(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
1 May 2014 (01.05.2014)

WIPO | PCT

(10) International Publication Number
WO 2014/064129 A1

(51) International Patent Classification:
C07D 403/12 (2006.01) *A01N 43/56* (2006.01)
C07D 401/12 (2006.01) *A01N 43/58* (2006.01)

(21) International Application Number:
PCT/EP2013/072113

(22) International Filing Date:
23 October 2013 (23.10.2013)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/717,666 24 October 2012 (24.10.2012) US

(71) Applicant: **BASF SE** [DE/DE]; 67056 Ludwigshafen (DE).

(72) Inventors: **SÖRGEL, Sebastian**; Marienstr. 19, 67063 Ludwigshafen (DE). **SÄLINGER, Daniel**; Ludwigsstrasse 49, 67059 Ludwigshafen (DE). **GOCKEL, Birgit**; Eschenbachstrasse 42, 67063 Ludwigshafen (DE). **DEFIEBER, Christian**; Tullastr. 13, 68165 Mannheim (DE). **KÖRBER, Karsten**; Hintere Lisgewann 26, 69214 Eppelheim (DE). **LE VEZOUET, Ronan**; Neckarpromenade 20, 68167 Mannheim (DE). **GROß, Steffen**; Marie-Juchacz Allee 201, 67067 Ludwigshafen (DE). **CULBERTSON, Deborah, L.**; 6400 Vintage Ridge Lane, Fuquay Varina, NC 27526 (US). **GUNJIMA, Koshi**; Heights Takara-3 205, 97 Shirakawa-cho, Toyohashi-City, Aichi 441-8021 (JP).

(74) Agent: **REITSTÖTTER, KINZEBACH & PARTNER**; Ludwigsplatz 4, 67059 Ludwigshafen (DE).

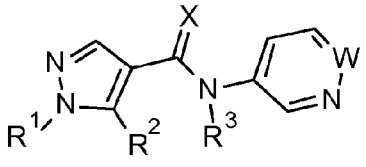
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

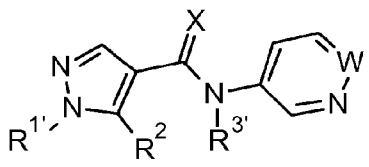
Published:

— *with international search report (Art. 21(3))*

(54) Title: PYRAZOLE COMPOUNDS FOR CONTROLLING INVERTEBRATE PESTS



(I)



(I')

(57) Abstract: The present invention relates to a pyrazole compound of the formulae (I) or (I'), or a stereoisomer, salt, tautomer or N-oxide thereof. The present invention also relates to methods and uses of these novel compounds for combating invertebrate pests such as insects, arachnids or nematodes in and on plants, and for protecting such plants being infested with pests, especially also for protecting plant propagation material as like seeds. The present invention also relates to methods and uses of these novel compounds for combating parasites in and on animals, and for protecting animals against infestation or infection by parasites.

WO 2014/064129 A1

Pyrazole Compounds for Controlling Invertebrate Pests

The present invention relates to a novel pyrazole compounds which can be used for combating or controlling invertebrate pests, in particular arthropod pests. The present invention further relates to a method for controlling invertebrate pests, a method for protecting plant propagation material and/or the plants growing therefrom and a method for treating or protecting an animal from infestation or infection by parasites by using these compounds. The present invention further relates to plant propagation material and to an agricultural or veterinary composition comprising said compounds.

Invertebrate pests and in particular arthropods and nematodes destroy growing and harvested crops and attack wooden dwelling and commercial structures, thereby causing large economic loss to the food supply and to property. While a large number of pesticidal agents are known, due to the ability of target pests to develop resistance to said agents, there is an ongoing need for new agents for combating invertebrate pests such as insects, arachnids and nematodes.

WO 2004/106324, WO 2004/035545 and WO 2005/040152 describe N-aryl and N-hetarylamides and the corresponding thioamides derived from carboxylic acids comprising a 5-membered heterocycle. These compounds are mentioned to be useful as herbicides.

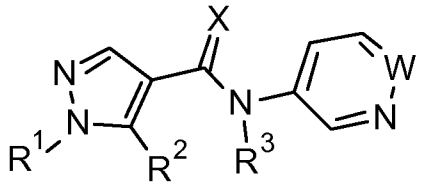
WO 2009/027393, WO 2010/034737, WO 2010/034738, and WO 2010/112177 describe derivatives of N-(het)arylamides, derived from pyrazole carboxylic acids. These compounds are mentioned to be useful for combating invertebrate pests.

PCT/EP2012/056875 describes N-pyridazinyl carboxamide compounds derived from pyrazole carboxylic acids. These compounds are mentioned to be useful for combating invertebrate pests. However, this document does not describe compounds having the characteristic substituents as claimed in the present invention.

It is an object of the present invention to provide compounds that have a good pesticidal activity, in particular insecticidal activity, and show a broad activity spectrum against a large number of different invertebrate pests, especially against difficult to control insects.

It has been found that these objects can be achieved by pyrazole compounds of the formulae I and I' as defined below, and the stereoisomers, salts, tautomers and N-oxides thereof, in particular their agriculturally or veterinarily acceptable salts.

Therefore, in a first aspect, the invention relates to acrylamide compounds of formula I



(I)

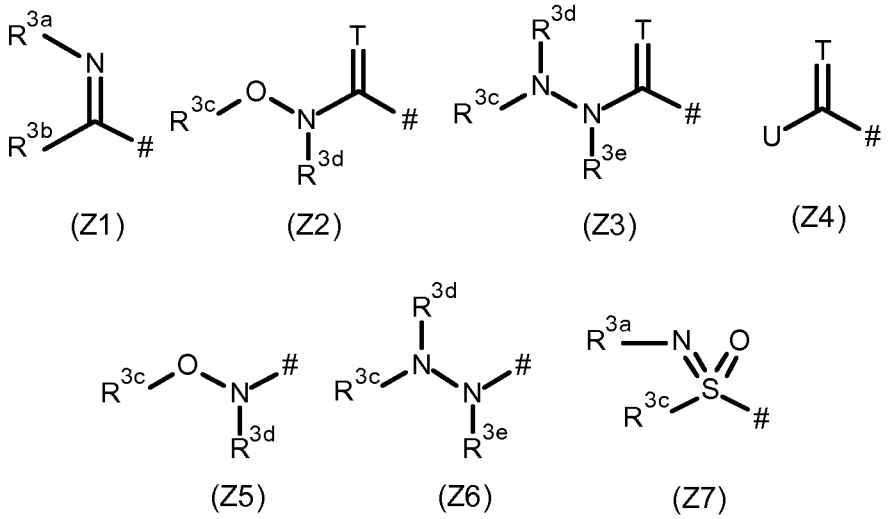
wherein

R^1 is selected from hydrogen, CN, NO_2, C_1-C_{10}-alkyl, C_2-C_{10}-alkenyl and C_2-C_{10}-alkynyl, wherein the three last mentioned radicals may be unsubstituted, may be partially or fully halogenated or may carry 1, 2 or 3 identical or different radicals R^x,
or R^1 is further selected from OR^a, SR^a, $C(Y)R^b$, $C(Y)OR^c$, $S(O)R^d$, $S(O)_2R^d$, NR^eR^f, $C(Y)NR^gR^h$, $S(O)_mNR^eR^f$, $C(Y)NR^iNR^eR^f$, C_1-C_5-alkylene-OR^a, C_1-C_5-alkylene-CN, C_1-C_5-alkylene-$C(Y)R^b$, C_1-C_5-alkylene-$C(Y)OR^c$, C_1-C_5-alkylene-NR^eR^f, C_1-C_5-alkylene-$C(Y)NR^gR^h$, C_1-C_5-alkylene-$S(O)_mR^a$, C_1-C_5-alkylene-$S(O)_mNR^eR^f$, C_1-C_5-alkylene-$NR^iNR^eR^f$, heterocyclyl, hetaryl, C_3-C_{10}-cycloalkyl, C_5-C_{10}-cycloalkenyl, heterocyclyl-C_1-C_5-alkyl, hetaryl-C_1-C_5-alkyl, C_3-C_{10}-cycloalkyl-C_1-C_5-alkyl, C_5-C_{10}-cycloalkenyl-C_1-C_5-alkyl, phenyl-C_1-C_5-alkyl and phenyl, wherein the rings of the ten last mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or 5 identical or different radicals R^y,
or R^1 is further selected from R^{1a} and C_1-C_5-alkylene-R^{1a}, wherein R^{1a} is a monospiro or dispiro 5- to 10-membered carbo- or heterocycle, which may contain 1 or 2 heteroatom moieties independently selected from N-R^j, O, and $S(O)_m$ as ring members, which monospiro or dispiro 5- to 10-membered carbo- or heterocycle is unsubstitued or may be substituted by 1, 2, 3 or 4 identical or different radicals R^k;

R^2 is halogen, C_1-C_6-alkyl, C_3-C_7-cycloalkyl, C_1-C_6-alkoxy, C_3-C_7-cycloalkoxy, C_3-C_7-cycloalkyl-C_1-C_4-alkyl or C_3-C_7-cycloalkyl-C_1-C_4-alkoxy, wherein the six last mentioned radicals may be unsubstituted, or may be partially or fully halogenated;

R^3 is Z or C_1-C_6-alkylene-Z, where an ethandiyl diradical within the alkylene moiety may be replaced by a C_3-C_7-cycloalkanediyl diradical,

wherein Z is selected from Z1, Z2, Z3, Z4, Z5, Z6 and Z7,



(Z1) (Z2) (Z3) (Z4)

(Z5) (Z6) (Z7)

where # denotes the point of attachment to the remainder of the molecule,

or Z is a monospiro or dispiro 5- to 10-membered carbo- or heterocycle, which may contain 1 or 2 heteroatom moieties independently selected from N-R^j, O, and $S(O)_m$ as ring members, which monospiro or dispiro 5- to 10-membered carbo- or heterocycle is unsubstitued or may be substituted by 1, 2, 3 or 4 radicals R^k;

W is CH or N;

X, Y are independently of each other selected from O and S;

m is 0, 1 or 2;

R^a, R^b, R^c are independently of each other selected from hydrogen, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_2-C_4-alkenyl, C_2-C_4-haloalkenyl, C_2-C_4-alkynyl, C_1-C_4-alkoxy-C_1-C_4-alkyl, C_3-C_6-cycloalkyl, C_3-C_6-cycloalkylmethyl, heterocyclyl, heterocyclyl-C_1-C_4-alkyl, phenyl, hetaryl, phenyl-C_1-C_4-alkyl and hetaryl-C_1-C_4-alkyl, wherein the ring in the eight last mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or 5 substituents which, independently of each other, are selected from halogen, cyano, nitro, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy and C_1-C_4-haloalkoxy;

R^d is selected from C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_2-C_4-alkenyl, C_2-C_4-haloalkenyl, C_2-C_4-alkynyl, C_1-C_4-alkoxy-C_1-C_4-alkyl, C_3-C_6-cycloalkyl, C_3-C_6-cycloalkylmethyl, heterocyclyl, heterocyclyl-C_1-C_4-alkyl, phenyl, hetaryl, phenyl-C_1-C_4-alkyl and

hetaryl-C_1-C_4-alkyl, wherein the ring in the eight last mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or 5 substituents which are independently of each other selected from halogen, cyano, nitro, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy and C_1-C_4-haloalkoxy;

R^e, R^f are independently of each other selected from hydrogen, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_3-C_6-cycloalkyl, C_3-C_6-cycloalkylmethyl, C_3-C_6-halocycloalkyl, C_2-C_4-alkenyl, C_2-C_4-haloalkenyl, C_2-C_4-alkynyl, C_1-C_4-alkoxy-C_1-C_4-alkyl, C_1-C_4-alkylcarbonyl, C_1-C_4-haloalkylcarbonyl, C_1-C_4-alkylsulfonyl, C_1-C_4-haloalkylsulfonyl, heterocyclyl, heterocyclyl-C_1-C_4-alkyl, heterocyclylcarbonyl, heterocyclyl-C_1-C_4-sulfonyl, phenyl, phenylcarbonyl, phenylsulfonyl, hetaryl, hetarylcarbonyl, hetarylsulfonyl, phenyl-C_1-C_4-alkyl and hetaryl-C_1-C_4-alkyl, wherein the ring in the twelve last mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or 5 substituents which, independently of each other, are selected from halogen, cyano, nitro, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy and C_1-C_4-haloalkoxy; or

R^e and R^f together with the nitrogen atom to which they are bound form a 5- or 6-membered, saturated or unsaturated heterocycle, which may carry a further heteroatom being selected from O, S and N as a ring member atom and wherein the heterocycle may be unsubstituted or may carry 1, 2, 3, 4 or 5 substituents which are independently of each other selected from halogen, cyano, nitro, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy and C_1-C_4-haloalkoxy;

R^g, R^h are independently of each other selected from hydrogen, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_3-C_6-cycloalkyl, C_3-C_6-halocycloalkyl, C_2-C_4-alkenyl, C_2-C_4-haloalkenyl, C_2-C_4-alkynyl, C_1-C_4-alkoxy-C_1-C_4-alkyl, heterocyclyl, heterocyclyl-C_1-C_4-alkyl, phenyl, hetaryl, phenyl-C_1-C_4-alkyl and hetaryl-C_1-C_4-alkyl, wherein the ring in the six last mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or substituents which are independently of each other selected from halogen, cyano, nitro, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy and C_1-C_4-haloalkoxy;

R^i is selected from hydrogen, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_3-C_6-cycloalkyl, C_3-C_6-cycloalkylmethyl, C_3-C_6-halocycloalkyl, C_2-C_4-alkenyl, C_2-C_4-haloalkenyl, C_2-C_4-alkynyl, C_1-C_4-alkoxy-C_1-C_4-alkyl, phenyl and phenyl-C_1-C_4-alkyl wherein the phenyl ring in the two last mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or 5 substituents which are independently of each other selected

from halogen, cyano, nitro, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy and C_1-C_4-haloalkoxy;

R^j is hydrogen, C_1-C_2-alkyl, C_1-C_2-haloalkyl, C_1-C_2-alkylcarbonyl and C_1-C_2-alkoxy-carbonyl;

R^k is selected from halogen, CN, C_1-C_4-alkyl, C_1-C_4-alkoxy, C_1-C_2-alkoxy-C_1-C_2-alkyl, C_1-C_2-alkylidene, wherein the four last mentioned radicals may be unsubstituted, or may be partially or fully halogenated,
or R^k is selected from NO_2, $C(O)NH_2$, $C(S)NH_2$, C_1-C_2-alkylcarbonyloxy, C_1-C_4-alkoxy, C_1-C_2-haloalkoxy, C_1-C_2-alkyloxycarbonyl, or $S(O)_mR^d$,
or two geminal radicals R^x may together form a moiety selected from =O, =S, =N-R^{kk}, -N-OR^{kk} and =N-SR^{kk};

R^x is selected from cyano, nitro, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, $S(O)_mR^d$, $S(O)_mNR^eR^f$, C_1-C_{10}-alkylcarbonyl, C_1-C_4-haloalkylcarbonyl, C_1-C_4-alkoxycarbonyl, C_1-C_4-haloalkoxycarbonyl, C_3-C_6-cycloalkyl, 3- to 7-membered heterocyclyl, 5- or 6-membered hetaryl, phenyl, C_3-C_6-cycloalkoxy, 3- to 6-membered heterocyclyloxy and phenoxy, wherein the last 7 mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or 5 radicals R^y,
or two geminal radicals R^x may together form a moiety selected from =O, =S, =N-R^{xx}, -N-OR^{xx} and =N-SR^{xx};

R^y is selected from halogen, cyano, nitro, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, $S(O)_mR^d$, $S(O)_mNR^eR^f$, C_1-C_4-alkylcarbonyl, C_1-C_4-haloalkylcarbonyl, C_1-C_4-alkoxycarbonyl, C_1-C_4-haloalkoxycarbonyl, C_3-C_6-cycloalkyl, C_3-C_6-halocycloalkyl, C_2-C_4-alkenyl, C_2-C_4-haloalkenyl, C_2-C_4-alkynyl and C_1-C_4-alkoxy-C_1-C_4-alkyl,
or two geminal radicals R^y may together form a moiety selected from =O, =S, =N-R^{YY}, -N-OR^{YY} and =N-SR^{YY};

R^{kk}, R^{xx}, R^{YY} independently of each other and from each appearance are selected from C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_3-C_6-cycloalkyl and C_3-C_6-halocycloalkyl;

T is O or S;

R^{3a}, R^{3b} are independently of each other selected from R^{31}, OR^{31} and $NR^{31}R^{32}$, wherein R^{31} and R^{32} are independently of each other selected from C_1-C_6-alkyl,

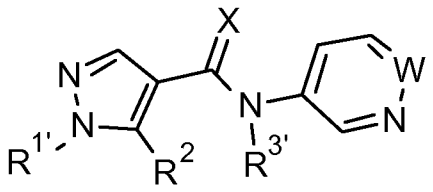
C_3-C_{10}-cycloalkyl and C_3-C_{10}-cycloalkyl-C_1-C_6-alkyl, wherein the three last mentioned radicals may be unsubstituted, or may be partially or fully halogenated;

R^{3c}, R^{3d}, R^{3e} are independently of each other selected from C_1-C_6-alkyl, C_3-C_{10}-cycloalkyl and C_3-C_{10}-cycloalkyl-C_1-C_6-alkyl, wherein the three last mentioned radicals may be unsubstituted, or may be partially or fully halogenated;

U is an N-bound 5- to 10-membered saturated heterocyclyl which may or may not contain one further heteroatom moiety selected from O, S, C_1-C_4-alkyl-N and R^{3f}-C(Y)-N as ring member, wherein R^{3f} is hydrogen or C_1-C_5-alkyl;

and the stereoisomers, tautomers, N-oxides and agriculturally or veterinarily acceptable salts thereof.

In a second aspect, the invention relates to acrylamide compounds of formula I'



(I')

wherein

$R^{3'}$ is hydrogen, C_1-C_6-alkyl, C_3-C_7-cycloalkyl or C_3-C_7-cycloalkyl-C_1-C_4-alkyl, wherein the three last mentioned radicals may be unsubstituted, or may be partially or fully halogenated,
or $R^{3'}$ is C_1-C_6-alkoxy-C_1-C_3-alkyl or C_3-C_7-cycloalkoxy-C_1-C_3-alkyl;

$R^{1'}$ is Z^a, G-Z^a or G'-Z^b, wherein

G is C_1-C_6-alkylene, where an ethandiyl diradical within the C_1-C_6-alkylene moiety may be replaced by a C_3-C_7-cycloalkandiyl diradical;

Z^a is selected from Z2, Z3, Z4, Z5, Z6 and Z7 which are as defined herein;

G' is either CR^lR^m-(C_1-C_4)-alkylene,
or, if $R^{3'}$ is not selected from hydrogen, C_1-C_2-alkyl and C_1-C_2-alkoxy-C_1-C_2-alkyl, G' may also be a direct bond or a diradical CR^lR^m,
wherein R^l and R^m are independently of each other selected from hydrogen and C_1-C_4-alkyl;

Z^b is a monospiro or dispiro 5- to 10-membered carbo- or heterocycle, which may contain 1 or 2 heteroatom moieties independently selected from N-R^j,

O, and $S(O)_m$ as ring members, which monospiro or dispiro 5- to 10-membered carbo- or heterocycle is unsubstitued or may be substituted by 1, 2, 3 or 4 radicals R^k, wherein the variables R^j, m and R^k are as defined herein,

or, if $R^{3'}$ is not selected from hydrogen, C_1-C_2-alkyl and C_1-C_2-alkoxy-C_1-C_2-alkyl, $R^{1'}$ may also be G''-Z1, where Z1 is as defined herein and G'' is C_1-C_8-alkylene;

R^2, X and W are as defined herein;

and the stereoisomers, tautomers, N-oxides and agriculturally or veterinarily acceptable salts thereof.

The present invention also relates to a method for combating or controlling invertebrate pests, which method comprises treating or contacting the pests, their food supply, their habitat or their breeding grounds with a pesticidally effective amount of a pyrazole compound of formulae I or I', or a salt thereof as defined herein.

The present invention also relates to a method for protecting growing plants or plant propagation materials (such as seed) from attack or infestation by invertebrate pests, which method comprises treating or contacting a plant, plant propagation material (such as seed), soil or water in which the plant is growing, with a pesticidally effective amount of a pyrazole compound of formulae I or I', or a salt thereof as defined herein.

The present invention also relates to plant propagation material, in particular seed, comprising at least one compound of formulae I or I'and/or an agriculturally acceptable salt thereof as defined herein.

The present invention also relates to the use of a compound of the formulae I or I', or an agriculturally acceptable salt thereof as defined herein, for protecting growing plants or plant propagation material from attack or infestation by invertebrate pests.

The present invention further relates to a method for treating or protecting animals from infestation or infection by parasites which comprises administering to the animals a parasiticidally effective amount of a compound of the formulae I or I', or a veterinarily acceptable salt thereof as defined herein.

The present invention further relates to the use of a compound of the formulae I or I', or a veterinarily acceptable salt thereof as defined herein, for combating parasites in and on animals.

The present invention further relates to a compound I or I', or a veterinarily acceptable salt thereof as defined herein, for preparing a medicament for treating animals infested or infected by parasites.

The present invention also relates to an agricultural or veterinary composition for combating animal pests comprising a pyrazole compound of formulae I or I', or a salt thereof as defined herein, and at least one inert liquid and/or solid agriculturally or veterinarily acceptable carrier and optionally at least one surfactant.

The term "invertebrate pest" (also referred to as animal pests) as used herein encompasses animal populations, such as insects, arachnids and nematodes, which may attack plants, thereby causing substantial damage to the plants attacked, as well as ectoparasites which may infest animals, in particular warm blooded animals such as e.g. mammals or birds, or other higher animals such as reptiles, amphibians or fish, thereby causing substantial damage to the animals infested.

The term "compound(s) according to the invention", or "compound(s) of formulae I or I'" comprises the compound(s) as defined herein as well as a stereoisomer, salt, tautomer or N-oxide thereof. The term "compound(s) of the present invention" is to be understood as equivalent to the term "compound(s) according to the invention", therefore also comprising a stereoisomer, salt, tautomer or N-oxide thereof.

The term "stereoisomers" encompasses both optical isomers, such as enantiomers or diastereomers, the latter existing due to more than one center of chirality in the molecule, as well as geometrical isomers (cis/trans isomers).

Depending on the substitution pattern, the compounds of formulae I or I' may have one or more centers of chirality, in which case they are present as mixtures of enantiomers or diastereomers. One center of chirality is the carbon atom carrying radicals R^3, R^4 and R^5. The invention provides both the pure enantiomers or diastereomers and their mixtures and the use according to the invention of the pure enantiomers or diastereomers of the compound I or I' or their mixtures. Suitable compounds of the formulae I or I' also include all possible geometrical stereoisomers (cis/trans isomers) and mixtures thereof.

The term "N-oxide" relates to a form of compounds I or I' in which at least one nitrogen atom is present in oxidized form (as NO).

The compounds of the present invention may be amorphous or may exist in one ore more different crystalline states (polymorphs) which may have a different macroscopic properties such as stability or show different biological properties such as activities. The present invention includes both amorphous and crystalline compounds of the formulae I or I', mixtures of different crystalline states of the respective compound I or I', as well as amorphous or crystalline salts thereof.

Salts of the compounds of the formulae I or I' are preferably agriculturally and veterinarily acceptable salts. They can be formed in a customary method, e.g. by reacting the compound with an acid of the anion in question if the compound of formulae I or I' has a basic functionality or by reacting an acidic compound of formulae I or I' with a suitable base.

Suitable agriculturally acceptable salts are especially the salts of those cations or the acid addition salts of those acids whose cations and anions, respectively, do not have any adverse effect on the action of the compounds according to the present invention. Suitable cations are in particular the ions of the alkali metals, preferably lithium, sodium and potassium, of the alkaline earth metals, preferably calcium, magnesium and barium, and of the transition metals, preferably manganese, copper, zinc and iron, and also ammonium (NH^{4+}) and substituted ammonium in which one to four of the hydrogen atoms are replaced by C_1-C_4-alkyl, C_1-C_4-hydroxyalkyl, C_1-C_4-alkoxy, C_1-C_4-alkoxy-C_1-C_4-alkyl, hydroxy-C_1-C_4-alkoxy-C_1-C_4-alkyl, phenyl or benzyl. Examples of substituted ammonium ions comprise methylammonium, isopropylammonium, dimethylammonium, diisopropylammonium, trimethylammonium, tetramethylammonium, tetraethylammonium, tetrabutylammonium, 2-hydroxyethylammonium, 2-(2-hydroxyethoxy)ethylammonium, bis(2-hydroxyethyl)ammonium, benzyltrimethylammonium and benzl-triethylammonium, furthermore phosphonium ions, sulfonium ions, preferably tri(C_1-C_4-alkyl)sulfonium, and sulfoxonium ions, preferably tri(C_1-C_4-alkyl)sulfoxonium.

Anions of useful acid addition salts are primarily chloride, bromide, fluoride, hydrogen sulfate, sulfate, dihydrogen phosphate, hydrogen phosphate, phosphate, nitrate, hydrogen carbonate, carbonate, hexafluorosilicate, hexafluorophosphate, benzoate, and the anions of C_1-C_4-alkanoic acids, preferably formate, acetate, propionate and butyrate. They can be formed by reacting a compound of formulae I or I' with an acid of the

corresponding anion, preferably of hydrochloric acid, hydrobromic acid, sulfuric acid, phosphoric acid or nitric acid.

By the term "veterinarily acceptable salts" is meant salts of those cations or anions which are known and accepted in the art for the formation of salts for veterinary use. Suitable acid addition salts, e.g. formed by compounds of formulae I or I' containing a basic nitrogen atom, e.g. an amino group, include salts with inorganic acids, for example hydrochlorids, sulphates, phosphates, and nitrates and salts of organic acids for example acetic acid, maleic acid, dimaleic acid, fumaric acid, difumaric acid, methane sulfenic acid, methane sulfonic acid, and succinic acid.

The term "plant propagation material" is to be understood to denote all the generative parts of the plant such as seeds and vegetative plant material such as cuttings and tubers (e. g. potatoes), which can be used for the multiplication of the plant. This includes seeds, roots, fruits, tubers, bulbs, rhizomes, shoots, sprouts and other parts of plants, including seedlings and young plants, which are to be transplanted after germination or after emergence from soil. The plant propagation materials may be treated prophylactically with a plant protection compound either at or before planting or transplanting. Said young plants may also be protected before transplantation by a total or partial treatment by immersion or pouring.

The term "plants" comprises any types of plants including "non-cultivated plants" and in particular "cultivated plants".

The term "non-cultivated plants" refers to any wild type species or related species or related genera of a cultivated plant.

The term "cultivated plants" is to be understood as including plants which have been modified by breeding, mutagenesis or genetic engineering including but not limiting to agricultural biotech products on the market or in development (cf. http://www.bio.org/speeches/pubs/er/agri_products.asp). Genetically modified plants are plants, whose genetic material has been modified by the use of recombinant DNA techniques in a way that is impossible under natural circumstances such as breeding, mutations or natural recombination. Typically, one or more genes have been integrated into the genetic material of a genetically modified plant in order to improve certain properties of the plant. Such genetic modifications also include but are not limited to targeted post-translational modification of protein(s), oligo- or polypeptides e. g. by glycosylation or polymer additions such as prenylated, acetylated or farnesylated moieties

or PEG moieties.

Plants that have been modified by breeding, mutagenesis or genetic engineering, e. g. have been rendered tolerant to applications of specific classes of herbicides, such as auxin herbicides such as dicamba or 2,4-D; bleacher herbicides such as hydroxylphenylpyruvate dioxygenase (HPPD) inhibitors or phytoene desaturase (PDS) inhibitors; acetolactate synthase (ALS) inhibitors such as sulfonyl ureas or imidazolinones; enolpyruvylshikimate-3-phosphate synthase (EPSPS) inhibitors, such as glyphosate; glutamine synthetase (GS) inhibitors such as glufosinate; protoporphyrinogen-IX oxidase inhibitors; lipid biosynthesis inhibitors such as acetyl CoA carboxylase (ACCase) inhibitors; or oxynil (i. e. bromoxynil or ioxynil) herbicides as a result of conventional methods of breeding or genetic engineering. Furthermore, plants have been made resistant to multiple classes of herbicides through multiple genetic modifications, such as resistance to both glyphosate and glufosinate or to both glyphosate and a herbicide from another class such as ALS inhibitors, HPPD inhibitors, auxin herbicides, or ACCase inhibitors. These herbicide resistance technologies are e. g. described in Pest Managem. Sci. 61, 2005, 246; 61, 2005, 258; 61, 2005, 277; 61, 2005, 269; 61, 2005, 286; 64, 2008, 326; 64, 2008, 332; Weed Sci. 57, 2009, 108; Austral. J. Agricult. Res. 58, 2007, 708; Science 316, 2007, 1185; and references quoted therein. Several cultivated plants have been rendered tolerant to herbicides by conventional methods of breeding (mutagenesis), e. g. Clearfield® summer rape (Canola, BASF SE, Germany) being tolerant to imidazolinones, e. g. imazamox, or ExpressSun® sunflowers (DuPont, USA) being tolerant to sulfonyl ureas, e. g. tribenuron. Genetic engineering methods have been used to render cultivated plants such as soybean, cotton, corn, beets and rape, tolerant to herbicides such as glyphosate and glufosinate, some of which are commercially available under the trade names RoundupReady® (glyphosate-tolerant, Monsanto, U.S.A.), Cultivance® (imidazolinone tolerant, BASF SE, Germany) and LibertyLink® (glufosinate-tolerant, Bayer CropScience, Germany).

Furthermore, plants are also covered that are by the use of recombinant DNA techniques capable to synthesize one or more insecticidal proteins, especially those known from the bacterial genus *Bacillus*, particularly from *Bacillus thuringiensis*, such as δ -endotoxins, e. g. CryIA(b), CryIA(c), CryIF, CryIF(a2), CryIIA(b), CryIIIA, CryIIIB(b1) or Cry9c; vegetative insecticidal proteins (VIP), e. g. VIP1, VIP2, VIP3 or VIP3A; insecticidal proteins of bacteria colonizing nematodes, e. g. *Photorhabdus* spp. or *Xenorhabdus* spp.; toxins produced by animals, such as scorpion toxins, arachnid toxins, wasp toxins, or other insect-specific neurotoxins; toxins produced by fungi, such Streptomycetes toxins, plant lectins, such as pea or barley lectins; agglutinins; proteinase inhibi-

tors, such as trypsin inhibitors, serine protease inhibitors, patatin, cystatin or papain inhibitors; ribosome-inactivating proteins (RIP), such as ricin, maize-RIP, abrin, luffin, saporin or bryodin; steroid metabolism enzymes, such as 3-hydroxysteroid oxidase, ecdysteroid-IDP-glycosyl-transferase, cholesterol oxidases, ecdysone inhibitors or HMG-CoA-reductase; ion channel blockers, such as blockers of sodium or calcium channels; juvenile hormone esterase; diuretic hormone receptors (helicokinin receptors); stilben synthase, bibenzyl synthase, chitinases or glucanases. In the context of the present invention these insecticidal proteins or toxins are to be understood expressly also as pre-toxins, hybrid proteins, truncated or otherwise modified proteins. Hybrid proteins are characterized by a new combination of protein domains, (see, e. g. WO 02/015701). Further examples of such toxins or genetically modified plants capable of synthesizing such toxins are disclosed, e. g., in EP-A 374 753, WO 93/007278, WO 95/34656, EP-A 427 529, EP-A 451 878, WO 03/18810 und WO 03/52073. The methods for producing such genetically modified plants are generally known to the person skilled in the art and are described, e. g. in the publications mentioned above. These insecticidal proteins contained in the genetically modified plants impart to the plants producing these proteins tolerance to harmful pests from all taxonomic groups of athropods, especially to beetles (Coeloptera), two-winged insects (Diptera), and moths (Lepidoptera) and to nematodes (Nematoda). Genetically modified plants capable to synthesize one or more insecticidal proteins are, e. g., described in the publications mentioned above, and some of which are commercially available such as YieldGard® (corn cultivars producing the Cry1Ab toxin), YieldGard® Plus (corn cultivars producing Cry1Ab and Cry3Bb1 toxins), Starlink® (corn cultivars producing the Cry9c toxin), Herculex® RW (corn cultivars producing Cry34Ab1, Cry35Ab1 and the enzyme Phosphinothricin-N-Acetyltransferase [PAT]); NuCOTN® 33B (cotton cultivars producing the Cry1Ac toxin), Bollgard® I (cotton cultivars producing the Cry1Ac toxin), Bollgard® II (cotton cultivars producing Cry1Ac and Cry2Ab2 toxins); VIPCOT® (cotton cultivars producing a VIP-toxin); NewLeaf® (potato cultivars producing the Cry3A toxin); Bt-Xtra®, NatureGard®, KnockOut®, BiteGard®, Protecta®, Bt11 (e. g. Agrisure® CB) and Bt176 from Syngenta Seeds SAS, France, (corn cultivars producing the Cry1Ab toxin and PAT enyzme), MIR604 from Syngenta Seeds SAS, France (corn cultivars producing a modified version of the Cry3A toxin, c.f. WO 03/018810), MON 863 from Monsanto Europe S.A., Belgium (corn cultivars producing the Cry3Bb1 toxin), IPC 531 from Monsanto Europe S.A., Belgium (cotton cultivars producing a modified version of the Cry1Ac toxin) and 1507 from Pioneer Overseas Corporation, Belgium (corn cultivars producing the Cry1F toxin and PAT enzyme).

Furthermore, plants are also covered that are by the use of recombinant DNA tech-

niques capable to synthesize one or more proteins to increase the resistance or tolerance of those plants to bacterial, viral or fungal pathogens. Examples of such proteins are the so-called " pathogenesis-related proteins" (PR proteins, see, e. g. EP-A 392 225), plant disease resistance genes (e. g. potato cultivars, which express resistance genes acting against *Phytophthora infestans* derived from the mexican wild potato *Solanum bulbocastanum*) or T4-lysozym (e. g. potato cultivars capable of synthesizing these proteins with increased resistance against bacteria such as *Erwinia amylvora*). The methods for producing such genetically modified plants are generally known to the person skilled in the art and are described, e. g. in the publications mentioned above.

Furthermore, plants are also covered that are by the use of recombinant DNA techniques capable to synthesize one or more proteins to increase the productivity (e. g. bio mass production, grain yield, starch content, oil content or protein content), tolerance to drought, salinity or other growth-limiting environmental factors or tolerance to pests and fungal, bacterial or viral pathogens of those plants.

Furthermore, plants are also covered that contain by the use of recombinant DNA techniques a modified amount of substances of content or new substances of content, specifically to improve human or animal nutrition, e. g. oil crops that produce health-promoting long-chain omega-3 fatty acids or unsaturated omega-9 fatty acids (e. g. Nexera® rape, DOW Agro Sciences, Canada).

Furthermore, plants are also covered that contain by the use of recombinant DNA techniques a modified amount of substances of content or new substances of content, specifically to improve raw material production, e. g. potatoes that produce increased amounts of amylopectin (e. g. Amflora® potato, BASF SE, Germany).

The organic moieties mentioned in the above definitions of the variables are - like the term halogen - collective terms for individual listings of the individual group members. The prefix C_n-C_m indicates in each case the possible number of carbon atoms in the group.

The term "halogen" denotes in each case fluorine, bromine, chlorine or iodine, in particular fluorine, chlorine or bromine.

The term "alkyl" as used herein and in the alkyl moieties of alkylthio (also referred to as alkylsulfanyl), alkylsulfinyl, and alkylsulfonyl denotes in each case a straight-chain or

branched alkyl group having usually from 1 to 6 carbon atoms, preferably 1 to 4 carbon atoms and in particular from 1 to 3 carbon atoms. Examples of an alkyl group are methyl, ethyl, n-propyl, isopropyl, n-butyl, 2-butyl, iso-butyl, tert-butyl, n-pentyl, 1-methylbutyl, 2-methylbutyl, 3-methylbutyl, 2,2-dimethylpropyl, 1-ethylpropyl, n-hexyl, 1,1-dimethylpropyl, 1,2-dimethylpropyl, 1-methylpentyl, 2-methylpentyl, 3-methylpentyl, 4-methylpentyl, 1,1-dimethylbutyl, 1,2-dimethylbutyl, 1,3-dimethylbutyl, 2,2-dimethylbutyl, 2,3-dimethylbutyl, 3,3-dimethylbutyl, 1-ethylbutyl, 2-ethylbutyl, 1,1,2-trimethylpropyl, 1,2,2-trimethylpropyl, 1-ethyl-1-methylpropyl, and 1-ethyl-2-methylpropyl.

The term "alkylene" (or alkanediyl) as used herein in each case denotes an alkyl radical as defined above, wherein one hydrogen atom at any position of the carbon backbone is replaced by one further binding site, thus forming a bivalent moiety.

The term "haloalkyl" as used herein and in the haloalkyl moieties of haloalkoxy, haloalkylthio, haloalkylcarbonyl, haloalkylsulfinyl and haloalkylsulfonyl, denotes in each case a straight-chain or branched alkyl group having usually from 1 to 10 carbon atoms, frequently from 1 to 6 carbon atoms, preferably from 1 to 4 carbon atoms, wherein the hydrogen atoms of this group are partially or totally replaced with halogen atoms. Preferred haloalkyl moieties are selected from C_1-C_4-haloalkyl, more preferably from C_1-C_2-haloalkyl, in particular from C_1-C_2-fluoroalkyl such as fluoromethyl, difluoromethyl, trifluoromethyl, 1-fluoroethyl, 2-fluoroethyl, 2,2-difluoroethyl, 2,2,2-trifluoroethyl, pentafluoroethyl and the like.

The term "alkoxy" as used herein denotes in each case a straight-chain or branched alkyl group which is bound via an oxygen atom at any position in the alkyl group and has usually from 1 to 10 carbon atoms, frequently from 1 to 6 carbon atoms, preferably 1 to 4 carbon atoms. Examples of an alkoxy group are methoxy, ethoxy, n-propoxy, iso-propoxy, n-butyloxy, 2-butyloxy, iso-butyloxy, tert.-butyloxy and the like.

The term "haloalkoxy" as used herein denotes in each case a straight-chain or branched alkoxy group having from 1 to 10 carbon atoms, frequently from 1 to 6 carbon atoms, preferably 1 to 4 carbon atoms, wherein the hydrogen atoms of this group are partially or totally replaced with halogen atoms, in particular fluorine atoms. Preferred haloalkoxy moieties include C_1-C_4-haloalkoxy, in particular C_1-C_2-fluoroalkoxy, such as fluoromethoxy, difluoromethoxy, trifluoromethoxy, 1-fluoroethoxy, 2-fluoroethoxy, 2,2-difluoroethoxy, 2,2,2-trifluoroethoxy, 2-chloro-2-fluoroethoxy, 2-chloro-2,2-difluoroethoxy, 2,2dichloro-2-fluorethoxy, 2,2,2-trichloroethoxy, pentafluoroethoxy and the like.

The term "cycloalkyl" as used herein and in the cycloalkyl moieties of cycloalkyl-alkyl, e.g. cycloalkyl-methyl, denotes in each case a mono- or bicyclic saturated carbocyclic radical having usually from 3 to 10, or preferably or 3 to 6 carbon atoms, such as cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, bicyclo[2.1.1]hexyl, bicyclo[3.1.1]heptyl, bicyclo[2.2.1]heptyl, and bicyclo[2.2.2]octyl and the like.

The term "cycloalkenyl" as used herein denotes in each case a partially unsaturated mono- or bicyclic carbocyclic radical having usually from 5 to 10, or preferably 5 to 8 carbon atoms, such as cyclopentenyl, cyclohexenyl, cycloheptenyl, cyclooctenyl, bicyclo[2.2.2]octenyl and the like.

The term "halocycloalkyl" as used herein and in the halocycloalkyl moieties of C_3-C_{10}-halocycloalkyl-methyl denotes in each case a mono- or bicyclic cycloaliphatic radical having usually from 3 to 10 carbon atoms or 3 to 6 carbon atoms, wherein at least one, e.g. 1, 2, 3, 4 or 5 of the hydrogen atoms are replaced by halogen, in particular by fluorine or chlorine. Examples are 1- and 2-fluorocyclopropyl, 1,2-, 2,2- and 2,3-difluorocyclopropyl, 1,2,2-trifluorocyclopropyl, 2,2,3,3-tetrafluorocyclpropyl, 1- and 2-chlorocyclopropyl, 1,2-, 2,2- and 2,3-dichlorocyclopropyl, 1,2,2-trichlorocyclopropyl, 2,2,3,3-tetrachlorocyclpropyl, 1-,2- and 3-fluorocyclopentyl, 1,2-, 2,2-, 2,3-, 3,3-, 3,4-, 2,5-difluorocyclopentyl, 1-,2- and 3-chlorocyclopentyl, 1,2-, 2,2-, 2,3-, 3,3-, 3,4-, 2,5-dichlorocyclopentyl and the like.

The term "alkenyl" as used herein denotes in each case a singly unsaturated hydrocarbon radical having usually 2 to 6, preferably 2 to 4 carbon atoms, e.g. vinyl, allyl (2-propen-1-yl), 1-propen-1-yl, 2-propen-2-yl, methallyl (2-methylprop-2-en-1-yl), 2-buten-1-yl, 3-buten-1-yl, 2-penten-1-yl, 3-penten-1-yl, 4-penten-1-yl, 1-methylbut-2-en-1-yl, 2-ethylprop-2-en-1-yl and the like.

The term "alkynyl" as used herein denotes in each case a singly unsaturated hydrocarbon radical having usually 2 to 6, preferably 2 to 4 carbon atoms, e.g. ethynyl, propargyl (2-propyn-1-yl), 1-propyn-1-yl, 1-methylprop-2-yn-1-yl), 2-butyn-1-yl, 3-butyn-1-yl, 1-pentyn-1-yl, 3-pentyn-1-yl, 4-pentyn-1-yl, 1-methylbut-2-yn-1-yl, 1-ethylprop-2-yn-1-yl and the like.

The term "alkoxyalkyl" as used herein refers to linear or branched alkyl having usually

1 to 4 carbon atoms, wherein 1 of those carbon atoms carries an alkoxy radical usually having 1 to 10, preferably 1 to 4 carbon atoms. Examples are CH_2OCH_3, CH_2-OC_2H_5, n-propoxymethyl, CH_2-$OCH(CH_3)_2$, n-butoxymethyl, (1-methylpropoxy)-methyl, (2-methylpropoxy)methyl, CH_2-$OC(CH_3)_3$, 2-(methoxy)ethyl, 2-(ethoxy)ethyl, 2-(n-propoxy)-ethyl, 2-(1-methylethoxy)-ethyl, 2-(n-butoxy)ethyl, 2-(1-methylpropoxy)-ethyl, 2-(2-methylpropoxy)-ethyl, 2-(1,1-dimethylethoxy)-ethyl, 2-(methoxy)-propyl, 2-(ethoxy)-propyl, 2-(n-propoxy)-propyl, 2-(1-methylethoxy)-propyl, 2-(n-butoxy)-propyl, 2-(1-methylpropoxy)-propyl, 2-(2-methylpropoxy)-propyl, 2-(1,1-dimethylethoxy)-propyl, 3-(methoxy)-propyl, 3-(ethoxy)-propyl, 3-(n-propoxy)-propyl, 3-(1-methylethoxy)-propyl, 3-(n-butoxy)-propyl, 3-(1-methylpropoxy)-propyl, 3-(2-methylpropoxy)-propyl, 3-(1,1-dimethylethoxy)-propyl, 2-(methoxy)-butyl, 2-(ethoxy)-butyl, 2-(n-propoxy)-butyl, 2-(1-methylethoxy)-butyl, 2-(n-butoxy)-butyl, 2-(1-methylpropoxy)-butyl, 2-(2-methyl-propoxy)-butyl, 2-(1,1-dimethylethoxy)-butyl, 3-(methoxy)-butyl, 3-(ethoxy)-butyl, 3-(n-propoxy)-butyl, 3-(1-methylethoxy)-butyl, 3-(n-butoxy)-butyl, 3-(1-methylpropoxy)-butyl, 3-(2-methylpropoxy)-butyl, 3-(1,1-dimethylethoxy)-butyl, 4-(methoxy)-butyl, 4-(ethoxy)-butyl, 4-(n-propoxy)-butyl, 4-(1-methylethoxy)-butyl, 4-(n-butoxy)-butyl, 4-(1-methylpropoxy)-butyl, 4-(2-methylpropoxy)-butyl, 4-(1,1-dimethylethoxy)-butyl and the like.

The term "alkylcarbonyl" (or alkyl-C(=O)-) as used herein refers to a straight-chain or branched saturated alkyl group usually having 1 to 10 (= C_1-C_{10}-alkylcarbonyl), preferably 1 to 4 carbon atoms (= C_1-C_4-alkylcarbonyl) which is attached via the carbon of a carbonyl group at any position in the alkyl group.

The term "haloalkylcarbonyl" as used herein refers to an alkylcarbonyl group as mentioned above, wherein the hydrogen atoms are partially or fully substituted by fluorine, chlorine, bromine and/or iodine.

The term "alkoxycarbonyl" is a C_1-C_2-alkoxy ("C_1-C_2-alkoxycarbonyl") group, as defined above, attached via a carbonyl [C(=O)] group. Examples are methoxycarbonyl and ethoxycarbonyl.

The term "alkylthio" (or alkylsulfanyl; or alkyl-S-) as used herein refers to a straight-chain or branched saturated alkyl group usually having 1 to 10 (= C_1-C_{10}-alkylthio), preferably 1 to 4 carbon atoms (= C_1-C_4-alkylthio) which is attached via a sulfur atom at any position in the alkyl group.

The term "haloalkylthio" as used herein refers to an alkylthio group as mentioned

above, wherein the hydrogen atoms are partially or fully substituted by fluorine, chlorine, bromine and/or iodine.

The term "di-(C_1-C_4-alkyl)amino" is a group -N(C_1-C_4-alkyl)$_2$. Examples are dimethylamino, diethylamino, ethylmethylamino, dipropylamino, diisopropylamino, methylpropylamino, methylisopropylamino, ethylpropylamino, ethylisopropylamino, dibutylamino and the like.

The term "alkylidene" as used herein refers to a divalent group derived from an alkane usually comprising 1 to 2 carbon atoms, wherein two hydrogen atoms are removed from the same carbon atom, the free valencies being part of a double bond. Examples are methylidene (=CH_2) and ethylidene (=CH(CH_3)).

The term "alkylsulfinyl" (or alkylsulfoxyl; or alkyl-S(=O)-), as used herein refers to a straight-chain or branched saturated alkyl group usually having 1 to 10 (= C_1-C_{10}-alkylsulfinyl), preferably 1 to 4 carbon atoms (= C_1-C_4-alkylsulfinyl), which is attached via the sulfur atom of a sulfinyl group at any position in the alkyl group.

The term "haloalkylsulfinyl" as used herein refers to a alkylsulfinyl group as mentioned above wherein the hydrogen atoms are partially or fully substituted by fluorine, chlorine, bromine and/or iodine.

The term "alkylsulfonyl" (or alkyl-S(=O)$_2$-) as used herein refers to a straight-chain or branched saturated alkyl group usually having 1 to 10 carbon atoms (= C_1-C_{10}-alkylsulfonyl), preferably 1 to 4 carbon atoms (= C_1-C_4-alkylsulfonyl), which is attached via the sulfur atom of a sulfonyl group at any position in the alkyl group.

The term "haloalkylsulfonyl" as used herein refers to an alkylsulfonyl group as mentioned above wherein the hydrogen atoms are partially or fully substituted by fluorine, chlorine, bromine and/or iodine.

The term "heterocyclyl" includes in general 3- to 8-membered, in particular 5- to 7-membered monocyclic heterocyclic non-aromatic radicals. The heterocyclic non-aromatic radicals usually comprise 1 or 2 heteroatoms selected from N, O and S as ring members, where S-atoms as ring members may be present as S, SO or SO_2. The heterocyclic non-aromatic radicals may also comprise 1 or 2 carbonyl groups as ring members.

Examples of 5-, or 6-membered heterocyclic radicals comprise saturated or unsaturated, non-aromatic heterocyclic rings, such as oxiranyl, oxetanyl, thietanyl, thietanyl-S-oxid (S-oxothietanyl), thietanyl-S-dioxid (S-dioxothiethanyl), pyrrolidinyl, pyrrolinyl, pyrazolinyl, tetrahydrofuranyl, dihydrofuranyl, 1,3-dioxolanyl, thiolanyl, S-oxothiolanyl, S-dioxothiolanyl, dihydrothienyl, S-oxodihydrothienyl, S-dioxodihydrothienyl, oxazolidinyl, oxazolinyl, thiazolinyl, oxathiolanyl, piperidinyl, piperazinyl, pyranyl, dihydropyranyl, tetrahydropyranyl, 1,3- and 1,4-dioxanyl, thiopyranyl, S.oxothiopyranyl, S-dioxothiopyranyl, dihydrothiopyranyl, S-oxodihydrothiopyranyl, S-dioxodihydrothiopyranyl, tetrahydrothiopyranyl, S-oxotetrahydrothiopyranyl, S-dioxotetrahydrothiopyranyl, morpholinyl, thiomorpholinyl, S-oxothiomorpholinyl, S-dioxothiomorpholinyl, thiazinyl and the like. Examples for heterocyclic ring also comprising 1 or 2 carbonyl groups as ring members comprise pyrrolidin-2-only, pyrrolidin-2,5-dionyl, imidazolidin-2-only, oxazolidin-2-only, thiazolidin-2-only and the like.

The term "hetaryl" includes monocyclic 5- or 6-membered heteroaromatic radicals comprising as ring members 1, 2, 3 or 4 heteroatoms selected from N, O and S. Examples of 5- or 6-membered heteroaromatic radicals include pyridyl, i.e. 2-, 3-, or 4-pyridyl, pyrimidinyl, i.e. 2-, 4- or 5-pyrimidinyl, pyrazinyl, pyridazinyl, i.e. 3- or 4-pyridazinyl, thienyl, i.e. 2- or 3-thienyl, furyl, i.e. 2-or 3-furyl, pyrrolyl, i.e. 2- or 3-pyrrolyl, oxazolyl, i.e. 2-, 3- or 5-oxazolyl, isoxazolyl, i.e. 3-, 4- or 5-isoxazolyl, thiazolyl, i.e. 2-, 3- or 5-thiazolyl, isothiazolyl, i.e. 3-, 4- or 5-isothiazolyl, pyrazolyl, i.e. 1-, 3-, 4- or 5-pyrazolyl, i.e. 1-, 2-, 4- or 5-imidazolyl, oxadiazolyl, e.g. 2- or 5-[1,3,4]oxadiazolyl, 4- or 5-(1,2,3-oxadiazol)yl, 3- or 5-(1,2,4-oxadiazol)yl, 2- or 5-(1,3,4-thiadiazol)yl, thiadiazolyl, e.g. 2- or 5-(1,3,4-thiadiazol)yl, 4- or 5-(1,2,3-thiadiazol)yl, 3- or 5-(1,2,4-thiadiazol)yl, triazolyl, e.g. 1H-, 2H- or 3H-1,2,3-triazol-4-yl, 2H-triazol-3-yl, 1H-, 2H-, or 4H-1,2,4-triazolyl and tetrazolyl, i.e. 1H- or 2H-tetrazolyl.

The term "hetaryl" also includes bicyclic 8- to 10-membered heteroaromatic radicals comprising as ring members 1, 2 or 3 heteroatoms selected from N, O and S, wherein a 5- or 6-membered heteroaromatic ring is fused to a phenyl ring or to a 5- or 6-membered heteroaromatic radical. Examples of a 5- or 6-membered heteroaromatic ring fused to a phenyl ring or to a 5- or 6-membered heteroaromatic radical include benzofuranyl, benzothienyl, indolyl, indazolyl, benzimidazolyl, benzoxathiazolyl, benzoxadiazolyl, benzothiadiazolyl, benzoxazinyl, chinolinyl, isochinolinyl, purinyl, 1,8-naphthyridyl, pteridyl, pyrido[3,2-d]pyrimidyl or pyridoimidazolyl and the like. These fused hetaryl radicals may be bonded to the remainder of the molecule via any ring atom of 5- or 6-membered heteroaromatic ring or via a carbon atom of the fused phenyl

moiety.

The terms "phenylalkyl" and "phenoxyalkyl" refers to phenyl or phenoxy, respectively, which are bound via an alkyl group having usually 1 to 4 carbon atoms, in particular a methyl group (= phenylmethyl), to the remainder of the molecule, examples including benzyl, 1-phenylethyl, 2-phenylethyl, 2-phenoxyethyl and the like.

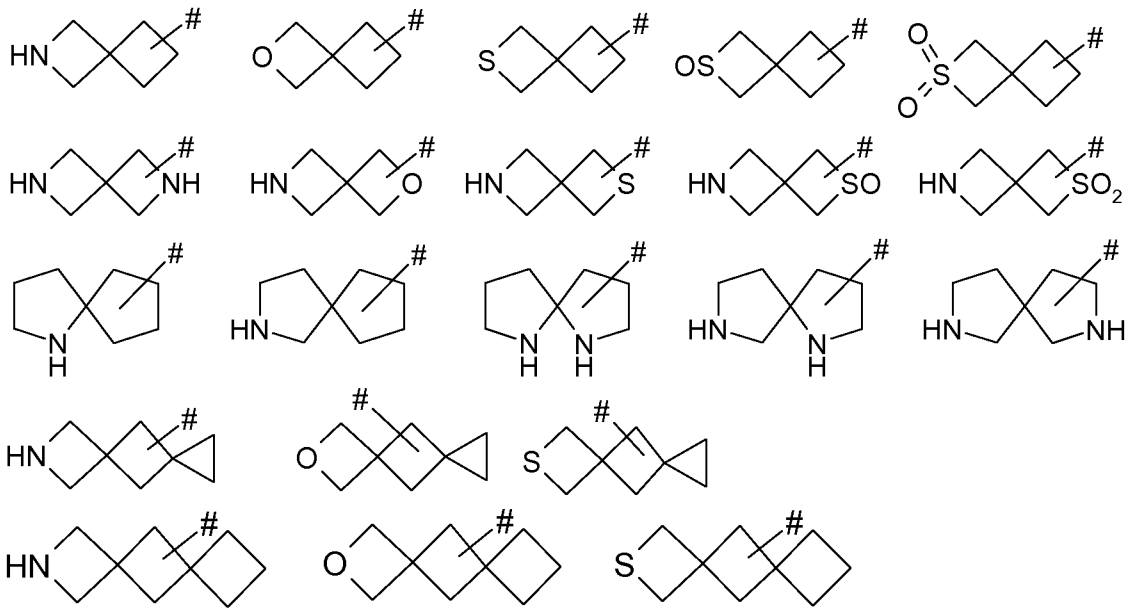
The terms "heterocyclylalkyl" and "hetarylalkyl" refers to heterocyclyl or hetaryl, respectively, as defined above which are bound via an alkyl group having usually 1 to 4 carbon atoms, in particular a methyl group (= heterocyclylmethyl or hetarylmethyl, respectively), to the remainder of the molecule.

The term "cycloalkyl" as used herein and in the cycloalkyl moieties of cycloalkoxy and cycloalkylmethyl denotes in each case a monocyclic cycloaliphatic radical having usually from 3 to 6 carbon atom. Examples are cyclopropyl, cyclobutyl, cyclopentyl, and cyclohexyl.

The term "cycloalkenyl" as used herein denotes in each case a monocyclic monounsaturated hydrocarbon groups having 5 or 6 carbon ring members. Examples are cyclopenten-1-yl, cyclopenten-3-yl, cyclohexen-1-yl, cyclohexen-3-yl and cyclohexen-4-yl.

The term "monospiro 5- to 10-membered carbocycle" refers to a bicyclic ring system of 5-, 6-, 7-, 8-, 9- or 10 carbon atoms having one atom in common (spiroatom). Examples are spiro[2.2]pentyl, spiro[2.3]hexyl, spiro[2.4]heptyl, spiro[3.4]octyl, spiro[3.5]nonyl, spiro[3.6]deyl, spiro[4.4]nonyl and spiro[4.5]decyl.
The term "dispiro 5- to 10-membered carbocycle" refers to a tricyclic ring system of 5-, 6-, 7-, 8-, 9- or 10 carbon atoms having 2 spiroatoms. Examples are dispiro[2.0.2.1]heptyl, dispiro[2.0.3.1]octyl, dispiro[3.0.3.1]nonyl, dispiro[2.0.4.1]nonyl, dispiro[2.1.2.1]octyl, dispiro[2.1.3.1]nonyl and dispiro[3.1.3.1]decyl.

The term "monospiro or dispiro 5- to 10-membered heterocycle" refers to a bicyclic or tricyclic ring system of 5-, 6-, 7-, 8-, 9- or 10 ring atoms which has one or two spiroatoms. The heterocyclic ring system usually comprise 1 or 2 heteroatoms selected from N, O and S as ring members, where S-atoms as ring members may be present as S, SO or SO_2. Examples are:



In the above structures # denotes the attachment point to the remainder of the molecule. The attachment point is not restricted to the ring on which is shown, but can be on either of the spiro rings, and may be on a carbon or on a nitrogen ring atom. If the rings carry one or more substituents, these may be bound to carbon and/or to nitrogen ring atoms.

The remarks made below as to preferred embodiments of the variables of the compounds of formulae I or I' are valid on their own as well as - preferably - in combination with each other. The remarks made below concerning preferred embodiments of the variables further are valid concerning the compounds of formulae I or I' as well as concerning the uses and methods according to the invention and the composition according to the present invention.

Amongst the compounds of the formulae I or I', preference is given to those compounds, wherein R^2 is selected from halogen, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_3-C_7-cycloalkyl, C_3-C_7-halocycloalkyl, C_1-C_6-alkoxy, C_1-C_6-haloalkoxy, C_3-C_7-cycloalkyl-C_1-C_4-alkyl and C_3-C_7-halocycloalkyl-C_1-C_4-alkyl.

More preferably R^2 is selected from C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_3-C_7-cycloalkyl and C_3-C_7-halocycloalkyl. In particular R^2 is selected from C_1-C_2-alkyl, fluorinated C_1-C_2-alkyl and C_3-C_6-cycloalkyl, and specifically from methyl, cyclopropyl, CHF_2 and CF_3.

A particularly preferred embodiment of the invention relates to pyrazole compounds of the formula I, to their stereoisomers, salts, tautomers and N-oxides, and to the methods

and uses of such compounds.

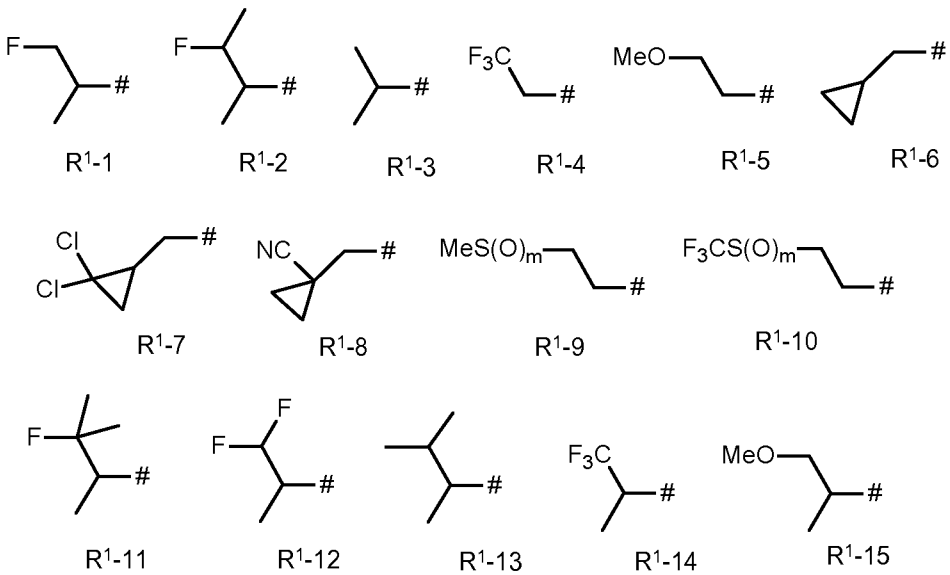
Amongst the compounds of the formula I, preference is given to those compounds, wherein R^1 is selected from hydrogen, C_1-C_{10}-alkyl and C_2-C_{10}-alkenyl, wherein the two last mentioned radicals may be unsubstituted, may be partially or fully halogenated or may carry 1, 2 or 3 identical or different substituents selected from CN, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, C_1-C_4-alkyl-$S(O)_m$, C_1-C_4-haloalkyl-$S(O)_m$, C_3-C_6-cycloalkyl, 3- to 7-membered heterocyclyl, 5- or 6-membered hetaryl, phenyl and phenoxy, wherein the last five mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or 5 radicals selected from halogen, CN, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, C_1-C_4-alkylsulfonyl and C_1-C_4-haloalkylsulfonyl,
or R^1 is further selected from C_3-C_6-cycloalkyl, 3- to 7-membered heterocyclyl, 5- to 6-membered hetaryl and phenyl, wherein the four last mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or 5 identical or different substituents selected from halogen, NO_2, CN, C_1-C_4-alkyl, C_3-C_6-cycloalkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, C_1-C_4-alkylthio, C_1-C_4-haloalkylthio, C_1-C_4-alkylsulfonyl and C_1-C_4-haloalkylsulfonyl,
or R^1 is further selected from R^{1a} and C_1-C_5-alkylene-R^{1a}, wherein R^{1a} is a monospiro or dispiro 5- to 10-membered carbo- or heterocycle, which may contain 1 or 2 heteroatom moieties independently selected from NH, N-C_1-C_2-alkyl, N-C_1-C_2-haloalkyl, O, and $S(O)_m$ as ring members, which monospiro or dispiro 5- to 10-membered carbo- or heterocycle is unsubstitued or may be substituted by 1 or 2 radicals selected from halogen, CN, C_1-C_2-alkyl, C_1-C_2-haloalkyl and C_1-C_2-alkoxy.

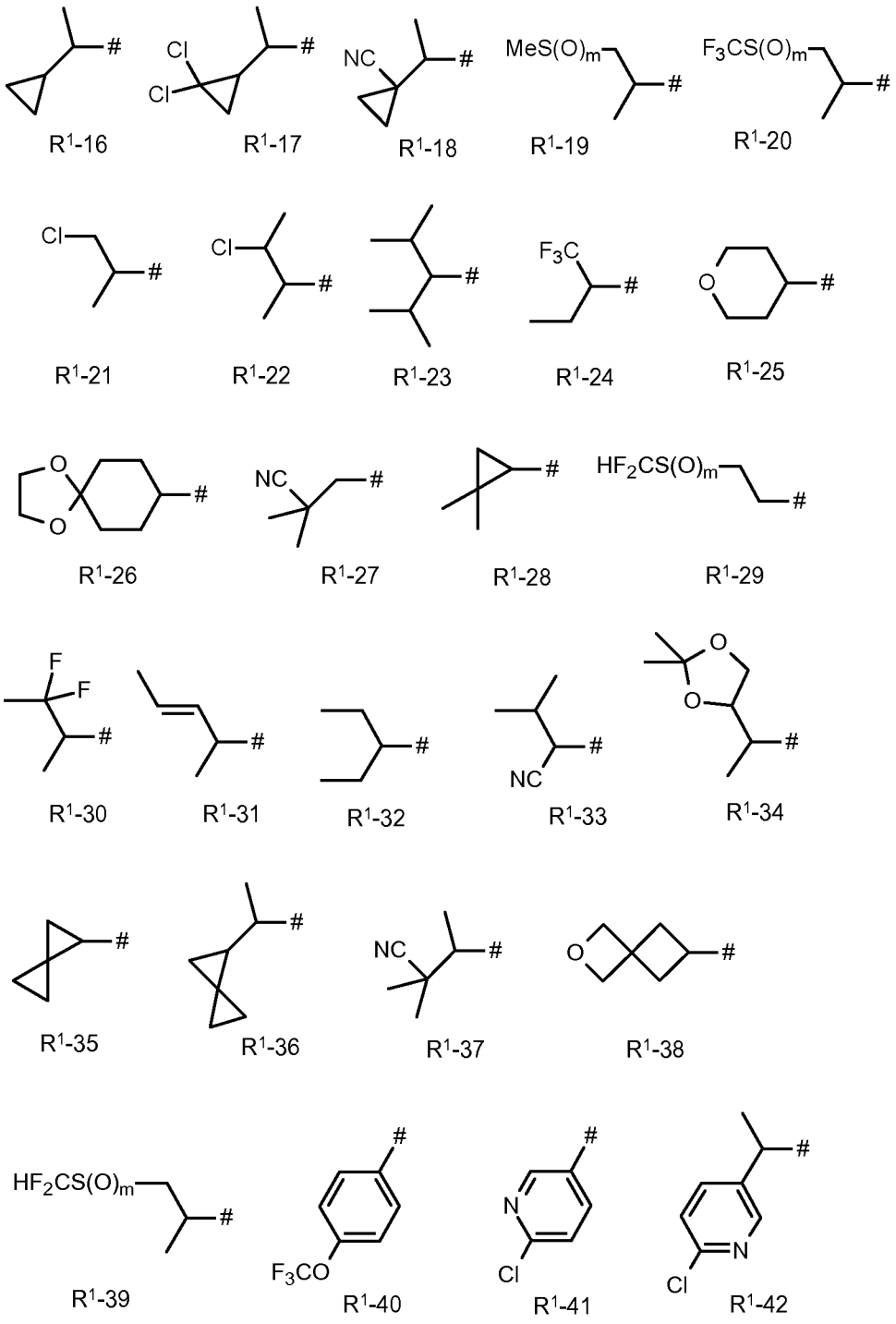
More preferably R^1 is selected from hydrogen, C_1-C_8-alkyl and C_2-C_6-alkenyl, wherein the two last mentioned radicals may be unsubstituted, may be partially or fully halogenated or may carry 1 or 2 identical or different substituents selected from CN, C_1-C_4-alkoxy, C_1-C_4-alkyl-$S(O)_m$, C_1-C_4-haloalkyl-$S(O)_m$, C_3-C_6-cycloalkyl, 5- to 6-membered heterocyclyl, 5- or 6-membered hetaryl and phenyl, wherein the last four mentioned radicals may be unsubstituted or may carry 1, 2, or 3 radicals selected from halogen, CN, C_1-C_2-alkyl and C_1-C_2-haloalkyl,
or R^1 is further selected from C_3-C_6-cycloalkyl, 5- to 6-membered heterocyclyl, 5- to 6-membered hetaryl and phenyl, wherein the four last mentioned radicals may be unsubstituted or may carry 1 or 2 identical or different substituents selected from halogen, CN, C_1-C_2-alkyl, C_1-C_2-haloalkyl, C_1-C_2-alkoxy and C_1-C_4-haloalkoxy,
or R^1 is further selected from R^{1a} and C_1-C_3-alkylene-R^{1a}, wherein R^{1a} is a monospiro or dispiro 5- to 10-membered carbo- or heterocycle, which may contain 1 or 2 heteroatom moieties independently selected from NH and O as ring members, which monospiro or

dispiro 5- to 10-membered carbo- or heterocycle is unsubstitued or may be substituted by 1 or 2 radicals selected from halogen, CN, C_1-C_2-alkyl and C_1-C_2-haloalkyl.

Even more preferably R^1 is selected from hydrogen, C_1-C_8-alkyl and C_2-C_6-alkenyl, wherein the two last mentioned radicals may be unsubstituted, may carry 1, 2 or 3 substituents selected from chlorine and fluorine or may carry 1 or 2 identical or different substituents selected from CN, methoxy, methyl-$S(O)_m$, CHF_2-$S(O)_m$, CF_3-$S(O)_m$, C_3-C_6-cycloalkyl, 5- to 6-membered heterocyclyl, 5- or 6-membered hetaryl and phenyl, wherein the last four mentioned radicals may be unsubstituted or may carry 1, 2, or 3 radicals selected from chlorine, CN and methyl,
or R^1 is further selected from C_3-C_6-cycloalkyl, 5- to 6-membered heterocyclyl, 5- to 6-membered hetaryl and phenyl, wherein the four last mentioned radicals may be unsubstituted or may carry 1 or 2 identical or different substituents selected from chlorine, CN, methyl, $OCHF_2$ and OCF_3.
or R^1 is further selected from R^{1a} and C_1-C_3-alkylene-R^{1a}, wherein R^{1a} is a monospiro or dispiro 5- to 10-membered carbo- or heterocycle, which may contain 1 or 2 O atoms as ring members.

Particularly preferred meanings of the variable R^1 are selected from the radicals R^1-1, R^1-2, R^1-3, R^1-4, R^1-5, R^1-6, R^1-7, R^1-8, R^1-9, R^1-10, R^1-11, R^1-12, R^1-13, R^1-14, R^1-15, R^1-16, R^1-17, R^1-18, R^1-19, R^1-20, R^1-21, R^1-22, R^1-23, R^1-24, R^1-25, R^1-26, R^1-27, R^1-28, R^1-29, R^1-30, R^1-31, R^1-32, R^1-33, R^1-34, R^1-35, R^1-36, R^1-37, R^1-38, R^1-39, R^1-40, R^1-41 and R^1-42 shown below:





wherein # denotes the point of attachment to the remainder of the molecule and the variable m is as defined herein.

Amongst the compounds of the formula I, preference is given to those compounds, wherein R^3 is selected from Z, C_1-C_4-alkylene-Z and C_3-C_6-cycloalkylene-Z,

wherein Z is either a monospiro or dispiro 5- to 10-membered carbo- or heterocycle, which may contain 1 or 2 heteroatom moieties independently selected from NH, N-C_1-C_2-alkyl and O as ring members,
or Z is selected from Z1, Z2, Z3, Z4, Z5, Z6 and Z7, as defined herein,
wherein the variables R^{3a}, R^{3b}, R^{3c}, R^{3d}, R^{3e}, U and T have the following preferred meantings:

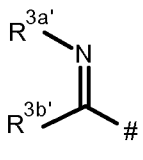
R^{3a}, R^{3b} are independently of each other selected from C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_3-C_7-cycloalkyl, C_3-C_7-halocycloalkyl, C_3-C_7-cycloalkyl-C_1-C_4-alkyl, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy and di-(C_1-C_4-alkyl)amino, and in particular selected from C_1-C_2-alkyl, C_1-C_2-haloalkyl, C_3-C_6-cycloalkyl, C_1-C_2-alkoxy and di-(C_1-C_2-alkyl)amino;

R^{3c}, R^{3d}, R^{3e} are independently of each other selected from C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_3-C_7-cycloalkyl, C_3-C_7-halocycloalkyl and C_3-C_7-cycloalkyl-C_1-C_4-alkyl, and in particular selected from C_1-C_2-alkyl, C_1-C_2-haloalkyl and C_3-C_6-cycloalkyl;

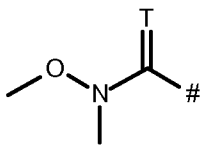
U is an N-bound 5- to 7-membered saturated heterocyclyl which may or may not contain one further heteroatom moiety selected from O, S, C_1-C_2-alkyl-N, formyl-N and C_1-C_2-alkylcarbonyl-N as ring member, and in particular U is an N-bound 5-, 6- or 7-membered saturated heterocyclyl which may or may not contain one further heteroatom moiety selected from O, methyl-N and acyl-N as ring member;

T is O or S.

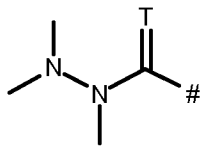
More preferably R^3 is selected from Z' or C_1-C_2-alkylene-Z', wherein Z' is selected from Z1', Z2', Z3', Z4', Z5', Z6', Z7', Z8, Z9 or Z10,



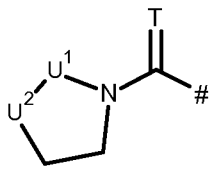
(Z1')



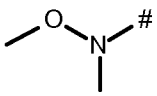
(Z2')



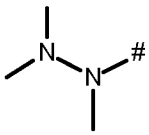
(Z3')



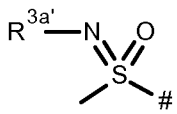
(Z4')



(Z5')

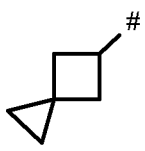


(Z6')

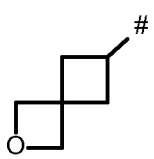


(Z7')

(Z8)



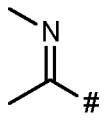
(Z9)



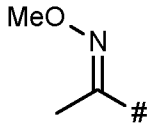
(Z10)

where # denotes the binding site to the remainder of the molecule;
$R^{3a'}$, $R^{3b'}$ are independently of each other selected from C_1-C_2-alkyl, C_1-C_2-haloalkyl, C_1-C_2-alkoxy and di-(C_1-C_2-alkyl)amino, and in particular selected from methyl, methoxy and di(methyl)N;
U^1 is CH_2 or CH_2CH_2 and U^2 is selected from CH_2, CH_2CH_2, O, methyl-N, ethyl-N and acetyl-N, and in particular U^1 is CH_2 provided that U^2 is CH_2, or U^1 is CH_2CH_2 provided that U^2 is selected from CH_2, O, methyl-N and acetyl-N; and
T is O or S.

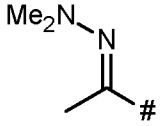
Particularly preferred meanings of the variable R^3 are selected from the radicals Z-A.1, Z-A.2, Z-A.3, Z-A.4, Z-A.5, Z-A.6, Z-A.7, Z-A.8, Z-A.9, Z-A.10, Z-A.11, Z-A.12, Z-A.13, Z-A.14, Z-A.15, Z-A.16, Z-A.17, Z-A.18, Z-A.19, Z-A.20, Z-A.21, Z-A.22, Z-A.23, Z-A.24, Z-A.25, Z-A.26, Z-A.27, Z-A.28, Z-A.29, Z-A.30, Z-A.31, Z-B.1, Z-B.2, Z-B.3, Z-B.4, Z-B.5, Z-B.6, Z-B.7, Z-B.8, Z-B.9, Z-B.10, Z-B.11, Z-B.12, Z-B.13, Z-B.14, Z-B.15, Z-B.16, Z-B.17, Z-B.18, Z-B.19, Z-B.20, Z-B.21, Z-B.22, Z-B.23, Z-B.24, Z-B.25, Z-B.26, Z-B.27, Z-B.28, Z-B.29, Z-B.30, Z-B.31, Z-C.1, Z-C.2, Z-C.3, Z-C.4, Z-C.5, Z-C.6, Z-C.7, Z-C.8, Z-C.9, Z-C.10, Z-C.11, Z-C.12, Z-C.13, Z-C.14, Z-C.15, Z-C.16, Z-C.17, Z-C.18, Z-C.19, Z-C.20, Z-C.21, Z-C.22, Z-C.23, Z-C.24, Z-C.25, Z-C.26, Z-C.27, Z-C.28, Z-C.29, Z-C.30 and Z-C.31 shown below:



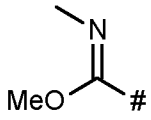
Z-A.1



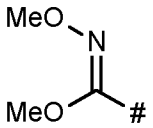
Z-A.2



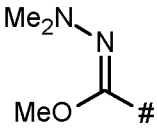
Z-A.3



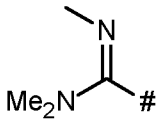
Z-A.4



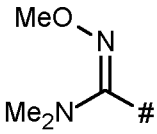
Z-A.5



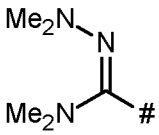
Z-A.6



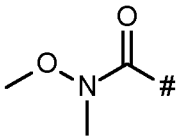
Z-A.7



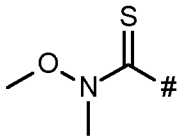
Z-A.8



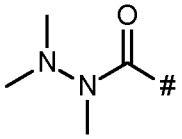
Z-A.9



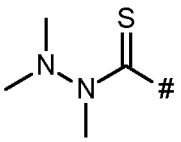
Z-A.10



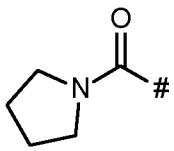
Z-A.11



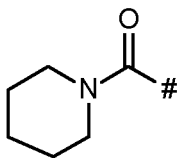
Z-A.12



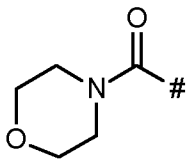
Z-A.13



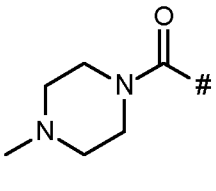
Z-A.14

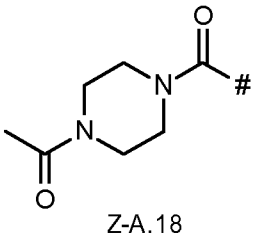


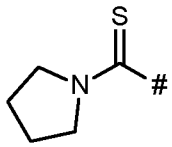
Z-A.15

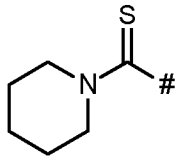


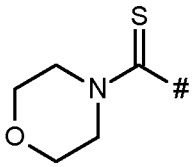
Z-A.16

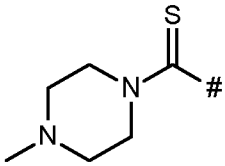

Z-A.17

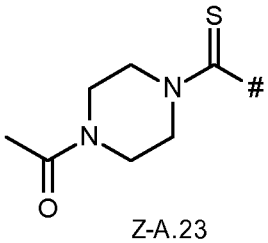

Z-A.18

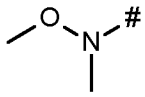

Z-A.19

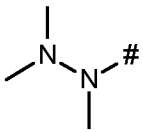

Z-A.20

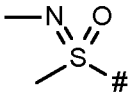

Z-A.21

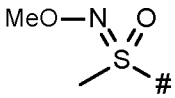

Z-A.22

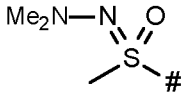

Z-A.23

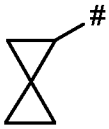

Z-A.24

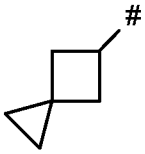

Z-A.25

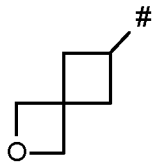

Z-A.26

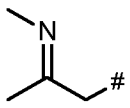

Z-A.27


Z-A.28

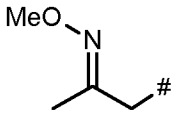

Z-A.29


Z-A.30

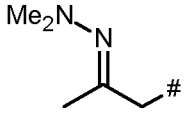

Z-A.31



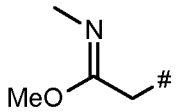
Z-B.1



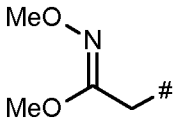
Z-B.2



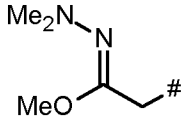
Z-B.3



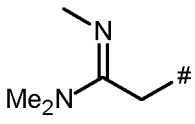
Z-B.4



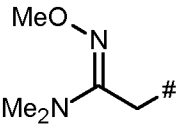
Z-B.5



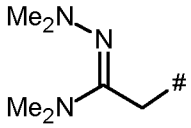
Z-B.6



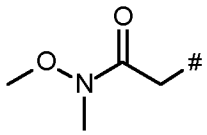
Z-B.7



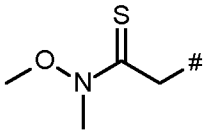
Z-B.8



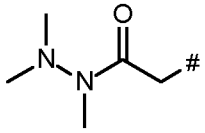
Z-B.9



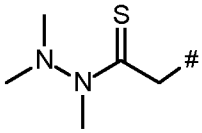
Z-B.10



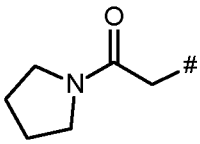
Z-B.11



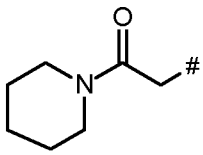
Z-B.12



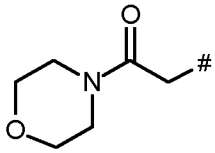
Z-B.13



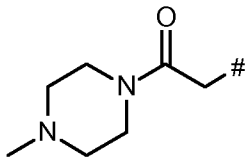
Z-B.14



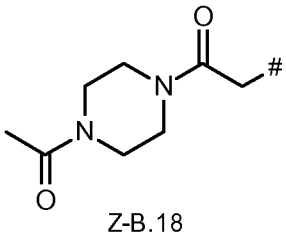
Z-B.15



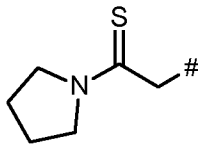
Z-B.16



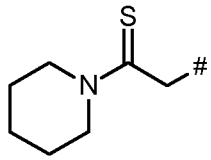
Z-B.17



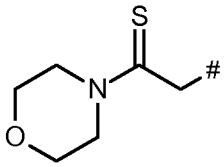
Z-B.18



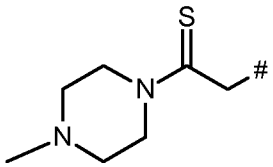
Z-B.19



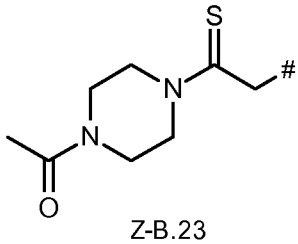
Z-B.20



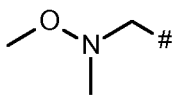
Z-B.21



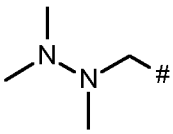
Z-B.22



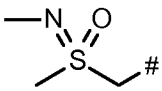
Z-B.23



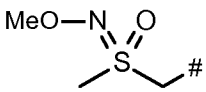
Z-B.24



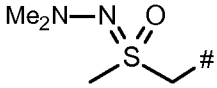
Z-B.25



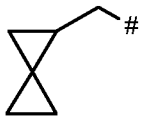
Z-B.26



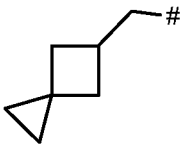
Z-B.27



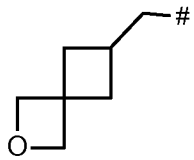
Z-B.28



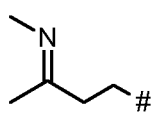
Z-B.29

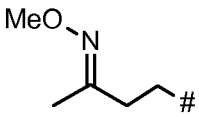


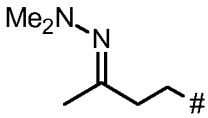
Z-B.30

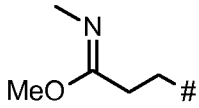


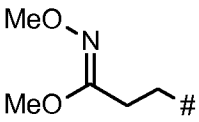
Z-B.31

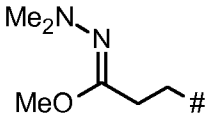

Z-C.1

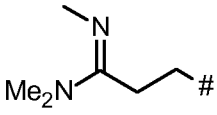

Z-C.2

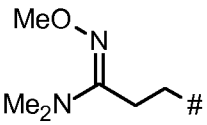

Z-C.3

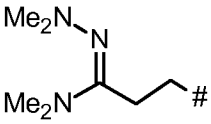

Z-C.4

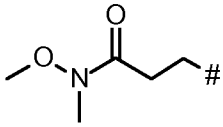

Z-C.5

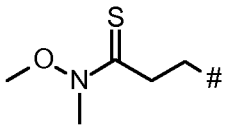

Z-C.6

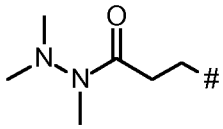

Z-C.7

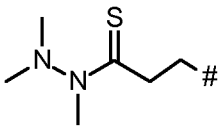

Z-C.8

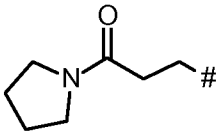

Z-C.9

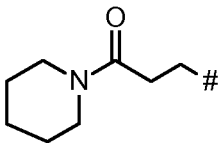

Z-C.10

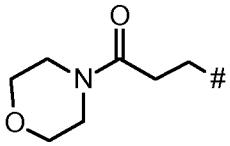

Z-C.11

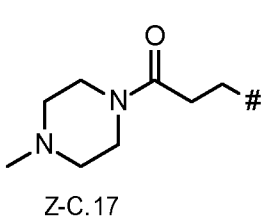

Z-C.12

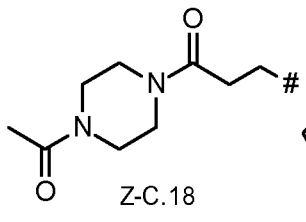

Z-C.13


Z-C.14

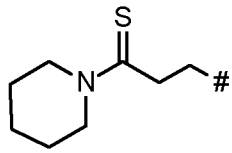

Z-C.15

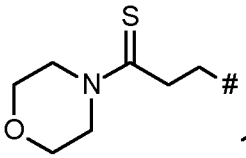

Z-C.16


Z-C.17

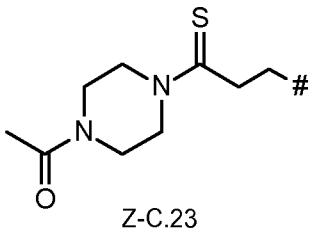

Z-C.18

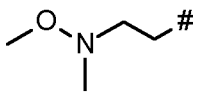

Z-C.19

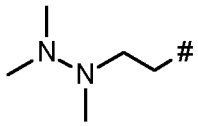

Z-C.20

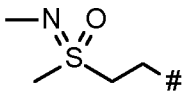

Z-C.21

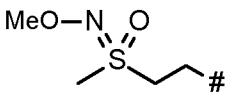

Z-C.22

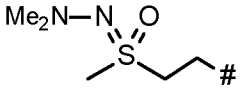

Z-C.23

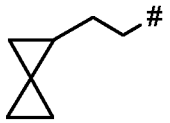

Z-C.24

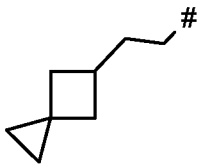

Z-C.25

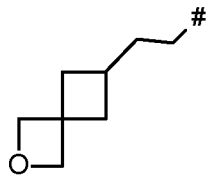

Z-C.26


Z-C.27


Z-C.28

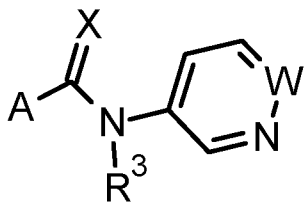

Z-C.29


Z-C.30

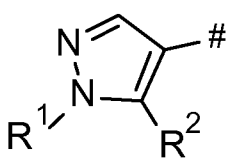

Z-C.31

where # denotes the point of attachment to the remainder of the molecule.

In order to illustrate compounds of the formula I that are particularly preferred, the general formula I may also be depicted as follows:



wherein X, W and R^3 are as defined herein and the radical A is of the following formula A:


A

wherein # denotes the point of attachment to the remainder of the molecule and R^1 and R^2 are as defined herein.

Examples of suitable radicals of formula A are A.1 to A.168, where the radicals R^1 and R^2 are as defined in any one of the 168 lines of table A.

Table A:

radical A	R^1	R^2
A.1	R^1-1	CH_3
A.2	R^1-2	CH_3
A.3	R^1-3	CH_3
A.4	R^1-4	CH_3
A.5	R^1-5	CH_3
A.6	R^1-6	CH_3
A.7	R^1-7	CH_3
A.8	R^1-8	CH_3
A.9	R^1-9	CH_3
A.10	R^1-10	CH_3
A.11	R^1-11	CH_3
A.12	R^1-12	CH_3
A.13	R^1-13	CH_3
A.14	R^1-14	CH_3
A.15	R^1-15	CH_3
A.16	R^1-16	CH_3
A.17	R^1-17	CH_3
A.18	R^1-18	CH_3
A.19	R^1-19	CH_3
A.20	R^1-20	CH_3
A.21	R^1-21	CH_3
A.22	R^1-22	CH_3
A.23	R^1-23	CH_3
A.24	R^1-24	CH_3
A.25	R^1-25	CH_3
A.26	R^1-26	CH_3
A.27	R^1-27	CH_3
A.28	R^1-28	CH_3
A.29	R^1-29	CH_3
A.30	R^1-30	CH_3
A.31	R^1-31	CH_3
A.32	R^1-32	CH_3
A.33	R^1-33	CH_3
A.34	R^1-34	CH_3
A.35	R^1-35	CH_3
A.36	R^1-36	CH_3
A.37	R^1-37	CH_3
A.38	R^1-38	CH_3
A.39	R^1-39	CH_3
A.40	R^1-40	CH_3
A.41	R^1-41	CH_3
A.42	R^1-42	CH_3
A.43	R^1-1	cycPr
A.44	R^1-2	cycPr
A.45	R^1-3	cycPr
A.46	R^1-4	cycPr
A.47	R^1-5	cycPr
A.48	R^1-6	cycPr
A.49	R^1-7	cycPr
A.50	R^1-8	cycPr
A.51	R^1-9	cycPr
A.52	R^1-10	cycPr
A.53	R^1-11	cycPr
A.54	R^1-12	cycPr
A.55	R^1-13	cycPr
A.56	R^1-14	cycPr
A.57	R^1-15	cycPr
A.58	R^1-16	cycPr
A.59	R^1-17	cycPr

A.60	R^1-18	cycPr
A.61	R^1-19	cycPr
A.62	R^1-20	cycPr
A.63	R^1-21	cycPr
A.64	R^1-22	cycPr
A.65	R^1-23	cycPr
A.66	R^1-24	cycPr
A.67	R^1-25	cycPr
A.68	R^1-26	cycPr
A.69	R^1-27	cycPr
A.70	R^1-28	cycPr
A.71	R^1-29	cycPr
A.72	R^1-30	cycPr
A.73	R^1-31	cycPr
A.74	R^1-32	cycPr
A.75	R^1-33	cycPr
A.76	R^1-34	cycPr
A.77	R^1-35	cycPr
A.78	R^1-36	cycPr
A.79	R^1-37	cycPr
A.80	R^1-38	cycPr
A.81	R^1-39	cycPr
A.82	R^1-40	cycPr
A.83	R^1-41	cycPr
A.84	R^1-42	cycPr
A.85	R^1-1	CHF_2
A.86	R^1-2	CHF_2
A.87	R^1-3	CHF_2
A.88	R^1-4	CHF_2
A.89	R^1-5	CHF_2
A.90	R^1-6	CHF_2
A.91	R^1-7	CHF_2
A.92	R^1-8	CHF_2
A.93	R^1-9	CHF_2
A.94	R^1-10	CHF_2
A.95	R^1-11	CHF_2
A.96	R^1-12	CHF_2

A.97	R^1-13	CHF_2
A.98	R^1-14	CHF_2
A.99	R^1-15	CHF_2
A.100	R^1-16	CHF_2
A.101	R^1-17	CHF_2
A.102	R^1-18	CHF_2
A.103	R^1-19	CHF_2
A.104	R^1-20	CHF_2
A.105	R^1-21	CHF_2
A.106	R^1-22	CHF_2
A.107	R^1-23	CHF_2
A.108	R^1-24	CHF_2
A.109	R^1-25	CHF_2
A.110	R^1-26	CHF_2
A.101	R^1-27	CHF_2
A.112	R^1-28	CHF_2
A.113	R^1-29	CHF_2
A.114	R^1-30	CHF_2
A.115	R^1-31	CHF_2
A.116	R^1-32	CHF_2
A.117	R^1-33	CHF_2
A.118	R^1-34	CHF_2
A.119	R^1-35	CHF_2
A.120	R^1-36	CHF_2
A.121	R^1-37	CHF_2
A.122	R^1-38	CHF_2
A.123	R^1-39	CHF_2
A.124	R^1-40	CHF_2
A.125	R^1-41	CHF_2
A.126	R^1-42	CHF_2
A.127	R^1-1	CF_3
A.138	R^1-2	CF_3
A.129	R^1-3	CF_3
A.130	R^1-4	CF_3
A.131	R^1-5	CF_3
A.132	R^1-6	CF_3
A.133	R^1-7	CF_3

A.134	R^1-8	CF_3
A.135	R^1-9	CF_3
A.136	R^1-10	CF_3
A.137	R^1-11	CF_3
A.138	R^1-12	CF_3
A.139	R^1-13	CF_3
A.140	R^1-14	CF_3
A.141	R^1-15	CF_3
A.142	R^1-16	CF_3
A.143	R^1-17	CF_3
A.144	R^1-18	CF_3
A.145	R^1-19	CF_3
A.146	R^1-20	CF_3
A.147	R^1-21	CF_3
A.148	R^1-22	CF_3
A.149	R^1-23	CF_3
A.150	R^1-24	CF_3
A.151	R^1-25	CF_3
A.152	R^1-26	CF_3
A.153	R^1-27	CF_3
A.154	R^1-28	CF_3
A.155	R^1-29	CF_3
A.156	R^1-30	CF_3
A.157	R^1-31	CF_3
A.158	R^1-32	CF_3
A.159	R^1-33	CF_3
A.160	R^1-34	CF_3
A.161	R^1-35	CF_3
A.162	R^1-36	CF_3
A.163	R^1-37	CF_3
A.164	R^1-38	CF_3
A.165	R^1-39	CF_3
A.166	R^1-40	CF_3
A.167	R^1-41	CF_3
A.168	R^1-42	CF_3

The abbreviation cycPr in the above table A represents a cylcopropyl radical.

A particularly preferred embodiment of the present invention relates to compounds of the formula I and to their stereoisomers, salts, tautomers and N-oxides, wherein

R^1 is selected from the radicals R^1-1, R^1-2, R^1-3, R^1-4, R^1-5, R^1-6, R^1-7, R^1-8, R^1-9, R^1-10, R^1-11, R^1-12, R^1-13, R^1-14, R^1-15, R^1-16, R^1-17, R^1-18, R^1-19, R^1-20, R^1-21, R^1-22, R^1-23, R^1-24, R^1-25, R^1-26, R^1-27, R^1-28, R^1-29, R^1-30, R^1-31, R^1-32, R^1-33, R^1-34, R^1-35, R^1-36, R^1-37, R^1-38, R^1-39, R^1-40, R^1-41 and R^1-42;

R^2 is selected from C_1-C_2-alkyl, fluorinated C_1-C_2-alkyl and C_3-C_6-cycloalkyl, and in particular R^2 is methyl, cyclopropyl, CHF_2 or CF_3;

R^3 is Z' or C_1-C_2-alkylene-Z', wherein Z' is selected from the radicals Z1', Z2', Z3', Z4', Z5', Z6', Z7', Z8, Z9 and Z10, as defined herein, and in particular R^3 is selected from Z-A.1, Z-A.2, Z-A.3, Z-A.4, Z-A.5, Z-A.6, Z-A.7, Z-A.8, Z-A.9, Z-A.10, Z-A.11, Z-A.12, Z-A.13, Z-A.14, Z-A.15, Z-A.16, Z-A.17, Z-A.18, Z-A.19, Z-A.20, Z-A.21, Z-A.22, Z-A.23, Z-A.24, Z-A.25, Z-A.26, Z-A.27, Z-A.28, Z-A.29, Z-A.30, Z-A.31, Z-B.1, Z-B.2, Z-B.3, Z-B.4, Z-B.5, Z-B.6, Z-B.7, Z-B.8, Z-B.9, Z-B.10, Z-

B.11, Z-B.12, Z-B.13, Z-B.14, Z-B.15, Z-B.16, Z-B.17, Z-B.18, Z-B.19, Z-B.20, Z-B.21, Z-B.22, Z-B.23, Z-B.24, Z-B.25, Z-B.26, Z-B.27, Z-B.28, Z-B.29, Z-B.30, Z-B.31, Z-C.1, Z-C.2, Z-C.3, Z-C.4, Z-C.5, Z-C.6, Z-C.7, Z-C.8, Z-C.9, Z-C.10, Z-C.11, Z-C.12, Z-C.13, Z-C.14, Z-C.15, Z-C.16, Z-C.17, Z-C.18, Z-C.19, Z-C.20, Z-C.21, Z-C.22, Z-C.23, Z-C.24, Z-C.25, Z-C.26, Z-C.27, Z-C.28, Z-C.29, Z-C.30 and Z-C.31;

W is CH or N; and

X is O or S.

Examples of compounds of this particularly preferred embodiment are the compounds as defined in the following tables 1 to 372.

Table 1: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.1.

Table 2: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.2.

Table 3: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.3.

Table 4: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.4.

Table 5: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.5.

Table 6: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.6.

Table 7: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.7.

Table 8: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.8.

Table 9: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.9.

Table 10: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.10.

Table 11: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.11.

Table 12: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.12.

Table 13: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.13.

Table 14: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.14.

Table 15: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.15.

Table 16: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.16.

Table 17: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.17.

Table 18: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.18.

Table 19: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.19.

Table 20: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.20.

Table 21: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.21.

Table 22: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.22.

Table 23: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.23.

Table 24: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.24.

Table 25: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.25.

Table 26: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.26.

Table 27: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.27.

Table 28: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.28.

Table 29: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.29.

Table 30: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.30.

Table 31: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.31.

Table 32: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.1.

Table 33: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.2.

Table 34: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.3.

Table 35: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.4.

Table 36: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.5.

Table 37: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.6.

Table 38: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.7.

Table 39: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.8.

Table 40: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.9.

Table 41: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.10.

Table 42: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.11.

Table 43: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.12.

Table 44: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.13.

Table 45: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.14.

Table 46: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.15.

Table 47: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.16.

Table 48: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.17.

Table 49: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.18.

Table 50: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.19.

Table 51: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.20.

Table 52: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.21.

Table 53: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.22.

Table 54: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.23.

Table 55: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.24.

Table 56: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.25.

Table 57: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.26.

Table 58: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.27.

Table 59: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.28.

Table 60: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.29.

Table 61: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.30.

Table 62: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.31.

Table 63: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.1.

Table 64: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.2.

Table65: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.3.

Table 66: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.4.

Table 67: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.5.

Table 68: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.6.

Table 69: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.7.

Table 70: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.8.

Table 71: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.9.

Table 72: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.10.

Table 73: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.11.

Table 74: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.12.

Table 75: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.13.

Table 76: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.14.

Table 77: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.15.

Table 78: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.16.

Table 79: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.17.

Table 80: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.18.

Table 81: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.19.

Table 82: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.20.

Table 83: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.21.

Table 84: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.22.

Table 85: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.23.

Table 86: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.24.

Table 87: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.25.

Table 88: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.26.

Table 89: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.27.

Table 90: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.28.

Table 91: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.29.

Table 92: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.30.

Table 93: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.31.

Tables 94 to 186: Compounds of the formula I corresponding to compounds according to tables 1 to 93, with the exception that X is S.

Table 187: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.1.

Table 188: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.2.

Table 189: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.3.

Table 190: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.4.

Table 191: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.5.

Table 192: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.6.

Table 193: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.7.

Table 194: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.8.

Table 195: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.9.

Table 196: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.10.

Table 197: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.11.

Table 198: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.12.

Table 199: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.13.

Table 200: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.14.

Table 201: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.15.

Table 202: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.16.

Table 203: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.17.

Table 204: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.18.

Table 205: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.19.

Table 206: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.20.

Table 207: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.21.

Table 208: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.22.

Table 209: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.23.

Table 210: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.24.

Table 211: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.25.

Table 212: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.26.

Table 213: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.27.

Table 214: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.28.

Table 215: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.29.

Table 216: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.30.

Table 217: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-A.31.

Table 218: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.1.

Table 219: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.2.

Table 220: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.3.

Table 221: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.4.

Table 222: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.5.

Table 223: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.6.

Table 224: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.7.

Table 225: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.8.

Table 226: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.9.

Table 227: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.10.

Table 228: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.11.

Table 229: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.12.

Table 230: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.13.

Table 231: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.14.

Table 232: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.15.

Table 233: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.16.

Table 234: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.17.

Table 235: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.18.

Table 236: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.19.

Table 237: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.20.

Table 238: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.21.

Table 239: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.22.

Table 240: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.23.

Table 241: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.24.

Table 242: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.25.

Table 243: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.26.

Table 244: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.27.

Table 245: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.28.

Table 246: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.29.

Table 247: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.30.

Table 248: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-B.31.

Table 249: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.1.

Table 250: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.2.

Table 251: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.3.

Table 252: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.4.

Table 253: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.5.

Table 254: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.6.

Table 255: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.7.

Table 256: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.8.

Table 257: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.9.

Table 258: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.10.

Table 259: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.11.

Table 260: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.12.

Table 261: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.13.

Table 262: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.14.

Table 263: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.15.

Table 264: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.16.

Table 265: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.17.

Table 266: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.18.

Table 267: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.19.

Table 268: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.20.

Table 269: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.21.

Table 270: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.22.

Table 271: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.23.

Table 272: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.24.

Table 273: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.25.

Table 274: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.26.

Table 275: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.27.

Table 276: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.28.

Table 277: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.29.

Table 278: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.30.

Table 279: Compounds of the formula I and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A is a radical selected from radicals A.1 to A.168 and R^3 is Z-C.31.

Tables 280 to 372: Compounds of the formula I corresponding to compounds according to tables 187 to 279, with the exception that X is S.

A further embodiment of the invention relates to pyrazole compounds of the formula I', to their stereoisomers, salts, tautomers and N-oxides, and to the methods and uses of such compounds.

Amongst the compounds of the formula I', preference is given to those compounds, wherein $R^{3'}$ is selected from hydrogen, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_3-C_6-cycloalkyl, C_3-C_6-halocycloalkyl, C_3-C_6-cycloalkyl-C_1-C_3-alkyl, C_1-C_4-alkoxy-C_1-C_3-alkyl and C_3-C_6-cycloalkoxy-C_1-C_2-alkyl.

More preferably $R^{3'}$ is selected from hydrogen, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_3-C_6-cycloalkyl, C_1-C_4-alkoxy-C_1-C_3-alkyl and C_3-C_6-cycloalkoxy-C_1-C_2-alkyl.

Particularly $R^{3'}$ is selected from hydrogen, C_1-C_4-alkyl and C_1-C_3-alkoxy-C_1-C_3-alkyl, and specifically from hydrogen, methyl, ethyl, methoxymethyl and ethoxymethyl.

Amongst the compounds of the formula I', preference is given to those compounds, wherein $R^{1'}$ is Z^a, G-Z^a or G'-Z^b, wherein

G is C_1-C_4-alkylene or C_3-C_6-cycloalkylene;

Z^a is selected from Z2, Z3, Z4, Z5, Z6 and Z7 which are as defined herein, wherein the variables R^{3a}, R^{3c}, R^{3d}, R^{3e}, U and T have the meanings given herein and in particular the meanings given as being preferred;

G' is either CR^lR^m-(C_1-C_2)-alkylene, or, if $R^{3'}$ is not selected from hydrogen, C_1-C_2-alkyl and C_1-C_2-alkoxy-C_1-C_2-alkyl, G' may also be a direct bond or a diradical CR^lR^m,
wherein R^l and R^m are independently of each other selected from hydrogen and C_1-C_2-alkyl;

Z^b is a monospiro or dispiro 5- to 10-membered carbo- or heterocycle, which may contain 1 or 2 heteroatom moieties independently selected from NH, N-C_1-C_2-alkyl and O as ring members;

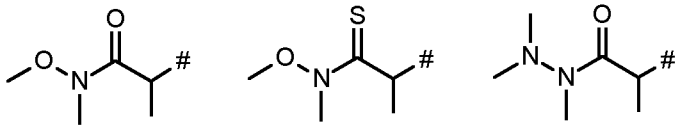
or, if $R^{3'}$ is not selected from hydrogen, C_1-C_2-alkyl and C_1-C_2-alkoxy-C_1-C_2-alkyl, $R^{1'}$ may also be G''-Z1,
wherein G'' is C_1-C_7-alkylene and in particular is CR^lR^m-(C_1-C_2)-alkylene or CR^lR^m with R^l and R^m being as defined herein, and wherein Z1 is as defined herein, wherein the variables R^{3a} and R^{3b} have the meanings given herein and in particular the meanings given as being preferred.

More preferably $R^{1'}$ is Z^a, $CH_n(CH_3)_{2-n}$-Z^a or $CH_n(CH_3)_{2-n}$-CH_2-Z^c, or, if $R^{3'}$ is not selected from hydrogen, C_1-C_2-alkyl and C_1-C_2-alkoxy-C_1-C_2-alkyl, $R^{1'}$ may also be

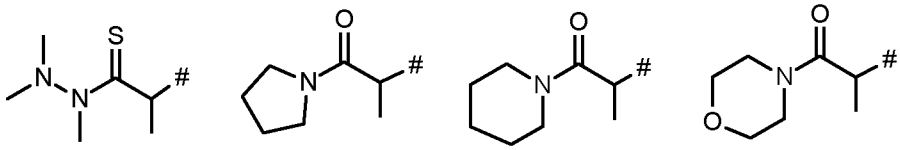
$CH_n(CH_3)_{2-n}$-Z1 or $CH_n(CH_3)_{2-n}$-CH_2-Z1, where n is 0, 1 or 2, Z^c is Z^a or Z^b, wherein the variables Z^a, Z^b and Z1 have the meanings given herein and in particular the meanings given as being preferred. In this context Z^a is preferably selected from Z2', Z3', Z4', Z5', Z6' and Z7' which are as defined herein, Z^b is preferably selected from Z8, Z9 and Z10 which are as defined herein, and Z1 is preferably Z1' which is as defined herein.

Even more preferably $R^{1'}$ is selected from Z^a, $CH_n(CH_3)_{2-n}$-Z^a and $CH_n(CH_3)_{2-n}$-CH_2-Z^c, where n is 0, 1 or 2, and Z^c is Z^a or Z^b, wherein Z^a is selected from Z2', Z3', Z4', Z5', Z6' and Z7' which have the meanings given herein, in particular the meanings given as being preferred, and Z^b is selected from Z8, Z9 and Z10 which are as defined herein.

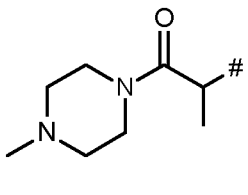
Particularly preferred meanings of the variable $R^{1'}$ are selected from the radicals Z-A.10, Z-A.11, Z-A.12, Z-A.13, Z-A.14, Z-A.15, Z-A.16, Z-A.17, Z-A.18, Z-A.19, Z-A.20, Z-A.21, Z-A.22, Z-A.23, Z-A.24, Z-A.25, Z-A.26, Z-A.27, Z-A.28, Z-B.10, Z-B.11, Z-B.12, Z-B.13, Z-B.14, Z-B.15, Z-B.16, Z-B.17, Z-B.18, Z-B.19, Z-B.20, Z-B.21, Z-B.22, Z-B.23, Z-B.24, Z-B.25, Z-B.26, Z-B.27, Z-B.28, Z-C.10, Z-C.11, Z-C.12, Z-C.13, Z-C.14, Z-C.15, Z-C.16, Z-C.17, Z-C.18, Z-C.19, Z-C.20, Z-C.21, Z-C.22, Z-C.23, Z-C.24, Z-C.25, Z-C.26, Z-C.27, Z-C.28, Z-C.29, Z-C.30 and Z-C.31, as defined herein; and Z-Bb.10, Z-Bb.11, Z-Bb.12, Z-Bb.13, Z-Bb.14, Z-Bb.15, Z-Bb.16, Z-Bb.17, Z-Bb.18, Z-Bb.19, Z-Bb.20, Z-Bb.21, Z-Bb.22, Z-Bb.23, Z-Bb.24, Z-Bb.25, Z-Bb.26, Z-Bb.27, Z-Bb.28, Z-Bc.10, Z-Bc.11, Z-Bc.12, Z-Bc.13, Z-Bc.14, Z-Bc.15, Z-Bc.16, Z-Bc.17, Z-Bc.18, Z-Bc.19, Z-Bc.20, Z-Bc.21, Z-Bc.22, Z-Bc.23, Z-Bc.24, Z-Bc.25, Z-Bc.26, Z-Bc.27, Z-Bc.28, Z-Cb.10, Z-Cb.11, Z-Cb.12, Z-Cb.13, Z-Cb.14, Z-Cb.15, Z-Cb.16, Z-Cb.17, Z-Cb.18, Z-Cb.19, Z-Cb.20, Z-Cb.21, Z-Cb.22, Z-Cb.23, Z-Cb.24, Z-Cb.25, Z-Cb.26, Z-Cb.27, Z-Cb.28, Z-Cb.29, Z-Cb.30, Z-Cb.31, Z-Cc.10, Z-Cc.11, Z-Cc.12, Z-Cc.13, Z-Cc.14, Z-Cc.15, Z-Cc.16, Z-Cc.17, Z-Cc.18, Z-Cc.19, Z-Cc.20, Z-Cc.21, Z-Cc.22, Z-Cc.23, Z-Cc.24, Z-Cc.25, Z-Cc.26, Z-Cc.27, Z-Cc.28, Z-Cc.29, Z-Cc.30 and Z-Cc.31 as shown below:

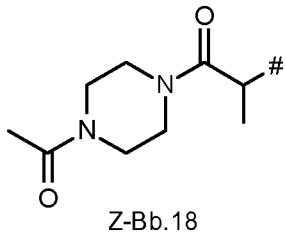


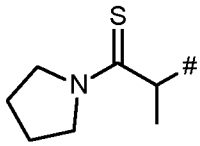
Z-Bb.10 Z-Bb.11 Z-Bb.12

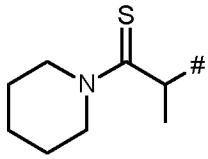


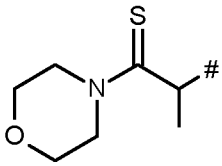
Z-Bb.13 Z-Bb.14 Z-Bb.15 Z-Bb.16

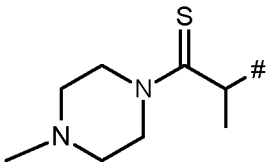

Z-Bb.17

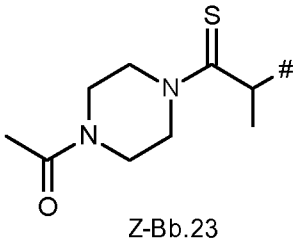

Z-Bb.18

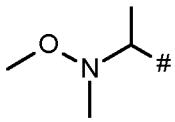

Z-Bb.19

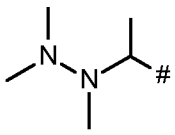

Z-Bb.20

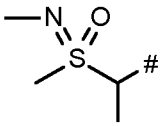

Z-Bb.21

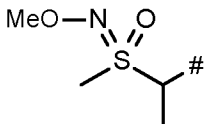

Z-Bb.22

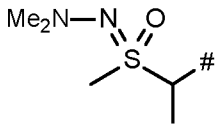

Z-Bb.23

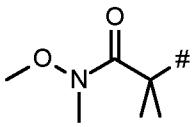

Z-Bb.24

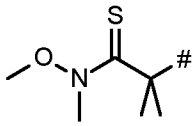

Z-Bb.25

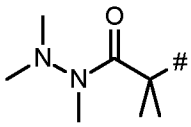

Z-Bb.26

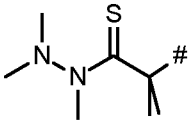

Z-Bb.27

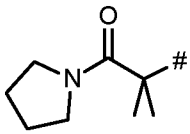

Z-Bb.28

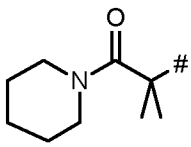

Z-Bc.10

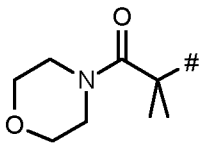

Z-Bc.11

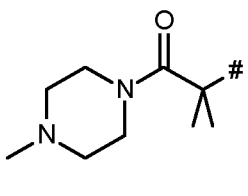

Z-Bc.12

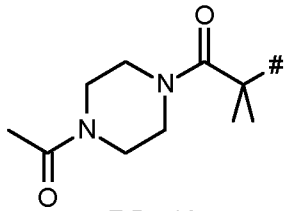

Z-Bc.13

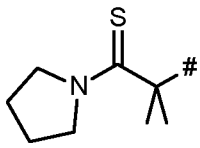

Z-Bc.14

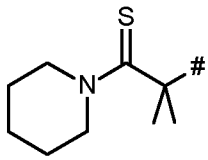

Z-Bc.15

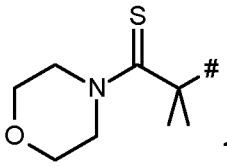

Z-Bc.16

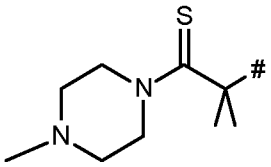

Z-Bc.17

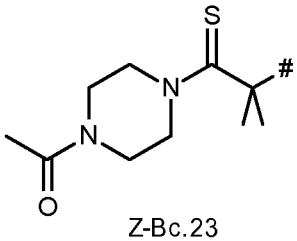

Z-Bc.18

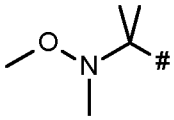

Z-Bc.19

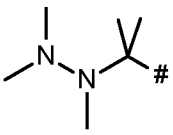

Z-Bc.20

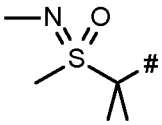

Z-Bc.21

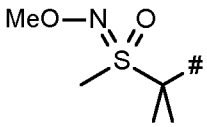

Z-Bc.22

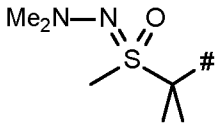

Z-Bc.23

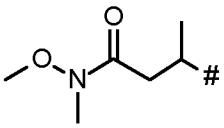

Z-Bc.24

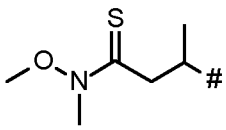

Z-Bc.25

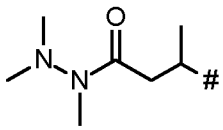

Z-Bc.26

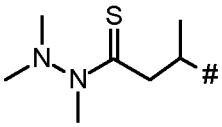

Z-Bc.27

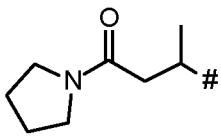

Z-Bc.28

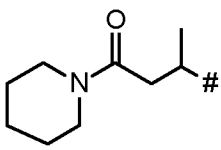

Z-Cb.10

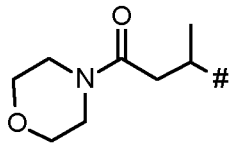

Z-Cb.11

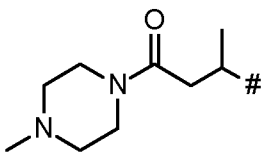

Z-Cb.12

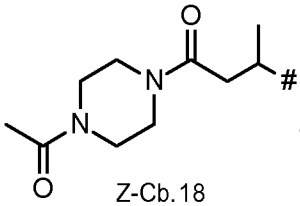

Z-Cb.13

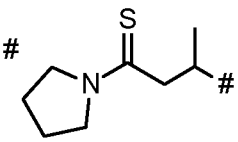

Z-Cb.14

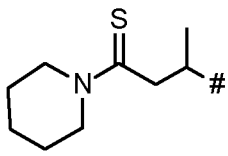

Z-Cb.15

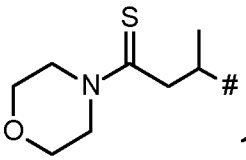

Z-Cb.16

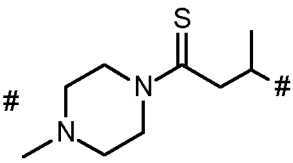

Z-Cb.17

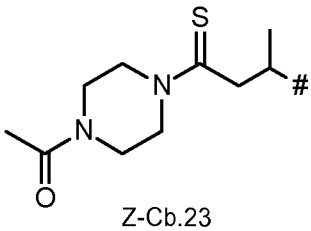

Z-Cb.18

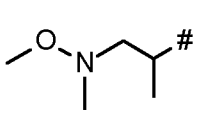

Z-Cb.19

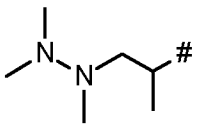

Z-Cb.20

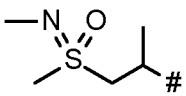

Z-Cb.21

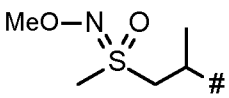

Z-Cb.22

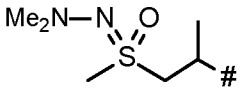

Z-Cb.23

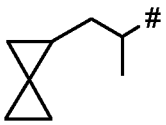

Z-Cb.24

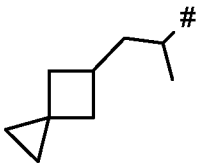

Z-Cb.25

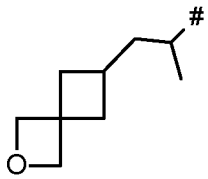

Z-Cb.26

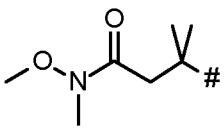

Z-Cb.27

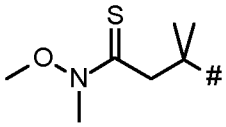

Z-Cb.28

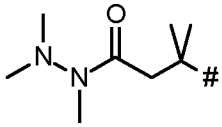

Z-Cb.29

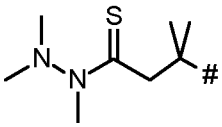

Z-Cb.30

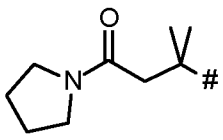

Z-Cb.31

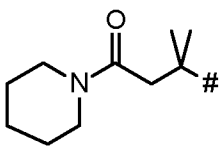

Z-Cb.10

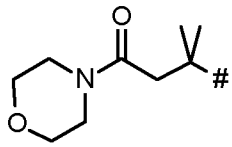

Z-Cb.11

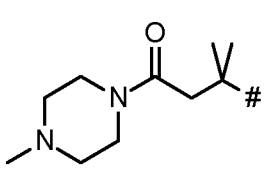

Z-Cb.12

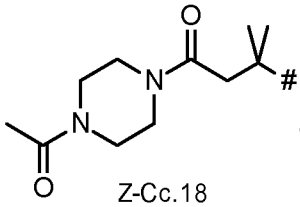

Z-Cb.13

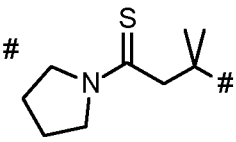

Z-Cb.14

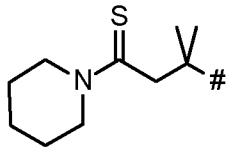

Z-Cb.15

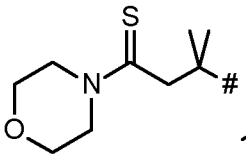

Z-Cb.16

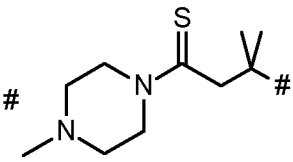

Z-Cc.17

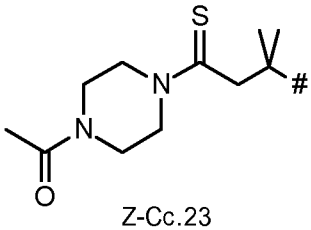

Z-Cc.18

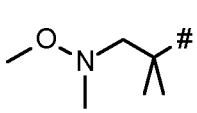

Z-Cc.19

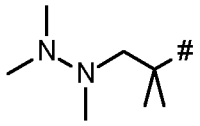

Z-Cc.20

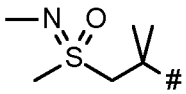

Z-Cc.21

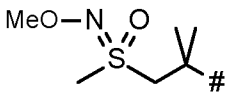

Z-Cc.22

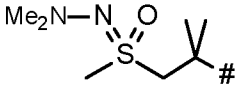

Z-Cc.23

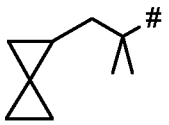

Z-Cc.24

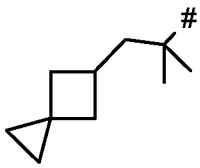

Z-Cc.25

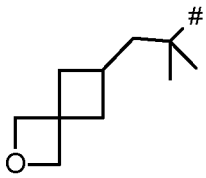

Z-Cc.26


Z-Cc.27


Z-Cc.28

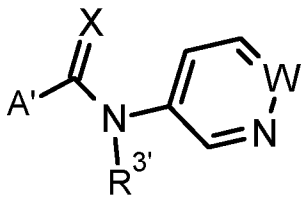

Z-Cc.29


Z-Cc.30

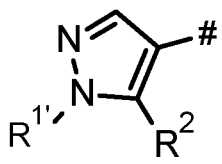

Z-Cc.31

where # denotes the point of attachment to the remainder of the molecule.

In order to illustrate compounds of the formula I' that are particularly preferred, the general formula I may also be depicted as follows:



wherein X, W and $R^{3'}$ are as defined herein and the radical A' is of the following formula A':


A'

where # denotes the point of attachment to the remainder of the molecule and $R^{1'}$ and R^2 are as defined herein.

Examples of suitable radicals of formula A' are A'.1 to A'.568, where the radicals R^1 and R^2 are as defined in any one of the 568 lines of table A'.

Table A':

radical A'	R^1	R^2
A'.1	Z-A.10	CH_3
A'.2	Z-A.11	CH_3
A'.3	Z-A.12	CH_3
A'.4	Z-A.13	CH_3
A'.5	Z-A.14	CH_3
A'.6	Z-A.15	CH_3
A'.7	Z-A.16	CH_3
A'.8	Z-A.17	CH_3
A'.9	Z-A.18	CH_3
A'.10	Z-A.19	CH_3
A'.11	Z-A.20	CH_3
A'.12	Z-A.21	CH_3
A'.13	Z-A.22	CH_3
A'.14	Z-A.23	CH_3
A'.15	Z-A.-24	CH_3
A'.16	Z-A.25	CH_3
A'.17	Z-A.26	CH_3
A'.18	Z-A.27	CH_3
A'.19	Z-A.28	CH_3
A'.20	Z-B.10	CH_3
A'.21	Z-B.11	CH_3
A'.22	Z-B.12	CH_3
A'.23	Z-B.13	CH_3
A'.24	Z-B.14	CH_3
A'.25	Z-B.15	CH_3
A'.26	Z-B.16	CH_3
A'.27	Z-B.17	CH_3
A'.28	Z-B.18	CH_3
A'.29	Z-B.19	CH_3
A'.30	Z-B.20	CH_3
A'.31	Z-B.21	CH_3
A'.32	Z-B.22	CH_3
A'.33	Z-B.23	CH_3
A'.34	Z-B.24	CH_3
A'.35	Z-B.25	CH_3
A'.36	Z-B.26	CH_3
A'.37	Z-B.27	CH_3
A'.38	Z-B.28	CH_3
A'.39	Z-C.10	CH_3
A'.40	Z-C.11	CH_3
A'.41	Z-C.12	CH_3
A'.42	Z-C.13	CH_3
A'.43	Z-C.14	CH_3
A'.44	Z-C.15	CH_3
A'.45	Z-C.16	CH_3
A'.46	Z-C.17	CH_3
A'.47	Z-C.18	CH_3
A'.48	Z-C.19	CH_3
A'.49	Z-C.20	CH_3
A'.50	Z-C.21	CH_3
A'.51	Z-C.22	CH_3
A'.52	Z-C.23	CH_3
A'.53	Z-C.24	CH_3
A'.54	Z-C.25	CH_3
A'.55	Z-C.26	CH_3
A'.56	Z-C.27	CH_3
A'.57	Z-C.28	CH_3
A'.58	Z-C.29	CH_3
A'.59	Z-C.30	CH_3
A'.60	Z-C.31	CH_3
A'.61	Z-Bb.10	CH_3

A'.62	Z-Bb.11	CH_3
A'.63	Z-Bb.12	CH_3
A'.64	Z-Bb.13	CH_3
A'.65	Z-Bb.14	CH_3
A'.66	Z-Bb.15	CH_3
A'.67	Z-Bb.16	CH_3
A'.68	Z-Bb.17	CH_3
A'.69	Z-Bb.18	CH_3
A'.70	Z-Bb.19	CH_3
A'.71	Z-Bb.20	CH_3
A'.72	Z-Bb.21	CH_3
A'.73	Z-Bb.22	CH_3
A'.74	Z-Bb.23	CH_3
A'.75	Z-Bb.24	CH_3
A'.76	Z-Bb.25	CH_3
A'.77	Z-Bb.26	CH_3
A'.78	Z-Bb.27	CH_3
A'.79	Z-Bb.28	CH_3
A'.80	Z-Bc.10	CH_3
A'.81	Z-Bc.11	CH_3
A'.82	Z-Bc.12	CH_3
A'.83	Z-Bc.13	CH_3
A'.84	Z-Bc.14	CH_3
A'.85	Z-Bc.15	CH_3
A'.86	Z-Bc.16	CH_3
A'.87	Z-Bc.17	CH_3
A'.88	Z-Bc.18	CH_3
A'.89	Z-Bc.19	CH_3
A'.90	Z-Bc.20	CH_3
A'.91	Z-Bc.21	CH_3
A'.92	Z-Bc.22	CH_3
A'.93	Z-Bc.23	CH_3
A'.94	Z-Bc.24	CH_3
A'.95	Z-Bc.25	CH_3
A'.96	Z-Bc.26	CH_3
A'.97	Z-Bc.27	CH_3
A'.98	Z-Bc.28	CH_3
A'.99	Z-Cb.10	CH_3

A'.100	Z-Cb.11	CH_3
A'.101	Z-Cb.12	CH_3
A'.102	Z-Cb.13	CH_3
A'.103	Z-Cb.14	CH_3
A'.104	Z-Cb.15	CH_3
A'.105	Z-Cb.16	CH_3
A'.106	Z-Cb.17	CH_3
A'.107	Z-Cb.18	CH_3
A'.108	Z-Cb.19	CH_3
A'.109	Z-Cb.20	CH_3
A'.110	Z-Cb.21	CH_3
A'.111	Z-Cb.22	CH_3
A'.112	Z-Cb.23	CH_3
A'.113	Z-Cb.24	CH_3
A'.114	Z-Cb.25	CH_3
A'.115	Z-Cb.26	CH_3
A'.116	Z-Cb.27	CH_3
A'.117	Z-Cb.28	CH_3
A'.118	Z-Cb.29	CH_3
A'.119	Z-Cb.30	CH_3
A'.120	Z-Cb.31	CH_3
A'.121	Z-Cc.10	CH_3
A'.122	Z-Cc.11	CH_3
A'.123	Z-Cc.12	CH_3
A'.124	Z-Cc.13	CH_3
A'.125	Z-Cc.14	CH_3
A'.126	Z-Cc.15	CH_3
A'.127	Z-Cc.16	CH_3
A'.128	Z-Cc.17	CH_3
A'.129	Z-Cc.18	CH_3
A'.130	Z-Cc.19	CH_3
A'.131	Z-Cc.20	CH_3
A'.132	Z-Cc.21	CH_3
A'.133	Z-Cc.22	CH_3
A'.134	Z-Cc.23	CH_3
A'.135	Z-Cc.24	CH_3
A'.136	Z-Cc.25	CH_3
A'.137	Z-Cc.26	CH_3

A'.138	Z-Cc.27	CH_3
A'.139	Z-Cc.28	CH_3
A'.140	Z-Cc.29	CH_3
A'.141	Z-Cc.30	CH_3
A'.142	Z-Cc.31	CH_3
A'.143	Z-A.10	cycPr
A'.144	Z-A.11	cycPr
A'.145	Z-A.12	cycPr
A'.146	Z-A.13	cycPr
A'.147	Z-A.14	cycPr
A'.148	Z-A.15	cycPr
A'.149	Z-A.16	cycPr
A'.150	Z-A.17	cycPr
A'.151	Z-A.18	cycPr
A'.152	Z-A.19	cycPr
A'.153	Z-A.20	cycPr
A'.154	Z-A.21	cycPr
A'.155	Z-A.22	cycPr
A'.156	Z-A.23	cycPr
A'.157	Z-A.-24	cycPr
A'.158	Z-A.25	cycPr
A'.159	Z-A.26	cycPr
A'.160	Z-A.27	cycPr
A'.161	Z-A.28	cycPr
A'.162	Z-B.10	cycPr
A'.163	Z-B.11	cycPr
A'.164	Z-B.12	cycPr
A'.165	Z-B.13	cycPr
A'.166	Z-B.14	cycPr
A'.167	Z-B.15	cycPr
A'.168	Z-B.16	cycPr
A'.169	Z-B.17	cycPr
A'.170	Z-B.18	cycPr
A'.171	Z-B.19	cycPr
A'.172	Z-B.20	cycPr
A'.173	Z-B.21	cycPr
A'.174	Z-B.22	cycPr
A'.175	Z-B.23	cycPr

A'.176	Z-B.24	cycPr
A'.177	Z-B.25	cycPr
A'.178	Z-B.26	cycPr
A'.179	Z-B.27	cycPr
A'.180	Z-B.28	cycPr
A'.181	Z-C.10	cycPr
A'.182	Z-C.11	cycPr
A'.183	Z-C.12	cycPr
A'.184	Z-C.13	cycPr
A'.185	Z-C.14	cycPr
A'.186	Z-C.15	cycPr
A'.187	Z-C.16	cycPr
A'.188	Z-C.17	cycPr
A'.189	Z-C.18	cycPr
A'.190	Z-C.19	cycPr
A'.191	Z-C.20	cycPr
A'.192	Z-C.21	cycPr
A'.193	Z-C.22	cycPr
A'.194	Z-C.23	cycPr
A'.195	Z-C.24	cycPr
A'.196	Z-C.25	cycPr
A'.197	Z-C.26	cycPr
A'.198	Z-C.27	cycPr
A'.199	Z-C.28	cycPr
A'.200	Z-C.29	cycPr
A'.201	Z-C.30	cycPr
A'.202	Z-C.31	cycPr
A'.203	Z-Bb.10	cycPr
A'.204	Z-Bb.11	cycPr
A'.205	Z-Bb.12	cycPr
A'.206	Z-Bb.13	cycPr
A'.207	Z-Bb.14	cycPr
A'.208	Z-Bb.15	cycPr
A'.209	Z-Bb.16	cycPr
A'.210	Z-Bb.17	cycPr
A'.211	Z-Bb.18	cycPr
A'.212	Z-Bb.19	cycPr
A'.213	Z-Bb.20	cycPr

A'.214	Z-Bb.21	cycPr
A'.215	Z-Bb.22	cycPr
A'.216	Z-Bb.23	cycPr
A'.217	Z-Bb.24	cycPr
A'.218	Z-Bb.25	cycPr
A'.219	Z-Bb.26	cycPr
A'.220	Z-Bb.27	cycPr
A'.221	Z-Bb.28	cycPr
A'.222	Z-Bc.10	cycPr
A'.223	Z-Bc.11	cycPr
A'.224	Z-Bc.12	cycPr
A'.225	Z-Bc.13	cycPr
A'.226	Z-Bc.14	cycPr
A'.227	Z-Bc.15	cycPr
A'.228	Z-Bc.16	cycPr
A'.229	Z-Bc.17	cycPr
A'.230	Z-Bc.18	cycPr
A'.231	Z-Bc.19	cycPr
A'.232	Z-Bc.20	cycPr
A'.233	Z-Bc.21	cycPr
A'.234	Z-Bc.22	cycPr
A'.235	Z-Bc.23	cycPr
A'.236	Z-Bc.24	cycPr
A'.237	Z-Bc.25	cycPr
A'.238	Z-Bc.26	cycPr
A'.239	Z-Bc.27	cycPr
A'.240	Z-Bc.28	cycPr
A'.241	Z-Cb.10	cycPr
A'.242	Z-Cb.11	cycPr
A'.243	Z-Cb.12	cycPr
A'.244	Z-Cb.13	cycPr
A'.245	Z-Cb.14	cycPr
A'.246	Z-Cb.15	cycPr
A'.247	Z-Cb.16	cycPr
A'.248	Z-Cb.17	cycPr
A'.249	Z-Cb.18	cycPr
A'.250	Z-Cb.19	cycPr
A'.251	Z-Cb.20	cycPr

A'.252	Z-Cb.21	cycPr
A'.253	Z-Cb.22	cycPr
A'.254	Z-Cb.23	cycPr
A'.255	Z-Cb.24	cycPr
A'.256	Z-Cb.25	cycPr
A'.257	Z-Cb.26	cycPr
A'.258	Z-Cb.27	cycPr
A'.259	Z-Cb.28	cycPr
A'.260	Z-Cb.29	cycPr
A'.261	Z-Cb.30	cycPr
A'.262	Z-Cb.31	cycPr
A'.263	Z-Cc.10	cycPr
A'.264	Z-Cc.11	cycPr
A'.265	Z-Cc.12	cycPr
A'.266	Z-Cc.13	cycPr
A'.267	Z-Cc.14	cycPr
A'.268	Z-Cc.15	cycPr
A'.269	Z-Cc.16	cycPr
A'.270	Z-Cc.17	cycPr
A'.271	Z-Cc.18	cycPr
A'.272	Z-Cc.19	cycPr
A'.273	Z-Cc.20	cycPr
A'.274	Z-Cc.21	cycPr
A'.275	Z-Cc.22	cycPr
A'.276	Z-Cc.23	cycPr
A'.277	Z-Cc.24	cycPr
A'.278	Z-Cc.25	cycPr
A'.279	Z-Cc.26	cycPr
A'.280	Z-Cc.27	cycPr
A'.281	Z-Cc.28	cycPr
A'.282	Z-Cc.29	cycPr
A'.283	Z-Cc.30	cycPr
A'.284	Z-Cc.31	cycPr
A'.285	Z-A.10	CHF_2
A'.286	Z-A.11	CHF_2
A'.287	Z-A.12	CHF_2
A'.288	Z-A.13	CHF_2
A'.289	Z-A.14	CHF_2

A'.290	Z-A.15	CHF_2
A'.291	Z-A.16	CHF_2
A'.292	Z-A.17	CHF_2
A'.293	Z-A.18	CHF_2
A'.294	Z-A.19	CHF_2
A'.295	Z-A.20	CHF_2
A'.296	Z-A.21	CHF_2
A'.297	Z-A.22	CHF_2
A'.298	Z-A.23	CHF_2
A'.299	Z-A.-24	CHF_2
A'.300	Z-A.25	CHF_2
A'.301	Z-A.26	CHF_2
A'.302	Z-A.27	CHF_2
A'.303	Z-A.28	CHF_2
A'.304	Z-B.10	CHF_2
A'.305	Z-B.11	CHF_2
A'.306	Z-B.12	CHF_2
A'.307	Z-B.13	CHF_2
A'.308	Z-B.14	CHF_2
A'.309	Z-B.15	CHF_2
A'.310	Z-B.16	CHF_2
A'.311	Z-B.17	CHF_2
A'.312	Z-B.18	CHF_2
A'.313	Z-B.19	CHF_2
A'.314	Z-B.20	CHF_2
A'.315	Z-B.21	CHF_2
A'.316	Z-B.22	CHF_2
A'.317	Z-B.23	CHF_2
A'.318	Z-B.24	CHF_2
A'.319	Z-B.25	CHF_2
A'.320	Z-B.26	CHF_2
A'.321	Z-B.27	CHF_2
A'.322	Z-B.28	CHF_2
A'.323	Z-C.10	CHF_2
A'.324	Z-C.11	CHF_2
A'.325	Z-C.12	CHF_2
A'.326	Z-C.13	CHF_2
A'.327	Z-C.14	CHF_2

A'.328	Z-C.15	CHF_2
A'.329	Z-C.16	CHF_2
A'.330	Z-C.17	CHF_2
A'.331	Z-C.18	CHF_2
A'.332	Z-C.19	CHF_2
A'.333	Z-C.20	CHF_2
A'.334	Z-C.21	CHF_2
A'.335	Z-C.22	CHF_2
A'.336	Z-C.23	CHF_2
A'.337	Z-C.24	CHF_2
A'.338	Z-C.25	CHF_2
A'.339	Z-C.26	CHF_2
A'.340	Z-C.27	CHF_2
A'.341	Z-C.28	CHF_2
A'.342	Z-C.29	CHF_2
A'.343	Z-C.30	CHF_2
A'.344	Z-C.31	CHF_2
A'.345	Z-Bb.10	CHF_2
A'.346	Z-Bb.11	CHF_2
A'.347	Z-Bb.12	CHF_2
A'.348	Z-Bb.13	CHF_2
A'.349	Z-Bb.14	CHF_2
A'.350	Z-Bb.15	CHF_2
A'.351	Z-Bb.16	CHF_2
A'.352	Z-Bb.17	CHF_2
A'.353	Z-Bb.18	CHF_2
A'.354	Z-Bb.19	CHF_2
A'.355	Z-Bb.20	CHF_2
A'.356	Z-Bb.21	CHF_2
A'.357	Z-Bb.22	CHF_2
A'.358	Z-Bb.23	CHF_2
A'.359	Z-Bb.24	CHF_2
A'.360	Z-Bb.25	CHF_2
A'.361	Z-Bb.26	CHF_2
A'.362	Z-Bb.27	CHF_2
A'.363	Z-Bb.28	CHF_2
A'.364	Z-Bc.10	CHF_2
A'.365	Z-Bc.11	CHF_2

A'.366	Z-Bc.12	CHF_2
A'.367	Z-Bc.13	CHF_2
A'.368	Z-Bc.14	CHF_2
A'.369	Z-Bc.15	CHF_2
A'.370	Z-Bc.16	CHF_2
A'.371	Z-Bc.17	CHF_2
A'.372	Z-Bc.18	CHF_2
A'.373	Z-Bc.19	CHF_2
A'.374	Z-Bc.20	CHF_2
A'.375	Z-Bc.21	CHF_2
A'.376	Z-Bc.22	CHF_2
A'.377	Z-Bc.23	CHF_2
A'.378	Z-Bc.24	CHF_2
A'.379	Z-Bc.25	CHF_2
A'.380	Z-Bc.26	CHF_2
A'.381	Z-Bc.27	CHF_2
A'.382	Z-Bc.28	CHF_2
A'.383	Z-Cb.10	CHF_2
A'.384	Z-Cb.11	CHF_2
A'.385	Z-Cb.12	CHF_2
A'.386	Z-Cb.13	CHF_2
A'.387	Z-Cb.14	CHF_2
A'.388	Z-Cb.15	CHF_2
A'.389	Z-Cb.16	CHF_2
A'.390	Z-Cb.17	CHF_2
A'.391	Z-Cb.18	CHF_2
A'.392	Z-Cb.19	CHF_2
A'.393	Z-Cb.20	CHF_2
A'.394	Z-Cb.21	CHF_2
A'.395	Z-Cb.22	CHF_2
A'.396	Z-Cb.23	CHF_2
A'.397	Z-Cb.24	CHF_2
A'.398	Z-Cb.25	CHF_2
A'.399	Z-Cb.26	CHF_2
A'.400	Z-Cb.27	CHF_2
A'.401	Z-Cb.28	CHF_2
A'.402	Z-Cb.29	CHF_2
A'.403	Z-Cb.30	CHF_2

A'.404	Z-Cb.31	CHF_2
A'.405	Z-Cc.10	CHF_2
A'.406	Z-Cc.11	CHF_2
A'.407	Z-Cc.12	CHF_2
A'.408	Z-Cc.13	CHF_2
A'.409	Z-Cc.14	CHF_2
A'.410	Z-Cc.15	CHF_2
A'.411	Z-Cc.16	CHF_2
A'.412	Z-Cc.17	CHF_2
A'.413	Z-Cc.18	CHF_2
A'.414	Z-Cc.19	CHF_2
A'.415	Z-Cc.20	CHF_2
A'.416	Z-Cc.21	CHF_2
A'.417	Z-Cc.22	CHF_2
A'.418	Z-Cc.23	CHF_2
A'.419	Z-Cc.24	CHF_2
A'.420	Z-Cc.25	CHF_2
A'.421	Z-Cc.26	CHF_2
A'.422	Z-Cc.27	CHF_2
A'.423	Z-Cc.28	CHF_2
A'.424	Z-Cc.29	CHF_2
A'.425	Z-Cc.30	CHF_2
A'.426	Z-Cc.31	CHF_2
A'.427	Z-A.10	CF_3
A'.428	Z-A.11	CF_3
A'.429	Z-A.12	CF_3
A'.430	Z-A.13	CF_3
A'.431	Z-A.14	CF_3
A'.432	Z-A.15	CF_3
A'.433	Z-A.16	CF_3
A'.434	Z-A.17	CF_3
A'.435	Z-A.18	CF_3
A'.436	Z-A.19	CF_3
A'.437	Z-A.20	CF_3
A'.438	Z-A.21	CF_3
A'.439	Z-A.22	CF_3
A'.440	Z-A.23	CF_3
A'.441	Z-A.-24	CF_3

A'.442	Z-A.25	CF_3
A'.443	Z-A.26	CF_3
A'.444	Z-A.27	CF_3
A'.445	Z-A.28	CF_3
A'.446	Z-B.10	CF_3
A'.447	Z-B.11	CF_3
A'.448	Z-B.12	CF_3
A'.449	Z-B.13	CF_3
A'.450	Z-B.14	CF_3
A'.451	Z-B.15	CF_3
A'.452	Z-B.16	CF_3
A'.453	Z-B.17	CF_3
A'.454	Z-B.18	CF_3
A'.455	Z-B.19	CF_3
A'.456	Z-B.20	CF_3
A'.457	Z-B.21	CF_3
A'.458	Z-B.22	CF_3
A'.459	Z-B.23	CF_3
A'.460	Z-B.24	CF_3
A'.461	Z-B.25	CF_3
A'.462	Z-B.26	CF_3
A'.463	Z-B.27	CF_3
A'.464	Z-B.28	CF_3
A'.465	Z-C.10	CF_3
A'.466	Z-C.11	CF_3
A'.467	Z-C.12	CF_3
A'.468	Z-C.13	CF_3
A'.469	Z-C.14	CF_3
A'.470	Z-C.15	CF_3
A'.471	Z-C.16	CF_3
A'.472	Z-C.17	CF_3
A'.473	Z-C.18	CF_3
A'.474	Z-C.19	CF_3
A'.475	Z-C.20	CF_3
A'.476	Z-C.21	CF_3
A'.477	Z-C.22	CF_3
A'.478	Z-C.23	CF_3
A'.479	Z-C.24	CF_3

A'.480	Z-C.25	CF_3
A'.481	Z-C.26	CF_3
A'.482	Z-C.27	CF_3
A'.483	Z-C.28	CF_3
A'.484	Z-C.29	CF_3
A'.485	Z-C.30	CF_3
A'.486	Z-C.31	CF_3
A'.487	Z-Bb.10	CF_3
A'.488	Z-Bb.11	CF_3
A'.489	Z-Bb.12	CF_3
A'.490	Z-Bb.13	CF_3
A'.491	Z-Bb.14	CF_3
A'.492	Z-Bb.15	CF_3
A'.493	Z-Bb.16	CF_3
A'.494	Z-Bb.17	CF_3
A'.495	Z-Bb.18	CF_3
A'.496	Z-Bb.19	CF_3
A'.497	Z-Bb.20	CF_3
A'.498	Z-Bb.21	CF_3
A'.499	Z-Bb.22	CF_3
A'.500	Z-Bb.23	CF_3
A'.501	Z-Bb.24	CF_3
A'.502	Z-Bb.25	CF_3
A'.503	Z-Bb.26	CF_3
A'.504	Z-Bb.27	CF_3
A'.505	Z-Bb.28	CF_3
A'.506	Z-Bc.10	CF_3
A'.507	Z-Bc.11	CF_3
A'.508	Z-Bc.12	CF_3
A'.509	Z-Bc.13	CF_3
A'.510	Z-Bc.14	CF_3
A'.511	Z-Bc.15	CF_3
A'.512	Z-Bc.16	CF_3
A'.513	Z-Bc.17	CF_3
A'.514	Z-Bc.18	CF_3
A'.515	Z-Bc.19	CF_3
A'.516	Z-Bc.20	CF_3
A'.517	Z-Bc.21	CF_3

A'.518	Z-Bc.22	CF_3
A'.519	Z-Bc.23	CF_3
A'.520	Z-Bc.24	CF_3
A'.521	Z-Bc.25	CF_3
A'.522	Z-Bc.26	CF_3
A'.523	Z-Bc.27	CF_3
A'.524	Z-Bc.28	CF_3
A'.525	Z-Cb.10	CF_3
A'.526	Z-Cb.11	CF_3
A'.527	Z-Cb.12	CF_3
A'.528	Z-Cb.13	CF_3
A'.529	Z-Cb.14	CF_3
A'.530	Z-Cb.15	CF_3
A'.531	Z-Cb.16	CF_3
A'.532	Z-Cb.17	CF_3
A'.533	Z-Cb.18	CF_3
A'.534	Z-Cb.19	CF_3
A'.535	Z-Cb.20	CF_3
A'.536	Z-Cb.21	CF_3
A'.537	Z-Cb.22	CF_3
A'.538	Z-Cb.23	CF_3
A'.539	Z-Cb.24	CF_3
A'.540	Z-Cb.25	CF_3
A'.541	Z-Cb.26	CF_3
A'.542	Z-Cb.27	CF_3
A'.543	Z-Cb.28	CF_3

A'.544	Z-Cb.29	CF_3
A'.545	Z-Cb.30	CF_3
A'.546	Z-Cb.31	CF_3
A'.547	Z-Cc.10	CF_3
A'.548	Z-Cc.11	CF_3
A'.549	Z-Cc.12	CF_3
A'.550	Z-Cc.13	CF_3
A'.551	Z-Cc.14	CF_3
A'.552	Z-Cc.15	CF_3
A'.553	Z-Cc.16	CF_3
A'.554	Z-Cc.17	CF_3
A'.555	Z-Cc.18	CF_3
A'.556	Z-Cc.19	CF_3
A'.557	Z-Cc.20	CF_3
A'.558	Z-Cc.21	CF_3
A'.559	Z-Cc.22	CF_3
A'.560	Z-Cc.23	CF_3
A'.561	Z-Cc.24	CF_3
A'.562	Z-Cc.25	CF_3
A'.563	Z-Cc.26	CF_3
A'.564	Z-Cc.27	CF_3
A'.565	Z-Cc.28	CF_3
A'.566	Z-Cc.29	CF_3
A'.567	Z-Cc.30	CF_3
A'.568	Z-Cc.31	CF_3

The abbreviation cycPr in the above table A' respresents a cylcopropyl radical.

A preferred embodiment of the present invention relates to compounds of the formula I' and to their stereoisomers, salts, tautomers and N-oxides, wherein

$R^{1'}$ is selected from Z^a, $CH_n(CH_3)_{2-n}$-Z^a and $CH_n(CH_3)_{2-n}$-CH_2-Z^c, wherein n is 0, 1 or 2, and Z^c is Z^a or Z^b, where Z^a and Z^b have the herein defined meanings, preferably Z^a is Z2', Z3', Z4', Z5', Z6' or Z7' which are as defined herein, and Z^b is Z8, Z9 or Z10 which are as defined herein; and in particular $R^{1'}$ is selected from the radicals Z-A.10, Z-A.11, Z-A.12, Z-A.13, Z-A.14, Z-A.15, Z-A.16, Z-A.17, Z-A.18, Z-A.19, Z-A.20, Z-A.21, Z-A.22, Z-A.23, Z-A.24, Z-A.25, Z-A.26, Z-A.27, Z-A.28, Z-

B.10, Z-B.11, Z-B.12, Z-B.13, Z-B.14, Z-B.15, Z-B.16, Z-B.17, Z-B.18, Z-B.19, Z-B.20, Z-B.21, Z-B.22, Z-B.23, Z-B.24, Z-B.25, Z-B.26, Z-B.27, Z-B.28, Z-C.10, Z-C.11, Z-C.12, Z-C.13, Z-C.14, Z-C.15, Z-C.16, Z-C.17, Z-C.18, Z-C.19, Z-C.20, Z-C.21, Z-C.22, Z-C.23, Z-C.24, Z-C.25, Z-C.26, Z-C.27, Z-C.28, Z-C.29, Z-C.30, Z-C.31, Z-Bb.10, Z-Bb.11, Z-Bb.12, Z-Bb.13, Z-Bb.14, Z-Bb.15, Z-Bb.16, Z-Bb.17, Z-Bb.18, Z-Bb.19, Z-Bb.20, Z-Bb.21, Z-Bb.22, Z-Bb.23, Z-Bb.24, Z-Bb.25, Z-Bb.26, Z-Bb.27, Z-Bb.28, Z-Bc.10, Z-Bc.11, Z-Bc.12, Z-Bc.13, Z-Bc.14, Z-Bc.15, Z-Bc.16, Z-Bc.17, Z-Bc.18, Z-Bc.19, Z-Bc.20, Z-Bc.21, Z-Bc.22, Z-Bc.23, Z-Bc.24, Z-Bc.25, Z-Bc.26, Z-Bc.27, Z-Bc.28, Z-Cb.10, Z-Cb.11, Z-Cb.12, Z-Cb.13, Z-Cb.14, Z-Cb.15, Z-Cb.16, Z-Cb.17, Z-Cb.18, Z-Cb.19, Z-Cb.20, Z-Cb.21, Z-Cb.22, Z-Cb.23, Z-Cb.24, Z-Cb.25, Z-Cb.26, Z-Cb.27, Z-Cb.28, Z-Cb.29, Z-Cb.30, Z-Cb.31, Z-Cc.10, Z-Cc.11, Z-Cc.12, Z-Cc.13, Z-Cc.14, Z-Cc.15, Z-Cc.16, Z-Cc.17, Z-Cc.18, Z-Cc.19, Z-Cc.20, Z-Cc.21, Z-Cc.22, Z-Cc.23, Z-Cc.24, Z-Cc.25, Z-Cc.26, Z-Cc.27, Z-Cc.28, Z-Cc.29, Z-Cc.30 and Z-Cc.31 as defined herein;

R^2 is selected from C_1-C_2-alkyl, fluorinated C_1-C_2-alkyl and C_3-C_6-cycloalkyl, and in particular R^2 is methyl, cyclopropyl, CHF_2 or CF_3;

$R^{3'}$ is selected from selected from hydrogen, C_1-C_4-alkyl and C_1-C_3-alkoxy-C_1-C_3-alkyl, and in particular $R^{3'}$ is hydrogen, methyl, ethyl, methoxymethyl or ethoxymethyl;

W is CH or N; and

X is O or S.

Examples of compounds of this preferred embodiment are the compounds as defined in the following tables 373 to 387.

Table 373: Compounds of the formula I' and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A' is a radical selected from radicals A'.1 to A'.568 and $R^{3'}$ is hydrogen.

Table 374: Compounds of the formula I' and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A' is a radical selected from radicals A'.1 to A'.568 and $R^{3'}$ is methyl.

Table 375: Compounds of the formula I' and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A' is a radical selected from radicals A'.1 to A'.568 and $R^{3'}$ is ethyl.

Table 376: Compounds of the formula I' and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A' is a radical selected from radicals A'.1 to A'.568 and $R^{3'}$ is methoxymethyl.

Table 377: Compounds of the formula I' and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is CH, A' is a radical selected from radicals A'.1 to A'.568 and $R^{3'}$ is ethoxymethyl.

Tables 378 to 382: Compounds of the formula I' corresponding to compounds according to tables 373 to 377, with the exception that X is S.

Table 383: Compounds of the formula I' and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A' is a radical selected from radicals A'.1 to A'.568 and $R^{3'}$ is hydrogen.

Table 384: Compounds of the formula I' and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A' is a radical selected from radicals A'.1 to A'.568 and $R^{3'}$ is methyl.

Table 385: Compounds of the formula I' and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A' is a radical selected from radicals A'.1 to A'.568 and $R^{3'}$ is ethyl.

Table 386: Compounds of the formula I' and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A' is a radical selected from radicals A'.1 to A'.568 and $R^{3'}$ is methoxymethyl.

Table 387: Compounds of the formula I' and the stereoisomers, salts, tautomers or N-oxide thereof, wherein X is O, W is N, A' is a radical selected from radicals A'.1 to A'.568 and $R^{3'}$ is ethoxymethyl.

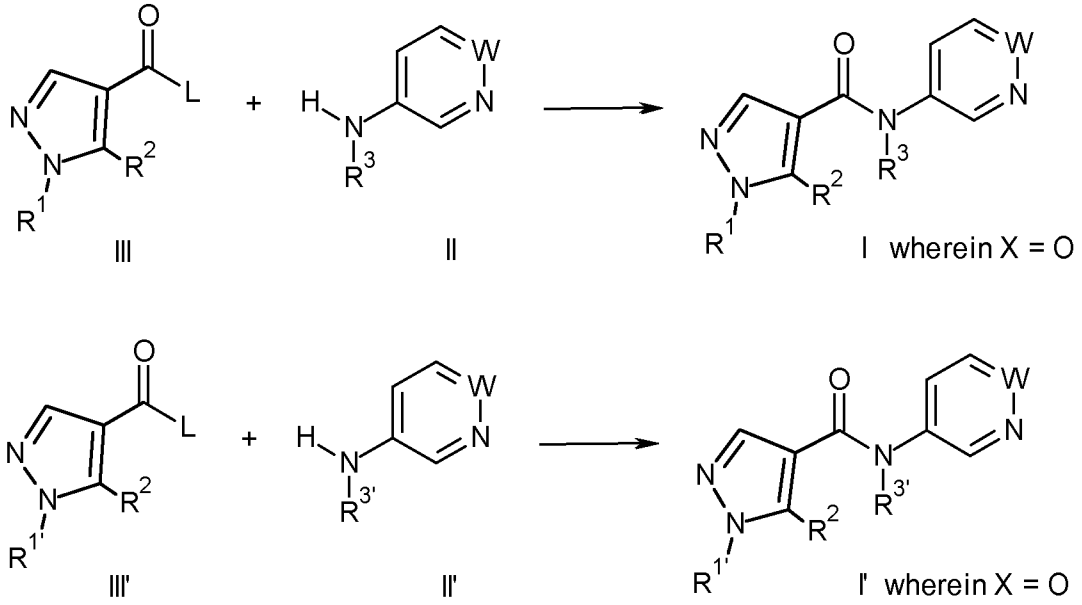
Tables 383 to 387: Compounds of the formula I' corresponding to compounds according to tables 378 to 382, with the exception that X is S.

The compounds of the formulae I or I' can be prepared analogously to the synthesis

routes described in WO 2009/027393 and WO 2010/034737 according to standard processes of organic chemistry, for example according to the following synthesis routes:

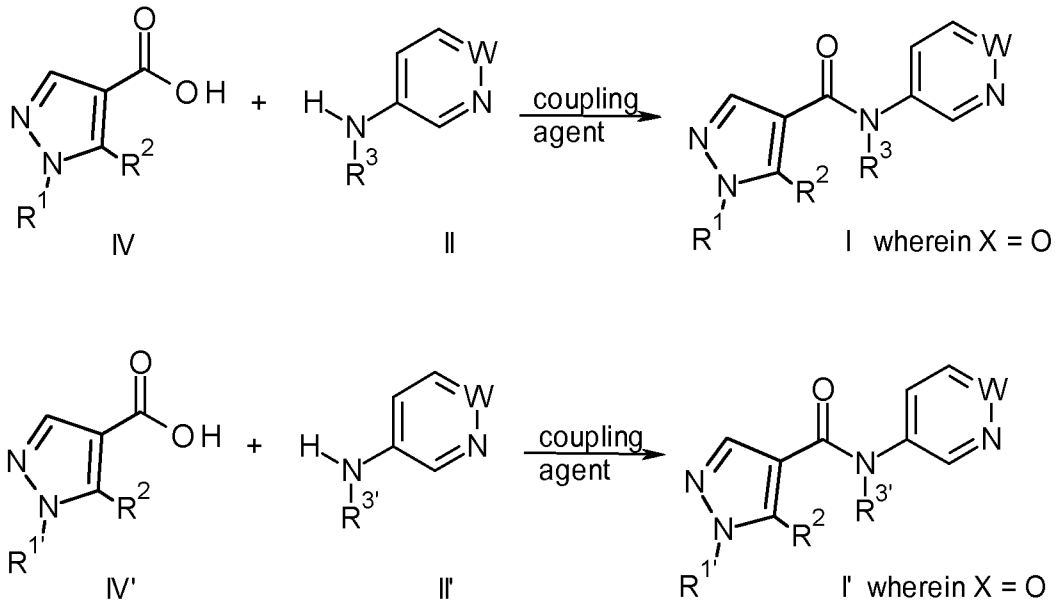
The compounds of the formulae I or I', wherein X is O, can be prepared e.g. according to the method depicted in scheme 1 by reacting activated pyrazole carboxylic acid derivative III or III' with a 3-aminopyridine or 3-aminopyridazine compound II or II' (see e.g. Houben-Weyl: "Methoden der organ. Chemie" [Methods of Organic Chemistry], Georg-Thieme-Verlag, Stuttgart, New York 1985, Volume E5, pp. 941-1045). Activated pyrazole carboxylic acid derivatives III or III' are, for example, halides, activated esters, anhydrides, azides, for example chlorides, fluorides, bromides, para-nitrophenyl esters, pentafluorophenyl esters, N-hydroxysuccinimides, hydroxybenzotriazol-1-yl esters. In scheme 1, the radicals W, R^1, $R^{1'}$, R^2, R^3 and $R^{3'}$ have the meanings given herein and in particular the meanings given as being preferred, L is a suitable leaving group such as halogen, N_3, para-nitrophenoxy or pentafluorophenoxy etc.

Scheme 1:



The active compounds of the formulae I or I', wherein X is O, can also be prepared, for example, by reacting the pyrazole carboxylic acid IV or IV' with a 3-aminopyridine or 3-aminopyridazine compound II or II' in the presence of a coupling agent according to scheme 2. In scheme 2, the radicals W, R^1, $R^{1'}$, R^2, R^3 and $R^{3'}$ have the meanings given above and in particular the meanings given as being preferred.

Scheme 2:



IV II I wherein X = O

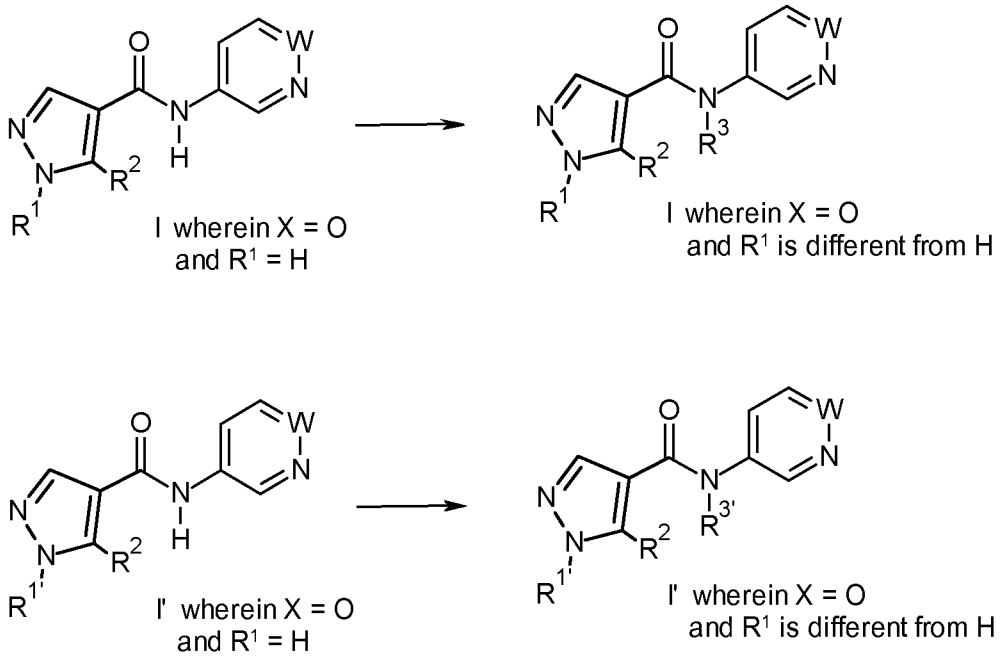
IV' II' I' wherein X = O

Suitable coupling agents are, for example:

- coupling agents based on carbodiimides, for example N,N'-dicyclohexyl-carbodiimide [J.C. Sheehan, G.P. Hess, J. Am. Chem. Soc. 1955, 77, 1067], N-(3-dimethylaminopropyl)-N'-ethylcarbodiimide;
- coupling agents which form mixed anhydrides with carbonic esters, for example 2-ethoxy-1-ethoxycarbonyl-1,2-dihydroquinoline [B. Belleau, G. Malek, J. Amer. Chem. Soc. 1968, 90, 1651], 2-isobutyloxy-1-isobutyloxycarbonyl-1,2-dihydroquinoline [Y. Kiso, H. Yajima, J. Chem. Soc., Chem. Commun. 1972, 942];
- coupling agents based on phosphonium salts, for example (benzotriazol-1-yloxy)tris(dimethylamino)phosphonium hexafluorophosphate [B. Castro, J.R. Domoy, G. Evin, C. Selve, Tetrahedron Lett. 1975, 14, 1219], (benzotriazol-1-yl-oxy)tripyrrolidinophosphonium hexafluorophosphate [J. Coste et al., Tetrahedron Lett. 1990, 31, 205];
- coupling agents based on uronium salts or having a guanidinium N-oxide structure, for example N,N,N',N'-tetramethyl-O-(1H-benzotriazol-1-yl)uronium hexafluoro-phosphate [R. Knorr, A. Trzeciak, W. Bannwarth, D. Gillessen, Tetrahedron Lett. 1989, 30, 1927], N,N,N',N'-tetramethyl-O-(benzotriazol-1-yl)uronium tetrafluorobo-rate, (benzotriazol-1-yloxy)dipiperidinocarbenium hexafluorophosphate [S. Chen, J. Xu, Tetrahedron Lett. 1992, 33, 647];
- coupling agents which form acid chlorides, for example bis-(2-oxo-oxazolidinyl)phosphinic chloride [J. Diago-Mesequer, Synthesis 1980, 547].

Compounds of formulae I or I' wherein X is O and R^3 or $R^{3'}$ is different from hydrogen can also be prepared by alkylating the amides I or I' (in which R^3 or $R^{3'}$ is hydrogen and which can be obtained according to schemes 1 or 2) using suitable alkylating agents in the presence of bases.

Scheme 3:



The pyrazole carboxylic acids IV and IV' and their activated derivatives III and III' as well as 3-aminopyridine or 3-aminopyridazine compounds II and II' are known in the art or are commercially available or can be prepared by methods known from the literature.

A compound of the formulae I or I', wherein X is S, can be prepared e.g. by reacting the corresponding compound of formulae I or I', wherein X is oxygen with 2,4-bis(4-methoxyphenyl)-1,3,2,4-dithiadiphosphetane-2,4-disulfide or phorphorus pentasulfide according to the method described by M. Jesberger et al. in Synthesis 2003, 1929.

The N-oxides of compounds of the formulae I or I' can be prepared by oxidation of compounds I or I', respectively, according to standard methods of preparing pyridine N-oxides, e.g. by the method described by C. Botteghi et al. in Journal of Organometallic Chemistry 1989, 370, 17-31.

As a rule, the compounds of the formulae I or I' can be prepared by the methods described above. If individual compounds can not be prepared via the above-described routes, they can be prepared by derivatization of other compounds of formulae I or I', or by customary modifications of the synthesis routes described. For example, in individual cases, certain compounds of formulae I or I' can advantageously be prepared from other compounds of formulae I or I', e.g. by ester hydrolysis, amidation, esterification,

ether cleavage, olefination, reduction, oxidation and the like.

The reaction mixtures are worked up in the customary manner, for example by mixing with water, separating the phases, and, if appropriate, purifying the crude products by chromatography, for example on alumina or on silica gel. Some of the intermediates and end products may be obtained in the form of colorless or pale brown viscous oils which are freed or purified from volatile components under reduced pressure and at moderately elevated temperature. If the intermediates and end products are obtained as solids, they may be purified by recrystallization or trituration.

Due to their excellent activity, the compounds of the present invention may be used for controlling invertebrate pests.

Accordingly, the present invention also provides a method for controlling invertebrate pests which method comprises treating the pests, their food supply, their habitat or their breeding ground or a cultivated plant, plant propagation materials (such as seed), soil, area, material or environment in which the pests are growing or may grow, or the materials, cultivated plants, plant propagation materials (such as seed), soils, surfaces or spaces to be protected from pest attack or infestation with a pesticidally effective amount of a compound of the present invention or a composition as defined above.

Preferably, the method of the invention serves for protecting plant propagation material (such as seed) and the plant which grows therefrom from invertebrate pest attack or infestation and comprises treating the plant propagation material (such as seed) with a pesticidally effective amount of a compound of the present invention as defined above or with a pesticidally effective amount of an agricultural composition as defined above and below. The method of the invention is not limited to the protection of the "substrate" (plant, plant propagation materials, soil material etc.) which has been treated according to the invention, but also has a preventive effect, thus, for example, according protection to a plant which grows from a treated plant propagation materials (such as seed), the plant itself not having been treated.

In the sense of the present invention, "invertebrate pests" are preferably selected from arthropods and nematodes, more preferably from harmful insects, arachnids and nematodes, and even more preferably from insects, acarids and nematodes. In the sense of the present invention, "invertebrate pests" are most preferably insects.

The invention further provides an agricultural composition for combating invertebrate pests, which comprises such an amount of at least one compound according to the

invention and at least one inert liquid and/or solid agronomically acceptable carrier that has a pesticidal action and, if desired, at least one surfactant.
Such a composition may comprise a single active compound of the present invention or a mixture of several active compounds of the present invention. The composition according to the present invention may comprise an individual isomer or mixtures of isomers or a salt as well as individual tautomers or mixtures of tautomers.

The compounds of the present invention, including their stereoisomers, salts, tautomers and N-oxides, are in particular suitable for efficiently controlling arthropodal pests such as arachnids, myriapedes and insects as well as nematodes. They are especially suitable for efficiently combating or controlling the following pests:

Insects from the order of the lepidopterans (Lepidoptera), for example Agrotis ypsilon, Agrotis segetum, Alabama argillacea, Anticarsia gemmatalis, Argyresthia conjugella, Autographa gamma, Bupalus piniarius, Cacoecia murinana, Capua reticulana, Cheimatobia brumata, Choristoneura fumiferana, Choristoneura occidentalis, Cirphis unipuncta, Cydia pomonella, Dendrolimus pini, Diaphania nitidalis, Diatraea grandiosella, Earias insulana, Elasmopalpus lignosellus, Eupoecilia ambiguella, Evetria bouliana, Feltia subterranea, Galleria mellonella, Grapholitha funebrana, Grapholitha molesta, Heliothis armigera, Heliothis virescens, Heliothis zea, Hellula undalis, Hibernia defoliaria, Hyphantria cunea, Hyponomeuta malinellus, Keiferia lycopersicella, Lambdina fiscellaria, Laphygma exigua, Leucoptera coffeella, Leucoptera scitella, Lithocolletis blancardella, Lobesia botrana, Loxostege sticticalis, Lymantria dispar, Lymantria monacha, Lyonetia clerkella, Malacosoma neustria, Mamestra brassicae, Orgyia pseudotsugata, Ostrinia nubilalis, Panolis flammea, Pectinophora gossypiella, Peridroma saucia, Phalera bucephala, Phthorimaea operculella, Phyllocnistis citrella, Pieris brassicae, Plathypena scabra, Plutella xylostella, Pseudoplusia includens, Rhyacionia frustrana, Scrobipalpula absoluta, Sitotroga cerealella, Sparganothis pilleriana, Spodoptera frugiperda, Spodoptera littoralis, Spodoptera litura, Thaumatopoea pityocampa, Tortrix viridana, Trichoplusia ni and Zeiraphera canadensis;

beetles (Coleoptera), for example Agrilus sinuatus, Agriotes lineatus, Agriotes obscurus, Amphimallus solstitialis, Anisandrus dispar, Anthonomus grandis, Anthonomus pomorum, Aphthona euphoridae, Athous haemorrhoidalis, Atomaria linearis, Blastophagus piniperda, Blitophaga undata, Bruchus rufimanus, Bruchus pisorum, Bruchus lentis, Byctiscus betulae, Cassida nebulosa, Cerotoma trifurcata, Cetonia aurata, Ceuthorrhynchus assimilis, Ceuthorrhynchus napi, Chaetocnema tibialis, Conoderus vespertinus, Crioceris asparagi, Ctenicera ssp., Diabrotica longicornis, Diabrotica semipunctata, Diabrotica 12-punctata Diabrotica speciosa, Diabrotica virgifera, Epilachna

varivestis, Epitrix hirtipennis, Eutinobothrus brasiliensis, Hylobius abietis, Hypera brunneipennis, Hypera postica, Ips typographus, Lema bilineata, Lema melanopus, Leptinotarsa decemlineata, Limonius californicus, Lissorhoptrus oryzophilus, Melanotus communis, Meligethes aeneus, Melolontha hippocastani, Melolontha melolontha, Oulema oryzae, Otiorrhynchus sulcatus, Otiorrhynchus ovatus, Phaedon cochleariae, Phyllobius pyri, Phyllotreta chrysocephala, Phyllophaga sp., Phyllopertha horticola, Phyllotreta nemorum, Phyllotreta striolata, Popillia japonica, Sitona lineatus and Sitophilus granaria;

flies, mosquitoes (Diptera), e.g. Aedes aegypti, Aedes albopictus, Aedes vexans, Anastrepha ludens, Anopheles maculipennis, Anopheles crucians, Anopheles albimanus, Anopheles gambiae, Anopheles freeborni, Anopheles leucosphyrus, Anopheles minimus, Anopheles quadrimaculatus, Calliphora vicina, Ceratitis capitata, Chrysomya bezziana, Chrysomya hominivorax, Chrysomya macellaria, Chrysops discalis, Chrysops silacea, Chrysops atlanticus, Cochliomyia hominivorax, Contarinia sorghicola Cordylobia anthropophaga, Culicoides furens, Culex pipiens, Culex nigripalpus, Culex quinquefasciatus, Culex tarsalis, Culiseta inornata, Culiseta melanura, Dacus cucurbitae, Dacus oleae, Dasineura brassicae, Delia antique, Delia coarctata, Delia platura, Delia radicum, Dermatobia hominis, Fannia canicularis, Geomyza Tripunctata, Gasterophilus intestinalis, Glossina morsitans, Glossina palpalis, Glossina fuscipes, Glossina tachinoides, Haematobia irritans, Haplodiplosis equestris, Hippelates spp., Hylemyia platura, Hypoderma lineata, Leptoconops torrens, Liriomyza sativae, Liriomyza trifolii, Lucilia caprina, Lucilia cuprina, Lucilia sericata, Lycoria pectoralis, Mansonia titillanus, Mayetiola destructor, Musca autumnalis, Musca domestica, Muscina stabulans, Oestrus ovis, Opomyza florum, Oscinella frit, Pegomya hysocyami, Phorbia antiqua, Phorbia brassicae, Phorbia coarctata, Phlebotomus argentipes, Psorophora columbiae, Psila rosae, Psorophora discolor, Prosimulium mixtum, Rhagoletis cerasi, Rhagoletis pomonella, Sarcophaga haemorrhoidalis, Sarcophaga spp., Simulium vittatum, Stomoxys calcitrans, Tabanus bovinus, Tabanus atratus, Tabanus lineola, and Tabanus similis, Tipula oleracea, and Tipula paludosa;

thrips (Thysanoptera), e.g. Dichromothrips corbetti, Dichromothrips ssp., Frankliniella fusca, Frankliniella occidentalis, Frankliniella tritici, Scirtothrips citri, Thrips oryzae, Thrips palmi and Thrips tabaci,

termites (Isoptera), e.g. Calotermes flavicollis, Leucotermes flavipes, Heterotermes aureus, Reticulitermes flavipes, Reticulitermes virginicus, Reticulitermes lucifugus, Reticulitermes santonensis, Reticulitermes grassei, Termes natalensis, and Coptotermes formosanus;

cockroaches (Blattaria - Blattodea), e.g. Blattella germanica, Blattella asahinae, Periplaneta americana, Periplaneta japonica, Periplaneta brunnea, Periplaneta fuligginosa, Periplaneta australasiae, and Blatta orientalis;

bugs, aphids, leafhoppers, whiteflies, scale insects, cicadas (Hemiptera), e.g. Acrosternum hilare, Blissus leucopterus, Cyrtopeltis notatus, Dysdercus cingulatus, Dysdercus intermedius, Eurygaster integriceps, Euschistus impictiventris, Leptoglossus phyllopus, Lygus lineolaris, Lygus pratensis, Nezara viridula, Piesma quadrata, Solubea insularis, Thyanta perditor, Acyrthosiphon onobrychis, Adelges laricis, Aphidula nasturtii, Aphis fabae, Aphis forbesi, Aphis pomi, Aphis gossypii, Aphis grossulariae, Aphis schneideri, Aphis spiraecola, Aphis sambuci, Acyrthosiphon pisum, Aulacorthum solani, Bemisia argentifolii, Brachycaudus cardui, Brachycaudus helichrysi, Brachycaudus persicae, Brachycaudus prunicola, Brevicoryne brassicae, Capitophorus horni, Cerosipha gossypii, Chaetosiphon fragaefolii, Cryptomyzus ribis, Dreyfusia nordmannianae, Dreyfusia piceae, Dysaphis radicola, Dysaulacorthum pseudosolani, Dysaphis plantaginea, Dysaphis pyri, Empoasca fabae, Hyalopterus pruni, Hyperomyzus lactucae, Macrosiphum avenae, Macrosiphum euphorbiae, Macrosiphon rosae, Megoura viciae, Melanaphis pyrarius, Metopolophium dirhodum, Myzus persicae, Myzus ascalonicus, Myzus cerasi, Myzus varians, Nasonovia ribis-nigri, Nilaparvata lugens, Pemphigus bursarius, Perkinsiella saccharicida, Phorodon humuli, Psylla mali, Psylla piri, Rhopalomyzus ascalonicus, Rhopalosiphum maidis, Rhopalosiphum padi, Rhopalosiphum insertum, Sappaphis mala, Sappaphis mali, Schizaphis graminum, Schizoneura lanuginosa, Sitobion avenae, Trialeurodes vaporariorum, Toxoptera aurantiiand, Viteus vitifolii, Cimex lectularius, Cimex hemipterus, Reduvius senilis, Triatoma spp., and Arilus critatus;

ants, bees, wasps, sawflies (Hymenoptera), e.g. Athalia rosae, Atta cephalotes, Atta capiguara, Atta cephalotes, Atta laevigata, Atta robusta, Atta sexdens, Atta texana, Crematogaster spp., Hoplocampa minuta, Hoplocampa testudinea, Lasius niger, Monomorium pharaonis, Solenopsis geminata, Solenopsis invicta, Solenopsis richteri, Solenopsis xyloni, Pogonomyrmex barbatus, Pogonomyrmex californicus, Pheidole megacephala, Dasymutilla occidentalis, Bombus spp., Vespula squamosa, Paravespula vulgaris, Paravespula pennsylvanica, Paravespula germanica, Dolichovespula maculata, Vespa crabro, Polistes rubiginosa, Camponotus floridanus, and Linepithema humile;

crickets, grasshoppers, locusts (Orthoptera), e.g. Acheta domestica, Gryllotalpa gryllotalpa, Locusta migratoria, Melanoplus bivittatus, Melanoplus femurrubrum, Melanoplus mexicanus, Melanoplus sanguinipes, Melanoplus spretus, Nomadacris septemfasciata,

Schistocerca americana, Schistocerca gregaria, Dociostaurus maroccanus, Tachycines asynamorus, Oedaleus senegalensis, Zonozerus variegatus, Hieroglyphus daganensis, Kraussaria angulifera, Calliptamus italicus, Chortoicetes terminifera, and Locustana pardalina;

arachnoidea, such as arachnids (Acarina), e.g. of the families Argasidae, Ixodidae and Sarcoptidae, such as Amblyomma americanum, Amblyomma variegatum, Ambryomma maculatum, Argas persicus, Boophilus annulatus, Boophilus decoloratus, Boophilus microplus, Dermacentor silvarum, Dermacentor andersoni, Dermacentor variabilis, Hyalomma truncatum, Ixodes ricinus, Ixodes rubicundus, Ixodes scapularis, Ixodes holocyclus, Ixodes pacificus, Ornithodorus moubata, Ornithodorus hermsi, Ornithodorus turicata, Ornithonyssus bacoti, Otobius megnini, Dermanyssus gallinae, Psoroptes ovis, Rhipicephalus sanguineus, Rhipicephalus appendiculatus, Rhipicephalus evertsi, Sarcoptes scabiei, and Eriophyidae spp. such as Aculus schlechtendali, Phyllocoptrata oleivora and Eriophyes sheldoni; Tarsonemidae spp. such as Phytonemus pallidus and Polyphagotarsonemus latus; Tenuipalpidae spp. such as Brevipalpus phoenicis; Tetranychidae spp. such as Tetranychus cinnabarinus, Tetranychus kanzawai, Tetranychus pacificus, Tetranychus telarius and Tetranychus urticae, Panonychus ulmi, Panonychus citri, and Oligonychus pratensis; Araneida, e.g. Latrodectus mactans, and Loxosceles reclusa;

fleas (Siphonaptera), e.g. Ctenocephalides felis, Ctenocephalides canis, Xenopsylla cheopis, Pulex irritans, Tunga penetrans, and Nosopsyllus fasciatus,

silverfish, firebrat (Thysanura), e.g. Lepisma saccharina and Thermobia domestica,

centipedes (Chilopoda), e.g. Scutigera coleoptrata,

millipedes (Diplopoda), e.g. Narceus spp.,

Earwigs (Dermaptera), e.g. forficula auricularia,

lice (Phthiraptera), e.g. Pediculus humanus capitis, Pediculus humanus corporis, Pthirus pubis, Haematopinus eurysternus, Haematopinus suis, Linognathus vituli, Bovicola bovis, Menopon gallinae, Menacanthus stramineus and Solenopotes capillatus.

Collembola (springtails), e.g. Onychiurus ssp..

The compounds of the present invention, including their stereoisomers, salts, tautomers and N-oxides, are also suitable for controlling nematodes , especially plant parasitic nematodes such as root knot nematodes, Meloidogyne hapla, Meloidogyne incognita, Meloidogyne javanica, 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, Belonolaimus 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 root-knot nematodes, Nacobbus species; Needle nematodes, Longidorus elongatus and other Longidorus 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 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.

The compounds of the present invention, including their stereoisomers, salts, tautomers and N-oxides, are particularly useful for controlling insects, preferably sucking or piercing and chewing and biting insects such as insects from the genera Ixodida, Siphonaptera, Lepidoptera, Coleoptera and Hemiptera.

The invention also relates to agrochemical compositions comprising an auxiliary and at least one compound I or I' according to the invention.

An agrochemical composition comprises a pesticidally effective amount of a compound I or I'. The term "effective amount" denotes an amount of the composition or of the compounds I or I', which is sufficient for controlling invertebrate pests on cultivated plants or in the protection of materials and which does not result in a substantial damage to the treated plants or material. Such an amount can vary in a broad range and is

dependent on various factors, such as the invertebrate (e.g. insect) species to be controlled, the treated cultivated plant or material, the climatic conditions and the specific compound I or I' used.

The compounds I or I', their stereoisomers, N-oxides and salts can be converted into customary types of agrochemical compositions, e. g. solutions, emulsions, suspensions, dusts, powders, pastes, granules, pressings, capsules, and mixtures thereof. Examples for composition types are suspensions (e.g. SC, OD, FS), emulsifiable concentrates (e.g. EC), emulsions (e.g. EW, EO, ES, ME), capsules (e.g. CS, ZC), pastes, pastilles, wettable powders or dusts (e.g. WP, SP, WS, DP, DS), pressings (e.g. BR, TB, DT), granules (e.g. WG, SG, GR, FG, GG, MG), insecticidal articles (e.g. LN), as well as gel formulations for the treatment of plant propagation materials such as seeds (e.g. GF). These and further compositions types are defined in the " Catalogue of pesticide formulation types and international coding system" , Technical Monograph No. 2, 6th Ed. May 2008, CropLife International.

The compositions are prepared in a known manner, such as described by Mollet and Grubemann, Formulation technology, Wiley VCH, Weinheim, 2001; or Knowles, New developments in crop protection product formulation, Agrow Reports DS243, T&F Informa, London, 2005.

Examples for suitable auxiliaries are solvents, liquid carriers, solid carriers or fillers, surfactants, dispersants, emulsifiers, wetters, adjuvants, solubilizers, penetration enhancers, protective colloids, adhesion agents, thickeners, humectants, repellents, attractants, feeding stimulants, compatibilizers, bactericides, anti-freezing agents, antifoaming agents, colorants, tackifiers and binders.

Suitable solvents and liquid carriers are water and organic solvents, such as mineral oil fractions of medium to high boiling point, e.g. kerosene, diesel oil; oils of vegetable or animal origin; aliphatic, cyclic and aromatic hydrocarbons, e. g. toluene, paraffin, tetrahydronaphthalene, alkylated naphthalenes; alcohols, e.g. ethanol, propanol, butanol, benzylalcohol, cyclohexanol; glycols; DMSO; ketones, e.g. cyclohexanone; esters, e.g. lactates, carbonates, fatty acid esters, gamma-butyrolactone; fatty acids; phosphonates; amines; amides, e.g. N-methylpyrrolidone, fatty acid dimethylamides; and mixtures thereof.

Suitable solid carriers or fillers are mineral earths, e.g. silicates, silica gels, talc, kaolins, limestone, lime, chalk, clays, dolomite, diatomaceous earth, bentonite, calcium sulfate, magnesium sulfate, magnesium oxide; polysaccharide powders, e.g. cellulose, starch; fertilizers, e.g. ammonium sulfate, ammonium phosphate, ammonium nitrate,

ureas; products of vegetable origin, e.g. cereal meal, tree bark meal, wood meal, nutshell meal, and mixtures thereof.

Suitable surfactants are surface-active compounds, such as anionic, cationic, nonionic and amphoteric surfactants, block polymers, polyelectrolytes, and mixtures thereof. Such surfactants can be used as emusifier, dispersant, solubilizer, wetter, penetration enhancer, protective colloid, or adjuvant. Examples of surfactants are listed in McCutcheon' s, Vol.1: Emulsifiers & Detergents, McCutcheon' s Directories, Glen Rock, USA, 2008 (International Ed. or North American Ed.).

Suitable anionic surfactants are alkali, alkaline earth or ammonium salts of sulfonates, sulfates, phosphates, carboxylates, and mixtures thereof. Examples of sulfonates are alkylarylsulfonates, diphenylsulfonates, alpha-olefin sulfonates, lignine sulfonates, sulfonates of fatty acids and oils, sulfonates of ethoxylated alkylphenols, sulfonates of alkoxylated arylphenols, sulfonates of condensed naphthalenes, sulfonates of dodecyl- and tridecylbenzenes, sulfonates of naphthalenes and alkylnaphthalenes, sulfosuccinates or sulfosuccinamates. Examples of sulfates are sulfates of fatty acids and oils, of ethoxylated alkylphenols, of alcohols, of ethoxylated alcohols, or of fatty acid esters. Examples of phosphates are phosphate esters. Examples of carboxylates are alkyl carboxylates, and carboxylated alcohol or alkylphenol ethoxylates.

Suitable nonionic surfactants are alkoxylates, N-subsituted fatty acid amides, amine oxides, esters, sugar-based surfactants, polymeric surfactants, and mixtures thereof. Examples of alkoxylates are compounds such as alcohols, alkylphenols, amines, amides, arylphenols, fatty acids or fatty acid esters which have been alkoxylated with 1 to 50 equivalents. Ethylene oxide and/or propylene oxide may be employed for the alkoxylation, preferably ethylene oxide. Examples of N-subsititued fatty acid amides are fatty acid glucamides or fatty acid alkanolamides. Examples of esters are fatty acid esters, glycerol esters or monoglycerides. Examples of sugar-based surfactants are sorbitans, ethoxylated sorbitans, sucrose and glucose esters or alkylpolyglucosides. Examples of polymeric surfactants are home- or copolymers of vinylpyrrolidone, vinylalcohols, or vinylacetate.

Suitable cationic surfactants are quaternary surfactants, for example quaternary ammonium compounds with one or two hydrophobic groups, or salts of long-chain primary amines. Suitable amphoteric surfactants are alkylbetains and imidazolines. Suitable block polymers are block polymers of the A-B or A-B-A type comprising blocks of polyethylene oxide and polypropylene oxide, or of the A-B-C type comprising alkanol, polyethylene oxide and polypropylene oxide. Suitable polyelectrolytes are polyacids or pol-

ybases. Examples of polyacids are alkali salts of polyacrylic acid or polyacid comb polymers. Examples of polybases are polyvinylamines or polyethyleneamines.

Suitable adjuvants are compounds, which have a neglectable or even no pesticidal activity themselves, and which improve the biological performance of the compound I or I' on the target. Examples are surfactants, mineral or vegetable oils, and other auxilaries. Further examples are listed by Knowles, Adjuvants and additives, Agrow Reports DS256, T&F Informa UK, 2006, chapter 5.

Suitable thickeners are polysaccharides (e.g. xanthan gum, carboxymethylcellulose), anorganic clays (organically modified or unmodified), polycarboxylates, and silicates.

Suitable bactericides are bronopol and isothiazolinone derivatives such as alkylisothiazolinones and benzisothiazolinones.

Suitable anti-freezing agents are ethylene glycol, propylene glycol, urea and glycerin.

Suitable anti-foaming agents are silicones, long chain alcohols, and salts of fatty acids.

Suitable colorants (e.g. in red, blue, or green) are pigments of low water solubility and water-soluble dyes. Examples are inorganic colorants (e.g. iron oxide, titan oxide, iron hexacyanoferrate) and organic colorants (e.g. alizarin-, azo- and phthalocyanine colorants).

Suitable tackifiers or binders are polyvinylpyrrolidons, polyvinylacetates, polyvinyl alcohols, polyacrylates, biological or synthetic waxes, and cellulose ethers.

Examples for composition types and their preparation are:

i) Water-soluble concentrates (SL, LS)

10-60 wt% of a compound I or I' according to the invention and 5-15 wt% wetting agent (e.g. alcohol alkoxylates) are dissolved in water and/or in a water-soluble solvent (e.g. alcohols) up to 100 wt%. The active substance dissolves upon dilution with water.

ii) Dispersible concentrates (DC)

5-25 wt% of a compound I or I' according to the invention and 1-10 wt% dispersant (e.g. polyvinylpyrrolidone) are dissolved in up to 100 wt% organic solvent (e.g. cyclohexanone). Dilution with water gives a dispersion.

iii) Emulsifiable concentrates (EC)

15-70 wt% of a compound I or I' according to the invention and 5-10 wt% emulsifiers (e.g. calcium dodecylbenzenesulfonate and castor oil ethoxylate) are dissolved in up to 100 wt% water-insoluble organic solvent (e.g. aromatic hydrocarbon). Dilution with water gives an emulsion.

iv) Emulsions (EW, EO, ES)

5-40 wt% of a compound I or I' according to the invention and 1-10 wt% emulsifiers (e.g. calcium dodecylbenzenesulfonate and castor oil ethoxylate) are dissolved in 20-40 wt% water-insoluble organic solvent (e.g. aromatic hydrocarbon). This mixture is introduced into up to 100 wt% water by means of an emulsifying machine and made into a homogeneous emulsion. Dilution with water gives an emulsion.

v) Suspensions (SC, OD, FS)

In an agitated ball mill, 20-60 wt% of a compound I or I' according to the invention are comminuted with addition of 2-10 wt% dispersants and wetting agents (e.g. sodium lignosulfonate and alcohol ethoxylate), 0,1-2 wt% thickener (e.g. xanthan gum) and up to 100 wt% water to give a fine active substance suspension. Dilution with water gives a stable suspension of the active substance. For FS type composition up to 40 wt% binder (e.g. polyvinylalcohol) is added.

vi) Water-dispersible granules and water-soluble granules (WG, SG)

50-80 wt% of a compound I or I' according to the invention are ground finely with addition of up to 100 wt% dispersants and wetting agents (e.g. sodium lignosulfonate and alcohol ethoxylate) and prepared as water-dispersible or water-soluble granules by means of technical appliances (e. g. extrusion, spray tower, fluidized bed). Dilution with water gives a stable dispersion or solution of the active substance.

vii) Water-dispersible powders and water-soluble powders (WP, SP, WS)

50-80 wt% of a compound I or I' according to the invention are ground in a rotor-stator mill with addition of 1-5 wt% dispersants (e.g. sodium lignosulfonate), 1-3 wt% wetting agents (e.g. alcohol ethoxylate) and up to 100 wt% solid carrier, e.g. silica gel. Dilution with water gives a stable dispersion or solution of the active substance.

viii) Gel (GW, GF)

In an agitated ball mill, 5-25 wt% of a compound I or I' according to the invention are comminuted with addition of 3-10 wt% dispersants (e.g. sodium lignosulfonate), 1-5 wt% thickener (e.g. carboxymethylcellulose) and up to 100 wt% water to give a fine suspension of the active substance. Dilution with water gives a stable suspension of the active substance.

ix) Microemulsion (ME)

5-20 wt% of a compound I or I' according to the invention are added to 5-30 wt% organic solvent blend (e.g. fatty acid dimethylamide and cyclohexanone), 10-25 wt% surfactant blend (e.g. alkohol ethoxylate and arylphenol ethoxylate), and water up to 100 %. This mixture is stirred for 1 h to produce spontaneously a thermodynamically stable microemulsion.

x) Microcapsules (CS)

An oil phase comprising 5-50 wt% of a compound I or I' according to the invention, 0-40 wt% water insoluble organic solvent (e.g. aromatic hydrocarbon), 2-15 wt% acrylic monomers (e.g. methylmethacrylate, methacrylic acid and a di- or triacrylate) are dispersed into an aqueous solution of a protective colloid (e.g. polyvinyl alcohol). Radical

polymerization initiated by a radical initiator results in the formation of poly(meth)acrylate microcapsules. Alternatively, an oil phase comprising 5-50 wt% of a compound I or I' according to the invention, 0-40 wt% water insoluble organic solvent (e.g. aromatic hydrocarbon), and an isocyanate monomer (e.g. diphenylmethene-4,4'-diisocyanatae) are dispersed into an aqueous solution of a protective colloid (e.g. polyvinyl alcohol). The addition of a polyamine (e.g. hexamethylenediamine) results in the formation of a polyurea microcapsules. The monomers amount to 1-10 wt%. The wt% relate to the total CS composition.

xi) Dustable powders (DP, DS)

1-10 wt% of a compound I or I' according to the invention are ground finely and mixed intimately with up to 100 wt% solid carrier, e.g. finely divided kaolin.

xii) Granules (GR, FG)

0.5-30 wt% of a compound I or I' according to the invention is ground finely and associated with up to 100 wt% solid carrier (e.g. silicate). Granulation is achieved by extrusion, spray-drying or the fluidized bed.

xiii) Ultra-low volume liquids (UL)

1-50 wt% of a compound I or I' according to the invention are dissolved in up to 100 wt% organic solvent, e.g. aromatic hydrocarbon.

The compositions types i) to xiii) may optionally comprise further auxiliaries, such as 0,1-1 wt% bactericides, 5-15 wt% anti-freezing agents, 0,1-1 wt% anti-foaming agents, and 0,1-1 wt% colorants.

The agrochemical compositions generally comprise between 0.01 and 95%, preferably between 0.1 and 90%, and in particular between 0.5 and 75%, by weight of active substance. The active substances are employed in a purity of from 90% to 100%, preferably from 95% to 100% (according to NMR spectrum).

Water-soluble concentrates (LS), Suspoemulsions (SE), flowable concentrates (FS), powders for dry treatment (DS), water-dispersible powders for slurry treatment (WS), water-soluble powders (SS), emulsions (ES), emulsifiable concentrates (EC) and gels (GF) are usually employed for the purposes of treatment of plant propagation materials, particularly seeds. The compositions in question give, after two-to-tenfold dilution, active substance concentrations of from 0.01 to 60% by weight, preferably from 0.1 to 40% by weight, in the ready-to-use preparations. Application can be carried out before or during sowing. Methods for applying or treating compound I or I' and compositions thereof, respectively, on to plant propagation material, especially seeds include dressing, coating, pelleting, dusting, soaking and in-furrow application methods of the propagation material. Preferably, compound I or I' or the compositions thereof, respectively, are applied on to the plant propagation material by a method such that germination is

not induced, e. g. by seed dressing, pelleting, coating and dusting.

When employed in plant protection, the amounts of active substances applied are, depending on the kind of effect desired, from 0.001 to 2 kg per ha, preferably from 0.005 to 2 kg per ha, more preferably from 0.05 to 0.9 kg per ha, and in particular from 0.1 to 0.75 kg per ha.
In treatment of plant propagation materials such as seeds, e. g. by dusting, coating or drenching seed, amounts of active substance of from 0.1 to 1000 g, preferably from 1 to 1000 g, more preferably from 1 to 100 g and most preferably from 5 to 100 g, per 100 kilogram of plant propagation material (preferably seeds) are generally required.
When used in the protection of materials or stored products, the amount of active substance applied depends on the kind of application area and on the desired effect. Amounts customarily applied in the protection of materials are 0.001 g to 2 kg, preferably 0.005 g to 1 kg, of active substance per cubic meter of treated material.

Various types of oils, wetters, adjuvants, fertilizer, or micronutrients, and further pesticides (e.g. herbicides, insecticides, fungicides, growth regulators, safeners) may be added to the active substances or the compositions comprising them as premix or, if appropriate not until immediately prior to use (tank mix). These agents can be admixed with the compositions according to the invention in a weight ratio of 1:100 to 100:1, preferably 1:10 to 10:1.

The user applies the composition according to the invention usually from a predosage device, a knapsack sprayer, a spray tank, a spray plane, or an irrigation system. Usually, the agrochemical composition is made up with water, buffer, and/or further auxiliaries to the desired application concentration and the ready-to-use spray liquor or the agrochemical composition according to the invention is thus obtained. Usually, 20 to 2000 liters, preferably 50 to 400 liters, of the ready-to-use spray liquor are applied per hectare of agricultural useful area.

According to one embodiment, individual components of the composition according to the invention such as parts of a kit or parts of a binary or ternary mixture may be mixed by the user himself in a spray tank and further auxiliaries may be added, if appropriate.
In a further embodiment, either individual components of the composition according to the invention or partially premixed components, e. g. components comprising compounds I or I' and/or active substances from the groups M) or F) (see below), may be mixed by the user in a spray tank and further auxiliaries and additives may be added, if appropriate.
In a further embodiment, either individual components of the composition according to the invention or partially premixed components, e. g. components comprising compounds I or I' and/or active substances from the groups M) or F) (see below), can be

applied jointly (e.g. after tank mix) or consecutively.

The following categorized list M of pesticides represents insecticidal mixture partners, which are, whenever possible, classified according to the Insecticide Resistance Action Committee (IRAC), and together with which the compounds according to the present invention may be used. The combined use of the compounds of the present invention with the following pesticides may result in potential synergistic effects. The following examples of insecticidal mixing partners are provided with the intention to illustrate the possible combinations, but not to impose any limitation to the obtainable mixtures:

M.1 Acetylcholine esterase (AChE) inhibitors from the class of
M.1A carbamates, for example aldicarb, alanycarb, bendiocarb, benfuracarb, butocarboxim, butoxycarboxim, carbaryl, carbofuran, carbosulfan, ethiofencarb, fenobucarb, formetanate, furathiocarb, isoprocarb, methiocarb, methomyl, metolcarb, oxamyl, pirimicarb, propoxur, thiodicarb, thiofanox, trimethacarb, XMC, xylylcarb and triazamate; or from the class of
M.1B organophosphates, for example acephate, azamethiphos, azinphos-ethyl, azinphosmethyl, cadusafos, chlorethoxyfos, chlorfenvinphos, chlormephos, chlorpyrifos, chlorpyrifos-methyl, coumaphos, cyanophos, demeton-S-methyl, diazinon, dichlorvos/DDVP, dicrotophos, dimethoate, dimethylvinphos, disulfoton, EPN, ethion, ethoprophos, famphur, fenamiphos, fenitrothion, fenthion, fosthiazate, heptenophos, imicyafos, isofenphos, isopropyl O- (methoxyaminothio-phosphoryl) salicylate, isoxathion, malathion, mecarbam, methamidophos, methidathion, mevinphos, monocrotophos, naled, omethoate, oxydemeton-methyl, parathion, parathion-methyl, phenthoate, phorate, phosalone, phosmet, phosphamidon, phoxim, pirimiphos- methyl, profenofos, propetamphos, prothiofos, pyraclofos, pyridaphenthion, quinalphos, sulfotep, tebupirimfos, temephos, terbufos, tetrachlorvinphos, thiometon, triazophos, trichlorfon and vamidothion;

M.2. GABA-gated chloride channel antagonists such as:
M.2A cyclodiene organochlorine compounds, as for example endosulfan or chlordane; or
M.2B fiproles (phenylpyrazoles), as for example ethiprole, fipronil, flufiprole, pyrafluprole and pyriprole;

M.3 Sodium channel modulators from the class of
M.3A pyrethroids, for example acrinathrin, allethrin, d-cis-trans allethrin, d-trans allethrin, bifenthrin, bioallethrin, bioallethrin S-cylclopentenyl, bioresmethrin, cycloprothrin, cyfluthrin, beta-cyfluthrin, cyhalothrin, lambda-cyhalothrin, gamma-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, cyphenothrin, deltamethrin, empenthrin, esfenvalerate, etofenprox,

fenpropathrin, fenvalerate, flucythrinate, flumethrin, tau-fluvalinate, halfenprox, imiprothrin, meperfluthrin,metofluthrin, permethrin, phenothrin, prallethrin, profluthrin, pyrethrin (pyrethrum), resmethrin, silafluofen, tefluthrin, tetramethylfluthrin, tetramethrin, tralomethrin and transfluthrin; or

M.3B sodium channel modulators such as DDT or methoxychlor;

M.4 Nicotinic acetylcholine receptor agonists (nAChR) from the class of
M.4A neonicotinoids, for example acteamiprid, chlothianidin, dinotefuran, imidacloprid, nitenpyram, thiacloprid and thiamethoxam; or
M.4B nicotine.

M.5 Nicotinic acetylcholine receptor allosteric activators from the class of spinosyns, for example spinosad or spinetoram;

M.6 Chloride channel activators from the class of avermectins and milbemycins, for example abamectin, emamectin benzoate, ivermectin, lepimectin or milbemectin;

M.7 Juvenile hormone mimics, such as
M.7A juvenile hormone analogues as hydroprene, kinoprene and methoprene; or others as
M.7B fenoxycarb, or
M.7C pyriproxyfen;

M.8 miscellaneous non-specific (multi-site) inhibitors, for example
M.8A alkyl halides as methyl bromide and other alkyl halides, or
M.8B chloropicrin, or
M.8C sulfuryl fluoride, or
M.8D borax, or
M.8E tartar emetic;

M.9 Selective homopteran feeding blockers, for example
M.9B pymetrozine, or
M.9C flonicamid;

M.10 Mite growth inhibitors, for example
M.10A clofentezine, hexythiazox and diflovidazin, or
M.10B etoxazole;

M.11 Microbial disruptors of insect midgut membranes, for example bacillus thuringiensis or bacillus sphaericus and the insecticdal proteins they produce such as bacillus thuringiensis subsp. israelensis, bacillus sphaericus, bacillus thuringiensis subsp. aizawai, bacillus thuringiensis subsp. kurstaki and bacillus thuringiensis subsp. tenebri-

onis, or the Bt crop proteins: Cry1Ab, Cry1Ac, Cry1Fa, Cry2Ab, mCry3A, Cry3Ab, Cry3Bb and Cry34/35Ab1;

M.12 Inhibitors of mitochondrial ATP synthase, for example
M.12A diafenthiuron, or
M.12B organotin miticides such as azocyclotin, cyhexatin or fenbutatin oxide, or M.12C propargite, or
M.12D tetradifon;

M.13 Uncouplers of oxidative phosphorylation via disruption of the proton gradient, for example chlorfenapyr, DNOC or sulfluramid;

M.14 Nicotinic acetylcholine receptor (nAChR) channel blockers, for example nereistoxin analogues as bensultap, cartap hydrochloride, thiocyclam or thiosultap sodium;

M.15 Inhibitors of the chitin biosynthesis type 0, such as benzoylureas as for example bistrifluron, chlorfluazuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, teflubenzuron or triflumuron;

M.16 Inhibitors of the chitin biosynthesis type 1, as for example buprofezin;

M.17 Moulting disruptors, Dipteran, as for example cyromazine;

M.18 Ecdyson receptor agonists such as diacylhydrazines, for example methoxyfenozide, tebufenozide, halofenozide, fufenozide or chromafenozide;

M.19 Octopamin receptor agonists, as for example amitraz;

M.20 Mitochondrial complex III electron transport inhibitors, for example
M.20A hydramethylnon, or
M.20B acequinocyl, or
M.20C fluacrypyrim;

M.21 Mitochondrial complex I electron transport inhibitors, for example
M.21A METI acaricides and insecticides such as fenazaquin, fenpyroximate, pyrimidifen, pyridaben, tebufenpyrad or tolfenpyrad, or
M.21B rotenone;

M.22 Voltage-dependent sodium channel blockers, for example
M.22A indoxacarb, or
M.22B metaflumizone;

M.23 Inhibitors of the of acetyl CoA carboxylase, such as Tetronic and Tetramic acid derivatives, for example spirodiclofen, spiromesifen or spirotetramat;

M.24 Mitochondrial complex IV electron transport inhibitors, for example
M.24A phosphine such as aluminium phosphide, calcium phosphide, phosphine or zinc phosphide, or
M.24B cyanide.

M.25 Mitochondrial complex II electron transport inhibitors, such as beta-ketonitrile derivatives, for example cyenopyrafen or cyflumetofen;

M.26 Ryanodine receptor-modulators from the class of diamides, as
for example flubendiamide, chloranthraniliprole (rynaxypyr®), cyanthraniliprole (cyazypyr®), or
the phthalamide compounds
M.26.1: (R)-3-Chlor-N1-{2-methyl-4-[1,2,2,2-tetrafluor-1-(trifluormethyl)ethyl]phenyl}-N2-(1-methyl-2-methylsulfonylethyl)phthalamid and
M.26.2: (S)-3-Chlor-N1-{2-methyl-4-[1,2,2,2-tetrafluor-1-(trifluormethyl)ethyl]phenyl}-N2-(1-methyl-2-methylsulfonylethyl)phthalamid, or the compound
M.26.3: 3-bromo-N-{2-bromo-4-chloro-6-[(1-cyclopropylethyl)carbamoyl]phenyl}-1-(3-chlorpyridin-2-yl)-1H-pyrazole-5-carboxamide, or the compound
M.26.4: methyl-2-[3,5-dibromo-2-({[3-bromo-1-(3-chlorpyridin-2-yl)-1H-pyrazol-5-yl]carbonyl}amino)benzoyl]-1,2-dimethylhydrazinecarboxylate;

M.X insecticidal active compounds of unknown or uncertain mode of action, as for example azadirachtin, amidoflumet, benzoximate, bifenazate, bromopropylate, chinomethionat, cryolite, dicofol, flufenerim, flometoquin, fluensulfone, flupyradifurone, piperonyl butoxide, pyridalyl, pyrifluquinazon, sulfoxaflor, or the compound
M.X.1: 4-[5-(3,5-Dichloro-phenyl)-5-trifluoromethyl-4,5-dihydro-isoxazol-3-yl]-2-methyl-N-[(2,2,2-trifluoro-ethylcarbamoyl)-methyl]-benzamide, or the compound
M.X.2: cyclopropaneacetic acid, 1,1'-[(3S,4R,4aR,6S,6aS,12R,12aS,12bS)-4-[[(2-cyclopropylacetyl)oxy]methyl]-1,3,4,4a,5,6,6a,12,12a,12b-decahydro-12-hydroxy-4,6a,12b-trimethyl-11-oxo-9-(3-pyridinyl)-2H,11H-naphtho[2,1-b]pyrano[3,4-e]pyran-3,6-diyl] ester, or the compound
M.X.3: 11-(4-chloro-2,6-dimethylphenyl)-12-hydroxy-1,4-dioxa-9-azadispiro[4.2.4.2]-tetradec-11-en-10-one, or the compound
M.X.4: 3-(4'-fluoro-2,4-dimethylbiphenyl-3-yl)-4-hydroxy-8-oxa-1-azaspiro[4.5]dec-3-en-2-one, or the compound
M.X.5: 1-[2-fluoro-4-methyl-5-[(2,2,2-trifluoroethyl)sulfinyl]phenyl]-3-(trifluoromethyl)-1H-1,2,4-triazole-5-amine, or actives on basis of *bacillus firmus* (Votivo, I-1582).

The commercially available compounds of the group M listed above may be found in The Pesticide Manual, 15th Edition, C. D. S. Tomlin, British Crop Protection Council (2011) among other publications.

The phthalamides M.26.1 and M.26.2 are both known from WO 2007/101540. The anthranilamide M.26.3 has been described in WO2005/077943. The hydrazide compound M.26.4 has been described in WO 2007/043677.-The quinoline derivative flometoquin is shown in WO2006/013896. The aminofuranone compounds flupyradifurone is known from WO 2007/115644. The sulfoximine compound sulfoxaflor is known from WO2007/149134. The isoxazoline compound M.X.1 has been described in WO2005/085216. The pyripyropene derivative M.X.2 has been described in WO 2006/129714. The spiroketal-substituted cyclic ketoenol derivative M.X.3 is known from WO2006/089633 and the biphenyl-substituted spirocyclic ketoenol derivative M.X.4 from WO2008/067911. Finally triazoylphenylsulfide like M.X.5 have been described in WO2006/043635 and biological control agents on basis of *bacillus firmus* in WO2009/124707.

The following list F of active substances, in conjunction with which the compounds according to the invention can be used, is intended to illustrate the possible combinations but does not limit them:

F.I) Respiration Inhibitors

F.I-1) Inhibitors of complex III at Qo site (e.g. strobilurins)

strobilurins: azoxystrobin, coumethoxystrobin, coumoxystrobin, dimoxystrobin, enestroburin, fluoxastrobin, kresoxim-methyl, metominostrobin, orysastrobin, picoxystrobin, pyraclostrobin, pyrametostrobin, pyraoxystrobin, pyribencarb, triclopyricarb/chlorodincarb, trifloxystrobin, 2-[2-(2,5-dimethyl-phenoxymethyl)-phenyl]-3-methoxy-acrylic acid methyl ester and 2 (2-(3-(2,6-dichlorophenyl)-1-methyl-allylideneaminooxymethyl)-phenyl)-2-methoxyimino-N methyl-acetamide;

oxazolidinediones and imidazolinones: famoxadone, fenamidone;

F.I-2) Inhibitors of complex II (e.g. carboxamides):

carboxanilides: benodanil, bixafen, boscalid, carboxin, fenfuram, fenhexamid, fluopyram, flutolanil, furametpyr, isopyrazam, isotianil, mepronil, oxycarboxin, penflufen, penthiopyrad, sedaxane, tecloftalam, thifluzamide, tiadinil, 2-amino-4 methyl-thiazole-5-carboxanilide, N-(3',4',5' trifluorobiphenyl-2 yl)-3-difluoromethyl-1-methyl-1H-pyrazole-4 carboxamide, N-(4'-trifluoromethylthiobiphenyl-2-yl)-3 difluoromethyl-1-methyl-1H pyrazole-4-carboxamide and N-(2-(1,3,3-trimethyl-butyl)-phenyl)-1,3-dimethyl-5 fluoro-1H-pyrazole-4 carboxamide;

F.I-3) Inhibitors of complex III at Qi site: cyazofamid, amisulbrom;

F.I-4) Other respiration inhibitors (complex I, uncouplers)

diflumetorim; tecnazen; ferimzone; ametoctradin; silthiofam;

nitrophenyl derivates: binapacryl, dinobuton, dinocap, fluazinam, nitrthal-isopropyl,

organometal compounds: fentin salts, such as fentin-acetate, fentin chloride or fentin hydroxide;

F.II) Sterol biosynthesis inhibitors (SBI fungicides)

F.II-1) C14 demethylase inhibitors (DMI fungicides, e.g. triazoles, imidazoles)

triazoles: azaconazole, bitertanol, bromuconazole, cyproconazole, difenoconazole, diniconazole, diniconazole-M, epoxiconazole, fenbuconazole, fluquinconazole, flusilazole, flutriafol, hexaconazole, imibenconazole, ipconazole, metconazole, myclobutanil, paclobutrazole, penconazole, propiconazole, prothioconazole, simeconazole, tebuconazole, tetraconazole, triadimefon, triadimenol, triticonazole, uniconazole;

imidazoles: imazalil, pefurazoate, oxpoconazole, prochloraz, triflumizole;

pyrimidines, pyridines and piperazines: fenarimol, nuarimol, pyrifenox, triforine;

F.II-2) Delta14-reductase inhitors (Amines, e.g. morpholines, piperidines)

morpholines: aldimorph, dodemorph, dodemorph-acetate, fenpropimorph, tridemorph;

piperidines: fenpropidin, piperalin;

spiroketalamines: spiroxamine;

F.II-3) Inhibitors of 3-keto reductase: hydroxyanilides: fenhexamid;

F.III) Nucleic acid synthesis inhibitors

F.III-1) RNA, DNA synthesis

phenylamides or acyl amino acid fungicides: benalaxyl, benalaxyl-M, kiralaxyl, metalaxyl, metalaxyl-M (mefenoxam), ofurace, oxadixyl;

isoxazoles and iosothiazolones: hymexazole, octhilinone;

F.III-2) DNA topisomerase inhibitors: oxolinic acid;

F.III-3) Nucleotide metabolism (e.g. adenosin-deaminase)

hydroxy (2-amino)-pyrimidines: bupirimate;

F.IV) Inhibitors of cell division and or cytoskeleton

F.IV-1) Tubulin inhibitors: benzimidazoles and thiophanates: benomyl, carbendazim, fuberidazole, thiabendazole, thiophanate-methyl;

triazolopyrimidines: 5-chloro-7 (4-methylpiperidin-1-yl)-6-(2,4,6-trifluorophenyl)-[1,2,4]triazolo[1,5 a]pyrimidine

F.IV-2) Other cell division inhibitors

benzamides and phenyl acetamides: diethofencarb, ethaboxam, pencycuron, fluopicolide, zoxamide;

F.IV-3) Actin inhibitors: benzophenones: metrafenone;

F.V) Inhibitors of amino acid and protein synthesis

F.V-1) Mmethionine synthesis inhibitors (anilino-pyrimidines)

anilino-pyrimidines: cyprodinil, mepanipyrim, nitrapyrin, pyrimethanil;

F.V-2) Protein synthesis inhibitors (anilino-pyrimidines)

antibiotics: blasticidin-S, kasugamycin, kasugamycin hydrochloride-hydrate, mildiomycin, streptomycin, oxytetracyclin, polyoxine, validamycin A;

F.VI) Signal transduction inhibitors
F.VI-1) MAP / Histidine kinase inhibitors (e.g. anilino-pyrimidines)
dicarboximides: fluoroimid, iprodione, procymidone, vinclozolin;
phenylpyrroles: fenpiclonil, fludioxonil;
F.VI-2) G protein inhibitors: quinolines: quinoxyfen;
F.VII) Lipid and membrane synthesis inhibitors
F.VII-1) Phospholipid biosynthesis inhibitors
organophosphorus compounds: edifenphos, iprobenfos, pyrazophos;
dithiolanes: isoprothiolane;
F.VII-2) Lipid peroxidation
aromatic hydrocarbons: dicloran, quintozene, tecnazene, tolclofos-methyl, biphenyl, chloroneb, etridiazole;
F.VII-3) Carboxyl acid amides (CAA fungicides)
cinnamic or mandelic acid amides: dimethomorph, flumorph, mandiproamid, pyrimorph;
valinamide carbamates: benthiavalicarb, iprovalicarb, pyribencarb, valifenalate and N-(1-(1-(4-cyano-phenyl)ethanesulfonyl)-but-2-yl) carbamic acid-(4-fluorophenyl) ester;
F.VII-4) Compounds affecting cell membrane permeability and fatty acides
carbamates: propamocarb, propamocarb-hydrochlorid
F.VIII) Inhibitors with Multi Site Action
F.VIII-1) Inorganic active substances: Bordeaux mixture, copper acetate, copper hydroxide, copper oxychloride, basic copper sulfate, sulfur;
F.VIII-2) Thio- and dithiocarbamates: ferbam, mancozeb, maneb, metam, methasulphocarb, metiram, propineb, thiram, zineb, ziram;
F.VIII-3) Organochlorine compounds (e.g. phthalimides, sulfamides, chloronitriles):
anilazine, chlorothalonil, captafol, captan, folpet, dichlofluanid, dichlorophen, flusulfamide, hexachlorobenzene, pentachlorphenole and its salts, phthalide, tolylfluanid, N-(4-chloro-2-nitro-phenyl)-N-ethyl-4-methyl-benzenesulfonamide;
F.VIII-4) Guanidines: guanidine, dodine, dodine free base, guazatine, guazatine-acetate, iminoctadine, iminoctadine-triacetate, iminoctadine-tris(albesilate);
F.VIII-5) Ahtraquinones: dithianon;
F.IX) Cell wall synthesis inhibitors
F.IX-1) Inhibitors of glucan synthesis: validamycin, polyoxin B;
F.IX-2) Melanin synthesis inhibitors: pyroquilon, tricyclazole, carpropamide, dicyclomet, fenoxanil;
F.X) Plant defence inducers
F.X-1) Salicylic acid pathway: acibenzolar-S-methyl;
F.X-2) Others: probenazole, isotianil, tiadinil, prohexadione-calcium;
phosphonates: fosetyl, fosetyl-aluminum, phosphorous acid and its salts;
F.XI) Unknown mode of action:

bronopol, chinomethionat, cyflufenamid, cymoxanil, dazomet, debacarb, diclomezine, difenzoquat, difenzoquat-methylsulfate, diphenylamin, flumetover, flusulfamide, flutianil, methasulfocarb, oxin-copper, proquinazid, tebufloquin, tecloftalam, triazoxide, 2-butoxy-6-iodo-3-propylchromen-4-one, N-(cyclopropylmethoxyimino-(6-difluoro-methoxy-2,3-difluoro-phenyl)-methyl)-2-phenyl acetamide, N'-(4-(4-chloro-3-trifluoromethyl-phenoxy)-2,5-dimethyl-phenyl)-N-ethyl-N methyl formamidine, N' (4-(4-fluoro-3-trifluoro-methyl-phenoxy)-2,5-dimethyl-phenyl)-N-ethyl-N-methyl formamidine, N'-(2-methyl-5-trifluoromethyl-4-(3-trimethylsilanyl-propoxy)-phenyl)-N-ethyl-N-methyl formamidine, N'-(5-difluoromethyl-2 methyl-4-(3-trimethylsilanyl-propoxy)-phenyl)-N-ethyl-N-methyl formamidine, 2-{1-[2-(5-methyl-3-trifluoromethyl-pyrazole-1-yl)-acetyl]-piperidin-4-yl}-thiazole-4-carboxylic acid methyl-(1,2,3,4-tetrahydro-naphthalen-1-yl)-amide, 2-{1-[2-(5-methyl-3-trifluoromethyl-pyrazole-1-yl)-acetyl]-piperidin-4-yl}-thiazole-4-carboxylic acid methyl-(R)-1,2,3,4-tetrahydro-naphthalen-1-yl-amide, methoxy-acetic acid 6-tert-butyl-8-fluoro-2,3-dimethyl-quinolin-4-yl ester and N-Methyl-2-{1-[(5-methyl-3-trifluoro-methyl-1H-pyrazol-1-yl)-acetyl]-piperidin-4-yl}-N-[(1R)-1,2,3,4-tetrahydronaphthalen-1-yl]-4-thiazolecarboxamide, 3-[5-(4-chloro-phenyl)-2,3-dimethyl-isoxazolidin-3 yl]-pyridine, pyrisoxazole, 5-amino-2-isopropyl-3-oxo-4-ortho-tolyl-2,3-dihydro-pyrazole-1 carbothioic acid S-allyl ester, N-(6-methoxy-pyridin-3-yl) cyclopropanecarboxylic acid amide, 5-chloro-1 (4,6-dimethoxy-pyrimidin-2-yl)-2-methyl-1H-benzoimidazole, 2-(4-chloro-phenyl)-N-[4-(3,4-dimethoxy-phenyl)-isoxazol-5-yl]-2-prop-2-ynyloxy-acetamide;

F.XI) Growth regulators:

abscisic acid, amidochlor, ancymidol, 6-benzylaminopurine, brassinolide, butralin, chlormequat (chlormequat chloride), choline chloride, cyclanilide, daminozide, dikegulac, dimethipin, 2,6-dimethylpuridine, ethephon, flumetralin, flurprimidol, fluthiacet, forchlorfenuron, gibberellic acid, inabenfide, indole-3-acetic acid, maleic hydrazide, mefluidide, mepiquat (mepiquat chloride), naphthaleneacetic acid, N 6 benzyladenine, paclobutrazol, prohexadione (prohexadione-calcium), prohydrojasmon, thidiazuron, triapenthenol, tributyl phosphorotrithioate, 2,3,5 tri iodobenzoic acid, trinexapac-ethyl and uniconazole;

F.XII) Biological control agents

antifungal biocontrol agents: Bacillus substilis strain with NRRL No. B-21661 (e.g. RHAPSODY®, SERENADE® MAX and SERENADE® ASO from AgraQuest, Inc., USA.), Bacillus pumilus strain with NRRL No. B-30087 (e.g. SONATA® and BALLAD® Plus from AgraQuest, Inc., USA), Ulocladium oudemansii (e.g. the product BOTRY-ZEN from BotriZen Ltd., New Zealand), Chitosan (e.g. ARMOUR-ZEN from BotriZen Ltd., New Zealand).

The invertebrate pest (also referred to as "animal pest"), i.e. the insects, arachnids and nematodes, the plant, soil or water in which the plant is growing or may grow can be

contacted with the compounds of the present invention or composition(s) comprising them by any application method known in the art. As such, "contacting" includes both direct contact (applying the compounds/compositions directly on the invertebrate pest or plant - typically to the foliage, stem or roots of the plant) and indirect contact (applying the compounds/compositions to the locus of the invertebrate pest or plant).

The compounds of the present invention or the pesticidal compositions comprising them may be used to protect growing plants and crops from attack or infestation by animal pests, especially insects, acaridae or arachnids by contacting the plant/crop with a pesticidally effective amount of compounds of the present invention. The term "crop" refers both to growing and harvested crops.

The compounds of the present invention and the compositions comprising them are particularly important in the control of a multitude of insects on various cultivated plants, such as cereal, root crops, oil crops, vegetables, spices, ornamentals, for example seed of durum and other wheat, barley, oats, rye, maize (fodder maize and sugar maize / sweet and field corn), soybeans, oil crops, crucifers, cotton, sunflowers, bananas, rice, oilseed rape, turnip rape, sugarbeet, fodder beet, eggplants, potatoes, grass, lawn, turf, fodder grass, tomatoes, leeks, pumpkin/squash, cabbage, iceberg lettuce, pepper, cucumbers, melons, Brassica species, melons, beans, peas, garlic, onions, carrots, tuberous plants such as potatoes, sugar cane, tobacco, grapes, petunias, geranium/pelargoniums, pansies and impatiens.

The compounds of the present invention are employed as such or in form of compositions by treating the insects or the plants, plant propagation materials, such as seeds, soil, surfaces, materials or rooms to be protected from insecticidal attack with an insecticidally effective amount of the active compounds. The application can be carried out both before and after the infection of the plants, plant propagation materials, such as seeds, soil, surfaces, materials or rooms by the insects.

Moreover, invertebrate pests may be controlled by contacting the target pest, its food supply, habitat, breeding ground or its locus with a pesticidally effective amount of compounds of the present invention. As such, the application may be carried out before or after the infection of the locus, growing crops, or harvested crops by the pest.

The compounds of the present invention can also be applied preventively to places at which occurrence of the pests is expected.

The compounds of the present invention may be also used to protect growing plants from attack or infestation by pests by contacting the plant with a pesticidally effective amount of compounds of the present invention. As such, "contacting" includes both direct contact (applying the compounds/compositions directly on the pest and/or plant - typically to the foliage, stem or roots of the plant) and indirect contact (applying the compounds/compositions to the locus of the pest and/or plant).

"Locus" means a habitat, breeding ground, plant, seed, soil, area, material or environment in which a pest or parasite is growing or may grow.

In general, "pesticidally effective amount" means the amount of active ingredient needed to achieve an observable effect on growth, including the effects of necrosis, death, retardation, prevention, and removal, destruction, or otherwise diminishing the occurrence and activity of the target organism. The pesticidally effective amount can vary for the various compounds/compositions used in the invention. A pesticidally effective amount of the compositions will also vary according to the prevailing conditions such as desired pesticidal effect and duration, weather, target species, locus, mode of application, and the like.

In the case of soil treatment or of application to the pests dwelling place or nest, the quantity of active ingredient ranges from 0.0001 to 500 g per 100 m^2, preferably from 0.001 to 20 g per 100 m^2.

Customary application rates in the protection of materials are, for example, from 0.01 g to 1000 g of active compound per m^2 treated material, desirably from 0.1 g to 50 g per m^2.

Insecticidal compositions for use in the impregnation of materials typically contain from 0.001 to 95 weight %, preferably from 0.1 to 45 weight %, and more preferably from 1 to 25 weight % of at least one repellent and/or insecticide.

For use in treating crop plants, the rate of application of the active ingredients of this invention may be in the range of 0.1 g to 4000 g per hectare, desirably from 5 g to 500 g per hectare, more desirably from 5 g to 200 g per hectare.

The compounds of the present invention are effective through both contact (via soil, glass, wall, bed net, carpet, plant parts or animal parts), and ingestion (bait, or plant part).

The compounds of the present invention may also be applied against non-crop insect pests, such as ants, termites, wasps, flies, mosquitos, crickets, or cockroaches. For use against said non-crop pests, compounds of the present invention are preferably used in a bait composition.

The bait can be a liquid, a solid or a semisolid preparation (e.g. a gel). Solid baits can be formed into various shapes and forms suitable to the respective application e.g. granules, blocks, sticks, disks. Liquid baits can be filled into various devices to ensure proper application, e.g. open containers, spray devices, droplet sources, or evaporation sources. Gels can be based on aqueous or oily matrices and can be formulated to particular necessities in terms of stickyness, moisture retention or aging characteristics.

The bait employed in the composition is a product, which is sufficiently attractive to incite insects such as ants, termites, wasps, flies, mosquitos, crickets etc. or cockroaches to eat it. The attractiveness can be manipulated by using feeding stimulants or

sex pheromones. Food stimulants are chosen, for example, but not exclusively, from animal and/or plant proteins (meat-, fish- or blood meal, insect parts, egg yolk), from fats and oils of animal and/or plant origin, or mono-, oligo- or polyorganosaccharides, especially from sucrose, lactose, fructose, dextrose, glucose, starch, pectin or even molasses or honey. Fresh or decaying parts of fruits, crops, plants, animals, insects or specific parts thereof can also serve as a feeding stimulant. Sex pheromones are known to be more insect specific. Specific pheromones are described in the literature and are known to those skilled in the art.

For use in bait compositions, the typical content of active ingredient is from 0.001 weight % to 15 weight %, desirably from 0.001 weight % to 5% weight % of active ingredient.

Formulations of compounds of the present invention as aerosols (e.g in spray cans), oil sprays or pump sprays are highly suitable for the non-professional user for controlling pests such as flies, fleas, ticks, mosquitos or cockroaches. Aerosol recipes are preferably composed of the active compound, solvents such as lower alcohols (e.g. methanol, ethanol, propanol, butanol), ketones (e.g. acetone, methyl ethyl ketone), paraffin hydrocarbons (e.g. kerosenes) having boiling ranges of approximately 50 to 250 °C, dimethylformamide, N-methylpyrrolidone, dimethyl sulfoxide, aromatic hydrocarbons such as toluene, xylene, water, furthermore auxiliaries such as emulsifiers such as sorbitol monooleate, oleyl ethoxylate having 3-7 mol of ethylene oxide, fatty alcohol ethoxylate, perfume oils such as ethereal oils, esters of medium fatty acids with lower alcohols, aromatic carbonyl compounds, if appropriate stabilizers such as sodium benzoate, amphoteric surfactants, lower epoxides, triethyl orthoformate and, if required, propellants such as propane, butane, nitrogen, compressed air, dimethyl ether, carbon dioxide, nitrous oxide, or mixtures of these gases.

The oil spray formulations differ from the aerosol recipes in that no propellants are used.

For use in spray compositions, the content of active ingredient is from 0.001 to 80 weights %, preferably from 0.01 to 50 weight % and most preferably from 0.01 to 15 weight %.

The compounds of the present invention and its respective compositions can also be used in mosquito and fumigating coils, smoke cartridges, vaporizer plates or long-term vaporizers and also in moth papers, moth pads or other heat-independent vaporizer systems.

Methods to control infectious diseases transmitted by insects (e.g. malaria, dengue and yellow fever, lymphatic filariasis, and leishmaniasis) with compounds of the present invention and its respective compositions also comprise treating surfaces of huts and houses, air spraying and impregnation of curtains, tents, clothing items, bed nets, tsetse-fly trap or the like. Insecticidal compositions for application to fibers, fabric, knit-

goods, nonwovens, netting material or foils and tarpaulins preferably comprise a mixture including the insecticide, optionally a repellent and at least one binder. Suitable repellents for example are N,N-Diethyl-meta-toluamide (DEET), N,N-diethylphenylacetamide (DEPA), 1-(3-cyclohexan-1-yl-carbonyl)-2-methylpiperine, (2-hydroxymethylcyclohexyl) acetic acid lactone, 2-ethyl-1,3-hexandiol, indalone, Methyl-neodecanamide (MNDA), a pyrethroid not used for insect control such as {(+/-)-3-allyl-2-methyl-4-oxocyclopent-2-(+)-enyl-(+)-trans-chrysantemate (Esbiothrin), a repellent derived from or identical with plant extracts like limonene, eugenol, (+)-Eucamalol (1), (-)-1-epi-eucamalol or crude plant extracts from plants like Eucalyptus maculata, Vitex rotundifolia, Cymbopogan martinii, Cymbopogan citratus (lemon grass), Cymopogan nartdus (citronella). Suitable binders are selected for example from polymers and copolymers of vinyl esters of aliphatic acids (such as such as vinyl acetate and vinyl versatate), acrylic and methacrylic esters of alcohols, such as butyl acrylate, 2-ethylhexylacrylate, and methyl acrylate, mono- and di-ethylenically unsaturated hydrocarbons, such as styrene, and aliphatic diens, such as butadiene.

The impregnation of curtains and bednets is done in general by dipping the textile material into emulsions or dispersions of the insecticide or spraying them onto the nets.

The compounds of the present invention and their compositions can be used for protecting wooden materials such as trees, board fences, sleepers, etc. and buildings such as houses, outhouses, factories, but also construction materials, furniture, leathers, fibers, vinyl articles, electric wires and cables etc. from ants and/or termites, and for controlling ants and termites from doing harm to crops or human being (e.g. when the pests invade into houses and public facilities). The compounds of the present invention are applied not only to the surrounding soil surface or into the under-floor soil in order to protect wooden materials but it can also be applied to lumbered articles such as surfaces of the under-floor concrete, alcove posts, beams, plywoods, furniture, etc., wooden articles such as particle boards, half boards, etc. and vinyl articles such as coated electric wires, vinyl sheets, heat insulating material such as styrene foams, etc.

In case of application against ants doing harm to crops or human beings, the ant controller of the present invention is applied to the crops or the surrounding soil, or is directly applied to the nest of ants or the like.

The compounds of the present invention are also suitable for the treatment of plant propagation material, especially seeds, in order to protect them from insect pest, in particular from soil-living insect pests and the resulting plant' s roots and shoots against soil pests and foliar insects.

The compounds of the present invention are particularly useful for the protection of the seed from soil pests and the resulting plant' s roots and shoots against soil pests and foliar insects. The protection of the resulting plant' s roots and shoots is preferred.

More preferred is the protection of resulting plant' s shoots from piercing and sucking insects, wherein the protection from aphids is most preferred.

The present invention therefore comprises a method for the protection of seeds from insects, in particular from soil insects and of the seedlings' roots and shoots from insects, in particular from soil and foliar insects, said method comprising contacting the seeds before sowing and/or after pregermination with a compound of the present invention, including a salt thereof. Particularly preferred is a method, wherein the plant' s roots and shoots are protected, more preferably a method, wherein the plants shoots are protected form piercing and sucking insects, most preferably a method, wherein the plants shoots are protected from aphids.

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

The term 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 present invention also comprises seeds coated with or containing the active compound.

The term "coated with and/or containing" generally signifies that the active ingredient is for the most part on the surface of the propagation product at the time of application, although a greater or lesser part of the ingredient may penetrate into the propagation product, depending on the method of application. When the said propagation product is (re)planted, it may absorb the active ingredient.

Suitable seed is seed of cereals, root crops, oil crops, vegetables, spices, ornamentals, for example seed of durum and other wheat, barley, oats, rye, maize (fodder maize and sugar maize / sweet and field corn), soybeans, oil crops, crucifers, cotton, sunflowers, bananas, rice, oilseed rape, turnip rape, sugarbeet, fodder beet, eggplants, potatoes, grass, lawn, turf, fodder grass, tomatoes, leeks, pumpkin/squash, cabbage, iceberg lettuce, pepper, cucumbers, melons, Brassica species, melons, beans, peas, garlic, onions, carrots, tuberous plants such as potatoes, sugar cane, tobacco, grapes, petunias, geranium/pelargoniums, pansies and impatiens.

In addition, the active compound may also be used for the treatment seeds from plants, which tolerate the action of herbicides or fungicides or insecticides owing to breeding, including genetic engineering methods.

For example, the active compound can be employed in treatment of seeds from plants, which are resistant to herbicides from the group consisting of the sulfonylureas, imidazolinones, glufosinate-ammonium or glyphosate-isopropylammonium and analogous active substances (see for example, EP-A 242 236, EP-A 242 246) (WO 92/00377) (EP-A 257 993, U.S. 5,013,659) or in transgenic crop plants, for example cotton, with

the capability of producing Bacillus thuringiensis toxins (Bt toxins) which make the plants resistant to certain pests (EP-A 142 924, EP-A 193 259),
Furthermore, the active compound can be used also for the treatment of seeds from plants, which have modified characteristics in comparison with existing plants consist, which can be generated for example by traditional breeding methods and/or the generation of mutants, or by recombinant procedures). For example, a number of cases have been described of recombinant modifications of crop plants for the purpose of modifying the starch synthesized in the plants (e.g. WO 92/11376, WO 92/14827, WO 91/19806) or of transgenic crop plants having a modified fatty acid composition (WO 91/13972).
The seed treatment application of the active compound is carried out by spraying or by dusting the seeds before sowing of the plants and before emergence of the plants.

Compositions which are especially useful for seed treatment are e.g.:

A Soluble concentrates (SL, LS)
D Emulsions (EW, EO, ES)
E Suspensions (SC, OD, FS)
F Water-dispersible granules and water-soluble granules (WG, SG)
G Water-dispersible powders and water-soluble powders (WP, SP, WS)
H Gel-Formulations (GF)
I Dustable powders (DP, DS)

Conventional seed treatment formulations include for example flowable concentrates FS, solutions LS, powders for dry treatment DS, water dispersible powders for slurry treatment WS, water-soluble powders SS and emulsion ES and EC and gel formulation GF. These formulations can be applied to the seed diluted or undiluted. Application to the seeds is carried out before sowing, either directly on the seeds or after having pregerminated the latter.
In a preferred embodiment a FS formulation is used for seed treatment. Typcially, a FS formulation may comprise 1-800 g/l of active ingredient, 1-200 g/l Surfactant, 0 to 200 g/l antifreezing agent, 0 to 400 g/l of binder, 0 to 200 g/l of a pigment and up to 1 liter of a solvent, preferably water.
Especially preferred FS formulations of compounds of the present invention for seed treatment usually comprise from 0.1 to 80% by weight (1 to 800 g/l) of the active ingredient, from 0.1 to 20 % by weight (1 to 200 g/l) of at least one surfactant, e.g. 0.05 to 5 % by weight of a wetter and from 0.5 to 15 % by weight of a dispersing agent, up to 20 % by weight, e.g. from 5 to 20 % of an anti-freeze agent, from 0 to 15 % by weight, e.g. 1 to 15 % by weight of a pigment and/or a dye, from 0 to 40 % by weight, e.g. 1 to 40 % by weight of a binder (sticker /adhesion agent), optionally up to 5 % by weight, e.g.

from 0.1 to 5 % by weight of a thickener, optionally from 0.1 to 2 % of an anti-foam agent, and optionally a preservative such as a biocide, antioxidant or the like, e.g. in an amount from 0.01 to 1 % by weight and a filler/vehicle up to 100 % by weight.

Seed Treatment formulations may additionally also comprise binders and optionally colorants.

Binders can be added to improve the adhesion of the active materials on the seeds after treatment. Suitable binders are homo- and copolymers from alkylene oxides like ethylene oxide or propylene oxide, polyvinylacetate, polyvinylalcohols, polyvinylpyrrolidones, and copolymers thereof, ethylene-vinyl acetate copolymers, acrylic homo- and copolymers, polyethyleneamines, polyethyleneamides and polyethyleneimines, polysaccharides like celluloses, tylose and starch, polyolefin homo- and copolymers like olefin/maleic anhydride copolymers, polyurethanes, polyesters, polystyrene homo and copolymers.

Optionally, also colorants can be included in the formulation. Suitable colorants or dyes for seed treatment formulations are Rhodamin B, C.I. Pigment Red 112, C.I. Solvent Red 1, pigment blue 15:4, pigment blue 15:3, pigment blue 15:2, pigment blue 15:1, pigment blue 80, pigment yellow 1, pigment yellow 13, pigment red 112, pigment red 48:2, pigment red 48:1, pigment red 57:1, pigment red 53:1, pigment orange 43, pigment orange 34, pigment orange 5, pigment green 36, pigment green 7, pigment white 6, pigment brown 25, basic violet 10, basic violet 49, acid red 51, acid red 52, acid red 14, acid blue 9, acid yellow 23, basic red 10, basic red 108.

Examples of a gelling agent is carrageen (Satiagel®)

In the treatment of seed, the application rates of the compounds of the present invention are generally from 0.01 g to 10 kg per 100 kg of seed, preferably from 0.05 g to 5 kg per 100 kg of seed, more preferably from 0.1 g to 1000 g per 100 kg of seed and in particular from 0.1 g to 200 g per 100 kg of seed.

The invention therefore also relates to seed comprising a compound of the present invention, including an agriculturally useful salt of it, as defined herein. The amount of the compound of the present invention, including an agriculturally useful salt thereof will in general vary from 0.01 g to 10 kg per 100 kg of seed, preferably from 0.05 g to 5 kg per 100 kg of seed, in particular from 0.1 g to 1000 g per 100 kg of seed. For specific crops such as lettuce the rate can be higher.

Animal health

The compounds of the present invention, including their stereoisomers, veterinarily acceptable salts or N-oxides, are in particular also suitable for being used for combating parasites in and on animals.

An object of the present invention is therfore also to provide new methods to control parasites in and on animals. Another object of the invention is to provide safer pesti-

cides for animals. Another object of the invention is further to provide pesticides for animals that may be used in lower doses than existing pesticides. And another object of the invention is to provide pesticides for animals, which provide a long residual control of the parasites.

The invention also relates to compositions comprising a parasiticidally effective amount of compounds of the present invention, including their stereoisomers, veterinarily acceptable salts or N-oxides, and an acceptable carrier, for combating parasites in and on animals.

The present invention also provides a method for treating, controlling, preventing and protecting animals against infestation and infection by parasites, which comprises orally, topically or parenterally administering or applying to the animals a parasiticidally effective amount of a compound of the present invention, including its stereoisomers, veterinarily acceptable salts or N-oxides, or a composition comprising it.

The invention also provides a process for the preparation of a composition for treating, controlling, preventing or protecting animals against infestation or infection by parasites which comprises a parasiticidally effective amount of a compound of the present invention, including its stereoisomers, veterinarily acceptable salts or N-oxides, or a composition comprising it.

Activity of compounds against agricultural pests does not suggest their suitability for control of endo- and ectoparasites in and on animals which requires, for example, low, non-emetic dosages in the case of oral application, metabolic compatibility with the animal, low toxicity, and a safe handling.

Surprisingly it has now been found that compounds of formulae I or I' and their stereoisomers, veterinarily acceptable salts, tautomers and N-oxides, are suitable for combating endo- and ectoparasites in and on animals.

The compounds of the present invention, especially compounds of formulae I or I' and their stereoisomers, veterinarily acceptable salts, tautomers and N-oxides, and compositions comprising them are preferably used for controlling and preventing infestations of and infections in animals including warm-blooded animals (including humans) and fish. They are for example suitable for controlling and preventing infestations and infections in mammals such as cattle, sheep, swine, camels, deer, horses, pigs, poultry, rabbits, goats, dogs and cats, water buffalo, donkeys, fallow deer and reindeer, and also in fur-bearing animals such as mink, chinchilla and raccoon, birds such as hens, geese, turkeys and ducks and fish such as fresh- and salt-water fish such as trout, carp and eels.

Compounds of the present invention, including their stereoisomers, veterinarily acceptable salts or N-oxides, and compositions comprising them are preferably used for

controlling and preventing infestations and infections in domestic animals, such as dogs or cats.

Infestations in warm-blooded animals and fish include, but are not limited to, lice, biting lice, ticks, nasal bots, keds, biting flies, muscoid flies, flies, myiasitic fly larvae, chiggers, gnats, mosquitoes and fleas.

The compounds of the present invention, including their stereoisomers, veterinarily acceptable salts or N-oxides, and compositions comprising them are suitable for systemic and/or non-systemic control of ecto- and/or endoparasites. They are active against all or some stages of development.

The compounds of the present invention are especially useful for combating parasites of the following orders and species, respectively:

fleas (Siphonaptera), e.g. Ctenocephalides felis, Ctenocephalides canis, Xenopsylla cheopis, Pulex irritans, Tunga penetrans, and Nosopsyllus fasciatus,

cockroaches (Blattaria - Blattodea), e.g. Blattella germanica, Blattella asahinae, Periplaneta americana, Periplaneta japonica, Periplaneta brunnea, Periplaneta fuligginosa, Periplaneta australasiae, and Blatta orientalis,

flies, mosquitoes (Diptera), e.g. Aedes aegypti, Aedes albopictus, Aedes vexans, Anastrepha ludens, Anopheles maculipennis, Anopheles crucians, Anopheles albimanus, Anopheles gambiae, Anopheles freeborni, Anopheles leucosphyrus, Anopheles minimus, Anopheles quadrimaculatus, Calliphora vicina, Chrysomya bezziana, Chrysomya hominivorax, Chrysomya macellaria, Chrysops discalis, Chrysops silacea, Chrysops atlanticus, Cochliomyia hominivorax, Cordylobia anthropophaga, Culicoides furens, Culex pipiens, Culex nigripalpus, Culex quinquefasciatus, Culex tarsalis, Culiseta inornata, Culiseta melanura, Dermatobia hominis, Fannia canicularis, Gasterophilus intestinalis, Glossina morsitans, Glossina palpalis, Glossina fuscipes, Glossina tachinoides, Haematobia irritans, Haplodiplosis equestris, Hippelates spp., Hypoderma lineata, Leptoconops torrens, Lucilia caprina, Lucilia cuprina, Lucilia sericata, Lycoria pectoralis, Mansonia spp., Musca domestica, Muscina stabulans, Oestrus ovis, Phlebotomus argentipes, Psorophora columbiae, Psorophora discolor, Prosimulium mixtum, Sarcophaga haemorrhoidalis, Sarcophaga sp., Simulium vittatum, Stomoxys calcitrans, Tabanus bovinus, Tabanus atratus, Tabanus lineola, and Tabanus similis,

lice (Phthiraptera), e.g. Pediculus humanus capitis, Pediculus humanus corporis, Pthirus pubis, Haematopinus eurysternus, Haematopinus suis, Linognathus vituli, Bovicola bovis, Menopon gallinae, Menacanthus stramineus and Solenopotes capillatus.

ticks and parasitic mites (Parasitiformes): ticks (Ixodida), e.g. Ixodes scapularis, Ixodes holocyclus, Ixodes pacificus, Rhiphicephalus sanguineus, Dermacentor andersoni, Dermacentor variabilis, Amblyomma americanum, Ambryomma maculatum, Ornithodo-

rus hermsi, Ornithodorus turicata and parasitic mites (Mesostigmata), e.g. Ornithonyssus bacoti and Dermanyssus gallinae,
Actinedida (Prostigmata) und Acaridida (Astigmata) e.g. Acarapis spp., Cheyletiella spp., Ornithocheyletia spp., Myobia spp., Psorergates spp., 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,
Bugs (Heteropterida): Cimex lectularius, Cimex hemipterus, Reduvius senilis, Triatoma spp., Rhodnius ssp., Panstrongylus ssp. and Arilus critatus,
Anoplurida, e.g. Haematopinus spp., Linognathus spp., Pediculus spp., Phtirus spp., and Solenopotes spp,
Mallophagida (suborders Arnblycerina and Ischnocerina), e.g. Trimenopon spp., Menopon spp., Trinoton spp., Bovicola spp., Werneckiella spp., Lepikentron spp., Trichodectes spp., and Felicola spp,
Roundworms Nematoda:
Wipeworms and Trichinosis (Trichosyringida), e.g. Trichinellidae (Trichinella spp.), (Trichuridae) Trichuris spp., Capillaria spp,
Rhabditida, e.g. Rhabditis spp, Strongyloides spp., Helicephalobus spp,
Strongylida, e.g. Strongylus spp., Ancylostoma spp., Necator americanus, Bunostomum spp. (Hookworm), Trichostrongylus spp., Haemonchus contortus., Ostertagia spp., Cooperia spp., Nematodirus spp., Dictyocaulus spp., Cyathostoma spp., Oesophagostomum spp., Stephanurus dentatus, Ollulanus spp., Chabertia spp., Stephanurus dentatus , Syngamus trachea, Ancylostoma spp., Uncinaria spp., Globocephalus spp., Necator spp., Metastrongylus spp., Muellerius capillaris, Protostrongylus spp., Angiostrongylus spp., Parelaphostrongylus spp. Aleurostrongylus abstrusus, and Dioctophyma renale,
Intestinal roundworms (Ascaridida), e.g. Ascaris lumbricoides, Ascaris suum, Ascaridia galli, Parascaris equorum, Enterobius vermicularis (Threadworm), Toxocara canis, Toxascaris leonine, Skrjabinema spp., and Oxyuris equi,
Camallanida, e.g. Dracunculus medinensis (guinea worm)
Spirurida, e.g. Thelazia spp. Wuchereria spp., Brugia spp., Onchocerca spp., Dirofilari spp.a, Dipetalonema spp., Setaria spp., Elaeophora spp., Spirocerca lupi, and Habronema spp.,
Thorny headed worms (Acanthocephala), e.g. Acanthocephalus spp.,
Macracanthorhynchus hirudinaceus and Oncicola spp,
Planarians (Plathelminthes):
Flukes (Trematoda), e.g. Faciola spp., Fascioloides magna, Paragonimus spp., Dicrocoelium spp., Fasciolopsis buski, Clonorchis sinensis, Schistosoma spp., Trichobilharzia spp., Alaria alata, Paragonimus spp., and Nanocyetes spp,

Cercomeromorpha, in particular Cestoda (Tapeworms), e.g. Diphyllobothrium spp., Tenia spp., Echinococcus spp., Dipylidium caninum, Multiceps spp., Hymenolepis spp., Mesocestoides spp., Vampirolepis spp., Moniezia spp., Anoplocephala spp., Sirometra spp., Anoplocephala spp., and Hymenolepis spp.

The compounds of formulae I or I' and compositions containing them are particularly useful for the control of pests from the orders Diptera, Siphonaptera and Ixodida. Moreover, the use of the compounds of formulae I or I' and compositions containing them for combating mosquitoes is especially preferred.
The use of the compounds of formulae I or I' and compositions containing them for combating flies is a further preferred embodiment of the present invention.
Furthermore, the use of the compounds of formulae I or I' and compositions containing them for combating fleas is especially preferred.
The use of the compounds of formulae I or I' and compositions containing them for combating ticks is a further preferred embodiment of the present invention.
The compounds of formulae I or I' also are especially useful for combating endoparasites (roundworms nematoda, thorny headed worms and planarians).

Administration can be carried out both prophylactically and therapeutically.
Administration of the active compounds is carried out directly or in the form of suitable preparations, orally, topically/dermally or parenterally.
For oral administration to warm-blooded animals, the formulae I or I' compounds 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 formulae I or I' compounds may be administered to the animals in their drinking water. For oral administration, the dosage form chosen should provide the animal with 0.01 mg/kg to 100 mg/kg of animal body weight per day of the formulae I or I' compound, preferably with 0.5 mg/kg to 100 mg/kg of animal body weight per day.
Alternatively, the formulae I or I' compounds may be administered to animals parenterally, for example, by intraruminal, intramuscular, intravenous or subcutaneous injection. The formulae I or I' compounds may be dispersed or dissolved in a physiologically acceptable carrier for subcutaneous injection. Alternatively, the formulae I or I' compounds may be formulated into an implant for subcutaneous administration. In addition the formulae I or I' compound may be transdermally administered to animals. For parenteral administration, the dosage form chosen should provide the animal with 0.01 mg/kg to 100 mg/kg of animal body weight per day of the formulae I or I' compound.
The formulae I or I' compounds may also be applied topically to the animals in the form of dips, dusts, powders, collars, medallions, sprays, shampoos, spot-on and pour-on formulations and in ointments or oil-in-water or water-in-oil emulsions. For topical appli-

cation, dips and sprays usually contain 0.5 ppm to 5,000 ppm and preferably 1 ppm to 3,000 ppm of the formulae I or I' compound. In addition, the formulae I or I' compounds may be formulated as ear tags for animals, particularly quadrupeds such as cattle and sheep.

Suitable preparations are:

- Solutions such as oral solutions, concentrates for oral administration after dilution, solutions for use on the skin or in body cavities, pouring-on formulations, gels;
- Emulsions and suspensions for oral or dermal administration; semi-solid preparations;
- Formulations in which the active compound is processed in an ointment base or in an oil-in-water or water-in-oil emulsion base;
- Solid preparations such as powders, premixes or concentrates, granules, pellets, tablets, boluses, capsules; aerosols and inhalants, and active compound-containing shaped articles.

Compositions suitable for injection are prepared by dissolving the active ingredient in a suitable solvent and optionally adding further ingredients such as acids, bases, buffer salts, preservatives, and solubilizers. The solutions are filtered and filled sterile.

Suitable solvents are physiologically tolerable solvents such as water, alkanols such as ethanol, butanol, benzyl alcohol, glycerol, propylene glycol, polyethylene glycols, N-methyl-pyrrolidone, 2-pyrrolidone, and mixtures thereof.

The active compounds can optionally be dissolved in physiologically tolerable vegetable or synthetic oils which are suitable for injection.

Suitable solubilizers are solvents which promote the dissolution of the active compound in the main solvent or prevent its precipitation. Examples are polyvinylpyrrolidone, polyvinyl alcohol, polyoxyethylated castor oil, and polyoxyethylated sorbitan ester.

Suitable preservatives are benzyl alcohol, trichlorobutanol, p-hydroxybenzoic acid esters, and n-butanol.

Oral solutions are administered directly. Concentrates are administered orally after prior dilution to the use concentration. Oral solutions and concentrates are prepared according to the state of the art and as described above for injection solutions, sterile procedures not being necessary.

Solutions for use on the skin are trickled on, spread on, rubbed in, sprinkled on or sprayed on.

Solutions for use on the skin are prepared according to the state of the art and according to what is described above for injection solutions, sterile procedures not being necessary.

Further suitable solvents are polypropylene glycol, phenyl ethanol, phenoxy ethanol, ester such as ethyl or butyl acetate, benzyl benzoate, ethers such as alkyleneglycol alkylether, e.g. dipropylenglycol monomethylether, ketons such as acetone, meth-

ylethylketone, aromatic hydrocarbons, vegetable and synthetic oils, dimethylformamide, dimethylacetamide, transcutol, solketal, propylencarbonate, and mixtures thereof.

It may be advantageous to add thickeners during preparation. Suitable thickeners are inorganic thickeners such as bentonites, colloidal silicic acid, aluminium monostearate, organic thickeners such as cellulose derivatives, polyvinyl alcohols and their copolymers, acrylates and methacrylates.

Gels are applied to or spread on the skin or introduced into body cavities. Gels are prepared by treating solutions which have been prepared as described in the case of the injection solutions with sufficient thickener that a clear material having an ointment-like consistency results. The thickeners employed are the thickeners given above.

Pour-on formulations are poured or sprayed onto limited areas of the skin, the active compound penetrating the skin and acting systemically.

Pour-on formulations are prepared by dissolving, suspending or emulsifying the active compound in suitable skin-compatible solvents or solvent mixtures. If appropriate, other auxiliaries such as colorants, bioabsorption-promoting substances, antioxidants, light stabilizers, adhesives are added.

Suitable solvents which are: water, alkanols, glycols, polyethylene glycols, polypropylene glycols, glycerol, aromatic alcohols such as benzyl alcohol, phenylethanol, phenoxyethanol, esters such as ethyl acetate, butyl acetate, benzyl benzoate, ethers such as alkylene glycol alkyl ethers such as dipropylene glycol monomethyl ether, diethylene glycol mono-butyl ether, ketones such as acetone, methyl ethyl ketone, cyclic carbonates such as propylene carbonate, ethylene carbonate, aromatic and/or aliphatic hydrocarbons, vegetable or synthetic oils, DMF, dimethylacetamide, n-alkylpyrrolidones such as methylpyrrolidone, n-butylpyrrolidone or n-octylpyrrolidone, N-methylpyrrolidone, 2-pyrrolidone, 2,2-dimethyl-4-oxy-methylene-1,3-diox- olane and glycerol formal.

Suitable colorants are all colorants permitted for use on animals and which can be dissolved or suspended.

Suitable absorption-promoting substances are, for example, DMSO, spreading oils such as isopropyl myristate, dipropylene glycol pelargonate, silicone oils and copolymers thereof with polyethers, fatty acid esters, triglycerides, fatty alcohols.

Suitable antioxidants are sulfites or metabisulfites such as potassium metabisulfite, ascorbic acid, butylhydroxytoluene, butylhydroxyanisole, tocopherol.

Suitable light stabilizers are, for example, novantisolic acid.

Suitable adhesives are, for example, cellulose derivatives, starch derivatives, polyacrylates, natural polymers such as alginates, gelatin.

Emulsions can be administered orally, dermally or as injections.

Emulsions are either of the water-in-oil type or of the oil-in-water type.

They are prepared by dissolving the active compound either in the hydrophobic or in the hydrophilic phase and homogenizing this with the solvent of the other phase with the aid of suitable emulsifiers and, if appropriate, other auxiliaries such as colorants, absorption-promoting substances, preservatives, antioxidants, light stabilizers, viscosity-enhancing substances.

Suitable hydrophobic phases (oils) are:

liquid paraffins, silicone oils, natural vegetable oils such as sesame oil, almond oil, castor oil, synthetic triglycerides such as caprylic/capric biglyceride, triglyceride mixture with vegetable fatty acids of the chain length C_8-C_{12} or other specially selected natural fatty acids, partial glyceride mixtures of saturated or unsaturated fatty acids possibly also containing hydroxyl groups, mono- and diglycerides of the C_8-C_{10} fatty acids, fatty acid esters such as ethyl stearate, di-n-butyryl adipate, hexyl laurate, dipropylene glycol perlargonate, esters of a branched fatty acid of medium chain length with saturated fatty alcohols of chain length C_{16}-C_{18}, isopropyl myristate, isopropyl palmitate, caprylic/capric acid esters of saturated fatty alcohols of chain length C_{12}-C_{18}, isopropyl stearate, oleyl oleate, decyl oleate, ethyl oleate, ethyl lactate, waxy fatty acid esters such as synthetic duck coccygeal gland fat, dibutyl phthalate, diisopropyl adipate, and ester mixtures related to the latter, fatty alcohols such as isotridecyl alcohol, 2-octyldodecanol, cetylstearyl alcohol, oleyl alcohol, and fatty acids such as oleic acid and mixtures thereof.

Suitable hydrophilic phases are: water, alcohols such as propylene glycol, glycerol, sorbitol and mixtures thereof.

Suitable emulsifiers are:

non-ionic surfactants, e.g. polyethoxylated castor oil, polyethoxylated sorbitan monooleate, sorbitan monostearate, glycerol monostearate, polyoxyethyl stearate, alkylphenol polyglycol ether;

ampholytic surfactants such as di-sodium N-lauryl-p-iminodipropionate or lecithin;

anionic surfactants, such as sodium lauryl sulfate, fatty alcohol ether sulfates, mono/dialkyl polyglycol ether orthophosphoric acid ester monoethanolamine salt;

cation-active surfactants, such as cetyltrimethylammonium chloride.

Suitable further auxiliaries are: substances which enhance the viscosity and stabilize the emulsion, such as carboxymethylcellulose, methylcellulose and other cellulose and starch derivatives, polyacrylates, alginates, gelatin, gum arabic, polyvinylpyrrolidone, polyvinyl alcohol, copolymers of methyl vinyl ether and maleic anhydride, polyethylene glycols, waxes, colloidal silicic acid or mixtures of the substances mentioned.

Suspensions can be administered orally or topically/dermally. They are prepared by suspending the active compound in a suspending agent, if appropriate with addition of other auxiliaries such as wetting agents, colorants, bioabsorption-promoting substances, preservatives, antioxidants, light stabilizers.

Liquid suspending agents are all homogeneous solvents and solvent mixtures.
Suitable wetting agents (dispersants) are the emulsifiers given above.
Other auxiliaries which may be mentioned are those given above.
Semi-solid preparations can be administered orally or topically/dermally. They differ from the suspensions and emulsions described above only by their higher viscosity.
For the production of solid preparations, the active compound is mixed with suitable excipients, if appropriate with addition of auxiliaries, and brought into the desired form.
Suitable excipients are all physiologically tolerable solid inert substances. Those used are inorganic and organic substances. Inorganic substances are, for example, sodium chloride, carbonates such as calcium carbonate, hydrogencarbonates, aluminium oxides, titanium oxide, silicic acids, argillaceous earths, precipitated or colloidal silica, or phosphates. Organic substances are, for example, sugar, cellulose, foodstuffs and feeds such as milk powder, animal meal, grain meals and shreds, starches.
Suitable auxiliaries are preservatives, antioxidants, and/or colorants which have been mentioned above.
Other suitable auxiliaries are lubricants and glidants such as magnesium stearate, stearic acid, talc, bentonites, disintegration-promoting substances such as starch or crosslinked polyvinylpyrrolidone, binders such as starch, gelatin or linear polyvinylpyrrolidone, and dry binders such as microcrystalline cellulose.

In general, "parasiticidally effective amount" means the amount of active ingredient needed to achieve an observable effect on growth, including the effects of necrosis, death, retardation, prevention, and removal, destruction, or otherwise diminishing the occurrence and activity of the target organism. The parasiticidally effective amount can vary for the various compounds/compositions used in the invention. A parasiticidally effective amount of the compositions will also vary according to the prevailing conditions such as desired parasiticidal effect and duration, target species, mode of application, and the like.
The compositions which can be used in the invention can comprise generally from about 0.001 to 95% of the compound of formulae I or I'.
Generally it is favorable to apply the compounds of formulae I or I' in total amounts of 0.5 mg/kg to 100 mg/kg per day, preferably 1 mg/kg to 50 mg/kg per day.
Ready-to-use preparations contain the compounds acting against parasites, preferably ectoparasites, in concentrations of 10 ppm to 80 per cent by weight, preferably from 0.1 to 65 per cent by weight, more preferably from 1 to 50 per cent by weight, most preferably from 5 to 40 per cent by weight.
Preparations which are diluted before use contain the compounds acting against ectoparasites in concentrations of 0.5 to 90 per cent by weight, preferably of 1 to 50 per cent by weight.

Furthermore, the preparations comprise the compounds of formulae I or I' against endoparasites in concentrations of 10 ppm to 2 per cent by weight, preferably of 0.05 to 0.9 per cent by weight, very particularly preferably of 0.005 to 0.25 per cent by weight.

In a preferred embodiment of the present invention, the compositions comprising the compounds of formulae I or I' are applied dermally / topically.

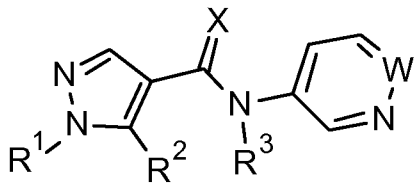
In a further preferred embodiment, the topical application is conducted in the form of compound-containing shaped articles such as collars, medallions, ear tags, bands for fixing at body parts, and adhesive strips and foils.

Generally it is favorable to apply solid formulations which release compounds of formulae I or I' in total amounts of 10 mg/kg to 300 mg/kg, preferably 20 mg/kg to 200 mg/kg, most preferably 25 mg/kg to 160 mg/kg body weight of the treated animal in the course of three weeks.

For the preparation of the shaped articles, thermoplastic and flexible plastics as well as elastomers and thermoplastic elastomers are used. Suitable plastics and elastomers are polyvinyl resins, polyurethane, polyacrylate, epoxy resins, cellulose, cellulose derivatives, polyamides and polyester which are sufficiently compatible with the compounds of formulae I or I'. A detailed list of plastics and elastomers as well as preparation procedures for the shaped articles is given e.g. in WO 03/086075.

Claims:

1. A pyrazole compound of the formula I,



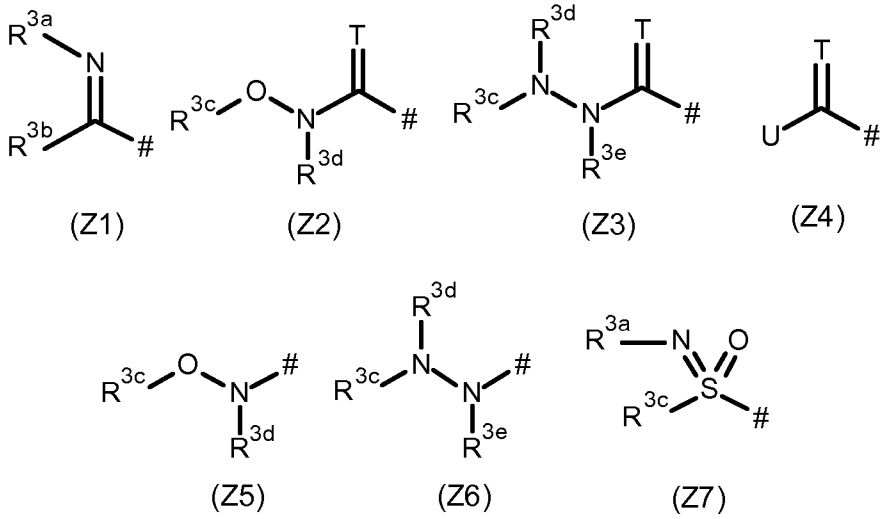
(I)

wherein

R^1 is selected from hydrogen, CN, NO_2, C_1-C_{10}-alkyl, C_2-C_{10}-alkenyl and C_2-C_{10}-alkynyl, wherein the three last mentioned radicals may be unsubstituted, may be partially or fully halogenated or may carry 1, 2 or 3 identical or different radicals R^x,
or R^1 is further selected from OR^a, SR^a, $C(Y)R^b$, $C(Y)OR^c$, $S(O)R^d$, $S(O)_2R^d$, NR^eR^f, $C(Y)NR^gR^h$, $S(O)_mNR^eR^f$, $C(Y)NR^iNR^eR^f$, C_1-C_5-alkylene-OR^a, C_1-C_5-alkylene-CN, C_1-C_5-alkylene-$C(Y)R^b$, C_1-C_5-alkylene-$C(Y)OR^c$, C_1-C_5-alkylene-NR^eR^f, C_1-C_5-alkylene-$C(Y)NR^gR^h$, C_1-C_5-alkylene-$S(O)_mR^a$, C_1-C_5-alkylene-$S(O)_mNR^eR^f$, C_1-C_5-alkylene-$NR^iNR^eR^f$, heterocyclyl, hetaryl, C_3-C_{10}-cycloalkyl, C_5-C_{10}-cycloalkenyl, heterocyclyl-C_1-C_5-alkyl, hetaryl-C_1-C_5-alkyl, C_3-C_{10}-cycloalkyl-C_1-C_5-alkyl, C_5-C_{10}-cycloalkenyl-C_1-C_5-alkyl, phenyl-C_1-C_5-alkyl and phenyl, wherein the rings of the ten last mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or 5 identical or different radicals R^y,
or R^1 is further selected from R^{1a} and C_1-C_5-alkylene-R^{1a}, wherein R^{1a} is a monospiro or dispiro 5- to 10-membered carbo- or heterocycle, which may contain 1 or 2 heteroatom moieties independently selected from N-R^j, O, and $S(O)_m$ as ring members, which monospiro or dispiro 5- to 10-membered carbo- or heterocycle is unsubstitued or may be substituted by 1, 2, 3 or 4 identical or different radicals R^k;

R^2 is halogen, C_1-C_6-alkyl, C_3-C_7-cycloalkyl, C_1-C_6-alkoxy, C_3-C_7-cycloalkoxy, C_3-C_7-cycloalkyl-C_1-C_4-alkyl or C_3-C_7-cycloalkyl-C_1-C_4-alkoxy, wherein the six last mentioned radicals may be unsubstituted, or may be partially or fully halogenated;

R^3 is Z or C_1-C_6-alkylene-Z, where an ethandiyl diradical within the alkylene moiety may be replaced by a C_3-C_7-cycloalkanediyl diradical,
wherein Z is selected from Z1, Z2, Z3, Z4, Z5, Z6 and Z7,



where # denotes the point of attachment to the remainder of the molecule,
or Z is a monospiro or dispiro 5- to 10-membered carbo- or heterocycle, which may contain 1 or 2 heteroatom moieties independently selected from N-R^j, O, and $S(O)_m$ as ring members, which monospiro or dispiro 5- to 10-membered carbo- or heterocycle is unsubstitued or may be substituted by 1, 2, 3 or 4 radicals R^k;

W is CH or N;

X, Y are independently of each other selected from O and S;

m is 0, 1 or 2;

R^a, R^b, R^c are independently of each other selected from hydrogen, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_2-C_4-alkenyl, C_2-C_4-haloalkenyl, C_2-C_4-alkynyl, C_1-C_4-alkoxy-C_1-C_4-alkyl, C_3-C_6-cycloalkyl, C_3-C_6-cycloalkylmethyl, heterocyclyl, heterocyclyl-C_1-C_4-alkyl, phenyl, hetaryl, phenyl-C_1-C_4-alkyl and hetaryl-C_1-C_4-alkyl, wherein the ring in the eight last mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or 5 substituents which, independently of each other, are selected from halogen, cyano, nitro, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy and C_1-C_4-haloalkoxy;

R^d is selected from C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_2-C_4-alkenyl, C_2-C_4-haloalkenyl, C_2-C_4-alkynyl, C_1-C_4-alkoxy-C_1-C_4-alkyl, C_3-C_6-cycloalkyl, C_3-C_6-cycloalkylmethyl, heterocyclyl, heterocyclyl-C_1-C_4-alkyl, phenyl, hetaryl, phenyl-C_1-C_4-alkyl and hetaryl-C_1-C_4-alkyl, wherein the ring in the eight last mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or 5 substituents which are independently of each

other selected from halogen, cyano, nitro, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy and C_1-C_4-haloalkoxy;

R^e, R^f are independently of each other selected from hydrogen, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_3-C_6-cycloalkyl, C_3-C_6-cycloalkylmethyl, C_3-C_6-halocycloalkyl, C_2-C_4-alkenyl, C_2-C_4-haloalkenyl, C_2-C_4-alkynyl, C_1-C_4-alkoxy-C_1-C_4-alkyl, C_1-C_4-alkylcarbonyl, C_1-C_4-haloalkylcarbonyl, C_1-C_4-alkylsulfonyl, C_1-C_4-haloalkylsulfonyl, heterocyclyl, heterocyclyl-C_1-C_4-alkyl, heterocyclylcarbonyl, heterocyclyl-C_1-C_4-sulfonyl, phenyl, phenylcarbonyl, phenylsulfonyl, hetaryl, hetarylcarbonyl, hetarylsulfonyl, phenyl-C_1-C_4-alkyl and hetaryl-C_1-C_4-alkyl, wherein the ring in the twelve last mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or 5 substituents which, independently of each other, are selected from halogen, cyano, nitro, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy and C_1-C_4-haloalkoxy; or

R^e and R^f together with the nitrogen atom to which they are bound form a 5- or 6-membered, saturated or unsaturated heterocycle, which may carry a further heteroatom being selected from O, S and N as a ring member atom and wherein the heterocycle may be unsubstituted or may carry 1, 2, 3, 4 or 5 substituents which are independently of each other selected from halogen, cyano, nitro, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy and C_1-C_4-haloalkoxy;

R^g, R^h are independently of each other selected from hydrogen, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_3-C_6-cycloalkyl, C_3-C_6-halocycloalkyl, C_2-C_4-alkenyl, C_2-C_4-haloalkenyl, C_2-C_4-alkynyl, C_1-C_4-alkoxy-C_1-C_4-alkyl, heterocyclyl, heterocyclyl-C_1-C_4-alkyl, phenyl, hetaryl, phenyl-C_1-C_4-alkyl and hetaryl-C_1-C_4-alkyl, wherein the ring in the six last mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or substituents which are independently of each other selected from halogen, cyano, nitro, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy and C_1-C_4-haloalkoxy;

R^i is selected from hydrogen, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_3-C_6-cycloalkyl, C_3-C_6-cycloalkylmethyl, C_3-C_6-halocycloalkyl, C_2-C_4-alkenyl, C_2-C_4-haloalkenyl, C_2-C_4-alkynyl, C_1-C_4-alkoxy-C_1-C_4-alkyl, phenyl and phenyl-C_1-C_4-alkyl wherein the phenyl ring in the two last mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or 5 substituents which are independently of each other selected from halogen, cyano, nitro, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy and C_1-C_4-haloalkoxy;

R^j is hydrogen, C_1-C_2-alkyl, C_1-C_2-haloalkyl, C_1-C_2-alkylcarbonyl and C_1-C_2-alkoxycarbonyl;

R^k is selected from halogen, CN, C_1-C_4-alkyl, C_1-C_4-alkoxy, C_1-C_2-alkoxy-C_1-C_2-alkyl, C_1-C_2-alkylidene, wherein the four last mentioned radicals may be unsubstituted, or may be partially or fully halogenated,
or R^k is selected from NO_2, $C(O)NH_2$, $C(S)NH_2$, C_1-C_2-alkylcarbonyloxy, C_1-C_4-alkoxy, C_1-C_2-haloalkoxy, C_1-C_2-alkyloxycarbonyl, or $S(O)_mR^d$,
or two geminal radicals R^x may together form a moiety selected from =O, =S, =N-R^{kk}, -N-OR^{kk} and =N-SR^{kk};

R^x is selected from cyano, nitro, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, $S(O)_mR^d$, $S(O)_mNR^eR^f$, C_1-C_{10}-alkylcarbonyl, C_1-C_4-haloalkylcarbonyl, C_1-C_4-alkoxycarbonyl, C_1-C_4-haloalkoxycarbonyl, C_3-C_6-cycloalkyl, 3- to 7-membered heterocyclyl, 5- or 6-membered hetaryl, phenyl, C_3-C_6-cycloalkoxy, 3- to 6-membered heterocyclyloxy and phenoxy, wherein the last 7 mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or 5 radicals R^y,
or two geminal radicals R^x may together form a moiety selected from =O, =S, =N-R^{xx}, -N-OR^{xx} and =N-SR^{xx};

R^y is selected from halogen, cyano, nitro, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, $S(O)_mR^d$, $S(O)_mNR^eR^f$, C_1-C_4-alkylcarbonyl, C_1-C_4-haloalkylcarbonyl, C_1-C_4-alkoxycarbonyl, C_1-C_4-haloalkoxycarbonyl, C_3-C_6-cycloalkyl, C_3-C_6-halocycloalkyl, C_2-C_4-alkenyl, C_2-C_4-haloalkenyl, C_2-C_4-alkynyl and C_1-C_4-alkoxy-C_1-C_4-alkyl,
or two geminal radicals R^y may together form a moiety selected from =O, =S, =N-R^{YY}, -N-OR^{YY} and =N-SR^{YY};

R^{kk}, R^{xx}, R^{YY} independently of each other and from each appearance are selected from C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_3-C_6-cycloalkyl and C_3-C_6-halocycloalkyl;

T is O or S;

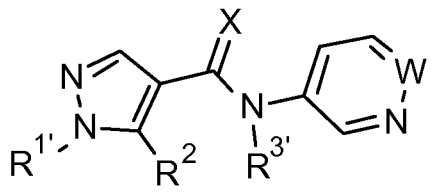
R^{3a}, R^{3b} are independently of each other selected from R^{31}, OR^{31} and $NR^{31}R^{32}$, wherein R^{31} and R^{32} are independently of each other selected from C_1-C_6-alkyl, C_3-C_{10}-cycloalkyl and C_3-C_{10}-cycloalkyl-C_1-C_6-alkyl, wherein the three last mentioned radicals may be unsubstituted, or may be partially or fully halogenated;

R^{3c}, R^{3d}, R^{3e} are independently of each other selected from C_1-C_6-alkyl, C_3-C_{10}-cycloalkyl and C_3-C_{10}-cycloalkyl-C_1-C_6-alkyl, wherein the three last mentioned radicals may be unsubstituted, or may be partially or fully halogenated;

U is an N-bound 5- to 10-membered saturated heterocyclyl which may or may not contain one further heteroatom moiety selected from O, S, C_1-C_4-alkyl-N and R^{3f}-C(Y)-N as ring member, wherein R^{3f} is hydrogen or C_1-C_5-alkyl;

a stereoisomer, salt, tautomer or N-oxide thereof.

2. A pyrazole compound of the formula I',



(I')

wherein

$R^{3'}$ is hydrogen, C_1-C_6-alkyl, C_3-C_7-cycloalkyl or C_3-C_7-cycloalkyl-C_1-C_4-alkyl, wherein the three last mentioned radicals may be unsubstituted, or may be partially or fully halogenated,
or $R^{3'}$ is C_1-C_6-alkoxy-C_1-C_3-alkyl or C_3-C_7-cycloalkoxy-C_1-C_3-alkyl;

$R^{1'}$ is Z^a, G-Z^a or G'-Z^b, wherein

G is C_1-C_6-alkylene, where an ethandiyl diradical within the C_1-C_6-alkylene moiety may be replaced by a C_3-C_7-cycloalkandiyl diradical;

Z^a is selected from Z2, Z3, Z4, Z5, Z6 and Z7 which are as defined in claim 1;

G' is either CR^lR^m-(C_1-C_4)-alkylene,
or, if $R^{3'}$ is not selected from hydrogen, C_1-C_2-alkyl and C_1-C_2-alkoxy-C_1-C_2-alkyl, G' may also be a direct bond or a diradical CR^lR^m,
wherein R^l and R^m are independently of each other selected from hydrogen and C_1-C_4-alkyl;

Z^b is a monospiro or dispiro 5- to 10-membered carbo- or heterocycle, which may contain 1 or 2 heteroatom moieties independently selected from N-R^j, O, and $S(O)_m$ as ring members, which monospiro or dispiro 5- to 10-membered carbo- or heterocycle is unsubstitued or may be substituted by 1, 2, 3 or 4 radicals R^k, wherein the variables R^j, m and R^k are as defined in claim 1,

or, if $R^{3'}$ is not selected from hydrogen, C_1-C_2-alkyl and C_1-C_2-alkoxy-C_1-C_2-alkyl, $R^{1'}$ may also be G''-Z1, where Z1 is as defined in claim 1 and G'' is C_1-C_8-alkylene;

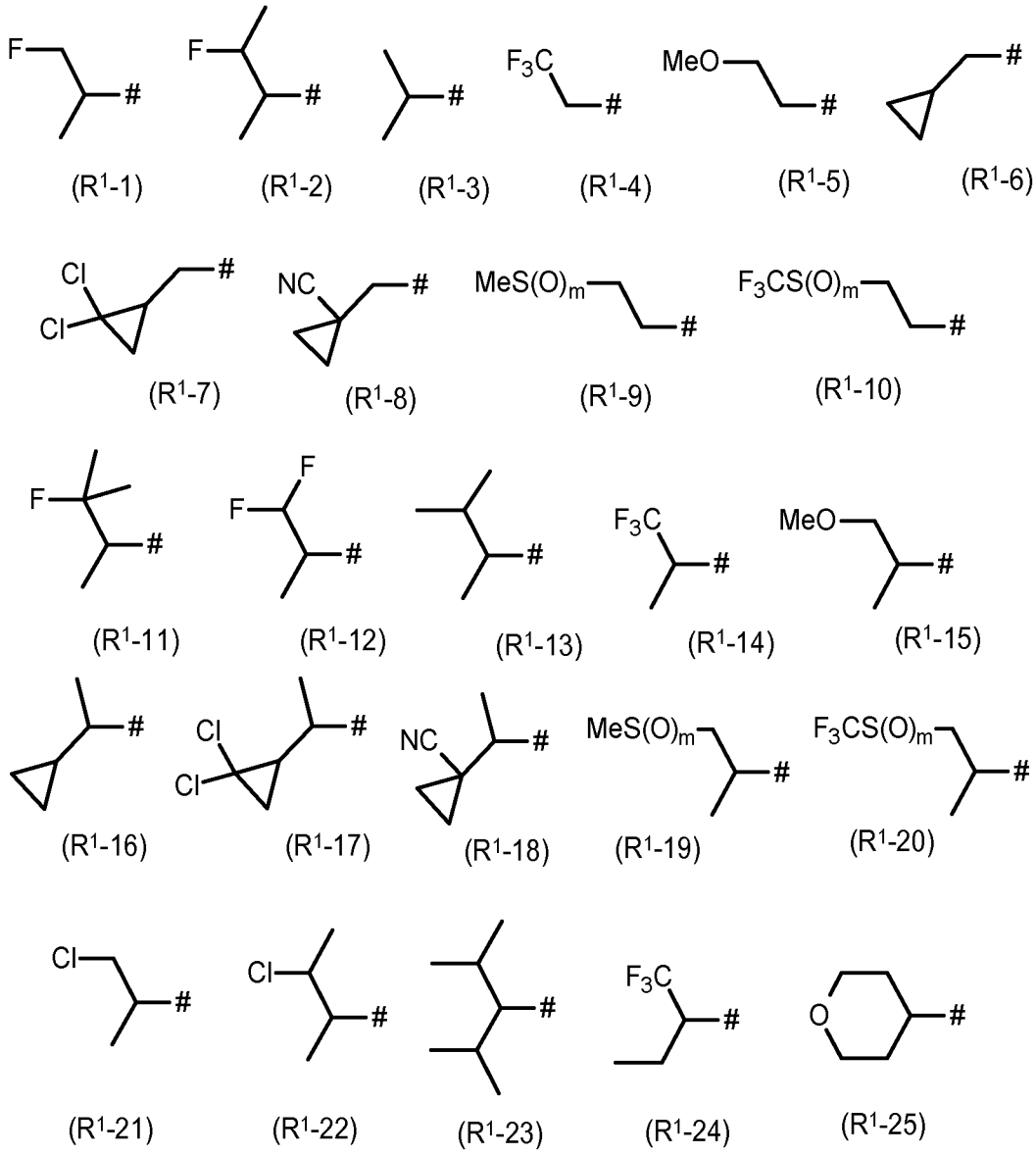
R^2, X and W are as defined in claim 1;

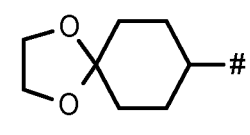
a stereoisomer, salt, tautomer or N-oxide thereof.

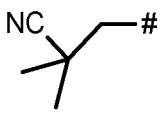
3. The pyrazole compound of the formula I as claimed in claim 1, wherein R^1 is selected from hydrogen, C_1-C_{10}-alkyl and C_2-C_{10}-alkenyl, wherein the two last mentioned radicals may be unsubstituted, may be partially or fully halogenated or may carry 1, 2 or 3 identical or different substituents selected from CN, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, C_1-C_4-alkyl-$S(O)_m$, C_1-C_4-haloalkyl-$S(O)_m$, C_3-C_6-cycloalkyl, 3- to 7-membered heterocyclyl, 5- or 6-membered hetaryl, phenyl and phenoxy, wherein the last five mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or 5 radicals selected from halogen, CN, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, C_1-C_4-alkylsulfonyl and C_1-C_4-haloalkylsulfonyl,
or R^1 is further selected from C_3-C_6-cycloalkyl, 3- to 7-membered heterocyclyl, 5- to 6-membered hetaryl and phenyl, wherein the four last mentioned radicals may be unsubstituted or may carry 1, 2, 3, 4 or 5 identical or different substituents selected from halogen, NO_2, CN, C_1-C_4-alkyl, C_3-C_6-cycloalkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, C_1-C_4-alkylthio, C_1-C_4-haloalkylthio, C_1-C_4-alkylsulfonyl and C_1-C_4-haloalkylsulfonyl,
or R^1 is further selected from R^{1a} and C_1-C_5-alkylene-R^{1a}, wherein R^{1a} is a monospiro or dispiro 5- to 10-membered carbo- or heterocycle, which may contain 1 or 2 heteroatom moieties independently selected from NH, N-C_1-C_2-alkyl, N-C_1-C_2-haloalkyl, O, and $S(O)_m$ as ring members, which monospiro or dispiro 5- to 10-membered carbo- or heterocycle is unsubstitued or may be substituted by 1 or 2 radicals selected from halogen, CN, C_1-C_2-alkyl, C_1-C_2-haloalkyl and C_1-C_2-alkoxy.

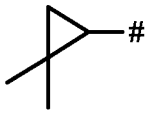
4. The pyrazole compound of the formula I as claimed in claim 3, wherein R^1 is selected from hydrogen, C_1-C_8-alkyl and C_2-C_6-alkenyl, wherein the two last mentioned radicals may be unsubstituted, may be partially or fully halogenated or may carry 1 or 2 identical or different substituents selected from CN, C_1-C_4-alkoxy, C_1-C_4-alkyl-$S(O)_m$, C_1-C_4-haloalkyl-$S(O)_m$, C_3-C_6-cycloalkyl, 5- to 6-membered heterocyclyl, 5- or 6-membered hetaryl and phenyl, wherein the last four mentioned radicals may be unsubstituted or may carry 1, 2, or 3 radicals selected from halogen, CN, C_1-C_2-alkyl and C_1-C_2-haloalkyl,
or R^1 is further selected from C_3-C_6-cycloalkyl, 5- to 6-membered heterocyclyl, 5- to 6-membered hetaryl and phenyl, wherein the four last mentioned radicals may be unsubstituted or may carry 1 or 2 identical or different substituents selected from halogen, CN, C_1-C_2-alkyl, C_1-C_2-haloalkyl, C_1-C_2-alkoxy and C_1-C_4-haloalkoxy,
or R^1 is further selected from R^{1a} and C_1-C_3-alkylene-R^{1a}, wherein R^{1a} is a monospiro or dispiro 5- to 10-membered carbo- or heterocycle, which may contain 1 or 2 heteroatom moieties independently selected from NH and O as ring members, which monospiro or dispiro 5- to 10-membered carbo- or heterocycle is unsubstitued or may be substituted by 1 or 2 radicals selected from halogen, CN, C_1-C_2-alkyl and C_1-C_2-haloalkyl.

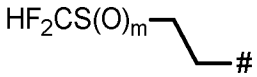
5. The pyrazole compound of the formula I as claimed in claim 4, wherein R^1 is selected from the variables R^1-1, R^1-2, R^1-3, R^1-4, R^1-5, R^1-6, R^1-7, R^1-8, R^1-9, R^1-10, R^1-11, R^1-12, R^1-13, R^1-14, R^1-15, R^1-16, R^1-17, R^1-18, R^1-19, R^1-20, R^1-21, R^1-22, R^1-23, R^1-24, R^1-25, R^1-26, R^1-27, R^1-28, R^1-29, R^1-30, R^1-31, R^1-32, R^1-33, R^1-34, R^1-35, R^1-36, R^1-37, R^1-38, R^1-39, R^1-40, R^1-41 and R^1-42,

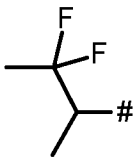


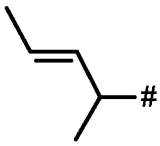

(R1-26)

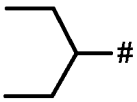

(R1-27)

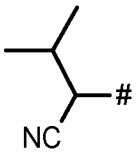

(R1-28)

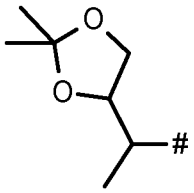

(R1-29)

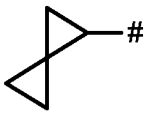

(R1-30)

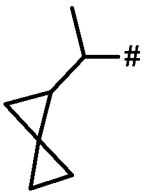

(R1-31)

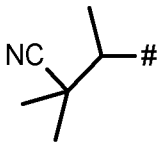

(R1-32)

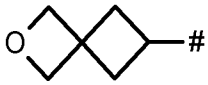

(R1-33)

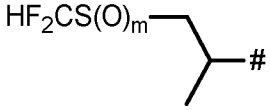

(R1-34)

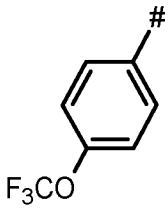

(R1-35)

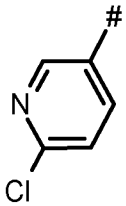

(R1-36)

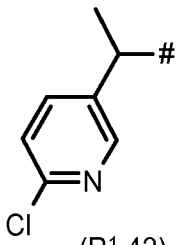

(R1-37)


(R1-38)


(R1-39)

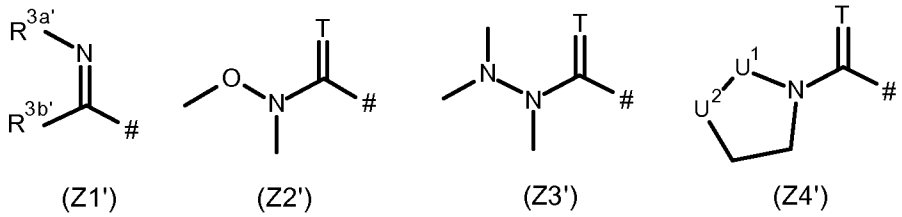

(R1-40)

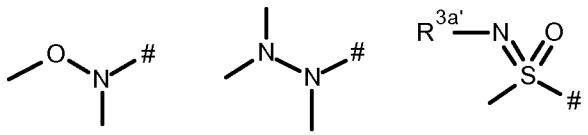

(R1-41)

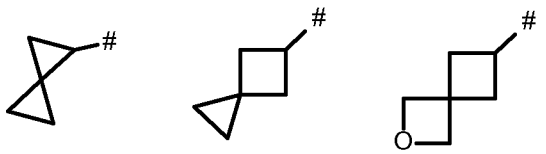

(R1-42)

where # denotes the point of attachment to the remainder of the molecule.

6. The pyrazole compound of the formula I as claimed in any one of claims 1, 3, 4 or 5, wherein R^3 is selected from Z' or C_1-C_2-alkylene-Z', wherein Z' is selected from Z1', Z2', Z3', Z4', Z5', Z6', Z7', Z8, Z9 or Z10,


(Z1') (Z2') (Z3') (Z4')


(Z5') (Z6') (Z7')


(Z8) (Z9) (Z10)

where # denotes the binding site to the remainder of the molecule;
$R^{3a'}$, $R^{3b'}$ are independently of each other selected from methyl, methoxy and di(methyl)N;
U^1 is CH_2 provided that U^2 is CH_2, or
U^1 is CH_2CH_2 provided that U^2 is selected from CH_2, O, methyl-N and acetyl-N; and
T is O or S.

7. The pyrazole compound of the formula I' as claimed in claim 2, wherein $R^{1'}$ is selected from Z^a, $CH_n(CH_3)_{2-n}$-Z^a and $CH_n(CH_3)_{2-n}$-CH_2-Z^c, where n is 0, 1 or 2, and Z^c is Z^a or Z^b.

8. The pyrazole compound of the formula I' as claimed in claim 2 or claim 7, wherein Z^a is selected from Z2', Z3', Z4', Z5', Z6' and Z7' which are as defined in claim 6 and Z^b is selected from Z8, Z9 and Z10 which are as defined in claim 6.

9. The pyrazole compound of the formula I' as claimed in any one of claims 2, 7 or 8, wherein $R^{3'}$ is selected from hydrogen, C_1-C_4-alkyl and C_1-C_3-alkoxy-C_1-C_3-alkyl.

10. The pyrazole compound of the formula I' as claimed in claim 9, wherein $R^{3'}$ is selected from hydrogen, methyl, ethyl, methoxymethyl and ethoxymethyl.

11. The pyrazole compound of the formulae I or I' as claimed in any one of the preceding claims, wherein R^2 is selected from C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_3-C_7-cycloalkyl and C_3-C_7-halocycloalkyl.

12. The pyrazole compound of the formulae I or I' as claimed in claim 11, wherein R^2 is selected from C_1-C_2-alkyl, fluorinated C_1-C_2-alkyl and C_3-C_6-cycloalkyl.

13. The pyrazole compound of the formulae I or I' as claimed in claim 12, wherein R^2 is selected from methyl, cyclopropyl, CHF_2 and CF_3.

14. The pyrazole compound of the formula I as claimed in any one of claims 5, 6 or 12, wherein

R^1 is selected from the radicals R^1-1, R^1-2, R^1-3, R^1-4, R^1-5, R^1-6, R^1-7, R^1-8, R^1-9, R^1-10, R^1-11, R^1-12, R^1-13, R^1-14, R^1-15, R^1-16, R^1-17, R^1-18, R^1-19, R^1-20, R^1-21, R^1-22, R^1-23, R^1-24, R^1-25, R^1-26, R^1-27, R^1-28, R^1-29, R^1-30, R^1-31, R^1-32, R^1-33, R^1-34, R^1-35, R^1-36, R^1-37, R^1-38, R^1-39, R^1-40, R^1-41 and R^1-42;

R^2 is selected from C_1-C_2-alkyl, fluorinated C_1-C_2-alkyl and C_3-C_6-cycloalkyl;

R^3 is Z' or C_1-C_2-alkylene-Z', wherein Z' is selected from the radicals Z1', Z2', Z3', Z4', Z5', Z6', Z7', Z8, Z9 and Z10;

W is CH or N; and

X is O or S.

15. The pyrazole compound of the formula I' as claimed in any one of claims 8, 10 or 12, wherein

$R^{1'}$ is selected from Z^a, $CH_n(CH_3)_{2-n}$-Z^a and $CH_n(CH_3)_{2-n}$-CH_2-Z^c, wherein n is 0, 1 or 2, and Z^c is Z^a or Z^b, where Z^a or Z^b are as defined in claim 8;

R^2 is selected from C_1-C_2-alkyl, fluorinated C_1-C_2-alkyl and C_3-C_6-cycloalkyl;

$R^{3'}$ is selected from hydrogen, methyl, ethyl, methoxymethyl and ethoxymethyl;

W is CH or N; and

X is O or S.

16. An agricultural or veterinary composition for combating animal pests comprising a pyrazole compound according to any one of claims 1 to 15 and at least one inert liquid and/or solid agriculturally or veterinarily acceptable carrier and, if desired, at least one surfactant.

17. A method for combating or controlling invertebrate pests, which method comprises contacting said pest or its food supply, habitat or breeding grounds with a pesticidally effective amount of a pyrazole compound according to any one of claims 1 to 15.

18. A method for protecting growing plants or plant propagation materials from attack or infestation by invertebrate pests, which method comprises contacting a plant, a plant propagation material or soil or water in which the plant is growing, with a pesticidally effective amount of a pyrazole compound according to any one of claims 1 to 15.

19. Plant propagation material comprising a pyrazole compound according to any one of claims 1 to 15 in an amount of from 0.1 g to 10 kg per 100 kg of seed.

20. A method for protection of plant propagation material comprising contacting the plant propagation material with a pyrazole compound according to any one of claims 1 to 15 in an amount of from 0.1 g to 10 kg per 100 kg of plant propagation material.

21. The use of a pyrazole compound according to any one of claims 1 to 15 for protecting growing plants or plant propagation material from attack or infestation by invertebrate pests.

22. A method for protecting animals against infestation or infection by parasites which comprises administering to the animals a pyrazole compound according to any one of claims 1 to 15 to the animal in need thereof.

23. A method for treating animals infested or infected by parasites which comprises administering to the animals a parasitically effective amount of a pyrazole compound according to any one of claims 1 to 15 to the animal in need thereof.

24. Use of a pyrazole compound according to any one of claims 1 to 15 for combating parasites in and on animals.

25. The pyrazole compound as claimed in any one of claims 1 to 15 for preparing a medicament for treating animals infested or infected by parasites.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/072113

A. CLASSIFICATION OF SUBJECT MATTER
INV. C07D403/12 C07D401/12 A01N43/56 A01N43/58
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
C07D A01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2010/034737 A1 (BASF SE [DE]; GROS STEFFEN [DE]; KOERBER KARSTEN [DE]; DEYN WOLFGANG V) 1 April 2010 (2010-04-01) cited in the application claim 1	1-25
X	WO 2009/027393 A2 (BASF SE [DE]; GROSS STEFFEN [DE]; BREUNINGER DELPHINE [DE]; BASTIAANS) 5 March 2009 (2009-03-05) cited in the application claim 1	1-25

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 November 2013	27/11/2013

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Bérillon, Laurent

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2013/072113

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2010034737 A1	01-04-2010	AR 073316 A1	28-10-2010
		AU 2009295936 A1	01-04-2010
		CA 2736538 A1	01-04-2010
		CN 102224149 A	19-10-2011
		EA 201100529 A1	30-12-2011
		EP 2342196 A1	13-07-2011
		JP 2012503622 A	09-02-2012
		KR 20110058906 A	01-06-2011
		TW 201016670 A	01-05-2010
		US 2011269770 A1	03-11-2011
		UY 32141 A	26-03-2010
		WO 2010034737 A1	01-04-2010
WO 2009027393 A2	05-03-2009	AR 068063 A1	04-11-2009
		AU 2008292238 A1	05-03-2009
		CA 2695733 A1	05-03-2009
		CN 101835377 A	15-09-2010
		CO 6170408 A2	18-06-2010
		CR 11297 A	19-05-2010
		EC SP109992 A	31-03-2010
		EP 2197280 A2	23-06-2010
		JP 2010536926 A	02-12-2010
		KR 20100065340 A	16-06-2010
		MA 31709 B1	01-09-2010
		PE 06092009 A1	14-06-2009
		RU 2010111359 A	10-10-2011
		TW 200917962 A	01-05-2009
		US 2011059973 A1	10-03-2011
		UY 31308 A1	02-03-2009
		WO 2009027393 A2	05-03-2009