyl	tetrahydrofuran-3-yl
278	3,5-dichloro-4-iodophenyl	tetrahydrofuran-3-yl
279	3,4,5-trifluorophenyl	tetrahydrofuran-3-yl
280	3-chloro-5-bromophenyl	tetrahydrofuran-3-yl
281	3-chloro-5-fluorophenyl	tetrahydrofuran-3-yl
282	3-chloro-5-(trifluoromethyl)phenyl	tetrahydrofuran-3-yl
283	3,4-dichloro-5-(trifluoromethyl)phenyl	tetrahydrofuran-3-yl
284	3,5-bis(trifluoromethyl)phenyl	tetrahydrofuran-3-yl
285	4-chloro-3,5-bis(trifluoromethyl)phenyl	tetrahydrofuran-3-yl
286	3-(trifluoromethyl)phenyl	tetrahydrofuran-3-yl
287	2,6-dichloro-4-pyridyl	tetrahydrofuran-3-yl
288	2,6-bis(trifluoromethyl)-4-pyridyl	tetrahydrofuran-3-yl

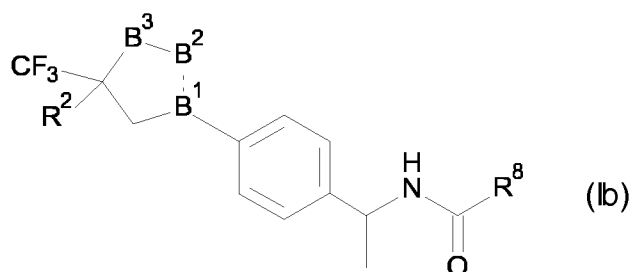
Table 21

Table 21 provides 288 compounds of formula Ib wherein B1-B2-B3 is C=N-O, and R2 and R8 are as defined in Table P.

Table 22

Table 22 provides 288 compounds of formula Ib wherein B1-B2-B3 is C=N-CH2, and R2 and R8 are as defined in Table P.

Table 23

Table 23 provides 288 compounds of formula Ib wherein B1-B2-B3 is N-CH2-CH2, and R2 and R8 are as defined in Table P.

Table 24

Table 24 provides 288 compounds of formula Ib wherein B1-B2-B3 is C=C-O, and R2 and R8 are as defined in Table P.

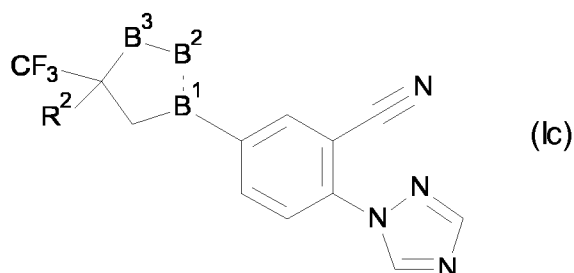
Table 25

Table 25 provides 18 compounds of formula Ic wherein B1-B2-B3 is C=N-O, and R2 is as defined in Table Q.

Table 26

Table 26 provides 18 compounds of formula Ic wherein B1-B2-B3 is C=N-CH2, and R2 is as defined in Table Q.

Table 27

Table 27 provides 18 compounds of formula Ic wherein B1-B2-B3 is N-CH2-CH2, and R2 is as defined in Table Q.

Table 28

Table 28 provides 18 compounds of formula Ic wherein B1-B2-B3 is C=C-O, and R2 is as defined in Table Q.

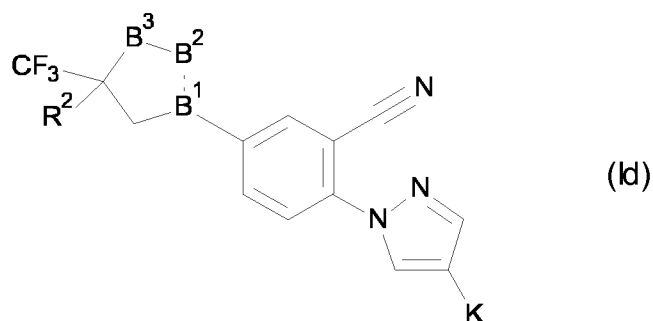
Table 29

Table 29 provides 18 compounds of formula Id wherein k is CN, B1-B2-B3 is C=N-O and R2 is as defined in Table Q.

Table 30

Table 30 provides 18 compounds of formula Id wherein k is CF3, B1-B2-B3 is C=N-O and R2 is as defined in Table Q.

Table 31

Table 31 provides 18 compounds of formula Id wherein k is CN, B1-B2-B3 is C=N-CH2 and R2 is as defined in Table Q.

Table 32

Table 32 provides 18 compounds of formula Id wherein k is CF3, B1-B2-B3 is C=N-CH2 and R2 is as defined in Table Q.

Table 33

Table 33 provides 18 compounds of formula Id wherein k is CN, B1-B2-B3 is N-CH2-CH2 and R2 is as defined in Table Q.

Table 34

Table 34 provides 18 compounds of formula Id wherein k is CF3, B1-B2-B3 is N-CH2-CH2 and R2 is as defined in Table Q.

Table 35

Table 35 provides 18 compounds of formula Id wherein k is CN, B1-B2-B3 is C=C-O and R2 is as defined in Table Q.

Table 36

Table 36 provides 18 compounds of formula Id wherein k is CF3, B1-B2-B3 is C=C-O and R2 is as defined in Table Q.

Table Q

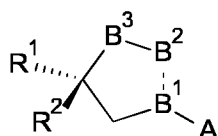
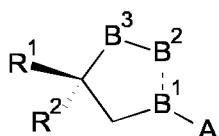
	R2
1	3,5-dichlorophenyl
2	3-chloro-4-fluorophenyl
3	3-fluoro-4-chlorophenyl
4	3,4-dichlorophenyl
5	3-chloro-4-bromophenyl
6	3,5-dichloro-4-fluorophenyl
7	3,4,5-trichlorophenyl
8	3,5-dichloro-4-iodophenyl
9	3,4,5-trifluorophenyl
10	3-chloro-5-bromophenyl
11	3-chloro-5-fluorophenyl
12	3-chloro-5-(trifluoromethyl)phenyl

13	3,4-dichloro-5-(trifluoromethyl)phenyl
14	3,5-bis(trifluoromethyl)phenyl
15	4-chloro-3,5-bis(trifluoromethyl)phenyl
16	3-(trifluoromethyl)phenyl
17	2,6-dichloro-4-pyridyl
18	2,6-bis(trifluoromethyl)-4-pyridyl

Of compounds of formula Ia, compounds in Tables 2, 4, 7 and 9 are particularly preferred. Of compounds of formula Ib, compounds in Tables 21, 22 and 23 are particularly preferred. Of compounds of formula Ic, compounds in Tables 25 and 26 are particularly preferred. Of compounds of formula Id, compounds in Tables 29, 30, 31, and 32 are particularly preferred.

Of particular interest are compounds 25.1, 25.7, 26.1 and 26.7.

Compounds of formula I include at least one chiral centre and may exist as compounds of formula I* or compounds of formula I**. Compounds I* and I** are enantiomers if there is no other chiral center or epimers otherwise.



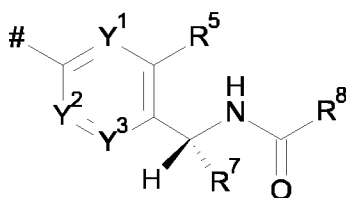
10

(I*)

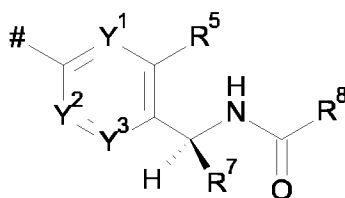
(I**)

Generally compounds of formula I** are more biologically active than compounds of formula I*. The invention includes mixtures of compounds I* and I** in any ratio e.g. in a molar ratio of 1:99 to 99:1, e.g. 10:1 to 1:10, e.g. a substantially 50:50 molar ratio. In an enantiomerically (or epimerically) enriched mixture of formula I**, the molar proportion of compound I** compared to the total amount of both enantiomers (or epimers) is for example greater than 50%, e.g. at least 55, 60, 65, 70, 75, 80, 85, 90, 95, 96, 97, 98, or at least 99%. Likewise, in enantiomerically (or epimerically) enriched mixtures of formula I*, the molar proportion of the compound of formula I* compared to the total amount of both enantiomers (or epimers) is for example greater than 50%, e.g. at least 55, 60, 65, 70, 75, 80, 85, 90, 95, 96, 97, 98, or at least 99%. Enantiomerically (or epimerically) enriched mixtures of formula I** are preferred. Each compound disclosed in Tables 1 to 36 represents a disclosure of a compound according to the compound of formula I* and a compound according to the compound of formula I**.

Likewise, group A2 may be group A2* or A2**.



(A2*)



(A2**)

The invention includes mixtures of compounds of formula I with A2 as A2* and A2** in any ratio e.g. in a molar ratio of 1:99 to 99:1, e.g. 10:1 to 1:10, e.g. a substantially 50:50 molar ratio. In an enantiomerically (or epimerically) enriched mixture of formula I with A2 as A2*, the molar proportion of formula I with A2 as A2* compared to the total amount of both enantiomers (or epimers) is for example
5 greater than 50%, e.g. at least 55, 60, 65, 70, 75, 80, 85, 90, 95, 96, 97, 98, or at least 99%. Likewise, in an enantiomerically (or epimerically) enriched mixture of formula I with A2 as A2**, the molar proportion of the compound of formula I with A2 as A2**, compared to the total amount of both enantiomers (or epimers) is for example greater than 50%, e.g. at least 55, 60, 65, 70, 75, 80, 85, 90, 95, 96, 97, 98, or at least 99%. Enantiomerically (or epimerically) enriched mixtures of formula I with A2 as A2** are
10 preferred.

Each compound disclosed in Tables 21 to 24 represents a disclosure of I with A2 as A2* and a compound I with A2 as A2**. Each compound disclosed in Tables 21 to 24 represents a disclosure of a compound according to formula I* with A2 as A2*. Each compound disclosed in Tables 21 to 24 represents a disclosure of a compound according to formula I** with A2 as A2*. Each compound
15 disclosed in Tables 21 to 24 represents a disclosure of a compound according to formula I* with A2 as A2**. Each compound disclosed in Tables 21 to 24 represents a disclosure of a compound according to formula I** with A2 as A2**. Enantiomerically (or epimerically) enriched mixtures of formula I** with A2 as A2** are preferred.

Reference to compounds of the invention also includes reference to salts and N-oxides.

20 The compounds of formula I may be prepared as described in WO08128711, WO10043315, WO11051455, WO07105814, WO08122375, WO09035004, WO09045999, WO09072621, WO09097992, WO10133336, WO10043315, WO11051455, WO11080211, JP2010235590, JP2011037817, JP2011178724, CN102210317, CN102246777, WO0907261, WO09097992, WO09051956.

25 The methods and uses of the invention are preferably for controlling and/or preventing infestation of the soybean crop by stink bugs, including stink bugs that are resistant to other insecticides, e.g. pyrethroid insecticides. Stinkbugs that are "resistant" to a particular insecticide refers e.g. to strains of stinkbugs that are less sensitive to that insecticide compared to the expected sensitivity of the same species of stinkbug. The expected sensitivity can be measured using e.g. a strain that has not previously
30 been exposed to the insecticide.

Application of the compounds of the invention is preferably to a crop of soybean plants, the locus thereof or propagation material thereof. Preferably application is to a crop of soybean plants or the locus thereof, more preferably to a crop of soybean plants. Application may be before infestation or when the pest is present. Application of the compounds of the invention can be performed according to any of
35 the usual modes of application, e.g. foliar, drench, soil, in furrow etc. However, control of stinkbugs is usually achieved by foliar application, which is the preferred mode of application according to the invention.

The compounds of the invention may be applied in combination with an attractant. An attractant is a chemical that causes the insect to migrate towards the location of application. For control of stinkbugs it can be advantageous to apply the compounds of the invention with an attractant, particularly when the application is foliar. Stinkbugs are often located near to the ground, and application of an attractant may encourage migration up the plant towards the active ingredient. Suitable attractants include glucose, sacchrose, salt, glutamate (e.g. Aji-no-moto™), citric acid (e.g. Orobor™), soybean oil, peanut oil and soybean milk. Glutamate and citric acid are of particular interest, with citric acid being preferred.

An attractant may be premixed with the compound of the invention prior to application, e.g. as a readymix or tankmix, or by simultaneous application or sequential application to the plant. Suitable rates of attractants are for example 0.02kg/ha-3kg/ha.

The compounds of the invention are preferably used for pest control on soybean at 1:500 g/ha, preferably 10-70g/ha.

The compounds of the invention are suitable for use on any soybean plant, including those that have been genetically modified to be resistant to active ingredients such as herbicides, or to produce biologically active compounds that control infestation by plant pests.

In a further preferred embodiment, transgenic plants and plant cultivars obtained by genetic engineering methods, if appropriate in combination with conventional methods (Genetically Modified Organisms), and parts thereof, are treated. Particularly preferably, plants of the plant cultivars which are in each case commercially available or in use are treated according to the invention. Plant cultivars are understood as meaning plants having novel properties ("traits") which have been obtained by conventional breeding, by mutagenesis or by recombinant DNA techniques.

These can be cultivars, bio- or genotypes. Depending on the plant species or plant cultivars, their location and growth conditions (soils, climate, vegetation period, diet), the treatment according to the invention may also result in superadditive "synergistic") effects.

Thus, for example, reduced application rates and/or a widening of the activity spectrum and/or an increase in the activity of the substances and compositions which can be used according to the invention, better plant growth, increased tolerance to high or low temperatures, increased tolerance to drought or to water or soil salt content, increased flowering performance, easier harvesting, accelerated maturation, higher harvest yields, higher quality and/or a higher nutritional value of the harvested products, better storage stability and/or processability of the harvested products are possible, which exceed the effects which were actually to be expected.

The preferred transgenic plants or plant cultivars (obtained by genetic engineering) which are to be treated according to the invention include all plants which, by virtue of the genetic modification, received genetic material which imparts particularly advantageous, useful traits to these plants. Examples of such traits are better plant growth, increased tolerance to high or low temperatures, increased tolerance to drought or to water or soil salt content, increased flowering performance, easier harvesting, accelerated maturation, higher harvest yields, higher quality and/or a higher nutritional value of the harvested products, better storage stability and/or processability of the harvested products.

Further and particularly emphasized examples of such traits are a better defence of the plants against animal and microbial pests, such as against insects, mites, phytopathogenic fungi, bacteria and/or viruses, and also increased tolerance of the plants to certain herbicidally active compounds.

Traits that are emphasized in particular are the increased defence of the plants against insects, 5 arachnids, nematodes and slugs and snails by virtue of toxins formed in the plants, in particular those formed in the plants by the genetic material from *Bacillus thuringiensis* (for example by the genes CryIA(a), CryIA(b), CryIA(c), CryIIA, CryIIIA, CryIIIB2, Cry9c, Cry2Ab, Cry3Bb and CryIF and also combinations thereof) (referred to herein as "Bt plants"). Traits that are also particularly emphasized are the increased defence of the plants against fungi, bacteria and viruses by systemic acquired resistance 10 (SAR), systemin, phytoalexins, elicitors and resistance genes and correspondingly expressed proteins and toxins.

Traits that are furthermore particularly emphasized are the increased tolerance of the plants to certain herbicidally active compounds, for example imidazolinones, sulphonylureas, glyphosate or phosphinotricin (for example the "PAT" gene). The genes which impart the desired traits in question can 15 also be present in combination with one another in the transgenic plants.

Examples of "Bt plants" are soya bean varieties which are sold under the trade names YIELD GARD®

Examples of herbicide-tolerant plants which may be mentioned are soybean varieties which are sold under the trade names Roundup Ready® (tolerance to glyphosate), Liberty Link® (tolerance to 20 phosphinotricin), IMI® (tolerance to imidazolinones) and STS® (tolerance to sulphonylureas).

Herbicide-resistant plants (plants bred in a conventional manner for herbicide tolerance) which may be mentioned include the varieties sold under the name Clearfield® (for example maize).

Of particular interest are soybean plants carrying traits conferring resistance to 2,4D (e.g. Enlist®), glyphosate (e.g. Roundup Ready®, Roundup Ready 2 Yield®), sulfonylurea (e.g. STS®), glufosinate 25 (e.g. Liberty Link®, Ignite®), Dicamba (Monsanto) HPPD tolerance (e.g. isoxaflutole herbicide) (Bayer CropScience, Syngenta). Double or triple stack in soybean plants of any of the traits described here are also of interest, including glyphosate and sulfonyl-urea tolerance (e.g. Optimum GAT®, plants stacked with STS® and Roundup Ready® or Roundup Ready 2 Yield®), dicamba and glyphosate tolerance (Monsanto). Soybean Cyst Nematode resistance soybean (SCN® - Syngenta) and soybean with Aphid 30 resistant trait (AMT® - Syngenta) are also of interest.

These statements also apply to plant cultivars having these genetic traits or genetic traits still to be developed, which plant cultivars will be developed and/or marketed in the future.

The compounds of the invention may be used on soybean to control, for example, *Elasmopalpus lignosellus*, *Diloboderus abderus*, *Diabrotica speciosa*, *Sternechus subsignatus*, *Formicidae*, *Agrotis ypsilon*, *Julus ssp.*, *Anticarsia gemmatilis*, *Megascelis ssp.*, *Procornitermes ssp.*, *Gryllotalpidae*, *Nezara viridula*, *Piezodorus ssp.*, *Acrosternum ssp.*, *Neomegalotomus ssp.*, *Cerotoma trifurcata*, *Popillia japonica*, *Edessa ssp.*, *Liogenys fuscus*, *Euchistus heros*, stalk borer, *Scaptocoris castanea*, *phyllophaga ssp.*, *Pseudoplusia includens*, *Spodoptera ssp.*, *Bemisia tabaci*, *Agriotes ssp.*, preferably *Diloboderus*

abderus, *Diabrotica speciosa*, *Nezara viridula*, *Piezodorus spp.*, *Acrosternum spp.*, *Cerotoma trifurcata*, *Popillia japonica*, *Euchistus heros*, *phyllophaga spp.*, *Agriotes spp.*.

The compounds of the invention are preferably used on soybean to control stinkbugs, e.g. *Nezara spp.* (e.g. *Nezara viridula*, *Nezara antennata*, *Nezara hilare*), *Piezodorus spp.* (e.g. *Piezodorus guildinii*),
5 *Acrosternum spp.* *Euchistus spp.* (e.g. *Euchistus heros*, *Euschistus servus*), *Halyomorpha halys*, *Plautia crossota*, *Riptortus clavatus*, *Rhopalus msculatus*, *Antestiopsis orbitalis*, *Dichelops spp.* (e.g. *Dichelops furcatus*, *Dichelops melacanthus*), *Eurygaster spp.* (e.g. *Eurygaster intergriceps*, *Eurygaster maura*),
10 *Oebalus spp.* (e.g. *Oebalus mexicana*, *Oebalus poecilus*, *Oebalus pugnase*, *Scotinophara spp.* (e.g. *Scotinophara lurida*, *Scotinophara coarctata*). Preferred targets include *Antestiopsis orbitalis*, *Dichelops furcatus*, *Dichelops melacanthus*, *Euchistus heros*, *Euschistus servus*, *Nezara viridula*, *Nezara hilare*,
Piezodorus guildinii, *Halyomorpha halys*. In one embodiment the stinkbug target is *Nezara viridula*, *Piezodorus spp.*, *Acrosternum spp.*, *Euchistus heros*. The compounds of the invention are particularly effective against *Euschistus* and in particular *Euchistus heros*. *Euschistus* and in particular *Euchistus heros* are the preferred targets.

15 In order to apply a compounds of the invention as an insecticide, acaricide, nematocide or molluscicide to a pest, a locus of pest, or to a plant susceptible to attack by a pest, compounds of the invention is usually formulated into a composition which includes, in addition to the compound of the invention, a suitable inert diluent or carrier and, optionally, a surface active agent (SFA). SFAs are chemicals which are able to modify the properties of an interface (for example, liquid/solid, liquid/air or
20 liquid/liquid interfaces) by lowering the interfacial tension and thereby leading to changes in other properties (for example dispersion, emulsification and wetting). It is preferred that all compositions (both solid and liquid formulations) comprise, by weight, 0.0001 to 95%, more preferably 1 to 85%, for example 5 to 60%, of a compound of the invention. The composition is generally used for the control of pests such that a compound of the invention is applied at a rate of from 0.1g to 10kg per hectare,
25 preferably from 1g to 6kg per hectare, more preferably from 1g to 1kg per hectare.

When used in a seed dressing, a compound of the invention is used at a rate of 0.0001g to 10g (for example 0.001g or 0.05g), preferably 0.005g to 10g, more preferably 0.005g to 4g, per kilogram of seed.

Compositions comprising a compound of the invention can be chosen from a number of formulation types, including dustable powders (DP), soluble powders (SP), water soluble granules (SG),
30 water dispersible granules (WG), wettable powders (WP), granules (GR) (slow or fast release), soluble concentrates (SL), oil miscible liquids (OL), ultra low volume liquids (UL), emulsifiable concentrates (EC), dispersible concentrates (DC), emulsions (both oil in water (EW) and water in oil (EO)), micro-emulsions (ME), suspension concentrates (SC), aerosols, fogging/smoke formulations, capsule suspensions (CS) and seed treatment formulations. The formulation type chosen in any instance will
35 depend upon the particular purpose envisaged and the physical, chemical and biological properties of the compound of the invention.

Dustable powders (DP) may be prepared by mixing a compound of the invention with one or more solid diluents (for example natural clays, kaolin, pyrophyllite, bentonite, alumina, montmorillonite,

kieselguhr, chalk, diatomaceous earths, calcium phosphates, calcium and magnesium carbonates, sulfur, lime, flours, talc and other organic and inorganic solid carriers) and mechanically grinding the mixture to a fine powder.

Soluble powders (SP) may be prepared by mixing a compound of the invention with one or more water-soluble inorganic salts (such as sodium bicarbonate, sodium carbonate or magnesium sulfate) or one or more water-soluble organic solids (such as a polysaccharide) and, optionally, one or more wetting agents, one or more dispersing agents or a mixture of said agents to improve water dispersibility/solubility. The mixture is then ground to a fine powder. Similar compositions may also be granulated to form water soluble granules (SG).

Wettable powders (WP) may be prepared by mixing a compound of the invention with one or more solid diluents or carriers, one or more wetting agents and, preferably, one or more dispersing agents and, optionally, one or more suspending agents to facilitate the dispersion in liquids. The mixture is then ground to a fine powder. Similar compositions may also be granulated to form water dispersible granules (WG).

Granules (GR) may be formed either by granulating a mixture of a compound of the invention and one or more powdered solid diluents or carriers, or from pre-formed blank granules by absorbing a compound of the invention (or a solution thereof, in a suitable agent) in a porous granular material (such as pumice, attapulgite clays, fuller's earth, kieselguhr, diatomaceous earths or ground corn cobs) or by adsorbing a compound of the invention (or a solution thereof, in a suitable agent) on to a hard core material (such as sands, silicates, mineral carbonates, sulfates or phosphates) and drying if necessary. Agents which are commonly used to aid absorption or adsorption include solvents (such as aliphatic and aromatic petroleum solvents, alcohols, ethers, ketones and esters) and sticking agents (such as polyvinyl acetates, polyvinyl alcohols, dextrans, sugars and vegetable oils). One or more other additives may also be included in granules (for example an emulsifying agent, wetting agent or dispersing agent).

Dispersible Concentrates (DC) may be prepared by dissolving a compound of the invention in water or an organic solvent, such as a ketone, alcohol or glycol ether. These solutions may contain a surface active agent (for example to improve water dilution or prevent crystallization in a spray tank).

Emulsifiable concentrates (EC) or oil-in-water emulsions (EW) may be prepared by dissolving a compound of the invention in an organic solvent (optionally containing one or more wetting agents, one or more emulsifying agents or a mixture of said agents). Suitable organic solvents for use in ECs include aromatic hydrocarbons (such as alkylbenzenes or alkylnaphthalenes, exemplified by SOLVESSO 100, SOLVESSO 150 and SOLVESSO 200; SOLVESSO is a Registered Trade Mark), ketones (such as cyclohexanone or methylcyclohexanone) and alcohols (such as benzyl alcohol, furfuryl alcohol or butanol), *N*-alkylpyrrolidones (such as *N*-methylpyrrolidone or *N*-octylpyrrolidone), dimethyl amides of fatty acids (such as C₈-C₁₀ fatty acid dimethylamide) and chlorinated hydrocarbons. An EC product may spontaneously emulsify on addition to water, to produce an emulsion with sufficient stability to allow spray application through appropriate equipment. Preparation of an EW involves obtaining a compound of the invention either as a liquid (if it is not a liquid at room temperature, it may be melted at a

reasonable temperature, typically below 70°C) or in solution (by dissolving it in an appropriate solvent) and then emulsifying the resultant liquid or solution into water containing one or more SFAs, under high shear, to produce an emulsion. Suitable solvents for use in EWs include vegetable oils, chlorinated hydrocarbons (such as chlorobenzenes), aromatic solvents (such as alkylbenzenes or alkylnaphthalenes) and other appropriate organic solvents which have a low solubility in water.

Microemulsions (ME) may be prepared by mixing water with a blend of one or more solvents with one or more SFAs, to produce spontaneously a thermodynamically stable isotropic liquid formulation. A compound of the invention is present initially in either the water or the solvent/SFA blend. Suitable solvents for use in MEs include those hereinbefore described for use in ECs or in EWs. An ME may be either an oil-in-water or a water-in-oil system (which system is present may be determined by conductivity measurements) and may be suitable for mixing water-soluble and oil-soluble pesticides in the same formulation. An ME is suitable for dilution into water, either remaining as a microemulsion or forming a conventional oil-in-water emulsion.

Suspension concentrates (SC) may comprise aqueous or non-aqueous suspensions of finely divided insoluble solid particles of a compound of the invention. SCs may be prepared by ball or bead milling the solid compound of the invention in a suitable medium, optionally with one or more dispersing agents, to produce a fine particle suspension of the compound. One or more wetting agents may be included in the composition and a suspending agent may be included to reduce the rate at which the particles settle. Alternatively, a compound of the invention may be dry milled and added to water, containing agents hereinbefore described, to produce the desired end product.

Aerosol formulations comprise a compound of the invention and a suitable propellant (for example *n*-butane). A compound of the invention may also be dissolved or dispersed in a suitable medium (for example water or a water miscible liquid, such as *n*-propanol) to provide compositions for use in non-pressurized, hand-actuated spray pumps.

A compound of the invention may be mixed in the dry state with a pyrotechnic mixture to form a composition suitable for generating, in an enclosed space, a smoke containing the compound.

Capsule suspensions (CS) may be prepared in a manner similar to the preparation of EW formulations but with an additional polymerization stage such that an aqueous dispersion of oil droplets is obtained, in which each oil droplet is encapsulated by a polymeric shell and contains a compound of the invention and, optionally, a carrier or diluent therefor. The polymeric shell may be produced by either an interfacial polycondensation reaction or by a coacervation procedure. The compositions may provide for controlled release of the compound of the invention and they may be used for seed treatment. A compound of the invention may also be formulated in a biodegradable polymeric matrix to provide a slow, controlled release of the compound.

A composition may include one or more additives to improve the biological performance of the composition (for example by improving wetting, retention or distribution on surfaces; resistance to rain on treated surfaces; or uptake or mobility of a compound of the invention). Such additives include surface active agents, spray additives based on oils, for example certain mineral oils or natural plant oils (such as

soy bean and rape seed oil), and blends of these with other bio-enhancing adjuvants (ingredients which may aid or modify the action of a compound of the invention).

A compound of the invention may also be formulated for use as a seed treatment, for example as a powder composition, including a powder for dry seed treatment (DS), a water soluble powder (SS) or a water dispersible powder for slurry treatment (WS), or as a liquid composition, including a flowable concentrate (FS), a solution (LS) or a capsule suspension (CS). The preparations of DS, SS, WS, FS and LS compositions are very similar to those of, respectively, DP, SP, WP, SC and DC compositions described above. Compositions for treating seed may include an agent for assisting the adhesion of the composition to the seed (for example a mineral oil or a film-forming barrier).

Wetting agents, dispersing agents and emulsifying agents may be surface SFAs of the cationic, anionic, amphoteric or non-ionic type.

Suitable SFAs of the cationic type include quaternary ammonium compounds (for example cetyltrimethyl ammonium bromide), imidazolines and amine salts.

Suitable anionic SFAs include alkali metals salts of fatty acids, salts of aliphatic monoesters of sulfuric acid (for example sodium lauryl sulfate), salts of sulfonated aromatic compounds (for example sodium dodecylbenzenesulfonate, calcium dodecylbenzenesulfonate, butylnaphthalene sulfonate and mixtures of sodium di-*isopropyl*- and tri-*isopropyl*-naphthalene sulfonates), ether sulfates, alcohol ether sulfates (for example sodium laureth-3-sulfate), ether carboxylates (for example sodium laureth-3-carboxylate), phosphate esters (products from the reaction between one or more fatty alcohols and phosphoric acid (predominately mono-esters) or phosphorus pentoxide (predominately di-esters), for example the reaction between lauryl alcohol and tetraphosphoric acid; additionally these products may be ethoxylated), sulfosuccinamates, paraffin or olefine sulfonates, taurates and lignosulfonates.

Suitable SFAs of the amphoteric type include betaines, propionates and glycines.

Suitable SFAs of the non-ionic type include condensation products of alkylene oxides, such as ethylene oxide, propylene oxide, butylene oxide or mixtures thereof, with fatty alcohols (such as oleyl alcohol or cetyl alcohol) or with alkylphenols (such as octylphenol, nonylphenol or octylcresol); partial esters derived from long chain fatty acids or hexitol anhydrides; condensation products of said partial esters with ethylene oxide; block polymers (comprising ethylene oxide and propylene oxide); alkanolamides; simple esters (for example fatty acid polyethylene glycol esters); amine oxides (for example lauryl dimethyl amine oxide); and lecithins.

Suitable suspending agents include hydrophilic colloids (such as polysaccharides, polyvinylpyrrolidone or sodium carboxymethylcellulose) and swelling clays (such as bentonite or attapulgite).

A compound of the invention may be applied by any of the known means of applying pesticidal compounds. For example, it may be applied, formulated or unformulated, to the pests or to a locus of the pests (such as a habitat of the pests, or a growing plant liable to infestation by the pests) or to any part of the plant, including the foliage, stems, branches or roots, to the seed before it is planted or to other media in which plants are growing or are to be planted (such as soil surrounding the roots, the soil generally,

paddy water or hydroponic culture systems), directly or it may be sprayed on, dusted on, applied by dipping, applied as a cream or paste formulation, applied as a vapor or applied through distribution or incorporation of a composition (such as a granular composition or a composition packed in a water-soluble bag) in soil or an aqueous environment.

- 5 A compound of the invention may also be injected into plants or sprayed onto vegetation using electrodynamic spraying techniques or other low volume methods, or applied by land or aerial irrigation systems.

Compositions for use as aqueous preparations (aqueous solutions or dispersions) are generally supplied in the form of a concentrate containing a high proportion of the active ingredient, the concentrate
10 being added to water before use. These concentrates, which may include DCs, SCs, ECs, EWs, MEs, SGs, SPs, WPs, WGs and CSs, are often required to withstand storage for prolonged periods and, after such storage, to be capable of addition to water to form aqueous preparations which remain homogeneous for a sufficient time to enable them to be applied by conventional spray equipment. Such aqueous preparations may contain varying amounts of a compound of the invention (for example 0.0001 to 10%,
15 by weight) depending upon the purpose for which they are to be used.

A compound of the invention may be used in mixtures with fertilizers (for example nitrogen-, potassium- or phosphorus-containing fertilizers). Suitable formulation types include granules of fertilizer. The mixtures preferably contain up to 25% by weight of the compound of the invention.

- The invention therefore also provides a fertilizer composition comprising a fertilizer and a
20 compound of the invention.

The compositions of this invention may contain other compounds having biological activity, for example micronutrients or compounds having fungicidal activity or which possess plant growth regulating, herbicidal, insecticidal, nematocidal or acaricidal activity.

- The compound of the invention may be the sole active ingredient of the composition or it may be
25 admixed with one or more additional active ingredients such as a pesticide, fungicide, synergist, herbicide or plant growth regulator where appropriate. An additional active ingredient may: provide a composition having a broader spectrum of activity or increased persistence at a locus; synergize the activity or complement the activity (for example by increasing the speed of effect or overcoming repellency) of the compound of the invention; or help to overcome or prevent the development of resistance to individual
30 components. The particular additional active ingredient will depend upon the intended utility of the composition. Examples of suitable pesticides include the following:

- a) Pyrethroids, such as permethrin, cypermethrin, fenvalerate, esfenvalerate, deltamethrin, cyhalothrin (in particular lambda-cyhalothrin and gamma cyhalothrin), bifenthrin, fenpropathrin, cyfluthrin, tefluthrin, fish safe pyrethroids (for example ethofenprox), natural pyrethrin, tetramethrin, S-bioallethrin,
35 fenfluthrin, prallethrin, acrinathrin, etofenprox or
5-benzyl-3-furylmethyl-(E)-(1R,3S)-2,2-dimethyl- 3-(2-oxothiolan-3-ylidenemethyl)cyclopropane carboxylate;

- b) Organophosphates, such as profenofos, sulprofos, acephate, methyl parathion, azinphos-methyl, demeton-s-methyl, heptenophos, thiometon, fenamiphos, monocrotophos, profenofos, triazophos, methamidophos, dimethoate, phosphamidon, malathion, chlorpyrifos, phosalone, terbufos, fensulfothion, fonofos, phorate, phoxim, pirimiphos-methyl, pirimiphos-ethyl, fenitrothion, fosthiazate or diazinon;
- 5 c) Carbamates (including aryl carbamates), such as pirimicarb, triazamate, cloethocarb, carbofuran, furathiocarb, ethiofencarb, aldicarb, thiofurox, carbosulfan, bendiocarb, fenobucarb, propoxur, methomyl or oxamyl;
- d) Benzoyl ureas, such as diflubenzuron, triflumuron, hexaflumuron, flufenoxuron, diafenthion, lufeneron, novaluron, noviflumuron or chlorfluazuron;
- 10) Organic tin compounds, such as cyhexatin, fenbutatin oxide or azocyclotin;
- f) Pyrazoles, such as tebufenpyrad, tolfenpyrad, ethiprole, pyriprole, fipronil, and fenpyroximate;
- g) Macrolides, such as avermectins or milbemycins, for example abamectin, emamectin benzoate, ivermectin, milbemycin, spinosad, azadirachtin, milbemectin, lepimectin or spinetoram;
- h) Hormones or pheromones;
- 15 i) Organochlorine compounds, such as endosulfan (in particular alpha-endosulfan), benzene hexachloride, DDT, chlordane or dieldrin;
- j) Amidines, such as chlordimeform or amitraz;
- k) Fumigant agents, such as chloropicrin, dichloropropane, methyl bromide or metam;
- l) Neonicotinoid compounds, such as imidacloprid, thiacloprid, acetamiprid, nitenpyram, dinotefuran,
- 20 thiamethoxam, clothianidin, or nithiazine;
- m) Diacylhydrazines, such as tebufenozide, chromafenozide or methoxyfenozide;
- n) Diphenyl ethers, such as diofenolan or pyriproxifen;
- o) Pyrazolines such as Indoxacarb or metaflumizone;
- p) Ketoenols, such as Spirotetramat, spirotetramat or spiromesifen;
- 25 q) Diamides, such as flubendiamide, chlorantraniliprole (Rynaxypyr®) or cyantraniliprole;
- r) Essential oils such as Bugoil® - (PlantImpact); or
- s) a comopund selected from buprofezine, flonicamid, acequinocyl, bifenazate, cyenopyrafen, cyflumetofen, etoxazole, flometoquin, fluacrypyrim, fluensulfone, flufenerim, flupyradifluorene, harpin, iodomethane, dodecadienol, pyridaben, pyridalyl, pyrimidifen, flupyradifurone, 4-[(6-Chloro-pyridin-3-ylmethyl)-(2,2-difluoro-ethyl)-amino]-5H-furan-2-one (DE 102006015467), CAS: 915972-17-7 (WO 2006129714; WO2011/147953; WO2011/147952), CAS: 26914-55-8 (WO 2007020986), chlorfenapyr, pymetrozine, sulfoxaflor and pyrifluquinazon.

In addition to the major chemical classes of pesticide listed above, other pesticides having particular targets may be employed in the composition, if appropriate for the intended utility of the composition. For instance, selective insecticides for particular crops, for example stemborer specific insecticides (such as cartap) or hopper specific insecticides (such as buprofezin) for use in rice may be employed. Alternatively insecticides or acaricides specific for particular insect species/stages may also be included in the compositions (for example acaricidal ovo-larvicides, such as clofentezine, flubenzimine,

hexythiazox or tetradifon; acaricidal motilicides, such as dicofol or propargite; acaricides, such as bromopropylate or chlorobenzilate; or growth regulators, such as hydramethylnon, cyromazine, methoprene, chlorfluazuron or diflubenzuron).

Examples of fungicidal compounds which may be included in the composition of the invention are (E)-*N*-methyl-2-[2-(2,5-dimethylphenoxy)methyl]phenyl]-2-methoxy-iminoacetamide (SSF-129), 4-bromo-2-cyano-*N,N*-dimethyl-6-trifluoromethylbenzimidazole-1-sulfonamide, α -[*N*-(3-chloro-2,6-xylol)-2-methoxyacetamido]- γ -butyrolactone, 4-chloro-2-cyano-*N,N*-dimethyl-5-*p*-tolylimidazole-1-sulfonamide (IKF-916, cyamidazosulfamid), 3-5-dichloro-*N*-(3-chloro-1-ethyl-1-methyl-2-oxopropyl)-4-methylbenzamide (RH-7281, zoxamide), *N*-allyl-4,5,-dimethyl-2-trimethylsilylthiophene-3-carboxamide (MON65500), *N*-(1-cyano-1,2-dimethylpropyl)-2-(2,4-dichlorophenoxy)propionamide (AC382042), *N*-(2-methoxy-5-pyridyl)-cyclopropane carboxamide, acibenzolar (CGA245704), alanycarb, aldimorph, anilazine, azaconazole, azoxystrobin, benalaxyl, benomyl, biloxazol, bitertanol, blasticidin S, bromuconazole, bupirimate, captafol, captan, carbendazim, carbendazim chlorhydrate, carboxin, carpropamid, carvone, CGA41396, CGA41397, chinomethionate, chlorothalonil, chlorozoline, clozylacon, copper containing compounds such as copper oxychloride, copper oxyquinolate, copper sulfate, copper tallate and Bordeaux mixture, cymoxanil, cyproconazole, cyprodinil, debacarb, di-2-pyridyl disulfide 1,1'-dioxide, dichlofluanid, diclomezine, dicloran, diethofencarb, difenoconazole, difenzoquat, diflumetorim, *O,O*-di-*iso*-propyl-*S*-benzyl thiophosphate, dimefluazole, dimetconazole, dimethomorph, dimethirimol, diniconazole, dinocap, dithianon, dodecyl dimethyl ammonium chloride, dodemorph, dodine, doguadine, edifenphos, epoxiconazole, ethirimol, ethyl-(Z)-*N*-benzyl-*N*-([methyl(methyl-thioethylideneaminooxycarbonyl)amino]thio)- β -alaninate, etridiazole, famoxadone, fenamidone (RPA407213), fenarimol, fenbuconazole, fenfuram, fenhexamid (KBR2738), fenpiclonil, fenpropidin, fenpropimorph, fentin acetate, fentin hydroxide, ferbam, ferimzone, fluazinam, fludioxonil, flumetover, fluoroimide, fluquinconazole, flusilazole, flutolanil, flutriafol, folpet, fuberidazole, furalaxyl, furametpyr, guazatine, hexaconazole, hydroxyisoxazole, hymexazole, imazalil, imibenconazole, iminoctadine, iminoctadine triacetate, ipconazole, iprobenfos, iprodione, iprovalicarb (SZX0722), isopropanil butyl carbamate, isoprothiolane, kasugamycin, kresoxim-methyl, LY186054, LY211795, LY248908, mancozeb, maneb, mefenoxam, mepanipyrim, mepronil, metalaxyl, metconazole, metiram, metiram-zinc, metominostrobin, myclobutanil, neosozin, nickel dimethyldithiocarbamate, nitrothal-*iso*-propyl, nuarimol, ofurace, organomercury compounds, oxadixyl, oxasulfuron, oxolinic acid, oxpoconazole, oxycarboxin, pefurazoate, penconazole, pencycuron, phenazin oxide, phosetyl-Al, phosphorus acids, phthalide, picoxystrobin (ZA1963), polyoxin D, polyram, probenazole, prochloraz, procymidone, propamocarb, propiconazole, propineb, propionic acid, pyrazophos, pyrifenoxy, pyrimethanil, pyroquilon, pyroxyfur, pyrrolnitrin, quaternary ammonium compounds, quinomethionate, quinoxifen, quintozone, sipconazole (F-155), sodium pentachlorophenate, spiroxamine, streptomycin, sulfur, tebuconazole, tecloftalam, tecnazene, tetraconazole, thiabendazole, thifluzamid, 2-(thiocyanomethylthio)benzothiazole, thiophanate-methyl, thiram, timibenconazole, tolclofos-methyl, tolylfluanid, triadimefon, triadimenol, triazbutil, triazoxide, tricyclazole, tridemorph, trifloxystrobin

(CGA279202), triforine, triflumizole, triticonazole, validamycin A, vapam, vinclozolin, zineb, ziram; N-[9-(dichloromethylene)-1,2,3,4-tetrahydro-1,4-methanonaphthalen-5-yl]-3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamide [1072957-71-1], 1-methyl-3-difluoromethyl-1H-pyrazole-4-carboxylic acid (2-dichloromethylene-3-ethyl-1-methyl-indan-4-yl)-amide, and 1-methyl-3-difluoromethyl-4H-pyrazole-4-carboxylic acid [2-(2,4-dichloro-phenyl)-2-methoxy-1-methyl-ethyl]-amide.

Preferred additional pesticidally active ingredients are those selected from neonicotinoids, pyrethroids, strobilurins, triazoles and carboxamides (SDHI inhibitors). Pyrethroids are of interest of which lambda-cyhalothrin is of particular interest. Combinations of compounds of the invention and pyrethroids, in particular lambda-cyhalothrin, exhibit synergistic control of stinkbugs (according to the Colby formula), in particular *Euschistus*, e.g. *Euschistus heros*.

In a further aspect of the invention there is provided a method comprising applying to a crop of soybean plants, the locus thereof, or propagation material thereof, a combination of a compound a compound of the invention and lambda cyhalothrin in a synergistically effective amount, wherein the method is for control and/or prevention of stinkbugs, preferably *Euschistus*, e.g. *Euschistus heros*.

The compounds of the invention may be mixed with soil, peat or other rooting media for the protection of plants against seed-borne, soil-borne or foliar fungal diseases.

Examples of suitable synergists for use in the compositions include piperonyl butoxide, sesamex, safroxan and dodecyl imidazole.

Suitable herbicides and plant-growth regulators for inclusion in the compositions will depend upon the intended target and the effect required.

An example of a rice selective herbicide which may be included is propanil. An example of a plant growth regulator for use in cotton is PIXTM.

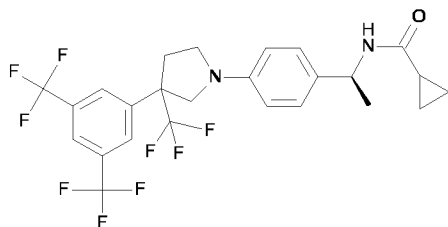
Some mixtures may comprise active ingredients which have significantly different physical, chemical or biological properties such that they do not easily lend themselves to the same conventional formulation type. In these circumstances other formulation types may be prepared. For example, where one active ingredient is a water insoluble solid and the other a water insoluble liquid, it may nevertheless be possible to disperse each active ingredient in the same continuous aqueous phase by dispersing the solid active ingredient as a suspension (using a preparation analogous to that of an SC) but dispersing the liquid active ingredient as an emulsion (using a preparation analogous to that of an EW). The resultant composition is a suspoemulsion (SE) formulation.

Unless otherwise stated the weight ratio of the compound of I with an additional active ingredient may generally be between 1000 : 1 and 1 : 1000. In other embodiments that weight ratio of A to B may be between 500 : 1 to 1 : 500, for example between 100 : 1 to 1 : 100, for example between 1 : 50 to 50 : 1, for example 1 : 20 to 20 : 1, for example 1:10 to 10:1, for example 1:5 to 5:1, for example 1:1.

Compositions of the invention include those prepared by premixing prior to application, e.g. as a readymix or tankmix, or by simultaneous application or sequential application to the plant.

The invention will now be illustrated by the following non-limiting Examples. All citations are incorporated by reference.

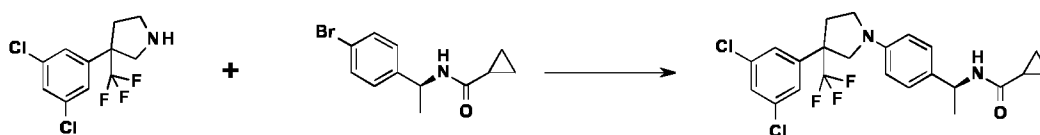
Example 1: Preparation of N-[(1S)-1-[4-[3-[3,5-bis(trifluoromethyl)phenyl]-3-(trifluoromethyl)pyrrolidin-1-yl]phenyl]ethyl]cyclopropanecarboxamide



To a solution of 3-[3,5-bis(trifluoromethyl)phenyl]-3-(trifluoromethyl)pyrrolidine (0.15 g, 0.4271 mmol, prepared as described in WO08128711) and N-[(1S)-1-(4-bromophenyl)ethyl]cyclopropanecarboxamide (0.134 g, 0.4997 mmol, prepared as described in WO 12001107) in Toluene (6.03 mL) stirred under argon were added Tris(dibenzylideneacetone)dipalladium(0) (9 mg), 4,5-Bis(diphenylphosphino)-9,9-dimethylxanthene (18 mg) and sodium tert-butoxide (96 mg). The mixture was heated in the microwave at 130C for 15 min. The reaction was then diluted with ethyl acetate and water then brine and then the mixture was extracted with ethyl acetate. The organic layers were combined and dried over magnesium sulphate, filtered then concentrated under reduced pressure to give a yellow oil which was purified by chromatography on column (cyclohexane/EtOAc as solvent) to afford the desired product as a white foam (172 mg).

¹H NMR (CDCl₃, 400MHz): δ = 7.92 (s, 1 H), 7.86 (s, 2 H), 7.27 (m, 2 H), 6.63 (d, *J*=8.4 Hz, 2 H), 5.74 (d, *J*=7.7 Hz, 1 H), 5.09 (t, *J*=7.3 Hz, 1 H), 4.16 (d, *J*=10.3 Hz, 1 H), 3.85 (d, *J*=10.3 Hz, 1 H), 3.60 (d, *J*=8.1 Hz, 1 H), 3.51 (d, *J*=2.9 Hz, 1 H), 2.91 - 3.03 (m, 1 H), 2.61 (d, *J*=13.6 Hz, 1 H), 1.50 (d, *J*=7.0 Hz, 3 H), 1.17 - 1.34 (m, 1 H), 0.90 - 1.04 (m, 2 H), 0.63 - 0.80 ppm (m, 2 H)

Example 2: Preparation of N-[(1S)-1-[4-[3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidin-1-yl]phenyl]ethyl]cyclopropanecarboxamide



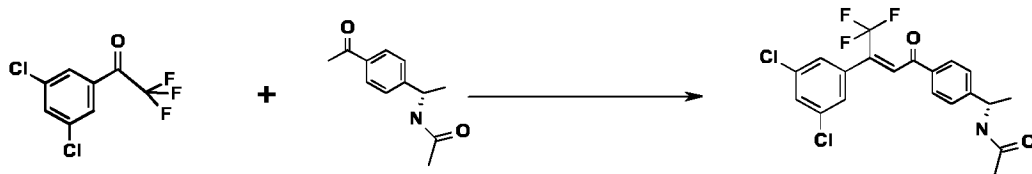
Tris(dibenzylideneacetone)dipalladium(0) (32 mg), 4,5-Bis(diphenylphosphino)-9,9-dimethylxanthene (61 mg) and sodium tert-butoxide (190 mg) were added to a solution of 3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidine (520 mg, prepared as described in WO08128711) and N-[(1S)-1-(4-bromophenyl)ethyl]cyclopropanecarboxamide (prepared as described in WO 2012001107, 520 mg) in Toluene (15mL) under argon atmosphere. The mixture was heated in the microwave at 130C for 30 min. The reaction was then diluted with ethyl acetate and water then brine and then the mixture was extracted with ethyl acetate. The organic layers were combined and dried over sodium sulphate, filtered then concentrated under reduced pressure to give a yellow oil which was purified by chromatography on column (Heptane/EtOAc as solvent (10/0 to 0/10) to afford the desired product as a white foam (650 mg).

¹H NMR (CDCl₃, 400MHz): δ = 7.40 (s, 1 H), 7.31 (s, 2 H), 7.26 (m, 2 H), 6.62 (d, 2 H), 5.73 (d, 1 H),

5.09 (t, 1 H), 4.06 (d, 1 H), 3.85 (d, 1 H), 3.57 (m, 1 H), 3.50 (m, 1 H), 2.84 (m, 1 H), 2.56 (m, 1 H), 1.50 (d, 3 H), 1.2 (m, 1 H), 0.99 (m, 2 H), 0.72 ppm (m, 2 H)

Example 3: Preparation of N-[(1S)-1-[4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]phenyl]ethyl]acetamide

Step 1:



To a suspension of N-[(1S)-1-(4-acetylphenyl)ethyl]acetamide (3 g) and 1-(3,5-dichlorophenyl)-2,2,2-trifluoroethanone (3.6 g) in 1,2-dichloroethane (40 mL) was added triethylamine (0.2 mL) and potassium carbonate (1 g). The solution was stirred at 80°C. After 40 minutes, more potassium carbonate (1 g) was added. The solution was heated at 80°C for another 20 minutes then more potassium carbonate (1 g) was added and the suspension was refluxed for 16 hours. The mixture was then cooled to room temperature, then water was added. The mixture was extracted with dichloromethane then washed with brine. The organic layers were combined and dried over magnesium sulphate, filtered then concentrated under reduced pressure to give a yellow oil which was purified by chromatography on column (Heptane/EtOAc as solvent (1/0 to 3/7) to afford the desired product as a yellow oil (5 g).

¹H NMR (CDCl₃, 400MHz): δ = 7.78 - 7.87 (m, 2 H), 7.42 - 7.40 (m, 2 H), 7.33 (m, 1 H), 7.16 (d, 2 H), 5.69 (d, 1 H), 5.02 - 5.26 (m, 1 H), 2.02 (s, 3 H), 1.48 - 1.51 ppm (d, 3 H)

Step 2:

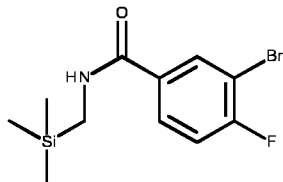


To a solution of N-[(1S)-1-[4-[3-(3,5-dichlorophenyl)-4,4,4-trifluoro-but-2-enoyl]phenyl]ethyl]acetamide (100 mg) in 1,2-dichloroethane (4 mL) was added tetrabutylammonium hydrobromide (40 mg), hydroxylamine (0.03 mL, 50% in water) and sodium hydroxide (0.46 mL, 1M) at room temperature. The solution was stirred at room temperature for 6 hours then a solution of saturated ammonium chloride was added. The mixture was extracted with DCM then washed with brine. The organic layers were combined and dried over magnesium sulphate, filtered then concentrated under reduced pressure to give a yellow oil which was purified by chromatography on column (Heptane/EtOAc as solvent (1/0 to 1/1) to afford the desired product as a yellow oil (77 mg).

¹H NMR (CDCl₃, 400MHz): δ = 7.59 - 7.69 (m, 2 H), 7.49 - 7.57 (m, 2 H), 7.43 (t, J =1.8 Hz, 1 H), 7.34 - 7.41 (m, J =8.4 Hz, 2 H), 5.65 (d, J =7.3 Hz, 1 H), 5.15 (t, J =7.2 Hz, 1 H), 4.01 - 4.13 (m, 1 H), 3.68 (d, J =17.2 Hz, 1 H), 2.01 (s, 3 H), 1.50 (d, J =7.0 Hz, 3 H), 1.27 ppm (t, J =7.2 Hz, 1 H).

5 Example 4: Preparation of 2-(1,2,4-triazol-1-yl)-5-[3-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]benzonitrile

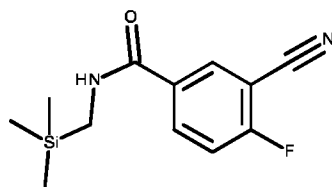
Step 1: Preparation of 3-bromo-4-fluoro-N-(trimethylsilylmethyl)benzamide



- 10 To a solution of 3-bromo-4-fluoro-benzoic acid (500 mg, 2.2830 mmol) in dichloromethane (15 mL) was added N,N-dimethylpyridin-4-amine (28mg, 0.22830 mmol), EDCI HCl (570mg, 2.9679 mmol). To this was added trimethylsilylmethanamine (260mg, 2.5113 mmol) and reaction was stirred at RT under nitrogen atmosphere for overnight, monitored by TLC. Reaction mass was diluted with water (10mL), extracted with DCM (3*50mL). Combined organic layer was dried over sodium sulphate, concentrated under vacuum. Purification by chromatography (hexane/ethyl acetate) provided 3-bromo-4-fluoro-N-(trimethylsilylmethyl)benzamide (550mg, 80%).

¹H NMR (400MHz, CDCl₃): 7.94(dd, 1H); 7.65(m, 1H); 7.15(t, 1H); 5.9(brs, 1H); 2.94(d, 2H); 0.12(s, 9H), LCMS (methanol, ESI): RT=2.06, m/z = 302.0(M-H)

20 Step 2: Preparation of 3-cyano-4-fluoro-N-(trimethylsilylmethyl)benzamide



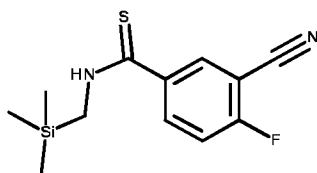
In a sealed tube was taken a solution of 3-bromo-4-fluoro-N-(trimethylsilylmethyl)benzamide (10 g, 32.870 mmol) in N,N-dimethylformamide (60 mL) was added zinc formonitrile (7.85g, 65.740 mmol) followed by palladium(0)tetrakis(triphenylphosphine) (7.61g, 6.5740 mmol). Reaction was degassed and

- 25 purged with nitrogen, stirred at 100°C for 4-5 hrs. Reaction was diluted with water (100 ml) extracted with ethyl acetate (3*100ml), washed with sodium bicarbonate (50 ml). Combined organic layer was dried over sodium sulphate, concentrated under vacuum. Purification by chromatography (hexane/ethyl acetate) provided 3-cyano-4-fluoro-N-(trimethylsilylmethyl)benzamide (6.7g, 81%)

¹H NMR (400MHz, CDCl₃): 7.98-8.02(m, 2H); 7.3(m, 1H); 5.94(brs, 1H); 2.95-2.98(m, 2H); 0.13(s,

- 30 9H). LCMS (methanol, APCI): RT=4.11, m/z = 249.09(M-H)

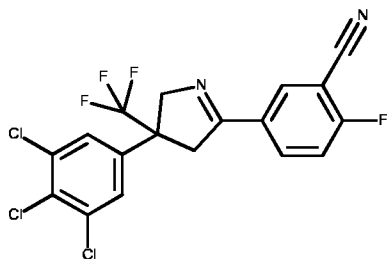
Step 3: Preparation of 3-cyano-4-fluoro-N-(trimethylsilylmethyl)benzenecarbothioamide



A solution of 3-cyano-4-fluoro-N-(trimethylsilylmethyl)benzamide (6.5 g, 26 mmol) and 2,4-bis(4-methoxyphenyl)-2,4-dithioxo-1,3,2,4-dithiadiphosphetane (11g, 26 mmol) in tetrahydrofuran (75 mL,) was refluxed for 2hrs. Reaction mass was concentrated to remove THF, diluted with water (50ml), extracted with ethyl acetate (3*100ml). Combined organic layer was dried over sodium sulphate, concentrated under vacuum. Purification by chromatography (hexane/ethyl acetate) provided 3-cyano-4-fluoro-N-(trimethylsilylmethyl) benzenecarbothioamide (4.8g, 69%).

¹H NMR (400MHz, CDCl₃): 8.2(m, 1H); 7.93-7.99(m, 1H); 7.64(brs, 1H); 7.22(m, 1H); 3.52(d, 2H); 0.18(s, 9H), LCMS (methanol, APCI): RT=4.55, m/z = 265.45(M-H).

Step 4: Preparation of 2-fluoro-5-[3-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]benzonitrile

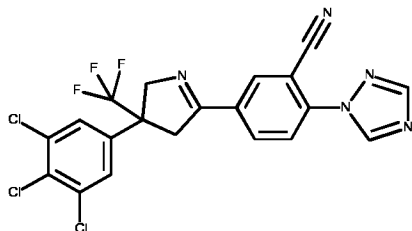


To a solution of 3-cyano-4-fluoro-N-(trimethylsilylmethyl)benzenecarbothioamide (4 g, 15.02 mmol) in N,N-dimethylformamide (40 mL) was added dipotassium carbonic acid (5.26g, 37.54 mmol). To this was added iodomethane (21.31g, 150.2 mmol). Reaction mass was stirred at RT for 3hrs, monitored by TLC. Reaction mass was quenched with water (10mL), extracted with ethyl acetate (3*50mL). Combined organic layer was dried over sodium sulphate, concentrated under vacuum to give methyl-3-cyano-4-fluoro-N-(trimethylsilylmethyl) benzenecarboximidothioate. To a -5°C cooled solution of methyl-3-cyano-4-fluoro-N-(trimethylsilylmethyl) benzenecarboximidothioate (4 g, 14.27 mmol) and 1,2,3-trichloro-5-[1-(trifluoromethyl)vinyl]benzene (3.97g., 14.41 mmol) in tetrahydrofuran (5 mL) was slowly added tetrabutylammonium hydrofluoride (7.13 mL, 7.133 mmol, 1 mol/L). Reaction was stirred at -5°C for 30 mins, then allowed to come at RT, and stirred at RT for 2hrs under Nitrogen atmosphere. Reaction was diluted with water (50ml), extracted with ethyl acetate (3*100 mL). Combined organic layer was dried over sodium sulphate, concentrated under vacuum. Purification by chromatography (hexane/ethyl acetate) provided 2-fluoro-5-[3-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]benzonitrile (2.5g, 40%).

^1H NMR(400MHz, CDCl_3): 8.04-8.13(m, 2H); 7.37(s, 2H); 7.35(m, 1H); 4.82(dd, 1H); 4.36(d, 1H); 3.7(dd, 1H); 3.35(d, 1H) ,LCMS (methanol, APCI): RT=5.05, m/z = 434.88(M+H)

Step 5: Preparation of 2-(1,2,4-triazol-1-yl)-5-[3-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-

5 dihydropyrrol-5-yl]benzonitrile

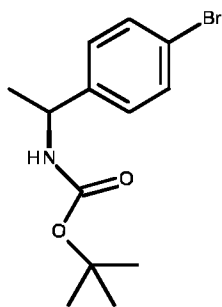


A solution of 2-fluoro-5-[3-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]benzonitrile (1.0 g, 2.3 mmol) , dipotassium carbonic acid (390mg, 2.8 mmol) and 1H-1,2,4-triazole (190mg, 2.8 mmol) were heated at 120°C for 2-3 hrs, monitored by TLC. Reaction was diluted with water (10ml), extracted with ethyl acetate (3*30ml). Combined organic layer was dried over sodium sulphate, concentrated under vacuum. Purification by chromatography (hexane/ethyl acetate) provided 2-(1,2,4-triazol-1-yl)-5-[3-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-5-yl]benzonitrile as solid (950mg, 85%). Melting point: 162-164°C.

^1H NMR (400MHz, CDCl_3): 8.9(s, 1H), 8.29-8.34(m, 2H); 8.21(s, 1H); 7.93(d, 1H); 7.40(s, 2H); 4.94(d, 1H); 4.51(d, 1H); 3.84(d, 1H); 3.54(d, 1H);, LCMS (methanol, APCI): RT=4.96, m/z = 483.94(M+H)

Example 5: Preparation of N-[(1S)-1-[4-[5-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-3-yl]phenyl]ethyl]cyclopropanecarboxamide

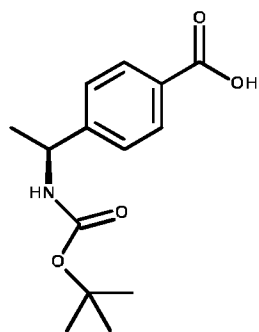
20 Step 1: Preparation of tert-butyl N-[(1S)-1-(4-bromophenyl)ethyl]carbamate



To a stirring solution of compound (1S)-1-(4-bromophenyl)ethanamine (50 mmol) in 50ml RB and tert-butoxycarbonyl tert-butyl carbonate (50 mmol) was added over period of 20 min and stirring was continued vigorously, After 5 min solid was precipitated out from reaction mass and thus obtained solid was filtered and washed with hexane and dried under vacuum. Weight-13 g (85%)

^1H -NMR (400 MHz, CDCl_3): 7.45(2H, d), 7.18(2H, d), 4.74(1H, m), 1.40-1.48 (12H, m).

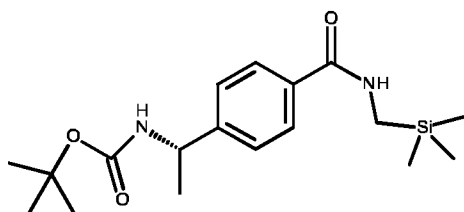
Step 2: Preparation of 4-[(1S)-1-(tert-butoxycarbonylamino)ethyl]benzoic acid



To a stirring solution of compound tert-butyl N-[(1S)-1-(4-bromophenyl)ethyl]carbamate (1 g, 3.331 mmol,) in THF (30ml) cooled to -78 °C, methyl lithium (5.33 mmol,1.6 eq) was added drop wise under nitrogen atmosphere and stirring was continued for 15 min followed by addition of butyllithium(5.33 mmol, 1.6 eq) drop wise and stirring was continued for 30 min. Dry carbon dioxide was added and stirring continued for 1h at -70 °C to rt. The reaction mass was quenched with water 50 ml and compound was extracted with ethyl acetate 30ml x 2 in order to remove debromo compound. Aqueous layer was acidified with ammonium chloride and extracted with ethylacetate 30 ml x 2 times. The combined organic layers were dried with sodium sulfate and evaporated off under vacuum and dried under vacuum. Weight- 0.61 g

¹H-NMR (400 MHz, CDCl₃): 7.86(2H, d), 7.37(2H, d), 4.64(1H, m), 1.28-1.31 (12H, m). LC-MS (methanol, ESI): m/z =264(M-H), RT 1.95-2.07.

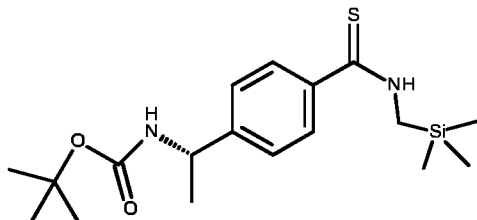
Step 3: Preparation of tert-butyl N-[(1S)-1-[4-(trimethylsilylmethylcarbamoyl)phenyl]ethyl]carbamate



To a stirring solution of 4-[(1S)-1-(tert-butoxycarbonylamino)ethyl]benzoic acid (1 g, 3.769 mmol), 1-hydroxybenzotriazole hydrate (542 mg, 3.5mmol) in DMF (5 ml), in DCM (30 ml), trimethylsilylmethanamine (0.38 g, 3.7 mmol), trimethylsilylmethanamine (0.38 g, 3.7 mmol) and the reaction mass was cooled to 0 °C and 3-(ethyliminomethyl)eneamino)-N,N-dimethyl-propan-1-amine hydrochloride (848 mg, 4.4234 mmol) was added and reaction was stirred at 0 °C to RT for overnight. TLC showed reaction was completed. The reaction mass was quenched with water (30mL) and extracted with DCM (35 ml x 2) and combined organic layer was washed with water (20 ml x 2) and dried with sodium sulfate and evaporated of under reduced pressure and compound was purified by combiflash. Weight - 0.93 g

¹H-NMR (400 MHz, CDCl₃): 7.68 (2H, d), 7.34(2H, d), 5.93(1H, m). 4.81 (2H, d), 2.95(2H, d), 1.40-1.45 (12H, m). LC-MS (methanol, ESI): m/z =349(M-H), RT 1.95-2.07 .

Step 4: Preparation of tert-butyl N-[(1S)-1-[4-(trimethylsilylmethylcarbamoyl)phenyl]ethyl]carbamate

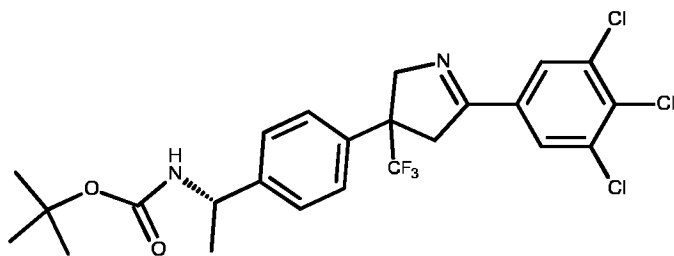


To a solution of tert-butyl N-[(1S)-1-[4-(trimethylsilylmethylcarbamoyl)phenyl]ethyl]carbamate (1 g, 2.853 mmol) in THF (25ml) was added 2,4-bis(4-methoxyphenyl)-1,3,2,4-dithiadiphosphetane-2,4-

5 disulfide (1 eq, 2.853 mmol,) and reaction mass was stirred at 65 °C for 4h. TLC showed reaction was completed. The solvent was removed from the reaction mass on rotary evaporator and resultant reaction mass was diluted with ethyl acetate, washed with water (twice). The organic layer was dried over anhydrous sodium sulfate and concentrated under reduced pressure. Crude mass thus obtained was purified by combiflash (silica gel). Weight - 0.8 g

10 ¹H-NMR (400 MHz, CDCl₃): 7.65 (2H, d), 7.51-7.52 (1H, m), 7.30(2H, d), 4.76-4.81 (2H, m), 3.51 (2H, d), 1.40-1.45 (12H, m). LC-MS (methanol, ESI): m/z =365 (M-H), RT 2.51-2.57.

Step 5: Preparation of tert-butyl N-[(1S)-1-[4-[5-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-3-yl]phenyl]ethyl]carbamate



15

To stirring solution of compound tert-butyl N-[(1S)-1-[4-

(trimethylsilylmethylcarbamoyl)phenyl]ethyl]carbamate (0.5 g, 1 mmol) in DMF (25ml), potassium carbonate (2 eq., 2 mmol,) was added followed by addition of iodomethane (10 equiv., 10 mmol) over 20 period of 1hr and stirring was continued for 3h. After completion of reaction (monitored by TLC) reaction mass was diluted with ethyl acetate and washed with water (20 ml x 3 times) and dried with sodium sulphate and evaporated off under vacuum. Thus obtained reaction mass was taken into THF (25ml) and 1,2,3-trichloro-5-[1-(trifluoromethyl)vinyl] benzene (1 equiv., 1 mmol) was added into it.

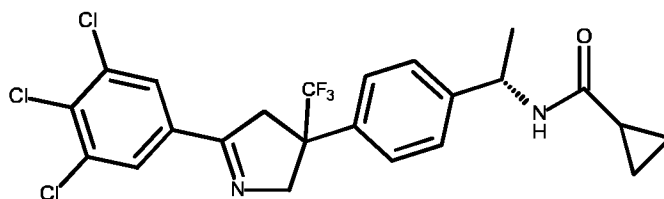
The mixture was cooled to 0 °C, TBAF (1 eq, 1 mmol) was added and stirring was continued for 3h at 25 rt.

After completion of reaction (monitored by TLC), solvent was evaporated off under vacuum and reaction mass was diluted with ethyl acetate and washed with water (30ml x 2 times) and dried with sodium sulphate and evaporated off under vacuum. Compound was purified by combiflash, (25-30% EtOAc-hexane). Weight - 0.11 g (20%)

¹H-NMR (400 MHz, CDCl₃): 7.97 (2H, d), 7.33-7.56 (4H, m), 4.85-4.92 (2H, m), 4.50 (1H, dd), 3.91 (1H, dd), 3.58 (1H, dd), 1.40-1.45 (12H, m). LC-MS (methanol, ESI): m/z = 533 (M-H), RT 2.51-2.57.

- 5 Step 6: Preparation of N-[(1S)-1-[4-[5-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-3-yl]phenyl]ethyl]cyclopropanecarboxamide

10

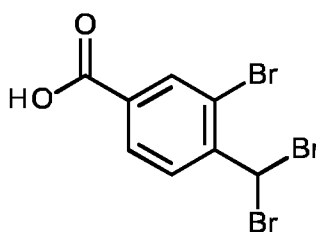
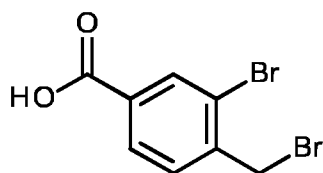


To a solution of tert-butyl N-[(1S)-1-[4-[5-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-3-yl]phenyl]ethyl]carbamate (0.35 g) in DCM (20ml) was added 2,2,2-trifluoroacetic acid (3 equiv) and reaction mass was stirred for 5h at RT. After completion of the reaction, solvent was removed under
 15 vacuuo and compound thus obtained was directly taken for the next step. A Solution of (1S)-1-[4-[5-(3,4,5-trichlorophenyl)-3-(trifluoromethyl)-2,4-dihydropyrrol-3-yl]phenyl]ethanamine TFA salt (0.3 g, 0.7 mmol), in DCM (20ml) was cooled at 0° C. To the cooled mixture was added triethylamine (2.2 eq, 1.54 mmol) followed by dropwise addition of cyclopropane carboxylic acid chloride (1 equiv, 0.7 mmol) over period of 5min and stirring was continued for overnight. After completion of reaction (monitored by
 20 TLC), reaction mass was diluted with DCM (20 ml) and washed with water (20ml). The organic layer was then dried over anhydrous sodium sulphate, and the solvent was removed under vacuum. Compound was purified by Combiflash (35 % EtOAc-hexane) Weight - 0.2 g, MPt. 80-82 °C.

¹H-NMR (400 MHz, CDCl₃): 7.82(2H, d), 7.35-7.41 (4H, m), 6.05 (1H, m), 5.13 (1H, m), 4.86 (1H, dd), 4.42 (1H, dd), 3.78 (1H, dd), 3.45 (1H, dd). 1.46-1.50 (4H, m), 0.93-0.96 (2H, m), 0.72-0.731 (2H, m)
 25 LC-MS (methanol, ESI): m/z = 501(M-H), RT 2.23-2.30.

Example 6: Preparation of N-{2-bromo-4-[4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2-yl]-benzyl}acetamide.

- 30 Step 1: Bromination of 3-bromo-4-methyl benzoic acid.

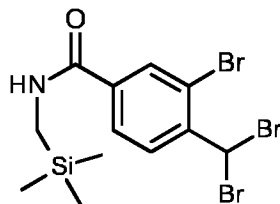


3-bromo-4-methyl benzoic acid (10g, 46.72mmol), NBS (8.7g,49.15mmol) and benzoylperoxide (0.5g, 2mmol) were suspended in CCl₄ and then heated to reflux for 5hrs. After completion of the reaction

(TLC monitoring) water was added into the reaction mixture. The organic layer was separated, dried over anhydrous sodium sulphate and concentrated in vacuo. The crude mixture thus obtained containing 3-bromo-4-bromomethyl benzoic acid and the 3-bromo-4-dibromomethyl benzoic acid was taken directly into the next step.

- 5 LC-MS (methanol, ESI): m/z =291 (M-H) and 368 (M-H)

Step 2: Preparation of 3-bromo-4-(dibromomethyl)-N-[(trimethylsilyl)methyl]benzamide.



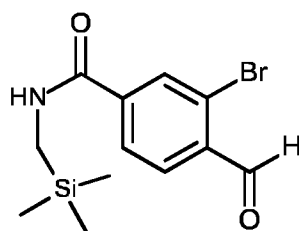
- 10 A mixture of 3-bromo-4-(bromomethyl)-N-[(trimethylsilyl)methyl]benzamide and 3-bromo-4-(dibromomethyl)-N-[(trimethylsilyl)methyl]benzamide (19 g, 51mmol), 1-(trimethylsilyl)methylamine (5.78g, 56mmol), N,N-dimethylaminopyridine (0.1g) and N-(3-dimethylaminopropyl)-N'-ethylcarbodiimide.HCl (12.74g, 66mmol) was dissolved in tetrahydrofuran solvent and stirred for 1h at rt. After completion of the reaction (TLC monitoring), Reaction mixture was
- 15 concentrated on rotary evaporator. Water was added to the reaction mixture, and extracted with ethylacetate. The organic layer was separated and dried using sodium sulphate. The residue was purified by silica gel chromatography to obtain 3-bromo-4-(dibromomethyl)-N-[(trimethylsilyl)methyl]benzamide (16g).

3-bromo-4-(dibromomethyl)-N-[(trimethylsilyl)methyl]benzamide.

- 20 LC-MS (methanol, ESI): m/z =456 (M+H).

¹H-NMR (400 MHz, CDCl₃): 8.01 (1H, dd), 7.87(1H, d), 7.04(1H, dd), 6.13(1H,bs), 3.51 (2H, d), 0.17 (9H,s).

Step 3: Preparation of 3-bromo-4-formyl-N-[(trimethylsilyl)methyl]benzamide.



25

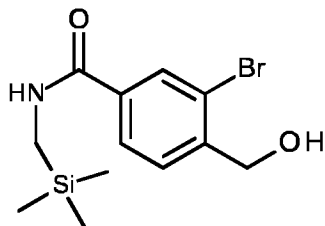
Compound B (3-bromo-4-(dibromomethyl)-N-[(trimethylsilyl)methyl]benzamide.) (0.25g, 0.69mmol) was taken in acetone (5ml) and water (2.5ml). Silver nitrate (0.3g, 1.7mmol) was added to the reaction mixture. The reaction was stirred at rt for 6hrs. The reaction mass was then concentrated and extracted with ethylacetate. The organic layer was separated and dried using sodium sulphate. The organic layer

30 was concentrated to obtain the product 3-bromo-4-formyl-N-[(trimethylsilyl)methyl]benzamide. (0.15g).

LC-MS (methanol, ESI): $m/z = 314(M+H)$.

1H -NMR (400 MHz, $CDCl_3$): 10.33(1H,s), 7.90 (1H, m), 7.60 (1H, dd), 7.56 (1H, m), 5.99(1H,s), 2.99 (2H, d), 0.17 (9H,s).

5 Step 4: Preparation of 3-bromo-4-hydroxymethyl-N-[trimethylsilaylmethyl] benzamide.



3-bromo-4-formyl-N-[(trimethylsilyl)methyl]benzamide(0.1g, 0.3mmol) was dissolved in methanol and to this was added $NaBH_4$ (0.014g, 0.38 mmol). Reaction was stirred at rt for 1hr. Methanol was removed under vacuo and water was added to the reaction mass which was then extracted using ethyl

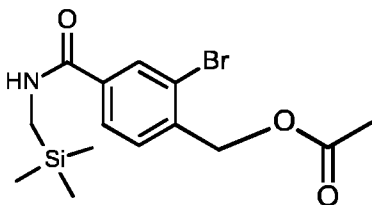
10 acetate. The organic layer was separated and dried using sodium sulphate followed by concentration to get the product 3-bromo-4-hydroxymethyl-N-[trimethylsilylmethyl] benzamide (0.05g).

LC-MS (methanol, ESI): $m/z = 316 (M+H)$.

1H -NMR (400 MHz, $CDCl_3$): 7.90 (1H, m), 7.60 (1H, m), 7.53 (1H, m), 6.02(1H, s), 4.75 (2H,s), 2.99(2H,s), 0.17 (9H,s).

15

Step 5: Preparation of Acetic acid 2-bromo-4- (trimethylsilanylmethyl-carbamoyl)-benzylester.



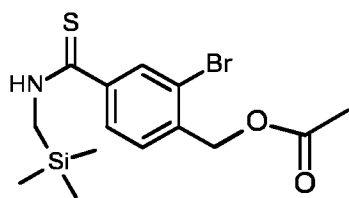
3-bromo-4-hydroxymethyl-N-[trimethylsilylmethyl] benzamide (0.25g, 0.7mmol) was dissolved in DMF solvent, triethyl amine (0.159g, 1.5mmol) and acetyl chloride (0.061g, 0.8mmol) were added to the

20 reaction mixture at rt. The reaction was stirred at rt for 30min. Water was added and reaction mass was then extracted with ethyl acetate. The organic layer was separated, dried using sodium sulphate and concentrated to get the product Acetic acid 2-bromo-4- (trimethylsilanylmethyl-carbamoyl)-benzylester (0.15g).

LC-MS (methanol): $m/z = 358 (M+H)$.

25 1H -NMR (400 MHz, $CDCl_3$): 7.90 (1H, m), 7.60 (1H, m), 7.38 (1H, m), 6.14(1H, bs), 5.11(2H, s), 2.99 (2H, d), 2.15 (3H, s), 0.17 (9H, s).

Step 6: Preparation of 3-bromo-4-(2-oxo-propyl)-N-trimethylsilanylmethyl-thiobenzamide.

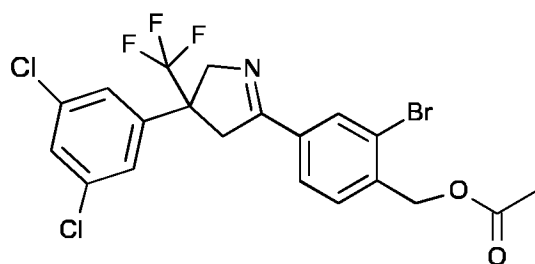


Acetic acid 2-bromo-4-(trimethylsilylmethyl-carbamoyl)-benzylester (2.4g, 7.6mmol) and Lawesson reagent (2.7g, 6.6mmol) were suspended in THF. The mixture was heated to reflux for 3hrs, concentrated, washed with water and extracted with ethyl acetate. The organic layer was separated and dried using sodium sulphate. The residue was purified by silica gel chromatography to obtain 3-bromo-4-(2-oxo-propyl)-N-trimethylsilylmethyl-thiobenzamide (1.8g).

LC-MS (methanol, ESI): $m/z = 374(M+H)$.

1H -NMR (400 MHz, $CDCl_3$): 7.90 (1H, m), 7.60 (1H, m), 7.38 (1H, m), 6.01 (1H, br s), 5.11 (2H, d), 2.99 (2H, d), 2.15 (3H, s), 0.17 (9H, s)

Step 7: Preparation of Acetic acid 2-bromo-4-[4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzylester.

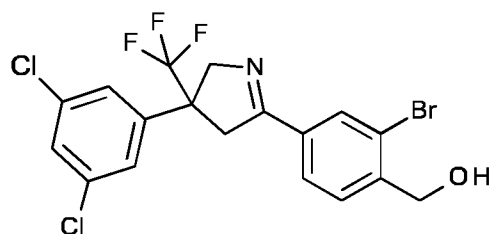


A mixed solution of methyl iodide (0.69g, 4.8mmol), potassium carbonate (0.80g, 5.7mmol) and 3-bromo-4-(2-oxo-propyl)-N-trimethylsilylmethyl-thiobenzamide (1.8g, 5.4mmol) in DMF (25ml) was stirred at 0 °C for 4hrs. The reaction mixture was poured into ice-cold water, extracted with ethyl acetate. The organic layer was separated, dried using sodium sulphate and concentrated to get the crude Acetic acid 2-bromo-4-{methylsulfonyl-[(E)-trimethylsilylmethylimino]-methyl}-benzyl ester (0.95g) which was dissolved in THF and was cooled to 0 °C under N_2 atm. A solution of TBAF (1.0M in THF) (0.56ml) was added gradually into it and reaction mixture was stirred for 8hrs at rt. The reaction mass was then concentrated and extracted with ethyl acetate. The organic layer was separated and dried using sodium sulphate. The resulting mixture was then purified by silica gel chromatography to obtain Acetic acid 2-bromo-4-[4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzylester (1.1g).

LC-MS (methanol, ESI): $m/z = 508(M+H)$.

1H -NMR (400 MHz, $CDCl_3$): 8.07 (1H, m), 7.71 (1H, m), 7.47 (1H, m), 7.38 (1H, m), 7.24 (2H, m), 5.23 (2H, s), 4.90 (1H, m), 4.43 (1H, d), 3.75 (1H, m), 3.43 (1H, d), 2.17 (3H, s).

Step 8: Preparation of 2-bromo-4-[4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-phenyl-methanol.



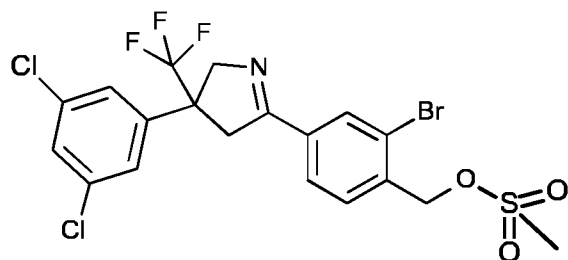
To a solution of Acetic acid 2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzylester (1.1g, 2.1mmol) in methanol (20ml) was added sodium methoxide (0.1g, 1.85 mmol) and the solution was stirred for 1h at rt. The reaction mass was then concentrated and extracted

5 with ethylacetate. The organic layer was separated and dried using sodium sulphate. The resulting mixture was then purified by silica gel chromatography to obtain 2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-phenyl-methanol (0.95g).

LC-MS (methanol, ESI): m/z =466 (M+H).

$^1\text{H-NMR}$ (400 MHz, CDCl_3): 8.07 (1H, m), 7.78 (1H, m), 7.59 (1H, m), 7.38 (3H, m), 4.90 (3H, d), 4.43
10 (1H, d), 3.75 (1H, m), 3.43 (1H, d).

Step 9: Preparation of Methanesulfonic acid-2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzylester.

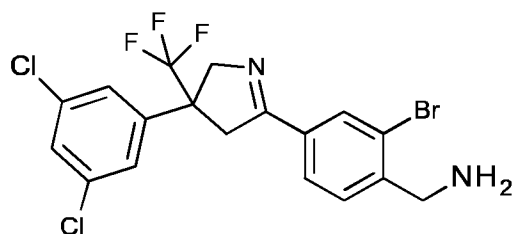


15 To a solution of 2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-phenyl-methanol (0.95g, 2mmol) and triethylamine (0.4g, 4.0mmol) in THF was added methanesulfonyl chloride (0.35g, 3.0mmol) gradually. The mixture was stirred for 1hr at rt. The reaction mixture was washed with water. The organic layer was separated and dried using sodium sulphate. The organic layer was evaporated to get the solid compound Methanesulfonic acid-2-bromo-4- [4-(3,5-dichlorophenyl)-4-
20 trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzylester (0.9 g).

LC-MS (methanol, ESI): m/z =544 (M+H).

$^1\text{H-NMR}$ (400 MHz, CDCl_3): 8.13 (1H, m), 7.81 (1H, m), 7.58 (1H, m), 7.38 (1H, m),
7.24(2H,m), 5.36(2H, s), 4.90 (1H, m), 4.43 (1H, d), 3.75 (1H, m), 3.43 (1H, d), 3.04 (3H,s).

25 Step 10: Preparation of 2-bromo-4- [4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2yl]-benzylamine.



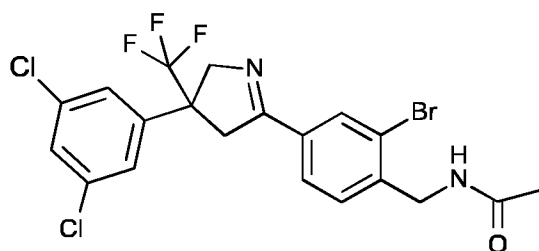
To a solution of Methanesulfonic acid-2-bromo-4-[4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2-yl]-benzylester (1.0g, 1.8mmol) in THF (30 mL) and MeOH (30 mL) was added dropwise to a mixed solution of aq. ammonia (30%), 30ml, and the reaction was stirred for 12hrs at rt.

- 5 The reaction mass was then concentrated and extracted with ethylacetate. The organic layer was separated and dried using sodium sulphate. The organic layer was evaporated to get the gummy compound 2-bromo-4-[4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2-yl]-benzylamine.

LC-MS (methanol, ESI): $m/z = 467(M+H)$.

- 10 1H -NMR (400 MHz, $CDCl_3$): 8.07 (1H, m), 7.71 (1H, m), 7.59 (1H, m), 7.38 (1H, m), 7.24(2H, m), 4.90 (1H, d), 4.43 (3H, m), 3.75 (1H, m), 3.43 (1H, d).

Step 11: Preparation of N-{2-bromo-4-[4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2-yl]-benzyl}acetamide.



- 15 To a solution of 2-bromo-4-[4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2-yl]-benzylamine (0.15g, 0.32mmol) in THF was added acetic anhydride (0.04g, 0.39mmol) and the mixture was stirred at rt for 1hr. The reaction mass was then concentrated under reduced pressure and extracted with ethylacetate. The organic layer was separated and dried using sodium sulphate. The resulting
- 20 mixture was then purified by silica gel chromatography to obtain N-{2-bromo-4-[4-(3,5-dichlorophenyl)-4-trifluoromethyl-4,5-dihydro-3H-pyrrol-2-yl]-benzyl}acetamide.

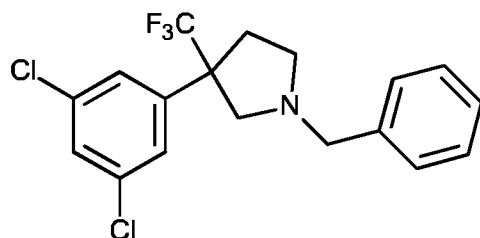
LC-MS (methanol, ESI): $m/z = 509 (M+H)$.

1H -NMR (400 MHz, $CDCl_3$): 8.07 (1H, m), 7.71 (1H, m), 7.47 (1H, m), 7.38 (1H, m), 7.24(2H, m), 5.98(1H, s), 4.90 (1H, d), 4.43 (3H, m), 3.75 (1H, m), 3.43 (1H, d), 2.04 (3H, s).

25

Example 7: Preparation of N-{4-[3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidin-1-yl]-2-methylbenzyl}acetamide.

Step 1: Preparation of 1-Benzyl-3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidine.



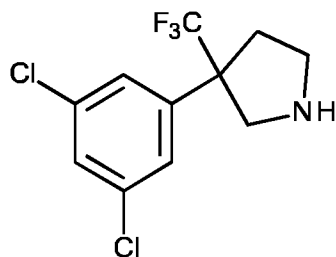
To a cooled solution of 1,3-dichloro-5(1-trifluoromethyl)vinyl)benzene (0.5g, 2.0mmol) and N-benzyl-1-methoxy-N-9trimethylsilyl)methyl)methanamine (0.4g, 2.0mmol) in DCM (10 mL) was added dropwise a solution of TFA (0.024g, 0.2mmol) in DCM (1 mL). The reaction mixture was stirred for 3hrs at rt.

- 5 The organic layer was washed with water (2 x 10 mL) and 10% aq sodium carbonate solution(10 mL). The organic layer was separated, dried with sodium sulphate and concentrated under reduced pressure. The residue was purified by silica gel chromatography to yield 1-Benzyl-3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidine (0.5g).

LC-MS (methanol, ESI): $m/z = 374$ (M+H).

- 10 $^1\text{H-NMR}$ (400 MHz, CDCl_3): 7.36 (4H, m), 7.30(2H, m), 7.23 (2H, m), 3.67 (2H, s), 3.08 (2H, dd), 2.69 (2H,m), 2.53 (1H, m), 2.27(1H,m).

Step 2: Preparation of 3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidine.



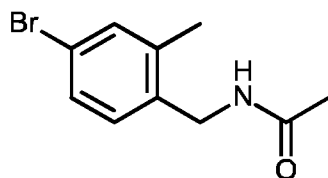
- 15 To a solution of 1-Benzyl-3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidine (0.22 g, 0.59mmol) and 1-chloroethylchloroformate(0.17g, 1.2mmol) in DCM was heated for reflux for 3hrs. The mixture was cooled to rt and concentrated under reduced pressure. Methanol was added to the residue which was then heated with stirring for 3hrs at 60 OC. The mixture was concentrated and water was added to it. The residue was extracted with ethylacetate (20 ml x 3) washed with brine, dried over sodium sulphate and
- 20 concentrated under reduced pressure. Purification over silica gel yielded 3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidine (4.2g).

LC-MS (methanol, ESI): $m/z = 284$ (M+H).

$^1\text{H-NMR}$ (400 MHz, CDCl_3): 7.35 (1H, t), 7.25 (2H, d), 3.74 (1H, d), 3.19 (2H, m), 2.97(1H,m),2.53 (1H, m), 2.27(1H,m).

25

Step 3: Preparation of N-(4-bromo-2-methyl-benzyl)acetamide.



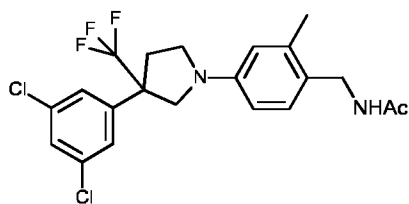
4-bromo-2-methyl benzonitrile (2.0g, 0.01mol) was taken in methanol along with NiCl₂ (2.41g, 0.01mol). In the same pot acetic anhydride was taken (2.0g, 0.020mol). The reaction was cooled to 0 OC. NaBH₄ (2.7g, 0.07mol) was added slowly to the reaction while stirring at the same temperature for 1hr.

- 5 The reaction mixture was concentrated under reduced pressure and was extracted with ethylacetate. The organic layer was separated, dried using sodium sulphate and concentrated under reduced pressure. The residue thus obtained was purified by silica gel chromatography to yield N-(4-bromo-2-methylbenzyl)acetamide.(1.1g).

LC-MS (methanol, ESI): m/z = 242 (M+H).

- 10 ¹H-NMR (400 MHz, CDCl₃): 7.71 (1H, m), 7.47 (1H, m), 7.38 (1H, m), 5.98(1H, s), 3.75 (1H, m), 3.43 (1H, d), 2.31 (3H, s), 2.04 (3H, s).

Step 4: Preparation of N-{4-[3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidin-1-yl]-2-methylbenzyl}acetamide.



15

To the mixture of 3-(3,5-dichlorophenyl)-3-(trifluoromethyl)pyrrolidine (0.25g, 0.88mmol) and the N-(4-bromo-2-methylbenzyl)acetamide (0.8g, 0.7mmol) in anhydrous toluene under N₂ atm was added Tris (dibenzylideneacetone)dipalladium (0.02g, 0.02mmol) and the ligand xanthphos (0.03g, 0.053mmol) followed by the addition of sodium tertiary butoxide (0.127g, 1.3mmol). The reaction mixture was heated at 80 OC for 3hrs. After completion of the reaction (TLC monitoring), reaction mass filtered over celite. The filtrate was concentrated and purified using column chromatography.

20

LC-MS (methanol, ESI): m/z = 445 (M+H).

¹H-NMR (400 MHz, CDCl₃): 7.37 (1H, d), 7.29 (2H, m), 7.11 (1H, d), 6.41 (2H, m), 5.45(1H, b s), 4.35 (2H, s), 4.01 (1H, d), 3.75 (1H, d), 3.43 (2H, m), 2.81 (1H, d), 2.51 (1H, d), 2.31 (3H, s), 1.97 (3H, s).

25

The following examples have been prepared according to methods described in US2009/0156643 and analysed by the LCMS methods described below:

Method A:

- 30 ZQ Mass Spectrometer from Waters (Single quadrupole mass spectrometer)

Instrument Parameter:

Ionization method: Electrospray

Polarity: positive and negative ions

Capillary: 3.00 kV

5 Cone: 30.00 V

Extractor: 2.00 V

Source Temperature: 100°C,

Desolvation Temperature: 250°C

Cone Gas Flow: 50 L/Hr

10 Desolvation Gas Flow: 400 L/Hr

Mass range: 100 to 900 Da

HP 1100 HPLC from Agilent:

Solvent degasser, quaternary pump, heated column compartment and diode-array detector.

15 Column: Phenomenex Gemini C18, 3 μ m, 30 x 3 mm,

Temp: 60 °C

DAD Wavelength range (nm): 210 to 500

Solvent Gradient:

A = H₂O + 5% MeOH + 0.05 % HCOOH

20 B= Acetonitril + 0.05 % HCOOH

Time	A%	B%	Flow (ml/min)
0.00	100	0	1.700
2.00	0	100.0	1.700
2.80	0	100.0	1.700
2.90	100	0	1.700
3.00	100	0	1.700

Method B:

ACQUITY SQD Mass Spectrometer from Waters (Single quadrupole mass spectrometer)

25 Ionisation method: Electrospray

Polarity: positive ions

Capillary (kV) 3.00, Cone (V) 20.00, Extractor (V) 3.00, Source Temperature (°C) 150, Desolvation Temperature (°C) 400, Cone Gas Flow (L/Hr) 60, Desolvation Gas Flow (L/Hr) 700

Mass range: 100 to 800 Da

30 DAD Wavelength range (nm): 210 to 400

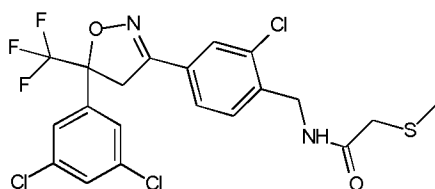
Method Waters ACQUITY UPLC with the following HPLC gradient conditions

(Solvent A: Water/Methanol 9:1,0.1% formic acid and Solvent B: Acetonitrile,0.1% formic acid)

	Time (minutes)	A (%)	B (%)	Flow rate (ml/min)
	0	100	0	0.75
	2.5	0	100	0.75
5	2.8	0	100	0.75
	3.0	100	0	0.75

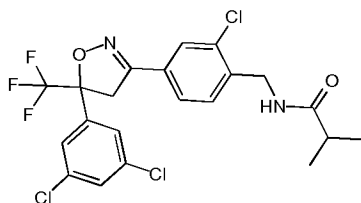
Type of column: Waters ACQUITY UPLC BEH C18; Column length: 50 mm; Internal diameter of column: 2.1 mm; Particle Size: 1.7 micron; Temperature: 60°C.

10 Example 8:



Method A RT 2.17 min, MH+ 511

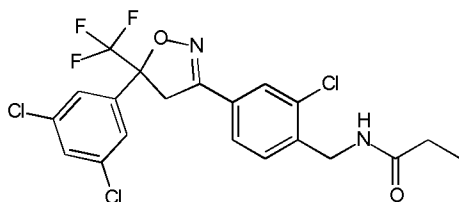
Example 9:



15

Method A RT 2.19 min, MH+ 493

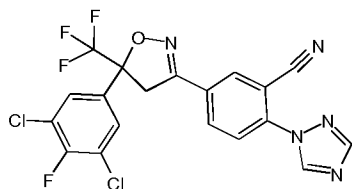
Example 10:



20 Method B RT 1.98 min, MH+ 479

The following Examples have been prepared according to methods described in WO2008/150393

Example 11:

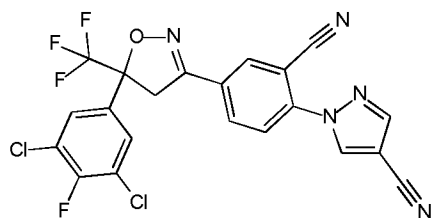


Method A RT 2.1 min, MH⁺ 470

The following example have been prepared according to methods described in WO2009/051956

5

Example 12:

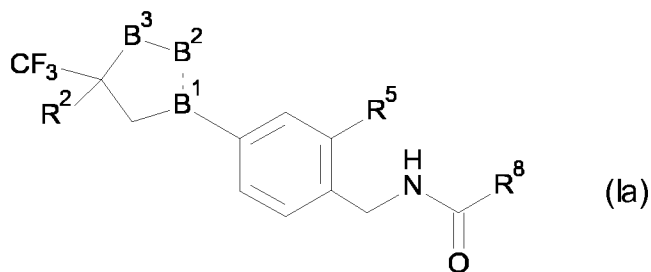


¹H NMR in CDCl₃: 3.73 ppm (d, 1H), 4.12 ppm (d, 1H), 7.58 ppm (d, 2H), 7.93 (m, 1H), 8.07-8.12 (m, 3H), 8.62 (s, 1H)

10

Table A

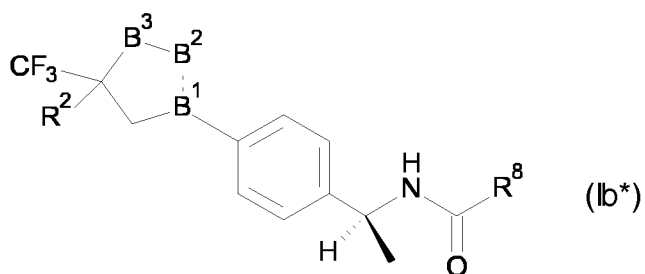
Compounds of formula Ia



	B1-B2-B3	R2	R5	R8
A1	C=N-O	2,4-dichlorophenyl	chloro	-CH ₂ -S-CH ₃
A2	C=N-O	2,4-dichlorophenyl	chloro	-CH(CH ₃)CH ₃
A3	C=N-O	2,4-dichlorophenyl	chloro	-CH ₂ CH ₃
A4	N-CH ₂ -CH ₂	2,4-dichlorophenyl	methyl	-CH ₃
A5	C=N-CH ₂	2,4-dichlorophenyl	bromo	-CH ₃
A6	C=N-CH ₂	2,4-dichlorophenyl	bromo	-CH ₂ CH ₃
A7	C=N-CH ₂	2,4-dichlorophenyl	bromo	cyclopropyl

15 Table B

Compounds of formula Ib*

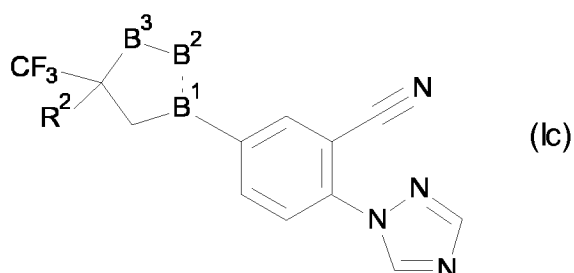


	B1-B2-B3	R2	R8
B1	N-CH ₂ -CH ₂	2,4-dichlorophenyl	cyclopropyl
B2	C=N-O	2,4-dichlorophenyl	-CH ₃
B3	C=N-CH ₂	2,3,4-trichlorophenyl	cyclopropyl
B4	N-CH ₂ -CH ₂	2,4-di-trifluoromethylphenyl	cyclopropyl

Table C

Compounds of formula Ic

5

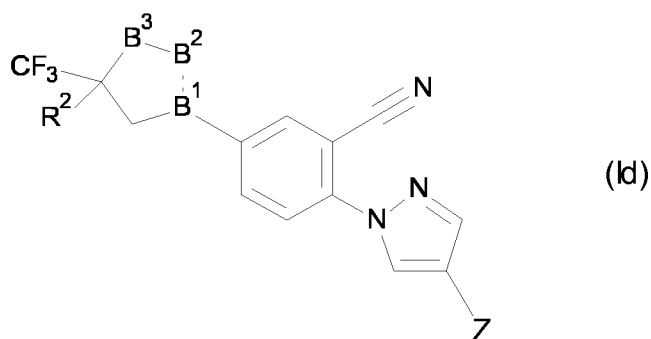


	B1-B2-B3	R2
C1	N-CH ₂ -CH ₂	2,4-dichlorophenyl
C2	C=N-CH ₂	2,3,4-trichlorophenyl
C3	C=N-O	2,4-dichloro-3-fluorophenyl

Table D

Compounds of formula Id

10



	B1-B2-B3	R2	Z
D1	C=N-O	2,4-dichloro-3-fluorophenyl	cyano

Biological Examples

Euschistus heros (Neotropical brown stink bug) (contact/feeding activity)

2 week old soybean plants are sprayed in a turn table spray chamber with the diluted spray solutions.

- 5 After drying, 2 soybean seeds are added and plants are infested with 10 N-2 nymphs of the neotropical brown stink bug *Euschistus heros* in plastic test boxes. Boxes are incubated in a climate chamber at 25°C and 60 % RH. Evaluation is done 5 days after infestation on mortality and growth effects.

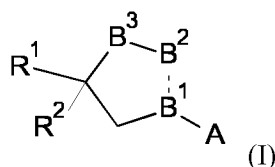
The following gave at least 50% control at 50 ppm: A1, A2, A3, A4, A5, B1, B2, B3, B4, C2, C3, D1

The following compounds gave more than 80% control at 50 ppm: A1, A3, B1, B2, B3, B4, C2, C3, D1.

- 10 Compounds C2, C3 and D1 demonstrated excellent control at low application rates.

Claims:

1. A method comprising applying to a crop of soybean plants, the locus thereof, or propagation material thereof, a compound of formula I

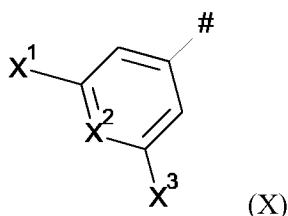


5 wherein

$-B^1-B^2-B^3-$ is $-C=N-O-$, $-C=N-CH_2-$, $-N-CH_2-CH_2-$, or $-C=C-O-$;

R^1 is trifluoromethyl, difluoromethyl or chlorodifluoromethyl;

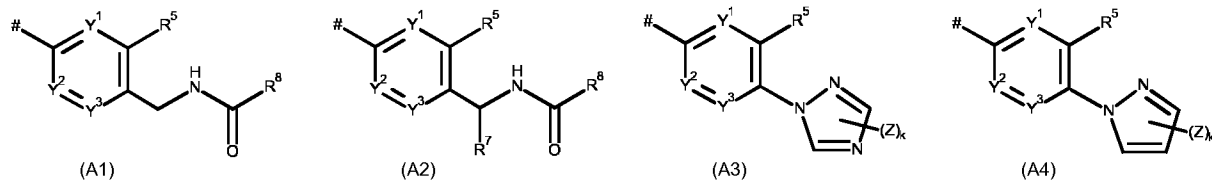
R^2 is group X



10 X^2 is $C-X^6$ or nitrogen;

X^1 , X^3 and X^6 are independently hydrogen, halogen or trihalomethyl, wherein at least one of X^1 , X^3 and X^6 is not hydrogen;

A is selected from group A1 to A4



15 Y^1 is $C-R^6$, CH or nitrogen;

Y^2 and Y^3 are independently CH or nitrogen;

wherein no more than two of Y^1 , Y^2 and Y^3 are nitrogen and wherein Y^2 and Y^3 are not both nitrogen;

R^5 is hydrogen, halogen, cyano, nitro, NH_2 , C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_3-C_5 cycloalkyl, C_3-C_5 halocycloalkyl, C_1-C_2 alkoxy, or C_1-C_2 haloalkoxy;

20 R^6 when present together with R^5 forms a $-CH=CH-CH=CH-$ bridge;

R^7 is C_1-C_4 alkyl;

R^8 is C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy(C_1-C_4)alkyl, C_1-C_4 alkylthio(C_1-C_4)alkyl, C_1-C_4 alkylsulfinyl(C_1-C_4)alkyl, C_1-C_4 alkylsulfonyl(C_1-C_4)alkyl, C_3-C_6 cycloalkyl, C_3-C_6 cycloalkyl(C_1-C_4)alkyl-, or tetrahydrofuranlyl;

25 each Z is independently halogen, C_1-C_{12} alkyl or C_1-C_{12} alkyl substituted by one to five R^{12} , nitro, C_1-C_{12} alkoxy or C_1-C_{12} alkoxy substituted by one to five R^{12} , cyano, C_1-C_{12} alkylsulfinyl, C_1-C_{12} alkylsulfonyl, C_1-C_{12} haloalkylsulfinyl, C_1-C_{12} haloalkylsulfonyl, hydroxyl or thiol;

each R¹² is halogen, cyano, nitro, hydroxy, C₁-C₈alkoxy-, C₁-C₈haloalkoxy-, mercapto, C₁-C₈alkylthio-, or C₁-C₈haloalkylthio; and

k is 0, 1, 2 or 3.

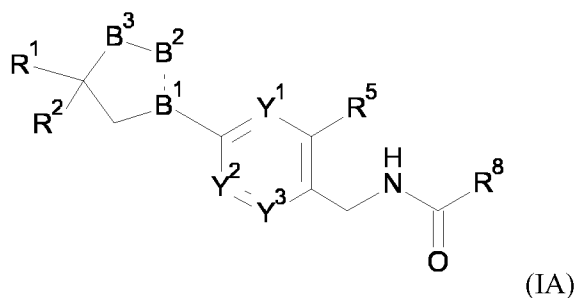
5 2. A method according to claim 1, wherein the method is a method of controlling and/or preventing infestation of stinkbugs in soybean comprising applying to a crop of soybean plants, the locus thereof, or propagation material thereof, a compound of formula I.

3. A method of controlling and/or preventing infestation of stinkbugs in a crop of useful plants
10 comprising applying to a crop of useful plants, the locus thereof, or propagation material thereof, a compound of formula I as defined in claim 1.

4. Use of a compound of formula I as defined in claim 1 for control of stinkbugs in a crop of useful plants.

15

5. A method or use according to any one of claims 1 to 4, wherein the compound of formula I is a compound of formula IA



wherein

20 R⁵ is chloro, bromo, fluoro or methyl;

R⁸ is methyl, ethyl, isopropyl, CH₃-O-CH₂-, CH₃-S-CH₂-, CH₃-S(O)-CH₂-, CH₃-SO₂-CH₂-, cyclobutyl, cyclopropyl or cyclopropyl-CH₂-; and

R¹, R², B¹, B², B³, Y¹, Y² and Y³ are as defined in claim 1.

25 6. A method or use according to claim 5, wherein

R¹ is CF₃;

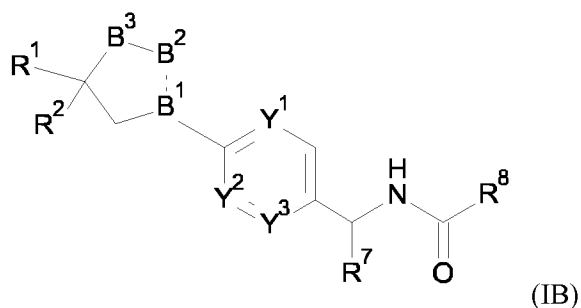
-B¹-B²-B³- is -C=N-O- or -C=N-CH₂-;

Y¹, Y² and Y³ are CH; and

R⁵ is chloro or methyl.

30

7. A method or use according to any one of claims 1 to 4, wherein the compound of formula I is a compound of formula IB



wherein

R^7 is methyl;

R^8 is methyl, ethyl, isopropyl, $\text{CH}_3\text{-O-CH}_2\text{-}$, $\text{CH}_3\text{-S-CH}_2\text{-}$, $\text{CH}_3\text{-S(O)-CH}_2\text{-}$, $\text{CH}_3\text{-SO}_2\text{-CH}_2\text{-}$, cyclobutyl,

5 cyclopropyl or cyclopropyl- $\text{CH}_2\text{-}$; and

R^1 , R^2 , B^1 , B^2 , B^3 , Y^1 , Y^2 and Y^3 are as defined in claim 1.

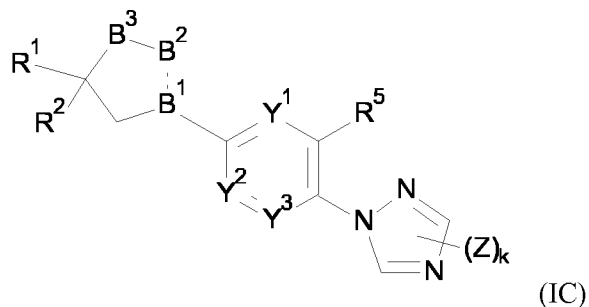
8. A method or use according to claim 7, wherein

R^1 is CF_3 ;

10 $-\text{B}^1\text{-B}^2\text{-B}^3\text{-}$ is $-\text{C=N-O-}$, $-\text{C=N-CH}_2\text{-}$ or $-\text{N-CH}_2\text{-CH}_2\text{-}$; and

Y^1 , Y^2 and Y^3 are CH.

9. A method or use according to any one of claims 1 to 4, wherein the compound of formula I is a compound of formula IC



wherein

R^5 is cyano;

K is 0 or 1;

Z is cyano or trifluoromethyl; and

20 R^1 , R^2 , B^1 , B^2 , B^3 , Y^1 , Y^2 and Y^3 are as defined in claim 1.

10. A method or use according to claim 9, wherein

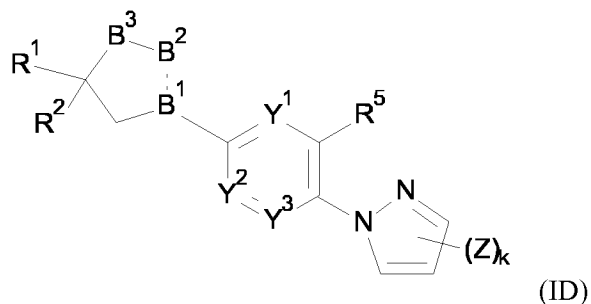
R^1 is CF_3 ;

$-\text{B}^1\text{-B}^2\text{-B}^3\text{-}$ is $-\text{C=N-O-}$ or $-\text{C=N-CH}_2\text{-}$;

25 Y^1 , Y^2 and Y^3 are CH; and

K is 0.

11. A method or use according to any one of claims 1 to 4, wherein the compound of formula I is a compound of formula ID



wherein

- 5 R^5 is cyano;
 k is 0 or 1;
 Z is cyano or trifluoromethyl; and
 R^1 , R^2 , B^1 , B^2 , B^3 , Y^1 , Y^2 and Y^3 are as defined in claim 1.
- 10 12. A method or use according to claim 11, wherein
 R^1 is CF_3 ;
 $-B^1-B^2-B^3-$ is $-C=N-O-$ or $-C=N-CH_2-$;
 Y^1 , Y^2 and Y^3 are CH ;
 k is 1; and
- 15 Z is cyano or trifluoromethyl.
13. A method or use according to any one of claims 1 to 12, wherein R^2 is 3,5-dichlorophenyl-, 3,5-dichloro-4-fluorophenyl- or 3,4,5-trichlorophenyl-.
- 20 14. A method or use according to any one of claims 1 to 13, wherein the stinkbug is selected from *Nezara* spp. (e.g. *Nezara viridula*, *Nezara antennata*, *Nezara hilare*), *Piezodorus* spp. (e.g. *Piezodorus guildinii*), *Acrosternum* spp. *Euschistus* spp. (e.g. *Euschistus heros*, *Euschistus servus*), *Halyomorpha halys*, *Plautia crossota*, *Riptortus clavatus*, *Rhopalus msculatus*, *Antestiopsis orbitalis*, *Dichelops* spp. (e.g. *Dichelops furcatus*, *Dichelops melacanthus*), *Eurygaster* spp. (e.g. *Eurygaster intergriceps*,
- 25 *Eurygaster maura*), *Oebalus* spp. (e.g. *Oebalus mexicana*, *Oebalus poecilus*, *Oebalus pugnase*, and *Scotinophara* spp. (e.g. *Scotinophara lurida*, *Scotinophara coarctata*).
15. A method or use according to any one of claims 1 to 13, wherein the stinkbug is from the genus *Euschistus*.
- 30 16. A method or use according to any one of claims 1 to 13, wherein the stinkbug is *Euschistus heros*.

17. A method for obtaining regulatory approval for the use of one or more of a compound of formula I as defined in any one of claims 1 to 13 to control stinkbugs, in particular the genus *Euschistus* and in particular the species *Euschistus heros*, comprising at least one step of referring to, submitting or relying on biological data showing that said active ingredient reduces insect pressure.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/064937

A. CLASSIFICATION OF SUBJECT MATTER INV. A01N43/80 A01N43/08 A01N43/36 A01N43/48 A01N43/64 A01N43/707 ADD. According to International Patent Classification (IPC) or to both national classification and IPC											
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) A01N Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, CHEM ABS Data											
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Category*</th> <th style="width: 70%;">Citation of document, with indication, where appropriate, of the relevant passages</th> <th style="width: 20%;">Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; vertical-align: top;">X</td> <td style="vertical-align: top;"> WO 2009/051956 A2 (DU PONT [US]; HOLYOKE CALEB WILLIAM JR [US]; LAHM GEORGE PHILIP [US];) 23 April 2009 (2009-04-23) cited in the application page 4, line 7 page 36, line 1 - line 16 ----- </td> <td style="text-align: center; vertical-align: top;">1-17</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">X</td> <td style="vertical-align: top;"> WO 2007/075459 A2 (DU PONT [US]; LAHM GEORGE PHILIP [US]; PATEL KANU MAGANBHAI [US]; PAHU) 5 July 2007 (2007-07-05) cited in the application page 6, line 21 page 84, line 26 - line 34 ----- -/-- </td> <td style="text-align: center; vertical-align: top;">1-17</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	WO 2009/051956 A2 (DU PONT [US]; HOLYOKE CALEB WILLIAM JR [US]; LAHM GEORGE PHILIP [US];) 23 April 2009 (2009-04-23) cited in the application page 4, line 7 page 36, line 1 - line 16 -----	1-17	X	WO 2007/075459 A2 (DU PONT [US]; LAHM GEORGE PHILIP [US]; PATEL KANU MAGANBHAI [US]; PAHU) 5 July 2007 (2007-07-05) cited in the application page 6, line 21 page 84, line 26 - line 34 ----- -/--	1-17
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X	WO 2007/075459 A2 (DU PONT [US]; LAHM GEORGE PHILIP [US]; PATEL KANU MAGANBHAI [US]; PAHU) 5 July 2007 (2007-07-05) cited in the application page 6, line 21 page 84, line 26 - line 34 ----- -/--	1-17									
☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.											
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family											
Date of the actual completion of the international search 13 May 2013		Date of mailing of the international search report 28/08/2013									
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Panday, Narendra									

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/064937

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2008/150393 A1 (DU PONT [US]; LAHM GEORGE PHILIP [US]; PAHUTSKI THOMAS FRANCIS JR [US]) 11 December 2008 (2008-12-11) cited in the application page 4, line 5 page 36, line 1 - line 16 -----	1-17
X	WO 2007/070606 A2 (DU PONT [US]; PATEL KANU MAGANBHAI [US]) 21 June 2007 (2007-06-21) page 5, line 21 page 59, line 18 - line 33 -----	1-17
X	WO 2009/045999 A1 (DU PONT [US]; LONG JEFFREY KEITH [US]; SELBY THOMAS PAUL [US]; XU MING) 9 April 2009 (2009-04-09) page 4, line 23 page 38, line 1 - line 17 -----	1-17

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2012/064937

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-17(partially)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-17(partially)

Method according to claim 1, Use according to claim 4,
wherein -B1-B2-B3- is -C=N-O-

2. claims: 1-17(partially)

Method according to claim 1, Use according to claim 4,
wherein -B1-B2-B3- is -C=N-CH2-

3. claims: 1-17(partially)

Method according to claim 1, Use according to claim 4,
wherein -B1-B2-B3- is -N-CH2-CH2-

4. claims: 1-17(partially)

Method according to claim 1, Use according to claim 4,
wherein -B1-B2-B3- is -C=C-O

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2012/064937

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