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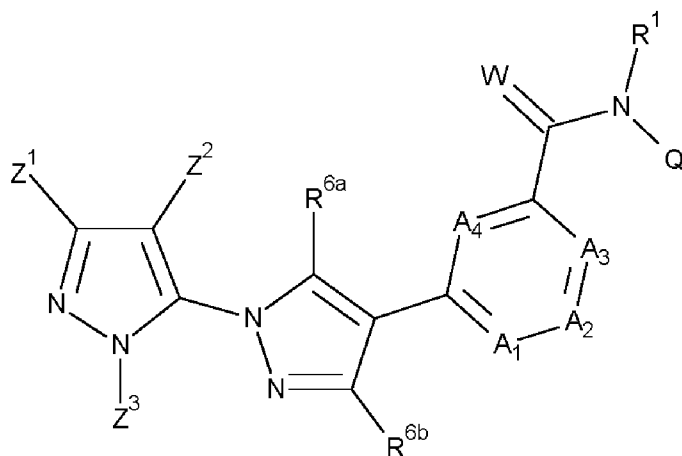
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(54) Title: METHOD OF CONTROL OF STINKBUGS



(I)

(57) Abstract: The present invention relates to methods for controlling and/or preventing infestation of stinkbugs, comprising applying to a crop of plants, the locus thereof, or propagation material thereof, a compound of formula I wherein R^1 , R^{6a} , R^{6b} , Q, W, A_1 , A_2 , A_3 , A_4 , Z_1 , Z_2 and Z_3 are as defined in the description.

Title

METHOD OF CONTROL OF STINKBUGS

Technical Field

- 5 The present invention relates to methods for controlling and/or preventing infestation of stinkbugs, particularly stinkbugs of the genus *Euschistus*, more particularly *Euschistus heros*.

Background

- 10 The present invention relates to methods of pest control in crops. Stinkbugs (*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 - Stinkbugs, University of Tennessee Institute of Agriculture, W200 09-0098, stinkbugs are probably the most common pest problem in soybean. Although they may feed on many parts of the plant, they typically target developing
- 15 seed including the pods, meaning that injury to soybean seed is the primary problem associated with stinkbug 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
- 20 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 is often vital to prevent significant economic damage. Insecticides
- 25 commonly used to control stinkbugs include pyrethroids, neonicotinoids and organophosphates, although pyrethroid insecticides are usually the method of choice for controlling stinkbugs. However, there are increasing problems with insecticide resistance, particularly in brown stinkbug populations and particularly to pyrethroids. *Euschistus heros* can also be difficult to manage using organophosphates or endosulfan (Sosa-Gomez et al.,
- 30 2009). There is therefore a need for effective alternative methods of controlling stinkbugs.

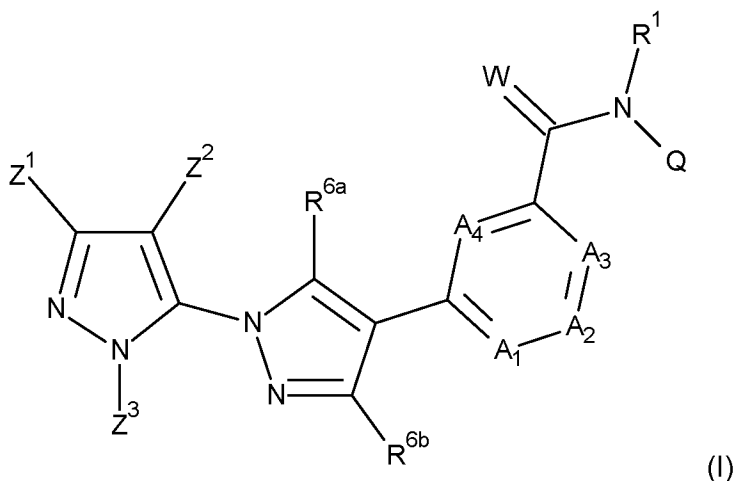
Compounds that are active as pest-control agents by antagonism of the gamma-aminobutyric acid (GABA)-gated chloride channel have been described in WO 2012/107434 and WO 2014/122083.

Description of the embodiments

The applicant has now surprisingly found that particular compounds from this class of gamma-aminobutyric acid (GABA)-gated chloride channel antagonists are highly effective at controlling stinkbugs. It has also surprisingly been found that the structure activity

5 relationship for activity against stinkbugs is very sensitive and that particular compounds exhibit a significantly higher activity against stinkbugs than structurally very similar compounds. These highly active compounds therefore represent an important new solution for safeguarding crops from stinkbugs, particularly where stinkbugs are resistant to current methods.

Thus, as embodiment 1, there is provided a method of controlling and/or preventing infestation of stinkbugs comprising applying to a crop of plants, the locus thereof, or propagation material thereof, a compound of formula (I)



wherein

R^1 is selected from H, C_1 - C_6 -alkyl, C_3 - C_6 alkenyl, C_3 - C_6 alkynyl, C_3 - C_7 cycloalkyl, C_3 - C_7 cycloalkyl- C_1 - C_3 -alkyl, C_1 - C_6 -alkylcarbonyl, C_1 - C_6 -alkoxycarbonyl, aryl(C_1 - C_3)-alkyl and heteroaryl(C_1 - C_3)-alkyl, wherein each of C_1 - C_6 -alkyl, C_3 - C_6 alkenyl, C_3 - C_6 alkynyl, C_3 - C_7 cycloalkyl, C_3 - C_7 cycloalkyl- C_1 - C_3 -alkyl, C_1 - C_6 -alkylcarbonyl, C_1 - C_6 -alkoxycarbonyl, aryl(C_1 - C_3)-alkyl and heteroaryl(C_1 - C_3)-alkyl is unsubstituted or substituted with 1 to 5 substituents independently selected from halogen, cyano, C_1 - C_6 -alkoxy and C_1 - C_6 -alkoxycarbonyl; Q is selected from H, hydroxy, $HC(=O)-$, C_1 - C_6 -alkyl, C_1 - C_6 -alkoxy, C_3 - C_6 alkenyl, C_3 - C_6 alkynyl, C_3 - C_7 cycloalkyl, C_3 - C_7 heterocycloalkyl, C_3 - C_7 cycloalkyl- C_1 - C_3 -alkyl, C_1 - C_3 -alkyl- C_3 - C_7 cycloalkyl, aryl(C_1 - C_3)-alkyl, heteroaryl(C_1 - C_3)-alkyl, *N*- C_1 - C_6 -alkylamino, *N*- C_1 - C_6 -alkylcarbonylamino and *N,N*-di (C_1 - C_6 -alkyl)amino, wherein each of C_1 - C_6 -alkyl, C_1 - C_6 -alkoxy,

C₃-C₆ alkenyl, C₃-C₆ alkynyl, C₃-C₇ cycloalkyl, C₃-C₇ heterocycloalkyl, C₃-C₇ cycloalkyl- C₁-C₃-alkyl, C₁-C₃-alkyl-C₃-C₇ cycloalkyl, aryl(C₁-C₃)-alkyl, heteroaryl(C₁-C₃)-alkyl, *N*- C₁-C₆-alkylamino, *N*- C₁-C₆-alkylcarbonylamino and *N,N*-di (C₁-C₆-alkyl)amino is unsubstituted or substituted with 1 to 5 substituents independently selected from halogen, hydroxyl, nitro,
 5 amino, cyano, C₁-C₆-alkoxy, C₁-C₆-alkoxycarbonyl, hydroxycarbonyl, C₁-C₆-alkylcarbamoyl, C₃-C₆-cycloalkylcarbamoyl and phenyl;

A₁ is CR² or N;

A₂ is CR³ or N;

A₃ is CR⁴ or N;

10 A₄ is CR⁵ or N;

with the proviso that no more than 3 of A₁, A₂, A₃ and A₄ are N;

R², R³, R⁴ and R⁵ are independently selected from H, halogen, cyano, nitro, C₁-C₆-alkyl, C₁-C₆-alkoxy, *N*- C₁-C₆-alkoxy-imino-C₁-C₃-alkyl, C₁-C₆-alkylsulfanyl, C₁-C₆-alkylsulfinyl, C₁-C₆-alkylsulfonyl, *N*- C₁-C₆-alkylamino and *N,N*-di- C₁-C₆-alkylamino, wherein each of C₁-C₆-alkyl,
 15 C₁-C₆-alkoxy, *N*- C₁-C₆-alkoxy-imino-C₁-C₃-alkyl, C₁-C₆-alkylsulfanyl, C₁-C₆-alkylsulfinyl, C₁-C₆-alkylsulfonyl, *N*- C₁-C₆-alkylamino and *N,N*-di- C₁-C₆-alkylamino is unsubstituted or substituted with 1 to 5 substituents independently selected from halogen, hydroxy, nitro, amino, cyano, C₁-C₆-alkoxy, C₁-C₆-alkoxycarbonyl, hydroxycarbonyl, C₁-C₆-alkylcarbamoyl, C₃-C₆-cycloalkylcarbamoyl and phenyl;

20 W is O or S;

R^{6a} and R^{6b} are independently selected from H, halogen, cyano, nitro, amino, C₁-C₆-alkyl, C₁-C₆-alkoxy, C₁-C₆-alkylcarbonyl, C₁-C₆-alkylsulfanyl, C₁-C₆-alkylsulfinyl, C₁-C₆-alkylsulfonyl, wherein each of C₁-C₆-alkyl, C₁-C₆-alkoxy, C₁-C₆-alkylcarbonyl, C₁-C₆-alkylsulfanyl, C₁-C₆-alkylsulfinyl, C₁-C₆-alkylsulfonyl is unsubstituted or substituted with 1 to 5 halogen;

25 Z¹ is selected from C₁-C₆-halogenalkyl, C₃-C₆-cycloalkyl and C₃-C₆-halogencycloalkyl, wherein each of C₁-C₆-halogenalkyl, C₃-C₆-cycloalkyl and C₃-C₆-halogencycloalkyl is unsubstituted or substituted with 1 to 5 substituents independently selected from halogen, hydroxy, nitro, amino, cyano, C₁-C₆-alkoxy, C₁-C₆-alkoxycarbonyl, hydroxycarbonyl, C₁-C₆-alkylcarbamoyl, C₃-C₆-cycloalkylcarbamoyl and phenyl;

30 Z² is selected from H, halogen, cyano, nitro, amino, C₁-C₆-alkyl, C₁-C₆-alkylcarbonyl, C₁-C₆-alkylsulfanyl, C₁-C₆-alkylsulfinyl and C₁-C₆-alkylsulfonyl, wherein each of C₁-C₆-alkyl, C₁-C₆-alkylcarbonyl, C₁-C₆-alkylsulfanyl, C₁-C₆-alkylsulfinyl and C₁-C₆-alkylsulfonyl is unsubstituted or substituted with 1 to 5 substituents independently selected from halogen, hydroxy, nitro, amino, cyano, C₁-C₆-alkoxy, C₁-C₆-alkoxycarbonyl, hydroxycarbonyl, C₁-C₆-alkylcarbamoyl,
 35 C₃-C₆-cycloalkylcarbamoyl and phenyl;

Z^3 is selected from C_1 - C_6 -alkyl, C_1 - C_6 -cycloalkyl, C_1 - C_6 -alkenyl, C_1 - C_6 -alkinyl, aryl and heteroaryl, wherein each of C_1 - C_6 -alkyl, C_1 - C_6 -cycloalkyl, C_1 - C_6 -alkenyl, C_1 - C_6 -alkinyl, aryl and heteroaryl is unsubstituted or substituted with 1 to 5 substituents independently selected from halogen, hydroxy, nitro, amino, cyano, C_1 - C_6 -alkoxy, C_1 - C_6 -alkoxycarbonyl, hydroxycarbonyl, C_1 - C_6 -alkylcarbamoyl, C_3 - C_6 -cycloalkylcarbamoyl and phenyl; or an agrochemically acceptable salt or N-oxide thereof.

Embodiment 2: A method according to embodiment 1, wherein

R^1 is selected from H, methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, s-butyl, t-butyl, methoxymethyl, ethoxymethyl, propoxymethyl, methylcarbonyl, ethylcarbonyl, n-propylcarbonyl, isopropylcarbonyl, s-butylcarbonyl, t-butylcarbonyl, methoxycarbonyl, ethoxycarbonyl, n-propoxycarbonyl, isopropoxycarbonyl, s-butoxycarbonyl, t-butoxycarbonyl, cyanomethyl, 2-cyanoethyl, benzyl, 4-methoxybenzyl, pyrid-2-yl-methyl, pyrid-3-yl-methyl, pyrid-4-yl-methyl and 4-chlor-pyrid-3-yl-methyl; Q is selected from H, methyl, ethyl, n-propyl, 1-methylethyl, 1,1-dimethylethyl, 1-methylpropyl, n-butyl, 2-methylpropyl, 2-methylbutyl, hydroxyethyl, 2-hydroxypropyl, cyanomethyl, 2-cyanoethyl, 2-fluorethyl, 2,2-difluorethyl, 2,2,2-trifluorethyl, 1-trifluormethylethyl, 2,2-difluorpropyl, 3,3,3-trifluorpropyl, 2,2-dimethyl-3-fluorpropyl, cyclopropyl, 1-cyano-cyclopropyl, 1-methoxycarbonyl-cyclopropyl, 1-(N-methylcarbamoyl)cyclopropyl, 1-carbamoyl-cyclopropyl, 1-carbamothioyl-cyclopropyl, 1-(N-cyclopropylcarbamoyl)cyclopropyl, cyclopropyl-methyl, cyclobutyl, cyclopentyl, cyclohexyl, 1-cyclopropylethyl, bis(cyclopropyl)methyl, 2,2-dimethylcyclopropyl-methyl, 2-phenylcyclopropyl, 2,2-dichlorcyclopropyl, trans-2-chlorcyclopropyl, cis-2-chlorcyclopropyl, 2,2-difluorcyclopropyl, trans-2-fluorcyclopropyl, cis-2-fluorcyclopropyl, trans-4-hydroxycyclohexyl, 4-trifluormethylcyclohexyl, prop-2-enyl, 2-methylprop-2-enyl, prop-2-ynyl, 1,1-dimethylbut-2-ynyl, 3-chlor-prop-2-enyl, 3-fluor-prop-2-enyl, 3,3-dichlor-prop-2-enyl, 3,3-dichlor-1,1-dimethylprop-2-enyl, oxetan-3-yl, thietan-3-yl, l-oxido-thietan-3-yl, l,l-dioxido-thietan-3-yl, isoxazol-3-ylmethyl, 1,2,4-triazol-3-ylmethyl, 3-methyloxetan-3-ylmethyl, benzyl, 2,6-difluorphenylmethyl, 3-fluorphenylmethyl, 2-fluorphenylmethyl, 2,5-difluorphenylmethyl, 1-phenylethyl, 4-chlorphenylethyl, 2-trifluormethylphenylethyl, 1-pyridin-2-ylethyl, pyridin-2-ylmethyl, 5-fluorpyridin-2-ylmethyl, (6-chlor-pyridin-3-yl)methyl, pyrimidin-2-ylmethyl, methoxy, 2-ethoxyethyl, 2-methoxyethyl, 2-(methylsulfanyl)ethyl, l-methyl-2-(ethylsulfanyl)ethyl, 2-methyl-1-(methylsulfanyl)propan-2-yl, methoxycarbonyl, methoxycarbonylmethyl, NH_2 , N-ethylamino, N-allylamino, N,N-dimethylamino and N,N-diethylamino; or

Q is selected from phenyl, naphthyl, pyridazin, pyrazin, pyrimidin, triazin, pyridin, pyrazol, thiazol, isothiazol, oxazol, isoxazol, triazol, imidazol, furan, thiophen, pyrrol, oxadiazol, and thiadiazol, each of which is unsubstituted or substituted with 1 to 4 substituents independently selected from V;

- 5 V is selected from fluoro, chloro, bromo, iodo, Cyano, nitro, methyl, ethyl, difluoromethyl, trichloromethyl, chlordifluoromethyl, dichlorofluoromethyl, trifluoromethyl, 1 -fluoroethyl, 2-fluoroethyl, 2,2-difluoroethyl, 2,2,2-trifluoroethyl, 1,2,2,2-tetrafluoroethyl, 1 -chloro- 1,2,2,2-tetrafluoroethyl, 2,2,2-trichloroethyl, 2-chloro-2,2-difluoroethyl, 1, 1 -difluoroethyl, pentafluoroethyl heptafluoro-n-propyl, heptafluoro-isopropyl, nonafluoro-n-butyl, cyclopropyl, 10 cyclobutyl, methoxy, ethoxy, n-propoxy, 1 -methylethoxy, fluormethoxy, difluormethoxy, chloro-difluormethoxy, dichloro-fluoromethoxy, trifluoromethoxy, 2,2,2-trifluoroethoxy, 2-chloro-2,2- difluorethoxy, pentafluorethoxy, N-methoxyiminomethyl, I-(N-methoxyimino)-ethyl, methylsulfanyl, methylsulfonyl, methylsulfinyl, trifluormethylsulfonyl, trifluormethylsulfinyl, trifluormethylsulfanyl and N,N-dimethylamino;

- 15 W is O or S;

A_1 is CR^2 or N;

A_2 is CR^3 or N;

A_3 is CR^4 or N;

A_4 is CR^5 or N;

- 20 with the proviso that no more than 3 of A_1 , A_2 , A_3 and A_4 are N;

R^2 and R^5 are independently selected from H, methyl, fluoro and chloro;

R^3 and R^4 are independently selected from H, fluoro, chloro, bromo, iodo, cyano, nitro, methyl, ethyl, fluoromethyl, difluoromethyl, chlordifluoromethyl, trifluoromethyl, 2,2,2-

- trifluoroethyl, methoxy, ethoxy, n-propoxy, 1 -methylethoxy, fluoromethoxy, difluoromethoxy, 25 chloro-difluoromethoxy, dichloro- fluoromethoxy, trifluoromethoxy, 2,2,2-trifluoroethoxy, 2-chloro-2,2-difluorethoxy, pentafluoroethoxy, N- methoxyiminomethyl, I-(N-methoxyimino)-ethyl, methylsulfanyl, trifluoromethylsulfanyl, methylsulfonyl, methylsulfinyl, trifluormethylsulfonyl and trifluormethylsulfinyl;

R^{6a} and R^{6b} are independently selected from halogen, cyano, nitro, amino, methyl, ethyl,

- 30 propyl, 1- methylethyl, tert-butyl, trifluoromethyl, difluoromethyl, methoxy, ethoxy, trifluoromethoxy, 2,2- difluoroethoxy, 2,2,2-trifluoroethoxy, methylcarbonyl, ethylcarbonyl, trifluoromethylcarbonyl, methylsulfanyl, methylsulfinyl, methylsulfonyl, trifluoromethylsulfonyl, trifluoromethylsulfanyl and trifluoromethylsulfinyl;

Z^1 is selected from methyl, ethyl, 1,1 -dimethylethyl, difluoromethyl, trichloromethyl,

- 35 chlorodifluoromethyl, dichlorofluoromethyl, trifluoromethyl, bromodichloromethyl, 1 -

fluoroethyl, 1-fluoro-1-methylethyl, 2-fluoroethyl, 2,2-difluoroethyl, 2,2,2-trifluoroethyl, 1,2,2,2-tetrafluoroethyl, 1-chloro- 1,2,2,2- tetrafluoroethyl, 2,2,2-trichloroethyl, 2-chloro-2,2-difluoroethyl, 1,1 -difluoroethyl, pentafluoroethyl heptafluor-n-propyl, heptafluor-isopropyl, nonafluoro-n-butyl, cyclopropyl, 1 -chlorocyclopropyl, 1 -fluorocyclopropyl, 1 -

5 bromocyclopropyl, 1 -cyano-cyclopropyl, 1-trifluoromethyl-cyclopropyl, cyclobutyl and 2,2-Difluoro-1-methyl-cyclopropyl;

Z^2 is selected from H, halogen, cyano, nitro, amino, methyl, ethyl, 1,1 -dimethylethyl, difluoromethyl, trichloromethyl, chlorodifluoromethyl, dichlorofluoromethyl, trifluoromethyl, bromodichloromethyl, 1-fluoroethyl, 1-fluoro-1 methylethyl, 2-fluoroethyl, 2,2-difluoroethyl, 10 2,2,2-trifluoroethyl, 1,2,2,2-tetrafluoroethyl, 1 -chlor- 1,2,2,2-tetrafluoroethyl, 2,2,2-trichloroethyl, 2-chloro-2,2-difluoroethyl, 1,1 -difluoroethyl, pentafluoroethyl heptafluoro-n-propyl, heptafluoro- isopropyl, nonafluoro-n-butyl, methylsulfanyl, methylsulfinyl, methylsulfonyl, ethylthio, ethylsulfinyl, ethylsulfonyl, trifluoromethylsulfanyl, trifluoromethylsulfinyl, trifluoromethylsulfonyl, chloro-difluoromethylsulfanyl, chloro- 15 difluoromethylsulfinyl, chloro-difluoromethylsulfonyl, dichloro-fluoromethylsulfanyl, dichloro-fluoromethylsulfinyl, dichloro-fluoromethylsulfonyl; and

Z^3 is selected from H, methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, s-butyl, t-butyl, ethenyl, 1-propenyl, 1-propinyl, 1-butylnyl, difluoromethyl, trichloromethyl, chlorodifluoromethyl, dichlorofluoromethyl, trifluoromethyl, 1 -fluoroethyl, 1 fluoro- 1 - 20 methylethyl, 2-fluoroethyl, 2,2- difluoroethyl, 2,2,2-trifluoroethyl, phenyl, 2-chlorophenyl, 3-chlorophenyl, 4-chlorophenyl, 2,5- dichlorophenyl, 3,4-dichlorophenyl, 2,6-dichlorophenyl 2,6-dichloro-4-trifluoromethylphenyl and 3- chlor-5-trifluoromethylpyridin-2-yl

Embodiment 3: A method according to embodiment 1 or 2, wherein

25 R^1 is H, methyl, ethyl, n-propyl, n-propylcarbonyl and propenyl;

Q is selected from 1 -cyano-cyclopropyl, benzyl, cyclopropyl, 2-thienylmethyl, carbamothioylcyclopropyl, pyrid-4-yl, 2,2,2-trifluoroethyl, methylsulfonyl, thietan-3-yl and 1- carbamoylcyclopropyl;

W is O;

30 A^1 and A^4 are CH;

A^2 is CH or CF;

A^3 is CH or CCl;

R^{6a} is H or methyl;

R^{6b} is H, methyl or CF₃;

35 Z^1 is CF₂CF₃;

Z^2 is CF_3 ;

Z^3 is selected from methyl, ethyl, phenyl, 4- NO_2 -phenyl and 3-chloropyridin-2-yl.

Embodiment 4: A method according to embodiment 1, wherein

5 R^1 is H or methyl;

Q is selected from 1- cyano-cyclopropyl, benzyl, cyclopropyl, 2-thienylmethyl, carbamothioylcyclopropyl, pyrid-4-yl, 2,2,2-trifluorethyl, methylsulfonyl, thietan-3-yl and 1-carbamoylcyclopropyl;

W is O;

10 A^1 and A^4 are CH;

A^2 is N;

A^3 is CH or CCl;

R^{6a} is H or methyl;

R^{6b} is H, methyl or CF_3 ;

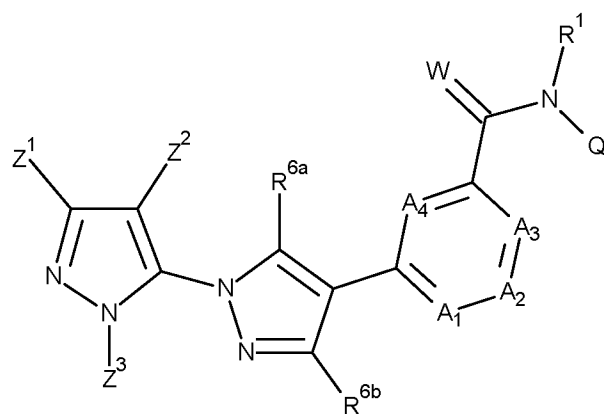
15 Z^1 is CF_2CF_3 ;

Z^2 is CF_3 ;

Z^3 is methyl, ethyl, phenyl, 4- NO_2 -phenyl, 3-chloropyridin-2-yl.

Embodiment 5: A method according to embodiment 1, wherein the compound is selected

20 from a compound of formula (I)



(I)

wherein Z^1 , Z^2 , Z^3 , R^{6a} , R^{6b} , A_1 , A_2 , A_3 , A_4 , W, Q and R^1 are as defined in the table below

Ex no	Z^1	Z^2	Z^3	R^1	R^{6a}	R^{6b}	A_4	A_3	A_2	A_1	W	Q
1c-2	CF_2CF_3	CF_3	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	1-Cyano-cyclopropyl

Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-3	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	Benzyl
lc-4	CF ₂ CF ₃	CF ₃	CH ₃	H	H	CF ₃	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-5	CF ₂ CF ₃	CF ₃	CH ₃	H	CH ₃	CF ₃	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-6	CF ₂ CF ₃	CF ₃	Phenyl	H	H	H	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-7	CF ₂ CF ₃	CF ₃	Phenyl	H	H	H	C-H	C-Cl	C-H	C-H	O	1-Cyano-cyclopropyl
lc-8	CF ₂ CF ₃	CF ₃	4-N02-Phenyl	H	H	H	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-9	CF ₂ CF ₃	CF ₃	CH ₃	H	CH ₃	CH ₃	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-10	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	2-Thienylmethyl
lc-11	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	1-Carbamothioylcyclopropyl
lc-12	CF ₂ CF ₃	CF ₃	CH ₃	H	H	CH ₃	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-13	CF ₂ CF ₃	CF ₃	CH ₃	H	CH ₃	H	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-14	CF ₂ CF ₃	CF ₃	3-Chlorpyridin-2-yl	H	H	H	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-15	CF ₂ CF ₃	CF ₃	3-Chlorpyridin-2-yl	H	H	H	C-H	C-Cl	C-H	C-H	O	1-Cyano-cyclopropyl
lc-16	CF ₂ CF ₃	CF ₃	CH ₂ CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-17	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-H	C-H	C-H	O	Benzyl
lc-18	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-H	C-H	C-H	O	Cyclopropyl
lc-19	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-H	C-H	C-H	O	1-Cyano-cyclopropyl
lc-20	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-H	C-H	C-H	O	2-Thienylmethyl

Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-21	CF ₂ CF ₃	CF ₃	CH ₂ CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	1-Cyano-cyclopropyl
lc-22	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	Pyrid-4-yl
lc-23	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	2,2,2-Trifluorethyl
lc-24	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-F	C-H	O	Cyclopropyl
lc-25	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	4-Chlorophenyl
lc-26	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	Methylsulfonyl
lc-27	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-F	C-H	O	1-Cyano-cyclopropyl
lc-28	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	Thietan-3-yl
lc-29	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	1-Carbamoylcyclopropyl
lc-30	CF ₃	CN	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-31	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-oxo-2-[(2,2,2-trifluoroethyl)amino]ethyl
lc-32	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-(CF ₃)cyclopropyl
lc-33	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-F	C-H	C-H	C-H	O	cyclopropyl
lc-34	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Br	C-H	C-H	O	1-cyanocyclopropyl
lc-35	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-H	C-H	O	H
lc-36	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C-H	C-H	O	1-cyanocyclopropyl
lc-37	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C-H	C-H	O	cyclopropyl
lc-38	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-F	C-H	O	1-cyanocyclopropyl
lc-39	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-F	C-H	O	cyclopropyl

Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-40	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-F	C-H	C-H	C-H	O	1-cyanocyclopropyl
lc-41	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-H	C-F	O	cyclopropyl
lc-42	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-H	C-F	O	1-cyanocyclopropyl
lc-43	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-Cl	C-H	O	1-cyanocyclopropyl
lc-44	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-Cl	C-H	O	cyclopropyl
lc-45	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-H	C-Cl	O	1-cyanocyclopropyl
lc-46	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-H	C-Cl	O	cyclopropyl
lc-47	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C-F	C-H	O	1-cyanocyclopropyl
lc-48	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C-H	C-Cl	O	1-cyanocyclopropyl
lc-49	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C-H	C-Cl	O	cyclopropyl
lc-50	CF ₃	(E/Z) (hydroxyimino)methyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-51	CF ₃	(E/Z) (methoxyimino)methyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-52	CF ₃	formyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-53	CF ₃	CN	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-54	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-Me	C-H	O	cyclopropyl
lc-55	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C-F	C-H	O	cyclopropyl
lc-56	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-Me	C-H	O	1-cyanocyclopropyl
lc-57	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-H	C-Me	O	cyclopropyl
lc-58	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-H	C-Me	O	1-cyanocyclopropyl
lc-59	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C- CF ₃	C-H	O	cyclopropyl
lc-60	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C- CF ₃	C-H	O	1-cyanocyclopropyl

Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-61	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-F	C-F	O	cyclopropyl
lc-62	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-	C-H	O	cyclopropyl
lc-63	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C- OMe	C-H	O	1-cyanocyclopropyl
lc-64	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-F	C-F	O	1-cyanocyclopropyl
lc-65	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-N02	C-H	C-H	O	1-cyanocyclopropyl
lc-66	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-N02	C-H	C-H	O	cyclopropyl
lc-67	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-OMe	C-H	C-H	O	1-cyanocyclopropyl
lc-68	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-OMe	C-H	C-H	O	cyclopropyl
lc-69	CF ₃	CH ₂ OH	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-70	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	N	C-H	O	cyclopropyl
lc-71	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	N	C-H	O	1-cyanocyclopropyl
lc-72	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	N	C-H	C-F	O	cyclopropyl
lc-73	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	N	C-H	C-F	O	1-cyanocyclopropyl
lc-74	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C- OCF	C-H	O	cyclopropyl
lc-75	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C- OCF	C-H	O	1-cyanocyclopropyl
lc-76	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	N	C-H	C-H	O	1-cyanocyclopropyl
lc-77	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-fluoroethyl
lc-78	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2,2-difluoroethyl
lc-79	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-methylcyclopropyl
lc-80	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2,2-difluoropropyl
lc-81	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-fluorocyclopropyl
lc-83	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	N	C-H	O	1-cyanocyclopropyl
lc-84	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Me	N	C-H	O	cyclopropyl
lc-85	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Me	N	C-H	O	1-cyanocyclopropyl
lc-86	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-OMe	N	C-H	O	cyclopropyl
lc-87	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-OMe	N	C-H	O	1-cyanocyclopropyl
lc-88	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	N	C-Cl	C-H	O	cyclopropyl
lc-89	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	N	C-Cl	C-H	O	1-cyanocyclopropyl
lc-90	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-Me	C-H	O	cyclopropyl
lc-91	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-Me	C-H	O	1-cyanocyclopropyl
lc-92	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-F	O	cyclopropyl
lc-93	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-F	O	1-cyanocyclopropyl
lc-94	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-Cl	C-H	O	cyclopropyl
lc-95	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-Cl	C-H	O	1-cyanocyclopropyl
lc-96	CF ₂ CF ₃	CF ₃	Me	Me	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-97	CF ₂ CF ₃	CF ₃	Me	Me	H	H	C-H	C-Cl	C-H	C-H	O	1-

Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-98	CF ₃	(E/Z) (hydroxyimino) methyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-99	CF ₃	(E/Z) (methoxyimin o)methyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-100	CF ₃	cyclopropylc arbamoyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-101	CF ₃	cyclopropylc arbamoyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-102	CF ₃	formyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-103	CF ₃	CH ₂ F	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-104	CF ₃	CH ₂ OH	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-105	CF ₂ CF ₃	CF ₃	Me	H	H	H	N	C-H	C-H	C-H	O	1-cyanocyclopropyl
lc-106	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-F	C-Cl	C-H	C-H	O	cyclopropyl
lc-107	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-F	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-108	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	3- (methylsulfanyl)cyclobutyl
lc-109	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	prop-2-yn-1-yl
lc-110	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1,1,1-trifluoropropan-2-yl
lc-111	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	buta-2,3-dien-1-yl
lc-112	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	3-chloroprop-2-en-1-yl
lc-113	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	isopropyl
lc-114	CF ₃	CH ₂ Cl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-115	CF ₃	CH ₂ F	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-116	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-oxidothietan-3-yl
lc-117	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1,1-dioxidothietan-3-yl
lc-118	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-(E/Z)- (methoxyi mino)met hyl	C-H	C-H	O	cyclopropyl
lc-119	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2- (methylsulfanyl)cyclobutyl
lc-120	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2- [(methylsulfanyl)methyl]c yclobutyl

Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-121	CF ₂ CF ₃	formyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-122	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	3-(methylsulfonyl)cyclobutyl
lc-123	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-[(methylsulfinyl)methyl]cyclobutyl
lc-124	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	(1S,2R)-2-(methylsulfonyl)cyclobutyl
lc-125	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-(methylsulfinyl)cyclobutyl
lc-126	CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-127	CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-128	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	3-cyanothietan-3-yl
lc-129	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Me	C-H	C-H	O	1-cyanocyclopropyl
lc-130	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Me	C-H	C-H	O	cyclopropyl
lc-131	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Me	C-H	C-H	O	4-fluorophenyl
lc-132	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	s	cyclopropyl
lc-133	CF ₃	CHF ₂	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-134	CF ₃	S(O)Me	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-135	CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	phenyl
lc-136	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	phenyl
lc-137	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	3-methylbutan-2-yl
lc-138	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-(dimethylamino)ethyl
lc-139	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-methoxyethyl
lc-140	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	pyridin-2-yl
lc-141	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopentyl
lc-142	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	isobutyl
lc-143	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclobutyl
lc-144	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1H-tetrazol-5-yl

Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-145	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1,2-oxazol-3-yl
lc-146	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1H-imidazol-2-ylmethyl
lc-147	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyanomethyl
lc-148	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	5-methyl-1,2-oxazol-3-yl
lc-149	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	pyridin-3-yl
lc-150	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1H-pyrazol-3-yl
lc-151	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	3-chloropropyl
lc-152	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	methyl
lc-153	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropylmethyl
lc-154	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-amino-1-oxopropan-2-yl
lc-155	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	methoxy
lc-156	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-amino-2-oxoethyl
lc-157	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1H-pyrazol-3-ylmethyl
lc-158	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	5-methyl-1,3,4-oxadiazol-2-yl
lc-159	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-methyl-1 H-pyrazol-3-yl
lc-160	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	4-methyl-1,3-oxazol-2-yl
lc-161	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyclopropylpropan-2-yl
lc-162	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	5-hydroxy-1 H-pyrazol-3-
lc-163	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-methyl-1 H-pyrazol-5-yl
lc-164	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	(3R)-tetrahydrofuran-3-yl
lc-165	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-methoxypropan-2-yl
lc-166	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-methyl-1 H-pyrazol-4-yl
lc-167	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-(methylsulfanyl)ethyl
lc-168	CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-fluoroethyl
lc-169	CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2,2,2-trifluoroethyl
lc-170	CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2,2-difluoroethyl
lc-171	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	H	C-0- CF ₂ -O- C	O	cyclopropyl

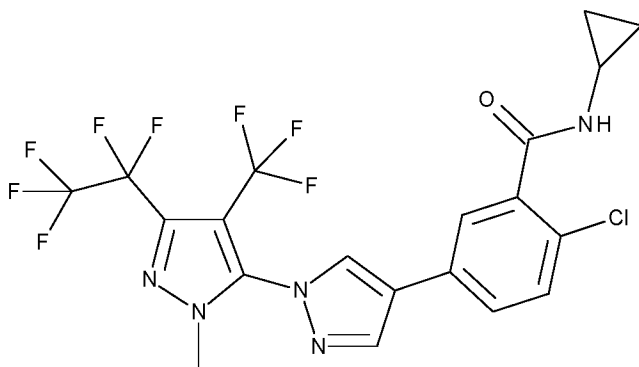
Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-172	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	H	C-0- CF ₂ - 0- C	O	1-cyanocyclopropyl
lc-173	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C- sulfa moyl	C-H	O	cyclopropyl
lc-174	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-F	C-F	C-H	C-H	O	cyclopropyl
lc-175	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-F	C-F	C-H	C-H	O	1-cyanocyclopropyl
lc-176	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-ethoxycyclopropyl
lc-177	CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-fluorocyclopropyl
lc-178	CF ₂ CF ₃	CF ₃	Me	H	H	H	N	C-H	N	C-H	O	cyclopropyl
lc-179	CF ₂ CF ₃	CF ₃	Me	H	H	H	N	C-H	N	C-H	O	1-cyanocyclopropyl
lc-180	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	(1R,2R)-2- ethoxycyclopropyl
lc-181	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-(CF ₃)cyclopropyl
lc-182	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-SMe	C-H	C-H	O	cyclopropyl
lc-183	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	(1S,2S,3S)-2-ethoxy-3- methylcyclopropyl
lc-184	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2,2-dichlorocyclopropyl
lc-185	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C- diethylsulf amoyl	C-H	C-H	O	cyclopropyl
lc-186	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	(1S,2S)-2- ethoxycyclopropyl
lc-187	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-methoxycyclopropyl
lc-188	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1,1'-bi(cyclopropyl)-1-yl
lc-189	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-S(O)Me	C-H	C-H	O	cyclopropyl
lc-190	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C- S(O) ₂ Me	C-H	C-H	O	cyclopropyl
lc-191	CF ₂ CF ₃	CF ₃	Me	H	H	amino	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-192	CF ₂ CF ₃	CF ₃	Me	H	H	amino	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-193	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	but-3-yn-2-yl

Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-194	CF ₂ CF ₃	SMe	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-195	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-sulfa moyl	C-H	O	cyclopropyl
lc-196	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-CF ₃	C-H	C-H	O	cyclopropyl
lc-197	CF ₂ CF ₃	CF ₃	Me	Et	H	H	C-H	C-cycloprop ylsulfamo yl	C-H	C-H	O	ethyl
lc-198	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	pent-3-yn-2-yl
lc-199	CF ₂ CF ₃	CF ₃	Me	Me	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-200	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-methylcyclopropyl
lc-201	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C-F	C-F	O	cyclopropyl
lc-202	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C-F	C-F	O	1-cyanocyclopropyl
lc-203	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-CF ₃	C-H	C-H	O	1-cyanocyclopropyl
lc-204	CF ₂ CF ₃	CF ₃	Me	nPr	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-205	CF ₂ CF ₃	CF ₃	Me	propionyl	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-206	CF ₂ CF ₃	CF ₃	Me	allyl	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-207	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyclopropylethyl
lc-208	CF ₂ CF ₃	CF ₃	Me	Et	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-209	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	4-fluorophenyl
lc-210	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyclobutylcyclopropyl
lc-211	CF ₂ CF ₃	CF ₃	Me	Et	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-212	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	N	O	cyclopropyl
lc-213	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	N	O	1-cyanocyclopropyl
lc-214	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	pyrazin-2-yl

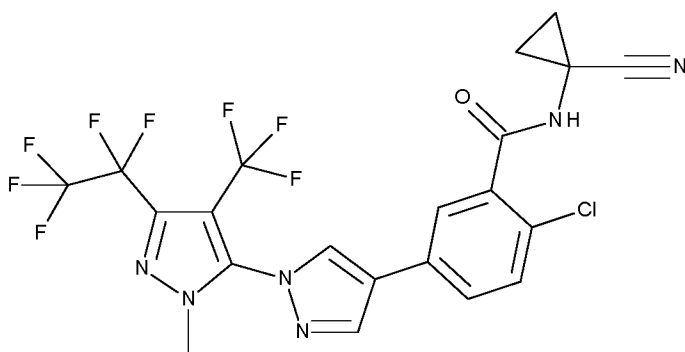
or an agrochemically acceptable salt or N-oxide thereof.

Embodiment 6: A method according to embodiment 1, wherein the compound is selected from

- 17 -



and



- 5 Embodiment 7: Use of a compound as defined in any one of embodiments 1 to 6 for controlling and/or preventing infestation of stinkbugs.

Embodiment 8: The method according to any one of embodiments 1 to 6 or the use according to embodiment 7, wherein the stinkbug is selected from *Nezara* spp. (e.g. *Nezara viridula*, *Nezara antennata*, *Nezara hilare*), *Piezodorus* spp. (e.g. *Piezodorus guildinii*), *Acrosternum* spp. (e.g. *Acrosternum hilare*), *Euschistus* spp. (e.g. *Euschistus heros*, *Euschistus servus*), *Halymorpha* spp. (e.g. *Halymorpha halys*), *Plautia crossota*, *Riptortus clavatus*, *Rhopalus msculatus*, *Antestiopsis* spp. (e.g. *Antestiopsis orbitalis*), *Dichelops* spp. (e.g. *Dichelops furcatus*, *Dichelops melacanthus*), *Edessa* spp. (e.g. *Edessa meditabunda*), *Eurygaster* spp. (e.g. *Eurygaster intergriceps*, *Eurygaster maura*), *Murgantia* spp., *Oebalus* spp. (e.g. *Oebalus mexicana*, *Oebalus poecilus*, *Oebalus pugnase*, *Oebalus pugnax*), *Thianta* spp., *Pentatomidae*, *Lygus* spp. (e.g. *Lygus lineolaris*, *Lygus hesperus*, *Lygus elisus*), *Thyanta* spp., *Tibraca* spp. and *Scotinophara* spp. (e.g. *Scotinophara lurida*, *Scotinophara coarctata*).

Embodiment 9: The method according to any one of embodiments 1 to 6 or the use according to embodiment 7, wherein the stinkbug is selected from the genus *Euschistus*.

5 Embodiment 10: The method according to any one of embodiments 1 to 6 or the use according to embodiment 7, wherein the stinkbug is *Euschistus heros*.

10 Embodiment 11: The method or the use according to any one of embodiments 1 to 6 or the use according to embodiment 7, wherein the method or use is for controlling stinkbugs that are resistant to one or more other insecticides.

Embodiment 12: The method or use according to embodiment 11, wherein the stinkbugs that are resistant to one or more other insecticides are resistant to pyrethroid, neonicotinoids and/or organophosphates, more preferably pyrethroid insecticides.

15 Embodiment 13: A method for obtaining regulatory approval for the use of a compound as defined in any one of embodiments 1 to 6 for controlling and/or preventing infestation of stinkbugs, particularly *Euschistus spp.*, comprising at least one step of referring to, submitting or relying on biological data showing that said active ingredient reduces stinkbug pressure.

20 Embodiment 13.1: A method for growing soybean comprising applying or treating soybean or a seed thereof with a compound as defined in any one embodiment 1 to 6.

25 Embodiment 13.2: The method according to any one of embodiments 1 to 13 or the use according to any one of embodiment 7 to 13, wherein the plant is selected from soybean, sorghum, sunflower, sugarbeet, cereals, coffee, cocoa, corn, cotton, citrus fruits, grapes, potato, rice, sugarcane and vegetables.

30 Embodiment 13.3: The method according to any one of embodiments 1 to 13 or the use according to any one of embodiment 7 to 13, wherein the plant is selected from soybean, sorghum, sunflower, cereals, corn and cotton.

35 Embodiment 13.4: The method according to any one of embodiments 1 to 13 or the use according to any one of embodiment 7 to 13, wherein the plant is selected from soybean and sunflower, in particular soybean.

As used herein, when one embodiment refers to several other embodiments by using the term "according to any one of", for example "according to any one of embodiments 1 to 13", then said embodiment refers not only to embodiments indicated by the integers such as 1 and 2 but also to embodiments indicated by numbers with a decimal component such as 13.1.

The compounds as defined in any one of embodiments 1 to 6 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 invention also covers salts and N-oxides of the compounds of the invention.

The preparation of the compounds as defined in any one of embodiments 1 to 6 has been disclosed in WO 2014/122083 which is incorporated herein by reference.

Definitions:

The term "Alkyl" as used herein- in isolation or as part of a chemical group – represents straight-chain or branched hydrocarbons, preferably with 1 bis 6 carbon atoms, for example methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, s-butyl, t-butyl, pentyl, 1- methylbutyl, 2- methylbutyl, 3-methylbutyl, 1,2-dimethylpropyl, 1,1 -dimethylpropyl, 2,2- dimethylpropyl, 1 - ethylpropyl, hexyl, 1 -methylpentyl, 2-methylpentyl, 3-methylpentyl, 4- methylpentyl, 1,2- dimethylpropyl, 1,3-dimethylbutyl, 1,4-dimethylbutyl, 2,3-dimethylbutyl, 1,1- dimethylbutyl, 2,2-dimethylbutyl, 3,3-dimethylbutyl, 1,1,2-trimethylpropyl, 1,2,2-trimethylpropyl, 1- ethylbutyl and 2-ethylbutyl. Alkyls groups with 1 to 4 carbon atoms are preferred, for example methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, s-butyl or t-butyl.

The term "Alkenyl" - in isolation or as part of a chemical group - represents straight-chain or branched hydrocarbons, preferably with 2 bis 6 carbon atoms and at least one double bond, for example vinyl, 2-propenyl, 2-butenyl, 3-butenyl, 1- methyl-2-propenyl, 2-methyl-2-propenyl, 2-pentenyl, 3-pentenyl, 4-pentenyl, 1-methyl-2-butenyl, 2- methyl-2-butenyl, 3- methyl-2-butenyl, 1-methyl-3-butenyl, 2-methyl-3-butenyl, 3-methyl-3-butenyl, 1,1 - dimethyl-2-propenyl, 1,2-dimethyl-2-propenyl, 1 -ethyl-2-propenyl, 2-hexenyl, 3-hexenyl, 4- hexenyl, 5- hexenyl, 1 -methyl-2-pentenyl, 2-methyl-2-pentenyl, 3-methyl-2-pentenyl, 4-methyl-2-pentenyl, 3-methyl-3-pentenyl, 4-methyl-3-pentenyl, 1 -methyl-4-pentenyl, 2-methyl-4-

pentenyl, 3- methyl-4-pentenyl, 4-methyl-4-pentenyl, 1, 1 -dimethyl-2-butenyl, 1,1-dimethyl-3-butenyl, 1,2- dimethyl-2-butenyl, 1,2-dimethyl-3-butenyl, 1,3-dimethyl-2-butenyl, 2,2-dimethyl-3-butenyl, 2,3- dimethyl-2-butenyl, 2,3-dimethyl-3-butenyl, 1 -ethyl-2-butenyl, 1-ethyl-3-butenyl, 2-ethyl-2-butenyl, 2-ethyl-3-butenyl, 1, 1,2-trimethyl-2-propenyl, 1 -ethyl- 1 -methyl-2-propenyl und 1-ethyl-2-methyl-2-propenyl. Alkenyl groups with 2 to 4 carbon atoms are preferred, for example 2-propenyl, 2-butenyl or 1-methyl-2-propenyl.

The term "Alkynyl" - in isolation or as part of a chemical group - represents straight-chain or branched hydrocarbons, preferably with 2 bis 6 carbon atoms and at least one triple bond, for example 2-propynyl, 2-butylnyl, 3-butylnyl, 1-methyl-2- propynyl, 2-pentylnyl, 3-pentylnyl, 4-pentylnyl, 1-methyl-3-butylnyl, 2-methyl-3-butylnyl, 1-methyl-2- butynyl, 1,1 -dimethyl-2-propynyl, 1 -ethyl-2-propynyl, 2-hexynyl, 3-hexynyl, 4-hexynyl, 5-hexynyl, 1- methyl-2-pentylnyl, 1-methyl-3-pentylnyl, 1 -methyl-4-pentylnyl, 2-methyl-3-pentylnyl, 2-methyl-4- pentylnyl, 3 -methyl-4-pentylnyl, 4-methyl-2-pentylnyl, 1,1 -dimethyl-3 -butynyl, 1,2-dimethyl-3 -butynyl, 2,2- dimethyl-3-butylnyl, 1-ethyl-3-butylnyl, 2-ethyl-3-butylnyl, 1-ethyl-1-methyl, 1,2-propynyl and 2,5-hexadiynyl.

Alkynyls with 2 to 4 carbon atoms are preferred, for example ethynyl, 2- propynyl or 2-butylnyl-2-propenyl.

The term "cycloalkyl" - in isolation or as part of a chemical group - represents mono-, bi- or tricyclic hydrocarbons, preferably 3 to 10 carbon atoms, for example cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, bicyclo[2.2.1]heptyl, bicyclo[2.2.2]octyl or adamantyl.

Cycloalkyls with 3, 4, 5, 6 or 7 carbon atoms are preferred, for example cyclopropyl or cyclobutyl.

The term "heterocycloalkyl" - in isolation or as part of a chemical group - represents mono-, bi- or tricyclic hydrocarbons, preferably 3 to 10 carbon atoms, for example cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, bicyclo[2.2.1]heptyl, bicyclo[2.2.2]octyl or adamantyl, wherein one or more of the ring atoms, preferably 1 to 4, more preferably 1, 2 or 3 of the ring atoms are independently selected from N, O, S, P, B, Si and Se, more preferably N, O and S, wherein no O atoms can be located next to each other.

The term "Alkylcycloalkyl" represents mono-, bi- oder tricyclic alkylcycloalkyl, preferably with 4 to 10 or 4 to 7 carbon atoms, for example ethylcyclopropyl, isopropylcyclobutyl, 3-methylcyclopentyl und 4-methyl-cyclohexyl.

Alkylcycloalkyls with 4, 5 or 7 carbon atoms are preferred, for example ethylcyclopropyl or 4-methyl-cyclohexyl.

The term "cycloalkylalkyl" represents mono, bi- or tricyclic cycloalkylalkyls, preferably 4 to 10 or 4 to 7 carbon atoms, for example cyclopropylmethyl, cyclobutylmethyl, cyclopentylmethyl, cyclohexylmethyl and cyclopentylethyl.

Cycloalkylalkyls with 4, 5 or 7 carbon atoms are preferred, for example cyclopropylmethyl or cyclobutylmethyl.

The term "halogen" represents fluoro, chloro, bromo or iodo, particularly fluoro, chloro or bromo.

The chemical groups which are substituted with halogen, for example halogenalkyl, halogencycloalkyl, halogenalkoxy, halogenalkylsulfanyl, halogenalkylsulfinyl or

halogenalkylsulfonyl are substituted one or up to the maximum number of substituents with halogen.

If "alkyl", "alkenyl" or "alkinyl" are substituted with halogen, the halogen atoms can be the same or different and can be bound at the same carbon atom or different carbon atoms.

The term "halogencycloalkyl" represents mono-, bi- or tricyclic halogencycloalkyl, preferably with 3 to 10 carbon atoms, for example 1-fluoro-cyclopropyl, 2-fluoro-cyclopropyl or 1-fluoro-cyclobutyl. Preferred halogencycloalkyl mit 3, 5 oder 7 carbon atoms.

The term "halogenalkyl", "halogenalkenyl" or "halogenalkinyl" represents alkyls, alkenyls or alkynyls substituted with halogen, preferably with 1 to 9 halogen atoms that are the same or different, for example monohaloalkyls (= monohalogenalkyl) like $\text{CH}_2\text{CH}_2\text{Cl}$, $\text{CH}_2\text{CH}_2\text{F}$, CHClCH_3 , CHFCH_3 , CH_2Cl , CH_2F ; perhaloalkyls like CCl_3 or CF_3 or CF_2CF_3 ; polyhaloalkyls like CHF_2 , CH_2F , CH_2CHFCl , $\text{CF}_2\text{CF}_2\text{H}$, CH_2CF_3 .

The same applies for haloalkenyl and other groups substituted by halogen.

Examples of haloalkoxy are for example OCF_3 , OCHF_2 , OCH_2F , OCF_2CF_3 , OCH_2CF_3 , OCF_3 , OCHF_2 , OCH_2F , OCF_2CF_3 , OCH_2CF_3 .

Further examples of halogenalkyls are trichloromethyl, chlorodifluoromethyl, dichlorofluoromethyl, 1-fluoroethyl, 2-fluoroethyl, 2,2-difluoroethyl, 2,2,2-trifluoroethyl, 2,2,2-trichloroethyl, 2-chloro-2,2-difluoroethyl, pentafluoroethyl and pentafluoro-t-butyl.

Halogenalkyls having 1 to 4 carbon atoms and 1 to 9, preferably 1 to 5 of the same or different halogen atoms selected from fluoro, chloro or bromo, are preferred.

Halogenalkyls having 1 or 2 carbon atoms and 1 to 5 gleichen of the same or different halogen atoms selected from fluoro or chloro, for example difluoromethyl, trifluoromethyl or 2,2-difluoroethyl, are particularly preferred.

The term "hydroxyalkyl" represents straight or branched chain alcohols, preferably with 1 to 6 carbon atoms, for example methanol, ethanol, n-propanol, isopropanol, n-butanol, isobutanol, s-butanol and t-butanol.

Hydroxyalkyls having 1 to 4 carbon atoms are preferred.

- 5 The term "alkoxy" represents straight or branched chain O-alkyl, preferably having 1 to 6 carbon atoms, for example methoxy, ethoxy, n-propoxy, isopropoxy, n-butoxy, isobutoxy, s-butoxy und t-butoxy.

Alkoxy having 1 to 4 carbon atoms are preferred.

- 10 The term "halogenalkoxy" represents straight or branched chain O-alkyl substituted with halogen, preferably with 1 to 6 carbon atoms, for example difluoromethoxy, trifluoromethoxy, 2,2-difluoroethoxy, 1,1,2,2-tetrafluoroethoxy, 2,2,2-Trifluoroethoxy and 2-Chloro-1,1,2-trifluoroethoxy.

Halogenalkoxy having 1 to 4 carbon atoms are preferred.

- 15 The term "alkylsulfanyl" represents straight or branched chain s-alkyl, preferably with 1 to 6 carbon atoms, for example methylthio, ethylthio, n-propylthio, isopropylthio, n-butylthio, isobutylthio, s-butylthio and t-butylthio.

Alkylsulfanyl having 1 to 4 carbon atoms are preferred.

- 20 Examples for halogenalkylsulfanyl, i.e. with halogen substituted alkylsulfanyl, are for example difluoromethylthio, trifluoromethylthio, trichloromethylthio, chlorodifluoromethylthio, 1-fluoroethylthio, 2-fluoroethylthio, 2,2-difluoroethylthio, 1,1,2,2-tetrafluoroethylthio, 2,2,2-trifluoroethylthio or 2-chloro-1,1,2-trifluoroethylthio.

The term "alkylsulfinyl" represents straight or branched chain alkylsulfinyl, preferably having 1 to 6 carbon atoms, for example methylsulfinyl, ethylsulfinyl, n-propylsulfinyl, isopropylsulfinyl, n-butylsulfinyl, isobutylsulfinyl, s-butylsulfinyl und t-Butylsulfinyl.

- 25 Alkylsulfinyls having 1 to 4 carbon atoms are preferred.

Examples of halogenalkylsulfinyls, i.e. with halogen substituted alkylsulfinyls, are difluoromethylsulfinyl, trifluoromethylsulfinyl, trichloromethylsulfinyl, chlorodifluoromethylsulfinyl, 1-fluoroethylsulfinyl, 2-fluoroethylsulfinyl, 2,2-difluoroethylsulfinyl, 1,1,2,2-tetrafluoroethylsulfinyl, 2,2,2-trifluoroethylsulfinyl and 2-chloro-1,1,2-trifluoroethylsulfinyl.

- 30 The term "alkylsulfonyl" represents straight or branched chain alkylsulfonyl, preferably having 1 to 6 carbon atoms, for example methylsulfonyl, ethylsulfonyl, n-propylsulfonyl, isopropylsulfonyl, n-butylsulfonyl, isobutylsulfonyl, s-butylsulfonyl and t-butylsulfonyl.

Alkylsulfonyls having 1 to 4 carbon atoms are preferred.

Examples of halogenalkylsulfonyls, i.e. with halogen substituted alkylsulfonyls, are for example difluoromethylsulfonyl, trifluoromethylsulfonyl, trichloromethylsulfonyl, chlorodifluoromethylsulfonyl, 1-fluoroethylsulfonyl, 2-fluoroethylsulfonyl, 2,2-difluoroethylsulfonyl, 1,1,2,2-tetrafluoroethylsulfonyl, 2,2,2-trifluoroethylsulfonyl and 2-chloro-1,1,2-trifluoroethylsulfonyl.

The term "alkylcarbonyl" represents straight or branched chain alkyl-C(=O), preferably having 2 to 7 carbon atoms, for example methylcarbonyl, ethylcarbonyl, n-propylcarbonyl, isopropylcarbonyl, s-butylcarbonyl and t-butylcarbonyl.

Alkylcarbonyls having 1 to 4 carbon atoms are preferred.

The term "cycloalkylcarbonyl" represents cycloalkyl-carbonyl, preferably 3 to 10 carbon atoms in the cycloalkyl part, for example cyclopropylcarbonyl, cyclobutylcarbonyl, cyclopentylcarbonyl, cyclohexyl-carbonyl, cycloheptyl-carbonyl, cyclooctylcarbonyl, bicyclo[2.2.1]heptyl, bicyclo[2.2.2]octylcarbonyl and adamantylcarbonyl.

Cycloalkylcarbonyls having 3, 5 or 7 carbon atoms in the cycloalkyl part are preferred.

The term "alkoxycarbonyl" - in isolation or as part of a chemical group - represents straight or branched chain alkoxycarbonyl, preferably having 1 to 6 carbon atoms or 1 to 4 carbon atoms in the alkoxy part, for example methoxycarbonyl, ethoxycarbonyl, n-propoxycarbonyl, isopropoxycarbonyl, s-butoxycarbonyl and t-butoxycarbonyl.

The term "alkylaminocarbonyl" represents straight or branched chain alkylaminocarbonyl having preferably 1 to 6 carbon atoms or 1 to 4 carbon atoms in the alkyl part, for example methylaminocarbonyl, ethylaminocarbonyl, n-propylaminocarbonyl, isopropyl-aminocarbonyl, s-butylaminocarbonyl and t-butylaminocarbonyl.

The term "N,N-Dialkylamino-carbonyl" represents straight or branched chain N,N-dialkylaminocarbonyl with preferably 1 to 6 carbon atoms or 1 to 4 carbon atoms in the alkyl part, for example N,N-Dimethylamino-carbonyl, N,N-diethylamino-carbonyl, N,N-di(n-propylamino)-carbonyl, N,N-di(isopropylamino)-carbonyl and N,N-di(s-butylamino)-carbonyl.

The term "aryl" represents a mono-, bi- or polycyclical aromatic system with preferably 6 to 14, more preferably 6 to 10 ring-carbon atoms, for example phenyl, naphthyl, anthryl, phenanthrenyl, preferably phenyl. "Aryl" also represents polycyclic systems, for example tetrahydronaphthyl, indenyl, indanyl, fluorenyl, biphenyl.

Arylalkyls are examples of substituted aryls, which may be further substituted with the same or different substituents both at the aryl or alkyl part.

Benzyl and 1-phenylethyl are examples of such arylalkyls.

The term "heterocyclyl", "heterocyclic ring" or "heterocyclic ring system" represents a carbocyclic ring system with at least one ring, in which ring at least one carbon atom is

replaced by a heteroatom, preferably selected from N, O, S, P, B, Si, Se, and which ring is saturated, unsaturated or partially saturated, and which ring is unsubstituted or substituted with a substituent Z, wherein the connecting bond is located at a ring atom.

Unless otherwise defined, the heterocyclic ring has preferably 3 to 9 ring atoms, preferably

5 3 to 6 ring atoms, and one or more, preferably 1 to 4, more preferably 1, 2 or 3

heteroatoms in the heterocyclic ring, preferably selected from N, O, and S, wherein no O atoms can be located next to each other.

The heterocyclic rings normally contain no more than 4 nitrogens, and/or no more than 2 oxygen atoms and/or no more than 2 sulfur atoms.

10 In case that the heterocyclic substituent or the heterocyclic ring are further substituted, it can be further annulated with other heterocyclic rings.

The term „heterocyclic“ also includes polycyclic systems, for example 8-aza-bicyclo[3.2.1]octanyl or 1-aza-bicyclo[2.2.1]heptyl.

The term „heterocyclic“ also includes spirocyclic systems, for example 1-oxa-5-aza-

15 spiro[2.3]hexyl.

Examples of heterocyclyls are for example piperidinyl, piperazinyl, morpholinyl, thiomorpholinyl, dihydropyranyl, tetrahydropyranyl, dioxanyl, pyrrolinyl, pyrrolidinyl, imidazoliny, imidazolidinyl, thiazolidinyl, oxazolidinyl, dioxolanyl, dioxolyl, pyrazolidinyl, tetrahydrofuranyl, dihydrofuranyl, oxetanyl, oxiranyl, azetidiny, aziridinyl, oxazetidiny,

20 oxaziridinyl, oxazepanyl, oxazinanyl, azepanyl, oxopyrrolidinyl, dioxopyrrolidinyl, oxomorpholinyl, oxopiperazinyl und oxepanyl.

Particularly important are heteroaryls, i.e. heteroaromatic systems.

The term „heteroaryl“ represents heteroaromatic groups, i.e. completely unsaturated aromatic heterocyclic groups, which fall under the above definition of heterocycles.

25 „Heteroaryls“ with 5 to 7-membered rings with 1 to 3, preferably 1 or 2 of the same or different heteroatoms selected from N, O, and S.

Examples of “heteroaryls” are furyl, thienyl, pyrazolyl, imidazolyl, 1,2,3- and 1,2,4-triazolyl, isoxazolyl, thiazolyl, isothiazolyl, 1,2,3-, 1,3,4-, 1,2,4- and 1,2,5-oxadiazolyl, azepiny, pyrrolyl, pyridyl, pyridazinyl, pyrimidinyl, pyrazinyl, 1,3,5-, 1,2,4- and 1,2,3-triazinyl, 1,2,4-,

30 1,3,2-, 1,3,6- and 1,2,6-oxazinyl, oxepiny, thiepinyl, 1,2,4-triazolonyl und 1,2,4-diazepiny.

The methods and uses according to any one of embodiments 1 to 13 are preferably for controlling and/or preventing infestation of the crop by stinkbugs, including stinkbugs that are resistant to other insecticides, e.g. pyrethroid insecticides. Stinkbugs that are "resistant" to a

35 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 been exposed to the insecticide.

- 5 Application is of the compounds as defined in any one of embodiments 1 to 6 is preferably to a crop of plants, the locus thereof or propagation material thereof. Preferably application is to a crop of plants or the locus thereof, more preferably to a crop of 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 the usual modes of application, e.g. foliar, drench, soil,
10 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 as defined in any one of embodiments 1 to 6 may be applied in combination with an attractant. An attractant is a chemical that causes the insect to migrate towards the
15 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
20 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 as defined in any one of embodiments 1 to 6 prior to application, e.g. as a readymix or tankmix, or by simultaneous application or
25 sequential application to the plant. Suitable rates of attractants are for example 0.02kg/ha-3kg/ha.

The compounds as defined in any one of embodiments 1 to 6 are preferably used for pest control at 1 to 500 g/ha, preferably 10-70g/ha.

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The compounds as defined in any one of embodiments 1 to 6 are suitable for use on any 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.

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In a further embodiment 14, 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, 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 (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 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 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 (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 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 as defined in any one of embodiments 1 to 6 are preferably used to control stinkbugs, e.g. selected from *Nezara* spp. (e.g. *Nezara viridula*, *Nezara antennata*, *Nezara hilare*), *Piezodorus* spp. (e.g. *Piezodorus guildinii*), *Acrosternum* spp. (e.g. *Acrosternum hilare*), *Euschistus* spp. (e.g. *Euschistus heros*, *Euschistus servus*), *Halymorpha* spp. (e.g. *Halymorpha halys*), *Plautia crossota*, *Riptortus clavatus*, *Rhopalus msculatus*, *Antestiopsis*

spp. (e.g. *Antestiopsis orbitalis*), *Dichelops* spp. (e.g. *Dichelops furcatus*, *Dichelops melacanthus*), *Edessa* spp. (e.g. *Edessa meditabunda*), *Eurygaster* spp. (e.g. *Eurygaster intergriceps*, *Eurygaster maura*), *Murgantia* spp., *Oebalus* spp. (e.g. *Oebalus mexicana*, *Oebalus poecilus*, *Oebalus pugnase*, *Oebalus pugnax*), *Thianta* spp., *Pentatomidae*, *Lygus* spp. (e.g. *Lygus lineolaris*, *Lygus hesperus*, *Lygus elisus*), *Thyanta* spp., *Tibraca* spp. and *Scotinophara* spp. (e.g. *Scotinophara lurida*, *Scotinophara coarctata*).

The compounds as defined in any one of embodiment 1 to 6 are particularly effective against *Euschistus* and in particular *Euschistus heros*. *Euschistus* and in particular *Euschistus heros* are the preferred targets.

In order to apply compounds as defined in any one of embodiments 1 to 6 in a method according to any one of embodiments 1 to 13, the compounds are usually formulated into a composition which includes, in addition to the compound as defined in any one of embodiment 1 to 6, 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 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 as defined in any one of embodiments 1 to 6. The composition is generally used for the control of pests such that a compound as defined in any one of embodiments 1 to 6 is applied at a rate of from 0.1g to 10kg per hectare, preferably from 1g to 6kg per hectare, more preferably from 1g to 1kg per hectare.

When used in a seed dressing, a compound as defined in any one of embodiments 1 to 6 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 as defined in any one of embodiments 1 to 6 can be chosen from a number of formulation types, including dustable powders (DP), soluble powders (SP), water soluble granules (SG), 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 depend upon the particular purpose envisaged and the physical, chemical and biological properties of the compound as defined in any one of embodiments 1 to 6.

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Dustable powders (DP) may be prepared by mixing a compound as defined in any one of embodiments 1 to 6 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.

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Soluble powders (SP) may be prepared by mixing a compound as defined in any one of embodiments 1 to 6 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 as defined in any one of embodiments 1 to 6 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 as defined in any one of embodiments 1 to 6 and one or more powdered solid diluents or carriers, or from pre-formed blank granules by absorbing a compound as defined

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in any one of embodiments 1 to 6 (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 as defined in any one of embodiments 1 to 6 (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 as defined in any one of embodiments 1 to

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6 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 as defined in any one of embodiments 1 to 6 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 as defined in any one of embodiments 1 to 6 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 as defined in any one of embodiments 1 to 6 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 as defined in any one of embodiments 1 to 6. SCs may be prepared by ball or bead milling the solid compound as defined in any one of embodiments 1 to 6 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 as defined in any one of embodiments 1 to 6 may be dry milled and added to water, containing agents hereinbefore described, to produce the desired end product. Aerosol formulations comprise a compound as defined in any one of
5 embodiments 1 to 6 and a suitable propellant (for example *n*-butane). A compound as defined in any one of embodiments 1 to 6 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 as defined in any one of embodiments 1 to 6 may be mixed in the dry state with a pyrotechnic
10 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 as defined in any one of embodiments 1 to 6
15 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 as defined in any one of embodiments 1 to 6 and they may be used for seed treatment. A compound as defined in any one of embodiments 1 to 6 may also be formulated in a biodegradable polymeric matrix to provide a
20 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 as defined in any
25 one of embodiments 1 to 6). 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 as defined in any one of embodiments 1 to 6).

30 A compound as defined in any one of embodiments 1 to 6 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
35 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, butyl naphthalene 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 as defined in any one of embodiments 1 to 6 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.

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A compound as defined in any one of embodiments 1 to 6 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.

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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 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 as defined in any one of embodiments 1 to 6 (for example 0.0001 to 10%, by weight) depending upon the purpose for which they are to be used.

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A compound as defined in any one of embodiments 1 to 6 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 as defined in any one of embodiments 1 to 6.

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The invention therefore also provides a fertilizer composition comprising a fertilizer and a compound as defined in any one of embodiments 1 to 6. 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, nematicidal or acaricidal activity.

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The compound as defined in any one of embodiments 1 to 6 may be the sole active ingredient of the composition or it may be 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

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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 as defined in any one of embodiments 1 to 6; or help to overcome or prevent the development of resistance to individual 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, 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;

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;

e) 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;

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, thiamethoxam, clothianidin, or nithiazine;

- m) Diacylhydrazines, such as tebufenozide, chromafenozide or methoxyfenozide;
 n) Diphenyl ethers, such as diofenolan or pyriproxifen;
 o) Ureas such as Indoxacarb or metaflumizone;
 p) Ketoenols, such as Spirotetramat, spiroticlofen or spiromesifen;
 5 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, flupyradifuone, harpin, iodomethane, dodecadienol, pyridaben, pyridalyl, pyrimidifen,
 10 flupyradifurone, 4-[(6-Chloro-pyridin-3-ylmethyl)-(2,2-difluoro-ethyl)-amino]-5H-furan-2-one (DE 102006015467), CAS: 915972-17-7 (WO 2006129714; WO 2011/147953; WO 2011/147952), CAS: 26914-55-8 (WO 2007/020986), chlorfenapyr, pymetrozine, sulfoxaflor and pyrifluquinazon.
- 15 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
 20 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).
- 25 Examples of fungicidal compounds which may be included in the composition of the invention are (E)-N-methyl-2-[2-(2,5-dimethylphenoxyethyl)phenyl]-2-methoxy-iminoacetamide (SSF-129), 4-bromo-2-cyano-N,N-dimethyl-6-trifluoromethylbenzimidazole-1-sulfonamide, α -[N-(3-chloro-2,6-xylyl)-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,-
 30 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, chlorozolinate, clozylacon, copper containing compounds such as copper

5 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,

10 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), fencpiclonil, fenpropidin, fenpropimorph, fentin acetate, fentin hydroxide, ferbam, ferimzone, fluazinam, fludioxonil, flumetover, fluoroimide, fluquinconazole, flusilazole,

15 flutolanil, flutriafol, folpet, fuberidazole, furalaxyl, furametpyr, guazatine, hexaconazole, hydroxyisoxazole, hymexazole, imazalil, imibenconazole, iminoctadine, iminoctadine triacetate, ipconazole, iprobenfos, iprodione, iprovalicarb (SZX0722), isopropanyl butyl carbamate, isoprothiolane, kasugamycin, kresoxim-methyl, LY186054, LY211795, LY248908, mancozeb, maneb, mefenoxam, mepanipyrim, mepronil, metalaxyl, metconazole, metiram,

20 metiram-zinc, metominostrobin, myclobutanil, neoasozin, nickel dimethyldithiocarbamate, nitrothal-isopropyl, 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

25 acid, pyrazophos, pyrifenox, 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,

30 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 plants, the locus thereof, or propagation material thereof, a compound as defined in any one of embodiments 1 to 6 and a further pesticide, particularly 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 as defined in any one of embodiments 1 to 6 (A) with an additional active ingredient (B) 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 may also be prepared by premixing prior to application, e.g. as a readymix or tankmix, or by simultaneous application or sequential application to the plant.

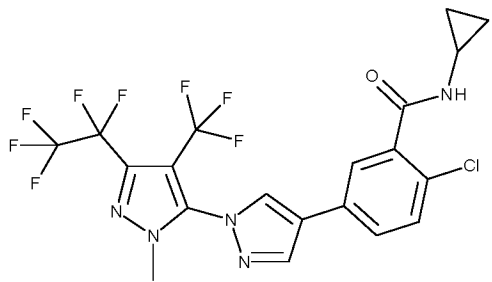
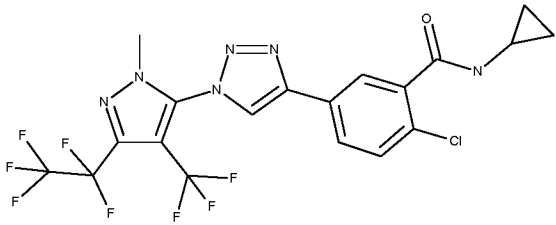
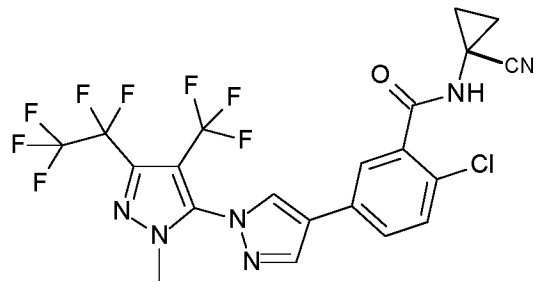
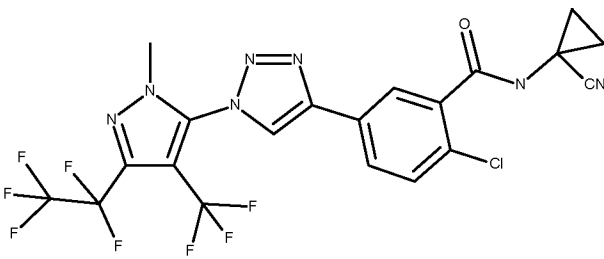
10 The invention will now be illustrated by the following non-limiting Examples. All citations are incorporated by reference.

Experimental

Biological testing

15 Insecticidal activity against *Euschistus heros* (neotropical brown stink bug): contact/feeding activity of compounds 1 and 3 according to the invention and 2 and 4 as comparison:
Two week old soybean plants were sprayed in a turn table spray chamber with the diluted spray solutions. After drying, two soybean seeds were added and plants were infested with ten N-2 nymphs of the neotropical brown stink bug *Euschistus heros* in plastic test boxes.
20 Boxes were incubated in a climate chamber at 25°C and 60 % relative humidity. Evaluation is done 5 days after infestation on mortality and growth effect.

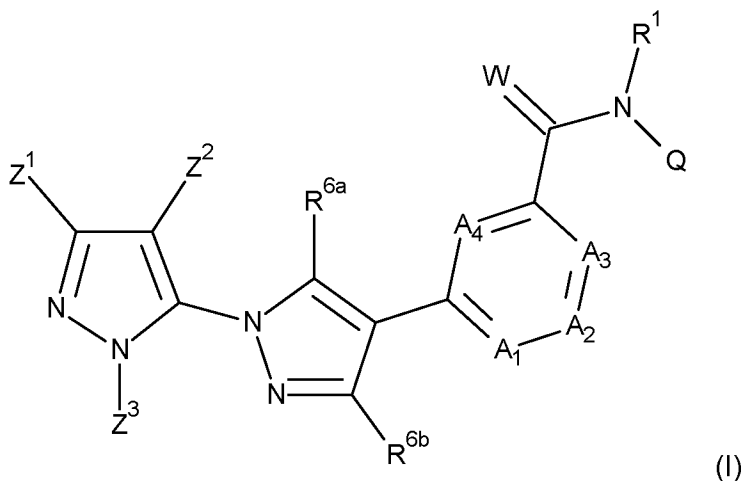
Compounds 1 and 3 are disclosed in WO 2014/122083 as examples Ic-1 (p. 76) and Ic-2 (p. 82). Compounds 2 and 4 are disclosed in WO 2012/107434 as compound A1 and A103 in
25 Table A of WO2012/107434.

No.	Compound structure	Concentration (ppm)	Mortality (%)
1		3	100
		0.8	100
		0.2	95
		0.05	50
		0.0125	35
2		3	100
		0.8	35
		0.2	20
		0.05	10
		0.0125	0
3		3	100
		0.8	95
		0.2	95
		0.05	35
		0.0125	15
4		3	95
		0.8	20
		0.2	0
		0.05	-
		0.0125	-

Claims

1. A method of controlling and/or preventing infestation of stinkbugs comprising applying to a crop of plants, the locus thereof, or propagation material thereof, a compound of formula

5 (I)



(I)

wherein

R^1 is selected from H, C_1 - C_6 -alkyl, C_3 - C_6 alkenyl, C_3 - C_6 alkynyl, C_3 - C_7 cycloalkyl, C_3 - C_7 cycloalkyl- C_1 - C_3 -alkyl, C_1 - C_6 -alkylcarbonyl, C_1 - C_6 -alkoxycarbonyl, aryl(C_1 - C_3)-alkyl and

10 heteroaryl(C_1 - C_3)-alkyl, wherein each of C_1 - C_6 -alkyl, C_3 - C_6 alkenyl, C_3 - C_6 alkynyl, C_3 - C_7 cycloalkyl, C_3 - C_7 cycloalkyl- C_1 - C_3 -alkyl, C_1 - C_6 -alkylcarbonyl, C_1 - C_6 -alkoxycarbonyl, aryl(C_1 - C_3)-alkyl and heteroaryl(C_1 - C_3)-alkyl is unsubstituted or substituted with 1 to 5 substituents independently selected from halogen, cyano, C_1 - C_6 -alkoxy and C_1 - C_6 -alkoxycarbonyl;

15 Q is selected from H, hydroxy, $HC(=O)-$, C_1 - C_6 -alkyl, C_1 - C_6 -alkoxy, C_3 - C_6 alkenyl, C_3 - C_6 alkynyl, C_3 - C_7 cycloalkyl, C_3 - C_7 heterocycloalkyl, C_3 - C_7 cycloalkyl- C_1 - C_3 -alkyl, C_1 - C_3 -alkyl- C_3 - C_7 cycloalkyl, aryl(C_1 - C_3)-alkyl, heteroaryl(C_1 - C_3)-alkyl, N - C_1 - C_6 -alkylamino, N - C_1 - C_6 -alkylcarbonylamino and N,N -di (C_1 - C_6 -alkyl)amino, wherein each of C_1 - C_6 -alkyl, C_1 - C_6 -alkoxy, C_3 - C_6 alkenyl, C_3 - C_6 alkynyl, C_3 - C_7 cycloalkyl, C_3 - C_7 heterocycloalkyl, C_3 - C_7 cycloalkyl- C_1 - C_3 -alkyl, C_1 - C_3 -alkyl- C_3 - C_7 cycloalkyl, aryl(C_1 - C_3)-alkyl, heteroaryl(C_1 - C_3)-alkyl, N - C_1 - C_6 -alkylamino, N - C_1 - C_6 -alkylcarbonylamino and N,N -di (C_1 - C_6 -alkyl)amino is unsubstituted or

20 substituted with 1 to 5 substituents independently selected from halogen, hydroxyl, nitro, amino, cyano, C_1 - C_6 -alkoxy, C_1 - C_6 -alkoxycarbonyl, hydroxycarbonyl, C_1 - C_6 -alkylcarbonyl, C_3 - C_6 -cycloalkylcarbonyl and phenyl; A_1 is CR^2 or N;

A_2 is CR^3 or N;

25 A_3 is CR^4 or N;

A₄ is CR⁵ or N;

with the proviso that no more than 3 of A₁, A₂, A₃ and A₄ are N;

R², R³, R⁴ and R⁵ are independently selected from H, halogen, cyano, nitro, C₁-C₆-alkyl, C₁-C₆-alkoxy, *N*-C₁-C₆-alkoxy-imino-C₁-C₃-alkyl, C₁-C₆-alkylsulfanyl, C₁-C₆-alkylsulfinyl, C₁-C₆-alkylsulfonyl, *N*-C₁-C₆-alkylamino and *N,N*-di-C₁-C₆-alkylamino, wherein each of C₁-C₆-alkyl, C₁-C₆-alkoxy, *N*-C₁-C₆-alkoxy-imino-C₁-C₃-alkyl, C₁-C₆-alkylsulfanyl, C₁-C₆-alkylsulfinyl, C₁-C₆-alkylsulfonyl, *N*-C₁-C₆-alkylamino and *N,N*-di-C₁-C₆-alkylamino is unsubstituted or substituted with 1 to 5 substituents independently selected from halogen, hydroxy, nitro, amino, cyano, C₁-C₆-alkoxy, C₁-C₆-alkoxycarbonyl, hydroxycarbonyl, C₁-C₆-alkylcarbamoyl, C₃-C₆-cycloalkylcarbamoyl and phenyl;

W is O or S;

R^{6a} and R^{6b} are independently selected from H, halogen, cyano, nitro, amino, C₁-C₆-alkyl, C₁-C₆-alkoxy, C₁-C₆-alkylcarbonyl, C₁-C₆-alkylsulfanyl, C₁-C₆-alkylsulfinyl, C₁-C₆-alkylsulfonyl, wherein each of C₁-C₆-alkyl, C₁-C₆-alkoxy, C₁-C₆-alkylcarbonyl, C₁-C₆-alkylsulfanyl, C₁-C₆-alkylsulfinyl, C₁-C₆-alkylsulfonyl is unsubstituted or substituted with 1 to 5 halogen;

Z¹ is selected from C₁-C₆-halogenalkyl, C₃-C₆-cycloalkyl and C₃-C₆-halogencycloalkyl, wherein each of C₁-C₆-halogenalkyl, C₃-C₆-cycloalkyl and C₃-C₆-halogencycloalkyl is unsubstituted or substituted with 1 to 5 substituents independently selected from halogen, hydroxy, nitro, amino, cyano, C₁-C₆-alkoxy, C₁-C₆-alkoxycarbonyl, hydroxycarbonyl, C₁-C₆-alkylcarbamoyl, C₃-C₆-cycloalkylcarbamoyl and phenyl;

Z² is selected from H, halogen, cyano, nitro, amino, C₁-C₆-alkyl, C₁-C₆-alkylcarbonyl, C₁-C₆-alkylsulfanyl, C₁-C₆-alkylsulfinyl and C₁-C₆-alkylsulfonyl, wherein each of C₁-C₆-alkyl, C₁-C₆-alkylcarbonyl, C₁-C₆-alkylsulfanyl, C₁-C₆-alkylsulfinyl and C₁-C₆-alkylsulfonyl is unsubstituted or substituted with 1 to 5 substituents independently selected from halogen, hydroxy, nitro, amino, cyano, C₁-C₆-alkoxy, C₁-C₆-alkoxycarbonyl, hydroxycarbonyl, C₁-C₆-alkylcarbamoyl, C₃-C₆-cycloalkylcarbamoyl and phenyl;

Z³ is selected from C₁-C₆-alkyl, C₁-C₆-cycloalkyl, C₁-C₆-alkenyl, C₁-C₆-alkinyl, aryl and heteroaryl, wherein each of C₁-C₆-alkyl, C₁-C₆-cycloalkyl, C₁-C₆-alkenyl, C₁-C₆-alkinyl, aryl and heteroaryl is unsubstituted or substituted with 1 to 5 substituents independently selected from halogen, hydroxy, nitro, amino, cyano, C₁-C₆-alkoxy, C₁-C₆-alkoxycarbonyl, hydroxycarbonyl, C₁-C₆-alkylcarbamoyl, C₃-C₆-cycloalkylcarbamoyl and phenyl; or an agrochemically acceptable salt or N-oxide thereof.

2. The method according to claim 1, wherein

R¹ is selected from H, methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, s-butyl, t-butyl, methoxymethyl, ethoxymethyl, propoxymethyl, methylcarbonyl, ethylcarbonyl, n-propylcarbonyl, isopropylcarbonyl, s-butylcarbonyl, t-butylcarbonyl, methoxycarbonyl, ethoxycarbonyl, n-propoxycarbonyl, isopropoxycarbonyl, s-butoxycarbonyl, t-butoxycarbonyl, cyanomethyl, 2-cyanoethyl, benzyl, 4-methoxybenzyl, pyrid-2-yl-methyl, pyrid-3-yl-methyl, pyrid-4-yl-methyl and 4-chlor-pyrid-3-yl-methyl;

Q is selected from H, methyl, ethyl, n-propyl, 1-methylethyl, 1,1-dimethylethyl, 1-methylpropyl, n-butyl, 2-methylpropyl, 2-methylbutyl, hydroxyethyl, 2-hydroxypropyl, cyanomethyl, 2-cyanoethyl, 2-fluorethyl, 2,2-difluorethyl, 2,2,2-trifluorethyl, 1-trifluormethylethyl, 2,2-difluorpropyl, 3,3,3-trifluorpropyl, 2,2-dimethyl-3-fluorpropyl, cyclopropyl, 1-cyano-cyclopropyl, 1-methoxycarbonyl-cyclopropyl, 1-(N-methylcarbamoyl)cyclopropyl, 1-carbamoyl-cyclopropyl, 1-carbamothioyl-cyclopropyl, 1-(N-cyclopropylcarbamoyl)cyclopropyl, cyclopropyl-methyl, cyclobutyl, cyclopentyl, cyclohexyl, 1-cyclopropylethyl, bis(cyclopropyl)methyl, 2,2-dimethylcyclopropyl-methyl, 2-phenylcyclopropyl, 2,2-dichlorcyclopropyl, trans-2-chlorcyclopropyl, cis-2-chlorcyclopropyl, 2,2-difluorcyclopropyl, trans-2-fluorcyclopropyl, cis-2-fluorcyclopropyl, trans-4-hydroxycyclohexyl, 4-trifluormethylcyclohexyl, prop-2-enyl, 2-methylprop-2-enyl, prop-2-ynyl, 1,1-dimethylbut-2-ynyl, 3-chlor-prop-2-enyl, 3-fluor-prop-2-enyl, 3,3-dichlor-prop-2-enyl, 3,3-dichlor-1,1-dimethylprop-2-enyl, oxetan-3-yl, thietan-3-yl, l-oxido-thietan-3-yl, l,l-dioxido-thietan-3-yl, isoxazol-3-ylmethyl, l,2,4-triazol-3-ylmethyl, 3-methyloxetan-3-ylmethyl, benzyl, 2,6-difluorphenylmethyl, 3-fluorphenylmethyl, 2-fluorphenylmethyl, 2,5-difluorphenylmethyl, 1-phenylethyl, 4-chlorphenylethyl, 2-trifluormethylphenylethyl, 1-pyridin-2-ylethyl, pyridin-2-ylmethyl, 5-fluorpyridin-2-ylmethyl, (6-chlor-pyridin-3-yl)methyl, pyrimidin-2-ylmethyl, methoxy, 2-ethoxyethyl, 2-methoxyethyl, 2-(methylsulfanyl)ethyl, l-methyl-2-(ethylsulfanyl)ethyl, 2-methyl-1-(methylsulfanyl)propan-2-yl, methoxycarbonyl, methoxycarbonylmethyl, NH₂, N-ethylamino, N-allylamino, N,N-dimethylamino and N,N-diethylamino; or

Q is selected from phenyl, naphthyl, pyridazin, pyrazin, pyrimidin, triazin, pyridin, pyrazol, thiazol, isothiazol, oxazol, isoxazol, triazol, imidazol, furan, thiophen, pyrrol, oxadiazol, and thiadiazol, each of which is unsubstituted or substituted with 1 to 4 substituents independently selected from V;

V is selected from fluoro, chloro, bromo, iodo, Cyano, nitro, methyl, ethyl, difluoromethyl, trichloromethyl, chlordifluoromethyl, dichlorofluoromethyl, trifluoromethyl, 1-fluoroethyl, 2-fluoroethyl, 2,2-difluoroethyl, 2,2,2-trifluoroethyl, 1,2,2,2-tetrafluoroethyl, 1-chloro-1,2,2,2-tetrafluoroethyl, 2,2,2-trichloroethyl, 2-chloro-2,2-difluoroethyl, 1,1-difluoroethyl,

pentafluoroethyl heptafluoro-n-propyl, heptafluoro-isopropyl, nonafluoro-n-butyl, cyclopropyl, cyclobutyl, methoxy, ethoxy, n-propoxy, 1-methylethoxy, fluormethoxy, difluormethoxy, chloro-difluormethoxy, dichloro-fluoromethoxy, trifluoromethoxy, 2,2,2-trifluoroethoxy, 2-chloro-2,2-difluoroethoxy, pentafluoroethoxy, N-methoxyiminomethyl, I-(N-methoxyimino)-ethyl,
 5 methylsulfanyl, methylsulfonyl, methylsulfinyl, trifluoromethylsulfonyl, trifluoromethylsulfinyl, trifluoromethylsulfanyl and N,N-dimethylamino;

W is O or S;

A₁ is CR² or N;

A₂ is CR³ or N;

10 A₃ is CR⁴ or N;

A₄ is CR⁵ or N;

with the proviso that no more than 3 of A₁, A₂, A₃ and A₄ are N;

R² and R⁵ are independently selected from H, methyl, fluoro and chloro;

R³ and R⁴ are independently selected from H, fluoro, chloro, bromo, iodo, cyano, nitro,

15 methyl, ethyl, fluoromethyl, difluoromethyl, chlordifluoromethyl, trifluoromethyl, 2,2,2-trifluoroethyl, methoxy, ethoxy, n-propoxy, 1-methylethoxy, fluoromethoxy, difluoromethoxy, chloro-difluoromethoxy, dichloro-fluoromethoxy, trifluoromethoxy, 2,2,2-trifluoroethoxy, 2-chloro-2,2-difluoroethoxy, pentafluoroethoxy, N-methoxyiminomethyl, I-(N-methoxyimino)-ethyl, methylsulfanyl, trifluoromethylsulfanyl, methylsulfonyl, methylsulfinyl,
 20 trifluoromethylsulfonyl and trifluoromethylsulfinyl;

R^{6a} and R^{6b} are independently selected from halogen, cyano, nitro, amino, methyl, ethyl, propyl, 1-methylethyl, tert-butyl, trifluoromethyl, difluoromethyl, methoxy, ethoxy, trifluoromethoxy, 2,2-difluoroethoxy, 2,2,2-trifluoroethoxy, methylcarbonyl, ethylcarbonyl, trifluoromethylcarbonyl, methylsulfanyl, methylsulfinyl, methylsulfonyl, trifluoromethylsulfonyl,
 25 trifluoromethylsulfanyl and trifluoromethylsulfinyl;

Z¹ is selected from methyl, ethyl, 1,1-dimethylethyl, difluoromethyl, trichloromethyl, chlorodifluoromethyl, dichlorofluoromethyl, trifluoromethyl, bromodichloromethyl, 1-fluoroethyl, 1-fluoro-1-methylethyl, 2-fluoroethyl, 2,2-difluoroethyl, 2,2,2-trifluoroethyl, 1,2,2,2-tetrafluoroethyl, 1-chloro-1,2,2,2-tetrafluoroethyl, 2,2,2-trichloroethyl, 2-chloro-2,2-difluoroethyl, 1,1-difluoroethyl, pentafluoroethyl heptafluoro-n-propyl, heptafluoro-isopropyl, nonafluoro-n-butyl, cyclopropyl, 1-chlorocyclopropyl, 1-fluorocyclopropyl, 1-bromocyclopropyl, 1-cyano-cyclopropyl, 1-trifluoromethyl-cyclopropyl, cyclobutyl and 2,2-Difluoro-1-methyl-cyclopropyl;

Z² is selected from H, halogen, cyano, nitro, amino, methyl, ethyl, 1,1-dimethylethyl,

35 difluoromethyl, trichloromethyl, chlorodifluoromethyl, dichlorofluoromethyl, trifluoromethyl,

bromodichloromethyl, 1-fluoroethyl, 1-fluoro-1 methylethyl, 2-fluoroethyl, 2,2-difluoroethyl, 2,2,2-trifluoroethyl, 1,2,2,2-tetrafluoroethyl, 1 -chlor- 1,2,2,2-tetrafluoroethyl, 2,2,2-trichloroethyl, 2-chloro-2,2-difluoroethyl, 1,1 -difluoroethyl, pentafluoroethyl heptafluoro-n-propyl, heptafluoro- isopropyl, nonafluoro-n-butyl, methylsulfanyl, methylsulfinyl, methylsulfonyl, ethylthio, ethylsulfinyl, ethylsulfonyl, trifluoromethylsulfanyl, trifluoromethylsulfinyl, trifluoromethylsulfonyl, chloro-difluoromethylsulfanyl, chloro-difluoromethylsulfinyl, chloro-difluoromethylsulfonyl, dichloro-fluoromethylsulfanyl, dichloro-fluoromethylsulfinyl, dichloro-fluoromethylsulfonyl; and

Z^3 is selected from H, methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, s-butyl, t-butyl, ethenyl, 1-propenyl, 1-propinyl, 1-butylnyl, difluoromethyl, trichloromethyl, chlorodifluoromethyl, dichlorofluoromethyl, trifluoromethyl, 1 -fluoroethyl, 1 fluoro- 1 -methylethyl, 2-fluoroethyl, 2,2- difluoroethyl, 2,2,2-trifluoroethyl, phenyl, 2-chlorophenyl, 3-chlorophenyl, 4-chlorophenyl, 2,5- dichlorophenyl, 3,4-dichlorophenyl, 2,6-dichlorophenyl, 2,6-dichloro-4-trifluoromethylphenyl and 3- chlor-5-trifluormethylpyridin-2-yl.

3. The method according to claim 1, wherein

R^1 is H, methyl, ethyl, n-propyl, n-propylcarbonyl and propenyl;

Q is selected from 1 -cyano-cyclopropyl, benzyl, cyclopropyl, 2-thienylmethyl, carbamothioylcyclopropyl, pyrid-4-yl, 2,2,2-trifluorethyl, methylsulfonyl, thietan-3-yl and 1-carbamoylcyclopropyl;

W is O;

A^1 and A^4 are CH;

A^2 is CH or CF;

A^3 is CH or CCl;

R^{6a} is H or methyl;

R^{6b} is H, methyl or CF_3 ;

Z^1 is CF_2CF_3 ;

Z^2 is CF_3 ;

Z^3 is selected from methyl, ethyl, phenyl, 4- NO_2 -phenyl and 3-chlorpyridin-2-yl.

4. The method according to claim 1, wherein

R^1 is H or methyl;

Q is selected from 1- cyano-cyclopropyl, benzyl, cyclopropyl, 2-thienylmethyl, carbamothioylcyclopropyl, pyrid-4-yl, 2,2,2-trifluorethyl, methylsulfonyl, thietan-3-yl and 1-carbamoylcyclopropyl;

W is O;

A¹ and A⁴ are CH;

A² is N;

A³ is CH or CCl;

5 R^{6a} is H or methyl;

R^{6b} is H, methyl or CF₃;

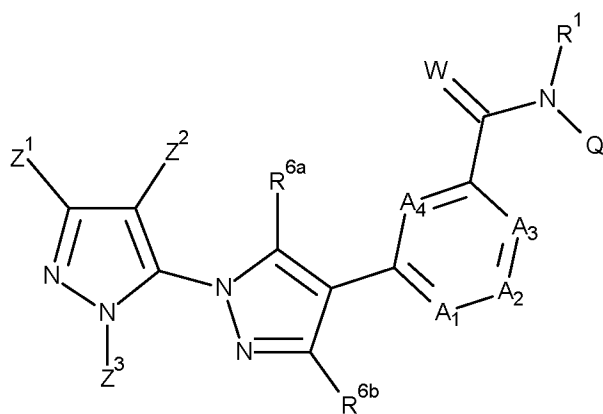
Z¹ is CF₂CF₃;

Z² is CF₃;

Z³ is methyl, ethyl, phenyl, 4-NO₂-phenyl, 3-chloropyridin-2-yl.

10

5. The method according to claim 1, wherein the compound is selected from a compound of formula (I)



(I)

wherein Z¹, Z², Z³, R^{6a}, R^{6b}, A₁, A₂, A₃, A₄, W, Q and R¹ are as defined in the table below

Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-2	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	1-Cyano-cyclopropyl
lc-3	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	Benzyl
lc-4	CF ₂ CF ₃	CF ₃	CH ₃	H	H	CF ₃	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-5	CF ₂ CF ₃	CF ₃	CH ₃	H	CH ₃	CF ₃	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-6	CF ₂ CF ₃	CF ₃	Phenyl	H	H	H	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-7	CF ₂ CF ₃	CF ₃	Phenyl	H	H	H	C-H	C-Cl	C-H	C-H	O	1-Cyano-cyclopropyl

Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-8	CF ₂ CF ₃	CF ₃	4-N02-Phenyl	H	H	H	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-9	CF ₂ CF ₃	CF ₃	CH ₃	H	CH ₃	CH ₃	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-10	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	2-Thienylmethyl
lc-11	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	1-Carbamothioylcyclopropyl
lc-12	CF ₂ CF ₃	CF ₃	CH ₃	H	H	CH ₃	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-13	CF ₂ CF ₃	CF ₃	CH ₃	H	CH ₃	H	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-14	CF ₂ CF ₃	CF ₃	3-Chlorpyridin-2-yl	H	H	H	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-15	CF ₂ CF ₃	CF ₃	3-Chlorpyridin-2-yl	H	H	H	C-H	C-Cl	C-H	C-H	O	1-Cyano-cyclopropyl
lc-16	CF ₂ CF ₃	CF ₃	CH ₂ CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	Cyclopropyl
lc-17	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-H	C-H	C-H	O	Benzyl
lc-18	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-H	C-H	C-H	O	Cyclopropyl
lc-19	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-H	C-H	C-H	O	1-Cyano-cyclopropyl
lc-20	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-H	C-H	C-H	O	2-Thienylmethyl
lc-21	CF ₂ CF ₃	CF ₃	CH ₂ CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	1-Cyano-cyclopropyl
lc-22	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	Pyrid-4-yl
lc-23	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	2,2,2-Trifluorethyl
lc-24	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-F	C-H	O	Cyclopropyl
lc-25	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	4-Chlorphenyl

Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-26	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	Methylsulfonyl
lc-27	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-F	C-H	O	1-Cyano-cyclopropyl
lc-28	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	Thietan-3-yl
lc-29	CF ₂ CF ₃	CF ₃	CH ₃	H	H	H	C-H	C-Cl	C-H	C-H	O	1-Carbamoylcyclopropyl
lc-30	CF ₃	CN	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-31	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-oxo-2-[(2,2,2-trifluoroethyl)amino]ethyl
lc-32	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-(CF ₃)cyclopropyl
lc-33	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-F	C-H	C-H	C-H	O	cyclopropyl
lc-34	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Br	C-H	C-H	O	1-cyanocyclopropyl
lc-35	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-H	C-H	O	H
lc-36	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C-H	C-H	O	1-cyanocyclopropyl
lc-37	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C-H	C-H	O	cyclopropyl
lc-38	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-F	C-H	O	1-cyanocyclopropyl
lc-39	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-F	C-H	O	cyclopropyl
lc-40	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-F	C-H	C-H	C-H	O	1-cyanocyclopropyl
lc-41	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-H	C-F	O	cyclopropyl
lc-42	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-H	C-F	O	1-cyanocyclopropyl
lc-43	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-Cl	C-H	O	1-cyanocyclopropyl
lc-44	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-Cl	C-H	O	cyclopropyl

Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-45	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-H	C-Cl	O	1-cyanocyclopropyl
lc-46	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-H	C-Cl	O	cyclopropyl
lc-47	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C-F	C-H	O	1-cyanocyclopropyl
lc-48	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C-H	C-Cl	O	1-cyanocyclopropyl
lc-49	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C-H	C-Cl	O	cyclopropyl
lc-50	CF ₃	(E/Z) (hydroxyimino)methyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-51	CF ₃	(E/Z) (methoxyimino)methyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-52	CF ₃	formyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-53	CF ₃	CN	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-54	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-Me	C-H	O	cyclopropyl
lc-55	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C-F	C-H	O	cyclopropyl
lc-56	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-Me	C-H	O	1-cyanocyclopropyl
lc-57	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-H	C-Me	O	cyclopropyl
lc-58	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-H	C-Me	O	1-cyanocyclopropyl
lc-59	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C- CF ₃	C-H	O	cyclopropyl
lc-60	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C- CF ₃	C-H	O	1-cyanocyclopropyl
lc-61	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-F	C-F	O	cyclopropyl
lc-62	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-	C-H	O	cyclopropyl
lc-63	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C- OMe	C-H	O	1-cyanocyclopropyl
lc-64	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-F	C-F	O	1-cyanocyclopropyl
lc-65	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-N02	C-H	C-H	O	1-cyanocyclopropyl
lc-66	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-N02	C-H	C-H	O	cyclopropyl
lc-67	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-OMe	C-H	C-H	O	1-cyanocyclopropyl
lc-68	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-OMe	C-H	C-H	O	cyclopropyl

Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-69	CF ₃	CH ₂ OH	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-70	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	N	C-H	O	cyclopropyl
lc-71	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	N	C-H	O	1-cyanocyclopropyl
lc-72	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	N	C-H	C-F	O	cyclopropyl
lc-73	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	N	C-H	C-F	O	1-cyanocyclopropyl
lc-74	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-OCF ₃	C-H	O	cyclopropyl
lc-75	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	C-OCF ₃	C-H	O	1-cyanocyclopropyl
lc-76	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	N	C-H	C-H	O	1-cyanocyclopropyl
lc-77	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-fluoroethyl
lc-78	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2,2-difluoroethyl
lc-79	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-methylcyclopropyl
lc-80	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2,2-difluoropropyl
lc-81	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-fluorocyclopropyl
lc-83	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	N	C-H	O	1-cyanocyclopropyl
lc-84	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Me	N	C-H	O	cyclopropyl
lc-85	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Me	N	C-H	O	1-cyanocyclopropyl
lc-86	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-OMe	N	C-H	O	cyclopropyl
lc-87	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-OMe	N	C-H	O	1-cyanocyclopropyl
lc-88	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	N	C-Cl	C-H	O	cyclopropyl
lc-89	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	N	C-Cl	C-H	O	1-cyanocyclopropyl
lc-90	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-Me	C-H	O	cyclopropyl
lc-91	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-Me	C-H	O	1-cyanocyclopropyl
lc-92	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-F	O	cyclopropyl
lc-93	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-F	O	1-cyanocyclopropyl
lc-94	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-Cl	C-H	O	cyclopropyl
lc-95	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-Cl	C-H	O	1-cyanocyclopropyl
lc-96	CF ₂ CF ₃	CF ₃	Me	Me	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-97	CF ₂ CF ₃	CF ₃	Me	Me	H	H	C-H	C-Cl	C-H	C-H	O	1-
lc-98	CF ₃	(E/Z) (hydroxyimino) methyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-99	CF ₃	(E/Z) (methoxyimino) methyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-100	CF ₃	cyclopropylcarbonyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-101	CF ₃	cyclopropylcarbonyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl

Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-102	CF ₃	formyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-103	CF ₃	CH ₂ F	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-104	CF ₃	CH ₂ OH	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-105	CF ₂ CF ₃	CF ₃	Me	H	H	H	N	C-H	C-H	C-H	O	1-cyanocyclopropyl
lc-106	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-F	C-Cl	C-H	C-H	O	cyclopropyl
lc-107	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-F	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-108	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	3-(methylsulfanyl)cyclobutyl
lc-109	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	prop-2-yn-1-yl
lc-110	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1,1,1-trifluoropropan-2-yl
lc-111	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	buta-2,3-dien-1-yl
lc-112	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	3-chloroprop-2-en-1-yl
lc-113	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	isopropyl
lc-114	CF ₃	CH ₂ Cl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-115	CF ₃	CH ₂ F	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-116	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-oxidothietan-3-yl
lc-117	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1,1-dioxidothietan-3-yl
lc-118	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-(E/Z)- (methoxyimino)met	C-H	C-H	O	cyclopropyl
lc-119	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-(methylsulfanyl)cyclobutyl
lc-120	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-[(methylsulfanyl)methyl]cyclobutyl
lc-121	CF ₂ CF ₃	formyl	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-122	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	3-(methylsulfonyl)cyclobutyl
lc-123	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-[(methylsulfinyl)methyl]cyclobutyl
lc-124	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	(1S,2R)-2-(methylsulfonyl)cyclobutyl

Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-125	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-(methylsulfinyl)cyclobutyl
lc-126	CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-127	CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-128	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	3-cyanothietan-3-yl
lc-129	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Me	C-H	C-H	O	1-cyanocyclopropyl
lc-130	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Me	C-H	C-H	O	cyclopropyl
lc-131	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Me	C-H	C-H	O	4-fluorophenyl
lc-132	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	s	cyclopropyl
lc-133	CF ₃	CHF ₂	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-134	CF ₃	S(O)Me	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-135	CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	phenyl
lc-136	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	phenyl
lc-137	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	3-methylbutan-2-yl
lc-138	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-(dimethylamino)ethyl
lc-139	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-methoxyethyl
lc-140	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	pyridin-2-yl
lc-141	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopentyl
lc-142	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	isobutyl
lc-143	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclobutyl
lc-144	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1H-tetrazol-5-yl
lc-145	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1,2-oxazol-3-yl
lc-146	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1H-imidazol-2-ylmethyl
lc-147	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyanomethyl
lc-148	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	5-methyl-1,2-oxazol-3-yl
lc-149	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	pyridin-3-yl
lc-150	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1H-pyrazol-3-yl
lc-151	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	3-chloropropyl

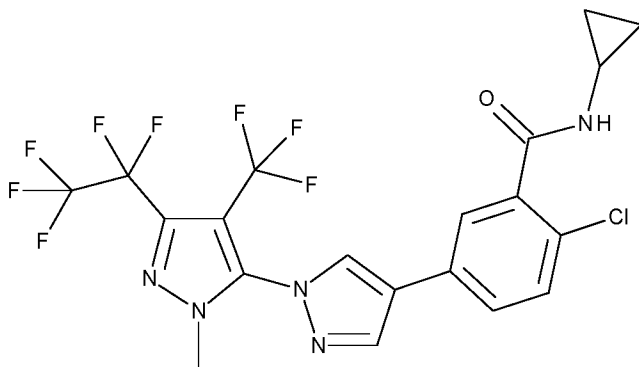
Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-152	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	methyl
lc-153	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropylmethyl
lc-154	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-amino-1-oxopropan-2-yl
lc-155	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	methoxy
lc-156	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-amino-2-oxoethyl
lc-157	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1H-pyrazol-3-ylmethyl
lc-158	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	5-methyl-1,3,4-oxadiazol-2-yl
lc-159	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-methyl-1 H-pyrazol-3-yl
lc-160	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	4-methyl-1,3-oxazol-2-yl
lc-161	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyclopropylpropan-2-yl
lc-162	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	5-hydroxy-1 H-pyrazol-3-
lc-163	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-methyl-1 H-pyrazol-5-yl
lc-164	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	(3R)-tetrahydrofuran-3-yl
lc-165	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-methoxypropan-2-yl
lc-166	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-methyl-1 H-pyrazol-4-yl
lc-167	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-(methylsulfanyl)ethyl
lc-168	CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-fluoroethyl
lc-169	CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2,2,2-trifluoroethyl
lc-170	CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2,2-difluoroethyl
lc-171	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	H	C-0- CF ₂ -0- C	O	cyclopropyl
lc-172	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-H	H	C-0- CF ₂ -0- C	O	1-cyanocyclopropyl
lc-173	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C- sulfa moyl	C-H	O	cyclopropyl
lc-174	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-F	C-F	C-H	C-H	O	cyclopropyl
lc-175	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-F	C-F	C-H	C-H	O	1-cyanocyclopropyl
lc-176	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-ethoxycyclopropyl
lc-177	CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-fluorocyclopropyl

Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-178	CF ₂ CF ₃	CF ₃	Me	H	H	H	N	C-H	N	C-H	O	cyclopropyl
lc-179	CF ₂ CF ₃	CF ₃	Me	H	H	H	N	C-H	N	C-H	O	1-cyanocyclopropyl
lc-180	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	(1R,2R)-2-ethoxycyclopropyl
lc-181	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2-(CF ₃)cyclopropyl
lc-182	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-SMe	C-H	C-H	O	cyclopropyl
lc-183	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	(1S,2S,3S)-2-ethoxy-3-methylcyclopropyl
lc-184	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	2,2-dichlorocyclopropyl
lc-185	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-diethylsulfamoyl	C-H	C-H	O	cyclopropyl
lc-186	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	(1S,2S)-2-ethoxycyclopropyl
lc-187	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-methoxycyclopropyl
lc-188	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1,1'-bi(cyclopropyl)-1-yl
lc-189	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-S(O)Me	C-H	C-H	O	cyclopropyl
lc-190	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-S(O) ₂ Me	C-H	C-H	O	cyclopropyl
lc-191	CF ₂ CF ₃	CF ₃	Me	H	H	amino	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-192	CF ₂ CF ₃	CF ₃	Me	H	H	amino	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-193	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	but-3-yn-2-yl
lc-194	CF ₂ CF ₃	SMe	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-195	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-sulfamoyl	C-H	O	cyclopropyl
lc-196	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-CF ₃	C-H	C-H	O	cyclopropyl
lc-197	CF ₂ CF ₃	CF ₃	Me	Et	H	H	C-H	C-cyclopropylsulfamoyl	C-H	C-H	O	ethyl
lc-198	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	pent-3-yn-2-yl

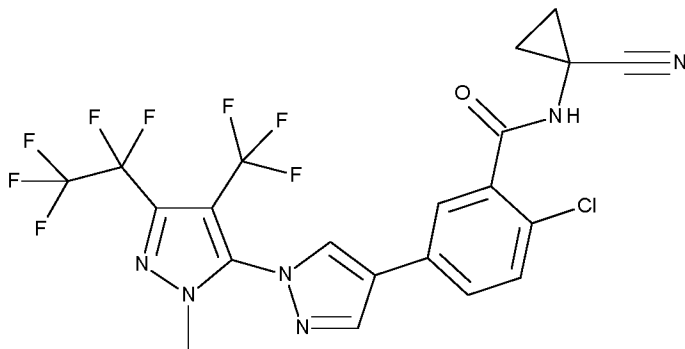
Ex no	Z ¹	Z ²	Z ³	R ¹	R ^{6a}	R ^{6b}	A ₄	A ₃	A ₂	A ₁	W	Q
lc-199	CF ₂ CF ₃	CF ₃	Me	Me	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-200	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-methylcyclopropyl
lc-201	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C-F	C-F	O	cyclopropyl
lc-202	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-F	C-F	C-F	O	1-cyanocyclopropyl
lc-203	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-CF ₃	C-H	C-H	O	1-cyanocyclopropyl
lc-204	CF ₂ CF ₃	CF ₃	Me	nPr	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-205	CF ₂ CF ₃	CF ₃	Me	propionyl	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-206	CF ₂ CF ₃	CF ₃	Me	allyl	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-207	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyclopropylethyl
lc-208	CF ₂ CF ₃	CF ₃	Me	Et	H	H	C-H	C-Cl	C-H	C-H	O	1-cyanocyclopropyl
lc-209	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	4-fluorophenyl
lc-210	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	1-cyclobutylcyclopropyl
lc-211	CF ₂ CF ₃	CF ₃	Me	Et	H	H	C-H	C-Cl	C-H	C-H	O	cyclopropyl
lc-212	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	N	O	cyclopropyl
lc-213	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	N	O	1-cyanocyclopropyl
lc-214	CF ₂ CF ₃	CF ₃	Me	H	H	H	C-H	C-Cl	C-H	C-H	O	pyrazin-2-yl

or an agrochemically acceptable salt or N-oxide thereof.

6. The method according to claim 1, wherein the compound is selected from



5 and



7. A method according to any one of claims 1 to 6,

wherein the stinkbug is selected from *Nezara* spp. (e.g. *Nezara viridula*, *Nezara antennata*,

- 5 *Nezara hilare*), *Piezodorus* spp. (e.g. *Piezodorus guildinii*), *Acrosternum* spp. (e.g. *Acrosternum hilare*), *Euschistus* spp. (e.g. *Euschistus heros*, *Euschistus servus*), *Halymorpha* spp. (e.g. *Halymorpha halys*), *Plautia crossota*, *Riptortus clavatus*, *Rhopalus msculatus*, *Antestiopsis* spp. (e.g. *Antestiopsis orbitalis*), *Dichelops* spp. (e.g. *Dichelops furcatus*, *Dichelops melacanthus*), *Edessa* spp. (e.g. *Edessa meditabunda*), *Eurygaster* spp. (e.g. *Eurygaster intergriceps*, *Eurygaster maura*), *Murgantia* spp., *Oebalus* spp. (e.g. *Oebalus* *mexicana*, *Oebalus poecilus*, *Oebalus pugnase*, *Oebalus pugnax*), *Thianta* spp., *Pentatomidae*, *Lygus* spp. (e.g. *Lygus lineolaris*, *Lygus hesperus*, *Lygus elisus*), *Thyanta* spp., *Tibraca* spp. and *Scotinophara* spp. (e.g. *Scotinophara lurida*, *Scotinophara coarctata*).

- 15 8. A method according to any one of claims 1 to 6, wherein the stinkbug is from the genus *Euschistus*.

9. The method according to any one of claims 1 to 6, wherein the stinkbug is *Euschistus heros*.

20

10. Use of a compound as defined in any one of claims 1 to 6 for controlling and/or preventing infestation of stinkbugs.

11. Use of a compound according to claim 10 wherein the stinkbug is selected from *Nezara* spp. (e.g. *Nezara viridula*, *Nezara antennata*, *Nezara hilare*), *Piezodorus* spp. (e.g. *Piezodorus guildinii*), *Acrosternum* spp. (e.g. *Acrosternum hilare*), *Euschistus* spp. (e.g. *Euschistus heros*, *Euschistus servus*), *Halymorpha* spp. (e.g. *Halymorpha halys*), *Plautia*
- 25

crossota, *Riptortus clavatus*, *Rhopalus msculatus*, *Antestiopsis* spp. (e.g. *Antestiopsis orbitalis*), *Dichelops* spp. (e.g. *Dichelops furcatus*, *Dichelops melacanthus*), *Edessa* spp. (e.g. *Edessa meditabunda*), *Eurygaster* spp. (e.g. *Eurygaster intergriceps*, *Eurygaster maura*), *Murgantia* spp., *Oebalus* spp. (e.g. *Oebalus mexicana*, *Oebalus poecilus*, *Oebalus pugnase*, *Oebalus pugnax*), *Thianta* spp., *Pentatomidae*, *Lygus* spp. (e.g. *Lygus lineolaris*, *Lygus hesperus*, *Lygus elisus*), *Thyanta* spp., *Tibraca* spp. and *Scotinophara* spp. (e.g. *Scotinophara lurida*, *Scotinophara coarctata*).

12. Use of a compound according to claim 11 wherein the stinkbug is selected from the genus *Euschistus*.

13. Use of a compound according to claim 12 wherein the stinkbug is *Euschistus heros*.

14. A method for obtaining regulatory approval for the use of a compound as defined in any one of claims 1 to 6 for controlling and/or preventing infestation of stinkbugs, particularly *Euschistus* spp., comprising at least one step of referring to, submitting or relying on biological data showing that said active ingredient reduces stinkbug pressure.

15. The method according to any one of claims 1 to 9 or the use according to any one of claims 10 to 13, wherein the plant is selected from soybean, sorghum, sunflower, sugarbeet, cereals, coffee, cocoa, corn, cotton, citrus fruits, grapes, potato, rice, sugarcane and vegetables.

16. The method according to any one of claims 1 to 9 or the use according to any one of claims 10 to 13, wherein the plant is selected from soybean and sunflower, in particular soybean.

17. A method for growing soybean comprising applying or treating soybean or a seed thereof with a compound as defined in any one claims 1 to 6.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2016/059447

A. CLASSIFICATION OF SUBJECT MATTER
INV. A01N43/56 A01N53/14 A01P7/04
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, WPI Data, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2012/107434 A1 (SYNGENTA PARTICIPATIONS AG [CH]; JUNG PIERRE JOSEPH MARCEL [CH]; HUETE) 16 August 2012 (2012-08-16) cited in the application compounds A1,A103 -----	1-13, 15-17
A	WO 2014/122083 A1 (BAYER CROPSCIENCE AG [DE]) 14 August 2014 (2014-08-14) cited in the application abstract; examples; compounds Ic-1,Ic-2 -----	1-13, 15-17
X,P	WO 2016/020441 A1 (BAYER CROPSCIENCE AG [DE]) 11 February 2016 (2016-02-11) abstract paragraph [0009] page 66 - page 67 paragraphs [0366], [0382] ----- -/-	1-5, 7-13,17



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

22 June 2016

Date of mailing of the international search report

30/06/2016

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
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Fax: (+31-70) 340-3016

Authorized officer

Molina de Alba, José

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2016/059447

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	WO 2016/020436 A1 (BAYER CROPSCIENCE AG [DE]) 11 February 2016 (2016-02-11) abstract page 117 - page 118 paragraphs [0602], [0616] table 1 -----	1-5, 7-13,17

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2016/059447

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.: 14
because they relate to subject matter not required to be searched by this Authority, namely:
see FURTHER INFORMATION sheet PCT/ISA/210
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:

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.:

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

Continuation of Box II.1

Claims Nos.: 14

Claim 14 is directed to a bureaucratic method which is characterized by submitting or relying on technical data. Such a method is deprived from technical character and is considered by this Authority to be covered by the provisions of R. 39.1(iii) and (v) PCT. Therefore, no search has been carried out on said method.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2016/059447

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2012107434	A1	16-08-2012	AR 085318 A1 25-09-2013
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		CN 103354811 A 16-10-2013	
		EA 201300894 A1 30-01-2014	
		EP 2673270 A1 18-12-2013	
		KR 20140051835 A 02-05-2014	
		UY 33895 A 28-09-2012	
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			CA 2900029 A1 14-08-2014
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			CR 20150392 A 26-11-2015
			DO P2015000177 A 30-11-2015
			EA 201591452 A1 29-02-2016
			EP 2953942 A1 16-12-2015
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			KR 20150116439 A 15-10-2015
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			TW 201518280 A 16-05-2015
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			UY 35309 A 29-08-2014
			WO 2014122083 A1 14-08-2014
WO 2016020441	A1	11-02-2016	UY 36255 A 29-01-2016
			WO 2016020441 A1 11-02-2016
WO 2016020436	A1	11-02-2016	UY 36249 A 29-01-2016
			WO 2016020436 A1 11-02-2016