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(54) Titre : COMPOSITIONS INSECTICIDES A ACTION AMELIOREE
(54) Title: INSECTICIDAL COMPOSITIONS WITH IMPROVED EFFECT

(57) Abrégé/Abstract:
The present invention relates to increasing the effect of crop-protection compositions comprising inhibitors of the nicotinergic acetylcholine receptor (for example neonicotinoids) through addition of ammonium salts and/or phosphonium salts or through addition of ammonium and/or phosphonium salts and penetration promoters, to the corresponding compositions, to methods for their production and to their use in crop protection.

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Insecticidal compositions having improved activity

Abstract

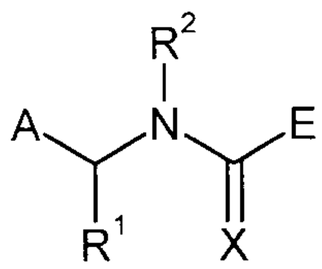
The present invention relates to increasing the activity of crop protection compositions comprising inhibitors of the nicotinic acetylcholine receptor (for example neonicotinoids) through the addition of ammonium salts and/or phosphonium salts or through the addition of ammonium or phosphonium salts and penetrants, to the corresponding compositions, to processes for preparing them and to their use in crop protection.

Insecticidal compositions having improved activity

The present invention relates to increasing the activity of crop protection compositions comprising inhibitors of the nicotinic acetylcholine receptor (for example neonicotinoids) through the addition of ammonium salts and/or phosphonium salts or through the addition of ammonium or phosphonium salts and penetrants, to the corresponding compositions, to processes for preparing them and to their use in crop protection.

All inhibitors according to the invention of the nicotinic acetylcholine receptor are already known as agents for controlling animal pests, in particular insects, and can be prepared by processes described in the prior art. The activity of these compounds is good; however, in particular at low application rates and concentrations, it is not always entirely satisfactory. Furthermore, the compatibility of these compounds with plants is not always sufficient. There was therefore a need for increasing the activity of the crop protection compositions comprising the compounds.

Neonicotinoids can be described by the formula (Ia)



(Ia)

in which

A represents in each case optionally substituted cycloalkyl, heterocyclyl, aryl or hetaryl,

R^1 represents hydrogen or alkyl,

R^2 represents hydrogen or alkyl,

X represents =N-NO_2, =N-CN or =CH-NO_2,

E represents methyl, OR^3, SR^3 or NR^4R^5,

in which

R^3 represents alkyl, alkenyl, cycloalkyl, cycloalkylalkyl, each of which is optionally substituted and optionally interrupted by one or more heteroatoms, or represents in each case substituted aryl, hetaryl, arylalkyl or hetarylalkyl,

R^4 and R^5 independently of one another represent hydrogen, represent alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, alkoxycarbonyl, each of which is optionally substituted and optionally interrupted by one or more heteroatoms, or represents in each optionally substituted aryl, hetaryl, arylalkyl or hetarylalkyl,

or

R^2 and R^5 together with the nitrogen atom to which they are attached represent an optionally substituted ring which is optionally interrupted by one or more heteroatoms,

or

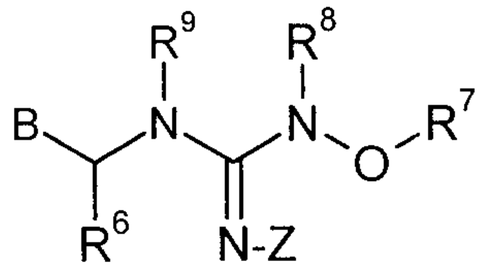
R^2 and R^3 together with the atoms linking them form an optionally substituted ring which is optionally interrupted by one or more heteroatoms,

or

R^2 and R^5 together with the atoms linking them form an optionally substituted ring which is optionally interrupted by one or more heteroatoms,

(see, for example, EP-A 0 580 553, EP-A 0 376 279, EP-A 0 235 725, EP-A 0 375 907, EP-A 0 376 279, EP-A 0 425 978, EP-A 0 483 062, EP-A 0 649 845).

Neonicotinoids can be furthermore be described by the formula (Ib)



(Ib)

in which

B represents in each case optionally substituted aryl, hetaryl or heterocyclyl,

R^6 and R^8 represent hydrogen or alkyl,

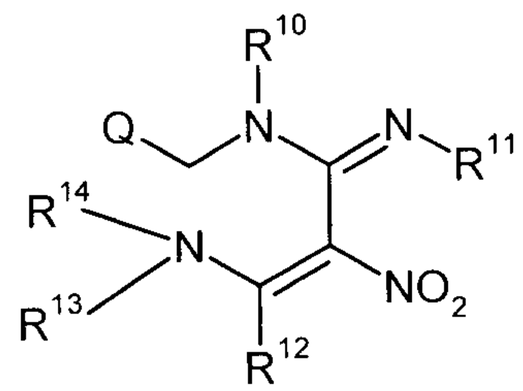
R^7 represents hydrogen or in each case optionally substituted alkyl, alkenyl, alkynyl, phenylalkyl or hetarylalkyl,

R^9 represents hydrogen, alkyl or cycloalkyl,

Z represents cyano or nitro,

(see, for example, EP–A 0 649 845 and WO 06/069 685).

Furthermore, neonicotinoids can be described by the formula (Ic)



(Ic)

in which

Q represents a five- or six-membered carbocyclic or heterocyclic ring, for example phenyl, pyridyl, pyridazinyl, pyrimidinyl, pyrazinyl, pyrrolyl, pyrazolyl, imidazolyl, thienyl, furanyl, thiazolyl, isothiazolyl, oxazolyl and isoxazolyl or represents the reduced forms of the heterocyclic rings, such as tetrahydrofuranyl,

R^{10}, R^{11}, R^{12}, R^{13} and R^{14} each independently of one another represent

(a) branched or straight-chain C_1-C_{10}-alkyl, C_1-C_{10}-alkoxy, C_1-C_{10}-alkenyl, C_1-C_{10}-alkynyl, C_1-C_{10}-alkylthio, C_1-C_{10}-alkylsulphinyl, C_1-C_{10}-alkylsulphonyl, C_1-C_{10}-alkylcarbonyl, C_1-C_{10}-alkylcarbonothioyl, C_1-C_{10}-alkoxycarbonyl, C_1-C_{10}-alkylthiocarbonyl, C_1-C_{10}-alkoxycarbonothioyl, C_1-C_{10}-alkylthiocarbonothioyl or HC(=NH)-,

(b) C_3-C_{10}-cycloalkyl or C_3-C_{10}-cycloalkenyl,

(c) aryl, heterocyclyl, aryloxy, heterocyclyloxy, arylthio, heterocyclylthio, arylamino or heterocyclylamino,

(d) hydrogen, hydroxyl, mercapto, amino, cyano, formyl, nitro, halogen or aminocarbonyl,

(see, for example, WO 04/056178). Instead of each hydrogen atom present, each Q and each R^{10}, R^{11}, R^{12}, R^{13} and R^{14} may carry one of the following substituents:

(a) branched or straight-chain C_1-C_{10}-alkyl, C_1-C_{10}-alkoxy, C_1-C_{10}-alkenyl, C_1-C_{10}-alkynyl, C_1-C_{10}-alkylthio, C_1-C_{10}-alkylsulphinyl, C_1-C_{10}-alkylsulphonyl, C_1-C_{10}-

alkylcarbonyl, C_1-C_{10}-alkylcarbonothioyl, C_1-C_{10}-alkoxycarbonyl, C_1-C_{10}-alkylthiocarbonyl, C_1-C_{10}-alkoxycarbonothioyl, C_1-C_{10}-alkylthiocarbonothioyl, C_1-C_{10}-dialkylphosphonyl, C_1-C_{10}-dialkylphosphatyl or HC(=NH)-,

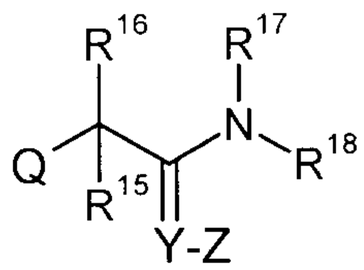
(b) C_3-C_{10}-cycloalkyl or C_3-C_{10}-cycloalkenyl,

(c) aryl, heterocyclyl, aryloxy, heterocyclyloxy, arylthio, heterocyclylthio, arylamino or heterocyclylamino,

(d) hydroxyl, mercapto, amino, cyano, formyl, nitro, halogen or aminocarbonyl,

as long as these substituents are sterically compatible with one another and obey the rules of chemical valency and ring strain.

In addition, neonicotinoids can be described by the formula (Id)



(Id)

in which

Q is as defined above,

Z is as defined above,

Y represents N, CR^{19}, COR^{19}, CSO_nR^{19} (where n = 0, 1 or 2), $CN(R^{19})_2$, $C(C=O)R^{19}$, $C(C=S)R^{19}$, $C(C=NR^{19})R^{19}$, $CP(=O)_m(R^{19})_2$ (where m = 0 or 1), $CP(=S)_m(R^{19})_2$ (where m = 0 or 1),

where each R^{19} independently of the others represents

(a) branched or straight-chain C_1-C_{10}-alkyl, C_1-C_{10}-alkoxy, C_1-C_{10}-alkenyl, C_1-C_{10}-alkynyl, C_1-C_{10}-alkylthio, C_1-C_{10}-alkylsulphinyl, C_1-C_{10}-alkylsulphonyl, C_1-C_{10}-alkylcarbonyl, C_1-C_{10}-alkylcarbonothioyl, C_1-C_{10}-alkoxycarbonyl, C_1-C_{10}-alkylthiocarbonyl, C_1-C_{10}-alkoxycarbonothioyl, C_1-C_{10}-alkylthiocarbonothioyl, C_1-C_{10}-dialkylphosphonyl, C_1-C_{10}-dialkylphosphatyl or HC(=NH)-,

(b) C_3-C_{10}-cycloalkyl or C_3-C_{10}-cycloalkenyl,

(c) aryl, heterocyclyl, aryloxy, heterocyclyloxy, arylthio, heterocyclylthio, arylamino or heterocyclylamino,

(d) hydrogen, hydroxyl, mercapto, amino, cyano, formyl, nitro, halogen or aminocarbonyl,

R^{15} and R^{16} each independently of one another represent

(a) branched or straight-chain C_1-C_{10}-alkyl, C_1-C_{10}-alkoxy, C_1-C_{10}-alkenyl, C_1-C_{10}-alkynyl, C_1-C_{10}-alkylthio, C_1-C_{10}-alkylsulphinyl, C_1-C_{10}-alkylsulphonyl, C_1-C_{10}-alkylcarbonyl, C_1-C_{10}-alkylcarbonothioyl, C_1-C_{10}-alkoxycarbonyl, C_1-C_{10}-alkylthiocarbonyl, C_1-C_{10}-alkoxycarbonothioyl, C_1-C_{10}-alkylthiocarbonothioyl, C_1-C_{10}-dialkylphosphonyl, C_1-C_{10}-dialkylphosphatyl or HC(=NH)-,

(b) C_3-C_{10}-cycloalkyl or C_3-C_{10}-cycloalkenyl,

(c) aryl, heterocyclyl, aryloxy, heterocyclyloxy, arylthio, heterocyclylthio, arylamino or heterocyclylamino,

(d) hydrogen, hydroxyl, mercapto, amino, cyano, formyl, nitro, halogen or aminocarbonyl,

R^{15} and R^{16} are attached to one another either directly or via a chain having a length of one to four atoms, where these atoms may be carbon, nitrogen, sulphur, phosphorus or oxygen,

R^{17} and R^{18} each independently of one another represent

(a) branched or straight-chain C_1-C_{10}-alkyl, C_1-C_{10}-alkoxy, C_1-C_{10}-alkenyl, C_1-C_{10}-alkynyl, C_1-C_{10}-alkylthio, C_1-C_{10}-alkylsulphinyl, C_1-C_{10}-alkylsulphonyl, C_1-C_{10}-alkylcarbonyl, C_1-C_{10}-alkylcarbonothioyl, C_1-C_{10}-alkoxycarbonyl, C_1-C_{10}-alkylthiocarbonyl, C_1-C_{10}-alkoxycarbonothioyl, C_1-C_{10}-alkylthiocarbonothioyl, C_1-C_{10}-dialkylphosphonyl, C_1-C_{10}-dialkylphosphatyl or HC(=NH)-,

(b) C_3-C_{10}-cycloalkyl or C_3-C_{10}-cycloalkenyl,

(c) aryl, heterocyclyl, aryloxy, heterocyclyloxy, arylthio, heterocyclylthio, arylamino or heterocyclylamino,

(d) hydrogen, hydroxyl, mercapto, amino, cyano, formyl, nitro, halogen or aminocarbonyl,

R^{17} and R^{18} are attached to one another either directly or via a chain having a length of one to four atoms, where these atoms may be carbon, nitrogen, sulphur, phosphorus or oxygen,

R^{16} and R^{17} are attached to one another either directly or via a chain having a length of one to four atoms, where these atoms may be carbon, nitrogen, sulphur, phosphorus or oxygen,

(see, for example, WO 04/057960). Instead of each hydrogen atom present, each Q, Y and each R^{15}, R^{16}, R^{17}, R^{18} and R^{19} may carry one of the following substituents:

(a) branched or straight-chain C_1-C_{10}-alkyl, C_1-C_{10}-alkoxy, C_1-C_{10}-alkenyl, C_1-C_{10}-alkynyl, C_1-C_{10}-alkylthio, C_1-C_{10}-alkylsulphinyl, C_1-C_{10}-alkylsulphonyl, C_1-C_{10}-alkylcarbonyl, C_1-C_{10}-alkylcarbonothioyl, C_1-C_{10}-alkoxycarbonyl, C_1-C_{10}-alkylthiocarbonyl, C_1-C_{10}-alkoxycarbonothioyl, C_1-C_{10}-alkylthiocarbonothioyl, C_1-C_{10}-dialkylphosphonyl, C_1-C_{10}-dialkylphosphatyl or HC(=NH)-,

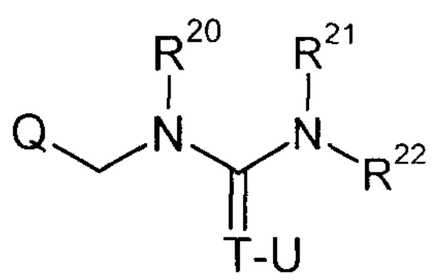
(b) C_3-C_{10}-cycloalkyl or C_3-C_{10}-cycloalkenyl,

(c) aryl, heterocyclyl, aryloxy, heterocyclyloxy, arylthio, heterocyclylthio, arylamino or heterocyclylamino,

(d) hydroxyl, mercapto, amino, cyano, formyl, nitro, halogen or aminocarbonyl,

as long as these substituents are sterically compatible with one another and obey the rules of chemical valency and ring strain.

In addition, neonicotinoids can be described by the formula (Ie)



(Ie)

in which

Q is as defined above,

T-U represents $C(CHO)$-NO_2,

R^{20}, R^{21} and R^{22} each independently of one another represent

(a) branched or straight-chain C_1-C_{10}-alkyl, C_1-C_{10}-alkoxy, C_1-C_{10}-alkenyl, C_1-C_{10}-alkynyl, C_1-C_{10}-alkylthio, C_1-C_{10}-alkylsulphinyl, C_1-C_{10}-alkylsulphonyl, C_1-C_{10}-alkylcarbonyl, C_1-C_{10}-alkylcarbonothioyl, C_1-C_{10}-alkoxycarbonyl, C_1-C_{10}-alkylthiocarbonyl, C_1-C_{10}-alkoxycarbonothioyl, C_1-C_{10}-alkylthiocarbonothioyl, C_1-C_{10}-dialkylphosphonyl, C_1-C_{10}-dialkylphosphatyl or HC(=NH)-,

(b) C_3-C_{10}-cycloalkyl or C_3-C_{10}-cycloalkenyl,

(c) aryl, heterocyclyl, aryloxy, heterocyclyloxy, arylthio, heterocyclylthio, arylamino or heterocyclylamino,

(d) hydrogen, hydroxyl, mercapto, amino, cyano, formyl, nitro, halogen or aminocarbonyl,

R^{20} and R^{21} are attached to one another either directly or via a chain having a length of one to four atoms, where these atoms may be carbon, nitrogen, sulphur or oxygen,

(see, for example, WO 04/058714). Instead of each hydrogen atom present, each Q and each R^{20}, R^{21} and R^{22} may carry one of the following substituents:

(a) branched or straight-chain C_1-C_{10}-alkyl, C_1-C_{10}-alkoxy, C_1-C_{10}-alkenyl, C_1-C_{10}-alkynyl, C_1-C_{10}-alkylthio, C_1-C_{10}-alkylsulphinyl, C_1-C_{10}-alkylsulphonyl, C_1-C_{10}-alkylcarbonyl, C_1-C_{10}-alkylcarbonothioyl, C_1-C_{10}-alkoxycarbonyl, C_1-C_{10}-alkylthiocarbonyl, C_1-C_{10}-alkoxycarbonothioyl, C_1-C_{10}-alkylthiocarbonothioyl, C_1-C_{10}-dialkylphosphonyl, C_1-C_{10}-dialkylphosphatyl or HC(=NH)-,

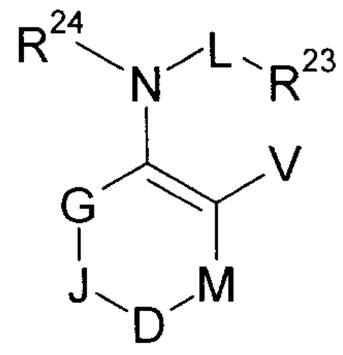
(b) C_3-C_{10}-cycloalkyl or C_3-C_{10}-cycloalkenyl,

(c) aryl, heterocyclyl, aryloxy, heterocyclyloxy, arylthio, heterocyclylthio, arylamino or heterocyclylamino,

(d) hydroxyl, mercapto, amino, cyano, formyl, nitro, halogen or aminocarbonyl,

as long as these substituents are sterically compatible with one another and obey the rules of chemical valency and ring strain.

Furthermore, neonicotinoids can be described by the formula (If)



(If)

in which

R^{23} represents an unsubstituted or substituted 5- or 6-membered aromatic heterocyclic radical which contains nitrogen,

R^{24} represents hydrogen, in each case unsubstituted or substituted alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, $-O-R^{25}$, $-S-R^{25}$, $-SO-R^{25}$, $-SO_2-R^{25}$, $-CO-R^{25}$ or $-CO_2-R^{25}$,

R^{25} represents hydrogen or in each case unsubstituted or substituted alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl or aryl,

G, J and D independently of one another each represent an unsubstituted or substituted carbon atom or heteroatom or represent a single bond,

L represents in each case unsubstituted or substituted alkylene or alkylidene,

M represents CO or CS,

V represents hydrogen or represents in each case unsubstituted or substituted alkyl, alkenyl, alkynyl or aryl or represents nitro, halogen or represents $-W-R^{26}$,

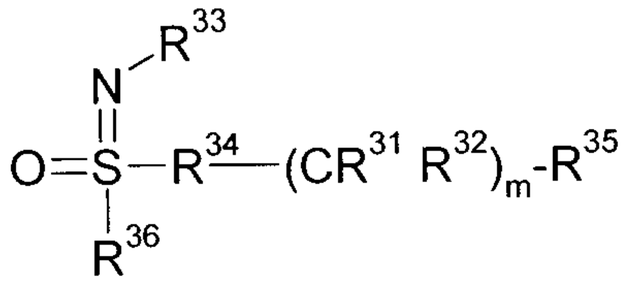
W represents CO, CO_2 or $S(O)_m$,

m represents 0, 1 or 2 and

R^{26} represents in each case unsubstituted or substituted alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl or aryl,

(see, for example, EP-A 0 539 588 and WO 06/037 475).

Furthermore, neonicotinoids can be described by the formula (Ig)



(Ig)

in which

m represents an integer from 0 to 3,

R^{31} and R^{32} independently of one another represent hydrogen, methyl, ethyl, fluorine, chlorine or bromine,

R^{33} represents nitro, cyano or $COOR^{37}$,

R^{34} represents a single bond or R^{36}, S and R^{34} together represent a five- or six-membered ring,

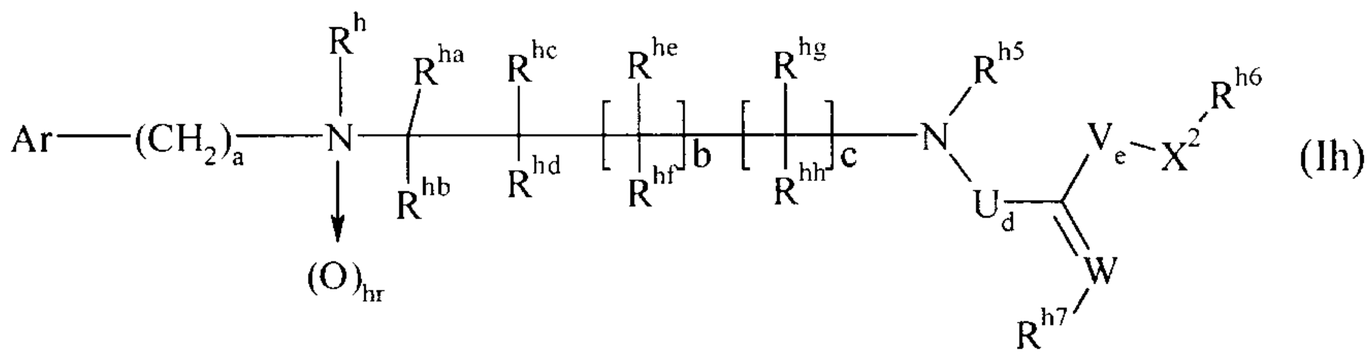
R^{35} represents 6-halopyridin-3-yl, 6-(C_1-C_4)-alkylpyridin-3-yl, 6-(C_1-C_4)-alkoxypyridin-3-yl, 2-chlorothiazol-4-yl or 3-chloroisoxazol-5-yl if m = 0-3 and R^{34} is a single bond or represents hydrogen, C_1-C_4-alkyl, phenyl, 6-halopyridin-3-yl, 6-(C_1-C_4)-alkylpyridin-3-yl, 6-(C_1-C_4)-alkoxypyridin-3-yl, 2-chlorothiazol-4-yl or 3-chloroisoxazol-5-yl if m = 0-1 and R^{36}, S and R^{34} together form a five- or six-membered ring,

R^{36} represents methyl or ethyl and

R^{37} represents C_1-C_3-alkyl,

(see WO 06/60029).

Further inhibitors of the nicotinic acetylcholine receptor are taught in WO 05/055715. They are described by the formula (Ih)

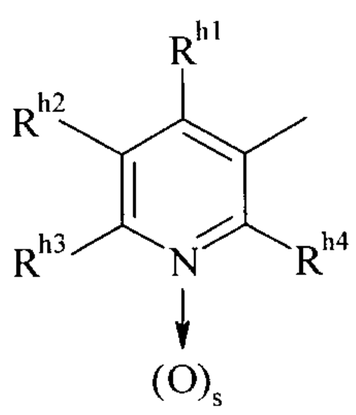


(Ih)

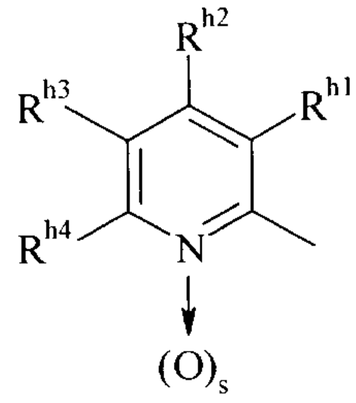
in which

a and hr independently of one another are 0 or 1,

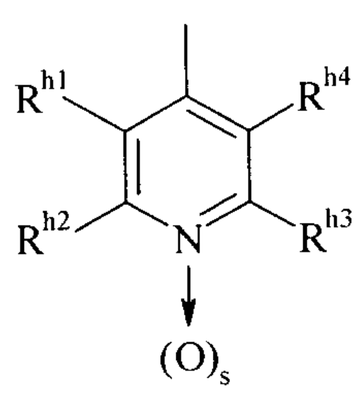
Ar is selected from the group consisting of



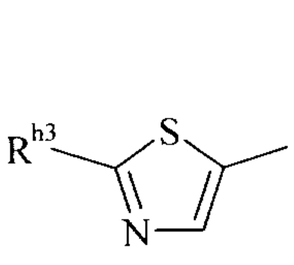
pyrid-3-yl



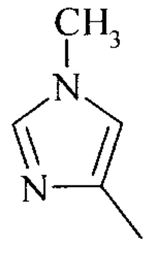
pyrid-2-yl



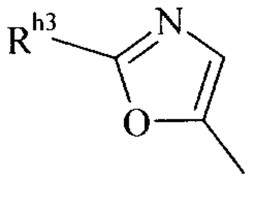
pyrid-4-yl



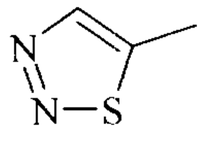
1,3-thioazol-5-yl



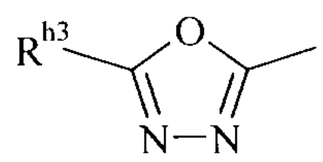
1-methylimidazol-4-yl



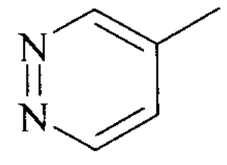
1,3-oxazol-5-yl



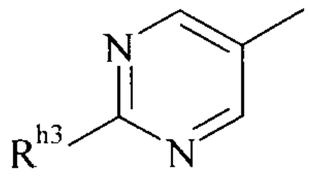
1,2,3-thiadiazol-5-yl



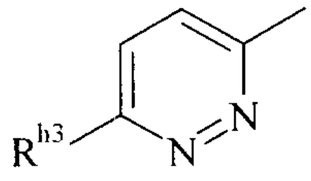
1,3,4-oxadizol-2-yl



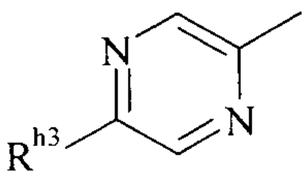
pyridazin-4-yl



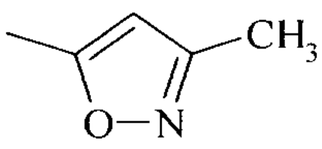
pyrimidin-5-yl



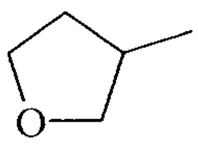
pyridazin-3-yl



pyrazin-5-yl



3-methylisoxazol-5-yl



oxolan-3-yl

where

R^{h1}, R^{h2}, R^{h3} and R^{h4} independently of one another are selected from the group consisting of hydrogen, halogen, alkyl, alkoxy, haloalkyl and haloalkoxy,

s is 0 or 1,

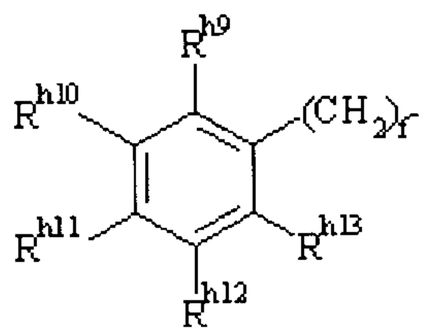
R^{ha}, R^{hb}, R^{hc} and R^{hd} independently of one another are selected from the group consisting of hydrogen and alkyl,

b and c are 0 or 1 and,

if b and c are 1,

R^{he}, R^{hf}, R^{hg} and R^{hh} independently of one another are selected from the group consisting of hydrogen and alkyl,

R^{h} is selected from the group consisting of hydrogen, haloalkyl, alkoxyalkyl, alkoxyalkoxyalkyl, cycloalkylalkyl, cyanoalkyl, formyl, alkylcarbonyl, alkoxycarbonyl, alkylsulphonyl, dialkylphosphonato, oxolan-3-ylmethyl, 2H-3,4,5,6-tetrahydropyran-2-ylmethyl, cyclohex-1-en-3-yl, thien-3-ylmethyl, furan-2-ylmethyl, furan-3-ylmethyl, benzo[b]furan-2-ylmethyl, 2-R^{h8}-1,3-thiazol-4-ylmethyl, 5-R^{h8}-1,2,4-oxadiazol-3-ylmethyl,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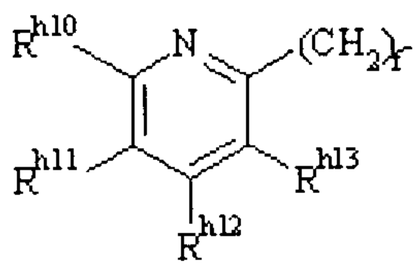
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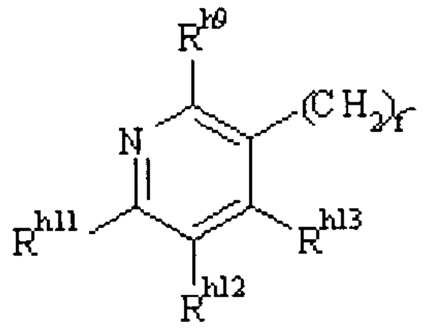
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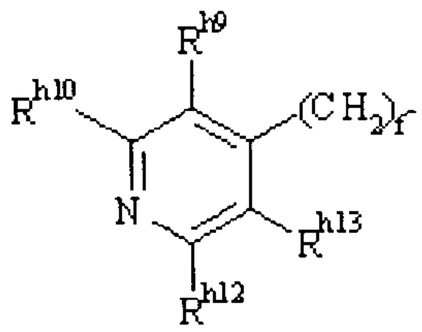

, $-(CH_2)_f-CR^{h14}=CR^{h15}R^{h16}$ and $-(CH_2)_f-C\equiv CR^{h17}$

in which

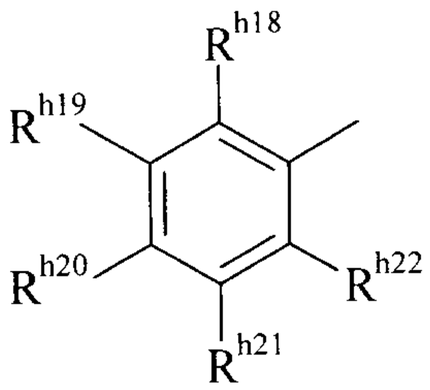
R^{h8} is selected from the group consisting of halogen, alkyl, aryl and hetaryl, where aryl and hetaryl are optionally substituted by at least one substituent selected from the group consisting of halogen, alkyl, haloalkyl, alkoxy and haloalkoxy;

f is 1 or 2 and

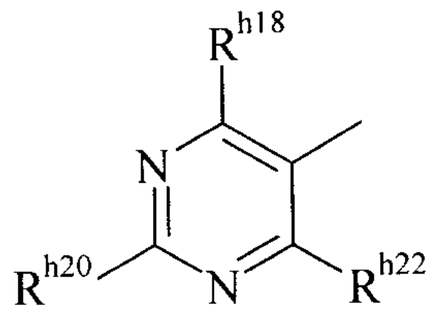
R^{h9}, R^{h10}, R^{h11}, R^{h12} and R^{h13} independently of one another are selected from the group consisting of hydrogen, halogen, alkyl, haloalkyl, alkoxy, haloalkoxy, alkoxyiminoalkyl, cyano, nitro, 2-alkyl-2H-tetrazol-5-yl, aryl and aryloxy;

R^{h14}, R^{h15} and R^{h16} independently of one another are selected from the group consisting of hydrogen, halogen, alkyl and aryl;

R^{h17} is selected from the group consisting of hydrogen, alkyl,



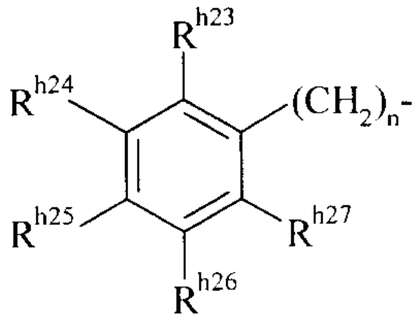
and



in which

R^{h18}, R^{h19}, R^{h20}, R^{h21} and R^{h22} independently of one another are selected from the group consisting of hydrogen, halogen, alkyl, haloalkyl, alkoxy and haloalkoxy,

R^{h5} is selected from the group consisting of hydrogen, alkyl and



in which

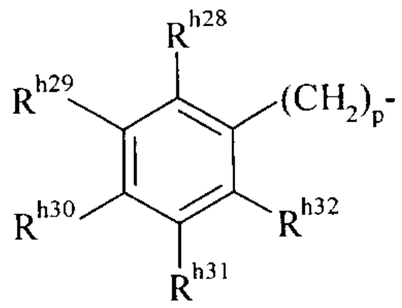
n is 1 or 2,

R^{h23}, R^{h24}, R^{h25}, R^{h26} and R^{h27} independently of one another are selected from the group consisting of hydrogen, halogen, alkyl, haloalkyl, alkoxy and haloalkoxy,

d and e independently of one another are 0 or 1 and,

if d and 1 are 1, U and V are methylene,

R^{h6} is selected from the group consisting of hydrogen, alkyl, cycloalkyl, cycloalkylalkyl, alkoxy, alkoxyalkyl, alkoxyalkoxyalkyl, alkenyl, haloalkenyl and



in which

p is 1 or 2 and

R^{h28}, R^{h29}, R^{h30}, R^{h31} and R^{h32} independently of one another are selected from the group consisting of hydrogen, halogen, alkyl, haloalkyl, alkoxy and haloalkoxy,

R^{h7} is selected from the group consisting of cyano and nitro,

W is selected from the group consisting of $-CR^{h33}-$ and –N-,

X^2 is selected from the group consisting of $-CR^{h34}R^{h35}-$, -O-, -S- and $-NR^{h36}-$,

where

R^{h33}, R^{h34}, R^{h35} and R^{h36} independently of one another are selected from the group consisting of hydrogen and alkyl,

with the proviso that

if Ar is oxolan-3-yl; a, b and c are 1; R^{ha} up to and including R^{hg} are hydrogen; d, e and r are 0; R is $-(CH_2)_mCR^{h14}=CR^{h15}R^{h16}$ or $-(CH_2)_mC\equiv CR^{h17}$; R^{h5} is hydrogen or alkyl; R^{h6} is hydrogen, alkyl, alkenyl or haloalkenyl and W is –CH-, then X^2 is not –S-,

if b and c are 0,

R^h and R^{h5} together are ethylene, forming a piperazine ring,

if d and e are 0,

R^{h5} and X^2 together may form a cycle $-CH_2(CH_2)_q-$ or $-CH_2YCH_2-$, where q is 1 or 2, Y is selected from the group consisting of O, S and NR^{h37}, where R^{h37} is hydrogen or alkyl, and

X^2 is selected from the group consisting of –CH-, -O-, -S- and –N-, where, if X is -CH- or –N-, R^{h6} is selected from the group consisting of hydrogen, alkyl and the definitions of R^h mentioned above.

Preferred substituents or ranges of the radicals listed in the formulae (Ia) to (Ih) mentioned above and below are illustrated below.

Preferred ranges for the radicals listed in formula (Ia) are given below:

A preferably represents optionally halogen- (fluorine-, chlorine-, bromine-, iodine-), cyano-, nitro-, C_1-C_4-alkyl-, C_1-C_4-haloalkyl-, C_1-C_4-alkoxy- or C_1-C_4-haloalkoxy-substituted phenyl.

A preferably represents tetrahydrofuryl which is optionally substituted by halogen, C_1-C_3-alkyl or C_1-C_3-haloalkyl.

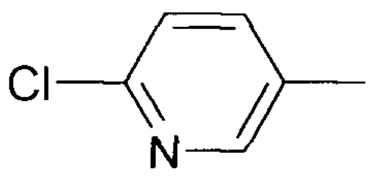
A furthermore preferably represents pyrazolyl, 1,2,4-triazolyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, 1,2,5-thiadiazolyl, pyridyl, pyrazinyl or pyrimidinyl which are optionally substituted by fluorine, chlorine, bromine, iodine, cyano, nitro, C_1-C_2-alkyl (which is optionally substituted by fluorine and/or chlorine), C_1-C_2-alkoxy (which is optionally substituted by fluorine and/or chlorine), C_1-C_2-alkyl (which is optionally substituted by fluorine and/or chlorine), C_1-C_2-alkylthio (which is optionally substituted by fluorine and/or chlorine), C_1-C_2-alkylsulphonyl (which is optionally substituted by fluorine and/or chlorine).

A furthermore preferably represents an optionally halogen- or C_1-C_3-alkyl-substituted saturated C_5-C_6-cycloalkyl radical in which optionally one methylene group is replaced by O or S.

A particularly preferably represents thiazolyl or pyridyl which are optionally substituted by halogen (*in particular chlorine*) or C_1-C_3-alkyl (*in particular methyl*).

A furthermore particularly preferably represents an optionally halogen- (in particular chlorine-) or C_1-C_3-alkyl- (in particular methyl-)substituted tetrahydrofuran radical.

A very particularly preferably represents one of the radicals



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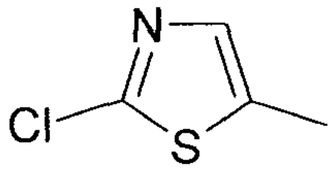

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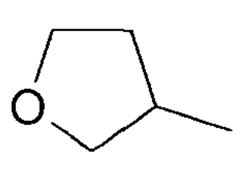

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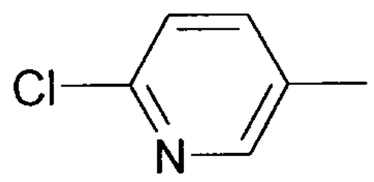
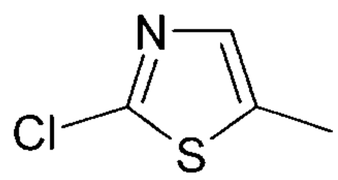
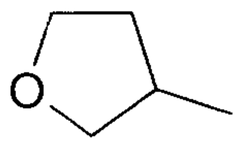
A especially preferably represents 2-chloropyrid-5-yl  .

A furthermore especially preferably represents 2-chloro-1,3-thiazol-5-yl  .

A furthermore especially preferably represents  .

R^1 preferably represents hydrogen, methyl, ethyl, n-propyl or isopropyl.

R^1 particularly preferably represents hydrogen or methyl.

R^2 preferably represents hydrogen, methyl, ethyl, n-propyl or isopropyl.

R^2 particularly preferably represents hydrogen, methyl or ethyl.

R^3 preferably represents straight-chain or branched C_1-C_6-alkyl, C_3-C_6-alkenyl, C_3-C_7-cycloalkyl, C_3-C_7-cycloalkyl-C_1-C_2-alkyl, each of which is optionally interrupted by oxygen or sulphur and optionally substituted by halogen, hydroxyl or cyano, represents optionally C_1-C_4-alkyl-, C_1-C_2-haloalkyl-, halogen-, C_1-C_4-alkoxy-, C_1-C_2-haloalkoxy-, nitro- or cyano-substituted phenyl-C_1-C_2-alkyl, phenyl, pyridyl, thiazolyl, pyrazolyl or pyrimidyl.

R^3 particularly preferably represents straight-chain or branched C_1-C_4-alkyl, in particular methyl, ethyl, propyl, isopropyl, sec-butyl, tert-butyl, hydroxy-C_1-C_4-alkyl, in particular 2-hydroxyethyl, 3-hydroxypropyl, C_3-C_4-alkenyl, in particular 2-propenyl, 2-butenyl, C_5-C_7-cycloalkyl, in particular cyclopropylmethyl, optionally fluorine-, chlorine-, bromine-, C_1-C_4-alkyl-, C_1-C_4-alkoxy-, C_1-C_2-haloalkyl-, C_1-C_2-haloalkoxy-, nitro- or cyano-substituted phenyl or benzyl.

R^3 very particularly preferably represents methyl or phenyl.

R^4 and R^5 preferably and independently of one another represent hydrogen, straight-chain or branched 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_6-alkenyl, C_1-C_6-alkoxycarbonyl, each of which is optionally interrupted by oxygen or sulphur and each of which is optionally substituted by halogen, or represent optionally C_1-

C_4-alkyl-, C_1-C_2-haloalkyl- or halogen-substituted phenyl, phenyl-C_1-C_2-alkenyl, pyridyl, thiazolyl, pyridyl-C_1-C_2-alkenyl or thiazolyl-C_1-C_2-alkenyl.

R^4 and R^5 particularly preferably and independently of one another represent hydrogen, straight-chain or branched C_1-C_4-alkyl, C_1-C_4-haloalkyl or C_3-C_4-alkenyl.

R^4 and R^5 very particularly preferably and independently of one another represent hydrogen, methyl, ethyl, propyl, isopropyl, trifluoroethyl, 1,1,1-trifluoroisopropyl, 2-propenyl or 2-butenyl.

R^4 and R^5 especially preferably and independently of one another represent hydrogen, methyl or ethyl.

X preferably represents =N-NO_2, =N-CN, =CH-NO_2 or =C(CHO)NO_2.

X particularly preferably represents =N-NO_2, =N-CN, =CH-NO_2.

E preferably represents OR^3, SR^3 or NR^4R^5.

E particularly preferably represents SR^3 or NR^4R^5.

R^2 and R^3 preferably represent an optionally C_1-C_4-alkyl-substituted C_2-C_4-alkylidenediyl group which may optionally be interrupted by a heteroatom from the group consisting of oxygen, sulphur and nitrogen.

R^2 and R^3 particularly preferably represent a C_2-C_3-alkylidenediyl group which may optionally be interrupted by a heteroatom from the group consisting of oxygen, sulphur and nitrogen.

R^2 and R^3 very particularly preferably represent -CH_2-CH_2-, -CH_2-CH_2-CH_2-, -CH_2-O-CH_2-, -CH_2-S-CH_2-, -CH_2-NH-CH_2 or -CH_2-N(CH_3)-CH_2-.

R^4 and R^5 preferably and together with the nitrogen atom to which they are attached represent a 4-, 5-, 6- or 7-membered ring or represent a 7- to 10-membered bicycle which are optionally also interrupted by oxygen, sulphur, sulphoxyl, sulphonyl, carbonyl, N-R^6 or by quaternized nitrogen and are optionally substituted by C_1-C_4-alkyl.

R^4 and R^5 particularly preferably represent optionally methyl- or ethyl-substituted C_4-C_6-alkylidenediyl which is optionally interrupted by oxygen, sulphur or N-R^6.

R^4 and R^5 very particularly preferably together with the nitrogen atom to which they are attached represent optionally methyl- or ethyl-substituted pyrrolidino, morpholino, thiomorpholino, piperidino, imidazolo or piperazino.

R^2 and R^5 preferably together with the atoms linking them represent an optionally C_1-C_4-alkyl-substituted saturated 5-, 6- or 7-membered ring.

R^2 and R^5 particularly preferably together with the atoms linking them represent a saturated 5-, 6- or 7-membered ring.

R^2 and R^5 very particularly preferably and together with the atoms linking them represent a saturated 5- or 6-membered ring.

In a group of outstanding compounds, R^1 represents hydrogen.

Preferred substituents or ranges of the radicals listed in formula (Ib) mentioned above and below are given below.

B preferably represents optionally halogen-, cyano-, nitro-, C_1-C_4-alkyl-, C_1-C_4-haloalkyl-, C_1-C_4-alkoxy- or C_1-C_4-haloalkoxy-substituted phenyl.

B also preferably represents pyrazolyl, 1,2,4-triazolyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, 1,2,5-thiadiazolyl, pyridyl, pyrazinyl, pyrimidinyl, C_1-C_4-alkyl-substituted tetrahydrofuryl which are optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C_1-C_4-alkyl (which is optionally substituted by fluorine and/or chlorine), C_1-C_4-alkylthio (which is optionally substituted by fluorine and/or chlorine), C_1-C_4-alkylsulphonyl (which is optionally substituted by fluorine and/or chlorine).

B particularly preferably represents thiazolyl or pyridyl which are optionally substituted by halogen or C_1-C_3-alkyl.

B very particularly preferably represents thiazolyl or pyridyl which are optionally substituted by chlorine or methyl.

B especially preferably represents 2-chloropyrid-5-yl or 2-chloro-1,3-thiazol-5-yl.

R^6 preferably represents hydrogen or methyl, ethyl or n-propyl or isopropyl.

R^6 particularly preferably represents hydrogen or methyl.

R^6 very particularly preferably represents hydrogen.

R^7 preferably represents hydrogen, methyl, ethyl, n-propyl or n-butyl.

R^7 particularly preferably represents hydrogen, methyl, ethyl or n-propyl.

R^7 very particularly preferably represents methyl.

R^8 particularly represents hydrogen, methyl or ethyl.

R^8 particularly preferably represents hydrogen.

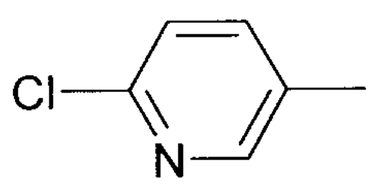
R^9 preferably represents hydrogen, methyl, ethyl, n-propyl, isopropyl, cyclopropyl, cyclobutyl, cyclopentyl or cyclohexyl.

R^9 particularly preferably represents hydrogen, methyl, ethyl or cyclopropyl.

R^9 very particularly preferably represents hydrogen.

Z preferably represents cyano or nitro.

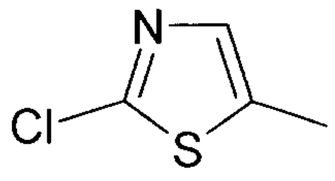
In an outstanding group of compounds of the formula (Ib), B represents

2-chloropyrid-5-yl 

.

In a further outstanding group of compounds of the formula (Ib),

B represents

2-chloro-1,3-thiazol-5-yl 

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The general or preferred radical definitions or illustrations given above apply to the end products and, correspondingly, to the starting materials and intermediates. These radical definitions can be combined with one another as desired, i.e. including combinations between the respective preferred ranges.

Preference according to the invention is given to compounds of the formulae (Ia) to (Ih) which contain a combination of the meanings given above as being preferred.

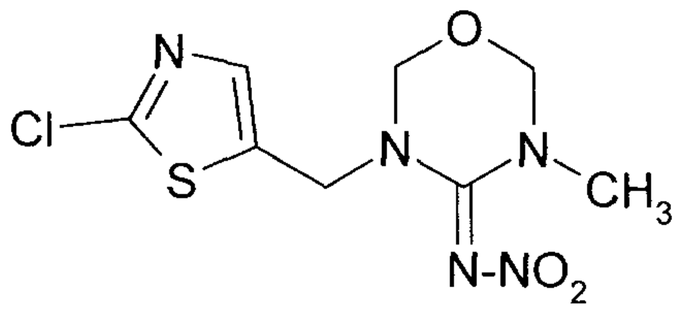
Particular preference according to the invention is given to compounds of the formulae (Ia) to (Ih) which contain a combination of the meanings given above as being particularly preferred.

Very particular preference according to the invention is given to compounds of the formulae (Ia) to (Ih) which contain a combination of the meanings given above as being very particularly preferred.

In the radical definitions given above and below, hydrocarbon radicals, such as alkyl, are in each case straight-chain or branched as far as this is possible - including in combination with heteroatoms, such as alkoxy.

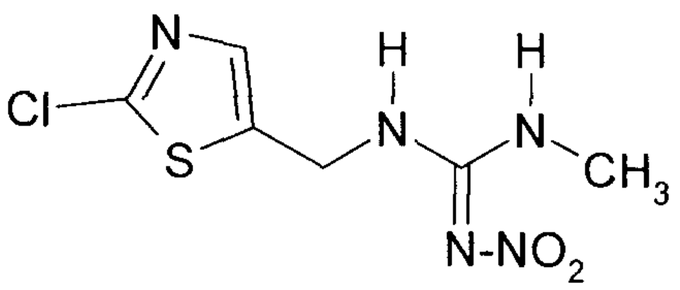
Specific mention may be made of the following compounds of the general formula (Ia) from the class of the neonicotinoids:

- Compound (Ia-1), thiamethoxam, has the formula



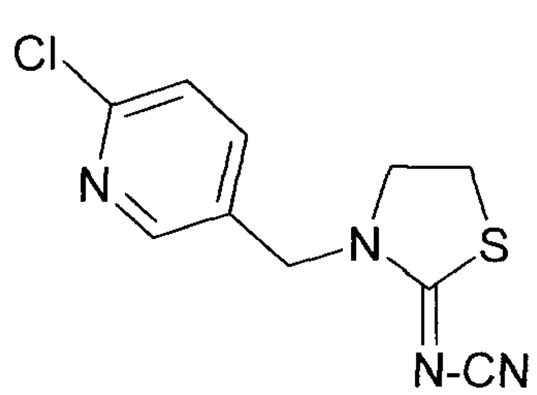
and is known from EP–A 0 580 553.

- Compound (Ia-2), clothianidin, has the formula



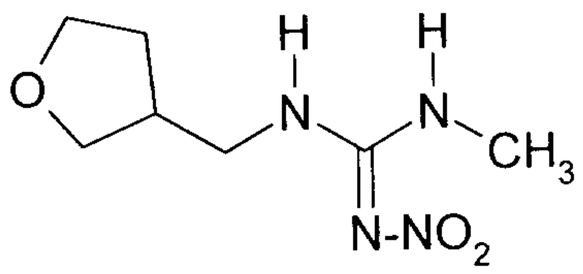
and is known from EP-A 0 376 279.

- Compound (Ia-3), thiacloprid, has the formula



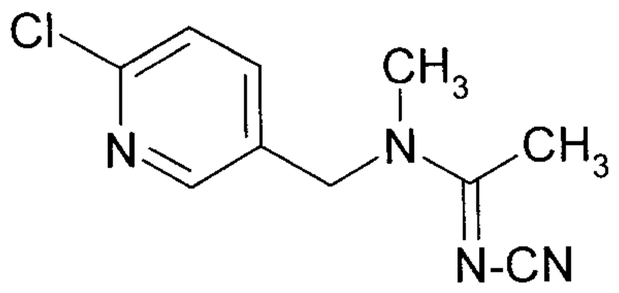
and is known from EP-A 0 235 725.

- Compound (Ia-4), dinotefuran, has the formula



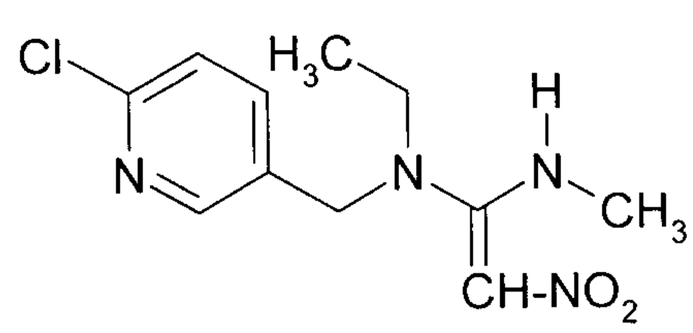
and is known from EP-A 0 649 845.

- Compound (Ia-5), acetamiprid, has the formula



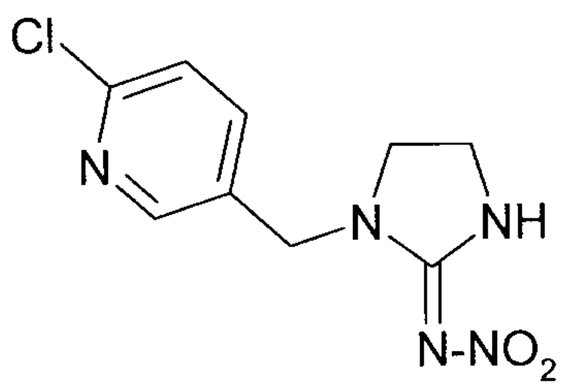
and is known from WO 91/04965.

- Compound (Ia-6), nitenpyram, has the formula



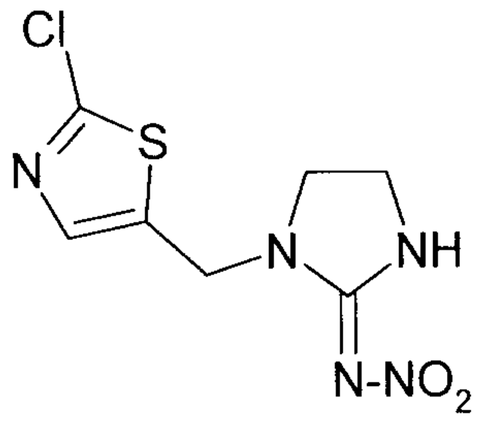
and is known from EP-A 0 302 389.

- Compound (Ia-7), imidacloprid, has the formula

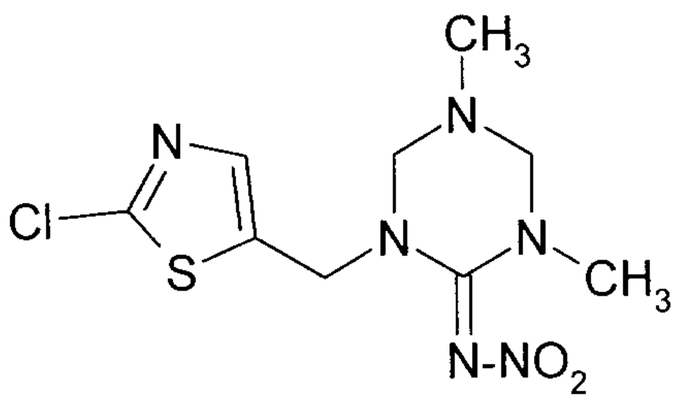


and is known from EP-A 0 192 060.

- Compound (Ia-8), imidaclothiz, has the formula



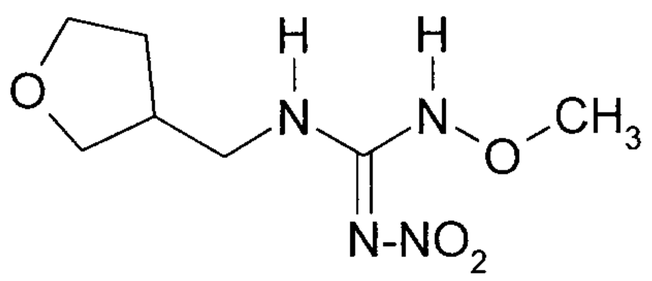
- Compound (Ia-9), AKD-1022, has the formula



and is known from EP 428941 A1.

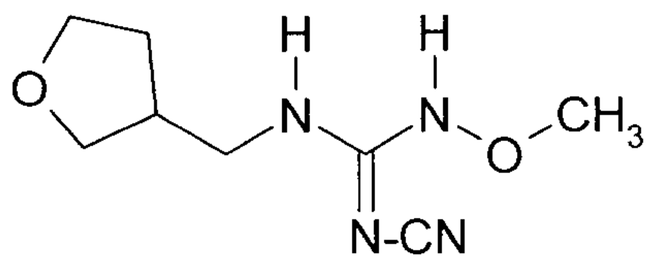
Furthermore, mention may be made of the following compounds of the general formula (Ib) from the class of the neonicotinoids:

- Compound (Ib-1) has the formula



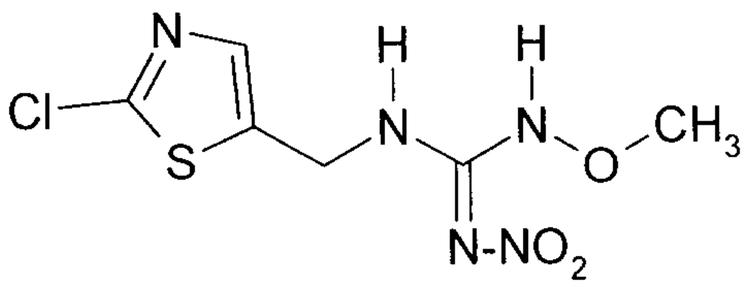
and is known from EP-A 0 649 845.

- Compound (Ib-2) has the formula



and is known from WO 2006 069 685 A1.

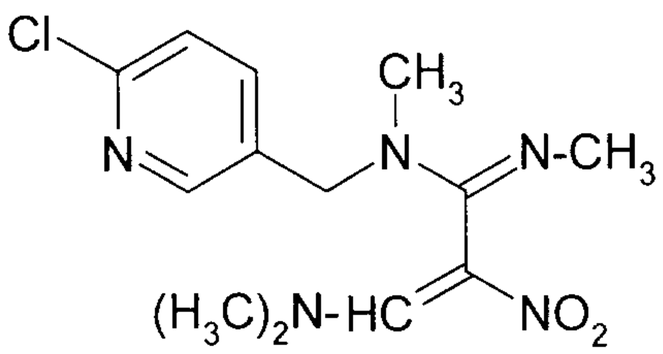
- Compound (Ib-3) has the formula



and is known from WO 2006 069 685 A1.

Furthermore, mention may be made of the following compounds of the general formula (Ic) from the class of the neonicotinoids:

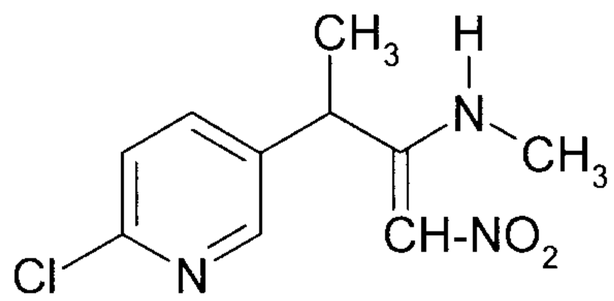
- Compound (Ic-1) has the formula



and is known from WO 04/056178.

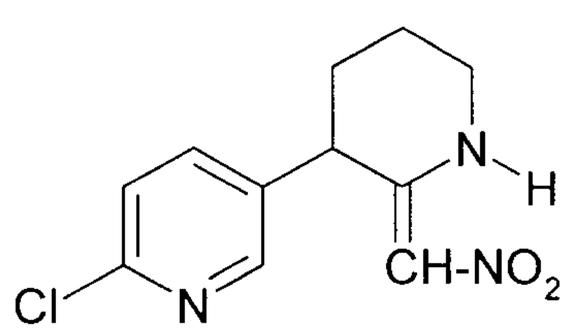
Furthermore, mention may be made of the following compounds of the general formula (Id) from the class of the neonicotinoids:

- Compound (Id-1) has the formula



and is known from WO 04/057960.

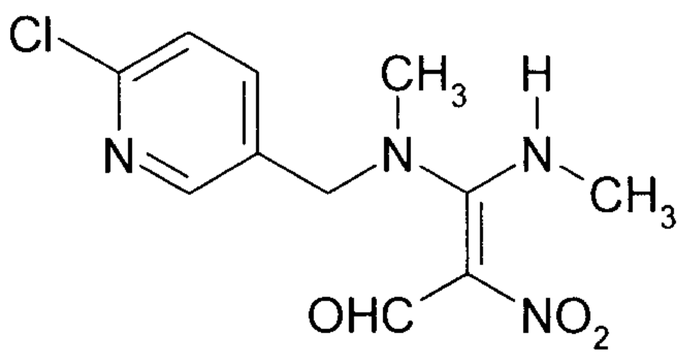
- Compound (Id-2) has the formula

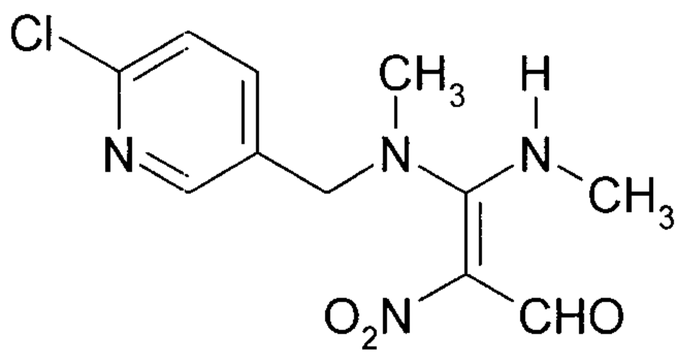


and is known from WO 04/057960.

Furthermore, mention may be made of the following compounds of the general formula (Ie) from the class of the neonicotinoids, which may also be present as geometrical isomers (A/B):

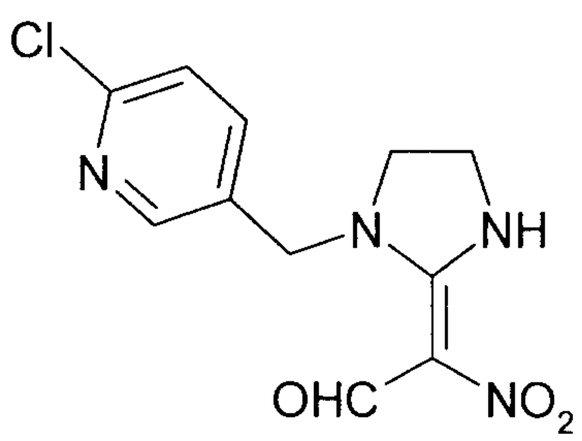
- Compound (Ie-1) has the formula

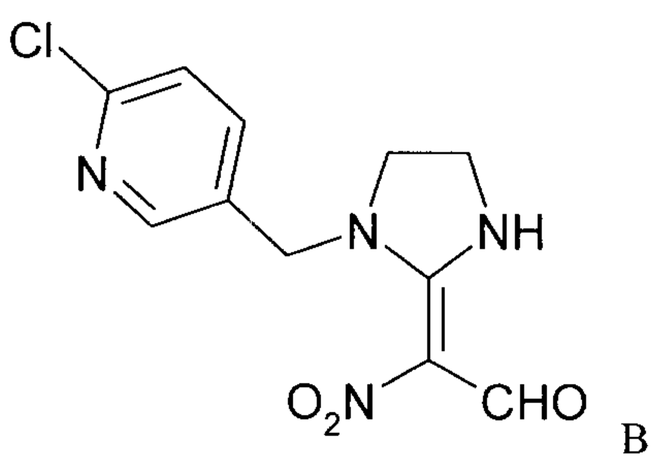

A


B

and is known from WO 04/058714.

- Compound (Ie-2) has the formula

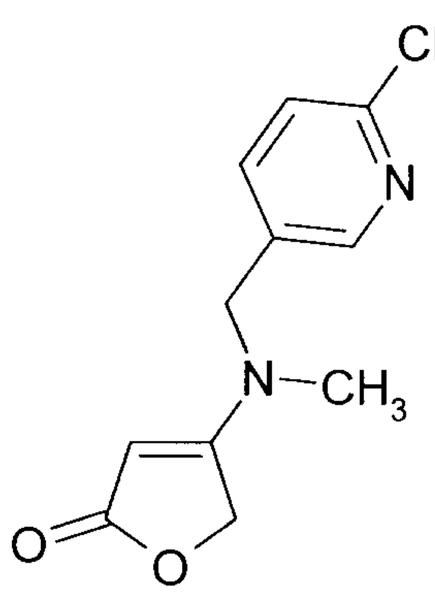

A


B

and is known from WO 04/058714.

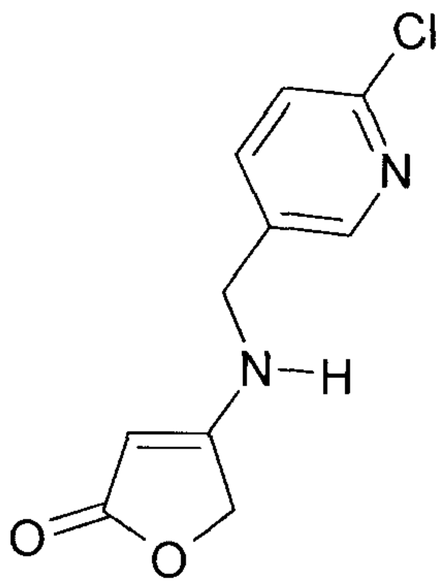
Furthermore, mention may be made of the following compounds of the general formula (If):

- Compound (If-1) has the formula



and is known from WO 92/00964 and WO 06/037475.

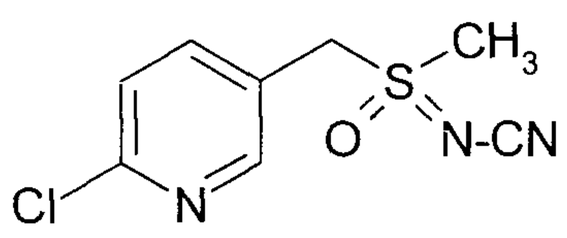
- Compound (If-2) has the formula



and is known from WO 92/00964 and WO 06/037475.

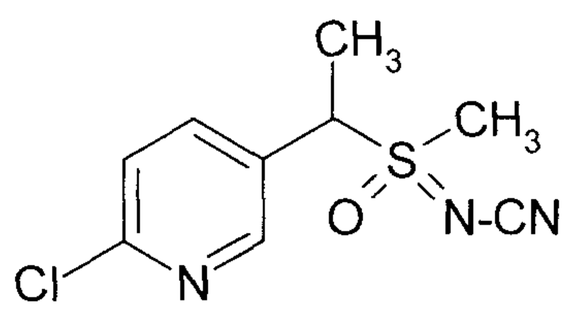
Furthermore, mention may be made of the following compounds of the general formula (Ig):

- Compound (Ig-1) has the formula



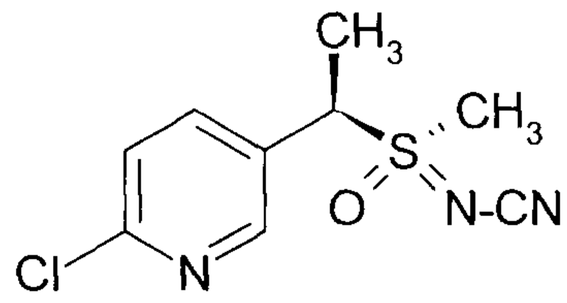
and is known from US 2005 0 228 027 A1.

- Compound (Ig-2) has the formula



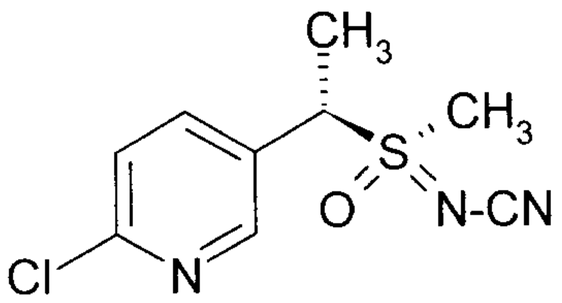
and is known from US 2005 0 228 027 A1.

- Compound (Ig-3) has the formula



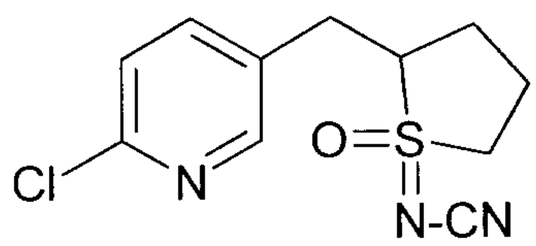
and is known from US 2005 0 228 027 A1.

- Compound (Ig-4) has the formula



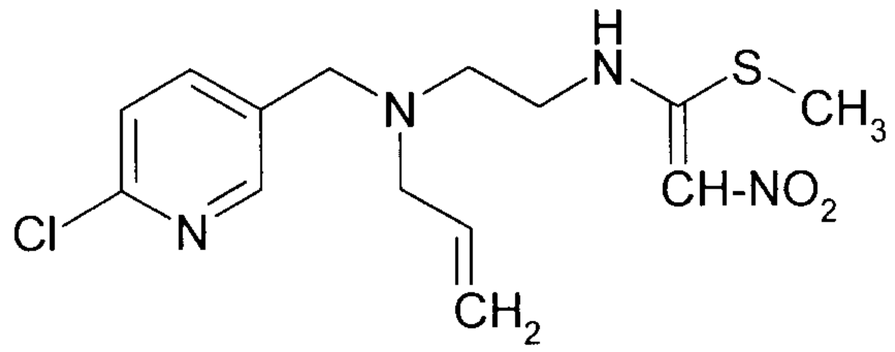
and is known from US 2005 0 228 027 A1.

- Compound (Ig-5) has the formula

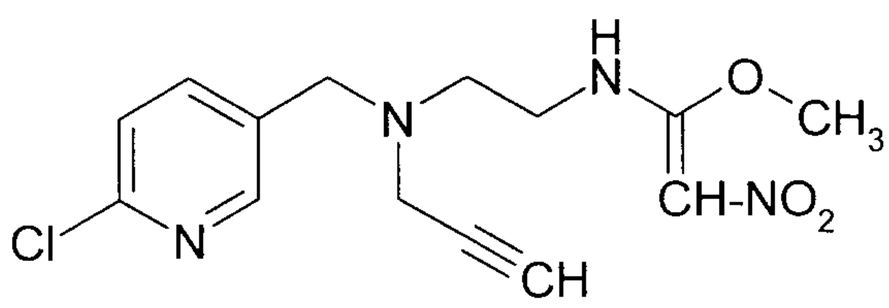


and is known from US 2005 0 228 027 A1.

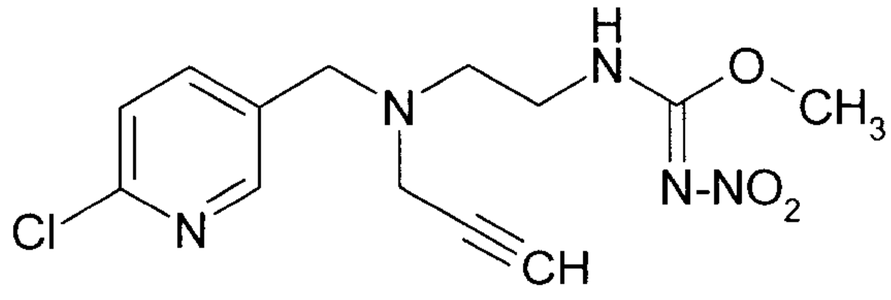
Furthermore, mention may be made of the following compounds of the general formula (Ih) from the class of the neonicotinoids



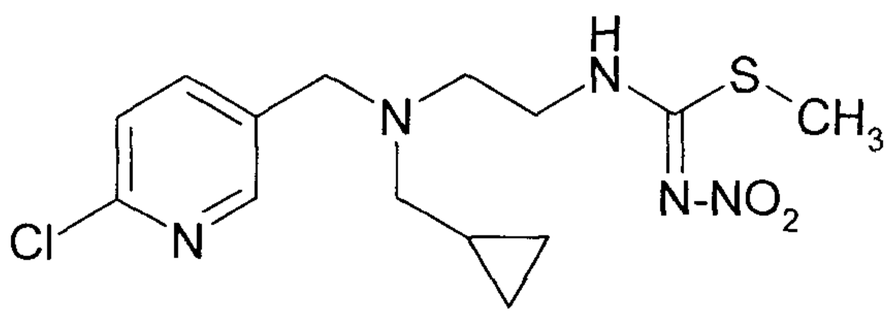
(Ih-1)



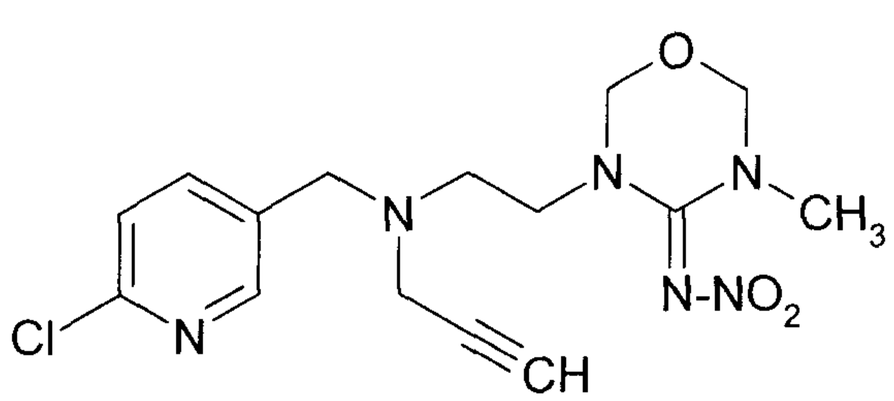
(Ih-2)



(Ih-3)



(Ih-4)



(Ih-5)

Inhibitors of the nicotinic acetylcholine receptor have broad insecticidal activity; however, in specific cases the activity is unsatisfactory.

The active compounds in the compositions according to the invention can be used in a broad concentration range. Here, the concentration of the active compounds in the formulation is usually 0.1–50% by weight.

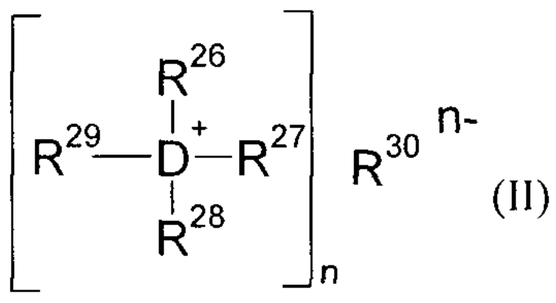
Descriptions have already been given in the literature to the effect that the activity of various active compounds can be increased through addition of ammonium or phosphonium salts. The salts in question, however, are salts with a detergent effect (for example WO 95/017817) and/or salts having relatively long alkyl and/or aryl substituents, which have a permeabilizing effect or which increase the solubility of the active compound (for example EP-A 0 453 086, EP-A 0 664 081, FR-A 2 600 494, US 4 844 734, US 5 462 912, US 5 538 937, US-A 03/0224939, US-A 05/0009880, US-A 05/0096386). Furthermore, the prior art describes the activity only for certain active compounds and/or certain applications of the composition in question. In still other cases, they are salts of sulphonic acids where the acids for their part have a paralysing action on insects (US 2 842 476). An activity increase through ammonium sulphate is described for the herbicides glyphosate and phosphinothricin (US 6 645 914, EP-A 0 036 106). However, this prior art neither discloses nor suggests a corresponding activity for insecticides.

Also, the use of ammonium sulphate as a formulating auxiliary has been described for certain active compounds and applications (WO 92/16108), but it is used there for the purpose of stabilizing the formulation, not for increasing activity.

It has now been found, entirely surprisingly, that the activity of insecticides which are inhibitors of the nicotinic acetylcholine receptor can be increased significantly through the addition of ammonium salts and/or phosphonium salts to the as-used solution (tank mix application) or

through the incorporation of these salts into a formulation comprising such insecticides. Accordingly, the present invention provides the use of ammonium salts and/or phosphonium salts for increasing the activity of crop protection compositions comprising insecticidally active inhibitors of the nicotinic acetylcholine receptor as active compound. The invention also provides compositions comprising such insecticides and activity-increasing ammonium salts and/or phosphonium salts, specifically including not only formulated active compounds but also ready-to-use compositions (spray liquors). Finally, the invention also provides the use of these compositions for controlling harmful insects.

Ammonium salts and phosphonium salts which, according to the invention, increase the activity of crop protection compositions comprising inhibitors of the nicotinic acetylcholine receptor are defined by formula (II)



(II)

in which

D represents nitrogen or phosphorus,

D preferably represents nitrogen,

R^{26}, R^{27}, R^{28} and R^{29} independently of one another represent hydrogen or in each case optionally substituted C_1-C_8-alkyl or mono- or polyunsaturated, optionally substituted C_1-C_8-alkylene, where the substituents may be selected from the group consisting of halogen, nitro and cyano,

R^{26}, R^{27}, R^{28} and R^{29} preferably independently of one another represent hydrogen or in each case optionally substituted C_1-C_4-alkyl, where the substituents may be selected from the group consisting of halogen, nitro and cyano,

R^{26}, R^{27}, R^{28} and R^{29} particularly preferably independently of one another represent hydrogen, methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, s-butyl or t-butyl,

R^{26}, R^{27}, R^{28} and R^{29} very particularly preferably represent hydrogen,

R^{26}, R^{27}, R^{28} and R^{29} furthermore very particularly preferably both represent methyl or both represent ethyl,

n represents 1, 2, 3 or 4,

n preferably represents 1 or 2,

R^{30} represents an inorganic or organic anion,

R^{30} preferably represents bicarbonate, tetraborate, fluoride, bromide, iodide, chloride, monohydrogenphosphate, dihydrogenphosphate, hydrogensulphate, tartrate, sulphate, nitrate, thiosulphate, thiocyanate, formate, lactate, acetate, propionate, butyrate, pentanoate, citrate or oxalate,

R^{30} furthermore preferably represents carbonate, pentaborate, sulphite, benzoate, hydrogenoxalate, hydrogencitrate, methylsulphate or tetrafluoroborate,

R^{30} particularly preferably represents lactate, sulphate, nitrate, thiosulphate, thiocyanate, citrate, oxalate or formate,

R^{30} furthermore particularly preferably represents monohydrogenphosphate or dihydrogenphosphate and

R^{30} very particularly preferably represents sulphate.

The ammonium salts and phosphonium salts of the formula (II) can be used in a broad concentration range to increase the activity of crop protection compositions comprising insecticidally or acaracidally active compounds. In general, the ammonium salts or phosphonium salts are used in the ready-to-use crop protection composition in a concentration of from 0.5 to 80 mmol/l, preferably from 0.75 to 37.5 mmol/l, particularly preferably from 1.5 to 25 mmol/l. In the case of a formulated product, the ammonium salt concentration and/or phosphonium salt concentration in the formulation is chosen such that it is within these stated general, preferred or very preferred ranges after the formulation has been diluted to the desired active compound concentration. The concentration of the salt in the formulation here is typically 1–50% by weight.

In a preferred embodiment of the invention, the activity is increased by adding to the crop protection compositions not only an ammonium salt and/or phosphonium salt but also, additionally, a penetrant. It is considered entirely surprising that even in these cases an even greater activity increase is observed. The present invention therefore likewise provides the use of a combination of penetrant and ammonium salts and/or phosphonium salts for increasing the activity

of crop protection compositions comprising insecticidally active inhibitors of the nicotinic acetylcholine receptor as active compound. The invention likewise provides compositions which comprise insecticidally active inhibitors of the nicotinic acetylcholine receptor, penetrants and ammonium salts and/or phosphonium salts, including specifically not only formulated active compounds but also ready-to-use compositions (spray liquors). The invention additionally provides, finally, for the use of these compositions for controlling harmful insects.

Suitable penetrants in the present context include all those substances which are typically used to enhance the penetration of agrochemically active compounds into plants. Penetrants are defined in this context by their ability to penetrate from the aqueous spray liquor and/or from the spray coating into the cuticle of the plant and thereby to increase the mobility of active compounds in the cuticle. The method described in the literature (Baur et al., 1997, *Pesticide Science* **51**, 131-152) can be used in order to determine this property.

Suitable penetrants are, for example, alkanol alkoxylates. Penetrants according to the invention are alkanol alkoxylates of the formula

$$R\text{-}O\text{-}(\text{-}AO)_v\text{-}R' \qquad (III)$$

in which

R represents straight-chain or branched alkyl having 4 to 20 carbon atoms,

R' represents hydrogen, methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, t-butyl, n-pentyl or n-hexyl,

AO represents an ethylene oxide radical, a propylene oxide radical, a butylene oxide radical or represents mixtures of ethylene oxide and propylene oxide radicals or butylene oxide radicals and

v represents numbers from 2 to 30.

A preferred group of penetrants are alkanol alkoxylates of the formula

$$R\text{-}O\text{-}(\text{-}EO\text{-})_n\text{-}R' \qquad (III\text{-}a)$$

in which

R is as defined above,

R' is as defined above,

EO represents $-CH_2-CH_2-O-$ and

n represents numbers from 2 to 20.

A further preferred group of penetrants are alkanol alkoxylates of the formula

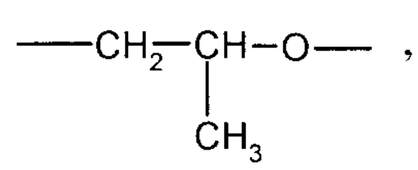
$$R\text{-}O\text{-}(\text{-}EO\text{-})_p\text{-}(\text{-}PO\text{-})_q\text{-}R' \qquad \text{(III-b)}$$

in which

R is as defined above,

R' is as defined above,

EO represents $-CH_2-CH_2-O-$,

PO represents  ,

p represents numbers from 1 to 10 and

q represents numbers from 1 to 10.

A further preferred group of penetrants are alkanol alkoxylates of the formula

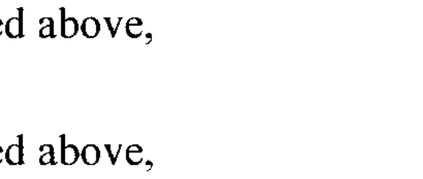
$$R\text{-}O\text{-}(\text{-}PO\text{-})_r\text{-}(EO\text{-})_S\text{-}R' \qquad \text{(III-c)}$$

in which

R is as defined above,

R' is as defined above,

EO represents $-CH_2-CH_2-O-$,

PO represents  ,

r represents numbers from 1 to 10 and

s represents numbers from 1 to 10.

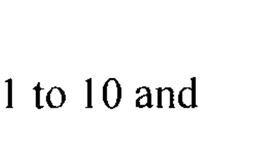
A further preferred group of penetrants are alkanol alkoxylates of the formula

$$R\text{-}O\text{-}(\text{-}EO\text{-})_p\text{-}(\text{-}BO\text{-})_q\text{-}R' \qquad \text{(III-d)}$$

in which

R and R' are as defined above,

EO represents CH_2-CH_2-O-,

BO represents 

p represents numbers from 1 to 10 and

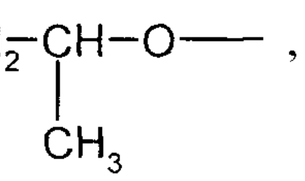
q represents numbers from 1 to 10.

A further preferred group of penetrants are alkanol alkoxylates of the formula

$$R\text{-}O\text{-}(\text{-}BO\text{-})_r\text{-}(\text{-}EO\text{-})_S\text{-}R' \qquad \text{(III-e)}$$

in which

R and R' are as defined above,

BO represents 

EO represents CH_2-CH_2-O-,

r represents numbers from 1 to 10 and

s represents numbers from 1 to 10.

A further preferred group of penetrants are alkanol alkoxylates of the formula

$$CH_3\text{-}(CH_2)_t\text{-}CH_2\text{-}O\text{-}(\text{-}CH_2\text{-}CH_2\text{-}O\text{-})_u\text{-}R' \qquad \text{(III-f)}$$

in which

R' is as defined above,

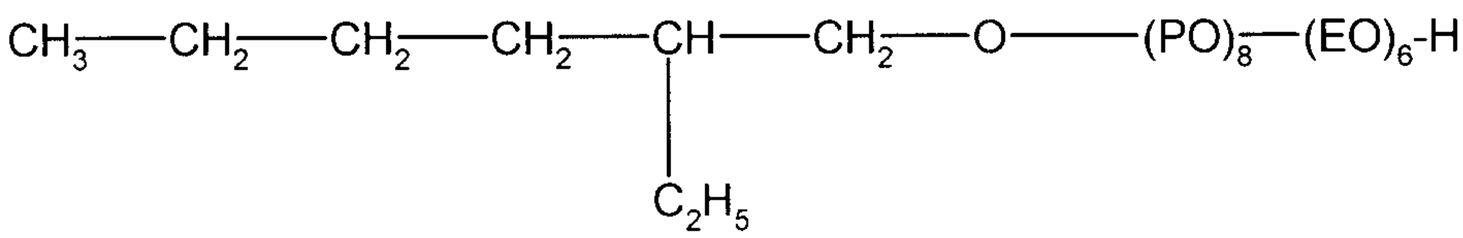
t represents numbers from 8 to 13 and

u represents numbers from 6 to 17.

In the formulae given above,

R preferably represents butyl, isobutyl, n-pentyl, isopentyl, neopentyl, n-hexyl, isohexyl, n-octyl, isooctyl, 2-ethylhexyl, nonyl, isononyl, decyl, n-dodecyl, isododecyl, lauryl, myristyl, isotridecyl, trimethylnonyl, palmityl, stearyl or eicosyl.

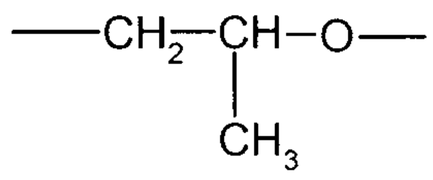
An example which may be mentioned of an alkanol alkoxylate of the formula (III-c) is 2-ethyl-hexyl alkoxylate of the formula



(III-c-1)

in which

EO represents $-CH_2-CH_2-O-$,

PO represents  and

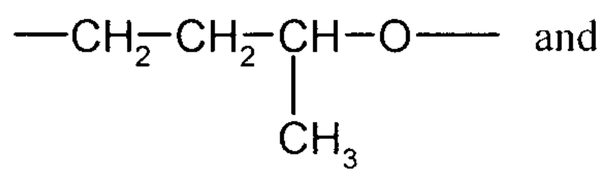
the numbers 8 and 6 are average values.

An example which may be mentioned of an alkanol alkoxylate of the formula (III-d) is the formula

$$CH_3-(CH_2)_{10}-O-(-EO-)_6-(-BO-)_2-CH_3 \qquad \text{(III-d-1)}$$

in which

EO represents CH_2-CH_2-O-,

BO represents  and

the numbers 10, 6 and 2 are average values.

Particularly preferred alkanol alkoxylates of the formula (III-f) are compounds of this formula in which

t represents numbers from 9 to 12 and

u represents numbers from 7 to 9.

The alkanol alkoxylate of the formula (III-f-1)

$$CH_3\text{-}(CH_2)_t\text{-}CH_2\text{-}O\text{-}(\text{-}CH_2\text{-}CH_2\text{-}O\text{-})_u\text{-}H \qquad \text{(III-f-1)}$$

in which

t represents the average value 10.5 and

u represents the average value 8.4

may be mentioned as being very particularly preferred.

The above formulae provide a general definition of the alkanol alkoxylates. These substances are mixtures of substances of the stated type with different chain lengths. The indices therefore have average values which may also deviate from whole numbers.

The alkanol alkoxylates of the formulae stated are known and in some cases are available commercially or can be prepared by known methods (cf. WO 98-35 553, WO 00-35 278 and EP-A 0 681 865).

Suitable penetrants also include, for example, substances which promote the solubility of the compounds of the formula (I) in a spray coating. These include, for example, mineral and vegetable oils. Suitable oils are all mineral or vegetable oils - modified or otherwise - which can typically be used in agrochemical compositions. Mention may be made by way of example of sunflower oil, rapeseed oil, olive oil, castor oil, colza oil, maizeseed oil, cottonseed oil and soybean oil, or the esters of said oils. Preference is given to rapeseed oil, sunflower oil and their methyl or ethyl esters.

The concentration of penetrants in the compositions according to the invention can be varied within a wide range. In the case of a formulated crop protection composition, it is generally from 1 to 95% by weight, preferably from 1 to 55% by weight, particularly preferably from 15 to 40% by weight. In the ready-to-use compositions (spray liquors), the concentration is generally between 0.1 and 10 g/l, preferably between 0.5 and 5 g/l.

Inventively emphasized combinations of active compound, salt and penetrant are listed in the table below. Here, "penetrant as per test" means that any compound that acts as a penetrant in the cuticle penetration test (Baur et al., 1997, *Pesticide Science* **51**, 131-152) is suitable.

#	Active compound	Salt	Penetrant
1	thiamethoxam (Ia-1)	ammonium sulphate	as per test
2	thiamethoxam (Ia-1)	ammonium lactate	as per test
3	thiamethoxam (Ia-1)	ammonium nitrate	as per test
4	thiamethoxam (Ia-1)	ammonium thiosulphate	as per test
5	thiamethoxam (Ia-1)	ammonium thiocyanate	as per test
6	thiamethoxam (Ia-1)	ammonium citrate	as per test
7	thiamethoxam (Ia-1)	ammonium oxalate	as per test
8	thiamethoxam (Ia-1)	ammonium formate	as per test
9	thiamethoxam (Ia-1)	ammonium hydrogenphosphate	as per test
10	thiamethoxam (Ia-1)	ammonium dihydrogenphosphate	as per test
11	thiamethoxam (Ia-1)	ammonium carbonate	as per test
12	thiamethoxam (Ia-1)	ammonium benzoate	as per test
13	thiamethoxam (Ia-1)	ammonium sulphite	as per test
14	thiamethoxam (Ia-1)	ammonium benzoate	as per test
15	thiamethoxam (Ia-1)	ammonium hydrogenoxalate	as per test
16	thiamethoxam (Ia-1)	ammonium hydrogencitrate	as per test
17	thiamethoxam (Ia-1)	ammonium acetate	as per test
18	thiamethoxam (Ia-1)	tetramethylammonium sulphate	as per test
19	thiamethoxam (Ia-1)	tetramethylammonium lactate	as per test
20	thiamethoxam (Ia-1)	tetramethylammonium nitrate	as per test
21	thiamethoxam (Ia-1)	tetramethylammonium thiosulphate	as per test
22	thiamethoxam (Ia-1)	tetramethylammonium thiocyanate	as per test
23	thiamethoxam (Ia-1)	tetramethylammonium citrate	as per test
24	thiamethoxam (Ia-1)	tetramethylammonium oxalate	as per test
25	thiamethoxam (Ia-1)	tetramethylammonium formate	as per test
26	thiamethoxam (Ia-1)	tetramethylammonium hydrogenphosphate	as per test
27	thiamethoxam (Ia-1)	tetramethylammonium dihydrogenphosphate	as per test
28	thiamethoxam (Ia-1)	tetraethylammonium sulphate	as per test
29	thiamethoxam (Ia-1)	tetraethylammonium lactate	as per test
30	thiamethoxam (Ia-1)	tetraethylammonium nitrate	as per test
31	thiamethoxam (Ia-1)	tetraethylammonium thiosulphate	as per test
32	thiamethoxam (Ia-1)	tetraethylammonium thiocyanate	as per test
33	thiamethoxam (Ia-1)	tetraethylammonium citrate	as per test
34	thiamethoxam (Ia-1)	tetraethylammonium oxalate	as per test
35	thiamethoxam (Ia-1)	tetraethylammonium formate	as per test
36	thiamethoxam (Ia-1)	tetraethylammonium hydrogenphosphate	as per test
37	thiamethoxam (Ia-1)	tetraethylammonium dihydrogenphosphate	as per test
38	clothianidin (Ia-2)	ammonium sulphate	as per test
39	clothianidin (Ia-2)	ammonium lactate	as per test
40	clothianidin (Ia-2)	ammonium nitrate	as per test
41	clothianidin (Ia-2)	ammonium thiosulphate	as per test
42	clothianidin (Ia-2)	ammonium thiocyanate	as per test
43	clothianidin (Ia-2)	ammonium citrate	as per test
44	clothianidin (Ia-2)	ammonium oxalate	as per test

#	Active compound	Salt	Penetrant
45	clothianidin (Ia-2)	ammonium formate	as per test
46	clothianidin (Ia-2)	ammonium hydrogenphosphate	as per test
47	clothianidin (Ia-2)	ammonium dihydrogenphosphate	as per test
48	clothianidin (Ia-2)	ammonium carbonate	as per test
49	clothianidin (Ia-2)	ammonium benzoate	as per test
50	clothianidin (Ia-2)	ammonium sulphite	as per test
51	clothianidin (Ia-2)	ammonium benzoate	as per test
52	clothianidin (Ia-2)	ammonium hydrogenoxalate	as per test
53	clothianidin (Ia-2)	ammonium hydrogencitrate	as per test
54	clothianidin (Ia-2)	ammonium acetate	as per test
55	clothianidin (Ia-2)	tetramethylammonium sulphate	as per test
56	clothianidin (Ia-2)	tetramethylammonium lactate	as per test
57	clothianidin (Ia-2)	tetramethylammonium nitrate	as per test
58	clothianidin (Ia-2)	tetramethylammonium thiosulphate	as per test
59	clothianidin (Ia-2)	tetramethylammonium thiocyanate	as per test
60	clothianidin (Ia-2)	tetramethylammonium citrate	as per test
61	clothianidin (Ia-2)	tetramethylammonium oxalate	as per test
62	clothianidin (Ia-2)	tetramethylammonium formate	as per test
63	clothianidin (Ia-2)	tetramethylammonium hydrogenphosphate	as per test
64	clothianidin (Ia-2)	tetramethylammonium dihydrogenphosphate	as per test
65	clothianidin (Ia-2)	tetraethylammonium sulphate	as per test
66	clothianidin (Ia-2)	tetraethylammonium lactate	as per test
67	clothianidin (Ia-2)	tetraethylammonium nitrate	as per test
68	clothianidin (Ia-2)	tetraethylammonium thiosulphate	as per test
69	clothianidin (Ia-2)	tetraethylammonium thiocyanate	as per test
70	clothianidin (Ia-2)	tetraethylammonium citrate	as per test
71	clothianidin (Ia-2)	tetraethylammonium oxalate	as per test
72	clothianidin (Ia-2)	tetraethylammonium formate	as per test
73	clothianidin (Ia-2)	tetraethylammonium hydrogenphosphate	as per test
74	clothianidin (Ia-2)	tetraethylammonium dihydrogenphosphate	as per test
75	thiacloprid (Ia-3)	ammonium sulphate	as per test
76	thiacloprid (Ia-3)	ammonium lactate	as per test
77	thiacloprid (Ia-3)	ammonium nitrate	as per test
78	thiacloprid (Ia-3)	ammonium thiosulphate	as per test
79	thiacloprid (Ia-3)	ammonium thiocyanate	as per test
80	thiacloprid (Ia-3)	ammonium citrate	as per test
81	thiacloprid (Ia-3)	ammonium oxalate	as per test
82	thiacloprid (Ia-3)	ammonium formate	as per test
83	thiacloprid (Ia-3)	ammonium hydrogenphosphate	as per test
84	thiacloprid (Ia-3)	ammonium dihydrogenphosphate	as per test
85	thiacloprid (Ia-3)	ammonium carbonate	as per test
86	thiacloprid (Ia-3)	ammonium benzoate	as per test
87	thiacloprid (Ia-3)	ammonium sulphite	as per test
88	thiacloprid (Ia-3)	ammonium benzoate	as per test
89	thiacloprid (Ia-3)	ammonium hydrogenoxalate	as per test
90	thiacloprid (Ia-3)	ammonium hydrogencitrate	as per test

#	Active compound	Salt	Penetrant
91	thiacloprid (Ia-3)	ammonium acetate	as per test
92	thiacloprid (Ia-3)	tetramethylammonium sulphate	as per test
93	thiacloprid (Ia-3)	tetramethylammonium lactate	as per test
94	thiacloprid (Ia-3)	tetramethylammonium nitrate	as per test
95	thiacloprid (Ia-3)	tetramethylammonium thiosulphate	as per test
96	thiacloprid (Ia-3)	tetramethylammonium thiocyanate	as per test
97	thiacloprid (Ia-3)	tetramethylammonium citrate	as per test
98	thiacloprid (Ia-3)	tetramethylammonium oxalate	as per test
99	thiacloprid (Ia-3)	tetramethylammonium formate	as per test
100	thiacloprid (Ia-3)	tetramethylammonium hydrogenphosphate	as per test
101	thiacloprid (Ia-3)	tetramethylammonium dihydrogenphosphate	as per test
102	thiacloprid (Ia-3)	tetraethylammonium sulphate	as per test
103	thiacloprid (Ia-3)	tetraethylammonium lactate	as per test
104	thiacloprid (Ia-3)	tetraethylammonium nitrate	as per test
105	thiacloprid (Ia-3)	tetraethylammonium thiosulphate	as per test
106	thiacloprid (Ia-3)	tetraethylammonium thiocyanate	as per test
107	thiacloprid (Ia-3)	tetraethylammonium citrate	as per test
108	thiacloprid (Ia-3)	tetraethylammonium oxalate	as per test
109	thiacloprid (Ia-3)	tetraethylammonium formate	as per test
110	thiacloprid (Ia-3)	tetraethylammonium hydrogenphosphate	as per test
111	thiacloprid (Ia-3)	tetraethylammonium dihydrogenphosphate	as per test
112	dinetofuran (Ia-4)	ammonium sulphate	as per test
113	dinetofuran (Ia-4)	ammonium lactate	as per test
114	dinetofuran (Ia-4)	ammonium nitrate	as per test
115	dinetofuran (Ia-4)	ammonium thiosulphate	as per test
116	dinetofuran (Ia-4)	ammonium thiocyanate	as per test
117	dinetofuran (Ia-4)	ammonium citrate	as per test
118	dinetofuran (Ia-4)	ammonium oxalate	as per test
119	dinetofuran (Ia-4)	ammonium formate	as per test
120	dinetofuran (Ia-4)	ammonium hydrogenphosphate	as per test
121	dinetofuran (Ia-4)	ammonium dihydrogenphosphate	as per test
122	dinetofuran (Ia-4)	ammonium carbonate	as per test
123	dinetofuran (Ia-4)	ammonium benzoate	as per test
124	dinetofuran (Ia-4)	ammonium sulphite	as per test
125	dinetofuran (Ia-4)	ammonium benzoate	as per test
126	dinetofuran (Ia-4)	ammonium hydrogenoxalate	as per test
127	dinetofuran (Ia-4)	ammonium hydrogencitrate	as per test
128	dinetofuran (Ia-4)	ammonium acetate	as per test
129	dinetofuran (Ia-4)	tetramethylammonium sulphate	as per test
130	dinetofuran (Ia-4)	tetramethylammonium lactate	as per test
131	dinetofuran (Ia-4)	tetramethylammonium nitrate	as per test
132	dinetofuran (Ia-4)	tetramethylammonium thiosulphate	as per test
133	dinetofuran (Ia-4)	tetramethylammonium thiocyanate	as per test
134	dinetofuran (Ia-4)	tetramethylammonium citrate	as per test
135	dinetofuran (Ia-4)	tetramethylammonium oxalate	as per test
136	dinetofuran (Ia-4)	tetramethylammonium formate	as per test

#	Active compound	Salt	Penetrant
137	dinetofuran (Ia-4)	tetramethylammonium hydrogenphosphate	as per test
138	dinetofuran (Ia-4)	tetramethylammonium dihydrogenphosphate	as per test
139	dinetofuran (Ia-4)	tetraethylammonium sulphate	as per test
140	dinetofuran (Ia-4)	tetraethylammonium lactate	as per test
141	dinetofuran (Ia-4)	tetraethylammonium nitrate	as per test
142	dinetofuran (Ia-4)	tetraethylammonium thiosulphate	as per test
143	dinetofuran (Ia-4)	tetraethylammonium thiocyanate	as per test
144	dinetofuran (Ia-4)	tetraethylammonium citrate	as per test
145	dinetofuran (Ia-4)	tetraethylammonium oxalate	as per test
146	dinetofuran (Ia-4)	tetraethylammonium formate	as per test
147	dinetofuran (Ia-4)	tetraethylammonium hydrogenphosphate	as per test
148	dinetofuran (Ia-4)	tetraethylammonium dihydrogenphosphate	as per test
149	acetamiprid (Ia-5)	ammonium sulphate	as per test
150	acetamiprid (Ia-5)	ammonium lactate	as per test
151	acetamiprid (Ia-5)	ammonium nitrate	as per test
152	acetamiprid (Ia-5)	ammonium thiosulphate	as per test
153	acetamiprid (Ia-5)	ammonium thiocyanate	as per test
154	acetamiprid (Ia-5)	ammonium citrate	as per test
155	acetamiprid (Ia-5)	ammonium oxalate	as per test
156	acetamiprid (Ia-5)	ammonium formate	as per test
157	acetamiprid (Ia-5)	ammonium hydrogenphosphate	as per test
158	acetamiprid (Ia-5)	ammonium dihydrogenphosphate	as per test
159	acetamiprid (Ia-5)	ammonium carbonate	as per test
160	acetamiprid (Ia-5)	ammonium benzoate	as per test
161	acetamiprid (Ia-5)	ammonium sulphite	as per test
162	acetamiprid (Ia-5)	ammonium benzoate	as per test
163	acetamiprid (Ia-5)	ammonium hydrogenoxalate	as per test
164	acetamiprid (Ia-5)	ammonium hydrogencitrate	as per test
165	acetamiprid (Ia-5)	ammonium acetate	as per test
166	acetamiprid (Ia-5)	tetramethylammonium sulphate	as per test
167	acetamiprid (Ia-5)	tetramethylammonium lactate	as per test
168	acetamiprid (Ia-5)	tetramethylammonium nitrate	as per test
169	acetamiprid (Ia-5)	tetramethylammonium thiosulphate	as per test
170	acetamiprid (Ia-5)	tetramethylammonium thiocyanate	as per test
171	acetamiprid (Ia-5)	tetramethylammonium citrate	as per test
172	acetamiprid (Ia-5)	tetramethylammonium oxalate	as per test
173	acetamiprid (Ia-5)	tetramethylammonium formate	as per test
174	acetamiprid (Ia-5)	tetramethylammonium hydrogenphosphate	as per test
175	acetamiprid (Ia-5)	tetramethylammonium dihydrogenphosphate	as per test
176	acetamiprid (Ia-5)	tetraethylammonium sulphate	as per test
177	acetamiprid (Ia-5)	tetraethylammonium lactate	as per test
178	acetamiprid (Ia-5)	tetraethylammonium nitrate	as per test
179	acetamiprid (Ia-5)	tetraethylammonium thiosulphate	as per test
180	acetamiprid (Ia-5)	tetraethylammonium thiocyanate	as per test
181	acetamiprid (Ia-5)	tetraethylammonium citrate	as per test
182	acetamiprid (Ia-5)	tetraethylammonium oxalate	as per test

#	Active compound	Salt	Penetrant
183	acetamiprid (Ia-5)	tetraethylammonium formate	as per test
184	acetamiprid (Ia-5)	tetraethylammonium hydrogenphosphate	as per test
185	acetamiprid (Ia-5)	tetraethylammonium dihydrogenphosphate	as per test
186	nitenpyram (Ia-6)	ammonium sulphate	as per test
187	nitenpyram (Ia-6)	ammonium lactate	as per test
188	nitenpyram (Ia-6)	ammonium nitrate	as per test
189	nitenpyram (Ia-6)	ammonium thiosulphate	as per test
190	nitenpyram (Ia-6)	ammonium thiocyanate	as per test
191	nitenpyram (Ia-6)	ammonium citrate	as per test
192	nitenpyram (Ia-6)	ammonium oxalate	as per test
193	nitenpyram (Ia-6)	ammonium formate	as per test
194	nitenpyram (Ia-6)	ammonium hydrogenphosphate	as per test
195	nitenpyram (Ia-6)	ammonium dihydrogenphosphate	as per test
196	nitenpyram (Ia-6)	ammonium carbonate	as per test
197	nitenpyram (Ia-6)	ammonium benzoate	as per test
198	nitenpyram (Ia-6)	ammonium sulphite	as per test
199	nitenpyram (Ia-6)	ammonium benzoate	as per test
200	nitenpyram (Ia-6)	ammonium hydrogenoxalate	as per test
201	nitenpyram (Ia-6)	ammonium hydrogencitrate	as per test
202	nitenpyram (Ia-6)	ammonium acetate	as per test
203	nitenpyram (Ia-6)	tetramethylammonium sulphate	as per test
204	nitenpyram (Ia-6)	tetramethylammonium lactate	as per test
205	nitenpyram (Ia-6)	tetramethylammonium nitrate	as per test
206	nitenpyram (Ia-6)	tetramethylammonium thiosulphate	as per test
207	nitenpyram (Ia-6)	tetramethylammonium thiocyanate	as per test
208	nitenpyram (Ia-6)	tetramethylammonium citrate	as per test
209	nitenpyram (Ia-6)	tetramethylammonium oxalate	as per test
210	nitenpyram (Ia-6)	tetramethylammonium formate	as per test
211	nitenpyram (Ia-6)	tetramethylammonium hydrogenphosphate	as per test
212	nitenpyram (Ia-6)	tetramethylammonium dihydrogenphosphate	as per test
213	nitenpyram (Ia-6)	tetraethylammonium sulphate	as per test
214	nitenpyram (Ia-6)	tetraethylammonium lactate	as per test
215	nitenpyram (Ia-6)	tetraethylammonium nitrate	as per test
216	nitenpyram (Ia-6)	tetraethylammonium thiosulphate	as per test
217	nitenpyram (Ia-6)	tetraethylammonium thiocyanate	as per test
218	nitenpyram (Ia-6)	tetraethylammonium citrate	as per test
219	nitenpyram (Ia-6)	tetraethylammonium oxalate	as per test
220	nitenpyram (Ia-6)	tetraethylammonium formate	as per test
221	nitenpyram (Ia-6)	tetraethylammonium hydrogenphosphate	as per test
222	nitenpyram (Ia-6)	tetraethylammonium dihydrogenphosphate	as per test
223	imidacloprid (Ia-7)	ammonium sulphate	as per test
224	imidacloprid (Ia-7)	ammonium lactate	as per test
225	imidacloprid (Ia-7)	ammonium nitrate	as per test
226	imidacloprid (Ia-7)	ammonium thiosulphate	as per test
227	imidacloprid (Ia-7)	ammonium thiocyanate	as per test
228	imidacloprid (Ia-7)	ammonium citrate	as per test

#	Active compound	Salt	Penetrant
229	imidacloprid (Ia-7)	ammonium oxalate	as per test
230	imidacloprid (Ia-7)	ammonium formate	as per test
231	imidacloprid (Ia-7)	ammonium hydrogenphosphate	as per test
232	imidacloprid (Ia-7)	ammonium dihydrogenphosphate	as per test
233	imidacloprid (Ia-7)	ammonium carbonate	as per test
234	imidacloprid (Ia-7)	ammonium benzoate	as per test
235	imidacloprid (Ia-7)	ammonium sulphite	as per test
236	imidacloprid (Ia-7)	ammonium benzoate	as per test
237	imidacloprid (Ia-7)	ammonium hydrogenoxalate	as per test
238	imidacloprid (Ia-7)	ammonium hydrogencitrate	as per test
239	imidacloprid (Ia-7)	ammonium acetate	as per test
240	imidacloprid (Ia-7)	tetramethylammonium sulphate	as per test
241	imidacloprid (Ia-7)	tetramethylammonium lactate	as per test
242	imidacloprid (Ia-7)	tetramethylammonium nitrate	as per test
243	imidacloprid (Ia-7)	tetramethylammonium thiosulphate	as per test
244	imidacloprid (Ia-7)	tetramethylammonium thiocyanate	as per test
245	imidacloprid (Ia-7)	tetramethylammonium citrate	as per test
246	imidacloprid (Ia-7)	tetramethylammonium oxalate	as per test
247	imidacloprid (Ia-7)	tetramethylammonium formate	as per test
248	imidacloprid (Ia-7)	tetramethylammonium hydrogenphosphate	as per test
249	imidacloprid (Ia-7)	tetramethylammonium dihydrogenphosphate	as per test
250	imidacloprid (Ia-7)	tetraethylammonium sulphate	as per test
251	imidacloprid (Ia-7)	tetraethylammonium lactate	as per test
252	imidacloprid (Ia-7)	tetraethylammonium nitrate	as per test
253	imidacloprid (Ia-7)	tetraethylammonium thiosulphate	as per test
254	imidacloprid (Ia-7)	tetraethylammonium thiocyanate	as per test
255	imidacloprid (Ia-7)	tetraethylammonium citrate	as per test
256	imidacloprid (Ia-7)	tetraethylammonium oxalate	as per test
257	imidacloprid (Ia-7)	tetraethylammonium formate	as per test
258	imidacloprid (Ia-7)	tetraethylammonium hydrogenphosphate	as per test
259	imidacloprid (Ia-7)	tetraethylammonium dihydrogenphosphate	as per test
260	imidaclothiz (Ia-8)	ammonium sulphate	as per test
261	imidaclothiz (Ia-8)	ammonium lactate	as per test
262	imidaclothiz (Ia-8)	ammonium nitrate	as per test
263	imidaclothiz (Ia-8)	ammonium thiosulphate	as per test
264	imidaclothiz (Ia-8)	ammonium thiocyanate	as per test
265	imidaclothiz (Ia-8)	ammonium citrate	as per test
266	imidaclothiz (Ia-8)	ammonium oxalate	as per test
267	imidaclothiz (Ia-8)	ammonium formate	as per test
268	imidaclothiz (Ia-8)	ammonium hydrogenphosphate	as per test
269	imidaclothiz (Ia-8)	ammonium dihydrogenphosphate	as per test
270	imidaclothiz (Ia-8)	ammonium carbonate	as per test
271	imidaclothiz (Ia-8)	ammonium benzoate	as per test
272	imidaclothiz (Ia-8)	ammonium sulphite	as per test
273	imidaclothiz (Ia-8)	ammonium benzoate	as per test
274	imidaclothiz (Ia-8)	ammonium hydrogenoxalate	as per test

#	Active compound	Salt	Penetrant
275	imidaclothiz (Ia-8)	ammonium hydrogencitrate	as per test
276	imidaclothiz (Ia-8)	ammonium acetate	as per test
277	imidaclothiz (Ia-8)	tetramethylammonium sulphate	as per test
278	imidaclothiz (Ia-8)	tetramethylammonium lactate	as per test
279	imidaclothiz (Ia-8)	tetramethylammonium nitrate	as per test
280	imidaclothiz (Ia-8)	tetramethylammonium thiosulphate	as per test
281	imidaclothiz (Ia-8)	tetramethylammonium thiocyanate	as per test
282	imidaclothiz (Ia-8)	tetramethylammonium citrate	as per test
283	imidaclothiz (Ia-8)	tetramethylammonium oxalate	as per test
284	imidaclothiz (Ia-8)	tetramethylammonium formate	as per test
285	imidaclothiz (Ia-8)	tetramethylammonium hydrogenphosphate	as per test
286	imidaclothiz (Ia-8)	tetramethylammonium dihydrogenphosphate	as per test
287	imidaclothiz (Ia-8)	tetraethylammonium sulphate	as per test
288	imidaclothiz (Ia-8)	tetraethylammonium lactate	as per test
289	imidaclothiz (Ia-8)	tetraethylammonium nitrate	as per test
290	imidaclothiz (Ia-8)	tetraethylammonium thiosulphate	as per test
291	imidaclothiz (Ia-8)	tetraethylammonium thiocyanate	as per test
292	imidaclothiz (Ia-8)	tetraethylammonium citrate	as per test
293	imidaclothiz (Ia-8)	tetraethylammonium oxalate	as per test
294	imidaclothiz (Ia-8)	tetraethylammonium formate	as per test
295	imidaclothiz (Ia-8)	tetraethylammonium hydrogenphosphate	as per test
296	imidaclothiz (Ia-8)	tetraethylammonium dihydrogenphosphate	as per test
297	AKD-1022 (Ia-9)	ammonium sulphate	as per test
298	AKD-1022 (Ia-9)	ammonium lactate	as per test
299	AKD-1022 (Ia-9)	ammonium nitrate	as per test
300	AKD-1022 (Ia-9)	ammonium thiosulphate	as per test
301	AKD-1022 (Ia-9)	ammonium thiocyanate	as per test
302	AKD-1022 (Ia-9)	ammonium citrate	as per test
303	AKD-1022 (Ia-9)	ammonium oxalate	as per test
304	AKD-1022 (Ia-9)	ammonium formate	as per test
305	AKD-1022 (Ia-9)	ammonium hydrogenphosphate	as per test
306	AKD-1022 (Ia-9)	ammonium dihydrogenphosphate	as per test
307	AKD-1022 (Ia-9)	ammonium carbonate	as per test
308	AKD-1022 (Ia-9)	ammonium benzoate	as per test
309	AKD-1022 (Ia-9)	ammonium sulphite	as per test
310	AKD-1022 (Ia-9)	ammonium benzoate	as per test
311	AKD-1022 (Ia-9)	ammonium hydrogenoxalate	as per test
312	AKD-1022 (Ia-9)	ammonium hydrogencitrate	as per test
313	AKD-1022 (Ia-9)	ammonium acetate	as per test
314	AKD-1022 (Ia-9)	tetramethylammonium sulphate	as per test
315	AKD-1022 (Ia-9)	tetramethylammonium lactate	as per test
316	AKD-1022 (Ia-9)	tetramethylammonium nitrate	as per test
317	AKD-1022 (Ia-9)	tetramethylammonium thiosulphate	as per test
318	AKD-1022 (Ia-9)	tetramethylammonium thiocyanate	as per test
319	AKD-1022 (Ia-9)	tetramethylammonium citrate	as per test
320	AKD-1022 (Ia-9)	tetramethylammonium oxalate	as per test

#	Active compound	Salt	Penetrant
321	AKD-1022 (Ia-9)	tetramethylammonium formate	as per test
322	AKD-1022 (Ia-9)	tetramethylammonium hydrogenphosphate	as per test
323	AKD-1022 (Ia-9)	tetramethylammonium dihydrogenphosphate	as per test
324	AKD-1022 (Ia-9)	tetraethylammonium sulphate	as per test
325	AKD-1022 (Ia-9)	tetraethylammonium lactate	as per test
326	AKD-1022 (Ia-9)	tetraethylammonium nitrate	as per test
327	AKD-1022 (Ia-9)	tetraethylammonium thiosulphate	as per test
328	AKD-1022 (Ia-9)	tetraethylammonium thiocyanate	as per test
329	AKD-1022 (Ia-9)	tetraethylammonium citrate	as per test
330	AKD-1022 (Ia-9)	tetraethylammonium oxalate	as per test
331	AKD-1022 (Ia-9)	tetraethylammonium formate	as per test
332	AKD-1022 (Ia-9)	tetraethylammonium hydrogenphosphate	as per test
333	AKD-1022 (Ia-9)	tetraethylammonium dihydrogenphosphate	as per test
334	(Ib-1)	ammonium sulphate	as per test
335	(Ib-1)	ammonium lactate	as per test
336	(Ib-1)	ammonium nitrate	as per test
337	(Ib-1)	ammonium thiosulphate	as per test
338	(Ib-1)	ammonium thiocyanate	as per test
339	(Ib-1)	ammonium citrate	as per test
340	(Ib-1)	ammonium oxalate	as per test
341	(Ib-1)	ammonium formate	as per test
342	(Ib-1)	ammonium hydrogenphosphate	as per test
343	(Ib-1)	ammonium dihydrogenphosphate	as per test
344	(Ib-1)	ammonium carbonate	as per test
345	(Ib-1)	ammonium benzoate	as per test
346	(Ib-1)	ammonium sulphite	as per test
347	(Ib-1)	ammonium benzoate	as per test
348	(Ib-1)	ammonium hydrogenoxalate	as per test
349	(Ib-1)	ammonium hydrogencitrate	as per test
350	(Ib-1)	ammonium acetate	as per test
351	(Ib-1)	tetramethylammonium sulphate	as per test
352	(Ib-1)	tetramethylammonium lactate	as per test
353	(Ib-1)	tetramethylammonium nitrate	as per test
354	(Ib-1)	tetramethylammonium thiosulphate	as per test
355	(Ib-1)	tetramethylammonium thiocyanate	as per test
356	(Ib-1)	tetramethylammonium citrate	as per test
357	(Ib-1)	tetramethylammonium oxalate	as per test
358	(Ib-1)	tetramethylammonium formate	as per test
359	(Ib-1)	tetramethylammonium hydrogenphosphate	as per test
360	(Ib-1)	tetramethylammonium dihydrogenphosphate	as per test
361	(Ib-1)	tetraethylammonium sulphate	as per test
362	(Ib-1)	tetraethylammonium lactate	as per test
363	(Ib-1)	tetraethylammonium nitrate	as per test
364	(Ib-1)	tetraethylammonium thiosulphate	as per test
365	(Ib-1)	tetraethylammonium thiocyanate	as per test
366	(Ib-1)	tetraethylammonium citrate	as per test

#	Active compound	Salt	Penetrant
367	(Ib-1)	tetraethylammonium oxalate	as per test
368	(Ib-1)	tetraethylammonium formate	as per test
369	(Ib-1)	tetraethylammonium hydrogenphosphate	as per test
370	(Ib-1)	tetraethylammonium dihydrogenphosphate	as per test
371	(Ib-2)	ammonium sulphate	as per test
372	(Ib-2)	ammonium lactate	as per test
373	(Ib-2)	ammonium nitrate	as per test
374	(Ib-2)	ammonium thiosulphate	as per test
375	(Ib-2)	ammonium thiocyanate	as per test
376	(Ib-2)	ammonium citrate	as per test
377	(Ib-2)	ammonium oxalate	as per test
378	(Ib-2)	ammonium formate	as per test
379	(Ib-2)	ammonium hydrogenphosphate	as per test
380	(Ib-2)	ammonium dihydrogenphosphate	as per test
381	(Ib-2)	ammonium carbonate	as per test
382	(Ib-2)	ammonium benzoate	as per test
383	(Ib-2)	ammonium sulphite	as per test
384	(Ib-2)	ammonium benzoate	as per test
385	(Ib-2)	ammonium hydrogenoxalate	as per test
386	(Ib-2)	ammonium hydrogencitrate	as per test
387	(Ib-2)	ammonium acetate	as per test
388	(Ib-2)	tetramethylammonium sulphate	as per test
389	(Ib-2)	tetramethylammonium lactate	as per test
390	(Ib-2)	tetramethylammonium nitrate	as per test
391	(Ib-2)	tetramethylammonium thiosulphate	as per test
392	(Ib-2)	tetramethylammonium thiocyanate	as per test
393	(Ib-2)	tetramethylammonium citrate	as per test
394	(Ib-2)	tetramethylammonium oxalate	as per test
395	(Ib-2)	tetramethylammonium formate	as per test
396	(Ib-2)	tetramethylammonium hydrogenphosphate	as per test
397	(Ib-2)	tetramethylammonium dihydrogenphosphate	as per test
398	(Ib-2)	tetraethylammonium sulphate	as per test
399	(Ib-2)	tetraethylammonium lactate	as per test
400	(Ib-2)	tetraethylammonium nitrate	as per test
401	(Ib-2)	tetraethylammonium thiosulphate	as per test
402	(Ib-2)	tetraethylammonium thiocyanate	as per test
403	(Ib-2)	tetraethylammonium citrate	as per test
404	(Ib-2)	tetraethylammonium oxalate	as per test
405	(Ib-2)	tetraethylammonium formate	as per test
406	(Ib-2)	tetraethylammonium hydrogenphosphate	as per test
407	(Ib-2)	tetraethylammonium dihydrogenphosphate	as per test
408	(Ib-3)	ammonium sulphate	as per test
409	(Ib-3)	ammonium lactate	as per test
410	(Ib-3)	ammonium nitrate	as per test
411	(Ib-3)	ammonium thiosulphate	as per test
412	(Ib-3)	ammonium thiocyanate	as per test

#	Active compound	Salt	Penetrant
413	(Ib-3)	ammonium citrate	as per test
414	(Ib-3)	ammonium oxalate	as per test
415	(Ib-3)	ammonium formate	as per test
416	(Ib-3)	ammonium hydrogenphosphate	as per test
417	(Ib-3)	ammonium dihydrogenphosphate	as per test
418	(Ib-3)	ammonium carbonate	as per test
419	(Ib-3)	ammonium benzoate	as per test
420	(Ib-3)	ammonium sulphite	as per test
421	(Ib-3)	ammonium benzoate	as per test
422	(Ib-3)	ammonium hydrogenoxalate	as per test
423	(Ib-3)	ammonium hydrogencitrate	as per test
424	(Ib-3)	ammonium acetate	as per test
425	(Ib-3)	tetramethylammonium sulphate	as per test
426	(Ib-3)	tetramethylammonium lactate	as per test
427	(Ib-3)	tetramethylammonium nitrate	as per test
428	(Ib-3)	tetramethylammonium thiosulphate	as per test
429	(Ib-3)	tetramethylammonium thiocyanate	as per test
430	(Ib-3)	tetramethylammonium citrate	as per test
431	(Ib-3)	tetramethylammonium oxalate	as per test
432	(Ib-3)	tetramethylammonium formate	as per test
433	(Ib-3)	tetramethylammonium hydrogenphosphate	as per test
434	(Ib-3)	tetramethylammonium dihydrogenphosphate	as per test
435	(Ib-3)	tetraethylammonium sulphate	as per test
436	(Ib-3)	tetraethylammonium lactate	as per test
437	(Ib-3)	tetraethylammonium nitrate	as per test
438	(Ib-3)	tetraethylammonium thiosulphate	as per test
439	(Ib-3)	tetraethylammonium thiocyanate	as per test
440	(Ib-3)	tetraethylammonium citrate	as per test
441	(Ib-3)	tetraethylammonium oxalate	as per test
442	(Ib-3)	tetraethylammonium formate	as per test
443	(Ib-3)	tetraethylammonium hydrogenphosphate	as per test
444	(Ib-3)	tetraethylammonium dihydrogenphosphate	as per test
445	(Ic-1)	ammonium sulphate	as per test
446	(Ic-1)	ammonium lactate	as per test
447	(Ic-1)	ammonium nitrate	as per test
448	(Ic-1)	ammonium thiosulphate	as per test
449	(Ic-1)	ammonium thiocyanate	as per test
450	(Ic-1)	ammonium citrate	as per test
451	(Ic-1)	ammonium oxalate	as per test
452	(Ic-1)	ammonium formate	as per test
453	(Ic-1)	ammonium hydrogenphosphate	as per test
454	(Ic-1)	ammonium dihydrogenphosphate	as per test
455	(Ic-1)	ammonium carbonate	as per test
456	(Ic-1)	ammonium benzoate	as per test
457	(Ic-1)	ammonium sulphite	as per test
458	(Ic-1)	ammonium benzoate	as per test

#	Active compound	Salt	Penetrant
459	(Ic-1)	ammonium hydrogenoxalate	as per test
460	(Ic-1)	ammonium hydrogencitrate	as per test
461	(Ic-1)	ammonium acetate	as per test
462	(Ic-1)	tetramethylammonium sulphate	as per test
463	(Ic-1)	tetramethylammonium lactate	as per test
464	(Ic-1)	tetramethylammonium nitrate	as per test
465	(Ic-1)	tetramethylammonium thiosulphate	as per test
466	(Ic-1)	tetramethylammonium thiocyanate	as per test
467	(Ic-1)	tetramethylammonium citrate	as per test
468	(Ic-1)	tetramethylammonium oxalate	as per test
469	(Ic-1)	tetramethylammonium formate	as per test
470	(Ic-1)	tetramethylammonium hydrogenphosphate	as per test
471	(Ic-1)	tetramethylammonium dihydrogenphosphate	as per test
472	(Ic-1)	tetraethylammonium sulphate	as per test
473	(Ic-1)	tetraethylammonium lactate	as per test
474	(Ic-1)	tetraethylammonium nitrate	as per test
475	(Ic-1)	tetraethylammonium thiosulphate	as per test
476	(Ic-1)	tetraethylammonium thiocyanate	as per test
477	(Ic-1)	tetraethylammonium citrate	as per test
478	(Ic-1)	tetraethylammonium oxalate	as per test
479	(Ic-1)	tetraethylammonium formate	as per test
480	(Ic-1)	tetraethylammonium hydrogenphosphate	as per test
481	(Ic-1)	tetraethylammonium dihydrogenphosphate	as per test
482	(Id-1)	ammonium sulphate	as per test
483	(Id-1)	ammonium lactate	as per test
484	(Id-1)	ammonium nitrate	as per test
485	(Id-1)	ammonium thiosulphate	as per test
486	(Id-1)	ammonium thiocyanate	as per test
487	(Id-1)	ammonium citrate	as per test
488	(Id-1)	ammonium oxalate	as per test
489	(Id-1)	ammonium formate	as per test
490	(Id-1)	ammonium hydrogenphosphate	as per test
491	(Id-1)	ammonium dihydrogenphosphate	as per test
492	(Id-1)	ammonium carbonate	as per test
493	(Id-1)	ammonium benzoate	as per test
494	(Id-1)	ammonium sulphite	as per test
495	(Id-1)	ammonium benzoate	as per test
496	(Id-1)	ammonium hydrogenoxalate	as per test
497	(Id-1)	ammonium hydrogencitrate	as per test
498	(Id-1)	ammonium acetate	as per test
499	(Id-1)	tetramethylammonium sulphate	as per test
500	(Id-1)	tetramethylammonium lactate	as per test
501	(Id-1)	tetramethylammonium nitrate	as per test
502	(Id-1)	tetramethylammonium thiosulphate	as per test
503	(Id-1)	tetramethylammonium thiocyanate	as per test
504	(Id-1)	tetramethylammonium citrate	as per test

#	Active compound	Salt	Penetrant
505	(Id-1)	tetramethylammonium oxalate	as per test
506	(Id-1)	tetramethylammonium formate	as per test
507	(Id-1)	tetramethylammonium hydrogenphosphate	as per test
508	(Id-1)	tetramethylammonium dihydrogenphosphate	as per test
509	(Id-1)	tetraethylammonium sulphate	as per test
510	(Id-1)	tetraethylammonium lactate	as per test
511	(Id-1)	tetraethylammonium nitrate	as per test
512	(Id-1)	tetraethylammonium thiosulphate	as per test
513	(Id-1)	tetraethylammonium thiocyanate	as per test
514	(Id-1)	tetraethylammonium citrate	as per test
515	(Id-1)	tetraethylammonium oxalate	as per test
516	(Id-1)	tetraethylammonium formate	as per test
517	(Id-1)	tetraethylammonium hydrogenphosphate	as per test
518	(Id-1)	tetraethylammonium dihydrogenphosphate	as per test
519	(Id-2)	ammonium sulphate	as per test
520	(Id-2)	ammonium lactate	as per test
521	(Id-2)	ammonium nitrate	as per test
522	(Id-2)	ammonium thiosulphate	as per test
523	(Id-2)	ammonium thiocyanate	as per test
524	(Id-2)	ammonium citrate	as per test
525	(Id-2)	ammonium oxalate	as per test
526	(Id-2)	ammonium formate	as per test
527	(Id-2)	ammonium hydrogenphosphate	as per test
528	(Id-2)	ammonium dihydrogenphosphate	as per test
529	(Id-2)	ammonium carbonate	as per test
530	(Id-2)	ammonium benzoate	as per test
531	(Id-2)	ammonium sulphite	as per test
532	(Id-2)	ammonium benzoate	as per test
533	(Id-2)	ammonium hydrogenoxalate	as per test
534	(Id-2)	ammonium hydrogencitrate	as per test
535	(Id-2)	ammonium acetate	as per test
536	(Id-2)	tetramethylammonium sulphate	as per test
537	(Id-2)	tetramethylammonium lactate	as per test
538	(Id-2)	tetramethylammonium nitrate	as per test
539	(Id-2)	tetramethylammonium thiosulphate	as per test
540	(Id-2)	tetramethylammonium thiocyanate	as per test
541	(Id-2)	tetramethylammonium citrate	as per test
542	(Id-2)	tetramethylammonium oxalate	as per test
543	(Id-2)	tetramethylammonium formate	as per test
544	(Id-2)	tetramethylammonium hydrogenphosphate	as per test
545	(Id-2)	tetramethylammonium dihydrogenphosphate	as per test
546	(Id-2)	tetraethylammonium sulphate	as per test
547	(Id-2)	tetraethylammonium lactate	as per test
548	(Id-2)	tetraethylammonium nitrate	as per test
549	(Id-2)	tetraethylammonium thiosulphate	as per test
550	(Id-2)	tetraethylammonium thiocyanate	as per test

#	Active compound	Salt	Penetrant
551	(Id-2)	tetraethylammonium citrate	as per test
552	(Id-2)	tetraethylammonium oxalate	as per test
553	(Id-2)	tetraethylammonium formate	as per test
554	(Id-2)	tetraethylammonium hydrogenphosphate	as per test
555	(Id-2)	tetraethylammonium dihydrogenphosphate	as per test
556	(Ie-1)	ammonium sulphate	as per test
557	(Ie-1)	ammonium lactate	as per test
558	(Ie-1)	ammonium nitrate	as per test
559	(Ie-1)	ammonium thiosulphate	as per test
560	(Ie-1)	ammonium thiocyanate	as per test
561	(Ie-1)	ammonium citrate	as per test
562	(Ie-1)	ammonium oxalate	as per test
563	(Ie-1)	ammonium formate	as per test
564	(Ie-1)	ammonium hydrogenphosphate	as per test
565	(Ie-1)	ammonium dihydrogenphosphate	as per test
566	(Ie-1)	ammonium carbonate	as per test
567	(Ie-1)	ammonium benzoate	as per test
568	(Ie-1)	ammonium sulphite	as per test
569	(Ie-1)	ammonium benzoate	as per test
570	(Ie-1)	ammonium hydrogenoxalate	as per test
571	(Ie-1)	ammonium hydrogencitrate	as per test
572	(Ie-1)	ammonium acetate	as per test
573	(Ie-1)	tetramethylammonium sulphate	as per test
574	(Ie-1)	tetramethylammonium lactate	as per test
575	(Ie-1)	tetramethylammonium nitrate	as per test
576	(Ie-1)	tetramethylammonium thiosulphate	as per test
577	(Ie-1)	tetramethylammonium thiocyanate	as per test
578	(Ie-1)	tetramethylammonium citrate	as per test
579	(Ie-1)	tetramethylammonium oxalate	as per test
580	(Ie-1)	tetramethylammonium formate	as per test
581	(Ie-1)	tetramethylammonium hydrogenphosphate	as per test
582	(Ie-1)	tetramethylammonium dihydrogenphosphate	as per test
583	(Ie-1)	tetraethylammonium sulphate	as per test
584	(Ie-1)	tetraethylammonium lactate	as per test
585	(Ie-1)	tetraethylammonium nitrate	as per test
586	(Ie-1)	tetraethylammonium thiosulphate	as per test
587	(Ie-1)	tetraethylammonium thiocyanate	as per test
588	(Ie-1)	tetraethylammonium citrate	as per test
589	(Ie-1)	tetraethylammonium oxalate	as per test
590	(Ie-1)	tetraethylammonium formate	as per test
591	(Ie-1)	tetraethylammonium hydrogenphosphate	as per test
592	(Ie-1)	tetraethylammonium dihydrogenphosphate	as per test
593	(Ie-2)	ammonium sulphate	as per test
594	(Ie-2)	ammonium lactate	as per test
595	(Ie-2)	ammonium nitrate	as per test
596	(Ie-2)	ammonium thiosulphate	as per test

#	Active compound	Salt	Penetrant
597	(Ie-2)	ammonium thiocyanate	as per test
598	(Ie-2)	ammonium citrate	as per test
599	(Ie-2)	ammonium oxalate	as per test
600	(Ie-2)	ammonium formate	as per test
601	(Ie-2)	ammonium hydrogenphosphate	as per test
602	(Ie-2)	ammonium dihydrogenphosphate	as per test
603	(Ie-2)	ammonium carbonate	as per test
604	(Ie-2)	ammonium benzoate	as per test
605	(Ie-2)	ammonium sulphite	as per test
606	(Ie-2)	ammonium benzoate	as per test
607	(Ie-2)	ammonium hydrogenoxalate	as per test
608	(Ie-2)	ammonium hydrogencitrate	as per test
609	(Ie-2)	ammonium acetate	as per test
610	(Ie-2)	tetramethylammonium sulphate	as per test
611	(Ie-2)	tetramethylammonium lactate	as per test
612	(Ie-2)	tetramethylammonium nitrate	as per test
613	(Ie-2)	tetramethylammonium thiosulphate	as per test
614	(Ie-2)	tetramethylammonium thiocyanate	as per test
615	(Ie-2)	tetramethylammonium citrate	as per test
616	(Ie-2)	tetramethylammonium oxalate	as per test
617	(Ie-2)	tetramethylammonium formate	as per test
618	(Ie-2)	tetramethylammonium hydrogenphosphate	as per test
619	(Ie-2)	tetramethylammonium dihydrogenphosphate	as per test
620	(Ie-2)	tetraethylammonium sulphate	as per test
621	(Ie-2)	tetraethylammonium lactate	as per test
622	(Ie-2)	tetraethylammonium nitrate	as per test
623	(Ie-2)	tetraethylammonium thiosulphate	as per test
624	(Ie-2)	tetraethylammonium thiocyanate	as per test
625	(Ie-2)	tetraethylammonium citrate	as per test
626	(Ie-2)	tetraethylammonium oxalate	as per test
627	(Ie-2)	tetraethylammonium formate	as per test
628	(Ie-2)	tetraethylammonium hydrogenphosphate	as per test
629	(Ie-2)	tetraethylammonium dihydrogenphosphate	as per test
630	(If-1)	ammonium sulphate	as per test
631	(If-1)	ammonium lactate	as per test
632	(If-1)	ammonium nitrate	as per test
633	(If-1)	ammonium thiosulphate	as per test
634	(If-1)	ammonium thiocyanate	as per test
635	(If-1)	ammonium citrate	as per test
636	(If-1)	ammonium oxalate	as per test
637	(If-1)	ammonium formate	as per test
638	(If-1)	ammonium hydrogenphosphate	as per test
639	(If-1)	ammonium dihydrogenphosphate	as per test
640	(If-1)	ammonium carbonate	as per test
641	(If-1)	ammonium benzoate	as per test
642	(If-1)	ammonium sulphite	as per test

#	Active compound	Salt	Penetrant
643	(If-1)	ammonium benzoate	as per test
644	(If-1)	ammonium hydrogenoxalate	as per test
645	(If-1)	ammonium hydrogencitrate	as per test
646	(If-1)	ammonium acetate	as per test
647	(If-1)	tetramethylammonium sulphate	as per test
648	(If-1)	tetramethylammonium lactate	as per test
649	(If-1)	tetramethylammonium nitrate	as per test
650	(If-1)	tetramethylammonium thiosulphate	as per test
651	(If-1)	tetramethylammonium thiocyanate	as per test
652	(If-1)	tetramethylammonium citrate	as per test
653	(If-1)	tetramethylammonium oxalate	as per test
654	(If-1)	tetramethylammonium formate	as per test
655	(If-1)	tetramethylammonium hydrogenphosphate	as per test
656	(If-1)	tetramethylammonium dihydrogenphosphate	as per test
657	(If-1)	tetraethylammonium sulphate	as per test
658	(If-1)	tetraethylammonium lactate	as per test
659	(If-1)	tetraethylammonium nitrate	as per test
660	(If-1)	tetraethylammonium thiosulphate	as per test
661	(If-1)	tetraethylammonium thiocyanate	as per test
662	(If-1)	tetraethylammonium citrate	as per test
663	(If-1)	tetraethylammonium oxalate	as per test
664	(If-1)	tetraethylammonium formate	as per test
665	(If-1)	tetraethylammonium hydrogenphosphate	as per test
666	(If-1)	tetraethylammonium dihydrogenphosphate	as per test
667	(If-2)	ammonium sulphate	as per test
668	(If-2)	ammonium lactate	as per test
669	(If-2)	ammonium nitrate	as per test
670	(If-2)	ammonium thiosulphate	as per test
671	(If-2)	ammonium thiocyanate	as per test
672	(If-2)	ammonium citrate	as per test
673	(If-2)	ammonium oxalate	as per test
674	(If-2)	ammonium formate	as per test
675	(If-2)	ammonium hydrogenphosphate	as per test
676	(If-2)	ammonium dihydrogenphosphate	as per test
677	(If-2)	ammonium carbonate	as per test
678	(If-2)	ammonium benzoate	as per test
679	(If-2)	ammonium sulphite	as per test
680	(If-2)	ammonium benzoate	as per test
681	(If-2)	ammonium hydrogenoxalate	as per test
682	(If-2)	ammonium hydrogencitrate	as per test
683	(If-2)	ammonium acetate	as per test
684	(If-2)	tetramethylammonium sulphate	as per test
685	(If-2)	tetramethylammonium lactate	as per test
686	(If-2)	tetramethylammonium nitrate	as per test
687	(If-2)	tetramethylammonium thiosulphate	as per test
688	(If-2)	tetramethylammonium thiocyanate	as per test

#	Active compound	Salt	Penetrant
689	(If-2)	tetramethylammonium citrate	as per test
690	(If-2)	tetramethylammonium oxalate	as per test
691	(If-2)	tetramethylammonium formate	as per test
692	(If-2)	tetramethylammonium hydrogenphosphate	as per test
693	(If-2)	tetramethylammonium dihydrogenphosphate	as per test
694	(If-2)	tetraethylammonium sulphate	as per test
695	(If-2)	tetraethylammonium lactate	as per test
696	(If-2)	tetraethylammonium nitrate	as per test
697	(If-2)	tetraethylammonium thiosulphate	as per test
698	(If-2)	tetraethylammonium thiocyanate	as per test
699	(If-2)	tetraethylammonium citrate	as per test
700	(If-2)	tetraethylammonium oxalate	as per test
701	(If-2)	tetraethylammonium formate	as per test
702	(If-2)	tetraethylammonium hydrogenphosphate	as per test
703	(If-2)	tetraethylammonium dihydrogenphosphate	as per test
704	(Ig-1)	ammonium sulphate	as per test
705	(Ig-1)	ammonium lactate	as per test
706	(Ig-1)	ammonium nitrate	as per test
707	(Ig-1)	ammonium thiosulphate	as per test
708	(Ig-1)	ammonium thiocyanate	as per test
709	(Ig-1)	ammonium citrate	as per test
710	(Ig-1)	ammonium oxalate	as per test
711	(Ig-1)	ammonium formate	as per test
712	(Ig-1)	ammonium hydrogenphosphate	as per test
713	(Ig-1)	ammonium dihydrogenphosphate	as per test
714	(Ig-1)	ammonium carbonate	as per test
715	(Ig-1)	ammonium benzoate	as per test
716	(Ig-1)	ammonium sulphite	as per test
717	(Ig-1)	ammonium benzoate	as per test
718	(Ig-1)	ammonium hydrogenoxalate	as per test
719	(Ig-1)	ammonium hydrogencitrate	as per test
720	(Ig-1)	ammonium acetate	as per test
721	(Ig-1)	tetramethylammonium sulphate	as per test
722	(Ig-1)	tetramethylammonium lactate	as per test
723	(Ig-1)	tetramethylammonium nitrate	as per test
724	(Ig-1)	tetramethylammonium thiosulphate	as per test
725	(Ig-1)	tetramethylammonium thiocyanate	as per test
726	(Ig-1)	tetramethylammonium citrate	as per test
727	(Ig-1)	tetramethylammonium oxalate	as per test
728	(Ig-1)	tetramethylammonium formate	as per test
729	(Ig-1)	tetramethylammonium hydrogenphosphate	as per test
730	(Ig-1)	tetramethylammonium dihydrogenphosphate	as per test
731	(Ig-1)	tetraethylammonium sulphate	as per test
732	(Ig-1)	tetraethylammonium lactate	as per test
733	(Ig-1)	tetraethylammonium nitrate	as per test
734	(Ig-1)	tetraethylammonium thiosulphate	as per test

#	Active compound	Salt	Penetrant
735	(Ig-1)	tetraethylammonium thiocyanate	as per test
736	(Ig-1)	tetraethylammonium citrate	as per test
737	(Ig-1)	tetraethylammonium oxalate	as per test
738	(Ig-1)	tetraethylammonium formate	as per test
739	(Ig-1)	tetraethylammonium hydrogenphosphate	as per test
740	(Ig-1)	tetraethylammonium dihydrogenphosphate	as per test
741	(Ig-2)	ammonium sulphate	as per test
742	(Ig-2)	ammonium lactate	as per test
743	(Ig-2)	ammonium nitrate	as per test
744	(Ig-2)	ammonium thiosulphate	as per test
745	(Ig-2)	ammonium thiocyanate	as per test
746	(Ig-2)	ammonium citrate	as per test
747	(Ig-2)	ammonium oxalate	as per test
748	(Ig-2)	ammonium formate	as per test
749	(Ig-2)	ammonium hydrogenphosphate	as per test
750	(Ig-2)	ammonium dihydrogenphosphate	as per test
751	(Ig-2)	ammonium carbonate	as per test
752	(Ig-2)	ammonium benzoate	as per test
753	(Ig-2)	ammonium sulphite	as per test
754	(Ig-2)	ammonium benzoate	as per test
755	(Ig-2)	ammonium hydrogenoxalate	as per test
756	(Ig-2)	ammonium hydrogencitrate	as per test
757	(Ig-2)	ammonium acetate	as per test
758	(Ig-2)	tetramethylammonium sulphate	as per test
759	(Ig-2)	tetramethylammonium lactate	as per test
760	(Ig-2)	tetramethylammonium nitrate	as per test
761	(Ig-2)	tetramethylammonium thiosulphate	as per test
762	(Ig-2)	tetramethylammonium thiocyanate	as per test
763	(Ig-2)	tetramethylammonium citrate	as per test
764	(Ig-2)	tetramethylammonium oxalate	as per test
765	(Ig-2)	tetramethylammonium formate	as per test
766	(Ig-2)	tetramethylammonium hydrogenphosphate	as per test
767	(Ig-2)	tetramethylammonium dihydrogenphosphate	as per test
768	(Ig-2)	tetraethylammonium sulphate	as per test
769	(Ig-2)	tetraethylammonium lactate	as per test
770	(Ig-2)	tetraethylammonium nitrate	as per test
771	(Ig-2)	tetraethylammonium thiosulphate	as per test
772	(Ig-2)	tetraethylammonium thiocyanate	as per test
773	(Ig-2)	tetraethylammonium citrate	as per test
774	(Ig-2)	tetraethylammonium oxalate	as per test
775	(Ig-2)	tetraethylammonium formate	as per test
776	(Ig-2)	tetraethylammonium hydrogenphosphate	as per test
777	(Ig-2)	tetraethylammonium dihydrogenphosphate	as per test
778	(Ig-3)	ammonium sulphate	as per test
779	(Ig-3)	ammonium lactate	as per test
780	(Ig-3)	ammonium nitrate	as per test

#	Active compound	Salt	Penetrant
781	(Ig-3)	ammonium thiosulphate	as per test
782	(Ig-3)	ammonium thiocyanate	as per test
783	(Ig-3)	ammonium citrate	as per test
784	(Ig-3)	ammonium oxalate	as per test
785	(Ig-3)	ammonium formate	as per test
786	(Ig-3)	ammonium hydrogenphosphate	as per test
787	(Ig-3)	ammonium dihydrogenphosphate	as per test
788	(Ig-3)	ammonium carbonate	as per test
789	(Ig-3)	ammonium benzoate	as per test
790	(Ig-3)	ammonium sulphite	as per test
791	(Ig-3)	ammonium benzoate	as per test
792	(Ig-3)	ammonium hydrogenoxalate	as per test
793	(Ig-3)	ammonium hydrogencitrate	as per test
794	(Ig-3)	ammonium acetate	as per test
795	(Ig-3)	tetramethylammonium sulphate	as per test
796	(Ig-3)	tetramethylammonium lactate	as per test
797	(Ig-3)	tetramethylammonium nitrate	as per test
798	(Ig-3)	tetramethylammonium thiosulphate	as per test
799	(Ig-3)	tetramethylammonium thiocyanate	as per test
800	(Ig-3)	tetramethylammonium citrate	as per test
801	(Ig-3)	tetramethylammonium oxalate	as per test
802	(Ig-3)	tetramethylammonium formate	as per test
803	(Ig-3)	tetramethylammonium hydrogenphosphate	as per test
804	(Ig-3)	tetramethylammonium dihydrogenphosphate	as per test
805	(Ig-3)	tetraethylammonium sulphate	as per test
806	(Ig-3)	tetraethylammonium lactate	as per test
807	(Ig-3)	tetraethylammonium nitrate	as per test
808	(Ig-3)	tetraethylammonium thiosulphate	as per test
809	(Ig-3)	tetraethylammonium thiocyanate	as per test
810	(Ig-3)	tetraethylammonium citrate	as per test
811	(Ig-3)	tetraethylammonium oxalate	as per test
812	(Ig-3)	tetraethylammonium formate	as per test
813	(Ig-3)	tetraethylammonium hydrogenphosphate	as per test
814	(Ig-3)	tetraethylammonium dihydrogenphosphate	as per test
815	(Ig-4)	ammonium sulphate	as per test
816	(Ig-4)	ammonium lactate	as per test
817	(Ig-4)	ammonium nitrate	as per test
818	(Ig-4)	ammonium thiosulphate	as per test
819	(Ig-4)	ammonium thiocyanate	as per test
820	(Ig-4)	ammonium citrate	as per test
821	(Ig-4)	ammonium oxalate	as per test
822	(Ig-4)	ammonium formate	as per test
823	(Ig-4)	ammonium hydrogenphosphate	as per test
824	(Ig-4)	ammonium dihydrogenphosphate	as per test
825	(Ig-4)	ammonium carbonate	as per test
826	(Ig-4)	ammonium benzoate	as per test

#	Active compound	Salt	Penetrant
827	(Ig-4)	ammonium sulphite	as per test
828	(Ig-4)	ammonium benzoate	as per test
829	(Ig-4)	ammonium hydrogenoxalate	as per test
830	(Ig-4)	ammonium hydrogencitrate	as per test
831	(Ig-4)	ammonium acetate	as per test
832	(Ig-4)	tetramethylammonium sulphate	as per test
833	(Ig-4)	tetramethylammonium lactate	as per test
834	(Ig-4)	tetramethylammonium nitrate	as per test
835	(Ig-4)	tetramethylammonium thiosulphate	as per test
836	(Ig-4)	tetramethylammonium thiocyanate	as per test
837	(Ig-4)	tetramethylammonium citrate	as per test
838	(Ig-4)	tetramethylammonium oxalate	as per test
839	(Ig-4)	tetramethylammonium formate	as per test
840	(Ig-4)	tetramethylammonium hydrogenphosphate	as per test
841	(Ig-4)	tetramethylammonium dihydrogenphosphate	as per test
842	(Ig-4)	tetraethylammonium sulphate	as per test
843	(Ig-4)	tetraethylammonium lactate	as per test
844	(Ig-4)	tetraethylammonium nitrate	as per test
845	(Ig-4)	tetraethylammonium thiosulphate	as per test
846	(Ig-4)	tetraethylammonium thiocyanate	as per test
847	(Ig-4)	tetraethylammonium citrate	as per test
848	(Ig-4)	tetraethylammonium oxalate	as per test
849	(Ig-4)	tetraethylammonium formate	as per test
850	(Ig-4)	tetraethylammonium hydrogenphosphate	as per test
851	(Ig-4)	tetraethylammonium dihydrogenphosphate	as per test
852	(Ig-5)	ammonium sulphate	as per test
853	(Ig-5)	ammonium lactate	as per test
854	(Ig-5)	ammonium nitrate	as per test
855	(Ig-5)	ammonium thiosulphate	as per test
856	(Ig-5)	ammonium thiocyanate	as per test
857	(Ig-5)	ammonium citrate	as per test
858	(Ig-5)	ammonium oxalate	as per test
859	(Ig-5)	ammonium formate	as per test
860	(Ig-5)	ammonium hydrogenphosphate	as per test
861	(Ig-5)	ammonium dihydrogenphosphate	as per test
862	(Ig-5)	ammonium carbonate	as per test
863	(Ig-5)	ammonium benzoate	as per test
864	(Ig-5)	ammonium sulphite	as per test
865	(Ig-5)	ammonium benzoate	as per test
866	(Ig-5)	ammonium hydrogenoxalate	as per test
867	(Ig-5)	ammonium hydrogencitrate	as per test
868	(Ig-5)	ammonium acetate	as per test
869	(Ig-5)	tetramethylammonium sulphate	as per test
870	(Ig-5)	tetramethylammonium lactate	as per test
871	(Ig-5)	tetramethylammonium nitrate	as per test
872	(Ig-5)	tetramethylammonium thiosulphate	as per test

#	Active compound	Salt	Penetrant
873	(Ig-5)	tetramethylammonium thiocyanate	as per test
874	(Ig-5)	tetramethylammonium citrate	as per test
875	(Ig-5)	tetramethylammonium oxalate	as per test
876	(Ig-5)	tetramethylammonium formate	as per test
877	(Ig-5)	tetramethylammonium hydrogenphosphate	as per test
878	(Ig-5)	tetramethylammonium dihydrogenphosphate	as per test
879	(Ig-5)	tetraethylammonium sulphate	as per test
880	(Ig-5)	tetraethylammonium lactate	as per test
881	(Ig-5)	tetraethylammonium nitrate	as per test
882	(Ig-5)	tetraethylammonium thiosulphate	as per test
883	(Ig-5)	tetraethylammonium thiocyanate	as per test
884	(Ig-5)	tetraethylammonium citrate	as per test
885	(Ig-5)	tetraethylammonium oxalate	as per test
886	(Ig-5)	tetraethylammonium formate	as per test
887	(Ig-5)	tetraethylammonium hydrogenphosphate	as per test
888	(Ig-5)	tetraethylammonium dihydrogenphosphate	as per test
889	(Ih-1)	ammonium sulphate	as per test
890	(Ih-1)	ammonium lactate	as per test
891	(Ih-1)	ammonium nitrate	as per test
892	(Ih-1)	ammonium thiosulphate	as per test
893	(Ih-1)	ammonium thiocyanate	as per test
894	(Ih-1)	ammonium citrate	as per test
895	(Ih-1)	ammonium oxalate	as per test
896	(Ih-1)	ammonium formate	as per test
897	(Ih-1)	ammonium hydrogenphosphate	as per test
898	(Ih-1)	ammonium dihydrogenphosphate	as per test
899	(Ih-1)	ammonium carbonate	as per test
900	(Ih-1)	ammonium benzoate	as per test
901	(Ih-1)	ammonium sulphite	as per test
902	(Ih-1)	ammonium benzoate	as per test
903	(Ih-1)	ammonium hydrogenoxalate	as per test
904	(Ih-1)	ammonium hydrogencitrate	as per test
905	(Ih-1)	ammonium acetate	as per test
906	(Ih-1)	tetramethylammonium sulphate	as per test
907	(Ih-1)	tetramethylammonium lactate	as per test
908	(Ih-1)	tetramethylammonium nitrate	as per test
909	(Ih-1)	tetramethylammonium thiosulphate	as per test
910	(Ih-1)	tetramethylammonium thiocyanate	as per test
911	(Ih-1)	tetramethylammonium citrate	as per test
912	(Ih-1)	tetramethylammonium oxalate	as per test
913	(Ih-1)	tetramethylammonium formate	as per test
914	(Ih-1)	tetramethylammonium hydrogenphosphate	as per test
915	(Ih-1)	tetramethylammonium dihydrogenphosphate	as per test
916	(Ih-1)	tetraethylammonium sulphate	as per test
917	(Ih-1)	tetraethylammonium lactate	as per test
918	(Ih-1)	tetraethylammonium nitrate	as per test

#	Active compound	Salt	Penetrant
919	(Ih-1)	tetraethylammonium thiosulphate	as per test
920	(Ih-1)	tetraethylammonium thiocyanate	as per test
921	(Ih-1)	tetraethylammonium citrate	as per test
922	(Ih-1)	tetraethylammonium oxalate	as per test
923	(Ih-1)	tetraethylammonium formate	as per test
924	(Ih-1)	tetraethylammonium hydrogenphosphate	as per test
925	(Ih-1)	tetraethylammonium dihydrogenphosphate	as per test
926	(Ih-2)	ammonium sulphate	as per test
927	(Ih-2)	ammonium lactate	as per test
928	(Ih-2)	ammonium nitrate	as per test
929	(Ih-2)	ammonium thiosulphate	as per test
930	(Ih-2)	ammonium thiocyanate	as per test
931	(Ih-2)	ammonium citrate	as per test
932	(Ih-2)	ammonium oxalate	as per test
933	(Ih-2)	ammonium formate	as per test
934	(Ih-2)	ammonium hydrogenphosphate	as per test
935	(Ih-2)	ammonium dihydrogenphosphate	as per test
936	(Ih-2)	ammonium carbonate	as per test
937	(Ih-2)	ammonium benzoate	as per test
938	(Ih-2)	ammonium sulphite	as per test
939	(Ih-2)	ammonium benzoate	as per test
940	(Ih-2)	ammonium hydrogenoxalate	as per test
941	(Ih-2)	ammonium hydrogencitrate	as per test
942	(Ih-2)	ammonium acetate	as per test
943	(Ih-2)	tetramethylammonium sulphate	as per test
944	(Ih-2)	tetramethylammonium lactate	as per test
945	(Ih-2)	tetramethylammonium nitrate	as per test
946	(Ih-2)	tetramethylammonium thiosulphate	as per test
947	(Ih-2)	tetramethylammonium thiocyanate	as per test
948	(Ih-2)	tetramethylammonium citrate	as per test
949	(Ih-2)	tetramethylammonium oxalate	as per test
950	(Ih-2)	tetramethylammonium formate	as per test
951	(Ih-2)	tetramethylammonium hydrogenphosphate	as per test
952	(Ih-2)	tetramethylammonium dihydrogenphosphate	as per test
953	(Ih-2)	tetraethylammonium sulphate	as per test
954	(Ih-2)	tetraethylammonium lactate	as per test
955	(Ih-2)	tetraethylammonium nitrate	as per test
956	(Ih-2)	tetraethylammonium thiosulphate	as per test
957	(Ih-2)	tetraethylammonium thiocyanate	as per test
958	(Ih-2)	tetraethylammonium citrate	as per test
959	(Ih-2)	tetraethylammonium oxalate	as per test
960	(Ih-2)	tetraethylammonium formate	as per test
961	(Ih-2)	tetraethylammonium hydrogenphosphate	as per test
962	(Ih-2)	tetraethylammonium dihydrogenphosphate	as per test
963	(Ih-3)	ammonium sulphate	as per test
964	(Ih-3)	ammonium lactate	as per test

#	Active compound	Salt	Penetrant
965	(Ih-3)	ammonium nitrate	as per test
966	(Ih-3)	ammonium thiosulphate	as per test
967	(Ih-3)	ammonium thiocyanate	as per test
968	(Ih-3)	ammonium citrate	as per test
969	(Ih-3)	ammonium oxalate	as per test
970	(Ih-3)	ammonium formate	as per test
971	(Ih-3)	ammonium hydrogenphosphate	as per test
972	(Ih-3)	ammonium dihydrogenphosphate	as per test
973	(Ih-3)	ammonium carbonate	as per test
974	(Ih-3)	ammonium benzoate	as per test
975	(Ih-3)	ammonium sulphite	as per test
976	(Ih-3)	ammonium benzoate	as per test
977	(Ih-3)	ammonium hydrogenoxalate	as per test
978	(Ih-3)	ammonium hydrogencitrate	as per test
979	(Ih-3)	ammonium acetate	as per test
980	(Ih-3)	tetramethylammonium sulphate	as per test
981	(Ih-3)	tetramethylammonium lactate	as per test
982	(Ih-3)	tetramethylammonium nitrate	as per test
983	(Ih-3)	tetramethylammonium thiosulphate	as per test
984	(Ih-3)	tetramethylammonium thiocyanate	as per test
985	(Ih-3)	tetramethylammonium citrate	as per test
986	(Ih-3)	tetramethylammonium oxalate	as per test
987	(Ih-3)	tetramethylammonium formate	as per test
988	(Ih-3)	tetramethylammonium hydrogenphosphate	as per test
989	(Ih-3)	tetramethylammonium dihydrogenphosphate	as per test
990	(Ih-3)	tetraethylammonium sulphate	as per test
991	(Ih-3)	tetraethylammonium lactate	as per test
992	(Ih-3)	tetraethylammonium nitrate	as per test
993	(Ih-3)	tetraethylammonium thiosulphate	as per test
994	(Ih-3)	tetraethylammonium thiocyanate	as per test
995	(Ih-3)	tetraethylammonium citrate	as per test
996	(Ih-3)	tetraethylammonium oxalate	as per test
997	(Ih-3)	tetraethylammonium formate	as per test
998	(Ih-3)	tetraethylammonium hydrogenphosphate	as per test
999	(Ih-3)	tetraethylammonium dihydrogenphosphate	as per test
1000	(Ih-4)	ammonium sulphate	as per test
1001	(Ih-4)	ammonium lactate	as per test
1002	(Ih-4)	ammonium nitrate	as per test
1003	(Ih-4)	ammonium thiosulphate	as per test
1004	(Ih-4)	ammonium thiocyanate	as per test
1005	(Ih-4)	ammonium citrate	as per test
1006	(Ih-4)	ammonium oxalate	as per test
1007	(Ih-4)	ammonium formate	as per test
1008	(Ih-4)	ammonium hydrogenphosphate	as per test
1009	(Ih-4)	ammonium dihydrogenphosphate	as per test
1010	(Ih-4)	ammonium carbonate	as per test

#	Active compound	Salt	Penetrant
1011	(Ih-4)	ammonium benzoate	as per test
1012	(Ih-4)	ammonium sulphite	as per test
1013	(Ih-4)	ammonium benzoate	as per test
1014	(Ih-4)	ammonium hydrogenoxalate	as per test
1015	(Ih-4)	ammonium hydrogencitrate	as per test
1016	(Ih-4)	ammonium acetate	as per test
1017	(Ih-4)	tetramethylammonium sulphate	as per test
1018	(Ih-4)	tetramethylammonium lactate	as per test
1019	(Ih-4)	tetramethylammonium nitrate	as per test
1020	(Ih-4)	tetramethylammonium thiosulphate	as per test
1021	(Ih-4)	tetramethylammonium thiocyanate	as per test
1022	(Ih-4)	tetramethylammonium citrate	as per test
1023	(Ih-4)	tetramethylammonium oxalate	as per test
1024	(Ih-4)	tetramethylammonium formate	as per test
1025	(Ih-4)	tetramethylammonium hydrogenphosphate	as per test
1026	(Ih-4)	tetramethylammonium dihydrogenphosphate	as per test
1027	(Ih-4)	tetraethylammonium sulphate	as per test
1028	(Ih-4)	tetraethylammonium lactate	as per test
1029	(Ih-4)	tetraethylammonium nitrate	as per test
1030	(Ih-4)	tetraethylammonium thiosulphate	as per test
1031	(Ih-4)	tetraethylammonium thiocyanate	as per test
1032	(Ih-4)	tetraethylammonium citrate	as per test
1033	(Ih-4)	tetraethylammonium oxalate	as per test
1034	(Ih-4)	tetraethylammonium formate	as per test
1035	(Ih-4)	tetraethylammonium hydrogenphosphate	as per test
1036	(Ih-4)	tetraethylammonium dihydrogenphosphate	as per test
1037	(Ih-5)	ammonium sulphate	as per test
1038	(Ih-5)	ammonium lactate	as per test
1039	(Ih-5)	ammonium nitrate	as per test
1040	(Ih-5)	ammonium thiosulphate	as per test
1041	(Ih-5)	ammonium thiocyanate	as per test
1042	(Ih-5)	ammonium citrate	as per test
1043	(Ih-5)	ammonium oxalate	as per test
1044	(Ih-5)	ammonium formate	as per test
1045	(Ih-5)	ammonium hydrogenphosphate	as per test
1046	(Ih-5)	ammonium dihydrogenphosphate	as per test
1047	(Ih-5)	ammonium carbonate	as per test
1048	(Ih-5)	ammonium benzoate	as per test
1049	(Ih-5)	ammonium sulphite	as per test
1050	(Ih-5)	ammonium benzoate	as per test
1051	(Ih-5)	ammonium hydrogenoxalate	as per test
1052	(Ih-5)	ammonium hydrogencitrate	as per test
1053	(Ih-5)	ammonium acetate	as per test
1054	(Ih-5)	tetramethylammonium sulphate	as per test
1055	(Ih-5)	tetramethylammonium lactate	as per test
1056	(Ih-5)	tetramethylammonium nitrate	as per test

#	Active compound	Salt	Penetrant
1057	(Ih-5)	tetramethylammonium thiosulphate	as per test
1058	(Ih-5)	tetramethylammonium thiocyanate	as per test
1059	(Ih-5)	tetramethylammonium citrate	as per test
1060	(Ih-5)	tetramethylammonium oxalate	as per test
1061	(Ih-5)	tetramethylammonium formate	as per test
1062	(Ih-5)	tetramethylammonium hydrogenphosphate	as per test
1063	(Ih-5)	tetramethylammonium dihydrogenphosphate	as per test
1064	(Ih-5)	tetraethylammonium sulphate	as per test
1065	(Ih-5)	tetraethylammonium lactate	as per test
1066	(Ih-5)	tetraethylammonium nitrate	as per test
1067	(Ih-5)	tetraethylammonium thiosulphate	as per test
1068	(Ih-5)	tetraethylammonium thiocyanate	as per test
1069	(Ih-5)	tetraethylammonium citrate	as per test
1070	(Ih-5)	tetraethylammonium oxalate	as per test
1071	(Ih-5)	tetraethylammonium formate	as per test
1072	(Ih-5)	tetraethylammonium hydrogenphosphate	as per test
1073	(Ih-5)	tetraethylammonium dihydrogenphosphate	as per test

Crop protection compositions according to the invention may also comprise further components, for example, surfactants and/or dispersing auxiliaries or emulsifiers.

Suitable nonionic surfactants and/or dispersing auxiliaries include all substances of this type that can usually be used in agrochemical compositions. Polyethylene oxide/polypropylene oxide block copolymers, polyethylene glycol ethers of straight-chain alcohols, reaction products of fatty acids with ethylene oxide and/or propylene oxide, furthermore polyvinyl alcohol, polyvinyl pyrrolidone, copolymers of polyvinyl alcohol and polyvinyl pyrrolidone and copolymers of (meth)acrylic acid and (meth)acrylic esters, and additionally alkyl ethoxylates and alkylaryl ethoxylates, which optionally may be phosphated and optionally may be neutralized with bases, examples of which may be mentioned being sorbitol ethoxylates, and also polyoxyalkyleneamine derivatives may be mentioned as being preferred.

Suitable anionic surfactants are all substances of this type that can usually be used in agrochemical compositions. Preference is given to alkali metal salts and alkaline earth metal salts of alkylsulphonic acids or alkylarylsulphonic acids.

A further preferred group of anionic surfactants and/or dispersing auxiliaries are the following salts that are of low solubility in plant oil: salts of polystyrenesulphonic acids, salts of polyvinylsulphonic acids, salts of naphthalenesulphonic acid/formaldehyde condensation products, salts of condensation products of naphthalenesulphonic acid, phenolsulphonic acid and formaldehyde, and salts of lignosulphonic acid.

Suitable additives which may be included in the formulations according to the invention are emulsifiers, foam inhibitors, preservatives, antioxidants, colorants and inert filling materials.

Preferred emulsifiers are ethoxylated nonylphenols, reaction products of alkylphenols with ethylene oxide and/or propylene oxide, ethoxylated arylalkylphenols, and also ethoxylated and propoxylated arylalkylphenols, and also sulphated or phosphated arylalkyl ethoxylates and/or arylalkyl ethoxypropoxylates, mention being made by way of example of sorbitan derivatives, such as polyethylene oxide sorbitan fatty acid esters and sorbitan fatty acid esters.

The examples below serve to illustrate the invention and should in no way be interpreted as being restrictive.

Activity increase through ammonium salts/phosphonium salts

The activity increase through ammonium salts or phosphonium salts is evident from the examples below. Whereas the salts alone, at the application rates employed, have no insecticidal activity, they effect a considerable activity increase as additives for insecticidally active compounds.

Example A

***Aphis gossypii* test**

Solvent: 7 parts by weight of dimethylformamide

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration. If addition of ammonium salts, phosphonium salts or penetrants is required, the appropriate amount is added by pipette after dilution of the respective finished preparation solution.

Single-leaf cotton plants (*Gossypium hirsutum*) which are heavily infested by the cotton aphid (*Aphis gossypii*) are treated by spraying of the upper side of the leaf (spray volume 600 l/ha) with the active compound preparation at the desired concentration.

After the desired period of time, the kill in % is determined. 100% means that all animals have been killed; 0% means that none of the animals have been killed.

Active compound	**Active compound g / ha**	**Kill rate after 3 days**	
		Without AS	**With AS 1 g/l**
(Ib-3)	**24**	**77**	**99**

AS = ammonium sulphate

Activity increase by ammonium salts/phosphonium salts in combination with penetrants

The data below confirm that ammonium salts or phosphonium salts are capable of increasing the activity even more, even when ready-to-use crop protection compositions comprising penetrants to increase activity are applied.

Example B

***Myzus persicae* test**

Solvent: 7 parts by weight of dimethylformamide

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration. If addition of ammonium salts, phosphonium salts or penetrants is required, the appropriate amount is added by pipette after dilution of the respective finished preparation solution. Single-leaf bell pepper plants (*Capsicum annuum*) which are heavily infested by the green peach aphid (*Myzus persicae*) are treated by spraying of the upper side of the leaf (spray volume 600 l/ha) with the active compound preparation at the desired concentration. After the desired period of time, the kill in % is determined. 100% means that all animals have been killed; 0% means that none of the animals have been killed.

Formulation	**Active compound g / ha**	**Kill rate after 6 days**	
		Without AS	**With AS 1 g/l**
(Ib-3) + RME (1 g/l)	**4.8**	**60**	**83**

RME = rapeseed oil methyl ester (amount formulated as 500 EW; concentration stated in g of active compound/l)

AS = ammonium sulphate

Example C

***Aphis gossypii* test**

Solvent:	7	parts by weight of dimethylformamide
Emulsifier:	1	part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration. If addition of ammonium salts, phosphonium salts or penetrants is required, the appropriate amount is added by pipette after dilution of the respective finished preparation solution.

Single-leaf cotton plants (*Gossypium hirsutum*) which are heavily infested by the cotton aphid (*Aphis gossypii*) are treated by spraying of the upper side of the leaf (spray volume 600 l/ha) with the active compound preparation at the desired concentration.

After the desired period of time, the kill in % is determined. 100% means that all animals have been killed; 0% means that none of the animals have been killed.

Active compound	**Active compound g / ha**	**Kill rate after 6 days**	
		Without AS	**With AS 1 g/l**
(Ib-3) + RME (1 g/l)	**4.8**	**83**	**96**

RME = rapeseed oil methyl ester (amount formulated as 500 EW; concentration stated in g of active compound/l)

AS = ammonium sulphate

Example D

Myzus persicae test

Solvent: 7 parts by weight of dimethylformamide

Emulsifier: 2 parts by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with emulsifier-containing water to the desired concentration. If addition of ammonium salts or ammonium salts and penetrant is required, the appropriate amount is added by pipette after dilution of the respective finished preparation solution (in each case 1000 ppm).

Bell pepper plants (*Capsicum annuum*) which are heavily infested by the green peach aphid (*Myzus persicaei*) are treated by spraying with the active compound preparation at the desired concentration.

After the desired period of time, the kill in % is determined. 100% means that all animals have been killed; 0% means that none of the animals have been killed.

In this test, for example, the following compounds of the preparation examples show good activity: see table

Active compound	**Active compound ppm**	**Kill rate after 6 days**	
		Without penetrant and AS	**With penetrant and AS**
Ia-1	**0.16**	**10**	**85**
Ia-2	**0.8**	**60**	**100**
Ia-3	**0.16**	**0**	**50**
Ia-4	**4**	**10**	**80**
Ia-5	**0.16**	**0**	**90**
Ia-6	**0.8**	**10**	**90**
Ia-7	**4**	**40**	**100**

Active compound	Active compound ppm	Kill rate after 6 days	
		Without penetrant and AS	With penetrant and AS
Ia-9	0.8	70	100
Ic-1	0.8	0	95
Id-1	0.8	0	90
Ie-2	0.16	10	95
If-1	0.16	20	85
If-2	0.16	0	50
Ih-1	0.8	20	98
Ih-2	0.8	80	98

Example E

Aphis gossypii test

Solvent: 7 parts by weight of dimethylformamide

Emulsifier: 2 parts by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with emulsifier-containing water to the desired concentration. If addition of ammonium salts or ammonium salts and penetrant is required, the appropriate amount is added by pipette after dilution of the respective finished preparation solution (in each case 1000 ppm).

Cotton leaves (*Gossypium hirsutum*) which are heavily infested by the cotton aphid (*Aphis gossypii*) are sprayed with an active compound preparation at the desired concentration.

After the desired period of time, the kill in % is determined. 100% means that all aphids have been killed; 0% means that none of the aphids have been killed.

In this test, for example, the following compounds show good activity: see table

Active compound	Active compound ppm	Kill rate after 6 days	
		Without penetrant and AS	With penetrant and AS
Ia-1	**0.16**	**0**	**40**
Ia-3	**0.16**	**0**	**70**
Ia-4	**0.8**	**0**	**35**
Ia-6	**0.8**	**25**	**99**
Ia-7	**4**	**15**	**95**
Ia-8	**0.8**	**65**	**95**
Ia-9	**0.8**	**80**	**100**
Ic-1	**0.8**	**5**	**60**
Id-1	**0.8**	**0**	**55**
Ie-2	**0.16**	**10**	**95**
If-1	**0.16**	**30**	**75**
If-2	**0.16**	**0**	**50**
Ih-1	**0.8**	**5**	**95**
Ih-2	**0.8**	**65**	**90**
Ih-3	**0.8**	**15**	**55**
Ih-4	**0.8**	**15**	**45**

Example F

Myzus persicae test

Solvent: 7 parts by weight of dimethylformamide

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration. If addition of ammonium salts or ammonium salts and penetrant is required, the appropriate amount is added by pipette after dilution of the respective finished preparation solution (in each case 1000 ppm).

Single-leaf bell pepper plants (*Capsicum annuum*) which are heavily infested by the green peach aphid (*Myzus persicaei*) are treated by spraying of the underside of the leaf with the active compound preparation at the desired concentration.

After the desired period of time, the kill in % is determined. 100% means that all animals have been killed; 0% means that none of the animals have been killed.

In this test, for example, the following compounds show good activity: see table

Active compound	**Active compound g/ha**	**Kill rate after 7 days**	
		Without penetrant and AS	**With penetrant and AS**
Ic-1	**0.48**	**0**	**67**

Example G

Myzus persicae test

Solvent: 7 parts by weight of dimethylformamide

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration. If addition of ammonium salts or ammonium salts and penetrant is required, the appropriate amount is added by pipette after dilution of the respective finished preparation solution (in each case 1000 ppm).

Single-leaf bell pepper plants (*Capsicum annuum*) which are heavily infested by the green peach aphid (*Myzus persicaei*) are treated by spraying of the upper side of the leaf with the active compound preparation at the desired concentration.

After the desired period of time, the kill in % is determined. 100% means that all animals have been killed; 0% means that none of the animals have been killed.

In this test, for example, the following compounds of the preparation examples show good activity: see table

Active compound	Active compound g/ha	Kill rate after 7 days	
		Without penetrant and AS	With penetrant and AS
Ic-1	**2.4**	**0**	**53**

Example H

Aphis gossypii test (APHIGO contact)

Solvent: 7 parts by weight of dimethylformamide

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration. If addition of ammonium salts or ammonium salts and penetrant is required, the appropriate amount is added by pipette after dilution of the respective finished preparation solution (in each case 1000 ppm).

Single-leaf cotton plants (*Gossypium hirsutum*) which are heavily infested by the cotton aphid (*Aphis gossypii*) are treated by spraying of the underside of the leaf with the active compound preparation at the desired concentration.

After the desired period of time, the kill in % is determined. 100% means that all animals have been killed; 0% means that none of the animals have been killed.

In this test, for example, the following compounds show good activity: see table

Active compound	Active compound g/ha	Kill rate after 7 days	
		Without penetrant and AS	With penetrant and AS
Ic-1	0.192	0	70

Example I

Aphis gossypii test (APHIGO translaminar)

Solvent: 7 parts by weight of dimethylformamide

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration. If addition of ammonium salts or ammonium salts and penetrant is required, the appropriate amount is added by pipette after dilution of the respective finished preparation solution (in each case 1000 ppm).

Single-leaf cotton plants (*Gossypium hirsutum*) which are heavily infested by the cotton aphid (*Aphis gossypii*) are treated by spraying of the upper side of the leaf with the active compound preparation at the desired concentration.

After the desired period of time, the kill in % is determined. 100% means that all animals have been killed; 0% means that none of the animals have been killed.

In this test, for example, the following compounds show good activity: see table

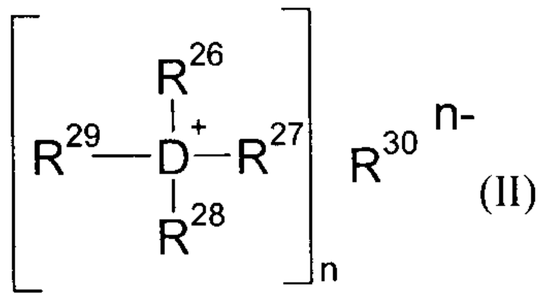
Active compound	Active compound g/ha	Kill rate after 7 days	
		Without penetrant and AS	With penetrant and AS
If-1	0.192	0	70

Claims

1. Composition comprising

- at least one insecticidally or acaricidally active compound

- at least one salt of the formula (II)



(II)

in which

D represents nitrogen or phosphorus,

R^{26}, R^{27}, R^{28} and R^{29} independently of one another represent hydrogen or in each case optionally substituted C_1-C_8-alkyl or mono- or polyunsaturated, optionally substituted C_1-C_8-alkylene, where the substituents may be selected from the group consisting of halogen, nitro and cyano,

n represents 1, 2, 3 or 4,

R^{30} represents an inorganic or organic anion.

2. Composition according to Claim 1, characterized in that the active compound is an inhibitor of the nicotinic acetylcholine receptor.

3. Composition according to Claim 1, characterized in that the active compound is a neonicotinoid.

4. Composition according to Claim 1, characterized in that the active compound is selected from the following list:

thiamethoxam

clothianidin

thiacloprid

dinotefuran

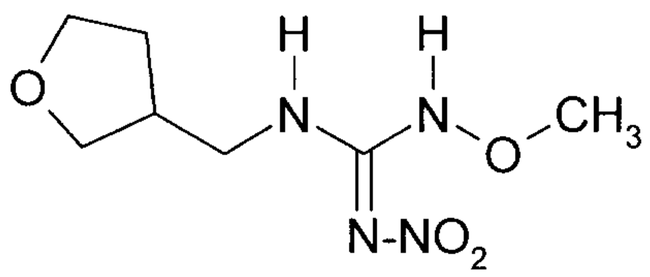
acetamiprid

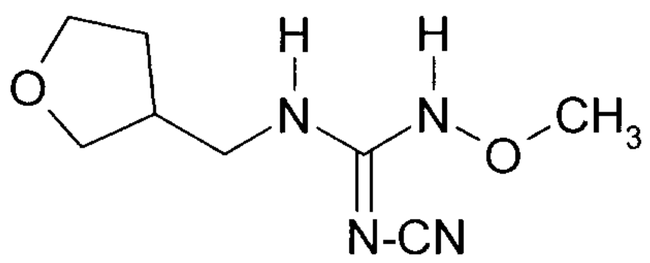
nitenpyram

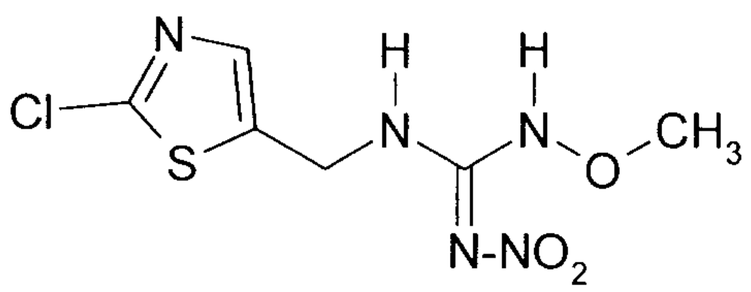
imidacloprid

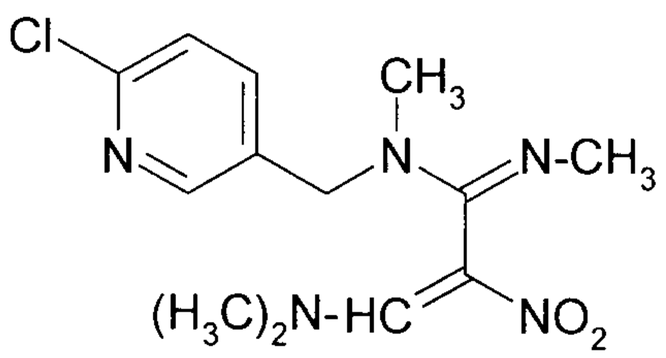
imidaclothiz

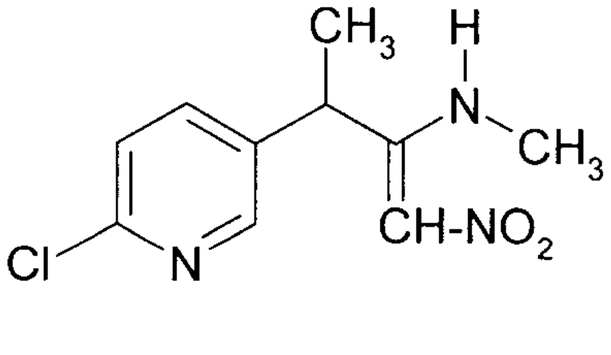
AKD-1022

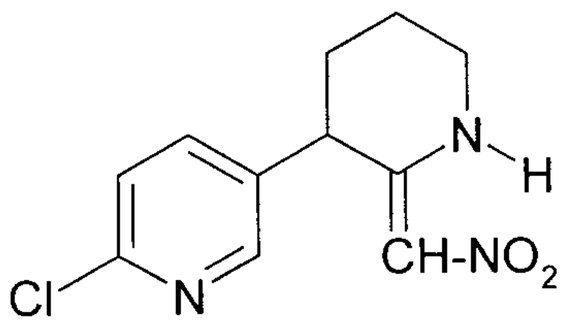


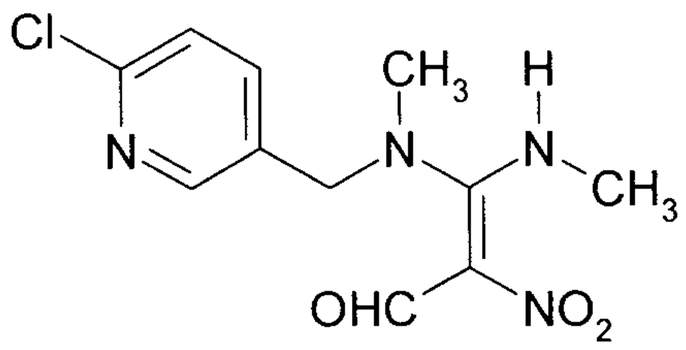


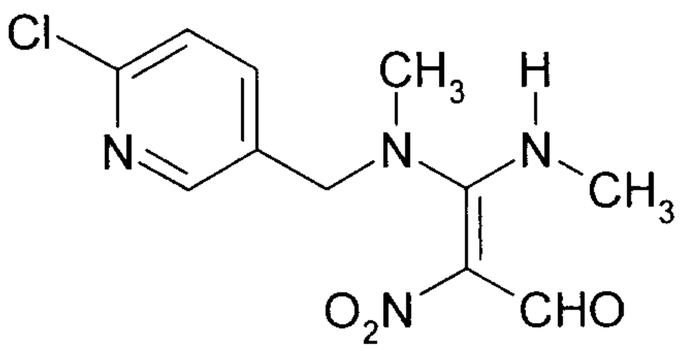


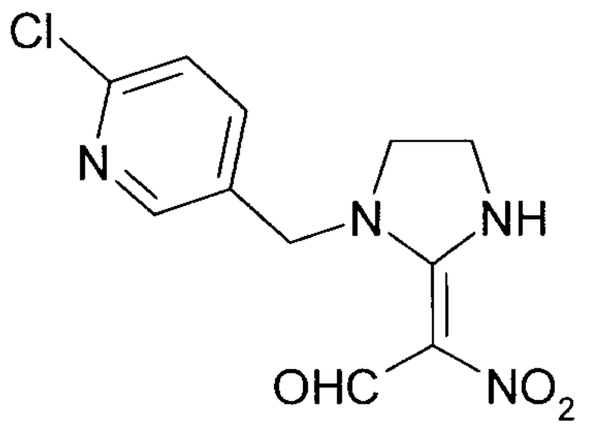


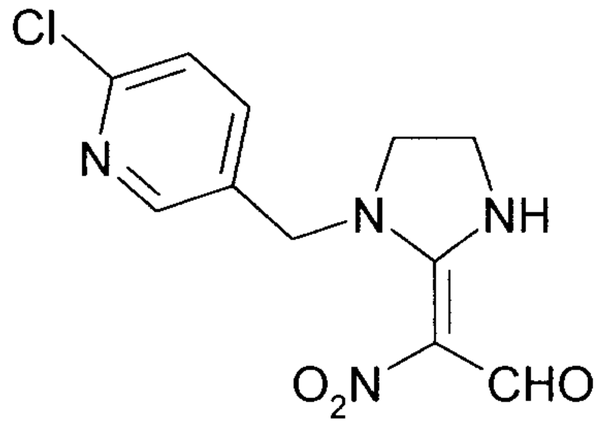


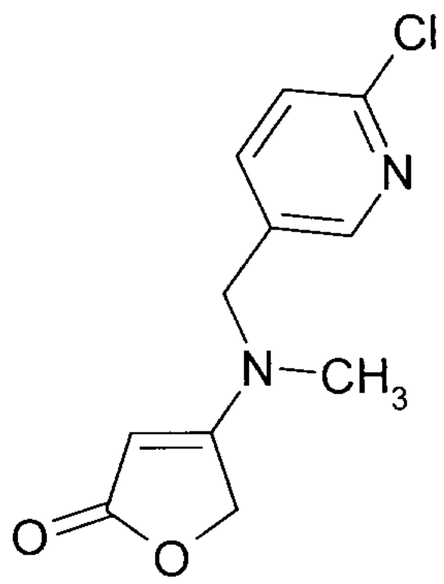


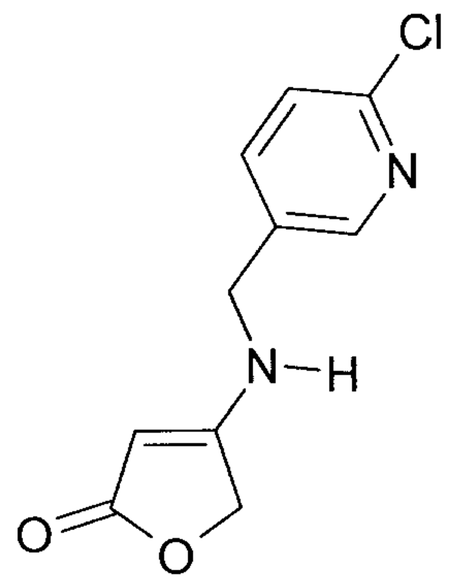


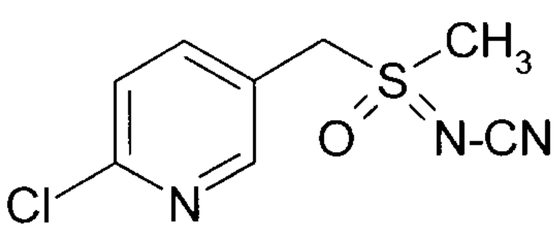


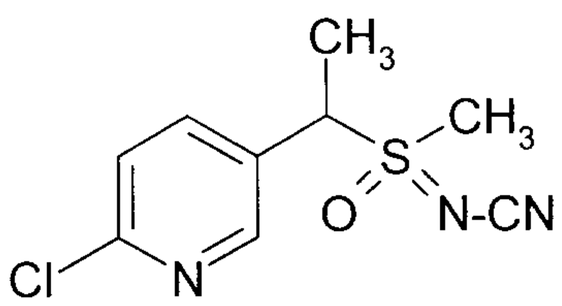


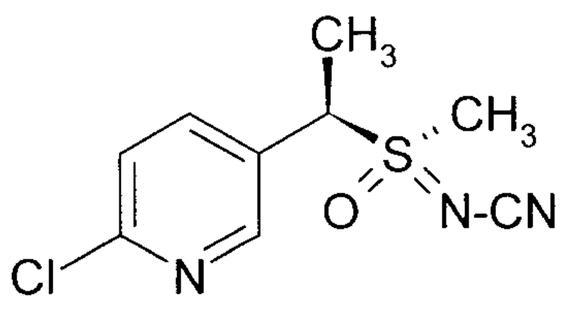


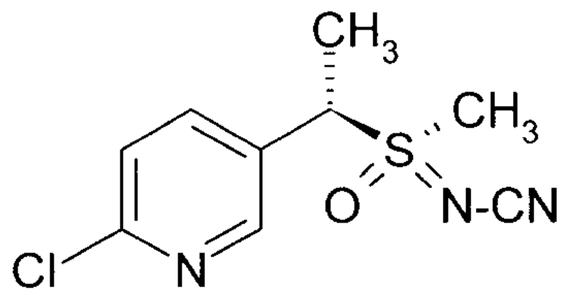


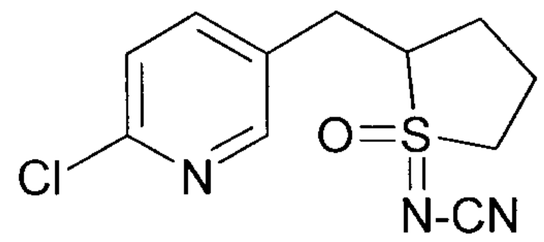


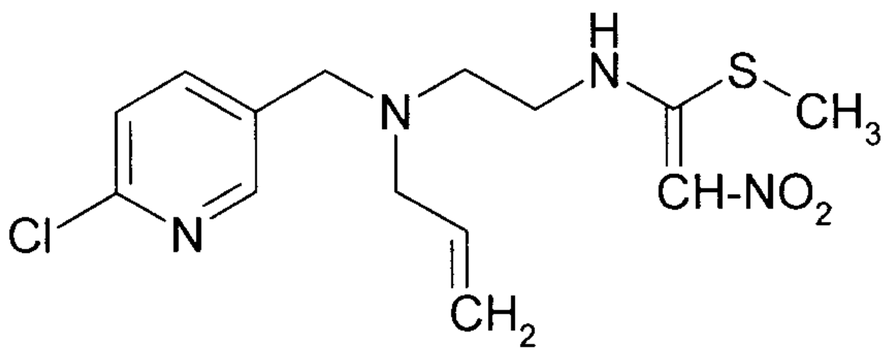


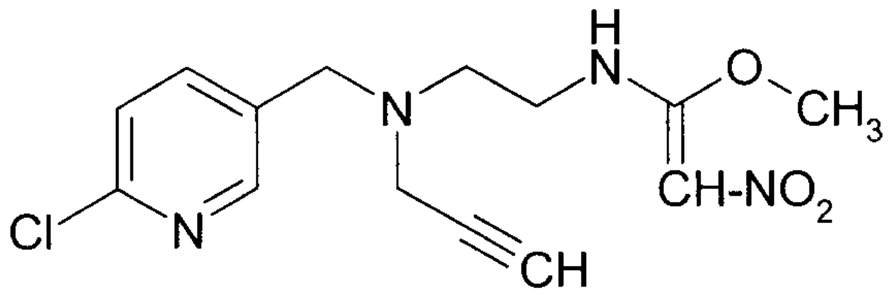


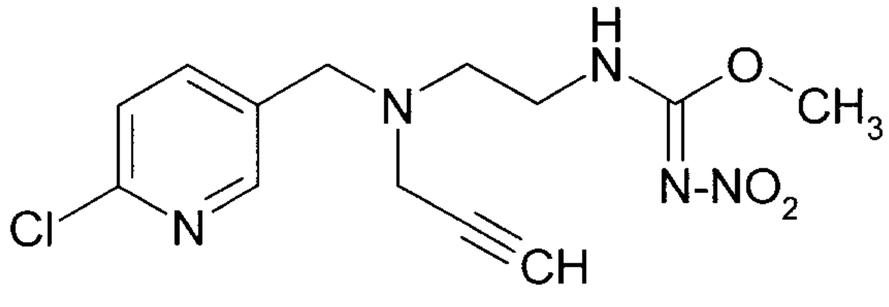


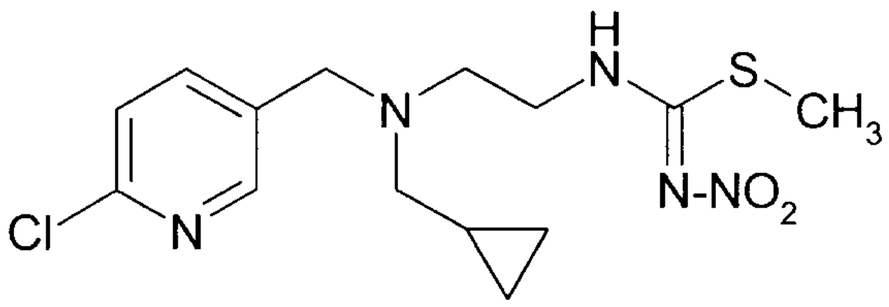


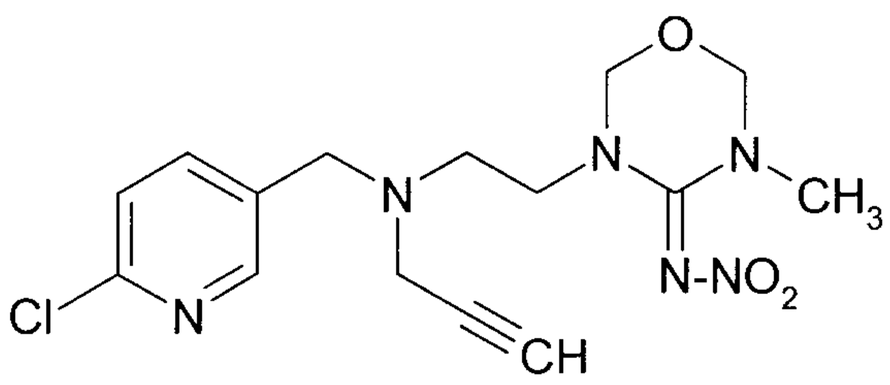












5. Composition according to one or more of Claims 1 to 4, characterized in that the active compound content is from 0.5 to 50% by weight.

6. Composition according to any of Claims 1 to 5, characterized in that D represents nitrogen.

7. Composition according to Claim 6, characterized in that R^{30} represents bicarbonate, tetraborate, fluoride, bromide, iodide, chloride, monohydrogenphosphate, dihydrogenphosphate, hydrogensulphate, tartrate, sulphate, nitrate, thiosulphate, thiocyanate, formate, lactate, acetate, propionate, butyrate, pentanoate, citrate or oxalate.

8. Composition according to Claim 6, characterized in that R^{30} represents carbonate, pentaborate, sulphite, benzoate, hydrogenoxalate, hydrogencitrate, methylsulphate or tetrafluoroborate.

9. Composition according to Claim 6, characterized in that R^{30} represents lactate, sulphate, nitrate, thiosulphate, thiocyanate, citrate, oxalate or formate.

10. Composition according to Claim 6, characterized in that R^{30} represents sulphate.

11. Composition according to Claim 6, characterized in that the salt of the formula (II) is ammonium sulphate.

12. Composition according to any of Claims 1 to 11, characterized in that it comprises at least one penetrant.

13. Composition according to Claim 12, characterized in that the penetrant is a fatty alcohol alkoxylate of the formula (III)

$$R\text{-}O\text{-}(\text{-}AO)_V\text{-}R' \qquad (III)$$

in which

R represents straight-chain or branched alkyl having 4 to 20 carbon atoms,

R' represents hydrogen, methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, t-butyl, n-pentyl or n-hexyl,

AO represents an ethylene oxide radical, a propylene oxide radical, a butylene oxide radical or represents mixtures of ethylene oxide and propylene oxide radicals or butylene oxide radicals and

v represents numbers from 2 to 30,

or a mineral or vegetable oil or the ester of a mineral or vegetable oil.

14. Composition according to Claim 12, characterized in that the penetrant is the ester of a vegetable oil.

15. Composition according to Claim 12, characterized in that the penetrant is rapeseed oil methyl ester.

16. Composition according to one or more of Claims 12 to 15, characterized in that the content of penetrant is from 1 to 95% by weight.

17. Method of controlling harmful insects, characterized in that a composition according to one or more of Claims 1 to 16 is applied neat or diluted to the insects or their habitat in such an amount that an effective amount of the insecticidally active compounds contained therein acts on the insects or their habitat.

18. Method of increasing the activity of crop protection compositions comprising an active compound from the class of the neonicotinoids, characterized in that the ready-to-use composition (spray liquor) is prepared using a salt of the formula (II).

19. Method according to Claim 18, characterized in that the spray liquor is prepared using a penetrant.

20. Method according to Claim 18 or 19, characterized in that the salt of the formula (II) is present in a final concentration of from 0.75 to 37.5 mmol/l.

21. Method according to Claim 19, characterized in that the penetrant is present in a final concentration of from 0.1 to 10 g/l.

22. Method according to Claim 19, characterized in that the penetrant is present in a final concentration of from 0.1 to 10 g/l and the salt of the formula (II) is present in a final concentration of from 0.75 to 37.5 mmol/l.

23. Use of a salt of the formula (II) according to Claim 1 for increasing the activity of a crop protection composition comprising an active compound from the class of the inhibitors of the nicotinic acetylcholine receptor, characterized in that the salt is used in preparing a ready-to-use crop protection composition (spray liquor).

24. Use according to Claim 23, characterized in that the salt of the formula (II) is present in the ready-to-use crop protection composition in a concentration of from 0.5 to 80 mmol/l.

25. Use according to Claim 23 or 24, characterized in that the salt is used in preparing a ready-to-use crop protection composition (spray liquor) that furthermore comprises a penetrant.

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