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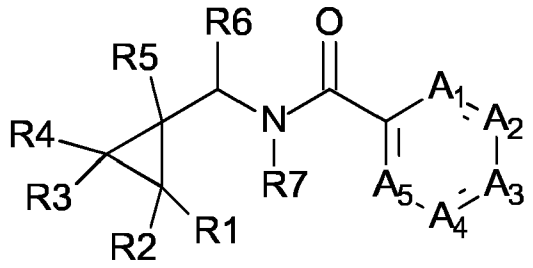
(54) **Title**: PESTICIDAL COMPOUNDS



(I)

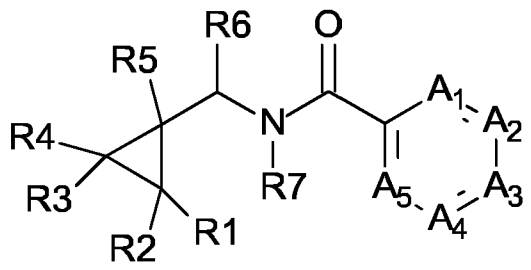
(57) **Abstract**: A compound of formula (I) wherein R1 to R4 are, for example, each hydrogen, R5 is, for example, a substituted phenol; R6 is, for example, hydrogen; R7 is, for example, hydrogen, cyano, hydroxyl, formyl, C1 -C4-alkyl, C1 -C4-alkoxy, C2-C4-alkenyl, or C2-C4-alkynyl; and A1 to A5 is, for example, A1 is N or C-X, A3 is C-X, and A2, A4 and A5 are C-H, where X, is, for example, halogen; and its use as a pesticidal agent.

PESTICIDAL COMPOUNDS

The present invention relates to certain N-[1-(2-phenyl)cyclopropylmethyl]heteroaryl carboxamide derivatives, to processes for their preparation, to compositions comprising those compounds, and to their use in agriculture and veterinary fields. and fields relying on pest management. The compounds are especially active for controlling damage to plants by pests and fungal diseases in agriculture.

Inventors have found that certain N-[1-(2-phenyl)cyclopropylmethyl]heteroaryl carboxamide derivatives are especially active for controlling damage by pests & fungal diseases, in particular nematode pests.

Accordingly, the present invention relates to a compound of formula (I) compound of the formula (I) wherein



(I) ,

wherein

R1 is hydrogen, methyl or a halogen;

R2 is hydrogen, methyl or a halogen;

R3 is hydrogen, methyl or a halogen;

R4 is hydrogen, methyl or a halogen;

R5 is substituted or unsubstituted phenyl group;

R6 is hydrogen or C1-C4-alkyl;

R7 is hydrogen, cyano, hydroxyl, formyl, C1-C4-alkyl, C1-C4-alkoxy, C2-C4-alkenyl, C2-C4-alkynyl, C1-C4-alkoxy- C1-C4-alkyl, C1-C4-cyanoalkyl, C1-C4-alkylcarbonyl, C1-C4-alkoxycarbonyl, benzyl, C3-C6-cycloalkylcarbonyl or C3-C6-cycloalkoxycarbonyl;

A1 is N, C-H or C-X;

A2 is N, C-H or C-X;

A3 is N, C-H or C-X;

A4 is N, C-H or C-X;

A5 is N, C-H or C-X;

provided wherein A1 & A5 are each N, then A2 to A4 are independently selected from CH, CX and N; or wherein A2 is CX, then A1, A3 to A5 are independently selected from CH, N or CX; or wherein A1 is CX and A5 is N, then A2 to A4 are independently selected from CX

and CH; or wherein A1 is CX and A5 is CH, then one of A2 to A4 is CX and the remaining are each CH; or wherein A1 is CX and A4 is N, then A2, A3 and A5 are independently selected from CX and CH;

X is a halogen, OH, cyano, C1-C4-alkyl, C1-C4-haloalkyl, C1-C4-alkoxy or C1-C4-haloalkoxy;

with the proviso that at most three of A1 to A5 are N;

as well as its acceptable salts, enantiomers, diastereomers, tautomers, and N-oxides.

The compounds of formula (I) and, where appropriate, the tautomers thereof, in each case in free form or in salt form, can be present in the form of one of the isomers which are possible or as a mixture of these, for example in the form of pure isomers, such as antipodes and/or diastereomers, or as isomer mixtures, such as enantiomer mixtures, for example racemates, diastereomer mixtures or racemate mixtures, depending on the number, absolute and relative configuration of asymmetric carbon atoms which occur in the molecule and/or depending on the configuration of non-aromatic double bonds which occur in the molecule; the invention relates to the pure isomers and also to all isomer mixtures which are possible and is to be understood in each case in this sense hereinabove and hereinbelow, even when stereochemical details are not mentioned specifically in each case. This invention accordingly covers all such isomers and tautomers and mixtures thereof in all proportions as well as isotopic forms such as deuterated compounds. As an example, the compounds of the invention may contain one or more asymmetric carbon atoms, for example, at the $-CR^6-$, $-CR^5-$, $-CR^1R^2-$, and $-CR^3R^4-$ groups, and the compounds of formula (I) may exist as enantiomers (or as pairs of diastereoisomers) or as mixtures of such.

The invention also covers salts and N-oxides of each compound for formula (I).

One skilled in the art also recognizes that because in the environment and under physiological conditions salts of chemical compounds are in equilibrium with their corresponding non salt forms, salts share the biological utility of the non salt forms.

Thus a wide variety of salts of compounds of the invention (and active ingredients used in combination with the active ingredients of the invention) may be useful for control of invertebrate pests and animal parasites. Salts amongst agriculturally and/or physiologically tolerable salts include acid-addition salts with inorganic or organic acids such as hydrobromic, hydrochloric, nitric, phosphoric, sulfuric, acetic, butyric, fumaric, lactic, maleic, malonic, oxalic, propionic, salicylic, tartaric, 4-toluenesulfonic or valeric acids.

Suitable amongst agriculturally and/or physiologically tolerable salts can also be the salts of those cations which do not adversely affect the pesticidal and/or parasiticidal action of the compounds of formula (I). Thus, especially suitable cations are the ions of the alkali metals including sodium, potassium and lithium, of the alkaline earth metals including calcium and magnesium, and of the transition metals including manganese, copper, iron, zinc, cobalt, lead, silver, nickel, and also ammonium or organic ammonium including monoalkylammonium, dialkylammonium, trialkylammonium, tetraalkylammonium, monoalkenylammonium, dialkenylam onium, trialkenylam onium, monoalkynylammonium, dialkynyla monium, monoalkanolammonium, dialkanolammonium, C5-C6-cycloalkylammonium, piperidinium, morpholinium, pyrrolidinium, or benzylammonium, moreover phosphonium ions, sulfonium ions, preferably tri(C1-C4 -alkyl) sulfonium and sulfoxonium ions, preferably tri (C1-C4 -alkyl) sulfoxonium.

Alkyl groups (either alone or as part of a larger group, such as alkoxy-, alkylsulfanyl-, alkylsulfinyl-, alkylsulfonyl-, alkylcarbonyl- or alkoxycarbonyl-) can be in the form of a straight or branched chain and are, for example, methyl, ethyl, propyl, prop-2-yl, butyl, but-2-yl, or 2-methyl-prop-2-yl. The alkyl group (either alone or as part of a larger group, such as alkoxy-, alkylsulfanyl-, alkylsulfinyl-, alkylsulfonyl-, alkylcarbonyl- or alkoxycarbonyl-), in each embodiment of the invention, is preferably C1-C3-alkyl, more preferably C1-C2-alkyl, especially methyl group. In the instance of alkoxy, examples are methoxy, ethoxy, propoxy, n-butoxy, isobutoxy and also their isomeric groups; preferably, independent of other embodiments, methoxy and ethoxy, especially methoxy.

Alkenyl groups can be in the form of straight or branched chains, and can be, where appropriate, of either the (E)- or (Z)-configuration. Examples are vinyl and allyl. The alkenyl group, in each embodiment of the invention, is preferably a C2-C3 -alkenyl group, more preferably vinyl or allyl group.

Alkynyl groups can be in the form of straight or branched chains. Examples are ethynyl and propargyl. The alkynyl group, in each embodiment of the invention, is preferably a C2-C3-alkynyl group, more preferably propargyl group.

Halogen is fluorine, chlorine, bromine or iodine; halogen, in each embodiment of the invention, is fluorine, chlorine, or bromine; especially fluorine or chlorine.

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

haloalkylsulfanyl-, haloalkylsulfinyl- or haloalkylsulfonyl-), in each embodiment of the invention, haloakyl is preferably trifluromethyl. In instance of haloalkoxy, examples are fluoromethoxy, difluoromethoxy, trifluoromethoxy, 2,2,2-trifluoroethoxy, 1,1,2,2-tetrafluoroethoxy, 2-fluoroethoxy, 2-chloroethoxy, 2,2-difluoroethoxy and 2,2,2-trichloroethoxy; preferably difluoromethoxy, 2,2,2-trifluoroethoxy, 2-chloroethoxy and trifluoromethoxy

Cycloalkyl groups are mono-cyclic and are, for example, cyclopropyl, cyclobutyl, cyclopentyl and cyclohexyl. The C3-C6-cycloalkyl group, in each embodiment of the invention, is preferably a C3-C5-cycloakyl, more preferably a C3-C4-cycloalkyl group, especially a C3-cycloalkyl group. Where a cycloalkyl moiety is said to be substituted, the cycloalkyl moiety is preferably substituted by one to four substituents, most preferably by one to three substituents, such as one or two substituents, especially one substitutent.

Alkoxycarbonyl is, for example, methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl, isopropoxycarbonyl, n-butoxycarbonyl, isobutoxycarbonyl, sec-butoxycarbonyl and tert-butoxycarbonyl; preferred are methoxycarbonyl, ethoxycarbonyl and isopropoxycarbonyl.

Alkylsulfanyl group is, for example, methylsulfanyl, ethylsulfanyl, propylsulfanyl, isopropylsulfanyl, n-butylsulfanyl, isobutylsulfanyl, sec-butylsulfanyl and tert-butylsulfanyl Examples of haloalkylsulfanyl are chloro- and/or fluoro-halogenated substituents thereof, such as difluoromethylsulfanyl, trifluoromethylsulfanyl, chlorodifluoromethylsulfanyl and 2,2,2-trifluoro-ethylsulfanyl.

Alkylsulfinyl is, for example, methylsulfinyl, ethylsulfinyl, propylsulfinyl, isopropylsulfinyl, n-butylsulfinyl, isobutylsulfinyl, sec-butylsulfinyl, and tert-butylsulfinyl. Examples of haloakylsulfinyl are chloro- and/or fluoro-halogenated substituents thereof, such as difluoromethylsulfinyl, trifluoromethylsulfinyl, chlorodifluoromethylsulfinyl and 2,2,2-trifluoro-ethylsufhinyl.

Alkylsulfonyl group is, for example, methylsulfonyl, ethylsulfonyl, propylsulfonyl, isopropylsulfonyl, n-butylsulfonyl, isobutylsulfonyl, sec-butylsulfonyl and tert-butylsulfonyl. Examples of haloakylsulfonyl are chloro- and/or fluoro-halogenated substituents thereof, such as difluoromethylsulfonyl, trifluoromethylsulfonyl, chlorodifluoromethylsulfonyl and 2,2,2-trifluoro-ethylsulfonyl.

Alkoxyalkyl is, for example, methoxymethyl, 2-methoxyethyl, ethoxymethyl, 2-ethoxyethyl, n-propoxymethyl, 2-n-propoxyethyl, isopropoxymethyl and 1-isopropoxyethyl. The alkoxyalkyl group, in each embodiment of the invention,is preferably a C1-C4-alkoxy-

C1-C4-alkyl, more preferably a C1-C2-alkoxy-methyl, such as methoxymethyl and ethoxymethyl groups.

Aryl groups (either alone or as part of a larger group, such as aryl-alkylene-) are aromatic ring systems which can be mono-, bi- or tricyclic. Examples of such rings include phenyl, naphthyl, anthracenyl, indenyl or phenanthrenyl. Preferred aryl groups are phenyl and naphthyl, phenyl being most preferred.

Examples of cycloalkylcarbonyl are cyclopropylcarbonyl, cyclobutylcarbonyl, cyclopentylcarbonyl and cyclohexylcarbonyl; preferred are cyclopropylcarbonyl and cyclobutylcarbonyl.

Examples of cycloalkoxycarbonyl are cyclopropyloxycarbonyl, cyclobutyloxycarbonyl, cyclopentyloxycarbonyl and cyclohexyloxycarbonyl; preferred are cyclopropyloxycarbonyl and cyclobutyloxycarbonyl,

In an embodiment, independent of other embodiments, at least two of R1, R2, R3 and R4 for the compound of formula (I) are hydrogens; preferably at least three; especially each of R1, R2, R3 and R4 is hydrogen.

In an embodiment, independent of other embodiments, at least one, preferably one, of R1, R2, R3 and R4 for the compound of formula (I) is halogen or methyl.

In an embodiment, independent of other embodiments, R5 is unsubstituted phenyl.

In an embodiment, independent of other embodiments, R5 is substituted phenyl having 1 - 5 substituents.

In an embodiment, independent of other embodiments, R5 is substituted phenyl having 1 – 3 substituents.

In an embodiment, independent of other embodiments, R5 is substituted phenyl having 2 substitutents.

In an embodiment, independent of other embodiments, R5 is substituted phenyl having 1 substituent.

In an embodiment, independent of other embodiments, if R5 is a substituted phenyl, the substituent(s) is, independently selected, from halogen, cyano, C1-C4-alkyl, C1-C4-haloalkyl, C1-C4-alkoxy, C1-C4-haloalkoxy, C1-C4-alkylsulfanyl, C1-C4-haloalkylsulfanyl, C1-C4-alkylsulfinyl, C1-C4-haloalkylsulfinyl, C1-C4-alkylsulfonyl, C1-C4-haloalkylsulfonyl, C3–C6-cycloalkyl, which cycloalkyl is unsubstituted or substituted by one or more substituents Rx, where Rx is, independently of each other, is selected from halogen, C1-C4-alkyl, and C1-C4-haloalkyl.

In an embodiment, independent of other embodiments, if R5 is a substituted phenyl, the substituent(s) is, independently selected, from halogen, cyano, C1-C4-alkyl,

C1-C4-haloalkyl, C1-C4-haloalkoxy, and C3–C6-cycloalkyl, which cycloalkyl is unsubstituted or substituted by one or more substituents Rx, where Rx is, independently of each other, is selected from halogen, C1-C4-alkyl, and C1-C4-haloalkyl; preferably the substituent(s) is, independently selected, from cyano, halogen, and C1-C4-haloalkyl.

In an embodiment R5 is a cyano substituted phenyl (which is optionally further substituted by halogen or trifluoromethyl), 2-fluoro-4-trifluoromethly phenyl, 2,6-difluoro-4-chloro-phenyl, 2,4-difluorophenyl, 2,4,6-trifluoro phenyl, 2-fluoro-4-chloro phenyl, 2-fluoro-4-bromo phenyl, 2-chloro-4-fluoro phenyl, 2-chloro-4-trifluoromethyl phenyl, 3,4,5-trifluoro phenyl, 2, 4-dichloro-6-fluoro phenyl, 2, 4-dibromo phenyl or 2,4 dichlorophenyl, wherein in each case phenyl stands for phen-1-yl.

In an embodiment, independent of other embodiments, R5 is any one of the R5 substituents depicted in Table P below.

In an embodiment, independent of other embodiments, R6 is hydrogen or C1-C2-alkyl, preferably hydrogen or methyl.

In an embodiment, independent of other embodiments, R7 is selected from hydrogen, cyano, hydroxyl, formyl, C1-C4-alkyl, C1-C4-alkoxy, C2-C4-alkenyl, C2-C4-alkynyl, C1-C4-alkoxy- C1-C4-alkyl, C1-C4-alkylcarbonyl, C1-C4-alkoxycarbonyl and benzyl. Preferably R7 is hydrogen, hydroxyl, C1-C2-alkyl, C1-C2-alkoxy, C2-alkenyl, C3-alkynyl, C1-C2-alkoxy-C1-alkyl, C1-C2-alkylcarbonyl, and C1-C2-alkoxycarbonyl, especially hydrogen, hydroxyl, methyl, cyano, formyl, methoxy, allyl, propargyl, methoxycarbonyl, methoxymethyl and benzyl; especially R7 is hydrogen.

In a preferred group of compounds of formula (I), R1 to R4 are each hydrogen; R5 is a substituted or unsubstituted phenyl; R6 is hydrogen or C1-C4-alkyl; R7 is hydrogen, C1-C4-alkylcarbonyl, or C1-C4-alkoxycarbonyl; and A1 & A5 are each N, then A2 to A4 are independently selected from CH, CX and N; or A2 is CX, then A1, A3 to A5 are independently selected from CH, N or CX; or A1 is CX and A5 is N, then A2 to A4 are independently selected from CX and CH; or A1 is CX and A5 is CH, then one of A2 to A4 is CX and the remaining are each CH; or A1 is CX and A4 is N, then A2, A3 and A5 are independently selected from CX and CH; wherein X, independent of each other, is a halogen, C1-C4-alkyl, or C1-C4-haloalkyl.

In a further preferred group of compounds of formula (I), R1 to R4 are each hydrogen; R5 is a di or tri-substituted phenyl, wherein the substituents are independently selected from halogen, cyano, C1-C4-haloalkyl, C1-C4-haloalkoxy, and C3–C6-cycloalkyl, which cycloalkyl is unsubstituted or substituted by one or more substituents Rx, where Rx is, independently of each other, is selected from halogen, C1-C4-alkyl, and C1-C4-

haloalkyl.; R6 is hydrogen or C1-C4-alkyl; R7 is hydrogen, C1-C4-alkylcarbonyl, or C1-C4 alkoxycarbonyl; and and A1 & A5 are each N, then A2 to A4 are independently selected from CH, CX and N; or A2 is CX, then A1, A3 to A5 are independently selected from CH, N or CX; or A1 is CX and A5 is N, then A2 to A4 are independently selected from CX and CH; or A1 is CX and A5 is CH, then one of A2 to A4 is CX and the remaining are each CH; or A1 is CX and A4 is N, then A2, A3 and A5 are independently selected from CX and CH; wherein X, independent of each other, is a halogen, C1-C4-alkyl, or C1-C4-haloalkyl; with the proviso that at most three of A1 to A5 are N; as well as its acceptable salts, enantiomers, diastereomers, tautomers, and N-oxides.

In another preferred group of compounds of formula (I), R1 to R4 are each hydrogen; R5 is a substituted or unsubstituted phenyl; R6 is hydrogen or C1-C4-alkyl; R7 is hydrogen, C1-C4-alkylcarbonyl, or C1-C4-alkoxycarbonyl; A1 is other than C-halogen, A2 is N, and A3, A4 and A5 are independently selected from CX and CH; wherein X, independent of each other, is a halogen, C1-C4-alkyl, or C1-C4-haloalkyl, as well as its acceptable salts, enantiomers, diastereomers, tautomers, and N-oxides. Preferably, in this group of compounds, A1 is C-C1-C4-haloalkyl, A2 is N, and A3, A4 and A5 are independently selected from CX and CH; wherein X , independent of each other, is a halogen, C1-C4-alkyl or C1-C4-haloalkyl; preferably A1 is C-CF3, A2 is N, and A3, A4 and A5 are each CH.

In an embodiment, independent of other embodiments, X, independent of each other, is a halogen, C1-C4-alkyl, or C1-C4-haloalkyl, preferably selected from bromine, chlorine, fluorine, trifluoromethyl and difluoromethyl; especially selected from chlorine, fluorine, methyl and trifluoromethyl.

In another preferred group of compounds of formula (I), R1 to R4 are each hydrogen; R5 is selected from cyano substituted phenyl (which is optionally further substituted by halogen or trifluoromethyl), 2-fluoro-4-trifluoromethly phenyl, 2,6-difluoro-4-chloro-phenyl, 2,4-difluorophenyl, 2,4,6-trifluoro phenyl, 2-fluoro-4-chloro phenyl, 2-fluoro-4-bromo phenyl, 2-chloro-4-fluoro phenyl, 2-chloro-4-trifluoromethyl phenyl, 3,4,5-trifluoro phenyl, 2, 4-dichloro-6-fluoro phenyl, and 2, 4-dibromo phenyl; R6 is hydrogen or C1-C4-alkyl; R7 is hydrogen, C1-C4-alkylcarbonyl, or C1-C4-alkoxycarbonyl; and A1 is C-X, and A2 to A5 are each CH; or A1 and A5 are each C-X, and A2 to A4 are each CH; or A1 is C-X, A2 and A5 are each N, and A3 and A4 are each CH; or A1 is C-X, A2 is N, and A3 to A5 are each CH, wherein X is independently selected from halogen, C-C4-alkyl or C-1-C4-haloalkyl, as well as its acceptable salts, enantiomers, diastereomers, tautomers, and N-oxides. Preferably X is, independently of the A1 to A5 configuration and independently

of X within a A1 to A5 configuration, selected from chlorine, fluorine, trifluoromethyl and difluoromethyl; In a preferred embodiment, A1 is C-CF3, and A2 to A5 are each CH; or A1 and A5 are each C-F, and A2 to A4 are each CH; or A1 is C-CF3 or Cl, A2 and A5 are each N, and A3 and A4 are each CH; or A1 is C-CF3, A2 is N, and A3 to A5 are each CH.

In another preferred group of compounds of formula (I), R1 to R4 are each hydrogen; R5 is 2, 4-chloro phenyl; R6 is hydrogen or C1-C4-alkyl; R7 is hydrogen, C1-C4-alkylcarbonyl, or C1-C4-alkoxycarbonyl; and A1 is C-Cl, and A2 to A5 are each CH; or A1 is C-F, A2 and A5 are each N, and A3 and A4 are each CH; or or A1 and A5 are each C-Cl or C-CF3 and A2 to A4 are each CH; or A1 is C-F or C-CF3, A2 is N, and A3 to A5 are each CH; or A1 & A5 are each N, then A2 to A4 are independently selected from CH, CX and N; or A2 is CX, then A1, A3 to A5 are independently selected from CH, N or CX; or A1 is CX and A5 is N, then A2 to A4 are independently selected from CX and CH; or A1 is CX and A5 is CH, then one of A2 to A4 is CX and the remaining are each CH; or A1 is CX and A4 is N, then A2, A3 and A5 are independently selected from CX and CH; wherein X, independent of each other, is a halogen, C1-C4-alkyl, or C1-C4-haloalkyl, as well as its acceptable salts, enantiomers, diastereomers, tautomers, and N-oxides.

In an embodiment, independent of other embodiments, R5 is a substituted phenyl having substituents independently selected from halogen, cyano, C1-C4-alkyl, C1-C4-haloalkyl, C1-C4-alkoxy, C1-C4-haloalkoxy, C3–C6-cycloalkyl, which cycloalkyl is unsubstituted or substituted by one or more substituents Rx, where Rx is, independently of each other, is selected from halogen, C1-C4-alkyl, and C1-C4-haloalkyl. Preferably, the substituents on the phenyl at R5 are independently selected from halogen, cyano, C1-C2-alkyl, C1-C2-haloalkyl, C1-C2-alkoxy, C1-C2-haloalkoxy, and optionally substituted C3–C4-cycloalkyl, wherein the substituents can be independently selected from chlorine, fluorine, and trifluoromethyl.

In an embodiment, independent of other embodiments, R5 is a substituted phenyl having one to three substituents, preferably two or three substituents, more preferably two substituents.

In an embodiment, independent of other embodiments, the phenyl at R5 is substituted by an optionally substituted phenyl or optionally substituted pyrazole. Preferably, the substituent(s) on the phenyl or pyrazole substituted phenyl at R5 is independently selected from chlorine, methyl, fluorine, trifuoromethyl, cyclopropyl, and cyano.

In an embodiment, independent of other embodiments, R6 is hydrogen or C1-C2-alkyl, preferably hydrogen.

In an embodiment, independent of other embodiments, R7 is hydrogen.

In an embodiment, independent of other embodiments, wherein A1 is N or C-X, and the groups A2, A3, A4 and A5 are selected from (I) A2, A3 and A4 are each C-H, and A5 is N; (II) A2 is C-X, and A3, A4 and A5 are each C-H; (III) A3 is C-X, and A2, A4 and A5 are each C-H; (IV) A4 is C-X, and A2, A3 and A5 are each C-H; and (V) A2, A3 and A5 are each CH and A4 is N.

In an embodiment, independent of other embodiments, wherein A1 & A5 are each N, then A2 to A4 are independently selected from CH, CX and N.

In an embodiment, independent of other embodiments, wherein A2 is CX, then A1, A3 to A5 are independently selected from CH, N or CX.

In an embodiment, independent of other embodiments, wherein A1 is CX and A5 is N, then A2 to A4 are independently selected from CX and CH.

In an embodiment, independent of other embodiments, A1 is N or C-X, and A2, A3 and A4 are C-H, and A5 is N. Preferably, in this embodiment, A1 is CX, A2, A3 and A4 are C-H, and A5 is N and A1 is N, A2, A3 and A4 are C-H, and A5 is N.

In an embodiment, independent of other embodiments, A1 is N or C-X, A2 is C-X, and A3, A4 and A5 are each C-H.

In an embodiment, independent of other embodiments, A1 is N or C-X, A3 is C-X, and A2, A4 and A5 are C-H; and

In an embodiment, independent of other embodiments, A1 is N or C-X, A4 is C-X, and A2, A3 and A5 are each C-H.

In an embodiment, independent of other embodiments, A1 and A5 are N; and remaining are independently selected from C-H and C-X.

In an embodiment, independent of other embodiments, A1 is CX, A2, A3 and A5 are each CH, and A4 is CX.

In an embodiment, independent of other embodiments, A1 is CX, A2, A3 and A5 are each CH, and A4 is N.

In an embodiment, independent of other embodiments, A1 is CX, A2, A4 and A5 are each CH, and A3 is CX.

In an embodiment, independent of other embodiments, A1 is CX, A2 and A3 are each CH, A4 is N and A5 is CX.

In an embodiment, independent of other embodiments, in the instance any one of A1 to A5 is CX, X in CX is, independently selected, from halogen, C1-C4-alkyl and C1-C4-

haloalkyl. Preferably X is halogen, C1-C2-alkyl and C1-C2-haloalkyl, especially halogen, methyl and halomethyl, such as trifluoromethyl.

In an embodiment, independent of other embodiments, A1 is C-C1-C4-haloalkyl, A2 is N and A3, A4 and A5 are each C-H.

In an embodiment, independent of other embodiments, A1 is C-X, A2, A3 and A4 are C-H, and A5 is N.

In an embodiment, independent of other embodiments, R6 is hydrogen or C1-C2-alkyl, preferably hydrogen.

In an embodiment, independent of other embodiments, R7 is hydrogen.

In an embodiment, independent of other embodiments, X in CX of the A1 to A5 is, independently selected, from halogen, C1-C2-alkyl and C1-C2-haloalkyl; preferably selected independently from chlorine, fluorine, methyl, and trifluoromethyl,

In an aspect, a compound of formula (I) is wherein R1 to R4 are each hydrogen; R5 is a substituted or unsubstituted phenyl; R6 is hydrogen or C1-C4-alkyl; R7 is hydrogen, C1-C4-alkylcarbonyl, or C1-C4-alkoxycarbonyl; and A1 is CX, A2 and A4 are each N, and A3 & A5 are each CH or A1 is CX, A3 and A5 are each N, and A2 & A4 are each CH; wherein X, independent of each other, is a halogen, C1-C4-alkyl, or C1-C4-haloalkyl.

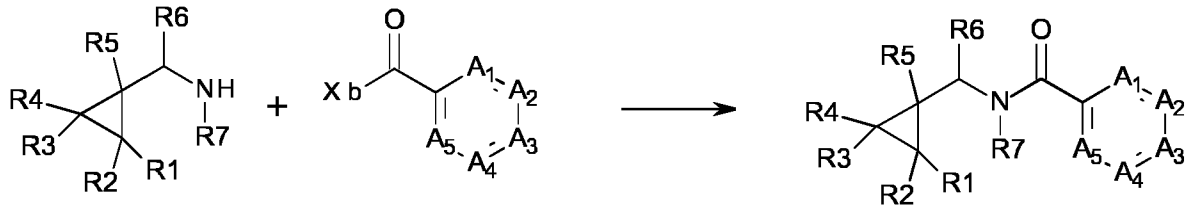
In a preferred embodiment of each embodiment described herein, R5 is a phenyl substituted by 2 to 3 substituents independently selected from halogen, cyano, C1-C4-haloalkyl, C1-C4-haloalkoxy, and optionally substituted C3–C6-cycloalky; preferably independently selected from chlorine, methyl, fluorine, trifuoromethyl, cyclopropyl, and cyano.

In a preferred embodiment of each embodiment described herein, A1 is CX , A2 and A5 is independently selected from N and CH, and A3 & A4 are each CH wherein X is Cl, F or CF3, preferably CF3, Cl, more preferably CF3.

In an especially preferred embodiment, independent of each embodiment, A1 is CX, A2 is N and A3 to A5 are each CH wherein X is Cl, or CF3, preferably CF3, Cl, more preferably CF3; or A1 is CX, A5 is N and A2 to A4 are each CH wherein X is Cl, F or CF3, preferably CF3, Cl, more preferably CF3; or A1 is CX, A2 & A5 are each N and A3 and A4 are each CH wherein X is Cl, F or CF3, preferably CF3, Cl, more preferably CF3.

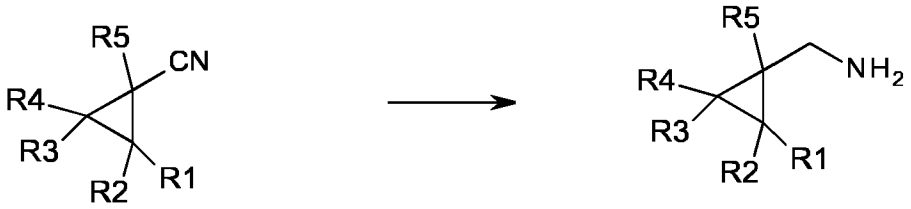
A preferred ring, independent of each embodiment, of A1 to A5 is A1 is C-CF3, and A2 to A5 are each CH; or A1 is C-CF3, A2 and A5 are each N, and A3 and A4 are each CH; or A1 is C-chlorine, A2 and A5 are each N, and A3 and A4 are each CH; or A1 and A5 are each is C-fluorine and A2 to A4 are each CH.

Compounds of formula (I) can be prepared from amines of the formula (II) and acylating agents of the formula (VII), wherein R1, R2, R3, R4, R5, R6, R7, A1, A2, A3, A4, and A5 are as defined herein and Xb is a leaving group. Typical leaving groups are halide, preferably chloride, and hydroxyl. When Xb is hydroxyl, (VII) is a carboxylic acid, and the reaction is preferably facilitated by an activating agent. Typical activating agents are DCC, EDCI, BOP, HBTU, BOP-Cl, PyBOP as described in L. A. Paquette, Encyclopedia of Reagents for Organic Synthesis, Vol 3. Wiley, England, 1995 pp 1751-1754. Acylating agents of the formula (VII) are known or are easily prepared by those skilled in the art.



(II) (VII) (I)

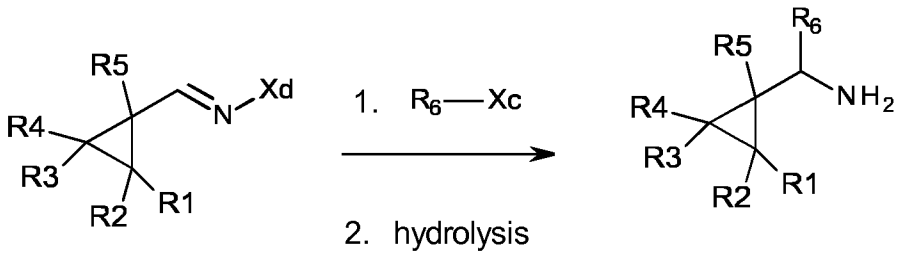
Amines of the formula (IIa), in which R6 and R7 are H and R1, R2, R3, R4, and R5 are as defined herein, can be prepared by treating nitriles of the formula (III) with a reducing agent. A typical reducing agent is hydrogen. Typically such a hydrogenation would be facilitated by a catalyst. Typical catalysts are metals, metal salts, or metal complexes. Other typical reducing agents are hydrides. Typical hydrides are borohydrides, or aluminium hydrides, examples of which are sodium borohydride, diisobutylaluminium hydride, or lithium aluminium hydride. Such hydride reductions can be facilitated by the use of other components such as metal salts.



(III) (IIa)

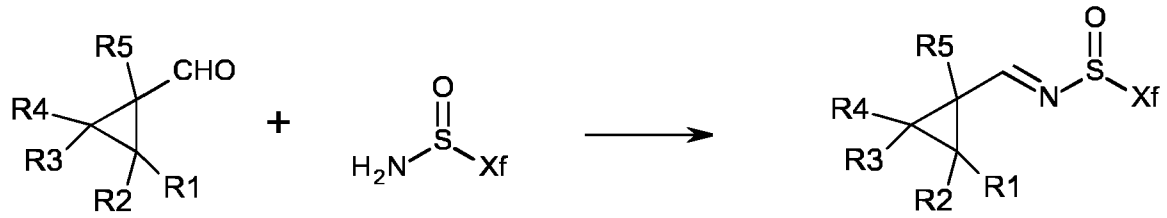
Compounds of the formula (IIb) in which R7 is H and R1, R2, R3, R4, R5, and R6 are as defined herein can be prepared by treating imines of the formula (IV) with an organometallic reagent of the formula R6-Xc followed by hydrolysis, for example with acid, such as hydrochloric acid. Xd is an activating group, typically an acyl, sulfinyl or sulfonyl

group. Xc is a metal ion, which may or may not be coordinated with a further anion or ligand. Typical R6Xc reagents are Grignard or organolithium reagents.



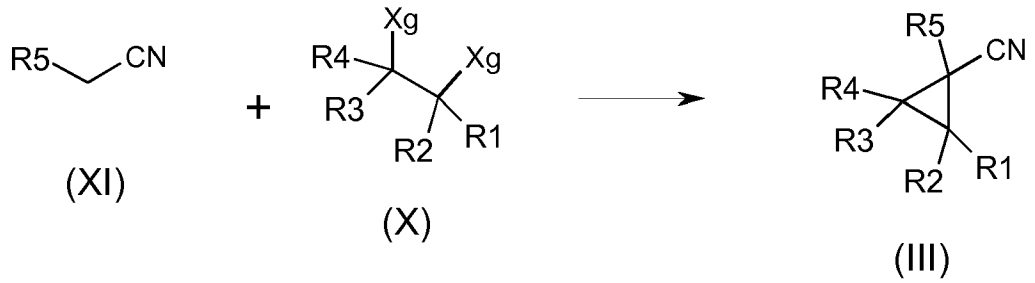
(IV) (IIb)

Compounds (IVa) in which Xd is S(=O)Xf and R1, R2, R3, R4, and R5 are as defined herein can be prepared from the aldehyde (VI) and a sulfinamide of the formula (IX), in which Xf is alkyl or aryl. This condensation is conveniently done in the presence of a dehydrating agent. Typical dehydrating agents are titanium chloride, titanium alkoxides, magnesium sulphate, or calcium chloride. Aldehydes of the formula (VI) can be prepared by reduction of the corresponding nitriles (III) or esters, or by oxidation of the corresponding alcohols, for example, SWERN oxidation. One of the reducing agents which can be used for reducing nitriles or esters to aldehydes is diisobutylaluminium hydride (DIBAL).



(VI) (IX) (IVa)

Nitriles of the formula (III), in which R1, R2, R3, R4, and R5 are as defined herein, can be prepared from nitriles of the formula (XI), in which R5 is as defined herein and an alkylating agent of the formula (X) in presence of a base, in which R1, R2, R3, and R4 are as defined herein and Xg is a leaving group. Typical leaving groups are halide and sulfonate.



It is clear that compounds of the formula (I) can be transformed to other comounds of the formula (I) through synthetic modification of the groups R1, R2, R3, R4, R5, R6, R7, A1, A2, A3, A4, and A5. Similarly such transformations can be performed on the intermediates (II)-(XI).

These reactions can be conveniently performed in a solvent.

These reactions can be conveniently performed at various temperatures.

These reactions can be conveniently performed in an inert atmosphere.

Alkylation of amine is well known for deriving compounds of formula (II).

The reactants can be reacted in the presence of a base. Examples of suitable bases are alkali metal or alkaline earth metal hydroxides, alkali metal or alkaline earth metal hydrides, alkali metal or alkaline earth metal amides, alkali metal or alkaline earth metal alkoxides, alkali metal or alkaline earth metal acetates, alkali metal or alkaline earth metal carbonates, alkali metal or alkaline earth metal dialkylamides or alkali metal or alkaline earth metal alkylsilylamides, alkylamines, alkylenediamines, free or N-alkylated saturated or unsaturated cycloalkylamines, basic heterocycles, ammonium hydroxides and carbocyclic amines. Examples which may be mentioned are sodium hydroxide, sodium hydride, sodium amide, sodium methoxide, sodium acetate, sodium carbonate, potassium tert-butoxide, potassium hydroxide, potassium carbonate, potassium hydride, lithium diisopropylamide, potassium bis(trimethylsilyl)amide, calcium hydride, triethylamine, diisopropylethylamine, triethylenediamine, cyclohexylamine, N-cyclohexyl-N,N-dimethylamine, N,N-diethylaniline, pyridine, 4-(N,N-dimethylamino)pyridine, quinuclidine, N-methylmorpholine, benzyltrimethylammonium hydroxide and 1,8-diaza-bicyclo[5.4.0]undec-7-ene (DBU).

The reactants can be reacted with each other as such, i.e. without adding a solvent or diluent. In most cases, however, it is advantageous to add an inert solvent or diluent or a mixture of these. If the reaction is carried out in the presence of a base, bases which are employed in excess, such as triethylamine, pyridine, N-methylmorpholine or N,N-diethylaniline, may also act as solvents or diluents.

The reaction is advantageously carried out in a temperature range from approximately -80°C to approximately +140°C, preferably from approximately -30°C to approximately +100°C, in many cases in the range between ambient temperature and approximately +80°C.

A compound of formula (I) can be converted in a manner known per se into another compound of formula (I) by replacing one or more substituents of the starting compound of formula (I) in the customary manner by (an)other substituent(s) according to the invention.

Depending on the choice of the reaction conditions and starting materials which are suitable in each case, it is possible, for example, in one reaction step only to replace one substituent by another substituent according to the invention, or a plurality of substituents can be replaced by other substituents according to the invention in the same reaction step.

Salts of compounds of formula (I) can be prepared in a manner known per se. Thus, for example, acid addition salts of compounds of formula (I) are obtained by treatment with a suitable acid or a suitable ion exchanger reagent and salts with bases are obtained by treatment with a suitable base or with a suitable ion exchanger reagent. A salt is chosen depending on its tolerances for compound's use, such as agricultural or physiological tolerance.

Salts of compounds of formula (I) can be converted in the customary manner into the free compounds I, acid addition salts, for example, by treatment with a suitable basic compound or with a suitable ion exchanger reagent and salts with bases, for example, by treatment with a suitable acid or with a suitable ion exchanger reagent.

Salts of compounds of formula (I) can be converted in a manner known per se into other salts of compounds of formula (I), acid addition salts, for example, into other acid addition salts, for example by treatment of a salt of inorganic acid such as hydrochloride with a suitable metal salt such as a sodium, barium or silver salt, of an acid, for example with silver acetate, in a suitable solvent in which an inorganic salt which forms, for example silver chloride, is insoluble and thus precipitates from the reaction mixture.

Depending on the procedure or the reaction conditions, the compounds of formula (I), which have salt-forming properties can be obtained in free form or in the form of salts.

Diastereomer mixtures or racemate mixtures of compounds of formula (I), in free form or in salt form, which can be obtained depending on which starting materials and procedures have been chosen can be separated in a known manner into the pure diasteromers or racemates on the basis of the physicochemical differences of the components, for example by fractional crystallization, distillation and/or chromatography.

Enantiomer mixtures, such as racemates, which can be obtained in a similar manner can be resolved into the optical antipodes by known methods, for example by recrystallization from an optically active solvent, by chromatography on chiral adsorbents, for example high-performance liquid chromatography (HPLC) on acetyl celulose, with the aid of suitable microorganisms, by cleavage with specific, immobilized enzymes, via the formation of inclusion compounds, for example using chiral crown ethers, where only one enantiomer is complexed, or by conversion into diastereomeric salts, for example by reacting a basic end-product racemate with an optically active acid, such as a carboxylic acid, for example camphor, tartaric or malic acid, or sulfonic acid, for example camphorsulfonic acid, and separating the diastereomer mixture which can be obtained in this manner, for example by fractional crystallization based on their differing solubilities, to give the diastereomers, from which the desired enantiomer can be set free by the action of suitable agents, for example basic agents.

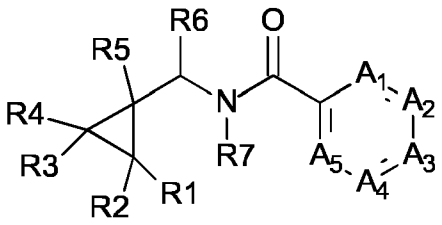
Pure diastereomers or enantiomers can be obtained according to the invention not only by separating suitable isomer mixtures, but also by generally known methods of diastereoselective or enantioselective synthesis, for example by carrying out the process according to the invention with starting materials of a suitable stereochemistry.

N-oxides can be prepared by reacting a compound of the formula (I) with a suitable oxidizing agent, for example the H_2O_2/urea adduct in the presence of an acid anhydride, e.g. trifluoroacetic anhydride. Such oxidations are known from the literature, for example from J. Med. Chem., 32 (12), 2561-73, 1989 or WO 00/15615 or C. White, Science, vol 318, p.783, 2007.

It can be advantageous to isolate or synthesize in each case the biologically more effective isomer, for example enantiomer or diastereomer, or isomer mixture, for example enantiomer mixture or diastereomer mixture, if the individual components have a different biological activity.

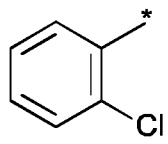
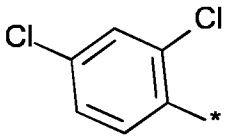
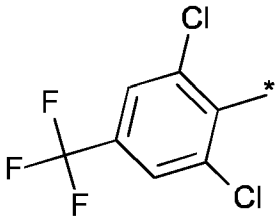
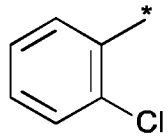
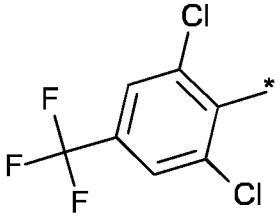
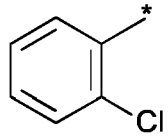
The compounds of formula (I) and, where appropriate, the tautomers thereof, in each case in free form or in salt form, can, if appropriate, also be obtained in the form of hydrates and/or include other solvents, for example those which may have been used for the crystallization of compounds which are present in solid form.

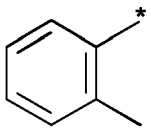
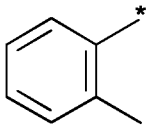
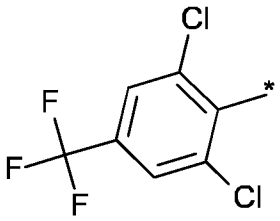
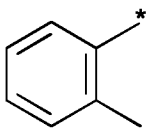
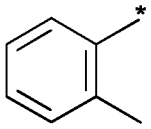
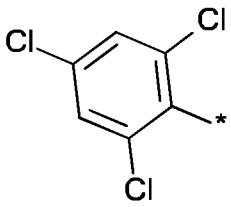
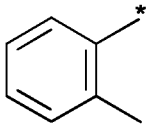
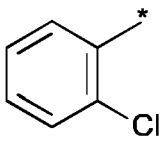
Specific examples of compounds of formula (I) are illustrated in the following Table P:

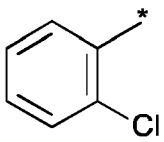
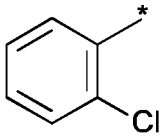
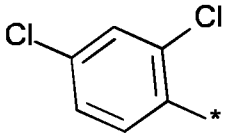
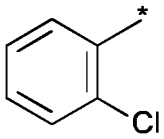
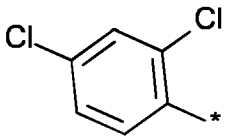
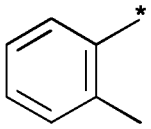
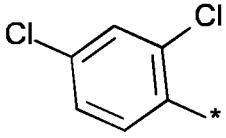
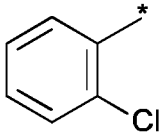
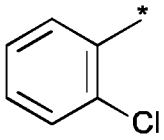


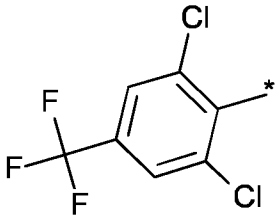
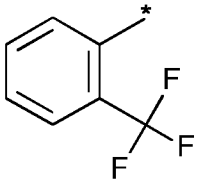
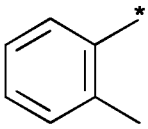
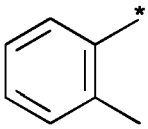
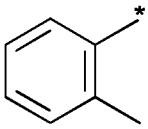
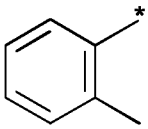
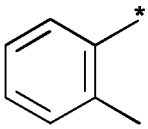
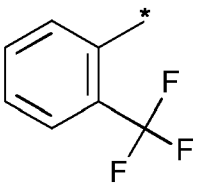
(I),

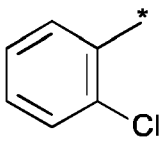
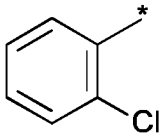
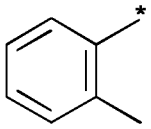
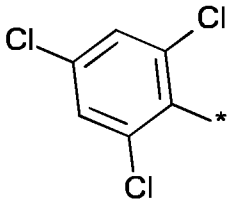
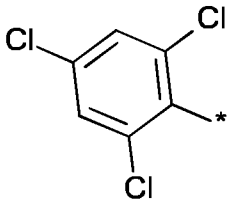
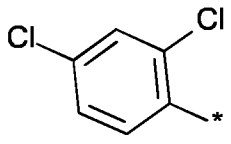
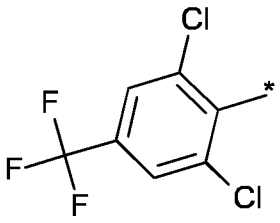
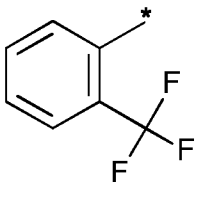
wherein

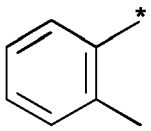
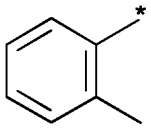
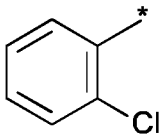
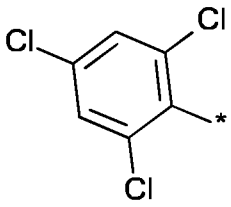
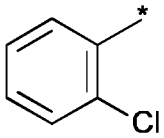
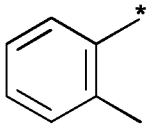
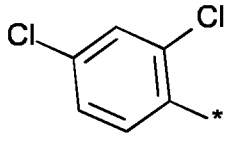
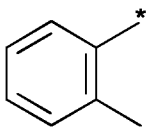
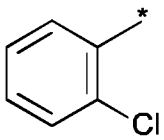
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*
P.1	H	H	H	H		H	CH3	N	C-H	C-H	C-H	N
P.2	H	H	H	H		H	H	C-CH3	C-CH3	C-H	C-H	C-H
P.3	H	H	H	H		H	H	N	C-H	C-H	C-H	N
P.4	H	H	H	H		H	H	C-CH3	C-H	C-H	C-CH3	C-H
P.5	H	H	H	H		H	H	C-CH3	C-H	C-CH3	C-H	C-H
P.6	H	H	H	H		H	O-CH3	N	C-H	C-H	C-H	N

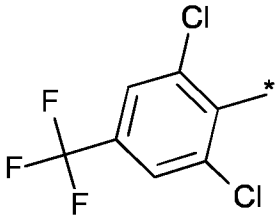
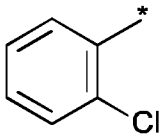
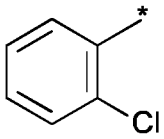
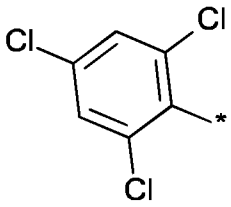
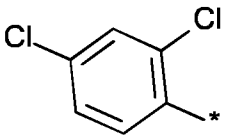
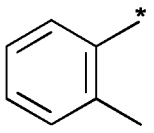
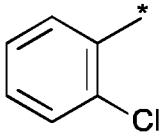
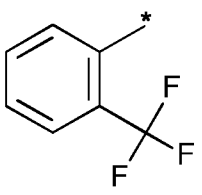
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.7	H	H	H	H		H	H	N	C-H	C-H	C-H	N
P.8	H	H	H	H		H	H	C-Cl	C-H	C-H	C-CH3	C-H
P.9	H	H	H	H		H	H	C-CH3	C-H	C-H	C-CH3	C-H
P.10	CH3	H	H	H		H	H	N	C-H	C-H	C-H	N
P.11	H	H	H	H		H	H	C-Cl	C-H	C-Cl	C-H	C-H
P.12	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.13	H	H	H	H		H	H	C-Cl	C-H	C-CH3	C-H	C-H
P.14	H	H	H	H		H	allyl	N	C-H	C-H	C-H	N

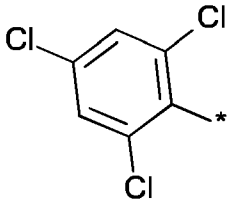
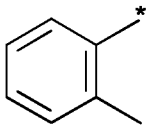
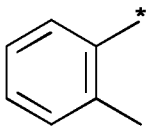
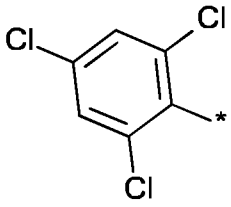
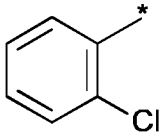
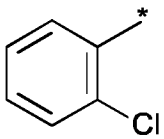
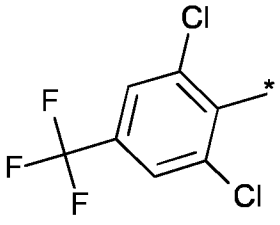
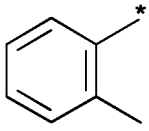
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.15	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.16	F	F	H	H		H	H	N	C-H	C-H	C-H	N
P.17	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.18	H	H	H	H		H	C(=O)-CH3	N	C-H	C-H	C-H	N
P.19	H	H	H	H		H	H	N	C-H	C-H	C-H	N
P.20	H	H	H	H		H	H	C-CH3	C-Cl	C-H	C-H	C-H
P.21	H	H	H	H		H	H	C-CH3	C-H	C-H	C-H	N
P.22	H	H	H	H		H	propargyl	N	C-H	C-H	C-H	N
P.23	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N

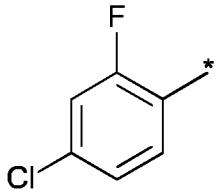
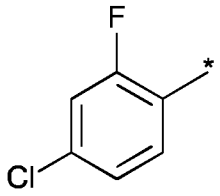
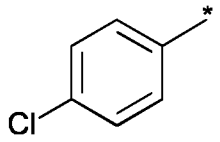
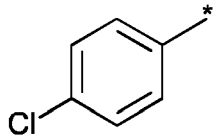
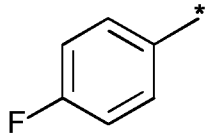
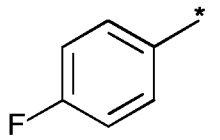
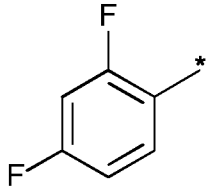
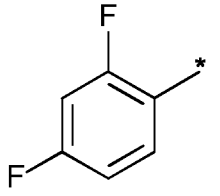
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.24	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.25	H	H	H	H		H	H	C-CH3	C-H	C-H	C-H	N
P.26	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.27	H	H	H	H		H	H	C-CH3	C-H	C-Cl	C-H	C-H
P.28	H	H	H	H		CH3	H	N	C-H	C-H	C-H	N
P.29	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.30	H	H	H	H		H	H	C-Cl	C-CH3	C-H	C-H	C-H
P.31	H	H	H	H		H	H	N	C-H	C-H	C-H	N

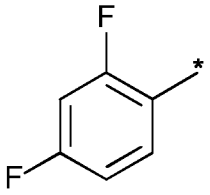
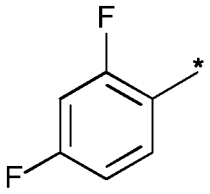
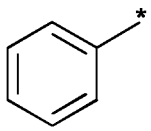
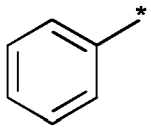
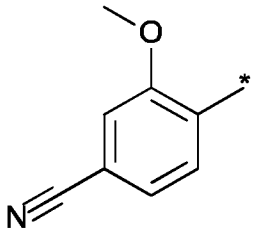
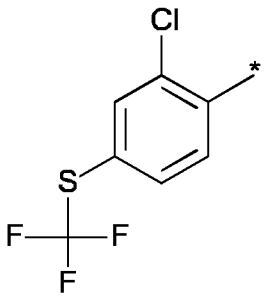
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.32	H	H	H	H		H	H	C-CH3	C-CH3	C-H	C-H	C-H
P.33	H	H	H	H		H	CH2-O-CH3	N	C-H	C-H	C-H	N
P.34	H	H	H	H		CH3	H	C-CH3	C-H	C-H	C-CH3	C-H
P.35	H	H	H	H		H	H	C-CH3	C-H	C-H	C-CH3	C-H
P.36	H	H	H	H		H	H	C-CH3	C-H	C-CH3	C-H	C-H
P.37	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.38	H	H	H	H		H	H	C-CH3	C-CH3	C-H	C-H	C-H
P.39	H	H	H	H		H	H	C-CH3	C-H	C-H	C-CH3	C-H

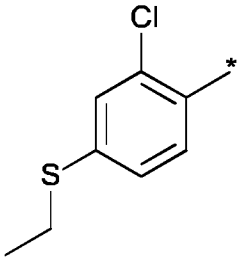
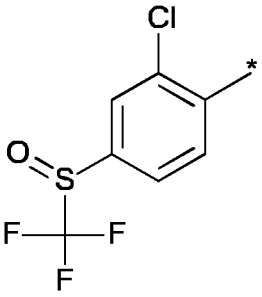
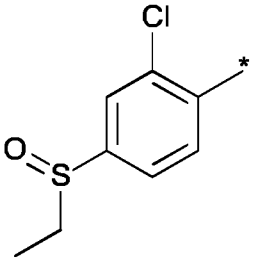
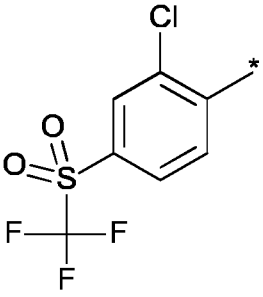
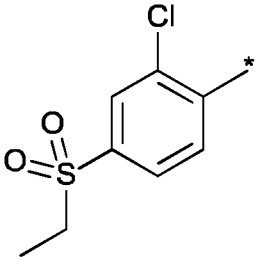
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.40	F	H	H	H		H	H	C-CH3	C-H	C-H	C-CH3	C-H
P.41	H	H	H	H		H	H	C-CH3	C-H	C-H	C-CH3	C-H
P.42	H	H	H	H		H	H	N	C-H	C-H	C-H	N
P.43	H	H	H	H		H	H	C-CH3	C-H	C-H	C-H	N
P.44	H	H	H	H		H	H	C-CH3	C-H	C-CH3	C-H	C-H
P.45	H	H	H	H		H	H	C-CH3	C-H	C-H	C-Cl	C-H
P.46	H	H	H	H		H	H	C-CH3	C-H	C-CH3	C-H	C-H
P.47	H	H	H	H		H	H	C-CH3	C-H	C-H	C-H	N
P.48	H	H	H	H		H	CN	N	C-H	C-H	C-H	N

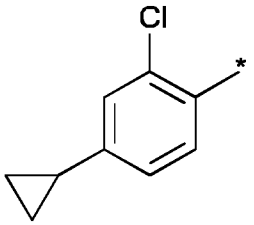
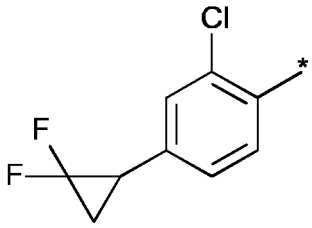
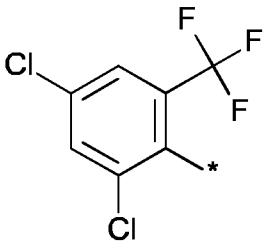
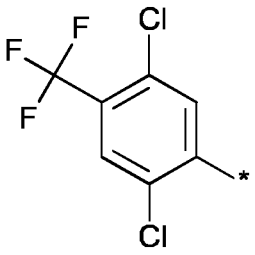
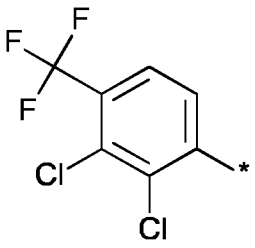
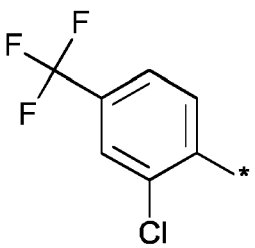
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.49	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.50	H	H	H	H		CH3	H	N	C-H	C-H	C-H	N
P.51	H	H	H	H		H	O-C(=O)-CH3	N	C-H	C-H	C-H	N
P.52	H	H	H	H		H	H	N	C-H	C-H	C-H	N
P.53	H	H	H	H		H	H	C-CH3	C-H	C-H	C-CH3	C-H
P.54	H	H	H	H		H	H	C-Cl	C-H	C-H	C-Cl	C-H
P.55	H	H	H	H		H	OH	N	C-H	C-H	C-H	N
P.56	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N

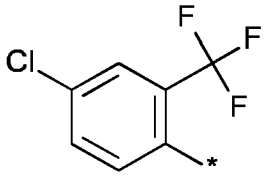
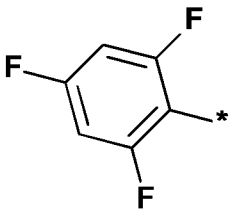
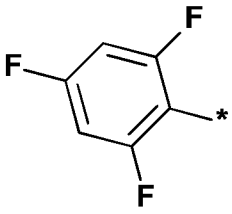
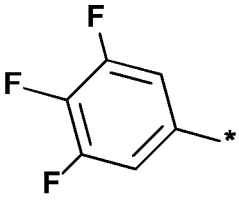
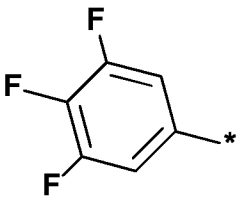
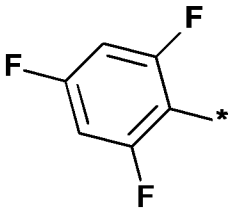
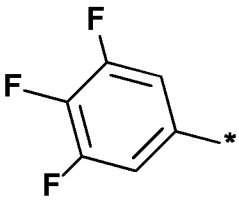
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*
P.57	H	H	H	H		H	H	C-CH3	C-CH3	C-H	C-H	C-H
P.58	H	H	H	H		H	H	C-CH3	C-H	C-CH3	C-H	C-H
P.59	H	H	H	H		H	H	C-CH3	C-CH3	C-H	C-H	C-H
P.60	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.61	H	H	H	H		H	H	C-CH3	C-H	C-H	C-H	N
P.62	H	H	H	H		H	benzyl	N	C-H	C-H	C-H	N
P.63	H	H	H	H		H	H	C-CH3	C-H	C-H	C-H	N
P.64	H	H	H	H		H	H	C-Cl	C-Cl	C-H	C-H	C-H

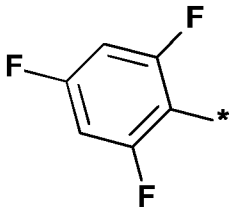
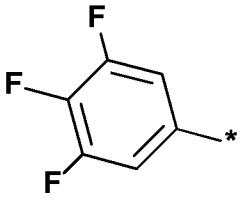
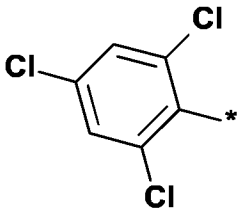
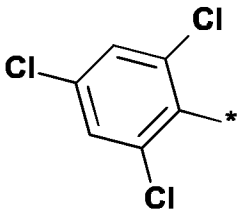
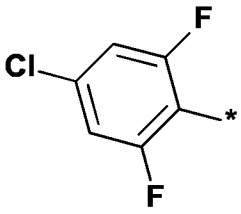
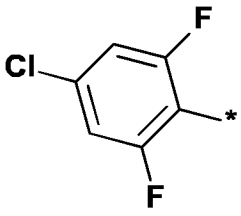
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.65	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N
P.66	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.67	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N
P.68	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.69	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.70	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N
P.71	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N
P.72	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N

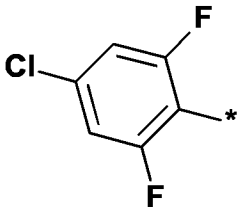
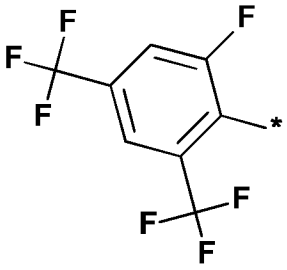
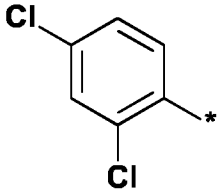
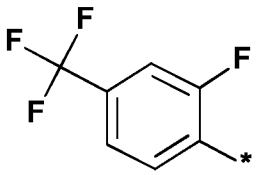
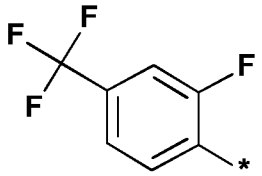
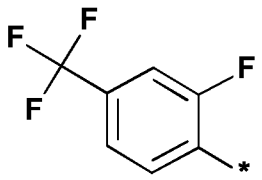
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*
P.73	H	H	H	H		H	cyclopropanecarbonyl	C-Cl	C-H	C-H	C-H	N
P.74	H	H	H	H		H	cyclopropoxycarbonyl	C-Cl	C-H	C-H	C-H	N
P.75	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N
P.76	H	H	H	H		H	H	N	C-H	C-H	C-H	N
P.77	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.78	H	H	H	H		H	H	N	C-H	C-H	C-H	N

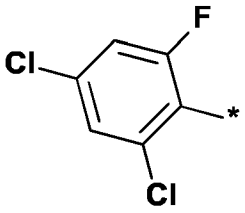
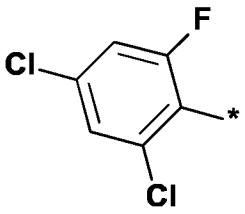
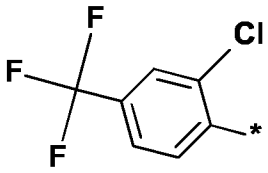
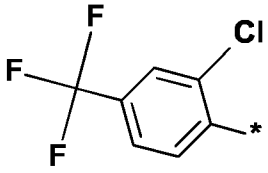
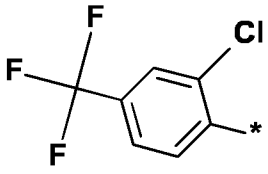
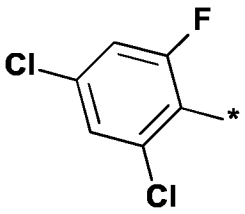
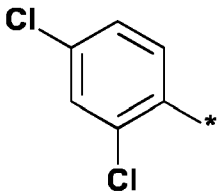
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.79	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N
P.80	H	H	H	H		H	H	N	C-H	C-H	C-H	N
P.81	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.82	H	H	H	H		H	H	N	C-H	C-H	C-H	N
P.83	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N

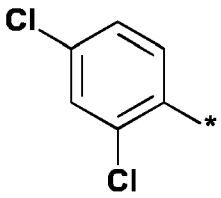
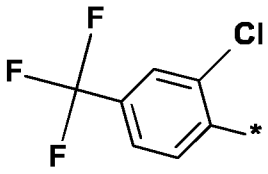
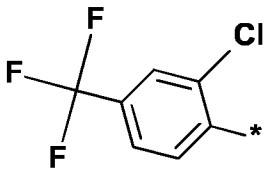
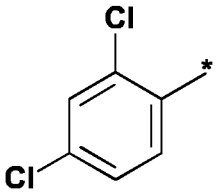
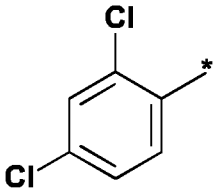
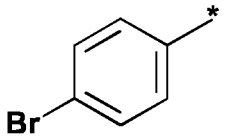
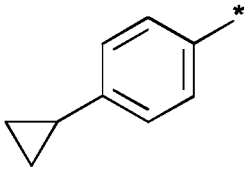
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.84	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.85	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.86	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.87	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.88	H	H	H	H		H	H	N	C-H	C-H	C-H	N
P.89	H	H	H	H		H	H	N	C-H	C-H	C-H	N

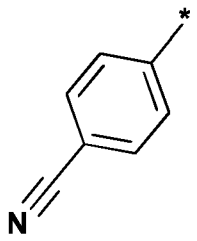
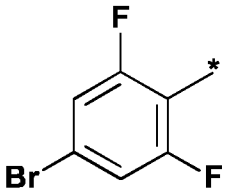
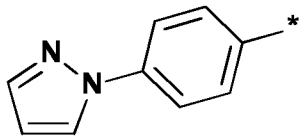
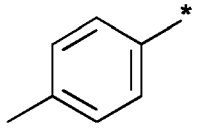
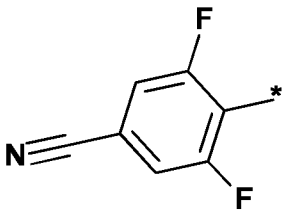
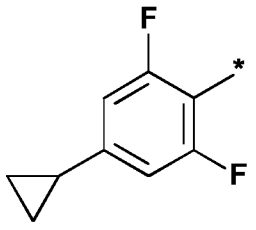
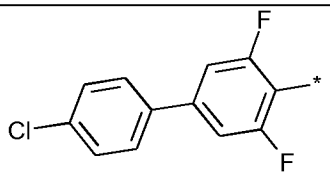
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.90	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.91	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.92	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.93	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.94	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.95	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N
P.96	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N

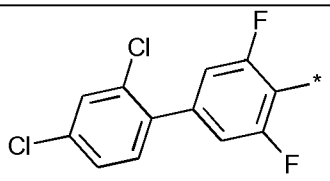
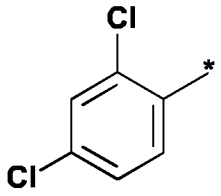
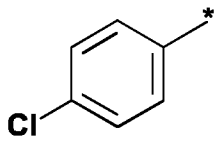
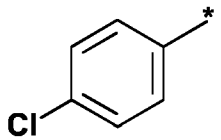
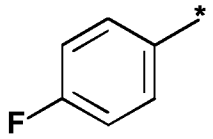
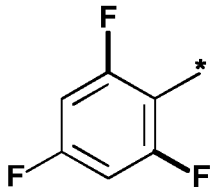
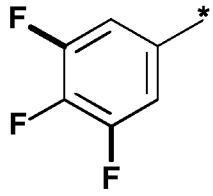
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.97	H	H	H	H		H	H	C-Br	C-H	C-H	C-H	N
P.98	H	H	H	H		H	H	C-Br	C-H	C-H	C-H	N
P.99	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.100	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N
P.101	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.102	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N

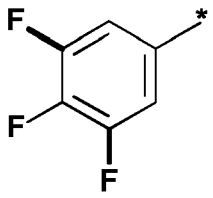
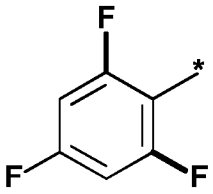
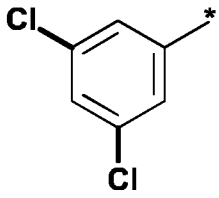
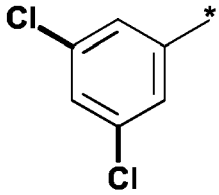
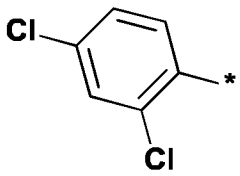
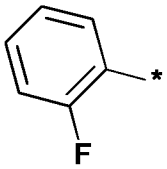
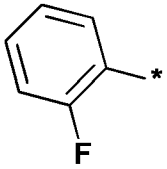
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.103	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.104	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.105	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.106	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.107	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.108	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N

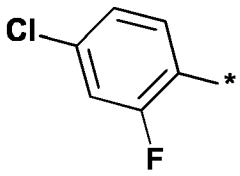
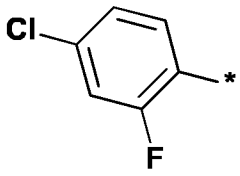
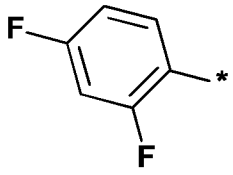
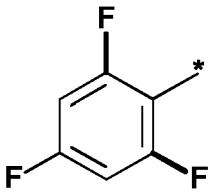
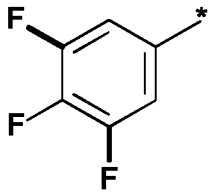
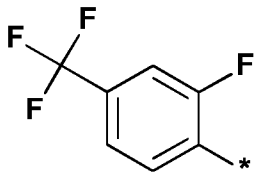
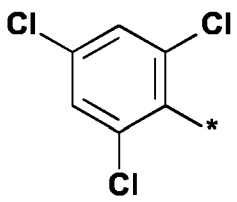
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.109	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.110	H	H	H	H		H	H	C-Br	C-H	C-H	C-H	N
P.111	H	H	H	H		H	H	N	C-CF3	C-H	C-H	C-H
P.112	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.113	H	H	H	H		H	H	C-Br	C-H	C-H	C-H	N
P.114	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.115	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N

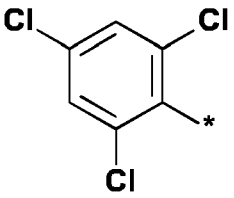
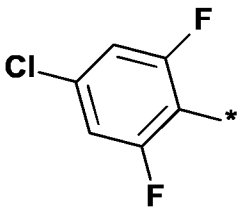
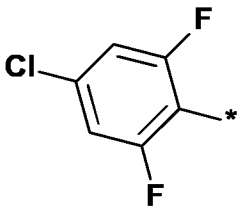
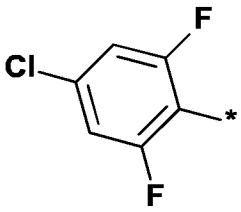
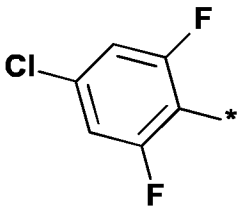
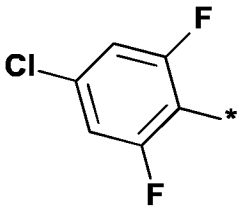
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.116	H	H	H	H		H	H	C-Br	C-H	C-H	C-H	N
P.117	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N
P.118	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.119	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.120	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N
P.121	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N
P.122	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N

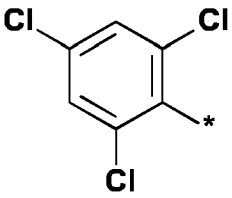
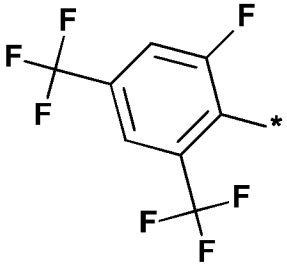
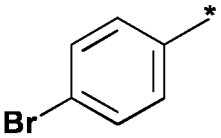
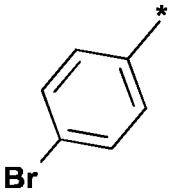
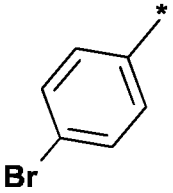
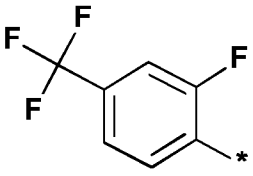
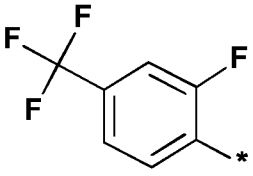
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.123	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N
P.124	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.125	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N
P.126	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N
P.127	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.128	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.129	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N

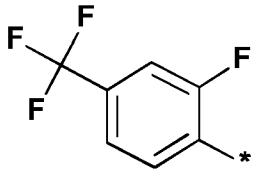
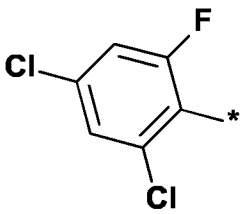
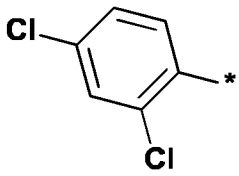
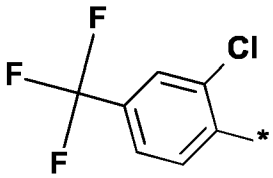
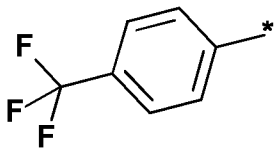
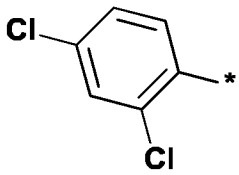
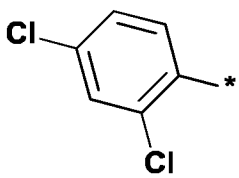
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.130	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.131	H	H	H	H		H	H	C-CF3	N	C-H	C-H	C-H
P.132	H	H	H	H		H	H	C-F	C-H	C-H	C-H	C-F
P.133	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H
P.134	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H
P.135	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H
P.136	H	H	H	H		H	H	C-Cl	N	C-H	C-H	N

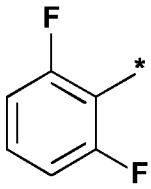
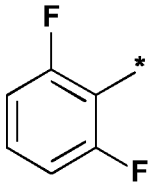
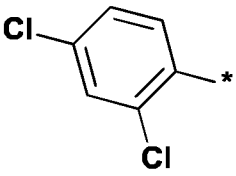
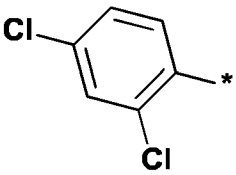
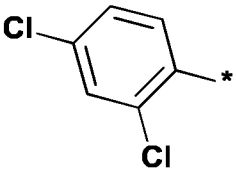
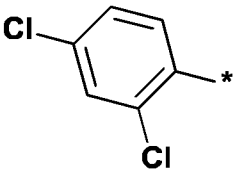
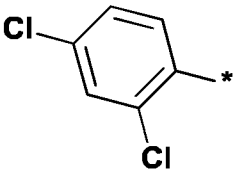
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.137	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H
P.138	H	H	H	H		H	H	C-Cl	N	C-H	C-H	N
P.139	H	H	H	H		H	H	C-Cl	N	C-H	C-H	N
P.140	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H
P.141	H	H	H	H		H	H	C-F	C-H	C-H	C-H	C-F
P.142	H	H	H	H		H	H	C-F	C-H	C-H	C-H	C-F
P.143	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H

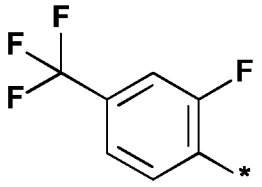
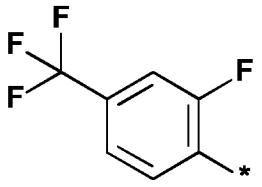
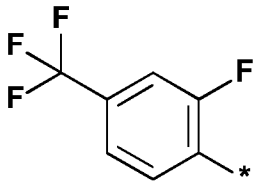
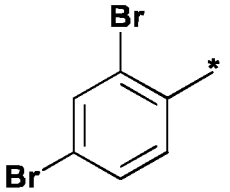
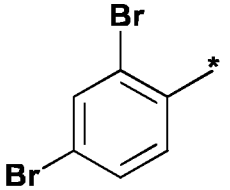
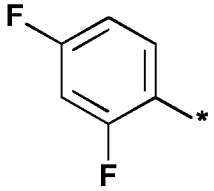
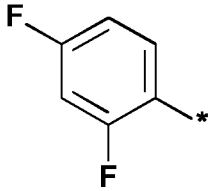
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.144	H	H	H	H		H	H	C-F	C-H	C-H	C-H	C-F
P.145	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H
P.146	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H
P.147	H	H	H	H		H	H	C-Cl	C-H	N	C-H	N
P.148	H	H	H	H		H	H	C-Cl	C-H	N	C-H	N
P.149	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H
P.150	H	H	H	H		H	H	C-CF3	N	C-H	C-H	C-H

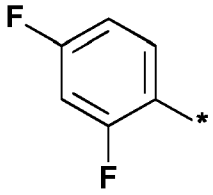
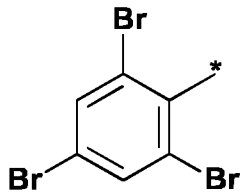
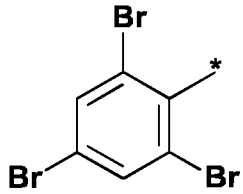
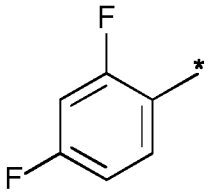
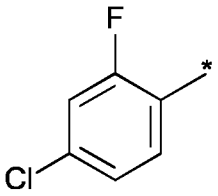
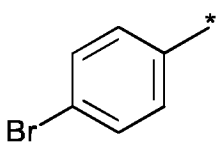
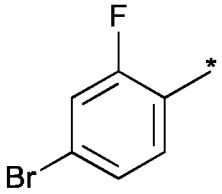
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.151	H	H	H	H		H	H	C-Cl	N	C-H	C-H	N
P.152	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H
P.153	H	H	H	H		H	H	C-CF3	N	C-H	C-H	C-H
P.154	H	H	H	H		H	H	C-Cl	N	C-H	C-H	N
P.155	H	H	H	H		H	H	C-Cl	C-H	N	C-H	N
P.156	H	H	H	H		H	H	C-F	C-H	C-H	C-H	C-F

	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.157	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H
P.158	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H
P.159	H	H	H	H		H	H	C-S-CH3	C-H	C-H	C-H	N
P.160	H	H	H	H		H	H	C-SO2-CH3	C-H	C-H	C-H	N
P.161	H	H	H	H		H	H	C-SO-CH3	C-H	C-H	C-H	N
P.162	H	H	H	H		H	H	C-CF3	N	C-H	C-H	C-H
P.163	H	H	H	H		H	H	C-F	C-H	C-H	C-H	C-F

	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.164	H	H	H	H		H	H	C-Cl	N	C-H	C-H	N
P.165	H	H	H	H		H	H	C-Cl	C-H	N	C-H	N
P.166	H	H	H	H		H	H	C-Cl	C-H	N	C-H	N
P.167	H	H	H	H		H	H	C-Cl	C-H	N	C-H	N
P.168	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H
P.169	H	H	H	H		H	H	C-Br	N	C-H	C-H	C-H
P.170	H	H	H	H		H	H	C-F	N	C-H	C-H	C-H

	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.171	H	H	H	H		H	H	C-F	C-H	C-H	C-H	C-F
P.172	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H
P.173	H	H	H	H		H	H	C-CF3	C-H	N	C-H	N
P.174	H	H	H	H		H	H	C-CF3	N	C-H	N	C-H
P.175	H	H	H	H		H	H	C-CF3	C-H	C-H	N	N
P.176	H	H	H	H		H	H	C-CF3	N	N	C-H	C-H
P.177	H	H	H	H		H	H	C-CF3	C-H	N	N	C-H

	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.178	H	H	H	H		H	H	C-CF3	N	C-H	C-H	N
P.179	H	H	H	H		H	H	C-CF3	C-H	N	C-H	N
P.180	H	H	H	H		H	H	C-CF3	N	C-H	N	C-H
P.181	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.182	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.183	H	H	H	H		H	H	C-CF3	N	C-H	C-H	C-H
P.184	H	H	H	H		H	H	C-CF3	N	C-H	C-H	N

	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5
P.185	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.186	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N
P.187	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.188	Me	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.189	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N
P.190	H	H	H	H		Me	H	C-CF3	C-H	C-H	C-H	N
P.191	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N

A compound of formula (I) has been found to control the damage caused by a pest and/or fungi.

In an embodiment, a compound of formula (I) can be used in agriculture.

Accordingly, the invention is moreover directed to a method of controlling damage and/or yield loss caused by a pest and/or fungi which comprises applying to a pest, to a locus of a pest, or to a plant susceptible to attack by a pest and/or fungi or to a plant propagation material an effective amount of a compound of formula (I).

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

The compounds of formula (I) according to the invention are preventively and/or curatively valuable active ingredients in the field of pest control, even at low rates of application, which can be used against pesticide resistant pests and fungi, which compounds of formula (I) have a very favorable biocidal spectrum and are well tolerated by warm-blooded species, fish and plants.

The compounds according to the invention act against all or individual developmental stages of normally sensitive, but also resistant, animal pests, such as insects or representatives of the order Acarina. The insecticidal or acaricidal activity of the compounds according to the invention can manifest itself directly, i. e. in destruction of the pests, which takes place either immediately or only after some time has elapsed, for example during ecdysis, or indirectly, for example in a reduced oviposition and/or hatching rate, a good activity corresponding to a destruction rate (mortality) of at least 50 to 60%.

Examples of the above mentioned animal pests are:

- from the order *Acarina*, for example,

Acalitus spp, Aculus spp, Acaricalus spp, Aceria spp, Acarus siro, Amblyomma spp., Argas spp., Boophilus spp., Brevipalpus spp., Bryobia spp, Calipitrimerus spp., Chorioptes spp., Dermanyssus gallinae, Dermatophagoides spp, Eotetranychus spp, Eriophyes spp., Hemitarsonemus spp, Hyalomma spp., Ixodes spp., Olygonychus spp, Ornithodoros spp., Polyphagotarsone latus, Panonychus spp., Phyllocoptruta oleivora, Phytonemus spp, Polyphagotarsonemus spp, Psoroptes spp., Rhipicephalus spp., Rhizoglyphus spp., Sarcoptes spp., Steneotarsonemus spp, Tarsonemus spp. and Tetranychus spp.;

- from the order *Anoplura*, for example,

Haematopinus spp., Linognathus spp., Pediculus spp., Pemphigus spp. and Phylloxera spp.;

- from the order *Coleoptera*, for example,

Agriotes spp., Amphimallon majale, Anomala orientalis, Anthonomus spp., Aphodius spp, Astylus atromaculatus, Ataenius spp, Atomaria linearis, Chaetocnema tibialis, Cerotoma spp, Conoderus spp, Cosmopolites spp., Cotinis nitida, Curculio spp., Cyclocephala spp, Dermestes spp., Diabrotica spp., Diloboderus abderus, Epilachna spp., Eremnus spp., Heteronychus arator, Hypothenemus hampei, Lagria vilosa, Leptinotarsa decemLineata, Lissorhoptrus spp., Liogenys spp, Maecolaspis spp, Maladera castanea, Megascelis spp, Melighetes aeneus, Melolontha spp., Myochrous armatus, Orycaephilus spp., Otiorhynchus spp., Phyllophaga spp, Phlyctinus spp., Popillia spp., Psylliodes spp., Rhyssomatus aubtilis, Rhizopertha spp., Scarabeidae, Sitophilus spp., Sitotroga spp., Somaticus spp, Sphenophorus spp, Sternechus subsignatus, Tenebrio spp., Tribolium spp. and Trogoderma spp.;

- from the order *Diptera,* for example,

Aedes spp., Anopheles spp, Antherigona soccata,Bactrocea oleae, Bibio hortulanus, Bradysia spp, Calliphora erythrocephala, Ceratitis spp., Chrysomyia spp., Culex spp., Cuterebra spp., Dacus spp., Delia spp, Drosophila melanogaster, Fannia spp., Gastrophilus spp., Geomyza tripunctata, Glossina spp., Hypoderma spp., Hyppobosca spp., Liriomyza spp., Lucilia spp., Melanagromyza spp., Musca spp., Oestrus spp., Orseolia spp., Oscinella frit, Pegomyia hyoscyami, Phorbia spp., Rhagoletis spp, Rivelia quadrifasciata, Scatella spp, Sciara spp., Stomoxys spp., Tabanus spp., Tannia spp. and Tipula spp.;

- from the order *Hemiptera,* for example,

Acanthocoris scabrator, Acrosternum spp, Adelphocoris lineolatus, Amblypelta nitida, Bathycoelia thalassina, Blissus spp, Cimex spp., Clavigralla tomentosicollis, Creontiades spp, Distantiella theobroma, Dichelops furcatus, Dysdercus spp., Edessa spp, Euchistus spp., Eurydema pulchrum, Eurygaster spp., Halyomorpha halys, Horcias nobilellus, Leptocorisa spp., Lygus spp, Margarodes spp, Murgantia histrionic, Neomegalotomus spp, Nesidiocoris tenuis, Nezara spp., Nysius simulans, Oebalus insularis, Piesma spp., Piezodorus spp, Rhodnius spp., Sahlbergella singularis, Scaptocoris castanea, Scotinophara spp., Thyanta spp , Triatoma spp., Vatiga illudens;

- from the order *homoptera,* for example,

Acyrthosium pisum, Adalges spp, Agalliana ensigera, Agonoscena targionii, Aleurodicus spp, Aleurocanthus spp, Aleurolobus barodensis, Aleurothrixus floccosus, Aleyrodes

brassicae, Amarasca biguttula, Amritodus atkinsoni, Aonidiella spp., Aphididae, Aphis spp., Aspidiotus spp., Aulacorthum solani, Bactericera cockerelli, Bemisia spp, Brachycaudus spp, Brevicoryne brassicae, Cacopsylla spp, Cavariella aegopodii Scop., Ceroplaster spp., Chrysomphalus aonidium, Chrysomphalus dictyospermi, Cicadella spp, Cofana spectra, Cryptomyzus spp, Cicadulina spp, Coccus hesperidum, Dalbulus maidis, Dialeurodes spp, Diaphorina citri, Diuraphis noxia, Dysaphis spp, Empoasca spp., Eriosoma larigerum, Erythroneura spp., Gascardia spp., Glycaspis brimblecombei, Hyadaphis pseudobrassicae, Hyalopterus spp, Hyperomyzus pallidus, Idioscopus clypealis, Jacobiasca lybica, Laodelphax spp., Lecanium corni, Lepidosaphes spp., Lopaphis erysimi, Lyogenys maidis, Macrosiphum spp., Mahanarva spp, Metcalfa pruinosa, Metopolophium dirhodum, Myndus crudus, Myzus spp., Neotoxoptera sp, Nephotettix spp., Nilaparvata spp., Nippolachnus piri Mats, Odonaspis ruthae, Oregma lanigera Zehnter, Parabemisia myricae, Paratrioza cockerelli, Parlatoria spp., Pemphigus spp., Peregrinus maidis, Perkinsiella spp, Phorodon humuli, Phylloxera spp, Planococcus spp., Pseudaulacaspis spp., Pseudococcus spp., Pseudatomoscelis seriatus, Psylla spp., Pulvinaria aethiopica, Quadraspidiotus spp., Quesada gigas, Recilia dorsalis, Rhopalosiphum spp., Saissetia spp., Scaphoideus spp., Schizaphis spp., Sitobion spp., Sogatella furcifera, Spissistilus festinus, Tarophagus Proserpina, Toxoptera spp, Trialeurodes spp, Tridiscus sporoboli, Trionymus spp, Trioza erytreae , Unaspis citri, Zygina flammigera, Zyginidia scutellaris, ;

- from the order *Hymenoptera*, for example,
Acromyrmex, Arge spp, Atta spp., Cephus spp., Diprion spp., Diprionidae, Gilpinia polytoma, Hoplocampa spp., Lasius spp., Monomorium pharaonis, Neodiprion spp., Pogonomyrmex spp, Slenopsis invicta, Solenopsis spp. and Vespa spp.;
- from the order *Isoptera*, for example,
Coptotermes spp, Corniternes cumulans, Incisitermes spp, Macrotermes spp, Mastotermes spp, Microtermes spp, Reticulitermes spp.; Solenopsis geminate
- from the order *Lepidoptera*, for example,
Acleris spp., Adoxophyes spp., Aegeria spp., Agrotis spp., Alabama argillaceae, Amylois spp., Anticarsia gemmatalis, Archips spp., Argyresthia spp, Argyrotaenia spp., Autographa spp., Bucculatrix thurberiella, Busseola fusca, Cadra cautella, Carposina nipponensis, Chilo spp., Choristoneura spp., Chrysoteuchia topiaria, Clysia ambiguella, Cnaphalocrocis spp., Cnephasia spp., Cochylis spp., Coleophora spp., Colias lesbia, Cosmophila flava, Crambus spp, Crocidolomia binotalis, Cryptophlebia leucotreta, Cydalima perspectalis, Cydia spp., Diaphania perspectalis, Diatraea spp., Diparopsis castanea, Earias spp.,

Eldana saccharina, Ephestia spp., Epinotia spp, Estigmene acrea, Etiella zinckinella, Eucosma spp., Eupoecilia ambiguella, Euproctis spp., Euxoa spp., Feltia jaculiferia, Grapholita spp., Hedya nubiferana, Heliothis spp., Hellula undalis, Herpetogramma spp, Hyphantria cunea, Keiferia lycopersicella, Lasmopalpus lignosellus, Leucoptera scitella, Lithocollethis spp., Lobesia botrana, Loxostege bifidalis, Lymantria spp., Lyonetia spp., Malacosoma spp., Mamestra brassicae, Manduca sexta, Mythimna spp, Noctua spp, Operophtera spp., Orniodes indica, Ostrinia nubilalis, Pammene spp., Pandemis spp., Panolis flammea, Papaipema nebris, Pectinophora gossypiela, Perileucoptera coffeella, Pseudaletia unipuncta, Phthorimaea operculella, Pieris rapae, Pieris spp., Plutella xylostella, Prays spp., Pseudoplusia spp, Rachiplusia nu, Richia albicosta, Scirpophaga spp., Sesamia spp., Sparganothis spp., Spodoptera spp., Sylepta derogate, Synanthedon spp., Thaumetopoea spp., Tortrix spp., Trichoplusia ni , Tuta absoluta, and Yponomeuta spp.;

- from the order *Mallophaga*, for example,

Damalinea spp. and Trichodectes spp.;

- from the order *Orthoptera*, for example,

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

- from the order *Psocoptera*, for example,

Liposcelis spp.;

- from the order *Siphonaptera*, for example,

Ceratophyllus spp., Ctenocephalides spp. and Xenopsylla cheopis;

- from the order *Thysanoptera*, for example,

Calliothrips phaseoli, Frankliniella spp., Heliothrips spp, Hercinothrips spp., Parthenothrips spp, Scirtothrips aurantii, Sericothrips variabilis, Taeniothrips spp., Thrips spp;

- from the order *Thysanura*, for example,

Lepisma saccharina.

In a further aspect, the invention may also relate to a method of controlling or preventing infestation of useful plants by phytopathogenic microorganisms, wherein a compound of formula (I) is applied as acitve ingredient to the plants, to parts thereof or the locus thereof. The compounds of formula (I) according to the invention are distinguished by activity, by being well tolerated by plants and by being environmentally safe. They have very useful curative, preventive and systemic properties and are used for protecting numerous useful plants. The compounds of formula (I) can be used to inhibit or destroy the diseases that occur on plants or parts of plants (fruit, blossoms, leaves, stems, tubers,

roots) of different useful plants, while at the same time protecting also those parts of the plants that grow later e.g. from phytopathogenic microorganisms. It is also possible to use compounds of formula (I) as dressing agents for the treatment of plant propagation material, in particular of seeds (fruit, tubers, grains) and plant cuttings (e.g. rice), for the protection against fungal infections as well as against phytopathogenic fungi occurring in the soil.

Examples of fungi include: Fungi imperfecti (e.g. Botrytis, Pyricularia, Helminthosporium, Fusarium, Septoria, Cercospora and Alternaria); Basidiomycetes (e.g. Rhizoctonia, Hemileia, Puccinia); the Ascomycetes classes (e.g. Venturia and Erysiphe, Podosphaera, Monilinia, Uncinula); Oomycetes classes (e.g. Phytophthora, Pythium, Plasmopara); Zygomycetes (e.g., Rhizopus spp.); family *Phakopsoraceae*, particularly those of the genus *Phakopsora*, for example *Phakopsora pachyrhizi*, which is also referred to as Asian soybean rust, and those of the family *Pucciniaceae*, particularly those of the genus *Puccinia* such as *Puccinia graminis*, also known as stem rust or black rust, which is a problem disease in cereal plants and *Puccinia recondita*, also known as brown rust.

Among the plants and the possible diseases of these plants protected by the method according to the present invention, mention may be made of:

- wheat, as regards controlling the following seed diseases: fusaria (Microdochium nivale and Fusarium roseum), stinking smut (Tilletia caries, Tilletia controversa or Tilletia indica), septoria disease (Septoria nodorum) and loose smut;
- wheat, as regards controlling the following diseases of the aerial parts of the plant: cereal eyespot (Tapesia yallundae, Tapesia acuiformis), take-all (Gaeumannomyces graminis), foot blight (F. culmorum, F. graminearum), black speck (Rhizoctonia cerealis), powdery mildew (Erysiphe graminis forma specie tritici), rusts (Puccinia striiformis and Puccinia recondita) and septoria diseases (Septoria tritici and Septoria nodorum);
- wheat and barley, as regards controlling bacterial and viral diseases, for example barley yellow mosaic; - barley, as regards controlling the following seed diseases: net blotch (Pyrenophora graminea, Pyrenophora teres and Cochliobolus sativus), loose smut (Ustilago nuda) and fusaria (Microdochium nivale and Fusarium roseum);
- barley, as regards controlling the following diseases of the aerial parts of the plant: cereal eyespot (Tapesia yallundae), net blotch (Pyrenophora teres and Cochliobolus sativus), powdery mildew (Erysiphe graminis forma specie hordei), dwarf leaf rust (Puccinia hordei) and leaf blotch (Rhynchosporium secalis);

- potato, as regards controlling tuber diseases (in particular Helminthosporium solani, Phoma tuberosa, Rhizoctonia solani, Fusarium solani), mildew (Plrytopthora infestans) and certain viruses (virus Y);
- potato, as regards controlling the following foliage diseases: early blight (Alternaria solani), mildew (Phytophthora infestans);
- cotton, as regards controlling the following diseases of young plants grown from seeds: damping-off and collar rot (Rhizoctonia solani, Fusarium oxysporum) and black root rot (Thielaviopsis basicola);
- protein yielding plants, for example peas, as regards controlling the following seed diseases: anthracnose (Ascochyta pisi, Mycosphaerella pinodes), fusaria (Fusarium oxysporum), grey mould (Botrytis cinerea) and mildew (Peronospora pisi);
- oil-bearing plants, for example rape, as regards controlling the following seed diseases: Phoma lingam, Alternaria brassicae and Sclerotinia sclerotiorum;
- corn, as regards controlling seed diseases: (Rhizopus sp., Penicillium sp., [0104]Trichoderma sp., Aspergillus sp., and Gibber ellafujikuroi);
- flax, as regards controlling the seed disease: Alternaria linicola;
- forest trees, as regards controlling damping-off (Fusarium oxysporum, Rhizoctonia solani);
- rice, as regards controlling the following diseases of the aerial parts: blast disease (Magnaporthe grisea), bordered sheath spot (Rhizoctonia solani);
- leguminous plants, as regards controlling the following diseases of seeds or of young plants grown from seeds: damping-off and collar rot (Fusarium oxysporum, Fusarium roseum, Rhizoctonia solani, Pythium sp.);
- leguminous plants, as regards controlling the following diseases of the aerial parts: grey mould (Botrytis sp.), powdery mildews (in particular Erysiphe cichoracearum, Sphaerotheca fuliginea and Leveillula taurica), fusaria (Fusarium oxysporum, Fusarium roseum), leaf spot (Cladosporium sp.), alternaria leaf spot (Alternaria sp.), anthracnose (Colletotrichum sp.), septoria leaf spot (Septoria sp.), black speck (Rhizoctonia solani), mildews (for example Bremia lactucae, Peronospora sp., Pseudoperonospora sp., Phytophthora sp.);
- fruit trees, as regards diseases of the aerial parts: monilia disease (Monilia fructigenae, M. laxa), scab (Venturia inaequalis), powdery mildew (Podosphaera leucotricha); - vine, as regards diseases of the foliage: in particular grey mould (Botrytis cinerea), powdery mildew (Uncinula necator), black rot (Guignardia biwelli) and mildew (Plasmopara viticola);

- beetroot, as regards the following diseases of the aerial parts: cercospora blight (Cercospora beticola), powdery mildew (Erysiphe beticola), leaf spot (Ramularia beticola).

The fungicide composition according to the present invention may also be used against fungal diseases liable to grow on or inside timber. The term "timber" means all types of species of wood, and all types of working of this wood intended for construction, for example solid wood, high-density wood, laminated wood, and plywood. The method for treating timber according to the invention mainly consists in contacting one or more compounds of the present invention, or a composition according to the invention; this includes for example direct application, spraying, dipping, injection or any other suitable means.

In a further aspect, the invention also relates to a method of controlling damage to plant and parts thereof by plant parasitic nematodes (Endoparasitic-, Semiendoparasitic- and Ectoparasitic nematodes), especially plant parasitic nematodes such as root knot nematodes, Meloidogyne hapla, Meloidogyne incognita, Meloidogyne javanica, Meloidogyne arenaria and other Meloidogyne species; cyst-forming nematodes, Globodera rostochiensis and other Globodera species; Heterodera avenae, Heterodera glycines, Heterodera schachtii, Heterodera trifolii, and other Heterodera species; Seed gall nematodes, Anguina species; Stem and foliar nematodes, Aphelenchoides species; Sting nematodes, Eelonolaimus longicaudatus and other Belonolaimus species; Pine nematodes, Bursaphelenchus xylophilus and other Bursaphelenchus species; Ring nematodes, Criconema species, Criconemella species, Criconemoides species, Mesocriconema species; Stem and bulb nematodes, Ditylenchus destructor, Ditylenchus dipsaci and other Ditylenchus species; Awl nematodes, Dolichodorus species; Spiral nematodes, Heliocotylenchus multicinctus and other Helicotylenchus species; Sheath and sheathoid nematodes, Hemicycliophora species and Hemicriconemoides species; Hirshmanniella species; Lance nematodes, Hoploaimus species; false rootknot nematodes, Nacobbus species; Needle nematodes, Longidorus elongatus and other Longidorus species; Pin nematodes, Pratylenchus species; Lesion nematodes, Pratylenchus neglectus, Pratylenchus penetrans, Pratylenchus curvitatus, Pratylenchus goodeyi and other Pratylenchus species; Burrowing nematodes, Radopholus similis and other Radopholus species; Reniform nematodes, Rotylenchus robustus, Rotylenchus reniformis and other Rotylenchus species; Scutellonema species; Stubby root nematodes, Trichodorus primitivus and other Trichodorus species, Paratrichodorus species; Stunt nematodes, Tylenchorhynchus claytoni, Tylenchorhynchus dubius and other Tylenchorhynchus species; Citrus nematodes, Tylenchulus species; Dagger nematodes,

Xiphinema species; and other plant parasitic nematode species, such as Subanguina spp., Hypsoperine spp., Macroposthonia spp., Melinius spp., Punctodera spp., and Quinisulcius spp..

The compounds of the invention may also have activity against the molluscs. Examples of which include, for example, Ampullariidae; Arion (A. ater, A. circumscriptus, A. hortensis, A. rufus); Bradybaenidae (Bradybaena fruticum); Cepaea (C. hortensis, C. Nemoralis); ochlodina; Deroceras (D. agrestis, D. empiricorum, D. laeve, D. reticulatum); Discus (D. rotundatus); Euomphalia; Galba (G. trunculata); Helicelia (H. itala, H. obvia); Helicidae Helicigona arbustorum); Helicodiscus; Helix (H. aperta); Limax (L. cinereoniger, L. flavus, L. marginatus, L. maximus, L. tenellus); Lymnaea; Milax (M. gagates, M. marginatus, M. sowerbyi); Opeas; Pomacea (P. canaticulata); Vallonia and Zanitoides. The combinations according to the present invention are particularly effective against Deroceras, such as Deroceras reticulatum.

In an embodiment, independent of other embodiments, the compounds of formula (I) are especially useful for the control of nematodes. Particularly, the nematode species Meloidogyne spp., Heterodera spp., Rotylenchus spp. and Pratylenchus spp. can be controlled by compounds of the invention.

Compounds of this invention are effective for controlling nematode, insect, acarid pests and/or fungal pathogens of agronomic plants, both growing and harvested, when employed alone, they may also be used in combination with other biological active agents used in agriculture, such as one or more nematicides, insecticides, acaricides, fungicides, bactericides, plant activator, molluscicide, and pheromones (whether chemical or biological). Mixing the compounds of the invention or the compositions thereof in the use form as pesticides with other pesticides frequently results in a broader pesticidal spectrum of action. For example, the formula (I) compounds of this invention may be used effectively in conjunction or combination with pyrethroids, neonicotinoids, macrolides, diamides, phosphates, carbamates, cyclodienes, formamidines, phenol tin compounds, chlorinated hydrocarbons, benzoylphenyl ureas, pyrroles and the like.

The activity of the compositions according to the invention can be broadened considerably, and adapted to prevailing circumstances, by adding, for example, one or more insecticidally, acaricidally, nematicidally and/or fungicidally active agents. The combinations compounds of formula (I) with other insecticidally, acaricidally, nematicidally and/or fungicidally active agents may also have further surprising advantages which can also be described, in a wider sense, as synergistic activity. For example, better tolerance by plants, reduced phytotoxicity, pests or fungi can be controlled in their different

development stages or better behaviour during their production, for example during grinding or mixing, during their storage or during their use.

The following list of pesticides together with which the compounds according to the invention can be used, is intended to illustrate the possible combinations by way of example.

The following combination of the compounds of formula (I) with another active compounds are preferred (the abbreviation "TX" means "one compound selected from the compounds of formulae P.1 to P.191 described in Table P of the present invention"):

an adjuvant selected from the group of substances consisting of petroleum oils (alternative name) (628) + TX,

an acaricide selected from the group of substances consisting of 1,1-bis(4-chloro-phenyl)-2-ethoxyethanol (IUPAC name) (910) + TX, 2,4-dichlorophenyl benzenesulfonate (IUPAC/Chemical Abstracts name) (1059) + TX, 2-fluoro-*N*-methyl-*N*-1-naphthylacetamide (IUPAC name) (1295) + TX, 4-chlorophenyl phenyl sulfone (IUPAC name) (981) + TX, abamectin (1) + TX, acequinocyl (3) + TX, acetoprole [CCN] + TX, acrinathrin (9) + TX, aldicarb (16) + TX, aldoxycarb (863) + TX, alpha-cypermethrin (202) + TX, amidithion (870) + TX, amidoflumet [CCN] + TX, amidothioate (872) + TX, amiton (875) + TX, amiton hydrogen oxalate (875) + TX, amitraz (24) + TX, aramite (881) + TX, arsenous oxide (882) + TX, AVI 382 (compound code) + TX, AZ 60541 (compound code) + TX, azinphos-ethyl (44) + TX, azinphos-methyl (45) + TX, azobenzene (IUPAC name) (888) + TX, azocyclotin (46) + TX, azothoate (889) + TX, benomyl (62) + TX, benoxafos (alternative name) [CCN] + TX, benzoximate (71) + TX, benzyl benzoate (IUPAC name) [CCN] + TX, bifenazate (74) + TX, bifenthrin (76) + TX, binapacryl (907) + TX, brofenvalerate (alternative name) + TX, bromocyclen (918) + TX, bromophos (920) + TX, bromophos-ethyl (921) + TX, bromopropylate (94) + TX, buprofezin (99) + TX, butocarboxim (103) + TX, butoxycarboxim (104) + TX, butylpyridaben (alternative name) + TX, calcium polysulfide (IUPAC name) (111) + TX, camphechlor (941) + TX, carbanolate (943) + TX, carbaryl (115) + TX, carbofuran (118) + TX, carbophenothion (947) + TX, CGA 50'439 (development code) (125) + TX, chinomethionat (126) + TX, chlorbenside (959) + TX, chlordimeform (964) + TX, chlordimeform hydrochloride (964) + TX, chlorfenapyr (130) + TX, chlorfenethol (968) + TX, chlorfenson (970) + TX, chlorfensulphide (971) + TX, chlorfenvinphos (131) + TX, chlorobenzilate (975) + TX, chloromebuform (977) + TX, chloromethiuron (978) + TX, chloropropylate (983) + TX, chlorpyrifos (145) + TX, chlorpyrifos-methyl (146) + TX, chlorthiophos (994) + TX, cinerin I (696) + TX, cinerin II (696) + TX, cinerins (696) +

TX, clofentezine (158) + TX, closantel (alternative name) [CCN] + TX, coumaphos (174) + TX, crotamiton (alternative name) [CCN] + TX, crotoxyphos (1010) + TX, cufraneb (1013) + TX, cyanthoate (1020) + TX, cyflumetofen (CAS Reg. No.: 400882-07-7) + TX, cyhalothrin (196) + TX, cyhexatin (199) + TX, cypermethrin (201) + TX, DCPM (1032) + TX, DDT (219) + TX, demephion (1037) + TX, demephion-O (1037) + TX, demephion-S (1037) + TX, demeton (1038) + TX, demeton-methyl (224) + TX, demeton-O (1038) + TX, demeton-O-methyl (224) + TX, demeton-S (1038) + TX, demeton-S-methyl (224) + TX, demeton-S-methylsulphon (1039) + TX, diafenthiuron (226) + TX, dialifos (1042) + TX, diazinon (227) + TX, dichlofluanid (230) + TX, dichlorvos (236) + TX, dicliphos (alternative name) + TX, dicofol (242) + TX, dicrotophos (243) + TX, dienochlor (1071) + TX, dimefox (1081) + TX, dimethoate (262) + TX, dinactin (alternative name) (653) + TX, dinex (1089) + TX, dinex-diclexine (1089) + TX, dinobuton (269) + TX, dinocap (270) + TX, dinocap-4 [CCN] + TX, dinocap-6 [CCN] + TX, dinocton (1090) + TX, dinopenton (1092) + TX, dinosulfon (1097) + TX, dinoterbon (1098) + TX, dioxathion (1102) + TX, diphenyl sulfone (IUPAC name) (1103) + TX, disulfiram (alternative name) [CCN] + TX, disulfoton (278) + TX, DNOC (282) + TX, dofenapyn (1113) + TX, doramectin (alternative name) [CCN] + TX, endosulfan (294) + TX, endothion (1121) + TX, EPN (297) + TX, eprinomectin (alternative name) [CCN] + TX, ethion (309) + TX, ethoate-methyl (1134) + TX, etoxazole (320) + TX, etrimfos (1142) + TX, fenazaflor (1147) + TX, fenazaquin (328) + TX, fenbutatin oxide (330) + TX, fenothiocarb (337) + TX, fenpropathrin (342) + TX, fenpyrad (alternative name) + TX, fenpyroximate (345) + TX, fenson (1157) + TX, fentrifanil (1161) + TX, fenvalerate (349) + TX, fipronil (354) + TX, fluacrypyrim (360) + TX, fluazuron (1166) + TX, flubenzimine (1167) + TX, flucycloxuron (366) + TX, flucythrinate (367) + TX, fluenetil (1169) + TX, flufenoxuron (370) + TX, flumethrin (372) + TX, fluorbenside (1174) + TX, fluvalinate (1184) + TX, FMC 1137 (development code) (1185) + TX, formetanate (405) + TX, formetanate hydrochloride (405) + TX, formothion (1192) + TX, formparanate (1193) + TX, gamma-HCH (430) + TX, glyodin (1205) + TX, halfenprox (424) + TX, heptenophos (432) + TX, hexadecyl cyclopropanecarboxylate (IUPAC/Chemical Abstracts name) (1216) + TX, hexythiazox (441) + TX, iodomethane (IUPAC name) (542) + TX, isocarbophos (alternative name) (473) + TX, isopropyl *O*-(methoxyaminothiophosphoryl)salicylate (IUPAC name) (473) + TX, ivermectin (alternative name) [CCN] + TX, jasmolin I (696) + TX, jasmolin II (696) + TX, jodfenphos (1248) + TX, lindane (430) + TX, lufenuron (490) + TX, malathion (492) + TX, malonoben (1254) + TX, mecarbam (502) + TX, mephosfolan (1261) + TX,

mesulfen (alternative name) [CCN] + TX, methacrifos (1266) + TX, methamidophos (527) + TX, methidathion (529) + TX, methiocarb (530) + TX, methomyl (531) + TX, methyl bromide (537) + TX, metolcarb (550) + TX, mevinphos (556) + TX, mexacarbate (1290) + TX, milbemectin (557) + TX, milbemycin oxime (alternative name) [CCN] + TX, mipafox (1293) + TX, monocrotophos (561) + TX, morphothion (1300) + TX, moxidectin (alternative name) [CCN] + TX, naled (567) + TX, NC-184 (compound code) + TX, NC-512 (compound code) + TX, nifluridide (1309) + TX, nikkomycins (alternative name) [CCN] + TX, nitrilacarb (1313) + TX, nitrilacarb 1:1 zinc chloride complex (1313) + TX, NNI-0101 (compound code) + TX, NNI-0250 (compound code) + TX, omethoate (594) + TX, oxamyl (602) + TX, oxydeprofos (1324) + TX, oxydisulfoton (1325) + TX, pp'-DDT (219) + TX, parathion (615) + TX, permethrin (626) + TX, petroleum oils (alternative name) (628) + TX, phenkapton (1330) + TX, phenthoate (631) + TX, phorate (636) + TX, phosalone (637) + TX, phosfolan (1338) + TX, phosmet (638) + TX, phosphamidon (639) + TX, phoxim (642) + TX, pirimiphos-methyl (652) + TX, polychloroterpenes (traditional name) (1347) + TX, polynactins (alternative name) (653) + TX, proclonol (1350) + TX, profenofos (662) + TX, promacyl (1354) + TX, propargite (671) + TX, propetamphos (673) + TX, propoxur (678) + TX, prothidathion (1360) + TX, prothoate (1362) + TX, pyrethrin I (696) + TX, pyrethrin II (696) + TX, pyrethrins (696) + TX, pyridaben (699) + TX, pyridaphenthion (701) + TX, pyrimidifen (706) + TX, pyrimitate (1370) + TX, quinalphos (711) + TX, quintiofos (1381) + TX, R-1492 (development code) (1382) + TX, RA-17 (development code) (1383) + TX, rotenone (722) + TX, schradan (1389) + TX, sebufos (alternative name) + TX, selamectin (alternative name) [CCN] + TX, SI-0009 (compound code) + TX, sophamide (1402) + TX, spirodiclofen (738) + TX, spiromesifen (739) + TX, SSI-121 (development code) (1404) + TX, sulfiram (alternative name) [CCN] + TX, sulfluramid (750) + TX, sulfotep (753) + TX, sulphur (754) + TX, SZI-121 (development code) (757) + TX, tau-fluvalinate (398) + TX, tebufenpyrad (763) + TX, TEPP (1417) + TX, terbam (alternative name) + TX, tetrachlorvinphos (777) + TX, tetradifon (786) + TX, tetranactin (alternative name) (653) + TX, tetrasul (1425) + TX, thiafenox (alternative name) + TX, thiocarboxime (1431) + TX, thiofanox (800) + TX, thiometon (801) + TX, thioquinox (1436) + TX, thuringiensin (alternative name) [CCN] + TX, triamiphos (1441) + TX, triarathene (1443) + TX, triazophos (820) + TX, triazuron (alternative name) + TX, trichlorfon (824) + TX, trifenofos (1455) + TX, trinactin (alternative name) (653) + TX, vamidothion (847) + TX, vaniliprole [CCN] and YI-5302 (compound code) + TX,

an algicide selected from the group of substances consisting of bethoxazin [CCN] + TX, copper dioctanoate (IUPAC name) (170) + TX, copper sulfate (172) + TX, cybutryne [CCN] + TX, dichlone (1052) + TX, dichlorophen (232) + TX, endothal (295) + TX, fentin (347) + TX, hydrated lime [CCN] + TX, nabam (566) + TX, quinoclamine (714) + TX, quinonamid (1379) + TX, simazine (730) + TX, triphenyltin acetate (IUPAC name) (347) and triphenyltin hydroxide (IUPAC name) (347) + TX,

an anthelmintic selected from the group of substances consisting of abamectin (1) + TX, crufomate (1011) + TX, doramectin (alternative name) [CCN] + TX, emamectin (291) + TX, emamectin benzoate (291) + TX, eprinomectin (alternative name) [CCN] + TX, ivermectin (alternative name) [CCN] + TX, milbemycin oxime (alternative name) [CCN] + TX, moxidectin (alternative name) [CCN] + TX, piperazine [CCN] + TX, selamectin (alternative name) [CCN] + TX, spinosad (737) and thiophanate (1435) + TX,

an avicide selected from the group of substances consisting of chloralose (127) + TX, endrin (1122) + TX, fenthion (346) + TX, pyridin-4-amine (IUPAC name) (23) and strychnine (745) + TX,

a bactericide selected from the group of substances consisting of 1-hydroxy-1*H*-pyridine-2-thione (IUPAC name) (1222) + TX, 4-(quinoxalin-2-ylamino)benzenesulfonamide (IUPAC name) (748) + TX, 8-hydroxyquinoline sulfate (446) + TX, bronopol (97) + TX, copper dioctanoate (IUPAC name) (170) + TX, copper hydroxide (IUPAC name) (169) + TX, cresol [CCN] + TX, dichlorophen (232) + TX, dipyrithione (1105) + TX, dodicin (1112) + TX, fenaminosulf (1144) + TX, formaldehyde (404) + TX, hydrargaphen (alternative name) [CCN] + TX, kasugamycin (483) + TX, kasugamycin hydrochloride hydrate (483) + TX, nickel bis(dimethyldithiocarbamate) (IUPAC name) (1308) + TX, nitrapyrin (580) + TX, octhilinone (590) + TX, oxolinic acid (606) + TX, oxytetracycline (611) + TX, potassium hydroxyquinoline sulfate (446) + TX, probenazole (658) + TX, streptomycin (744) + TX, streptomycin sesquisulfate (744) + TX, tecloftalam (766) + TX, and thiomersal (alternative name) [CCN] + TX,

a biological agent selected from the group of substances consisting of *Adoxophyes orana* GV (alternative name) (12) + TX, *Agrobacterium radiobacter* (alternative name) (13) + TX, *Amblyseius* spp. (alternative name) (19) + TX, *Anagrapha falcifera* NPV (alternative name) (28) + TX, *Anagrus atomus* (alternative name) (29) + TX, *Aphelinus abdominalis* (alternative name) (33) + TX, *Aphidius colemani* (alternative name) (34) + TX, *Aphidoletes aphidimyza* (alternative name) (35) + TX, *Autographa californica* NPV (alternative name) (38) + TX, *Bacillus firmus* (alternative name) (48) + TX, *Bacillus sphaericus* Neide (scientific name) (49) + TX, *Bacillus thuringiensis* Berliner (scientific

name) (51) + TX, *Bacillus thuringiensis* subsp. *aizawai* (scientific name) (51) + TX, *Bacillus thuringiensis* subsp. *israelensis* (scientific name) (51) + TX, *Bacillus thuringiensis* subsp. *japonensis* (scientific name) (51) + TX, *Bacillus thuringiensis* subsp. *kurstaki* (scientific name) (51) + TX, *Bacillus thuringiensis* subsp. *tenebrionis* (scientific name) (51) + TX, *Beauveria bassiana* (alternative name) (53) + TX, *Beauveria brongniartii* (alternative name) (54) + TX, *Chrysoperla carnea* (alternative name) (151) + TX, *Cryptolaemus montrouzieri* (alternative name) (178) + TX, *Cydia pomonella* GV (alternative name) (191) + TX, *Dacnusa sibirica* (alternative name) (212) + TX, *Diglyphus isaea* (alternative name) (254) + TX, *Encarsia formosa* (scientific name) (293) + TX, *Eretmocerus eremicus* (alternative name) (300) + TX, *Helicoverpa zea* NPV (alternative name) (431) + TX, *Heterorhabditis bacteriophora* and *H. megidis* (alternative name) (433) + TX, *Hippodamia convergens* (alternative name) (442) + TX, *Leptomastix dactylopii* (alternative name) (488) + TX, *Macrolophus caliginosus* (alternative name) (491) + TX, *Mamestra brassicae* NPV (alternative name) (494) + TX, *Metaphycus helvolus* (alternative name) (522) + TX, *Metarhizium anisopliae* var. *acridum* (scientific name) (523) + TX, *Metarhizium anisopliae* var. *anisopliae* (scientific name) (523) + TX, *Neodiprion sertifer* NPV and *N. lecontei* NPV (alternative name) (575) + TX, *Orius* spp. (alternative name) (596) + TX, *Paecilomyces fumosoroseus* (alternative name) (613) + TX, *Pasteuria penetrans* + TX, *Pasteuria thornei* + TX, *Pasteuria nishizawae* + TX, *Pasteuria ramosa* + TX, *Phytoseiulus persimilis* (alternative name) (644) + TX, *Spodoptera exigua* multicapsid nuclear polyhedrosis virus (scientific name) (741) + TX, *Steinernema bibionis* (alternative name) (742) + TX, *Steinernema carpocapsae* (alternative name) (742) + TX, *Steinernema feltiae* (alternative name) (742) + TX, *Steinernema glaseri* (alternative name) (742) + TX, *Steinernema riobrave* (alternative name) (742) + TX, *Steinernema riobravis* (alternative name) (742) + TX, *Steinernema scapterisci* (alternative name) (742) + TX, *Steinernema* spp. (alternative name) (742) + TX, *Trichogramma* spp. (alternative name) (826) + TX, *Typhlodromus occidentalis* (alternative name) (844) and *Verticillium lecanii* (alternative name) (848) + TX,

a soil sterilant selected from the group of substances consisting of iodomethane (IUPAC name) (542) and methyl bromide (537) + TX,

a chemosterilant selected from the group of substances consisting of apholate [CCN] + TX, bisazir (alternative name) [CCN] + TX, busulfan (alternative name) [CCN] + TX, diflubenzuron (250) + TX, dimatif (alternative name) [CCN] + TX, hemel [CCN] + TX, hempa [CCN] + TX, metepa [CCN] + TX, methiotepa [CCN] + TX, methyl apholate [CCN] + TX, morzid [CCN] + TX, penfluron (alternative name) [CCN] + TX,

tepa [CCN] + TX, thiohempa (alternative name) [CCN] + TX, thiotepa (alternative name) [CCN] + TX, tretamine (alternative name) [CCN] and uredepa (alternative name) [CCN] + TX,

an insect pheromone selected from the group of substances consisting of (*E*)-dec-5-en-1-yl acetate with (*E*)-dec-5-en-1-ol (IUPAC name) (222) + TX, (*E*)-tridec-4-en-1-yl acetate (IUPAC name) (829) + TX, (*E*)-6-methylhept-2-en-4-ol (IUPAC name) (541) + TX, (*E,Z*)-tetradeca-4,10-dien-1-yl acetate (IUPAC name) (779) + TX, (*Z*)-dodec-7-en-1-yl acetate (IUPAC name) (285) + TX, (*Z*)-hexadec-11-enal (IUPAC name) (436) + TX, (*Z*)-hexadec-11-en-1-yl acetate (IUPAC name) (437) + TX, (*Z*)-hexadec-13-en-11-yn-1-yl acetate (IUPAC name) (438) + TX, (*Z*)-icos-13-en-10-one (IUPAC name) (448) + TX, (Z)-tetradec-7-en-1-al (IUPAC name) (782) + TX, *(Z)*-tetradec-9-en-1-ol (IUPAC name) (783) + TX, (Z)-tetradec-9-en-1-yl acetate (IUPAC name) (784) + TX, (7*E*,9*Z*)-dodeca-7,9-dien-1-yl acetate (IUPAC name) (283) + TX, (9*Z*,11*E*)-tetradeca-9,11-dien-1-yl acetate (IUPAC name) (780) + TX, (9*Z*,12*E*)-tetradeca-9,12-dien-1-yl acetate (IUPAC name) (781) + TX, 14-methyloctadec-1-ene (IUPAC name) (545) + TX, 4-methylnonan-5-ol with 4-methylnonan-5-one (IUPAC name) (544) + TX, alpha-multistriatin (alternative name) [CCN] + TX, brevicomin (alternative name) [CCN] + TX, codlelure (alternative name) [CCN] + TX, codlemone (alternative name) (167) + TX, cuelure (alternative name) (179) + TX, disparlure (277) + TX, dodec-8-en-1-yl acetate (IUPAC name) (286) + TX, dodec-9-en-1-yl acetate (IUPAC name) (287) + TX, dodeca-8 + TX, 10-dien-1-yl acetate (IUPAC name) (284) + TX, dominicalure (alternative name) [CCN] + TX, ethyl 4-methyloctanoate (IUPAC name) (317) + TX, eugenol (alternative name) [CCN] + TX, frontalin (alternative name) [CCN] + TX, gossyplure (alternative name) (420) + TX, grandlure (421) + TX, grandlure I (alternative name) (421) + TX, grandlure II (alternative name) (421) + TX, grandlure III (alternative name) (421) + TX, grandlure IV (alternative name) (421) + TX, hexalure [CCN] + TX, ipsdienol (alternative name) [CCN] + TX, ipsenol (alternative name) [CCN] + TX, japonilure (alternative name) (481) + TX, lineatin (alternative name) [CCN] + TX, litlure (alternative name) [CCN] + TX, looplure (alternative name) [CCN] + TX, medlure [CCN] + TX, megatomoic acid (alternative name) [CCN] + TX, methyl eugenol (alternative name) (540) + TX, muscalure (563) + TX, octadeca-2,13-dien-1-yl acetate (IUPAC name) (588) + TX, octadeca-3,13-dien-1-yl acetate (IUPAC name) (589) + TX, orfralure (alternative name) [CCN] + TX, oryctalure (alternative name) (317) + TX, ostramone (alternative name) [CCN] + TX, siglure [CCN] + TX, sordidin (alternative name) (736) + TX, sulcatol (alternative name) [CCN] + TX, tetradec-11-en-1-yl acetate (IUPAC name) (785) + TX, trimedlure (839) + TX, trimedlure

A (alternative name) (839) + TX, trimedlure B_1 (alternative name) (839) + TX, trimedlure B_2 (alternative name) (839) + TX, trimedlure C (alternative name) (839) and trunc-call (alternative name) [CCN] + TX,

an insect repellent selected from the group of substances consisting of 2-(octylthio)ethanol (IUPAC name) (591) + TX, butopyronoxyl (933) + TX, butoxy(polypropylene glycol) (936) + TX, dibutyl adipate (IUPAC name) (1046) + TX, dibutyl phthalate (1047) + TX, dibutyl succinate (IUPAC name) (1048) + TX, diethyltoluamide [CCN] + TX, dimethyl carbate [CCN] + TX, dimethyl phthalate [CCN] + TX, ethyl hexanediol (1137) + TX, hexamide [CCN] + TX, methoquin-butyl (1276) + TX, methylneodecanamide [CCN] + TX, oxamate [CCN] and picaridin [CCN] + TX,

an insecticide selected from the group of substances consisting of 1-dichloro-1-nitroethane (IUPAC/Chemical Abstracts name) (1058) + TX, 1,1-dichloro-2,2-bis(4-ethylphenyl)ethane (IUPAC name) (1056), + TX, 1,2-dichloropropane (IUPAC/Chemical Abstracts name) (1062) + TX, 1,2-dichloropropane with 1,3-dichloropropene (IUPAC name) (1063) + TX, 1-bromo-2-chloroethane (IUPAC/Chemical Abstracts name) (916) + TX, 2,2,2-trichloro-1-(3,4-dichlorophenyl)ethyl acetate (IUPAC name) (1451) + TX, 2,2-dichlorovinyl 2-ethylsulphinylethyl methyl phosphate (IUPAC name) (1066) + TX, 2-(1,3-dithiolan-2-yl)phenyl dimethylcarbamate (IUPAC/ Chemical Abstracts name) (1109) + TX, 2-(2-butoxyethoxy)ethyl thiocyanate (IUPAC/Chemical Abstracts name) (935) + TX, 2-(4,5-dimethyl-1,3-dioxolan-2-yl)phenyl methylcarbamate (IUPAC/ Chemical Abstracts name) (1084) + TX, 2-(4-chloro-3,5-xylyloxy)ethanol (IUPAC name) (986) + TX, 2-chlorovinyl diethyl phosphate (IUPAC name) (984) + TX, 2-imidazolidone (IUPAC name) (1225) + TX, 2-isovalerylindan-1,3-dione (IUPAC name) (1246) + TX, 2-methyl(prop-2-ynyl)aminophenyl methylcarbamate (IUPAC name) (1284) + TX, 2-thiocyanatoethyl laurate (IUPAC name) (1433) + TX, 3-bromo-1-chloroprop-1-ene (IUPAC name) (917) + TX, 3-methyl-1-phenylpyrazol-5-yl dimethylcarbamate (IUPAC name) (1283) + TX, 4-methyl(prop-2-ynyl)amino-3,5-xylyl methylcarbamate (IUPAC name) (1285) + TX, 5,5-dimethyl-3-oxocyclohex-1-enyl dimethylcarbamate (IUPAC name) (1085) + TX, abamectin (1) + TX, acephate (2) + TX, acetamiprid (4) + TX, acethion (alternative name) [CCN] + TX, acetoprole [CCN] + TX, acrinathrin (9) + TX, acrylonitrile (IUPAC name) (861) + TX, alanycarb (15) + TX, aldicarb (16) + TX, aldoxycarb (863) + TX, aldrin (864) + TX, allethrin (17) + TX, allosamidin (alternative name) [CCN] + TX, allyxycarb (866) + TX, alpha-cypermethrin (202) + TX, alpha-ecdysone (alternative name) [CCN] + TX, aluminium phosphide (640) + TX, amidithion (870) + TX, amidothioate (872) + TX, aminocarb (873) + TX, amiton (875) + TX, amiton hydrogen

oxalate (875) + TX, amitraz (24) + TX, anabasine (877) + TX, athidathion (883) + TX, AVI 382 (compound code) + TX, AZ 60541 (compound code) + TX, azadirachtin (alternative name) (41) + TX, azamethiphos (42) + TX, azinphos-ethyl (44) + TX, azinphos-methyl (45) + TX, azothoate (889) + TX, *Bacillus thuringiensis* delta endotoxins (alternative name) (52) + TX, barium hexafluorosilicate (alternative name) [CCN] + TX, barium polysulfide (IUPAC/Chemical Abstracts name) (892) + TX, barthrin [CCN] + TX, Bayer 22/190 (development code) (893) + TX, Bayer 22408 (development code) (894) + TX, bendiocarb (58) + TX, benfuracarb (60) + TX, bensultap (66) + TX, beta-cyfluthrin (194) + TX, beta-cypermethrin (203) + TX, bifenthrin (76) + TX, bioallethrin (78) + TX, bioallethrin *S*-cyclopentenyl isomer (alternative name) (79) + TX, bioethanomethrin [CCN] + TX, biopermethrin (908) + TX, bioresmethrin (80) + TX, bis(2-chloroethyl) ether (IUPAC name) (909) + TX, bistrifluron (83) + TX, borax (86) + TX, brofenvalerate (alternative name) + TX, bromfenvinfos (914) + TX, bromocyclen (918) + TX, bromo-DDT (alternative name) [CCN] + TX, bromophos (920) + TX, bromophos-ethyl (921) + TX, bufencarb (924) + TX, buprofezin (99) + TX, butacarb (926) + TX, butathiofos (927) + TX, butocarboxim (103) + TX, butonate (932) + TX, butoxycarboxim (104) + TX, butylpyridaben (alternative name) + TX, cadusafos (109) + TX, calcium arsenate [CCN] + TX, calcium cyanide (444) + TX, calcium polysulfide (IUPAC name) (111) + TX, camphechlor (941) + TX, carbanolate (943) + TX, carbaryl (115) + TX, carbofuran (118) + TX, carbon disulfide (IUPAC/Chemical Abstracts name) (945) + TX, carbon tetrachloride (IUPAC name) (946) + TX, carbophenothion (947) + TX, carbosulfan (119) + TX, cartap (123) + TX, cartap hydrochloride (123) + TX, cevadine (alternative name) (725) + TX, chlorbicyclen (960) + TX, chlordane (128) + TX, chlordecone (963) + TX, chlordimeform (964) + TX, chlordimeform hydrochloride (964) + TX, chlorethoxyfos (129) + TX, chlorfenapyr (130) + TX, chlorfenvinphos (131) + TX, chlorfluazuron (132) + TX, chlormephos (136) + TX, chloroform [CCN] + TX, chloropicrin (141) + TX, chlorphoxim (989) + TX, chlorprazophos (990) + TX, chlorpyrifos (145) + TX, chlorpyrifos-methyl (146) + TX, chlorthiophos (994) + TX, chromafenozide (150) + TX, cinerin I (696) + TX, cinerin II (696) + TX, cinerins (696) + TX, cis-resmethrin (alternative name) + TX, cismethrin (80) + TX, clocythrin (alternative name) + TX, cloethocarb (999) + TX, closantel (alternative name) [CCN] + TX, clothianidin (165) + TX, copper acetoarsenite [CCN] + TX, copper arsenate [CCN] + TX, copper oleate [CCN] + TX, coumaphos (174) + TX, coumithoate (1006) + TX, crotamiton (alternative name) [CCN] + TX, crotoxyphos (1010) + TX, crufomate (1011) + TX, cryolite (alternative name) (177) + TX, CS 708 (development code) (1012) + TX,

cyanofenphos (1019) + TX, cyanophos (184) + TX, cyanthoate (1020) + TX, cyclethrin [CCN] + TX, cycloprothrin (188) + TX, cyfluthrin (193) + TX, cyhalothrin (196) + TX, cypermethrin (201) + TX, cyphenothrin (206) + TX, cyromazine (209) + TX, cythioate (alternative name) [CCN] + TX, *d*-limonene (alternative name) [CCN] + TX, *d*-tetramethrin (alternative name) (788) + TX, DAEP (1031) + TX, dazomet (216) + TX, DDT (219) + TX, decarbofuran (1034) + TX, deltamethrin (223) + TX, demephion (1037) + TX, demephion-O (1037) + TX, demephion-S (1037) + TX, demeton (1038) + TX, demeton-methyl (224) + TX, demeton-O (1038) + TX, demeton-O-methyl (224) + TX, demeton-S (1038) + TX, demeton-S-methyl (224) + TX, demeton-S-methylsulphon (1039) + TX, diafenthiuron (226) + TX, dialifos (1042) + TX, diamidafos (1044) + TX, diazinon (227) + TX, dicapthon (1050) + TX, dichlofenthion (1051) + TX, dichlorvos (236) + TX, dicliphos (alternative name) + TX, dicresyl (alternative name) [CCN] + TX, dicrotophos (243) + TX, dicyclanil (244) + TX, dieldrin (1070) + TX, diethyl 5-methylpyrazol-3-yl phosphate (IUPAC name) (1076) + TX, diflubenzuron (250) + TX, dilor (alternative name) [CCN] + TX, dimefluthrin [CCN] + TX, dimefox (1081) + TX, dimetan (1085) + TX, dimethoate (262) + TX, dimethrin (1083) + TX, dimethylvinphos (265) + TX, dimetilan (1086) + TX, dinex (1089) + TX, dinex-diclexine (1089) + TX, dinoprop (1093) + TX, dinosam (1094) + TX, dinoseb (1095) + TX, dinotefuran (271) + TX, diofenolan (1099) + TX, dioxabenzofos (1100) + TX, dioxacarb (1101) + TX, dioxathion (1102) + TX, disulfoton (278) + TX, dithicrofos (1108) + TX, DNOC (282) + TX, doramectin (alternative name) [CCN] + TX, DSP (1115) + TX, ecdysterone (alternative name) [CCN] + TX, EI 1642 (development code) (1118) + TX, emamectin (291) + TX, emamectin benzoate (291) + TX, EMPC (1120) + TX, empenthrin (292) + TX, endosulfan (294) + TX, endothion (1121) + TX, endrin (1122) + TX, EPBP (1123) + TX, EPN (297) + TX, epofenonane (1124) + TX, eprinomectin (alternative name) [CCN] + TX, esfenvalerate (302) + TX, etaphos (alternative name) [CCN] + TX, ethiofencarb (308) + TX, ethion (309) + TX, ethiprole (310) + TX, ethoate-methyl (1134) + TX, ethoprophos (312) + TX, ethyl formate (IUPAC name) [CCN] + TX, ethyl-DDD (alternative name) (1056) + TX, ethylene dibromide (316) + TX, ethylene dichloride (chemical name) (1136) + TX, ethylene oxide [CCN] + TX, etofenprox (319) + TX, etrimfos (1142) + TX, EXD (1143) + TX, famphur (323) + TX, fenamiphos (326) + TX, fenazaflor (1147) + TX, fenchlorphos (1148) + TX, fenethacarb (1149) + TX, fenfluthrin (1150) + TX, fenitrothion (335) + TX, fenobucarb (336) + TX, fenoxacrim (1153) + TX, fenoxycarb (340) + TX, fenpirithrin (1155) + TX, fenpropathrin (342) + TX, fenpyrad (alternative name) + TX, fensulfothion (1158) + TX, fenthion (346) + TX, fenthion-ethyl

[CCN] + TX, fenvalerate (349) + TX, fipronil (354) + TX, flonicamid (358) + TX, flubendiamide (CAS. Reg. No.: 272451-65-7) + TX, flucofuron (1168) + TX, flucycloxuron (366) + TX, flucythrinate (367) + TX, fluenetil (1169) + TX, flufenerim [CCN] + TX, flufenoxuron (370) + TX, flufenprox (1171) + TX, flumethrin (372) + TX, flupyradifurone + TX, fluvalinate (1184) + TX, FMC 1137 (development code) (1185) + TX, fonofos (1191) + TX, formetanate (405) + TX, formetanate hydrochloride (405) + TX, formothion (1192) + TX, formparanate (1193) + TX, fosmethilan (1194) + TX, fospirate (1195) + TX, fosthiazate (408) + TX, fosthietan (1196) + TX, furathiocarb (412) + TX, furethrin (1200) + TX, gamma-cyhalothrin (197) + TX, gamma-HCH (430) + TX, guazatine (422) + TX, guazatine acetates (422) + TX, GY-81 (development code) (423) + TX, halfenprox (424) + TX, halofenozide (425) + TX, HCH (430) + TX, HEOD (1070) + TX, heptachlor (1211) + TX, heptenophos (432) + TX, heterophos [CCN] + TX, hexaflumuron (439) + TX, HHDN (864) + TX, hydramethylnon (443) + TX, hydrogen cyanide (444) + TX, hydroprene (445) + TX, hyquincarb (1223) + TX, imidacloprid (458) + TX, imiprothrin (460) + TX, indoxacarb (465) + TX, iodomethane (IUPAC name) (542) + TX, IPSP (1229) + TX, isazofos (1231) + TX, isobenzan (1232) + TX, isocarbophos (alternative name) (473) + TX, isodrin (1235) + TX, isofenphos (1236) + TX, isolane (1237) + TX, isoprocarb (472) + TX, isopropyl *O*-(methoxy-aminothiophosphoryl)salicylate (IUPAC name) (473) + TX, isoprothiolane (474) + TX, isothioate (1244) + TX, isoxathion (480) + TX, ivermectin (alternative name) [CCN] + TX, jasmolin I (696) + TX, jasmolin II (696) + TX, jodfenphos (1248) + TX, juvenile hormone I (alternative name) [CCN] + TX, juvenile hormone II (alternative name) [CCN] + TX, juvenile hormone III (alternative name) [CCN] + TX, kelevan (1249) + TX, kinoprene (484) + TX, lambda-cyhalothrin (198) + TX, lead arsenate [CCN] + TX, lepimectin (CCN) + TX, leptophos (1250) + TX, lindane (430) + TX, lirimfos (1251) + TX, lufenuron (490) + TX, lythidathion (1253) + TX, *m*-cumenyl methylcarbamate (IUPAC name) (1014) + TX, magnesium phosphide (IUPAC name) (640) + TX, malathion (492) + TX, malonoben (1254) + TX, mazidox (1255) + TX, mecarbam (502) + TX, mecarphon (1258) + TX, menazon (1260) + TX, mephosfolan (1261) + TX, mercurous chloride (513) + TX, mesulfenfos (1263) + TX, metaflumizone (CCN) + TX, metam (519) + TX, metam-potassium (alternative name) (519) + TX, metam-sodium (519) + TX, methacrifos (1266) + TX, methamidophos (527) + TX, methanesulphonyl fluoride (IUPAC/Chemical Abstracts name) (1268) + TX, methidathion (529) + TX, methiocarb (530) + TX, methocrotophos (1273) + TX, methomyl (531) + TX, methoprene (532) + TX, methoquin-butyl (1276) + TX, methothrin (alternative name)

(533) + TX, methoxychlor (534) + TX, methoxyfenozide (535) + TX, methyl bromide (537) + TX, methyl isothiocyanate (543) + TX, methylchloroform (alternative name) [CCN] + TX, methylene chloride [CCN] + TX, metofluthrin [CCN] + TX, metolcarb (550) + TX, metoxadiazone (1288) + TX, mevinphos (556) + TX, mexacarbate (1290) + TX, milbemectin (557) + TX, milbemycin oxime (alternative name) [CCN] + TX, mipafox (1293) + TX, mirex (1294) + TX, monocrotophos (561) + TX, morphothion (1300) + TX, moxidectin (alternative name) [CCN] + TX, naftalofos (alternative name) [CCN] + TX, naled (567) + TX, naphthalene (IUPAC/Chemical Abstracts name) (1303) + TX, NC-170 (development code) (1306) + TX, NC-184 (compound code) + TX, nicotine (578) + TX, nicotine sulfate (578) + TX, nifluridide (1309) + TX, nitenpyram (579) + TX, nithiazine (1311) + TX, nitrilacarb (1313) + TX, nitrilacarb 1:1 zinc chloride complex (1313) + TX, NNI-0101 (compound code) + TX, NNI-0250 (compound code) + TX, nornicotine (traditional name) (1319) + TX, novaluron (585) + TX, noviflumuron (586) + TX, *O*-5-dichloro-4-iodophenyl *O*-ethyl ethylphosphonothioate (IUPAC name) (1057) + TX, *O,O*-diethyl *O*-4-methyl-2-oxo-2*H*-chromen-7-yl phosphorothioate (IUPAC name) (1074) + TX, *O,O*-diethyl *O*-6-methyl-2-propylpyrimidin-4-yl phosphorothioate (IUPAC name) (1075) + TX, *O,O,O*',*O*'-tetrapropyl dithiopyrophosphate (IUPAC name) (1424) + TX, oleic acid (IUPAC name) (593) + TX, omethoate (594) + TX, oxamyl (602) + TX, oxydemeton-methyl (609) + TX, oxydeprofos (1324) + TX, oxydisulfoton (1325) + TX, pp'-DDT (219) + TX, para-dichlorobenzene [CCN] + TX, parathion (615) + TX, parathion-methyl (616) + TX, penfluron (alternative name) [CCN] + TX, pentachlorophenol (623) + TX, pentachlorophenyl laurate (IUPAC name) (623) + TX, permethrin (626) + TX, petroleum oils (alternative name) (628) + TX, PH 60-38 (development code) (1328) + TX, phenkapton (1330) + TX, phenothrin (630) + TX, phenthoate (631) + TX, phorate (636) + TX, phosalone (637) + TX, phosfolan (1338) + TX, phosmet (638) + TX, phosnichlor (1339) + TX, phosphamidon (639) + TX, phosphine (IUPAC name) (640) + TX, phoxim (642) + TX, phoxim-methyl (1340) + TX, pirimetaphos (1344) + TX, pirimicarb (651) + TX, pirimiphos-ethyl (1345) + TX, pirimiphos-methyl (652) + TX, polychlorodicyclopentadiene isomers (IUPAC name) (1346) + TX, polychloroterpenes (traditional name) (1347) + TX, potassium arsenite [CCN] + TX, potassium thiocyanate [CCN] + TX, prallethrin (655) + TX, precocene I (alternative name) [CCN] + TX, precocene II (alternative name) [CCN] + TX, precocene III (alternative name) [CCN] + TX, primidophos (1349) + TX, profenofos (662) + TX, profluthrin [CCN] + TX, promacyl (1354) + TX, promecarb (1355) + TX, propaphos (1356) + TX, propetamphos (673) + TX, propoxur (678) + TX, prothidathion (1360) + TX, prothiofos (686) + TX, prothoate

(1362) + TX, protrifenbute [CCN] + TX, pymetrozine (688) + TX, pyraclofos (689) + TX, pyrazophos (693) + TX, pyresmethrin (1367) + TX, pyrethrin I (696) + TX, pyrethrin II (696) + TX, pyrethrins (696) + TX, pyridaben (699) + TX, pyridalyl (700) + TX, pyridaphenthion (701) + TX, pyrimidifen (706) + TX, pyrimitate (1370) + TX, pyriproxyfen (708) + TX, quassia (alternative name) [CCN] + TX, quinalphos (711) + TX, quinalphos-methyl (1376) + TX, quinothion (1380) + TX, quintiofos (1381) + TX, R-1492 (development code) (1382) + TX, rafoxanide (alternative name) [CCN] + TX, resmethrin (719) + TX, rotenone (722) + TX, RU 15525 (development code) (723) + TX, RU 25475 (development code) (1386) + TX, ryania (alternative name) (1387) + TX, ryanodine (traditional name) (1387) + TX, sabadilla (alternative name) (725) + TX, schradan (1389) + TX, sebufos (alternative name) + TX, selamectin (alternative name) [CCN] + TX, SI-0009 (compound code) + TX, SI-0205 (compound code) + TX, SI-0404 (compound code) + TX, SI-0405 (compound code) + TX, silafluofen (728) + TX, SN 72129 (development code) (1397) + TX, sodium arsenite [CCN] + TX, sodium cyanide (444) + TX, sodium fluoride (IUPAC/Chemical Abstracts name) (1399) + TX, sodium hexafluorosilicate (1400) + TX, sodium pentachlorophenoxide (623) + TX, sodium selenate (IUPAC name) (1401) + TX, sodium thiocyanate [CCN] + TX, sophamide (1402) + TX, spinosad (737) + TX, spiromesifen (739) + TX, spirotetrmat (CCN) + TX, sulcofuron (746) + TX, sulcofuron-sodium (746) + TX, sulfluramid (750) + TX, sulfotep (753) + TX, sulphuryl fluoride (756) + TX, sulprofos (1408) + TX, tar oils (alternative name) (758) + TX, tau-fluvalinate (398) + TX, tazimcarb (1412) + TX, TDE (1414) + TX, tebufenozide (762) + TX, tebufenpyrad (763) + TX, tebupirimfos (764) + TX, teflubenzuron (768) + TX, tefluthrin (769) + TX, temephos (770) + TX, TEPP (1417) + TX, terallethrin (1418) + TX, terbam (alternative name) + TX, terbufos (773) + TX, tetrachloroethane [CCN] + TX, tetrachlorvinphos (777) + TX, tetramethrin (787) + TX, theta-cypermethrin (204) + TX, thiacloprid (791) + TX, thiafenox (alternative name) + TX, thiamethoxam (792) + TX, thicrofos (1428) + TX, thiocarboxime (1431) + TX, thiocyclam (798) + TX, thiocyclam hydrogen oxalate (798) + TX, thiodicarb (799) + TX, thiofanox (800) + TX, thiometon (801) + TX, thionazin (1434) + TX, thiosultap (803) + TX, thiosultap-sodium (803) + TX, thuringiensin (alternative name) [CCN] + TX, tolfenpyrad (809) + TX, tralomethrin (812) + TX, transfluthrin (813) + TX, transpermethrin (1440) + TX, triamiphos (1441) + TX, triazamate (818) + TX, triazophos (820) + TX, triazuron (alternative name) + TX, trichlorfon (824) + TX, trichlormetaphos-3 (alternative name) [CCN] + TX, trichloronat (1452) + TX, trifenofos (1455) + TX, triflumuron (835) + TX, trimethacarb (840) + TX, triprene (1459) + TX,

vamidothion (847) + TX, vaniliprole [CCN] + TX, veratridine (alternative name) (725) + TX, veratrine (alternative name) (725) + TX, XMC (853) + TX, xylylcarb (854) + TX, YI-5302 (compound code) + TX, zeta-cypermethrin (205) + TX, zetamethrin (alternative name) + TX, zinc phosphide (640) + TX, zolaprofos (1469) and ZXI 8901 (development code) (858) + TX, cyantraniliprole [736994-63-19] + TX, chlorantraniliprole [500008-45-7] + TX, cyenopyrafen [560121-52-0] + TX, cyflumetofen [400882-07-7] + TX, pyrifluquinazon [337458-27-2] + TX, spinetoram [187166-40-1 + 187166-15-0] + TX, spirotetramat [203313-25-1] + TX, sulfoxaflor [946578-00-3] + TX, flufiprole [704886-18-0] + TX, meperfluthrin [915288-13-0] + TX, tetramethylfluthrin [84937-88-2] + TX,

a molluscicide selected from the group of substances consisting of bis(tributyltin) oxide (IUPAC name) (913) + TX, bromoacetamide [CCN] + TX, calcium arsenate [CCN] + TX, cloethocarb (999) + TX, copper acetoarsenite [CCN] + TX, copper sulfate (172) + TX, fentin (347) + TX, ferric phosphate (IUPAC name) (352) + TX, metaldehyde (518) + TX, methiocarb (530) + TX, niclosamide (576) + TX, niclosamide-olamine (576) + TX, pentachlorophenol (623) + TX, sodium pentachlorophenoxide (623) + TX, tazimcarb (1412) + TX, thiodicarb (799) + TX, tributyltin oxide (913) + TX, trifenmorph (1454) + TX, trimethacarb (840) + TX, triphenyltin acetate (IUPAC name) (347) and triphenyltin hydroxide (IUPAC name) (347) + TX, pyriprole [394730-71-3] + TX,

a nematicide selected from the group of substances consisting of AKD-3088 (compound code) + TX, 1,2-dibromo-3-chloropropane (IUPAC/Chemical Abstracts name) (1045) + TX, 1,2-dichloropropane (IUPAC/ Chemical Abstracts name) (1062) + TX, 1,2-dichloropropane with 1,3-dichloropropene (IUPAC name) (1063) + TX, 1,3-dichloropropene (233) + TX, 3,4-dichlorotetrahydrothiophene 1,1-dioxide (IUPAC/Chemical Abstracts name) (1065) + TX, 3-(4-chlorophenyl)-5-methylrhodanine (IUPAC name) (980) + TX, 5-methyl-6-thioxo-1,3,5-thiadiazinan-3-ylacetic acid (IUPAC name) (1286) + TX, 6-isopentenylaminopurine (alternative name) (210) + TX, abamectin (1) + TX, acetoprole [CCN] + TX, alanycarb (15) + TX, aldicarb (16) + TX, aldoxycarb (863) + TX, AZ 60541 (compound code) + TX, benclothiaz [CCN] + TX, benomyl (62) + TX, butylpyridaben (alternative name) + TX, cadusafos (109) + TX, carbofuran (118) + TX, carbon disulfide (945) + TX, carbosulfan (119) + TX, chloropicrin (141) + TX, chlorpyrifos (145) + TX, cloethocarb (999) + TX, cytokinins (alternative name) (210) + TX, dazomet (216) + TX, DBCP (1045) + TX, DCIP (218) + TX, diamidafos (1044) + TX, dichlofenthion (1051) + TX, dicliphos (alternative name) + TX, dimethoate (262) + TX, doramectin (alternative name) [CCN] + TX, emamectin (291) + TX, emamectin benzoate (291) + TX, eprinomectin (alternative name) [CCN] + TX, ethoprophos (312) +

TX, ethylene dibromide (316) + TX, fenamiphos (326) + TX, fenpyrad (alternative name) + TX, fensulfothion (1158) + TX, fosthiazate (408) + TX, fosthietan (1196) + TX, furfural (alternative name) [CCN] + TX, GY-81 (development code) (423) + TX, heterophos [CCN] + TX, iodomethane (IUPAC name) (542) + TX, isamidofos (1230) + TX, isazofos (1231) + TX, ivermectin (alternative name) [CCN] + TX, kinetin (alternative name) (210) + TX, mecarphon (1258) + TX, metam (519) + TX, metam-potassium (alternative name) (519) + TX, metam-sodium (519) + TX, methyl bromide (537) + TX, methyl isothiocyanate (543) + TX, milbemycin oxime (alternative name) [CCN] + TX, moxidectin (alternative name) [CCN] + TX, *Myrothecium verrucaria* composition (alternative name) (565) + TX, NC-184 (compound code) + TX, oxamyl (602) + TX, phorate (636) + TX, phosphamidon (639) + TX, phosphocarb [CCN] + TX, sebufos (alternative name) + TX, selamectin (alternative name) [CCN] + TX, spinosad (737) + TX, terbam (alternative name) + TX, terbufos (773) + TX, tetrachlorothiophene (IUPAC/ Chemical Abstracts name) (1422) + TX, thiafenox (alternative name) + TX, thionazin (1434) + TX, triazophos (820) + TX, triazuron (alternative name) + TX, xylenols [CCN] + TX, YI-5302 (compound code) and zeatin (alternative name) (210) + TX, fluensulfone [318290-98-1] + TX,

a nitrification inhibitor selected from the group of substances consisting of potassium ethylxanthate [CCN] and nitrapyrin (580) + TX,

a plant activator selected from the group of substances consisting of acibenzolar (6) + TX, acibenzolar-*S*-methyl (6) + TX, probenazole (658) and *Reynoutria sachalinensis* extract (alternative name) (720) + TX,

a rodenticide selected from the group of substances consisting of 2-isovalerylindan-1,3-dione (IUPAC name) (1246) + TX, 4-(quinoxalin-2-ylamino)benzenesulfonamide (IUPAC name) (748) + TX, alpha-chlorohydrin [CCN] + TX, aluminium phosphide (640) + TX, antu (880) + TX, arsenous oxide (882) + TX, barium carbonate (891) + TX, bisthiosemi (912) + TX, brodifacoum (89) + TX, bromadiolone (91) + TX, bromethalin (92) + TX, calcium cyanide (444) + TX, chloralose (127) + TX, chlorophacinone (140) + TX, cholecalciferol (alternative name) (850) + TX, coumachlor (1004) + TX, coumafuryl (1005) + TX, coumatetralyl (175) + TX, crimidine (1009) + TX, difenacoum (246) + TX, difethialone (249) + TX, diphacinone (273) + TX, ergocalciferol (301) + TX, flocoumafen (357) + TX, fluoroacetamide (379) + TX, flupropadine (1183) + TX, flupropadine hydrochloride (1183) + TX, gamma-HCH (430) + TX, HCH (430) + TX, hydrogen cyanide (444) + TX, iodomethane (IUPAC name) (542) + TX, lindane (430) + TX, magnesium phosphide (IUPAC name) (640) + TX, methyl bromide (537) + TX,

norbormide (1318) + TX, phosacetim (1336) + TX, phosphine (IUPAC name) (640) + TX, phosphorus [CCN] + TX, pindone (1341) + TX, potassium arsenite [CCN] + TX, pyrinuron (1371) + TX, scilliroside (1390) + TX, sodium arsenite [CCN] + TX, sodium cyanide (444) + TX, sodium fluoroacetate (735) + TX, strychnine (745) + TX, thallium sulfate [CCN] + TX, warfarin (851) and zinc phosphide (640) + TX,

a synergist selected from the group of substances consisting of 2-(2-butoxyethoxy)-ethyl piperonylate (IUPAC name) (934) + TX, 5-(1,3-benzodioxol-5-yl)-3-hexylcyclohex-2-enone (IUPAC name) (903) + TX, farnesol with nerolidol (alternative name) (324) + TX, MB-599 (development code) (498) + TX, MGK 264 (development code) (296) + TX, piperonyl butoxide (649) + TX, piprotal (1343) + TX, propyl isomer (1358) + TX, S421 (development code) (724) + TX, sesamex (1393) + TX, sesasmolin (1394) and sulfoxide (1406) + TX,

an animal repellent selected from the group of substances consisting of anthraquinone (32) + TX, chloralose (127) + TX, copper naphthenate [CCN] + TX, copper oxychloride (171) + TX, diazinon (227) + TX, dicyclopentadiene (chemical name) (1069) + TX, guazatine (422) + TX, guazatine acetates (422) + TX, methiocarb (530) + TX, pyridin-4-amine (IUPAC name) (23) + TX, thiram (804) + TX, trimethacarb (840) + TX, zinc naphthenate [CCN] and ziram (856) + TX,

a virucide selected from the group of substances consisting of imanin (alternative name) [CCN] and ribavirin (alternative name) [CCN] + TX,

a wound protectant selected from the group of substances consisting of mercuric oxide (512) + TX, octhilinone (590) and thiophanate-methyl (802) + TX,

and biologically active compounds selected from the group consisting of azaconazole (60207-31-0] + TX, bitertanol [70585-36-3] + TX, bromuconazole [116255-48-2] + TX, cyproconazole [94361-06-5] + TX, difenoconazole [119446-68-3] + TX, diniconazole [83657-24-3] + TX, epoxiconazole [106325-08-0] + TX, fenbuconazole [114369-43-6] + TX, fluquinconazole [136426-54-5] + TX, flusilazole [85509-19-9] + TX, flutriafol [76674-21-0] + TX, hexaconazole [79983-71-4] + TX, imazalil [35554-44-0] + TX, imibenconazole [86598-92-7] + TX, ipconazole [125225-28-7] + TX, metconazole [125116-23-6] + TX, myclobutanil [88671-89-0] + TX, pefurazoate [101903-30-4] + TX, penconazole [66246-88-6] + TX, prothioconazole [178928-70-6] + TX, pyrifenox [88283-41-4] + TX, prochloraz [67747-09-5] + TX, propiconazole [60207-90-1] + TX, simeconazole [149508-90-7] + TX, tebuconazole [107534-96-3] + TX, tetraconazole [112281-77-3] + TX, triadimefon [43121-43-3] + TX, triadimenol [55219-65-3] + TX, triflumizole [99387-89-0] + TX, triticonazole [131983-72-7] + TX, ancymidol [12771-68-

5] + TX, fenarimol [60168-88-9] + TX, nuarimol [63284-71-9] + TX, bupirimate [41483-43-6] + TX, dimethirimol [5221-53-4] + TX, ethirimol [23947-60-6] + TX, dodemorph [1593-77-7] + TX, fenpropidine [67306-00-7] + TX, fenpropimorph [67564-91-4] + TX, spiroxamine [118134-30-8] + TX, tridemorph [81412-43-3] + TX, cyprodinil [121552-61-2] + TX, mepanipyrim [110235-47-7] + TX, pyrimethanil [53112-28-0] + TX, fenpiclonil [74738-17-3] + TX, fludioxonil [131341-86-1] + TX, benalaxyl [71626-11-4] + TX, furalaxyl [57646-30-7] + TX, metalaxyl [57837-19-1] + TX, R-metalaxyl [70630-17-0] + TX, ofurace [58810-48-3] + TX, oxadixyl [77732-09-3] + TX, benomyl [17804-35-2] + TX, carbendazim [10605-21-7] + TX, debacarb [62732-91-6] + TX, fuberidazole [3878-19-1] + TX, thiabendazole [148-79-8] + TX, chlozolinate [84332-86-5] + TX, dichlozoline [24201-58-9] + TX, iprodione [36734-19-7] + TX, myclozoline [54864-61-8] + TX, procymidone [32809-16-8] + TX, vinclozoline [50471-44-8] + TX, boscalid [188425-85-6] + TX, carboxin [5234-68-4] + TX, fenfuram [24691-80-3] + TX, flutolanil [66332-96-5] + TX, mepronil [55814-41-0] + TX, oxycarboxin [5259-88-1] + TX, penthiopyrad [183675-82-3] + TX, thifluzamide [130000-40-7] + TX, guazatine [108173-90-6] + TX, dodine [2439-10-3] [112-65-2] (free base) + TX, iminoctadine [13516-27-3] + TX, azoxystrobin [131860-33-8] + TX, dimoxystrobin [149961-52-4] + TX, enestroburin {Proc. BCPC, Int. Congr., Glasgow, 2003, **1**, 93} + TX, fluoxastrobin [361377-29-9] + TX, kresoxim-methyl [143390-89-0] + TX, metominostrobin [133408-50-1] + TX, trifloxystrobin [141517-21-7] + TX, orysastrobin [248593-16-0] + TX, picoxystrobin [117428-22-5] + TX, pyraclostrobin [175013-18-0] + TX, ferbam [14484-64-1] + TX, mancozeb [8018-01-7] + TX, maneb [12427-38-2] + TX, metiram [9006-42-2] + TX, propineb [12071-83-9] + TX, thiram [137-26-8] + TX, zineb [12122-67-7] + TX, ziram [137-30-4] + TX, captafol [2425-06-1] + TX, captan [133-06-2] + TX, dichlofluanid [1085-98-9] + TX, fluoroimide [41205-21-4] + TX, folpet [133-07-3] + TX, tolylfluanid [731-27-1] + TX, bordeaux mixture [8011-63-0] + TX, copperhydroxid [20427-59-2] + TX, copperoxychlorid [1332-40-7] + TX, coppersulfat [7758-98-7] + TX, copperoxid [1317-39-1] + TX, mancopper [53988-93-5] + TX, oxine-copper [10380-28-6] + TX, dinocap [131-72-6] + TX, nitrothal-isopropyl [10552-74-6] + TX, edifenphos [17109-49-8] + TX, iprobenphos [26087-47-8] + TX, isoprothiolane [50512-35-1] + TX, phosdiphen [36519-00-3] + TX, pyrazophos [13457-18-6] + TX, tolclofos-methyl [57018-04-9] + TX, acibenzolar-S-methyl [135158-54-2] + TX, anilazine [101-05-3] + TX, benthiavalicarb [413615-35-7] + TX, blasticidin-S [2079-00-7] + TX, chinomethionat [2439-01-2] + TX, chloroneb [2675-77-6] + TX, chlorothalonil *[1897-45-6]* + TX, cyflufenamid *[180409-60-3]* + TX, cymoxanil *[57966-95-7]* + TX, dichlone *[117-80-6]* + TX, diclocymet [139920-

32-4] + TX, diclomezine *[62865-36-5]* + TX, dicloran *[99-30-9]* + TX, diethofencarb *[87130-20-9]* + TX, dimethomorph *[110488-70-5]* + TX, SYP-LI90 (Flumorph) *[211867-47-9]* + TX, dithianon *[3347-22-6]* + TX, ethaboxam *[162650-77-3]* + TX, etridiazole *[2593-15-9]* + TX, famoxadone *[131807-57-3]* + *TX,* fenamidone *[161326-34-7]* + TX, fenoxanil *[115852-48-7]* + TX, fentin *[668-34-8]* + TX, ferimzone *[89269-64-7]* + TX, fluazinam *[79622-59-6]* + TX, fluopicolide [239110-15-7] + TX, flusulfamide [106917-52-6] + TX, fenhexamid [126833-17-8] + TX, fosetyl-aluminium [39148-24-8] + TX, hymexazol [10004-44-1] + TX, iprovalicarb [140923-17-7] + TX, IKF-916 (Cyazofamid) *[120116-88-3]* + TX, kasugamycin [6980-18-3] + TX, methasulfocarb *[66952-49-6]* + TX, metrafenone *[220899-03-6]* + TX, pencycuron *[66063-05-6]* + TX, phthalide [27355-22-2] + TX, polyoxins [11113-80-7] + TX, probenazole [27605-76-1] + TX, propamocarb [25606-41-1] + TX, proquinazid [189278-12-4] + TX, pyroquilon [57369-32-1] + TX, quinoxyfen [124495-18-7] + TX, quintozene [82-68-8] + TX, sulphur [7704-34-9] + TX, tiadinil [223580-51-6] + TX, triazoxide [72459-58-6] + TX, tricyclazole [41814-78-2] + TX, triforine [26644-46-2] + TX, validamycin [37248-47-8] + TX, zoxamide (RH7281) [156052-68-5] + TX, mandipropamid [374726-62-2] + TX, isopyrazam [881685-58-1] + TX, sedaxane [874967-67-6] + TX, 3-difluoromethyl-1-methyl-1H-pyrazole-4-carboxylic acid (9-dichloromethylene-1,2,3,4-tetrahydro-1,4-methano-naphthalen-5-yl)-amide (dislosed in WO 2007/048556) + TX, 3-difluoromethyl-1-methyl-1H-pyrazole-4-carboxylic acid [2-(2,4-dichlorophenyl)-2-methoxy-1-methyl-ethyl]-amide (disclosed in WO 2008/148570) + TX, 1-[4-[4-[(5S)5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl]piperidin-1-yl]-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone + TX, 1-[4-[4-[5-(2,6-difluorophenyl)-4,5-dihydro-1,2-oxazol-3-yl]-1,3-thiazol-2-yl]piperidin-1-yl]-2-[5-methyl-3-(trifluoromethyl)-1H-pyrazol-1-yl]ethanone [1003318-67-9], both disclosed in WO 2010/123791, WO 2008/013925, WO 2008/013622 and WO 2011/051243 page 20) +TX, and 3-difluoromethyl-1-methyl-1H-pyrazole-4-carboxylic acid (3',4',5'-trifluoro-biphenyl-2-yl)-amide (dislosed in WO 2006/087343) + TX.

The references in square brackets behind the active ingredients, e.g. *[3878-19-1]* refer to the Chemical Abstracts Registry number. The above described mixing partners are known. Where the active ingredients are included in "The Pesticide Manual" [The Pesticide Manual - A World Compendium; Thirteenth Edition; Editor: C. D. S. Tomlin; The British Crop Protection Council], they are described therein under the entry number given in round brackets hereinabove for the particular compound; for example, the compound "abamectin" is described under entry number (1). Where "[CCN]" is added hereinabove to the particular compound, the compound in question is included in the "Compendium of

Pesticide Common Names", which is accessible on the internet [A. Wood; Compendium of Pesticide Common Names, Copyright © 1995-2004]; for example, the compound "acetoprole" is described under the internet address: http://www.alanwood.net/pesticides/acetoprole.html.

Most of the active ingredients described above are referred to hereinabove by a so-called "common name", the relevant "ISO common name" or another "common name" being used in individual cases. If the designation is not a "common name", the nature of the designation used instead is given in round brackets for the particular compound; in that case, the IUPAC name, the IUPAC/Chemical Abstracts name, a "chemical name", a "traditional name", a "compound name" or a "develoment code" is used or, if neither one of those designations nor a "common name" is used, an "alternative name" is employed. "CAS Reg. No" means the Chemical Abstracts Registry Number.

The mass ratio of of any two ingredients in each combination is selected as to give the desired, for example, synergistic action. In general, the mass ratio would vary depending on the specific ingredient and how many ingredients are present in the combination. Generally, the mass ratio between any two ingredients in any combination of the present invention, independently of one another, is from 100:1 to 1:100, including from 99:1, 98:2, 97:3, 96:4, 95:5, 94:6, 93:7, 92:8, 91:9, 90:10, 89:11, 88:12, 87:13, 86:14, 85:15, 84:16, 83:17, 82:18, 81:19, 80:20, 79:21, 78:22, 77:23, 76:24, 75:25, 74:26, 73:27, 72:28, 71:29, 70:30, 69:31, 68:32, 67:33, 66:34, 65:45, 64:46, 63:47, 62:48, 61:49, 60:40, 59:41, 58:42, 57:43, 56:44, 55:45, 54:46, 53:47, 52:48, 51:49, 50:50, 49:51, 48:52, 47:53, 46:54, 45:55, 44:56, 43:57, 42:58, 41:59, 40:60, 39:61, 38:62, 37:63, 36:64, 35:65, 34:66, 33:67, 32:68, 31:69, 30:70, 29:71, 28:72, 27:73, 26:74, 25:75, 24:76, 23:77, 22:78, 21:79, 20:80, 19:81, 18:82, 17:83, 16:84, 15:85, 14:86, 13:87, 12:88, 11:89, 10:90, 9:91, 8:92, 7:93, 6:94, 5:95, 4:96, 3:97, 2:98, to 1:99. Preferred mass ratios between any two components of present invention are from 75:1 to 1:75, more preferably, 50:1 to 1.50, especially 25:1 to 1:25, advantageously 10:1 to 1:10, such as 5:1 to 1:5, for example 1:3 to 3:1. The mixing ratios are understood to include, on the one hand, ratios by mass and also, on other hand, molar ratios.

Examples of application methods for the compounds of the invention amd compositions thereof, that is the methods of controlling pests / fungi in the agriculture, are spraying, atomizing, dusting, brushing on, dressing, scattering or pouring - which are to be selected to suit the intended aims of the prevailing circumstances.

A preferred method of application in agriculture is application to the foliage of the plants (foliar application), it being possible to select frequency and rate of application to

match the danger of infestation with the pest/fungi in question. Alternatively, the active ingredient can reach the plants via the root system (systemic action), by applying the compound to the locus of the plants, for example by application of a liquid composition of the compound into the soil (by drenching), or by applying a solid form of the compound in the form of granules to the soil (soil application). In the case of paddy rice plants, such granules can be metered into the flooded paddy-field.

Typical rates of application per hectare is generally 1 to 2000 g of active ingredient per hectare, in particular 10 to 1000 g/ha, preferably 10 to 600 g/ha, such as 50 to 300 g/ha.

The compounds of the invention and compositions thereof are also suitable for the protection of plant propagation material, for example seeds, such as fruit, tubers or kernels, or nursery plants, against pests of the abovementioned type. The propagation material can be treated with the compound prior to planting, for example seed can be treated prior to sowing. Alternatively, the compound can be applied to seed kernels (coating), either by soaking the kernels in a liquid composition or by applying a layer of a solid composition. It is also possible to apply the compositions when the propagation material is planted to the site of application, for example into the seed furrow during drilling. These treatment methods for plant propagation material and the plant propagation material thus treated are further subjects of the invention. Typical treatment rates would depend on the plant and pest/fungi to be controlled and are generally between 1 to 200 grams per 100 kg of seeds, preferably between 5 to 150 grams per 100 kg of seeds, such as between 10 to 100 grams per 100 kg of seeds.

The term seed embraces seeds and plant propagules of all kinds including but not limited to true seeds, seed pieces, suckers, corns, bulbs, fruit, tubers, grains, rhizomes, cuttings, cut shoots and the like and means in a preferred embodiment true seeds.

The present invention also comprises seeds coated or treated with or containing a compound of formula I. The term "coated or treated with and/or containing" generally signifies that the active ingredient is for the most part on the surface of the seed at the time of application, although a greater or lesser part of the ingredient may penetrate into the seed material, depending on the method of application. When the said seed product is (re)planted, it may absorb the active ingredient. In an embodiment, the present invention makes available a plant propagation material adhered thereto with a compound of formula (I). Further, it is hereby made available, a composition comprising a plant propagation material treated with a compound of formula (I).

Seed treatment comprises all suitable seed treatment techniques known in the art, such as seed dressing, seed coating, seed dusting, seed soaking and seed pelleting. The seed treatment application of the compound formula I can be carried out by any known methods, such as spraying or by dusting the seeds before sowing or during the sowing/planting of the seeds.

Suitable target plants are, in particular, cereals, such as wheat, barley, rye, oats, rice, maize or sorghum; beet, such as sugar or fodder beet; fruit, for example pomaceous fruit, stone fruit or soft fruit, such as apples, pears, plums, peaches, almonds, cherries or berries, for example strawberries, raspberries or blackberries; leguminous plants, such as beans, lentils, peas or soya; oil plants, such as oilseed rape, mustard, poppies, olives, sunflowers, coconut, castor, cocoa or ground nuts; cucurbits, such as pumpkins, cucumbers or melons; fibre plants, such as cotton, flax, hemp or jute; citrus fruit, such as oranges, lemons, grapefruit or tangerines; vegetables, such as spinach, lettuce, asparagus, cabbages, carrots, onions, tomatoes, potatoes or bell peppers; Lauraceae, such as avocado, Cinnamonium or camphor; and also tobacco, nuts, coffee, eggplants, sugarcane, tea, pepper, grapevines, hops, the plantain family, latex plants and ornamentals (such as flowers, amd lawn grass or turf).

In an embodiment, the plant is selected from cereals, corn, soybean, rice, sugarcane, vegetables and oil plants.

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

Toxins that can be expressed by such transgenic plants include, for example, insecticidal proteins from Bacillus cereus or Bacillus popilliae; or insecticidal proteins from Bacillus thuringiensis, such as δ-endotoxins, e.g. Cry1Ab, Cry1Ac, Cry1F, Cry1Fa2, Cry2Ab, Cry3A, Cry3Bb1 or Cry9C, or vegetative insecticidal proteins (Vip), e.g. Vip1, Vip2, Vip3 or Vip3A; or insecticidal proteins of bacteria colonising nematodes, for example Photorhabdus spp. or Xenorhabdus spp., such as Photorhabdus luminescens, Xenorhabdus nematophilus; toxins produced by animals, such as scorpion toxins, arachnid toxins, wasp toxins and other insect-specific neurotoxins; toxins produced by fungi, such as Streptomycetes toxins, plant lectins, such as pea lectins, barley lectins or snowdrop lectins; agglutinins; proteinase inhibitors, such as trypsin inhibitors, serine protease inhibitors, patatin, cystatin, papain inhibitors; ribosome-inactivating proteins (RIP), such as ricin, maize-RIP, abrin, luffin, saporin or bryodin; steroid metabolism enzymes, such as

3-hydroxysteroidoxidase, ecdysteroid-UDP-glycosyl-transferase, cholesterol oxidases, ecdysone inhibitors, HMG-COA-reductase, ion channel blockers, such as blockers of sodium or calcium channels, juvenile hormone esterase, diuretic hormone receptors, stilbene synthase, bibenzyl synthase, chitinases and glucanases.

In the context of the present invention there are to be understood by δ-endotoxins, for example Cry1Ab, Cry1Ac, Cry1F, Cry1Fa2, Cry2Ab, Cry3A, Cry3Bb1 or Cry9C, or vegetative insecticidal proteins (Vip), for example Vip1, Vip2, Vip3 or Vip3A, expressly also hybrid toxins, truncated toxins and modified toxins. Hybrid toxins are produced recombinantly by a new combination of different domains of those proteins (see, for example, WO 02/15701). Truncated toxins, for example a truncated Cry1Ab, are known. In the case of modified toxins, one or more amino acids of the naturally occurring toxin are replaced. In such amino acid replacements, preferably non-naturally present protease recognition sequences are inserted into the toxin, such as, for example, in the case of Cry3A055, a cathepsin-G-recognition sequence is inserted into a Cry3A toxin (see WO 03/018810).

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

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

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

Transgenic plants containing one or more genes that code for an insecticidal resistance and express one or more toxins are known and some of them are commercially available. Examples of such plants are: YieldGard® (maize variety that expresses a Cry1Ab toxin); YieldGard Rootworm® (maize variety that expresses a Cry3Bb1 toxin); YieldGard Plus® (maize variety that expresses a Cry1Ab and a Cry3Bb1 toxin); Starlink® (maize variety that expresses a Cry9C toxin); Herculex I® (maize variety that expresses a Cry1Fa2 toxin and the enzyme phosphinothricine N-acetyltransferase (PAT) to achieve tolerance to the herbicide glufosinate ammonium); NuCOTN 33B® (cotton variety that expresses a Cry1Ac toxin); Bollgard I® (cotton variety that expresses a Cry1Ac toxin);

Bollgard II® (cotton variety that expresses a Cry1Ac and a Cry2Ab toxin); VipCot® (cotton variety that expresses a Vip3A and a Cry1Ab toxin); NewLeaf® (potato variety that expresses a Cry3A toxin); NatureGard®, Agrisure® GT Advantage (GA21 glyphosate-tolerant trait), Agrisure® CB Advantage (Bt11 corn borer (CB) trait) and Protecta®.

Further examples of such transgenic plants are:

1. **Bt11 Maize** from Syngenta Seeds SAS, Chemin de l'Hobit 27, F-31 790 St. Sauveur, France, registration number C/FR/96/05/10. Genetically modified *Zea mays* which has been rendered resistant to attack by the European corn borer (*Ostrinia nubilalis* and *Sesamia nonagrioides*) by transgenic expression of a truncated Cry1Ab toxin. Bt11 maize also transgenically expresses the enzyme PAT to achieve tolerance to the herbicide glufosinate ammonium.

2. **Bt176 Maize** from Syngenta Seeds SAS, Chemin de l'Hobit 27, F-31 790 St. Sauveur, France, registration number C/FR/96/05/10. Genetically modified *Zea mays* which has been rendered resistant to attack by the European corn borer (*Ostrinia nubilalis* and *Sesamia nonagrioides*) by transgenic expression of a Cry1Ab toxin. Bt176 maize also transgenically expresses the enzyme PAT to achieve tolerance to the herbicide glufosinate ammonium.

3. **MIR604 Maize** from Syngenta Seeds SAS, Chemin de l'Hobit 27, F-31 790 St. Sauveur, France, registration number C/FR/96/05/10. Maize which has been rendered insect-resistant by transgenic expression of a modified Cry3A toxin. This toxin is Cry3A055 modified by insertion of a cathepsin-G-protease recognition sequence. The preparation of such transgenic maize plants is described in WO 03/018810.

4. **MON 863 Maize** from Monsanto Europe S.A. 270-272 Avenue de Tervuren, B-1150 Brussels, Belgium, registration number C/DE/02/9. MON *863* expresses a Cry3Bb1 toxin and has resistance to certain Coleoptera insects.

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

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

7. **NK603 × MON 810 Maize** from Monsanto Europe S.A. 270-272 Avenue de Tervuren, B-1150 Brussels, Belgium, registration number C/GB/02/M3/03. Consists of conventionally bred hybrid maize varieties by crossing the genetically modified varieties NK603 and MON 810. NK603 × MON 810 Maize transgenically expresses the protein CP4 EPSPS, obtained

from *Agrobacterium sp.* strain CP4, which imparts tolerance to the herbicide Roundup® (contains glyphosate), and also a Cry1Ab toxin obtained from *Bacillus thuringiensis subsp. kurstaki* which brings about tolerance to certain Lepidoptera, include the European corn borer.

Generally, a compound of the present invention is used in the form of a composition (e.g. formulation) containing a carrier. A compound of the invention and compositions thereof can be used in various forms such as aerosol dispenser, capsule suspension, cold fogging concentrate, dustable powder, emulsifiable concentrate, emulsion oil in water, emulsion water in oil, encapsulated granule, fine granule, flowable concentrate for seed treatment, gas (under pressure), gas generating product, granule, hot fogging concentrate, macrogranule, microgranule, oil dispersible powder, oil miscible flowable concentrate, oil miscible liquid, paste, plant rodlet, powder for dry seed treatment, seed coated with a pesticide, soluble concentrate, soluble powder, solution for seed treatment, suspension concentrate (flowable concentrate), ultra low volume (ulv) liquid, ultra low volume (ulv) suspension, water dispersible granules or tablets, water dispersible powder for slurry treatment, water soluble granules or tablets, water soluble powder for seed treatment and wettable powder.

A formulation typically comprises a liquid or solid carrier and optionally one or more customary formulaton auxiliaries, which may be solid or liquid auxiliaries, for example unepoxidized or epoxidized vegetable oils (for example epoxidized coconut oil, rapeseed oil or soya oil), antifoams, for example silicone oil, preservatives, clays, inorganic compounds, viscosity regulators, surfactant, binders and/or tackifiers. The composition may also further comprise a fertilizer, a micronutrient donor or other preparations which influence the growth of plants as well as comprising a combination containing the compound of the invention with one or more other biologically active agents, such as bactericides, fungicides, nematocides, plant activators, acaricides, and insecticides.

Accordingly, the present invention also makes available a composition comprising a compound of the invention and an agronomicaly carrier and optionally one or more customary formulation auxiliaries.

The compositions are prepared in a manner known per se, in the absence of auxiliaries for example by grinding, screening and/or compressing a solid compound of the present invention and in the presence of at least one auxiliary for example by intimately mixing and/or grinding the compound of the present invention with the auxiliary (auxiliaries). In the case of solid compounds of the invention, the grinding/milling of the compounds is to ensure specific particle size. These processes for the preparation of the

compositions and the use of the compounds of the invention for the preparation of these compositions are also a subject of the invention.

Examples of compositions for use in agriculture are emulsifiable concentrates, suspension concentrates, microemulsions, oil dispersibles, directly sprayable or dilutable solutions, spreadable pastes, dilute emulsions, soluble powders, dispersible powders, wettable powders, dusts, granules or encapsulations in polymeric substances, which comprise - at least – a compound according to the invention and the type of composition is to be selected to suit the intended aims and the prevailing circumstances.

Examples of suitable liquid carriers are unhydrogenated or partially hydrogenated aromatic hydrocarbons, preferably the fractions C_8 to C_{12} of alkylbenzenes, such as xylene mixtures, alkylated naphthalenes or tetrahydronaphthalene, aliphatic or cycloaliphatic hydrocarbons, such as paraffins or cyclohexane, alcohols such as ethanol, propanol or butanol, glycols and their ethers and esters such as propylene glycol, dipropylene glycol ether, ethylene glycol or ethylene glycol monomethyl ether or ethylene glycol monoethyl ether, ketones, such as cyclohexanone, isophorone or diacetone alcohol, strongly polar solvents, such as N-methylpyrrolid-2-one, dimethyl sulfoxide or N,N-dimethylformamide, water, unepoxidized or epoxidized vegetable oils, such as unexpodized or epoxidized rapeseed, castor, coconut or soya oil, and silicone oils.

Examples of solid carriers which are used for example for dusts and dispersible powders are, as a rule, ground natural minerals such as calcite, talc, kaolin, montmorillonite or attapulgite. To improve the physical properties, it is also possible to add highly disperse silicas or highly disperse absorbtive polymers. Suitable particulate adsorptive carriers for granules are porous types, such as pumice, brick grit, sepiolite or bentonite, and suitable non-sorptive carrier materials are calcite or sand. In addition, a large number of granulated materials of inorganic or organic nature can be used, in particular dolomite or comminuted plant residues.

Suitable surface-active compounds are, depending on the type of the active ingredient to be formulated, non-ionic, cationic and/or anionic surfactants or surfactant mixtures which have good emulsifying, dispersing and wetting properties. The surfactants mentioned below are only to be considered as examples; a large number of further surfactants which are conventionally used in the art of formulation and suitable according to the invention are described in the relevant literature.

Suitable non-ionic surfactants are, especially, polyglycol ether derivatives of aliphatic or cycloaliphatic alcohols, of saturated or unsaturated fatty acids or of alkyl phenols which may contain approximately 3 to approximately 30 glycol ether groups and

approximately 8 to approximately 20 carbon atoms in the (cyclo)aliphatic hydrocarbon radical or approximately 6 to approximately 18 carbon atoms in the alkyl moiety of the alkyl phenols. Also suitable are water-soluble polyethylene oxide adducts with polypropylene glycol, ethylenediaminopolypropylene glycol or alkyl polypropylene glycol having 1 to approximately 10 carbon atoms in the alkyl chain and approximately 20 to approximately 250 ethylene glycol ether groups and approximately 10 to approximately 100 propylene glycol ether groups. Normally, the abovementioned compounds contain 1 to approximately 5 ethylene glycol units per propylene glycol unit. Examples which may be mentioned are nonylphenoxypolyethoxyethanol, castor oil polyglycol ether, polypropylene glycol/polyethylene oxide adducts, tributylphenoxypolyethoxyethanol, polyethylene glycol or octylphenoxypolyethoxyethanol. Also suitable are fatty acid esters of polyoxyethylene sorbitan, such as polyoxyethylene sorbitan trioleate.

The cationic surfactants are, especially, quarternary ammonium salts which generally have at least one alkyl radical of approximately 8 to approximately 22 C atoms as substituents and as further substituents (unhalogenated or halogenated) lower alkyl or hydroxyalkyl or benzyl radicals. The salts are preferably in the form of halides, methylsulfates or ethylsulfates. Examples are stearyltrimethylammonium chloride and benzylbis(2-chloroethyl)ethylammonium bromide.

Examples of suitable anionic surfactants are water-soluble soaps or water-soluble synthetic surface-active compounds. Examples of suitable soaps are the alkali, alkaline earth or (unsubstituted or substituted) ammonium salts of fatty acids having approximately 10 to approximately 22 C atoms, such as the sodium or potassium salts of oleic or stearic acid, or of natural fatty acid mixtures which are obtainable for example from coconut or tall oil; mention must also be made of the fatty acid methyl taurates. However, synthetic surfactants are used more frequently, in particular fatty sulfonates, fatty sulfates, sulfonated benzimidazole derivatives or alkylaryl sulfonates. As a rule, the fatty sulfonates and fatty sulfates are present as alkali, alkaline earth or (substituted or unsubstituted) ammonium salts and they generally have an alkyl radical of approximately 8 to approximately 22 C atoms, alkyl also to be understood as including the alkyl moiety of acyl radicals; examples which may be mentioned are the sodium or calcium salts of lignosulfonic acid, of the dodecylsulphuric ester or of a fatty alcohol sulfate mixture prepared from natural fatty acids. This group also includes the salts of the sulphuric esters and sulfonic acids of fatty alcohol/ethylene oxide adducts. The sulfonated benzimidazole derivatives preferably contain 2 sulphonyl groups and a fatty acid radical of approximately 8 to approximately 22 C atoms. Examples of alkylarylsulfonates are the sodium, calcium or

triethanolammonium salts of decylbenzenesulfonic acid, of dibutylnaphthalenesulfonic acid or of a naphthalenesulfonic acid/formaldehyde condensate. Also possible are, furthermore, suitable phosphates, such as salts of the phosphoric ester of a p-nonylphenol/(4-14)ethylene oxide adduct, or phospholipids.

As a rule, the compositions comprise 0.1 to 99%, especially 0.1 to 95%, of compound according to the present invention and 1 to 99.9%, especially 5 to 99.9%, of at least one solid or liquid carrier, it being possible as a rule for 0 to 25%, especially 0.1 to 20%, of the composition to be surfactants (% in each case meaning percent by weight). Whereas concentrated compositions tend to be preferred for commercial goods, the end consumer as a rule uses dilute compositions which have substantially lower concentrations of active ingredient. Preferred compositions are composed in particular as follows (% = percent by weight):

Emulsifiable concentrates:

active ingredient:	1 to 95%, preferably 5 to 20%
surfactant:	1 to 30%, preferably 10 to 20 %
solvent:	5 to 98%, preferably 70 to 85%

Dusts:

active ingredient:	0.1 to 10%, preferably 0.1 to 1%
solid carrier:	99.9 to 90%, preferably 99.9 to 99%

Suspension concentrates and flowable concentrates:

active ingredient:	5 to 75%, preferably 10 to 50%
water:	94 to 24%, preferably 88 to 30%
surfactant:	1 to 40%, preferably 2 to 30%

Wettable powders:

active ingredient:	0.5 to 90%, preferably 1 to 80%
surfactant:	0.5 to 20%, preferably 1 to 15%
solid carrier:	5 to 99%, preferably 15 to 98%

Granulates:

active ingredient:	0.5 to 30%, preferably 3 to 15%
solid carrier:	99.5 to 70%, preferably 97 to 85%

Formulation examples (% = percent by weight)

Example F1: Emulsion concentrates	a)	b)	c)
Active ingredient	25 %	40 %	50 %
Calcium dodecylbenzenesulfonate	5 %	8 %	6 %
Castor oil polyethylene glycol ether (36 mol of EO)	5 %	-	-
Tributylphenoxypolyethylene glycol ether (30 mol of EO)	-	12 %	4 %
Cyclohexanone	-	15 %	20 %
Xylene mixture	65 %	25 %	20 %

Emulsions of any desired concentration can be prepared from such concentrates by dilution with water.

Example F2: Solutions	a)	b)	c)	d)
Active ingredient	80 %	10 %	5 %	95 %
Ethylene glycol monomethyl ether	20 %	-	-	-
Polyethylene glycol MW 400	-	70 %	-	-
N-Methylpyrrolid-2-one	-	20 %	-	-
Epoxidized coconut oil	-	-	1 %	5 %
Petroleum ether (boiling range: 160-190°)	-	-	94 %	-

The solutions are suitable for use in the form of microdrops.

Example F3: Granules	a)	b)	c)	d)
Active ingredient	5 %	10 %	8 %	21 %
Kaolin	94 %	-	79 %	54 %
Highly disperse silica	1 %	-	13 %	7 %
Attapulgite	-	90 %	-	18 %

The active ingredient is dissolved in dichloromethane, the solution is sprayed onto the carrier(s), and the solvent is subsequently evaporated in vacuo.

Example F4: Dusts	a)	b)
Active ingredient	2 %	5 %

Highly disperse silica	1 %	5 %
Talc	97 %	-
Kaolin	-	90 %

Ready-to-use dusts are obtained by intimately mixing the carriers and the active ingredient.

Example F5: Wettable powders	a)	b)	c)
Active ingredient	25 %	50 %	75 %
Sodium lignosulfonate	5 %	5 %	-
Sodium lauryl sulfate	3 %	-	5 %
Sodium diisobutyl-naphthalenesulfonate	-	6 %	10 %
Octylphenoxypolyethylene glycol ether (7-8 mol of EO)	-	2 %	-
Highly disperse silica	5 %	10 %	10 %
Kaolin	62 %	27 %	-

The active ingredient is mixed with the additives and the mixture is ground thoroughly in a suitable mill. This gives wettable powders, which can be diluted with water to give suspensions of any desired concentration.

Example F6: Extruder granules

Active ingredient	10 %
Sodium lignosulfonate	2 %
Carboxymethylcellulose	1 %
Kaolin	87 %

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

Example F7: Coated granules

Active ingredient	3 %
Polyethylene glycol (MW 200)	3 %
Kaolin	94 %

In a mixer, the finely ground active ingredient is applied uniformLy to the kaolin, which has been moistened with the polyethylene glycol. This gives dust-free coated granules.

Example F8: Suspension concentrate

Active ingredient	40 %
Ethylene glycol	10 %
Nonylphenoxypolyethylene glycol ether (15 mol of EO)	6 %
Sodium lignosulfonate	10 %
Carboxymethylcellulose	1 %
37 % aqueous formaldehyde solution	0.2 %
Silicone oil (75 % aqueous emulsion)	0.8 %
Water	32 %

The finely ground active ingredient is mixed intimately with the additives. Suspensions of any desired concentration can be prepared from the thus resulting suspension concentrate by dilution with water.

Example F9: Powders for dry seed treatment	a)	b)	c)
active ingredient	25 %	50 %	75 %
light mineral oil	5 %	5 %	5 %
highly dispersed silicic acid	5 %	5 %	-
Kaolin	65 %	40 %	-
Talcum	-	-	20 %

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

Example F10: Emulsifiable concentrate

active ingredient	10 %
octylphenol polyethylene glycol ether (4-5 mol of ethylene oxide)	3 %
calcium dodecylbenzenesulfonate	3 %
castor oil polyglycol ether (35 mol of ethylene oxide)	4 %
Cyclohexanone	30 %
xylene mixture	50 %

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

Example F11: Flowable concentrate for seed treatment

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

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

Examples of foliar formulation types for pre-mix compositions are:

GR: Granules

WP: wettable powders

WG: water dispersable granules (powders)

SG: water soluble granules

SL: soluble concentrates

EC: emulsifiable concentrate

EW: emulsions, oil in water

ME: micro-emulsion

SC: aqueous suspension concentrate

CS: aqueous capsule suspension

OD: oil-based suspension concentrate, and

SE: aqueous suspo-emulsion.

Whereas, examples of seed treatment formulation types for pre-mix compositions are:

WS: wettable powders for seed treatment slurry

LS: solution for seed treatment

ES: emulsions for seed treatment

FS: suspension concentrate for seed treatment

WG: water dispersible granules, and

CS: aqueous capsule suspension.

Examples of formulation types suitable for tank-mix compositions are solutions, dilute emulsions, suspensions, or a mixture thereof, and dusts.

As with the nature of the formulations, the methods of application, such as foliar, drench, spraying, atomizing, dusting, scattering, coating or pouring, are chosen in accordance with the intended objectives and the prevailing circumstances.

The tank-mix compositions are generally prepared by diluting with a solvent (for example, water) the one or more pre-mix compositions containing different pesticides, and optionally further auxiliaries.

Suitable carriers and adjuvants can be solid or liquid and are the substances ordinarily employed in formulation technology, e.g. natural or regenerated mineral substances, solvents, dispersants, wetting agents, tackifiers, thickeners, binders or fertilizers.

Generally, a tank-mix formulation for foliar or soil application comprises 0.1 to 20%, especially 0.1 to 15 %, of the desired ingredients, and 99.9 to 80 %, especially 99.9 to 85 %, of a solid or liquid auxiliaries (including, for example, a solvent such as water), where the auxiliaries can be a surfactant in an amount of 0 to 20 %, especially 0.1 to 15 %, based on the tank-mix formulation.

Typically, a pre-mix formulation for foliar application comprises 0.1 to 99.9 %, especially 1 to 95 %, of the desired ingredients, and 99.9 to 0.1 %, especially 99 to 5 %, of a solid or liquid adjuvant (including, for example, a solvent such as water), where the auxiliaries can be a surfactant in an amount of 0 to 50 %, especially 0.5 to 40 %, based on the pre-mix formulation.

Normally, a tank-mix formulation for seed treatment application comprises 0.25 to 80%, especially 1 to 75 %, of the desired ingredients, and 99.75 to 20 %, especially 99 to 25 %, of a solid or liquid auxiliaries (including, for example, a solvent such as water), where the auxiliaries can be a surfactant in an amount of 0 to 40 %, especially 0.5 to 30 %, based on the tank-mix formulation.

Typically, a pre-mix formulation for seed treatment application comprises 0.5 to 99.9 %, especially 1 to 95 %, of the desired ingredients, and 99.5 to 0.1 %, especially 99 to 5 %, of a solid or liquid adjuvant (including, for example, a solvent such as water), where the auxiliaries can be a surfactant in an amount of 0 to 50 %, especially 0.5 to 40 %, based on the pre-mix formulation.

Whereas commercial products will preferably be formulated as concentrates (e.g., pre-mix composition (formulation)), the end user will normally employ dilute formulations (e.g., tank mix composition).

Preferred seed treatment pre-mix formulations are aqueous suspension concentrates. The formulation can be applied to the seeds using conventional treating techniques and machines, such as fluidized bed techniques, the roller mill method, rotostatic seed treaters, and drum coaters. Other methods, such as spouted beds may also be useful. The seeds may be presized before coating. After coating, the seeds are typically dried and then transferred to a sizing machine for sizing. Such procedures are known in the art.

In general, the pre-mix compositions of the invention contain 0.5 to 99.9 especially 1 to 95, advantageously 1 to 50 , %, by mass of the desired ingredients, and 99.5 to 0.1, especially 99 to 5, %, by mass of a solid or liquid adjuvant (including, for example, a solvent such as water), where the auxiliaries (or adjuvant) can be a surfactant in an amount of 0 to 50, especially 0.5 to 40, %, by mass based on the mass of the pre-mix formulation.

A compound of the formula (I) is in a preferred embodiment, independent of any other embodiments, is in the form of a plant propagation material treating (or protecting) composition, wherein said plant propagation material protecting composition comprises additionally a colouring agent. The plant propagation material protecting composition or mixture may also comprise at least one polymer from water-soluble and water-dispersible film-forming polymers that improve the adherence of the active ingredients to the treated plant propagation material, which polymer generally has an average molecular weight of at least 10,000 to about 100,000.

The combinations of the present invention (i.e. those comprising a compound of the present invention and one or more other biological active agents) may be applied simulatenously or sequentially.

In the event, the ingredients of a combination are applied sequentially (i.e., one after the other), the ingredients are applied sequentially within a reasonable period of each other to attain the biological performance, such as within a few hours or days. The order of applying the ingredients in the combination, i.e., whether the compounds of formula (I) should be applied first or not is not essential for working the present invention.

In the event ingredients of the combinations are applied simultaneously in the present invention, they may be applied as a composition containing the combination, in which case (A) the compound of formula (I) and the one or more other ingredients in the

combinations can be obtained from separate formulation sources and mixed together (known as a tank-mix, ready-to-apply, spray broth, or slurry), or (B) the compound of formula (I) and the one or more other ingredients can be obtained as single formulation mixture source (known as a pre-mix,ready-mix, concentrate, or formulated product).

In an embodiment, independent of other embodiments, a compound according to the present invention is applied as a combination. Accordingly, the present invention also provides a composition comprising a a compound according the invention as herein described and one or more other biological active agents, and optionally one or more customary formulation auxiliaries; which may be in the form of a tank-mix or pre-mix composition.

Alternative to the actual synergistic action with respect to biological activity, the combinations according to the invention also can have surprising advantageous properties which can also be described, in a wider sense, as synergistic activity. Examples of such advantageous properties that may be mentioned are: advantageous behaviour during formulation and/or upon application, for example upon grinding, sieving, emulsifying, dissolving or dispensing; increased storage stability; improved stability to light; more advantageous degradability; improved toxicological and/or ecotoxicological behaviour; or any other advantages familiar to a person skilled in the art.

The compounds of the present invention may also find application in other fields, such as one or more of protection of stored goods and store rooms, the protection of raw materials (such as wood and textiles), floor coverings and buildings, and in hygiene management - especially the protection of humans, domestic animals and productive livestock against pests. The invention therefore also makes available pesticidal compositions for such uses and the methods therefor. The composition would need to be modified for use in a particular use, and a skilled person would be able to make available such compositions for any particular use.

In the hygiene sector, the compositions according to the invention are active against ectoparasites such as hard ticks, soft ticks, mange mites, harvest mites, flies (biting and licking), parasitic fly larvae, lice, hair lice, bird lice and fleas.

Examples of such parasites are:

- Of the order Anoplurida: Haematopinus spp., Linognathus spp., Pediculus spp. and Phtirus spp., Solenopotes spp..
- Of the order Mallophagida: Trimenopon spp., Menopon spp., Trinoton spp., Bovicola spp., Werneckiella spp., Lepikentron spp., Damalina spp., Trichodectes spp. and Felicola spp..

- Of the order Diptera and the suborders Nematocerina and Brachycerina, for example Aedes spp., Anopheles spp., Culex spp., Simulium spp., Eusimulium spp., Phlebotomus spp., Lutzomyia spp., Culicoides spp., Chrysops spp., Hybomitra spp., Atylotus spp., Tabanus spp., Haematopota spp., Philipomyia spp., Braula spp., Musca spp., Hydrotaea spp., Stomoxys spp., Haematobia spp., Morellia spp., Fannia spp., Glossina spp., Calliphora spp., Lucilia spp., Chrysomyia spp., Wohlfahrtia spp., Sarcophaga spp., Oestrus spp., Hypoderma spp., Gasterophilus spp., Hippobosca spp., Lipoptena spp. and Melophagus spp..
- Of the order Siphonapterida, for example Pulex spp., Ctenocephalides spp., Xenopsylla spp., Ceratophyllus spp..
- Of the order Heteropterida, for example Cimex spp., Triatoma spp., Rhodnius spp., Panstrongylus spp..
- Of the order Blattarida, for example Blatta orientalis, Periplaneta americana, Blattelagermanica and Supella spp..
- Of the subclass Acaria (Acarida) and the orders Meta- and Meso-stigmata, for example Argas spp., Ornithodorus spp., Otobius spp., Ixodes spp., Amblyomma spp., Boophilus spp., Dermacentor spp., Haemophysalis spp., Hyalomma spp., Rhipicephalus spp., Dermanyssus spp., Raillietia spp., Pneumonyssus spp., Sternostoma spp. and Varroa spp..
- Of the orders Actinedida (Prostigmata) and Acaridida (Astigmata), for example Acarapis spp., Cheyletiella spp., Ornithocheyletia spp., Myobia spp., Psorergatesspp., Demodex spp., Trombicula spp., Listrophorus spp., Acarus spp., Tyrophagus spp., Caloglyphus spp., Hypodectes spp., Pterolichus spp., Psoroptes spp., Chorioptes spp., Otodectes spp., Sarcoptes spp., Notoedres spp., Knemidocoptes spp., Cytodites spp. and Laminosioptes spp..

The compositions according to the invention are also suitable for protecting against insect infestation in the case of materials such as wood, textiles, plastics, adhesives, glues, paints, paper and card, leather, floor coverings and buildings. The compositions according to the invention can be used, for example, against the following pests: beetles such as Hylotrupes bajulus, Chlorophorus pilosis, Anobium punctatum, Xestobium rufovillosum, Ptilinuspecticornis, Dendrobium pertinex, Ernobius mollis, Priobium carpini, Lyctus brunneus, Lyctus africanus, Lyctus planicollis, Lyctus linearis, Lyctus pubescens, Trogoxylon aequale, Minthesrugicollis, Xyleborus spec.,Tryptodendron spec., Apate monachus, Bostrychus capucins, Heterobostrychus brunneus, Sinoxylon spec. and Dinoderus minutus, and also hymenopterans such as Sirex juvencus, Urocerus gigas,

Urocerus gigas taignus and Urocerus augur, and termites such as Kalotermes flavicollis, Cryptotermes brevis, Heterotermes indicola, Reticulitermes flavipes, Reticulitermes santonensis, Reticulitermes lucifugus, Mastotermes darwiniensis, Zootermopsis nevadensis and Coptotermes formosanus, and bristletails such as Lepisma saccharina.

The application methods for applying a compound or a composition thereof to stored goods, store rooms, raw materials (such as wood and textiles), floor coverings and buildings, and in hygiene management is known in the art.

The invention also provides a method for treating, curing, controlling, preventing and protecting warm-blooded animals, including humans, and fish against infestation and infection by helminths, arachnids and arthropod endo- and ectoparasites which comprises orally, topically or parenterally administering or applying to said animals an anthelmintically, acaricidally or endo- or ectoparasiticidally effective amount of compound of formula (I) .

The above method is particularly useful for controlling and preventing helminth, nemtode, acarid and arthropod endo- and ectoparasitic infestations and infections in warm-blooded animals such as cattle, sheep, swine, camels, deer, horses, poultry, fish, rabbits, goats, mink, fox, chinchillas, dogs and cats as well as humans.

In the context of control and prevention of infestation and infections in warm-blooded animals, compounds of invention are especially useful for the control of helminths and nematodes. Examples for helminths are members of the class Trematoda, commonly known as flukes or flatworms, especially members of the genera Fasciola, Fascioloides, Paramphistomu, Dicrocoelium, Eurytrema, Ophisthorchis, Fasciolopsis, Echinostoma and Paragonimus. Nematodes which can be controlled by the formula (I) compounds include the genera Haemonchus, Ostertagia, Cooperia, Oesphagastomu, Nematodirus, Dictyocaulus, Trichuris, Dirofilaria, Ancyclostoma, Ascaria and the like.

The compound of this invention may also control endoparasitic arthropod infestations such as cattle grub and stomach bot. In addition, acarid and arthropod ectoparasitic infestations in warm-blooded animals and fish including biting lice, sucking lice, bot flies, biting flies, muscoid flies, flies, myiasitic fly larvae, gnats, mosquitoes, fleas, mites, ticks, nasal bots, keds and chiggers may be controlled, prevented or eliminated by the compounds of this invention. Biting lice include members of Mallophaga such as Bovicola bovis, Trichodectes canis and Damilina ovis. Sucking lice include members of Anoplura such as Haematopinus eurysternus, Haematopinus suis, Linognathus vituli and Solenopotes capillatus. Biting flies include members of Haematobia. Ticks include Boophilus, Rhipicephalus, Ixodes, Hyalomma, Amblyomma and Dermacentor. The

compounds of the invention may also be used to control mites which are parasitic on warm-blooded mammals and poultry including mites of the orders Acariformes and Parasitiformes.

For oral administration to warm-blooded animals, the compounds of the invention may be formulated as animal feeds, animal feed premixes, animal feed concentrates, pills, solutions, pastes, suspensions, drenches, gels, tablets, boluses and capsules. In addition, the compounds of the invention may be administered to the animals in their drinking water. For oral administration, the dosage form chosen should provide the animal with about 0.01 mg/kg to 100 g/kg of animal body weight per day of the compound of the invention.

Alternatively, the compounds of the invention may be administered to animals parenterally, for example, by intraruminal, intramuscular, intravenous or subcutaneous injection. The compounds of the invention may be dispersed or dissolved in a physiologically acceptable carrier for subcutaneous injection. Alternatively, the compounds of the invention may be formulated into an implant for subcutaneous administration. In addition the compounds of the invention may be transdermally administered to animals. For parenteral administration, the dosage form chosen should provide the animal with about 0.01 mg/kg to 100 mg/kg of animal body weight per day of the compound of the invention.

The compounds of the invention may also be applied topically to the animals in the form of dips, dusts, powders, collars, medallions, sprays and pour-on formulations. For topical application, dips and sprays usually contain about 0.5 ppm to 5,000 ppm and preferably about 1 ppm to 3,000 ppm of the compound of the invention. In addition, the compounds of the invention may be formulated as ear tags for animals, particularly quadrupeds such as cattle and sheep.

The compounds of the invention may also be used in combination or conjunction with one or more other parasiticidal compounds (to broaden the spectrum of activity) including, but not limited to, anthelmintics, such as benzimidazoles, piperazine, levamisole, pyrantel, praziquantel and the like; endectocides such as avermectins, milbemycins and the like; ectoparasiticides such as arylpyrroles, organophosphates, carbamates, gamabutyric acid inhibitors including fipronil, pyrethroids, spinosads, imidacloprid and the like; insect growth regulators such as pyriproxyfen, cyromazine and the like; and chitin synthase inhibitors such as benzoylureas including flufenoxuron.

The parasiticidal compositions of the present invention include a parasiticidally effective amount of a compound of the invention or combinations thereof admixed with one or more physiologically tolerable inert, solid or liquid carriers known from veterinary

medicinal practice for oral, percutaneous and topical administration. Such compositions may comprise further additives, such as stabilizers, anifoams, viscosity regulators, binders and tackifiers, whereas commercial products will preferably be formulated as concentrates, the end user will normally employ dilute formulations.

The compositions according to the present invention may also be used for the preparation of composition useful to curatively or preventively treat human and animal fungal diseases such as, for example, mycoses, dermatoses, trichophyton diseases and candidiases or diseases caused by Aspergillus spp., for example Aspergillus fumigatus.

In an embodiment, independent of any other embodiments, a compound of formula (I) is a anti-helminth compound.

In an embodiment, independent of any other embodiments, a compound of formula (I) is a pesticidal compound, preferably a nematicidal compound.

In each aspect and embodiment of the invention, "consisting essentially" and inflections thereof are a preferred embodiment of "comprising" and its inflections, and "consisting of" and inflections thereof are a preferred embodiment of "consisting essentially of" and its inflections.

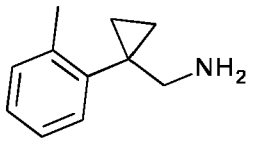
The disclosure in the present application makes available each and every combination of embodiments disclosed herein.

The following Examples serve to illustrate the invention. They do not limit the invention. Temperatures are given in degrees Celsius; mixing ratios of solvents are given in parts by volume.

EXAMPLES

PREPARATION EXAMPLE 1: 3-Methyl-pyridine-2-carboxylic acid (1-o-tolyl-cyclopropylmethyl)-amide (compound A.9)

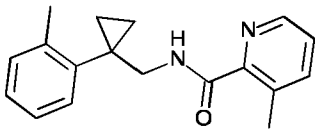
Step 1: C-(1-o-Tolyl-cyclopropyl)-methylamine (compound Q.1)



4.56 g of 1-o-tolyl-cyclopropanecarbonitrile was dissolved in 150 ml of methanol and 40 ml of ammonia (7N solution in methanol) was added, followed by 4.5 g of Raney Nickel. The reactor was sealed and the reaction mixture was stirred under 1 bar of hydrogen at ambient temperature for 2 days. Then the reaction mixture was filtered over celite and the

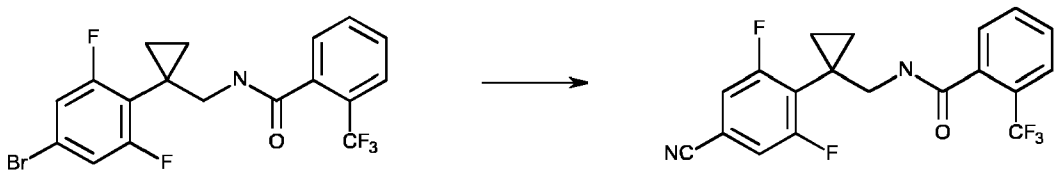
filtrate was concentrated. The residue was purified by chromatography on silica gel, with ethyl acetate / methanol / triethylamine (90:5:5) as a eluent. Thus, 4.01 g C-(1-o-tolyl-cyclopropyl)-methylamine was obtained as an oil. ^{1}H-NMR ($CDCl_3$): 7.25 ppm (m, 1H), 7.13 ppm (m, 3H), 2.70 ppm (s, 2H), 2.41 ppm (s, 3H), 1.40 ppm (s, 2H, broad), 0.80 ppm (m, 4H).

Step 2: 3-Methyl-pyridine-2-carboxylic acid (1-o-tolyl-cyclopropylmethyl)-amide (compound A.9)



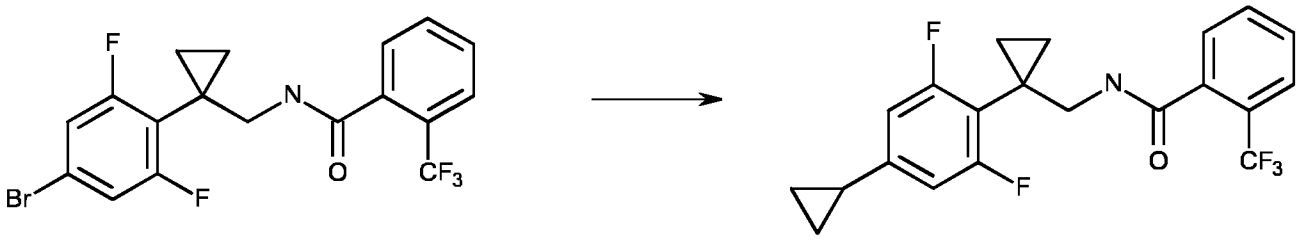
150 mg of C-(1-o-tolyl-cyclopropyl)-methylamine (step 1) was dissolved in 5 ml of dichloromethane and cooled to 0°C. Then 188 mg of triethylamine was added, followed by dropwise addition of a solution of 145 mg of 3-methyl-pyridine-2-carbonyl chloride in 1 ml dichloromethane . The reaction mixture was stirred at ambient temperature for 3 days. Then 6 ml of water were added, the resulting phases were separated and the organic phase was washed with aqueous 2N sodium hydroxide solution, then with 1N aqueous hydrochloric acid and brine, dried over sodium sulfate, filtered and concentrated. The residue was purified by chromatography on silica gel with cyclohexane / ethyl acetate (5:1) as a eluent. Thus, 51 mg of 3-methyl-pyridine-2-carboxylic acid (1-o-tolyl-cyclopropylmethyl)-amide was obtained as an oil. ^{1}H-NMR ($CDCl_3$): 8.83 ppm (m, 1H), 8.15 ppm (s, 1H, broad), 7.55 ppm (m, 1H), 7.30 ppm (m, 1H), 7.27 ppm (m, 1H), 7.12 ppm (m, 3H), 3.55 (d, 2H), 2.70 ppm (s, 3H), 2.50 ppm (s, 3H), 1.02 ppm (m, 2H), 0.82 ppm (m, 2H).

PREPARATION EXAMPLE 2: N-[[1-(4-cyano-2,6-difluoro-phenyl)cyclopropyl]methyl]-2-(trifluoromethyl)benzamide (compound A.57)



N-[[1-(4-bromo-2,6-difluoro-phenyl)cyclopropyl]methyl]-2-(trifluoromethyl)benzamide (100mg) and Zn(CN)2 (16.2 mg) were dissolved in deoxygenated DMF under an inert atmosphere. Pd(PPh3)4 (13.5 mg) was added and the vial was closed under inert atmosphereand placed in a preheated 80°C oil bath and stirred for 2.5 hrs . TLC shows only traces of product. Pd(PPh3)4 (13.5 mg) and Zn(CN)2 (16.2 mg) were added and the reaction mixture was stirred overnight at 80°C. TLC shows only traces of product, Pd(PPh3)4 (27 mg) and Zn(CN)2 (32.4 mg) were added and the RM was stirred at 100°C to form a yellow solution with white precipitate. TLC shows almost complete conversion. The reaction mixture was cooled down to RT and diluted with toluene, washed 2 times with 2 M NH4OH solution and brine, dried over Na2SO4 and the solvent was evaporated to give 145 mg of a yellow oil. Preperative TLC: hexanes:EtOAc 4:1
Yielded 71.7 mg of product which crystallised to a yellow solid m.p. 100-102 °C.
^{1}H-NMR ($CDCl_3$): 8.72 (d, 1H); 8.26 (d, 1H); 7.89 (br s, 1H); 7.58 (dd, 1H); 7.15 (m, 2H); 3.63 (d, 2H); 1.16 (t, 2H); 0.98 (t, 2H).

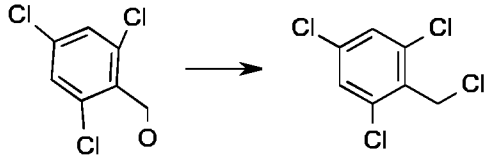
PREPARATION EXAMPLE 3: N-[[1-(4- cyclopropyl -2,6-difluoro-phenyl)cyclopropyl]methyl]-2-(trifluoromethyl)benzamide (compound A.58)



To N-[[1-(4-bromo-2,6-difluoro-phenyl)cyclopropyl]methyl]-2-(trifluoromethyl)benzamide (100mg), cyclopropylboronic acid (66 mg), P(Cy)3 (13 mg), and K3PO4(349 mg) in toluene (1.5 ml) and water (0.04 ml) was added Pd(OAc)2 (5.3 mg) under an inert atmosphere. The reaction mixture was heated to 100°C for 22 hrs. EtOAc and water were added and the phases were separated. The organic layer was washed with brine, dried over Na2SO4 and concentrated to give 210 mg of light brown oil. Preperative TLC (hexanes/EtOAc 9:1, 7 times eluted): yielded 165.4 mg of the product as yellow oil,
^{1}H-NMR ($CDCl_3$): 8.73 (d, 1H); 8.12 (d, 1H); 7.89 (br s, 1H); 7.53 (dd, 1H); 6.53 (m, 2H); 3.55 (d, 2H); 1.82 (m, 1H); 1.08-0.86 (m, 6H); 0.63 (m, 2H)

PREPARATION EXAMPLE 4: N-[[1-(2,4,6-trichlorophenyl)cyclopropyl]methyl]-3-(trifluoromethyl)pyridine-2-carboxamide (Compound A29)

Step 1: 1,3,5-trichloro-2-(chloromethyl)benzene

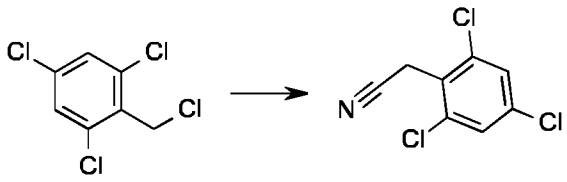


To a stirred solution of (2,4,6-trichlorophenyl)methanol (2g, 9.4574 mmol) in chloroform (20 mL) kept under N2 atmosphere, thionyl chloride (1.25 mL, 17.023 mmol), was added slowly at 0°C over a period of 10 min followed by a catalytic amount of DMF (35 mg, 0.4733 mmol). The reaction mixture was allowed to stirred at RT for 2h.

The reaction mixture was quenched with 10 mL of water; the aqueous layer is extracted with dichloromethane (3 times). The combined organic layer were washed with 5% Na2CO3 solution (2*10 mL), followed by NaCl (10mL) and dried over Na2SO4. The solvent was evaporated under reduced pressure to give an yellow oil (1.78 gr). The oil was diluted in EtOAc and washed twice with NaCl (3 mL), then dried over NaSO4, filtrated and evaporated to give 1.58 g of desired product.

^{1}H-NMR ($CDCl_3$): 7.4 (s, 2H); 4.8 (s, 2H).

Step 2: 2-(2,4,6-trichlorophenyl)acetonitrile



To a stirred solution of 1,3,5-trichloro-2-(chloromethyl)benzene (1.7 g, 7.39 mmol) in EtOH (5.7 mL), NaCN (0.411 g, 8.13 mmol) in H2O (1.7 mL) was added at RT. The reaction mixture was refluxed for 4 hr to complete the reaction.

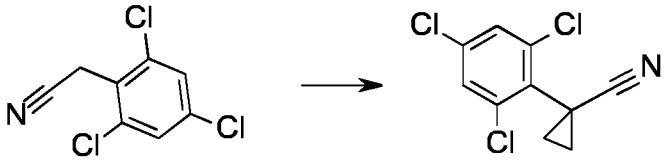
EtOH was evaporated and the white solid was diluted in water (6 mL). The aqueous layer was extracted with EtOAc (3 times). The combined organic layer were washed with NaCl

(10 mL) and dry over Na2SO4. The solvent was evaporated under reduced pressure to give a white solid (1.585 gr)

The crude was purified by flash chromatography (Cyclohexane/EtOAc (A/B): 100% of A to 50% of B) to give 1.098 g of desired product.

^{1}H-NMR ($CDCl_3$): 7.45 (s, 2H); 3.95 (s, 2H).

Step 3: 1-(2,4,6-trichlorophenyl)cyclopropanecarbonitrile

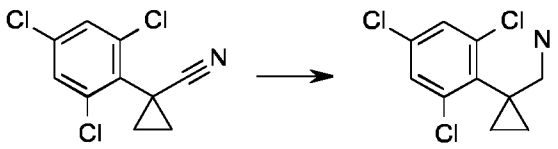


To a solution of NaH 60% in oil (0.387 g, 9.67 mmol) in dry THF (1.5 mL) was added dropwise ,under argon, at 0°C a solution of 2-(2,4,6-trichlorophenyl)acetonitrile (0.748 g, 3.22 mmol), in THF (1.5mL). The yellow mixture was stirred until the end of gaz formation. Then 1,2-dibromoethane (2.45 g, 12.9 mmol) was added dropwise at 0°C. The reaction mixture was stirred 30 min at 0°C then allowed at RT - 2 hr.

The reaction mixture was quenched at 0°C with aq NH4Cl (12 mL). EtOAc was added. The phases were separated. The water phase was extracted again with EtOAc. The combined organic phases were dried with Na_2SO_4 filtrated and the organic phases evaporated to give a pink solid (1.42g) which was purified by flash chromatography (Solvent: Cyclohexane /EtOAc 4/1) to give a white solid (0.704 g).

^{1}H-NMR ($CDCl_3$): 7.4 (s, 2H); 1.95 (m, 2H), 1.45 (m, 2H).

Step 4: [1-(2,4,6-trichlorophenyl)cyclopropyl]methanamine

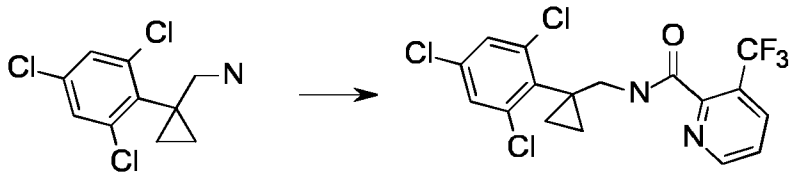


To a solution of 1-(2,4,6-trichlorophenyl)cyclopropanecarbonitrile (0.702 g, 2.85 mmol) in Et2O (6 mL) , was added carefully, at 0°C, LiAlH4 (1 M) in Et2O (4.27 mL, 4.27 mmol) (exothermic, keep T° between 5-10°C). The suspension was stirred 1hr at 0°C. Then the reaction mixture was diluted, 6 mL of Et2O was added, then quenched at 0°C very

carefully with 3ml water (exothermic, react violently, gaz), then 6mL aq. NaOH 4 M, then 9mL water. The reaction mixture was stirred 10 min at RT, then Na2SO4 was added and the reaction mixture was stirred 5 min more. All salts were filtrated over celite. The organic phase was washed with brine. The organic layer was dried with Na_2SO_4 , filtrated and the organic phase evaporated to give a yellow oil (524 mg).

^{1}H-NMR ($CDCl_3$): 7.35 (s, 2H); 2.85 (s, 2H), 1.6 (bs, 2H), 1.0 (m, 2H), 0.95 (m, 2H).

Step 5: N-[[1-(2,4,6-trichlorophenyl)cyclopropyl]methyl]-3-(trifluoromethyl)pyridine-2-carboxamide (Compound A29)

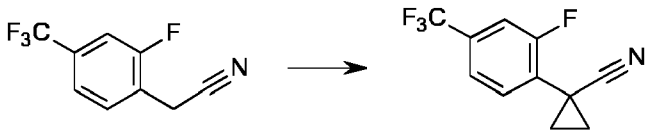


To a solution of [1-(2,4,6-trichlorophenyl)cyclopropyl]methanamine (1.10 mL, 0.458 mmol,) in dry dichloromethane (1.8 mL) was added, under argon, Et3N (0.129 mL, 0.915 mmol,) , then the mixture was cooled at 0°C. Then were added EDCI.HCl (0.175 g, 0.915 mmol,), HOBT.H2O (0.125 g, 0.915 mmol) , 3-(trifluoromethyl)pyridine-2-carboxylic acid (0.0874 g, 0.458 mmol,) and the reaction mixture was stirred ON at RT. Water was added, the aqueous solution was extracted with dichloromethane (3 times), the combined organic layers were washed by NaCl, dried over Na2SO4, filtrated and evaporated under reduced pressure to give yellow oil (198 mg). The crude was purified by flash chromatography using silica gel (Cyclohexane to Cyclohexane/AcOEt:1/4) afforded the desired product as white solid (115.7mg).

^{1}H-NMR ($CDCl_3$): 8.7 (d, 1H); 8.15 (d, 1H), 8.0 (bs, 1H), 7.55 (m, 1H), 7.3 (s, 2H), 3.67 (d, 2H), 1.25 (m, 2H), 1.05 (m, 2H).

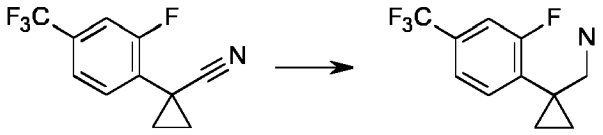
PREPARATION EXAMPLE 5: 3-chloro-N-[[1-[2-fluoro-4-(trifluoromethyl)phenyl]cyclopropyl]methyl]pyridine-2-carboxamide (Compound A37)

Step 1: 1-[2-fluoro-4-(trifluoromethyl)phenyl]cyclopropanecarbonitrile



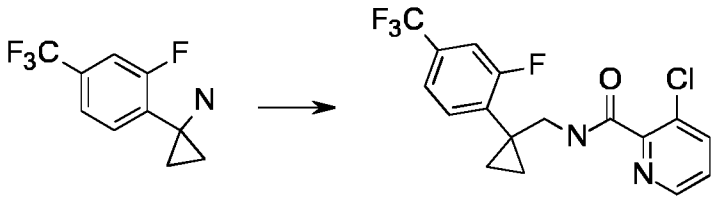
2-Fluoro-4-(trifluoromethyl)phenylacetonitrile (3 g, 14,47 mmol) was dissolved inTHF (30 mL). Sodium hydride (1.7366 g, 43,42 mmol) was added in several portions at 0°C. The reaction mixture was stirred until no detectable gas evolution. The reaction mixture was then a red suspension. At 0°C 1-Bromo-2-chloro-ethane (4.80 mL, 57,89 mmol) was added drop wise. The reaction mixture was stirred 30 min at 0°C then 2h at 50°C. It was cooled down to rt. The suspension was filtrated over Hyflo. The filtrate was evaporated. The residue was 3.7g dark red liquid/oil. The crude was purified by flash chromatography (Solvent: Cyclohexane /EtOAc 1/1) to yield 1.81g of a yellow oil, the desired product.
^{1}H-NMR ($CDCl_3$): 7.5 (t, 1H), 7.45-7.35 (m, 2H), 1.75 (m, 2H), 1.45 (m, 2H).

Step 2: [1-[2-fluoro-4-(trifluoromethyl)phenyl]cyclopropyl]methanamine



To a solution of 1-[2-fluoro-4-(trifluoromethyl)phenyl]cyclopropanecarbonitrile (1.926 g, 8.404 mmol) in Et2O (20 mL, 8.404 mmol), was added carefully, at 0°C, LiAlH4 (1 M) in Et2O (6.723 mL, 6.723 mmol) (exothermic, keep T° between 5-10°C). The colorless solution had turn to an orange suspension which was stirred 1h at 0°C. As there was some starting material left, 1.6 mL of LiAlH4 (1M in Et2O) was added and the reaction mixture was stirred one more hour. Then the reaction mixture was diluted, 20 mL of Et2O was added, then quenched at 0°C very carefully with 6 mL water (exothermic, react violently, gaz), then 5 mL aq. NaOH 2 M, then 6 mL water. The reaction mixture was stirred 10 min at RT, then Na2SO4 was added and the reaction mixture was stirred 5 min more. All salts were filtrated over celite. The filtrate was washed with brine. The organic layer was dried with Na_2SO_4 , filtrated and evaporated to give an yellow oil (1.66 g) which was the desired product.
^{1}H-NMR ($CDCl_3$): 7.44 (t, 1H), 7,37 (d, 1H), 7,30 (d,1H), 2,80 (s, 2H), 1,15 (bs, 2H), 0.84 (m, 4H).

Step 3: 3-chloro-N-[[1-[2-fluoro-4-(trifluoromethyl)phenyl]cyclopropyl]methyl]pyridine-2-carboxamide (compound A37)

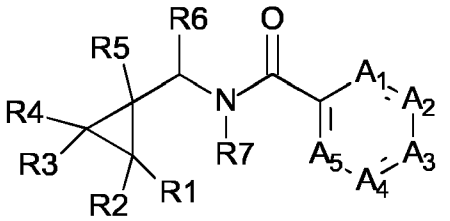


To a solution of [1-[2-fluoro-4-(trifluoromethyl)phenyl]cyclopropyl]methanamine (0.500 mL, 0.510 mmol) in dry dichloromethane (2.0 mL, 0.510 mmol) was added, under argon, Et3N (0.144 mL, 1.02 mmol) , then the mixture was cooled at 0°C. There were added EDCI.HCl (0.196 g, 1.02 mmol), HOBT.H2O (0.139 g, 1.02 mmol), 3-chloropyridine-2-carboxylic acid (0.0803 g, 0.510 mmol) and the reaction mixture was stirred overnight at RT. Water was added, the aqueous solution was extracted with dichloromethane (3 times), the combined organic layers were washed by NaCl, dried over Na2SO4, filtrated and evaporated under reduced pressure to give an oil (0.316 mg).which was purified by flash chromatography (Cyclohexane to Cyclohexane/AcOEt :4/1).The desired compound was isolated as a colorless oil (143.0 mg).

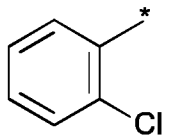
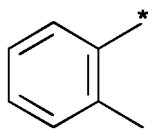
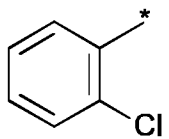
^{1}H-NMR ($CDCl_3$): 8.43 (d, 1H), 7.88 (bs, 1H), 7.80 (d, 1H), 7.46 (t, 1H), 7.40-7.30 (m, 3H), 3.63 (d, 2H), 1.10 (m, 2H), 0.91 (m, 2H).

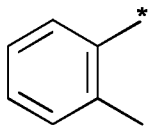
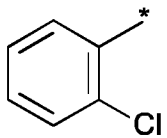
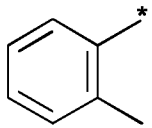
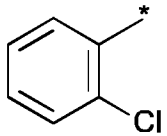
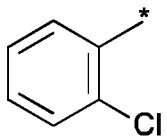
According to the methods described above, the compounds in Table A & Q were prepared.

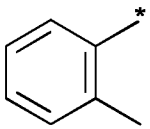
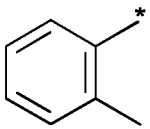
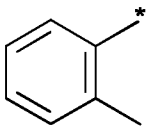
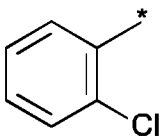
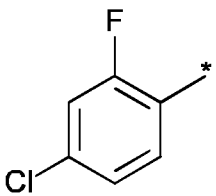
Table A: Compounds of formula (I) .

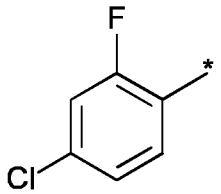
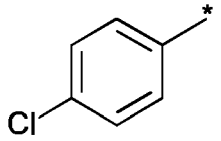
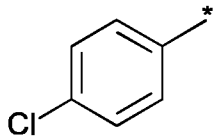
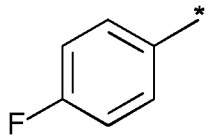
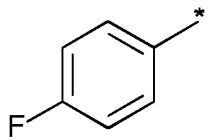


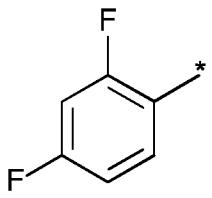
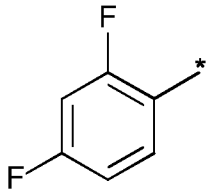
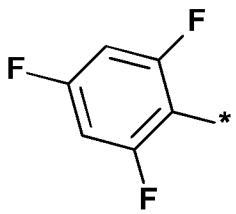
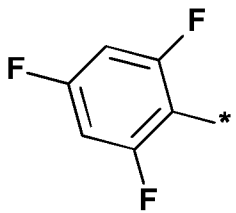
(I) ,

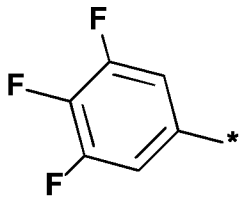
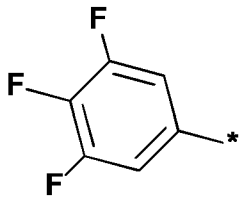
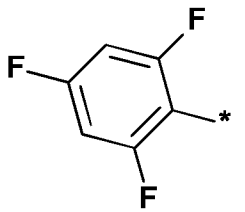
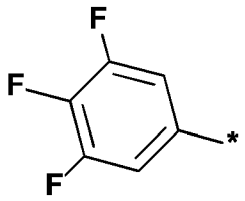
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*[M+H]+*	*Method LC-MS*	*Mp (°C)*
A.1	H	H	H	H		H	H	C-CH3	C-H	C-H	C-CH3	C-H	1.89	314 / 316	ZCQ11	
A.2	H	H	H	H		H	H	N	C-H	C-H	C-H	N	1.56	268	ZMD11	
A.3	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N	1.72	321 / 323 / 325	ZCQ11	

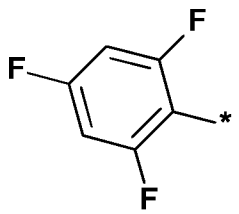
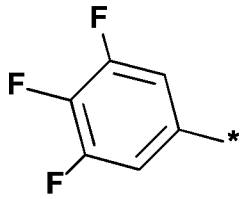
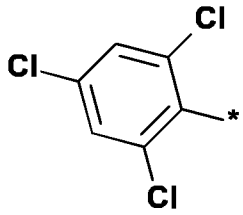
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*[M+H]+*	*Method LC-MS*	*Mp (°C)*
A.4	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N	1.75	301 / 303	ZMD11	
A.5	H	H	H	H		H	H	C-CH3	C-CH3	C-H	C-H	C-H	1.86	314 / 316	ZCQ11	110-113
A.6	H	H	H	H		H	H	C-CH3	C-H	C-H	C-CH3	C-H	1.86	294	ZMD11	
A.7	H	H	H	H		H	H	N	C-H	C-H	C-H	N	1.54	288 / 290	ZCQ11	
A.8	H	H	H	H		H	H	C-CH3	C-H	C-CH3	C-H	C-H	1.89	314 / 316	ZCQ11	109-114

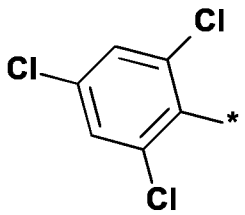
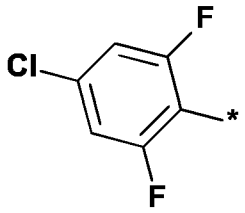
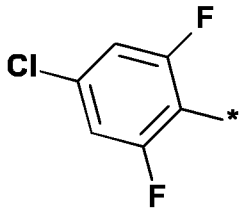
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*[M+H]+*	*Method LC-MS*	*Mp (°C)*
A.9	H	H	H	H		H	H	C-CH3	C-H	C-H	C-H	N	1.82	281	ZMD11	
A.10	H	H	H	H		H	H	C-CH3	C-H	C-CH3	C-H	C-H	1.89	294	ZMD11	104-106
A.11	H	H	H	H		H	H	C-CH3	C-CH3	C-H	C-H	C-H	1.88	294	ZMD11	95-99
A.12	H	H	H	H		H	H	C-CH3	C-H	C-H	C-H	N	1.82	301 / 303	ZCQ11	
A.13	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N				48-49

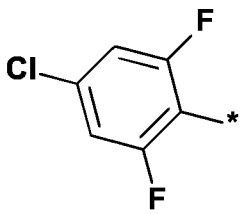
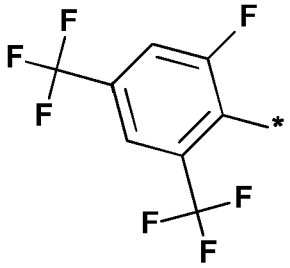
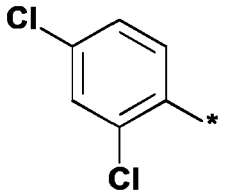
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5	Retention time	$[M+H]^+$	Method LC-MS	Mp (°C)
A.14	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N				97-98
A.15	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N				oil
A.16	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N				69-71
A.17	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N				79-81
A.18	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N				oil

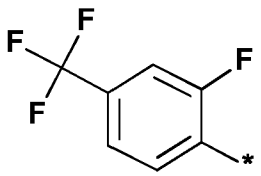
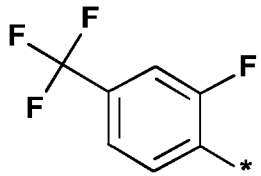
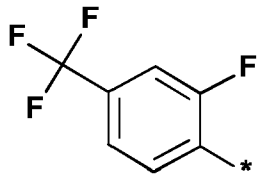
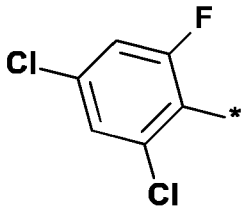
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*[M+H]+*	*Method LC-MS*	*Mp (°C)*
A.19	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N				98-99
A.20	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N				93-94
A.21	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N	1.02	438	STANDARD	
A.22	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N	0.98	340.9	STANDARD	128-129

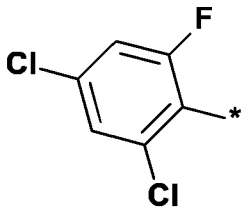
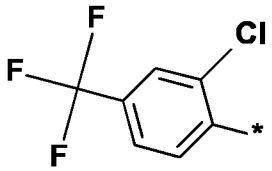
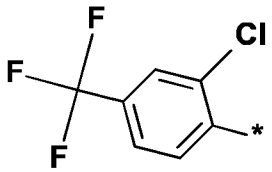
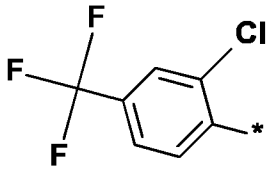
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5	Retention time	[M+H]+	Method LC-MS	Mp (°C)
A.23	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N	1.03	375	STANDARD	106-107
A.24	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N	0.99	340.9	STANDARD	79-80
A.25	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N	0.96	325	STANDARD	90-91
A.26	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N	0.98	325	STANDARD	

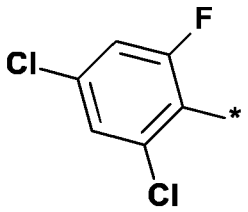
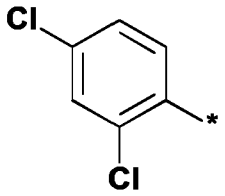
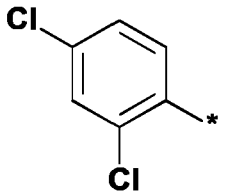
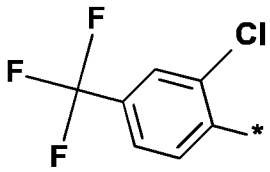
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.27	H	H	H	H		H	H	C-Br	C-H	C-H	C-H	N	0.99	373.9	STANDARD	124-125
A.28	H	H	H	H		H	H	C-Br	C-H	C-H	C-H	N	1	386.9	STANDARD	99-100
A.29	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N	1.19	425	STANDARD	142-144

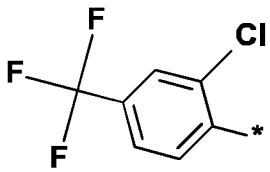
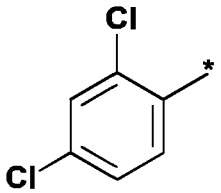
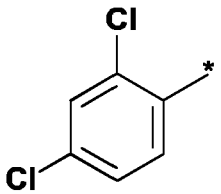
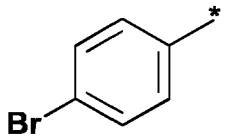
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.30	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N	1.12	375	STANDARD	
A.31	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N	1.08	391	STANDARD	
A.32	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N	1.02	341	STANDARD	

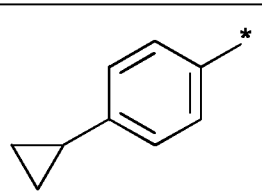
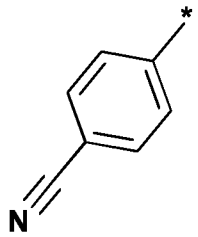
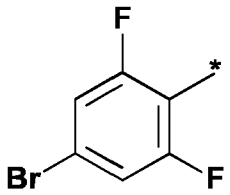
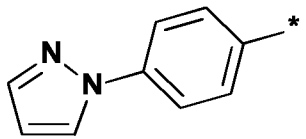
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.33	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N	1.03	357	STANDARD	
A.34	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N	1.14	475	STANDARD	99-100
A.35	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N	1.11	389	STANDARD	111-112

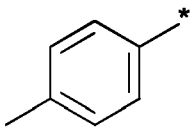
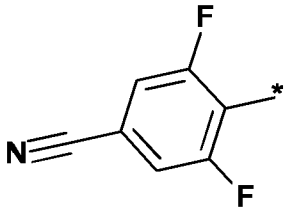
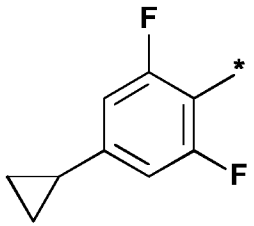
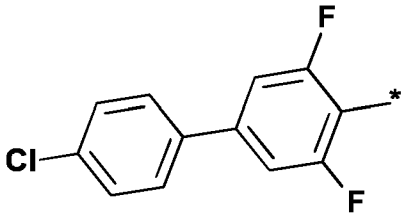
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.36	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N	1.09	407	STANDARD	
A.37	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N	1.03	373	STANDARD	
A.38	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N	1.03	357	STANDARD	
A.39	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N	1.1	374	STANDARD	

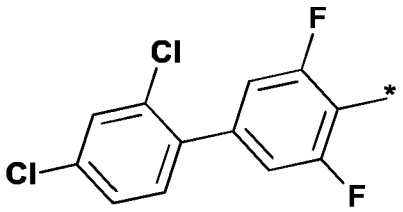
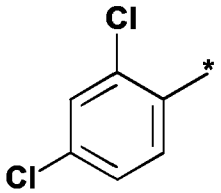
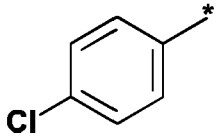
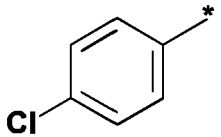
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.40	H	H	H	H		H	H	C-Br	C-H	C-H	C-H	N	1.1	419	STANDARD	
A.41	H	H	H	H		H	H	N	C-CF3	C-H	C-H	C-H	1.2	423	STANDARD	
A.42	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N	1.08	389	STANDARD	
A.43	H	H	H	H		H	H	C-Br	C-H	C-H	C-H	N	1.11	434	STANDARD	

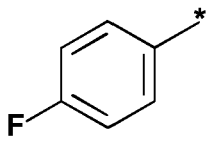
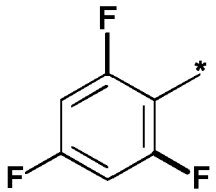
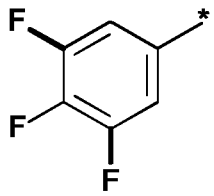
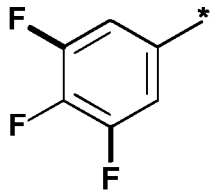
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.44	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N	1.11	407	STANDARD	
A.45	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N	1.08	356	STANDARD	
A.46	H	H	H	H		H	H	C-Br	C-H	C-H	C-H	N	1.08	401	STANDARD	
A.47	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N	1.07	373	STANDARD	

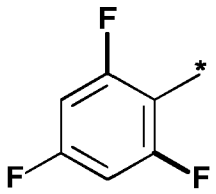
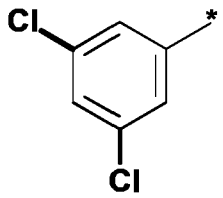
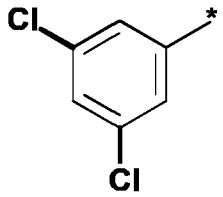
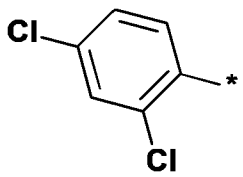
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.48	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N	1.02	424	STANDARD	
A.49	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N	1.83	355/357	ZDQ11	
A.50	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N	1.81	339/341	ZDQ11	
A.51	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N				83-84

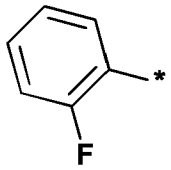
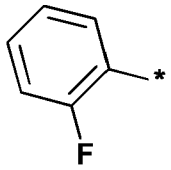
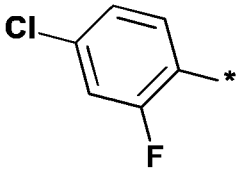
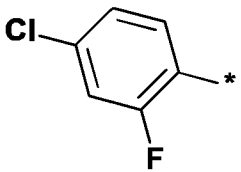
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.52	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N	1.04	311	ZDQ12	
A.53	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N	0.84	296	ZDQ12	
A.54	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N				122-124
A.55	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N	0.89	337	ZDQ12	

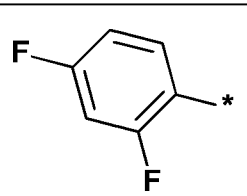
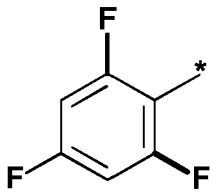
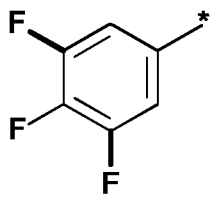
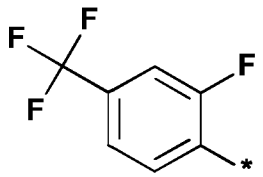
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.56	H	H	H	H		H	H	C-F	C-H	C-H	C-H	N	0.99	285	ZDQ12	
A.57	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N				100-102
A.58	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N	1.11	397	ZDQ12	
A.59	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N				143-145

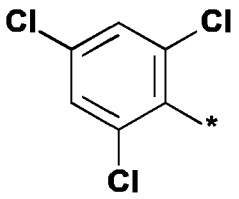
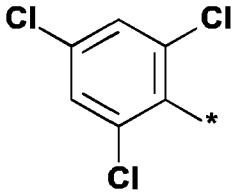
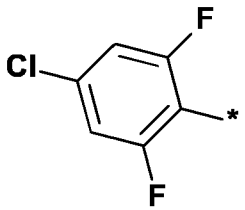
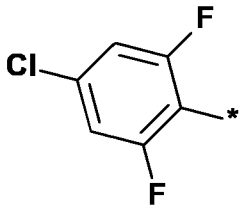
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5	Retention time	[M+H]+	Method LC-MS	Mp (°C)
A.60	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N				126-128
A.61	H	H	H	H		H	H	C-CF3	N	C-H	C-H	C-H				120-121
A.62	H	H	H	H		H	H	C-F	C-H	C-H	C-H	C-F				94-96
A.63	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H				97-99

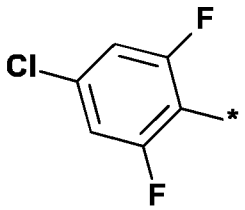
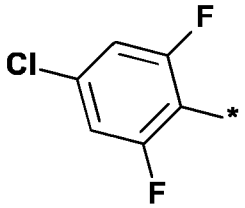
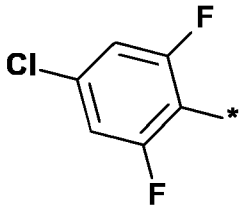
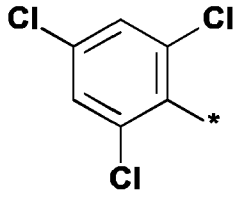
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*[M+H]+*	*Method LC-MS*	*Mp (°C)*
A.64	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H				68-71
A.65	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H				96-97
A.66	H	H	H	H		H	H	C-Cl	N	C-H	C-H	N	1.71	342	STANDARD	
A.67	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H				113-114

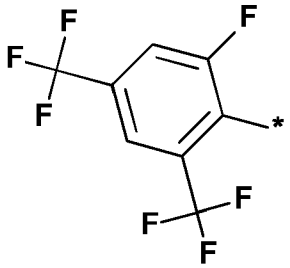
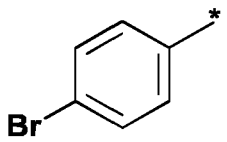
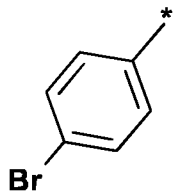
	R1	R2	R3	R4	R5	R6	R7	A1	A2	A3	A4	A5	Retention time	$[M+H]^+$	Method LC-MS	Mp (°C)
A.68	H	H	H	H		H	H	C-Cl	N	C-H	C-H	N				98-99
A.69	H	H	H	H		H	H	C-Cl	N	C-H	C-H	N				112-113
A.70	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H				102-103
A.71	H	H	H	H		H	H	C-F	C-H	C-H	C-H	C-F				100-103

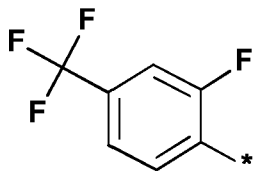
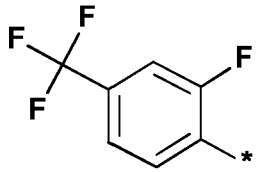
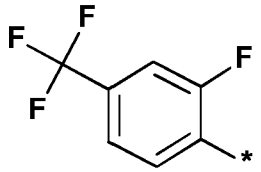
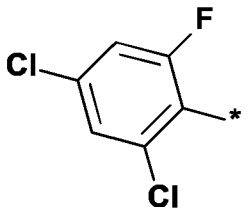
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*[M+H]+*	*Method LC-MS*	*Mp (°C)*
A.72	H	H	H	H		H	H	C-F	C-H	C-H	C-H	C-F				82-84
A.73	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H				73-75
A.74	H	H	H	H		H	H	C-F	C-H	C-H	C-H	C-F				125-127
A.75	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H				73-75

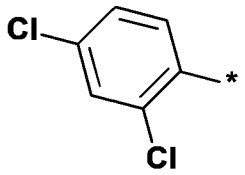
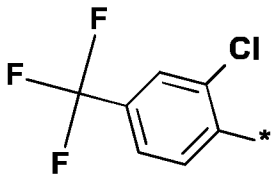
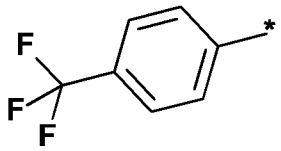
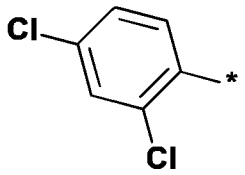
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.76	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H				76-78
A.77	H	H	H	H		H	H	C-Cl	C-H	N	C-H	N				96-97
A.78	H	H	H	H		H	H	C-Cl	C-H	N	C-H	N				97-98
A.79	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H				95-97

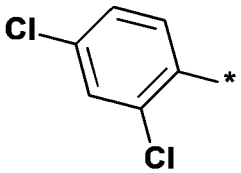
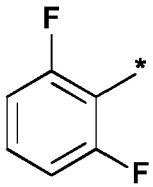
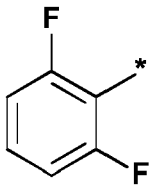
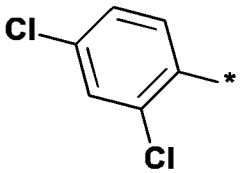
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.80	H	H	H	H		H	H	C-CF3	N	C-H	C-H	C-H				145-177
A.81	H	H	H	H		H	H	C-Cl	N	C-H	C-H	N	0.88	372/374	STANDARD	
A.82	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H	1.09	390	STANDARD	
A.83	H	H	H	H		H	H	C-CF3	N	C-H	C-H	C-H	1.02	391	STANDARD	

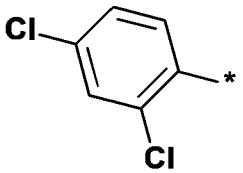
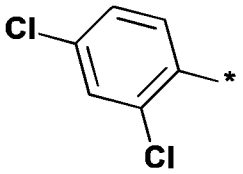
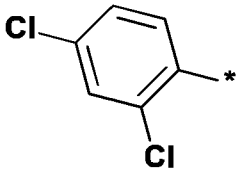
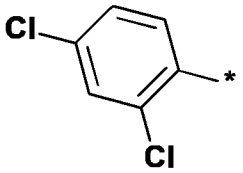
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.84	H	H	H	H		H	H	C-Cl	N	C-H	C-H	N	1	358	STANDARD	
A.85	H	H	H	H		H	H	C-Cl	C-H	N	C-H	N				110-111
A.86	H	H	H	H		H	H	C-F	C-H	C-H	C-H	C-F				132-133
A.87	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H	1.18	422	STANDARD	

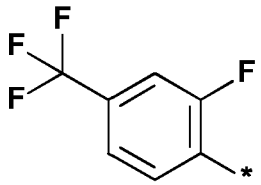
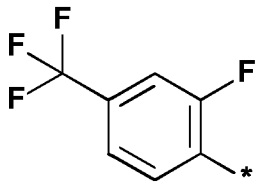
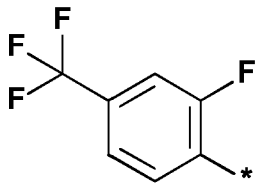
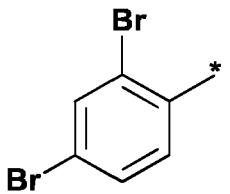
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.88	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H				129-130
A.89	H	H	H	H		H	H	C-S-CH3	C-H	C-H	C-H	N	1.1	379	ZDQ12	
A.90	H	H	H	H		H	H	C-SO2-CH3	C-H	C-H	C-H	N				37-39
A.91	H	H	H	H		H	H	C-SO-CH3	C-H	C-H	C-H	N				47-49

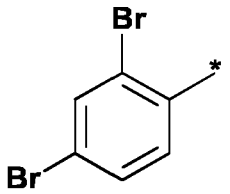
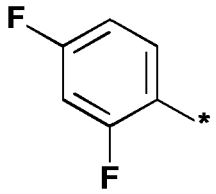
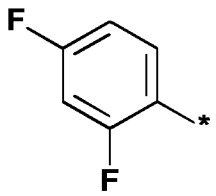
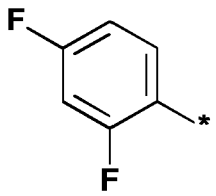
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.92	H	H	H	H		H	H	C-CF3	N	C-H	C-H	C-H				127-128
A.93	H	H	H	H		H	H	C-F	C-H	C-H	C-H	C-F	1.06	374	STANDARD	
A.94	H	H	H	H		H	H	C-Cl	N	C-H	C-H	N				97-98
A.95	H	H	H	H		H	H	C-Cl	C-H	N	C-H	N	1.05	356	STANDARD	

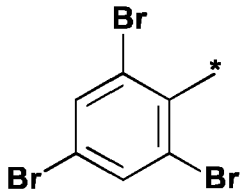
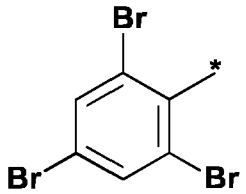
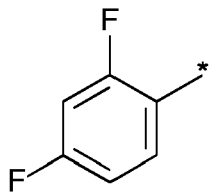
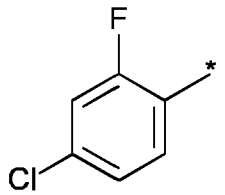
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.96	H	H	H	H		H	H	C-Cl	C-H	N	C-H	N	1.08	356	STANDARD	
A.97	H	H	H	H		H	H	C-Cl	C-H	N	C-H	N	1.07	391	STANDARD	
A.98	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H				89-92
A.99	H	H	H	H		H	H	C-Br	N	C-H	C-H	C-H	1.02	399	STANDARD	

	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*[M+H]+*	*Method LC-MS*	*Mp (°C)*
A.100	H	H	H	H		H	H	C-F	N	C-H	C-H	C-H	1.04	339	STANDARD	
A.101	H	H	H	H		H	H	C-F	C-H	C-H	C-H	C-F				100-102
A.102	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	C-H	1.02	356	ZDQ12	
A.103	H	H	H	H		H	H	C-CF3	C-H	N	C-H	N				101-103

	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.104	H	H	H	H		H	H	C-CF3	N	C-H	N	C-H				146-146
A.105	H	H	H	H		H	H	C-CF3	C-H	C-H	N	N				117-119
A.106	H	H	H	H		H	H	C-CF3	N	N	C-H	C-H				137-139
A.107	H	H	H	H		H	H	C-CF3	C-H	N	N	C-H	1.03	390	STANDARD	

	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.108	H	H	H	H		H	H	C-CF3	N	C-H	C-H	N				97-99
A.109	H	H	H	H		H	H	C-CF3	C-H	N	C-H	N	1.05	408	STANDARD	
A.110	H	H	H	H		H	H	C-CF3	N	C-H	N	C-H				134-136
A.111	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N	1.14	479	ZDQ12	

	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.112	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N	1.12	445	ZDQ12	
A.113	H	H	H	H		H	H	C-CF3	N	C-H	C-H	C-H	0.94	357	STANDARD	
A.114	H	H	H	H		H	H	C-CF3	N	C-H	C-H	N	0.97	358	STANDARD	
A.115	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N	0.99	357	STANDARD	

	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*$[M+H]^+$*	*Method LC-MS*	*Mp (°C)*
A.116	H	H	H	H		H	H	C-Cl	C-H	C-H	C-H	N				123-124
A.117	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N				155-157
A.118	Me	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N	1.08	371	ZDQ12	
A.119	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N	1.07	373	ZDQ12	

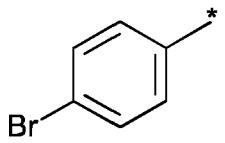
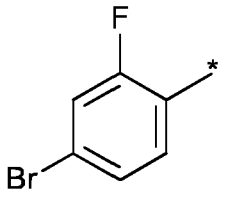
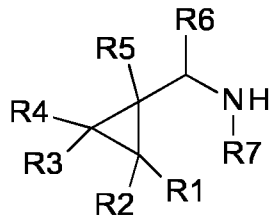
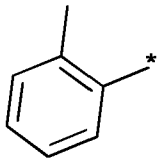
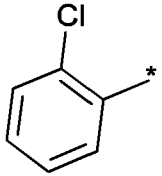
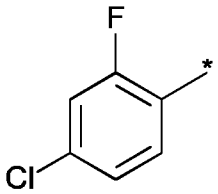
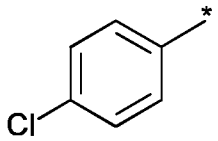
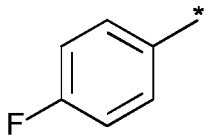
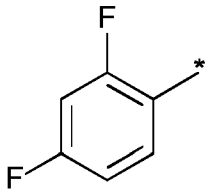
	R1	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*A1*	*A2*	*A3*	*A4*	*A5*	*Retention time*	*[M+H]+*	*Method LC-MS*	*Mp (°C)*
A.120	H	H	H	H		Me	H	C-CF3	C-H	C-H	C-H	N	1.14	414	ZDQ12	
A.121	H	H	H	H		H	H	C-CF3	C-H	C-H	C-H	N	1.09	418	ZDQ12	

Table Q: Compounds of formulae (II)



(II)

	Formula	*CAS Reference*	*R1*	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*Retention time*	*[M+H]+*	*Method LC-MS*	*Mp (°C)*
Q.1	Formula (II)	886365-78-2	H	H	H	H		H	H	0.56	162	ZMD11	
Q.2	Formula (II)	886365-68-0	H	H	H	H		H	H	0.76	182 / 184	ZCQ11	

	Formula	*CAS Reference*	*R1*	*R2*	*R3*	*R4*	*R5*	*R6*	*R7*	*Retention time*	*[M+H]+*	*Method LC-MS*	*Mp (°C)*
Q.3	Formula (II)	-	H	H	H	H		H	H				
Q.4	Formula (II)	69385-29-1	H	H	H	H		H	H				
Q.5	Formula (II)	75180-46-0	H	H	H	H		H	H				
Q.6	Formula (II)	-	H	H	H	H		H	H				

ZQ Mass Spectrometer from Waters (Single quadrupole mass spectrometer)

Instrument Parameter:
Ionization method: Electrospray
Polarity: positive and negative ions
Capillary: 3.00 kV
Cone: 30.00 V
Extractor: 2.00 V
Source Temperature: 100°C,
Desolvation Temperature: 250°C
Cone Gas Flow: 50 L/Hr
Desolvation Gas Flow: 400 L/Hr
Mass range: 100 to 900 Da

HP 1100 HPLC from Agilent:
Solvent degasser, binary pump, heated column compartment and diode-array detector.
Column: Phenomenex Gemini C18, 3 □m, 30 x 3 mm,
Temp: 60 °C
DAD Wavelength range (nm): 210 to 500
Solvent Gradient:
A = H2O + 5% MeOH + 0.05 % HCOOH
B= Acetonitril + 0.05 % HCOOH

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

ZQ Mass Spectrometer from Waters (Single quadrupole mass spectrometer)

Instrument Parameter:
Ionization method: Electrospray
Polarity: positive and negative ions
Capillary: 3.00 kV
Cone: 30 V
Extractor: 2.00 V
Source Temperature: 150°C,
Desolvation Temperature: 350C
Cone Gas Flow: 50 L/Hr
Desolvation Gas Flow: 400 L/Hr
Mass range: 100 to 900 Da

Acquity UPLC from Waters:
Binary pump, heated column compartment and diode-array detector.
Solvent degasser, binary pump, heated column compartment and diode-array detector.
Column: Waters UPLC HSS T3 , 1.8 □m, 30 x 2.1 mm,
Temp: 60 °C
DAD Wavelength range (nm): 210 to 500
Solvent Gradient:
A = H2O + 5% MeOH + 0.05 % HCOOH
B= Acetonitril + 0.05 % HCOOH

Time	A%	B%	Flow (ml/min)
0.00	90	10	0.85
1.20	0	100.0	0.85
1.50	0	100.0	0.85

ZQ Mass Spectrometer from Waters (Single quadrupole mass spectrometer)

Instrument Parameter:
Ionization method: Electrospray
Polarity: positive and negative ions
Capillary: 3.00 kV
Cone: 30.00 V
Extractor: 2.00 V
Source Temperature: 100°C,
Desolvation Temperature: 250°C
Cone Gas Flow: 50 L/Hr
Desolvation Gas Flow: 400 L/Hr
Mass range: 100 to 900 Da

HP 1100 HPLC from Agilent:
Solvent degasser, quaternary pump, heated column compartment and diode-array detector.
Column: Phenomenex Gemini C18, 3 mm, 30 x 3 mm,
Temp: 60 °C
DAD Wavelength range (nm): 210 to 500
Solvent Gradient:
A = H2O + 5% MeOH + 0.05 % HCOOH
B= Acetonitril + 0.05 % HCOOH

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

ZMD Mass Spectrometer from Waters (Single quadripole mass spectrometer)

Instrument Parameter:
Ionization method: Electrospray
Polarity: *positive or negative ions*
Capillary: 3.80 kV
Cone: 30.00 V
Extractor: 3.00 V
Source Temperature: 150°C,
Desolvation Temperature: 350°C
Cone Gas Flow: OFF
Desolvation Gas Flow: 600 L/Hr
Mass range: 100 to 900 Da

HP 1100 HPLC from Agilent:
Solvent degasser, binary pump, heated column compartment and diode-array detector.
Column: Phenomenex Gemini C18, 3 mm, 30 x 3 mm,
Temp: 60 °C
DAD Wavelength range (nm): 200 to 500
Solvent Gradient:
A = H2O + 5% MeOH + 0.05 % HCOOH
B= Acetonitril + 0.05 % HCOOH

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

ZQ Mass Spectrometer from Waters (Single quadrupole mass spectrometer)

Instrument Parameter:
Ionization method: Electrospray
Polarity: positive and negative ions
Capillary: 3.00 kV
Cone: 30 V
Extractor: 2.00 V
Source Temperature: 150°C,
Desolvation Temperature: 350C
Cone Gas Flow: 50 L/Hr
Desolvation Gas Flow: 400 L/Hr
Mass range: 100 to 900 Da

Acquity UPLC from Waters:
Binary pump, heated column compartment and diode-array detector.
Solvent degasser, binary pump, heated column compartment and diode-array detector.
Column: Waters UPLC HSS T3 , 1.8 □m, 30 x 2.1 mm,
Temp: 60 °C
DAD Wavelength range (nm): 210 to 500
Solvent Gradient:
A = H2O + 5% MeOH + 0.05 % HCOOH
B= Acetonitril + 0.05 % HCOOH

Time	A%	B%	Flow (ml/min)
0.00	90	10	0.85
1.20	0	100.0	0.85
1.50	0	100.0	0.85

BIOLOGICAL EXAMPLES:

Meloidogyne spp. (Root-knot nematode) contact activity, preventive. Pouch test.

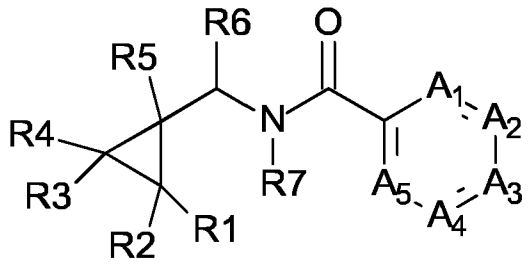
Filter papers (9 cm x 4.5 cm) with a small pocket were placed into plastic pouches (12 cm x 6 cm). One cucumber cv. Toshka seed was placed in the centre of the filter paper pocket of all the pouches needed for a test. The cucumber seeds in the pouches were treated with test solutions at 200 ppm by pipetting the solution directly over the cucumber seed in the filter paper pocket in the pouch. Prior to application, the compound solution was prepared at twice the concentration required and the egg suspension is prepared with FORL nutrient solution with 3000 eggs/ 0.5 ml. After applying all the treatments, 3000 eggs (in 0.5 ml of FORL nutrient solution) were pipetted into the pouches. The pouches were incubated in a moist chamber for twelve days and watered regularly to maintain good filter paper moisture essential for the growing cucumber root system. After this period, the filter paper containing the germinated cucumber seedling was removed from the plastic pouch to assess the number of galls caused by Meloidogyne spp. per root system.
The following compounds showed a greater than 75% reduction of galling compared to the untreated control: A.1, A.2, A.3, A.5, A.6, A.7, A.9, A.11, A.12, A.15, A.18, A.65, A.66, A.67, A.68, A.69, A.70, A.73, A.77, A.84, A.85, A.94, A.101.

Meloidogyne spp. (Root-knot nematode) contact activity, preventive, drench test.

Cucumber cv. Toshka seeds were sown directly into pots filled with a sandy substrate. Six days later pots were each treated with 5 ml of a WP10 suspension of the test compound at 20 ppm. Hereafter pots were inoculated with 3000 eggs of M. incognita. The trial was harvested fourteen days after trial application and inoculation. Root galling was assessed according to Zeck`s gall index (Zeck, 1971).
The following compounds showed a greater than 75% reduction of galling compared to the untreated control: A.1, A.2, A.3, A.6, A.7, A.12, A.14, A.15, A.17, A.19, A.21, A.22, A.23, A.24, A.25, A.27, A.28, A.31, A.32, A.35, A.36, A.37, A.38, A.49, A.50, A.56, A.57, A.58, A61 A.62, A.65, A.66, A.67, A.72, A.73, A.76, A.77, A.78, A.81, A.84, A.85, A.94, A.95, A.96, A.97, A.100, A.101.

CLAIMS

1. A compound of the formula (I) wherein



(I) ,

wherein

R1 is hydrogen, methyl or a halogen;

R2 is hydrogen, methyl or a halogen;

R3 is hydrogen, methyl or a halogen;

R4 is hydrogen, methyl or a halogen;

R5 is substituted or unsubstituted phenyl group;

R6 is hydrogen or C1-C4-alkyl;

R7 is hydrogen, cyano, hydroxyl, formyl, C1-C4-alkyl, C1-C4-alkoxy, C2-C4-alkenyl, C2-C4-alkynyl, C1-C4-alkoxy- C1-C4-alkyl, C1-C4-cyanoalkyl, C1-C4-alkylcarbonyl, C1-C4-alkoxycarbonyl, benzyl, C3-C6-cycloalkylcarbonyl or C3-C6-cycloalkoxycarbonyl;

A1 is N, C-H or C-X;

A2 is N, C-H or C-X;

A3 is N, C-H or C-X;

A4 is N, C-H or C-X;

A5 is N, C-H or C-X;

provided wherein A1 & A5 are each N, then A2 to A4 are independently selected from CH, CX and N; or wherein A2 is CX, then A1, A3 to A5 are independently selected from CH, N or CX; or wherein A1 is CX and A5 is N, then A2 to A4 are independently selected from CX and CH; or wherein A1 is CX and A5 is CH, then one of A2 to A4 is CX and the remaining are each CH; or wherein A1 is CX and A4 is N, then A2, A3 and A5 are independently selected from CX and CH; or wherein A1 is other than C-halogen and A2 is N, then A3, A4 and A5 are independently selected from CX and CH;

X is a halogen, OH, cyano, C1-C4-alkyl, C1-C4-haloalkyl, C1-C4-alkoxy or C1-C4-haloalkoxy;

with the proviso that at most three of A1 to A5 are N;

as well as its acceptable salts, enantiomers, diastereomers, tautomers, and N-oxides.

2. The compound according to claim 1 wherein R1 to R4 are each hydrogen; R5 is a substituted or unsubstituted phenyl; R6 is hydrogen or C1-C4-alkyl; R7 is hydrogen, C1-C4-alkylcarbonyl, or C1-C4-alkoxycarbonyl; and A1 & A5 are each N, then A2 to A4 are independently selected from CH, CX and N; or A2 is CX, then A1, A3 to A5 are independently selected from CH, N or CX; or A1 is CX and A5 is N, then A2 to A4 are independently selected from CX and CH; or A1 is CX and A5 is CH, then one of A2 to A4 is CX and the remaining are each CH; or A1 is CX and A4 is N, then A2, A3 and A5 are independently selected from CX and CH; wherein X, independent of each other, is a halogen, C1-C4-alkyl, or C1-C4-haloalkyl.

3. A compound of formula (I) defined in claim 1 wherein R1 to R4 are each hydrogen; R5 is a substituted or unsubstituted phenyl; R6 is hydrogen or C1-C4-alkyl; R7 is hydrogen, C1-C4-alkylcarbonyl, or C1-C4-alkoxycarbonyl; A1 is other than C-halogen, A2 is N, and A3, A4 and A5 are independently selected from CX and CH; wherein X, independent of each other, is a halogen, C1-C4-alkyl, or C1-C4-haloalkyl, as well as its acceptable salts, enantiomers, diastereomers, tautomers, and N-oxides.

4. The compound according to claim 3 wherein A1 is C-C1-C4-haloalkyl, A2 is N, and A3, A4 and A5 are independently selected from CX and CH; wherein X, independent of each other, is a halogen, C1-C4-alkyl or C1-C4-haloalkyl; preferably A1 is C-CF3, A2 is N, and A3, A4 and A5 are each CH.

5. The compound according to claim 1 wherein R1 to R4 are each hydrogen; R5 is a di or tri-substituted phenyl, wherein the substituents are independently selected from halogen, cyano, C1-C4-haloalkyl, C1-C4-haloalkoxy, and C3–C6-cycloalkyl, which cycloalkyl is unsubstituted or substituted by one or more substituents Rx, where Rx is, independently of each other, is selected from halogen, C1-C4-alkyl, and C1-C4-haloalkyl.; R6 is hydrogen or C1-C4-alkyl; R7 is hydrogen, C1-C4-alkylcarbonyl, or C1-C4 alkoxycarbonyl, and A1 & A5 are each N, then A2 to A4 are independently selected from CH, CX and N; or A2 is CX, then A1, A3 to A5 are independently selected from CH, N or CX; or A1 is CX and A5 is N, then A2 to A4 are independently selected from CX and CH; or A1 is CX and A5 is CH, then one of A2 to A4 is CX and the remaining are each CH; or A1 is CX and A4 is N, then A2, A3 and A5 are independently selected from CX and CH; wherein X, independent of each other, is a halogen, C1-C4-alkyl, or C1-C4-haloalkyl.

6. The compound according to any one of claims 1 to 5 wherein X, independent of each other, is a halogen, C1-C4-alkyl or C1-C4-haloalkyl.

7. The compound according to any one of claims 1 to 6, wherein the R5 is a substituted phenyl, then the substituent(s) is independently selected from cyano substituted phenyl (which is optionally further substituted by halogen or trifluoromethyl), 2-fluoro-4-trifluoromethly phenyl, 2,6-difluoro-4-chloro-phenyl, 2,4-difluorophenyl, 2,4,6-trifluoro phenyl, 2-fluoro-4-chloro phenyl, 2-fluoro-4-bromo phenyl, 2-chloro-4-fluoro phenyl, 2-chloro-4-trifluoromethyl phenyl, 3,4,5-trifluoro phenyl, 2, 4-dichloro-6-fluoro phenyl, and 2, 4-dibromo phenyl and 2, 4-chloro phenyl.

8. A compound of formula (I) defined in claim 1 wherein R1 to R4 are each hydrogen; R5 is selected from cyano substituted phenyl (which is optionally further substituted by halogen or trifluoromethyl), 2-fluoro-4-trifluoromethly phenyl, 2,6-difluoro-4-chloro-phenyl, 2,4-difluorophenyl, 2,4,6-trifluoro phenyl, 2-fluoro-4-chloro phenyl, 2-fluoro-4-bromo phenyl, 2-chloro-4-fluoro phenyl, 2-chloro-4-trifluoromethyl phenyl, 3,4,5-trifluoro phenyl, 2, 4-dichloro-6-fluoro phenyl, and 2, 4-dibromo phenyl; R6 is hydrogen or C1-C4-alkyl; R7 is hydrogen, C1-C4-alkylcarbonyl, or C1-C4-alkoxycarbonyl; and A1 is C-X, and A2 to A5 are each CH; or A1 and A5 are each C-X, and A2 to A4 are each CH; or A1 is C-X, A2 and A5 are each N, and A3 and A4 are each CH; or A1 is C-X, A2 is N, and A3 to A5 are each CH, wherein X is independently selected from halogen, C-C4-alkyl or C-1-C4-haloalkyl, well as its acceptable salts, enantiomers, diastereomers, tautomers, and N-oxides.

9. A compound of formula (I) defined in claim 1 wherein R1 to R4 are each hydrogen; R5 is 2, 4-chloro phenyl; R6 is hydrogen or C1-C4-alkyl; R7 is hydrogen, C1-C4-alkylcarbonyl, or C1-C4-alkoxycarbonyl; and A1 is C-Cl, and A2 to A5 are each CH; or A1 is C-F, A2 and A5 are each N, and A3 and A4 are each CH; or or A1 and A5 are each C-Cl or C-CF3 and A2 to A4 are each CH; or A1 is C-F or C-CF3, A2 is N, and A3 to A5 are each CH, as well as its acceptable salts, enantiomers, diastereomers, tautomers, and N-oxides.

10. The compound according to claim 8 wherein X is, independently of the A1 to A5 configuration and independently of X within a A1 to A5 configuration, selected from chlorine, fluorine, trifluoromethyl and difluoromethyl; preferably A1 is C-CF3, and A2 to A5

are each CH; or A1 and A5 are each C-F, and A2 to A4 are each CH; or A1 is C-CF3 or Cl, A2 and A5 are each N, and A3 and A4 are each CH; or A1 is C-CF3, A2 is N, and A3 to A5 are each CH.

11. The compound according to either claim 1 or claim 2 wherein the A1 is N or C-X, and the groups A2, A3, A4 and A5 are selected from (I) A2, A3 and A4 are each C-H, and A5 is N; (II) A2 is C-X, and A3, A4 and A5 are each C-H; (III) A3 is C-X, and A2, A4 and A5 are each C-H; (IV) A4 is C-X, and A2, A3 and A5 are each C-H; and (V) A2, A3 and A5 are each CH and A4 is N.

12. The compound according to to either claim 1 or claim 2 wherein A1 & A5 are each N, then A2 to A4 are independently selected from CH, CX and N; or wherein A2 is CX, then A1, A3 to A5 are independently selected from CH, N or CX; or wherein A1 is CX and A5 is N, then A2 to A4 are independently selected from CX and CH; preferably A1 & A5 are each N, then A2 to A4 are each CH; or wherein A2 is CX, A1 is CX and A3 to A5 are each CH; or wherein A1 is CX and A5 is N, then A2 to A4 are each CH.

13. The compound according to any one of claims 1 to 4, 6, 11 and 12 wherein R5 is a substituted phenyl having substituents independently selected from halogen, cyano, C1-C2-alkyl, C1-C4-haloalkyl, C1-C4-alkoxy, C1-C4-haloalkoxy, C3–C6-cycloalkyl, which cycloalkyl is unsubstituted or substituted by one or more substituents Rx, where Rx is, independently of each other, is selected from halogen, C1-C4-alkyl, and C1-C4-haloalkyl.

14. The compound according to claim 13 wherein the substituents on the phenyl at R5 are independently selected from halogen, cyano, C1-C4-haloalkyl, C1-C4-haloalkoxy, and C3–C6-cycloalkyl, which cycloalkyl is unsubstituted or substituted by one or more substituents Rx, where Rx is, independently of each other, is selected from halogen, C1-C2-alkyl, and C1-C2-haloalkyl .

15. The compound according to claim 5 wherein the substituents on the phenyl at R5 are independently selected from halogen, cyano, C1-C2-haloalkyl, C1-C2-haloalkoxy, and C3–C4-cycloalkyl, which cycloalkyl is unsubstituted or substituted by one or more substituents Rx, where Rx is, independently of each other, is selected from halogen, C1-C2-alkyl, and C1-C2-haloalkyl.

16. The compound according to any one of claims 1 to 4, 6, 11 to 14 wherein R5 is a substituted phenyl having one to three substituents, preferably two or three substituents, more preferably two substituents.

17. The compound according to claims 1 to 4, 6, 11, 12 and 16 wherein the phenyl at R5 is substituted by an optionally substituted phenyl or optionally substituted pyrazole.

18. The compound according to claim 16 wherein the substituents are independently selected from chlorine, methyl, fluorine, trifuoromethyl, cyclopropyl, and cyano.

19. The compound according to any one of claims 1, 2, 5 to 7 and 11 to 18 wherein A1 is N or C-X, A2, A3 and A4 are C-H, and A5 is N.

20. The compound according to any one of claims 1, 2, 5 to 7 and 11 to 18 wherein A1 is N or C-X, A2 is C-X, and A3, A4 and A5 are each C-H.

21. The compound according to any one of claims 1, 2, 5 to 7 and 11 to 18 wherein A1 is N or C-X, A3 is C-X, and A2, A4 and A5 are C-H.

22. The compound according to any one of claims 1, 2, 5 to 7 and 11 to 18 wherein A1 is N or C-X, A4 is C-X, and A2, A3 and A5 are each C-H.

23. The compound according to any one of claims 1, 2, 5 to 7 and 11 to 18 wherein A1 is C-C1-C4-haloalkyl, A2 is N and A3, A4 and A5 are each C-H.

24. The compound according to any one of claims 1, 2, 5 to 7 and 11 to 18 wherein A1 is C-X, A2, A3 and A4 are C-H, and A5 is N.

25. The compound according to any one of claims 1 to 24 wherein R6 is hydrogen or C1-C2-alkyl, preferably hydrogen.

26. The compound according to any one of claims 1 to 25 wherein R7 is hydrogen.

27. The compound according to claim 19 wherein A1 is CX, A2, A3 and A4 are C-H, and A5 is N.

28. The compound according to claim 19 wherein A1 is N, A2, A3 and A4 are C-H, and A5 is N.

29. The compound according to any one of claims 1 to 8 and 11 to 26 wherein X in CX of the A1 to A5 is, independently selected, from halogen, C1-C2-alkyl and C1-C2-haloalkyl; preferably selected independently from chlorine, fluorine, methyl, and trifluoromethyl,

30. The compound of formula (I) defined in claim 1 wherein R1 to R4, R6 and R7 are each hydrogen; R5 is a mono to tri-substituted phenyl, wherein the substituents are independently selected from halogen, C1-C4-alkyl, C1-C4-haloalkyl, cyano and C3-C6-cycloalklyl, which C3-C6-cycloalklyl is unsubstituted or substituted by one or more substituents Rx, where Rx is, independently of each other, is selected from halogen, C1-C4-alkyl, and C1-C4-haloalkyl; A1 to A5 are defined in any one of claims 19 to 24, 27 and 28; and X, independent of each other, is a halogen, C1-C2-alkyl, or C1-C2-haloalkyl, as well as its acceptable salts, enantiomers, diastereomers, tautomers, and N-oxides.

31. A composition comprising a compound defined in any one of claims 1 to 30 and a agronomicaly carrier and optionally one or more customary formulation auxiliaries; preferably the composition is a pesticidal composition; more preferably a nematicidal composition.

32. The composition according to claim 31 further comprising one or more other biologically active compounds.

33. A method of controlling damage and/or yield loss caused by a pest and/or fungi which comprises applying to a pest, to a locus of a pest, or to a plant susceptible to attack by a pest and/or fungi or to a plant propagation material an effective amount of a compound of formula (I) as defined in any one of claims 1 to 30 or a composition defined in either claim 31 or 32.

34. A method for the protecting plant propagation material from damage and/or yield loss caused by a pest and/or fungi which comprises applying to the propagation material or the site, where the propagation material is planted, an effective amount of a compound of

formula (I) as defined in any one of claims 1 to 30 or a composition defined in either claim 31 or 32.

35. The method according to either claim 33 or claim 34 wherein the pest is selected from the class Nematoda.

36. A treated plant propagation material, wherein adhered to the plant propagation material is an effective amount of a compound of formula (I) as defined in any one of claims 1 to 30.

37. A pharmaceutical composition for the control of helminths, arachnids or arthrop endo- or ectoparasites which comprises a compound of formula (I) as defined in any one of claims 1 to 30, a physiologically tolerable carrier and optionally one or more customary formulation auxiliaries.

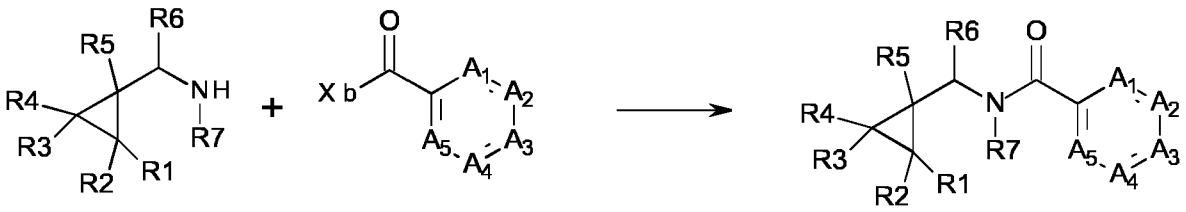
38. A pharmaceutical composition comprising a compound defined in any one of claims 1 to 30, a physiologically tolerable carrier, and optionally one or more customary formulation auxiliaries for preventing infection with diseases transmitted through helminths, arachnids or arthrop endo- or ectoparasites.

39. The composition according to claim 37 further comprising one or more other biologically active compounds.

40. A method for treating, controlling, preventing or protecting warm-blooded animals or fish against infestation or infection by helminths, arachnids or arthrop endo- or ectoparasites which comprises orally, topically or parenterally administering or applying to said animal or fish a parasiticidally effective amount of a compound of formula (I) as defined in any one of claims 1 to 30 or a composition defined in any one of claims 37 to 39.

41. A method for the preparation of a composition for treating, controlling, preventing or protecting warm-blooded animals or fish against infestation or infection by helminths, arachnids or arthrop endo- or ectoparasites which comprises a compound of formula (I) as defined in any one of claims 1 to 30.

42. A process for preparing a compound of formula (I) comprising reacting a compound of formula (II) and formula (VII)



(II) (VII) (I)

wherein R1 to R7, A1, A2, A3, A4, and A5 are as defined in any of claims 1 to 30, and Xb is a leaving group selected from halide and hydroxyl.