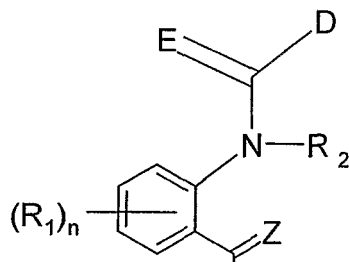


Novel Insecticides

The present invention relates to novel anthranilamide derivatives, to processes for their preparation, to compositions comprising those compounds, and to their use for controlling insects or representatives of the order *Acarina*.

Anthranilamide derivatives with insecticidal properties are known and described, for example, in WO 01/70671, WO 03/016284, WO 03/015518, WO 03/024222 and WO 04/033468. There have now been found novel anthranilamide derivatives with pesticidal properties, especially for the control of insects and members of the order *Acarina*.

The present invention accordingly relates to compounds of formula I



(I),

C_4 haloalkoxy, C_1 - C_4 alkylthio, C_1 - C_4 haloalkylthio, C_1 - C_4 alkylsulfinyl, C_1 - C_4 alkylsulfonyl, C_1 - C_4 alkylamino, C_2 - C_4 dialkylamino, C_3 - C_6 cycloalkylamino, C_1 - C_6 alkyl- C_3 - C_6 cycloalkylamino, C_2 - C_4 alkylcarbonyl, C_2 - C_6 alkoxycarbonyl, C_2 - C_6 alkylaminocarbonyl, C_3 - C_6 dialkylaminocarbonyl, C_2 - C_6 alkoxycarbonyloxy, C_2 - C_6 alkylaminocarbonyloxy, C_3 - C_6 dialkylaminocarbonyloxy or C_3 - C_6 trialkylsilyl, or by a three- to ten-membered monocyclic or fused bicyclic ring system which can be aromatic, partially saturated or fully saturated and can contain 1 to 4 hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, it not being possible for each ring system to contain more than 2 oxygen atoms and more than 2 sulfur atoms, and it being possible for the three- to ten-membered ring system itself to be mono-, di- or trisubstituted by halogen, cyano, nitro, hydroxy, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, C_3 - C_6 cycloalkyl, C_5 - C_7 cycloalkenyl, C_5 - C_8 cycloalkynyl, C_1 - C_6 haloalkyl, C_2 - C_6 haloalkenyl, C_2 - C_6 haloalkynyl, C_3 - C_6 halocycloalkyl, C_5 - C_7 halocycloalkenyl, C_5 - C_8 halocycloalkynyl, C_1 - C_4 alkoxy, C_1 - C_4 haloalkoxy, C_1 - C_4 alkylthio, C_1 - C_4 haloalkylthio, C_1 - C_4 alkylsulfinyl, C_1 - C_4 alkylsulfonyl, C_1 - C_4 alkylamino, C_2 - C_4 dialkylamino, C_3 - C_6 cycloalkylamino, C_1 - C_6 alkyl- C_3 - C_6 cycloalkylamino, C_2 - C_4 alkylcarbonyl, C_2 - C_6 alkoxycarbonyl, C_2 - C_6 alkylaminocarbonyl, C_3 - C_6 dialkylaminocarbonyl, C_2 - C_6 alkoxycarbonyloxy, C_2 - C_6 alkylaminocarbonyloxy, C_3 - C_6 dialkylaminocarbonyloxy, C_3 - C_6 trialkylsilyl or phenyl, it being possible for the phenyl group in turn to be substituted by hydroxy, C_1 - C_6 alkyl, C_1 - C_6 haloalkyl,

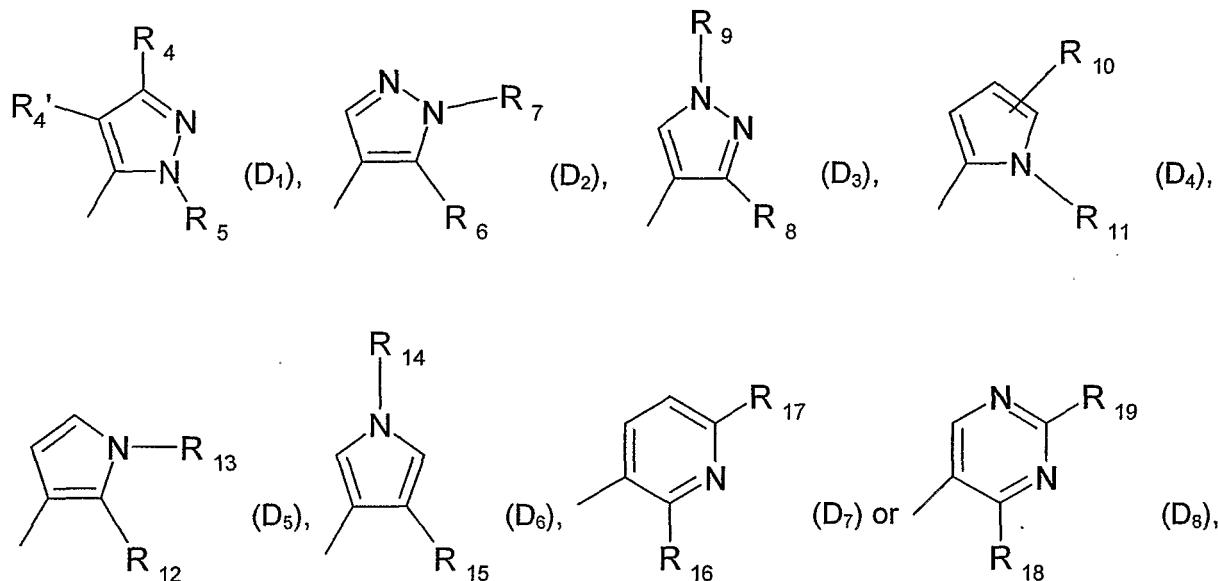
C₆cycloalkylamino, C₂-C₄alkylcarbonyl, C₂-C₆alkoxycarbonyl, C₂-C₆alkylaminocarbonyl, C₃-C₆dialkylaminocarbonyl, C₂-C₆alkoxycarbonyloxy, C₂-C₆alkylaminocarbonyloxy, C₃-C₆dialkylaminocarbonyloxy, C₃-C₆trialkylsilyl, or by a three- to ten-membered monocyclic or fused bicyclic ring system which can be aromatic, partially saturated or fully saturated and can contain 1 to 4 hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, it not being possible for each ring system to contain more than 2 oxygen atoms and more than 2 sulfur atoms, and it being possible for the three- to ten-membered ring system itself to be mono-, di- or trisubstituted by halogen, cyano, nitro, hydroxy, C₁-C₆alkyl, C₂-C₆alkenyl, C₂-C₆alkynyl, C₃-C₆cycloalkyl, C₅-C₇cycloalkenyl, C₅-C₈cycloalkynyl, C₁-C₆haloalkyl, C₂-C₆haloalkenyl, C₂-C₆haloalkynyl, C₃-C₆halocycloalkyl, C₅-C₇halocycloalkenyl, C₅-C₈halocycloalkynyl, C₁-C₄alkoxy, C₁-C₄haloalkoxy, C₁-C₄alkylthio, C₁-C₄haloalkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, C₁-C₄alkylamino, C₂-C₄dialkylamino, C₃-C₆cycloalkylamino, C₁-C₆alkyl-C₃-C₆cycloalkylamino, C₂-C₄alkylcarbonyl, C₂-C₆alkoxycarbonyl, C₂-C₆alkylaminocarbonyl, C₃-C₆dialkylaminocarbonyl, C₂-C₆alkoxycarbonyloxy, C₂-C₆alkylaminocarbonyloxy, C₃-C₆dialkylaminocarbonyloxy, C₃-C₆trialkylsilyl or phenyl, it being possible for the phenyl group in turn to be substituted by hydroxy, C₁-C₆alkyl, C₁-C₆haloalkyl, C₁-C₆alkylthio, C₁-C₆haloalkylthio, C₃-C₆alkenylthio, C₃-C₆haloalkenylthio, C₃-C₆alkynylthio, C₁-C₃alkoxy-C₁-C₃alkylthio, C₂-C₄alkylcarbonyl-C₁-C₃alkylthio, C₂-C₄alkoxycarbonyl-C₁-C₃alkylthio, C₂-C₆alkylaminocarbonyl-C₁-C₃alkylthio, C₃-C₆dialkylaminocarbonyl-C₁-C₃alkylthio, C₂-C₆alkoxycarbonyloxy-C₁-C₃alkylthio, C₂-C₆alkylaminocarbonyloxy-C₁-C₃alkylthio, C₃-C₆dialkylaminocarbonyloxy-C₁-C₃alkylthio, C₃-C₆trialkylsilyl-C₁-C₃alkylthio, C₃-C₆trialkylsilyl-C₃-C₆alkenylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkenylthio, C₃-C₆trialkylsilyl-C₃-C₆alkynylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkynylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkenylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkynylthio, C₃-C₆trialkylsilyl-C₃-C₆trialkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkenylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkynylthio, C₃-C₆trialkylsilyl-C₃-C₆trialkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkenylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkynylthio, C₃-C₆trialkylsilyl-C₃-C₆trialkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkenylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkynylthio, C₃-C₆trialkylsilyl-C₃-C₆trialkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkenylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkynylthio, C₃-C₆trialkylsilyl-C₃-C₆trialkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkenylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkynylthio, C₃-C₆trialkylsilyl-C₃-C₆trialkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkenylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkynylthio, C₃-C₆trialkylsilyl-C₃-C₆trialkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkenylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkynylthio, C₃-C₆trialkylsilyl-C₃-C₆trialkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkenylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkynylthio, C₃-C₆trialkylsilyl-C₃-C₆trialkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkenylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkynylthio, C₃-C₆trialkylsilyl-C₃-C₆trialkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkenylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkynylthio, C₃-C₆trialkylsilyl-C₃-C₆trialkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkenylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkynylthio, C₃-C₆trialkylsilyl-C₃-C₆trialkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkenylthio, C₃-C₆trialkylsilyl-C₃-C₆haloalkynylthio, C₃-C₆trialkylsilyl-C₃-C₆trialkylthio, C₃-C₆trialkylsilyl-C₃-C₆

- 5 -

C_6 cycloalkylamino, C_2 - C_4 alkylcarbonyl, C_2 - C_6 alkoxycarbonyl, C_2 - C_6 alkylaminocarbonyl, C_3 - C_6 dialkylaminocarbonyl, C_2 - C_6 alkoxycarbonyloxy, C_2 - C_6 alkylaminocarbonyloxy, C_3 - C_6 dialkylaminocarbonyloxy or C_3 - C_6 trialkylsilyl;

or each R_1 independently is amino, formyl, C_2 - C_6 cyanoalkenyl, C_2 - C_6 alkylcarbonylamino, phenylcarbonylamino which can be mono-, di- or trisubstituted by halogen, cyano, nitro, halogen, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, C_3 - C_6 cycloalkyl, C_1 - C_6 haloalkyl, C_2 - C_6 haloalkenyl, C_2 - C_6 haloalkynyl, C_3 - C_6 halocycloalkyl, C_1 - C_4 alkoxy, C_1 - C_4 haloalkoxy, C_1 - C_4 alkylthio, C_1 - C_4 haloalkylthio, C_1 - C_4 alkylsulfinyl, C_1 - C_4 alkylsulfonyl, C_1 - C_4 alkylamino, C_2 - C_4 dialkylamino, C_3 - C_6 cycloalkylamino, C_1 - C_6 alkyl- C_3 - C_6 cycloalkylamino, C_2 - C_4 alkylcarbonyl, C_2 - C_6 alkoxycarbonyl, C_2 - C_6 alkylaminocarbonyl, C_3 - C_6 dialkylaminocarbonyl, C_2 - C_6 alkoxycarbonyloxy, C_2 - C_6 alkylaminocarbonyloxy, C_3 - C_6 dialkylaminocarbonyloxy or C_3 - C_6 trialkylsilyl; or each R_1 independently is 2-,3- or 4-pyridylcarbonylamino which can be mono-, di- or trisubstituted by halogen, cyano, nitro, halogen, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, C_3 - C_6 cycloalkyl, C_1 - C_6 haloalkyl, C_2 - C_6 haloalkenyl, C_2 - C_6 haloalkynyl, C_3 - C_6 halocycloalkyl, C_1 - C_4 alkoxy, C_1 - C_4 haloalkoxy, C_1 - C_4 alkylthio, C_1 - C_4 haloalkylthio, C_1 - C_4 alkylsulfinyl, C_1 - C_4 alkylsulfonyl, C_1 - C_4 alkylamino, C_2 - C_4 dialkylamino, C_3 - C_6 cycloalkylamino, C_1 - C_6 alkyl- C_3 - C_6 cycloalkylamino, C_2 - C_4 alkylcarbonyl, C_2 - C_6 alkoxycarbonyl, C_2 - C_6 alkylaminocarbonyl, C_3 - C_6 dialkylaminocarbonyl, C_2 - C_6 alkoxycarbonyloxy, C_2 -

- 6 -



R_4 , R_4' , R_{10} , R_{17} , and R_{19} independently from each other, are hydrogen, C_1 - C_6 alkyl, C_3 - C_6 cycloalkyl, C_1 - C_6 haloalkyl, halogen, cyano, C_1 - C_4 alkoxy, C_1 - C_4 haloalkoxy, C_2 - C_4 alkoxycarbonyl, C_1 - C_4 alkylthio, C_1 - C_4 haloalkylthio, C_1 - C_4 alkylsulfinyl, C_1 - C_4 alkylsulfonyl, C_1 - C_4 haloalkylsulfinyl or C_1 - C_4 haloalkylsulfonyl;

R_5 , R_6 , R_8 , R_{11} , R_{12} , R_{15} , R_{16} and R_{18} independently from each other, are C_1 - C_6 alkyl or C_1 - C_6 alkyl mono-, di- or trisubstituted by halogen, cyano, nitro, hydroxy, C_1 - C_4 alkoxy, C_2 - C_4 alkoxycarbonyl, C_1 - C_4 alkylthio, C_1 - C_4 haloalkylthio, C_1 - C_4 alkylsulfinyl, C_1 - C_4 alkylsulfonyl, C_1 - C_4 haloalkylsulfinyl or C_1 - C_4 haloalkylsulfonyl;

- 7 -

ted or substituted, for example by halogen, for example acetic acid, such as saturated or unsaturated dicarboxylic acids, for example oxalic acid, malonic acid, succinic acid, maleic acid, fumaric acid or phthalic acid, such as hydroxycarboxylic acids, for example ascorbic acid, lactic acid, malic acid, tartaric acid or citric acid, or such as benzoic acid, or with organic sulfonic acids, such as C₁-C₄alkane- or arylsulfonic acids which are unsubstituted or substituted, for example by halogen, for example methane- or p-toluenesulfonic acid. Compounds I which have at least one acidic group can form, for example, salts with bases, for example mineral salts such as alkali metal or alkaline earth metal salts, for example sodium, potassium or magnesium salts, or salts with ammonia or an organic amine, such as morpholine, piperidine, pyrrolidine, a mono-, di- or tri-lower-alkylamine, for example ethyl-, diethyl-, triethyl- or dimethylpropylamine, or a mono-, di- or trihydroxy-lower-alkylamine, for example mono-, di- or triethanolamine. Where appropriate, the corresponding internal salts can furthermore be formed. Preferred within the scope of the invention are agrochemically advantageous salts; however, the invention also encompasses salts which have disadvantage for agrochemical use, for example salts which are toxic to bees or fish, and which are employed, for example, for the isolation or purification of free compounds I or agrochemically utilizable salts thereof. Owing to the close relationship between the compounds I in free form and in the form of their salts, for the purposes of the invention the free compounds I or their

trichloromethyl, 2,2,2-trifluoroethyl, 2-fluoroethyl, 2-chloroethyl, pentafluoroethyl, 1,1-difluoro-2,2,2-trichloroethyl, 2,2,3,3-tetrafluoroethyl and 2,2,2-trichloroethyl; preferably trichloromethyl, difluorochloromethyl, difluoromethyl, trifluoromethyl and dichlorofluoromethyl.

Suitable haloalkenyl groups are alkenyl groups which are mono- or polysubstituted by halogen, halogen being fluorine, chlorine, bromine and iodine and in particular fluorine and chlorine, for example 2,2-difluoro-1-methylvinyl, 3-fluoropropenyl, 3-chloropropenyl, 3-bromopropenyl, 2,3,3-trifluoropropenyl, 2,3,3-trichloropropenyl and 4,4,4-trifluorobut-2-en-1-yl. Among the C₃-C₂₀alkenyl groups which are mono-, di- or trisubstituted by halogen, preference is given to those having a chain length of from 3 to 5 carbon atoms.

Suitable haloalkynyl groups are, for example, alkynyl groups which are mono- or polysubstituted by halogen, halogen being bromine, iodine and in particular fluorine and chlorine, for example 3-fluoropropynyl, 3-chloropropynyl, 3-bromopropynyl, 3,3,3-trifluoropropynyl and 4,4,4-trifluorobut-2-yn-1-yl. Among the alkynyl groups which are mono- or polysubstituted by halogen, preference is given to those having a chain length of from 3 to 5 carbon atoms.

ethylsulfinyl, propylsulfinyl, isopropylsulfinyl, n-butylsulfinyl, isobutylsulfinyl, sec-butylsulfinyl, tert-butylsulfinyl; preferably methylsulfinyl and ethylsulfinyl.

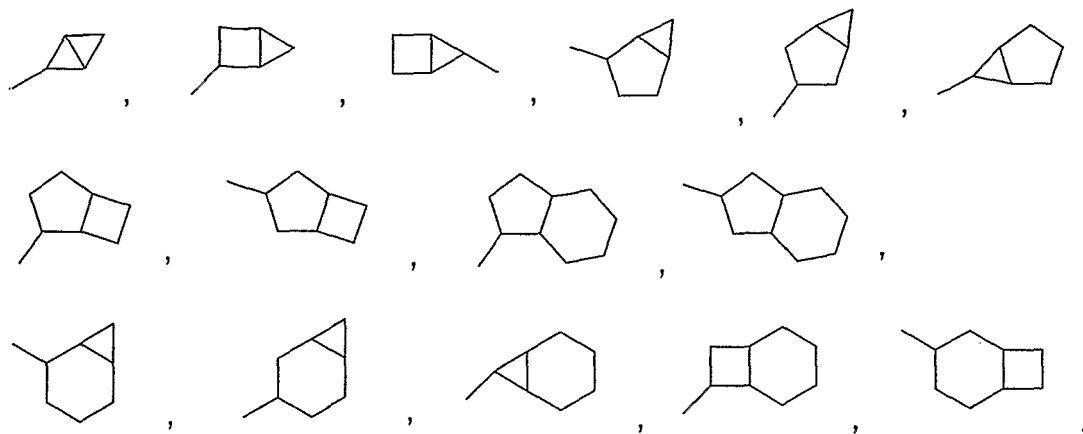
Alkylsulfonyl is, for example, methylsulfonyl, ethylsulfonyl, propylsulfonyl, isopropylsulfonyl, n-butylsulfonyl, isobutylsulfonyl, sec-butylsulfonyl or tert-butylsulfonyl; preferably methylsulfonyl or ethylsulfonyl. Alkoxyalkoxy groups preferably have a chain length of from 1 to 8 carbon atoms. Examples of alkoxyalkoxy groups are: methoxymethoxy, methoxyethoxy, methoxypropoxy, ethoxymethoxy, ethoxyethoxy, propoxymethoxy or butoxybutoxy.

Alkylamino is, for example, methylamino, ethylamino, n-propylamino, isopropylamino or the isomeric butylamines. Dialkylamino is, for example, dimethylamino, methylethylamino, diethylamino, n-propylmethylamino, dibutylamino and diisopropylamino. Preference is given to alkylamino groups having a chain length of from 1 to 4 carbon atoms.

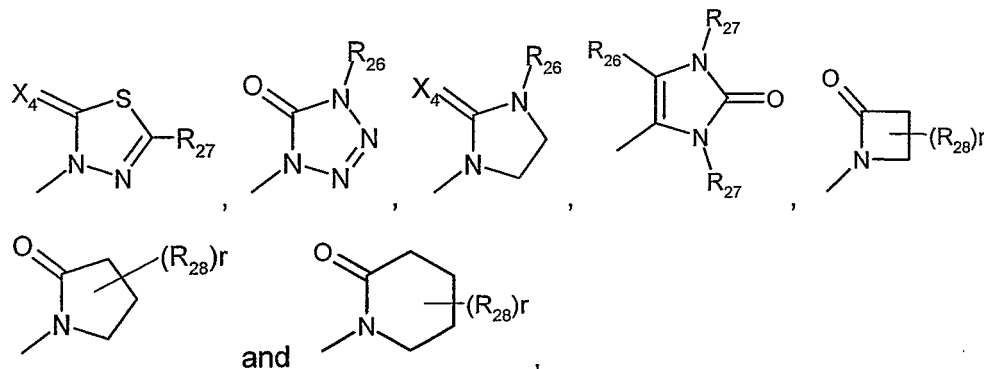
Alkylaminocarbonyl is, for example, methylaminocarbonyl (C₂-alkylaminocarbonyl) or ethylaminocarbonyl (C₃-aminocarbonyl). Alkoxyalkyl groups preferably have a chain length of 1 to 6 carbon atoms. Alkoxyalkyl is, for example, methoxymethyl, methoxyethyl, ethoxymethyl, ethoxyethyl, n-propoxymethyl, n-propoxyethyl, isopropoxymethyl or isopropoxyethyl. Alkylthioalkyl groups preferably have from 1 to 8 carbon atoms. Alkylthioalkyl is, for example, methylthiomethyl, methylthioethyl, ethylthiomethyl,

- 10 -

According to the present invention, a three- to ten-membered, monocyclic or fused bicyclic ring system which may be partially saturated or fully saturated is, depending of the number of ring members, for example, selected from the group consisting of

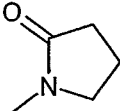


- 11 -



wherein each R_{26} is methyl, each R_{27} and each R_{28} are independently hydrogen, C_1 - C_3 alkyl, C_1 - C_3 alkoxy, C_1 - C_3 alkylthio or trifluoromethyl, X_4 is oxygen or sulfur and $r = 1, 2, 3$ or 4 .

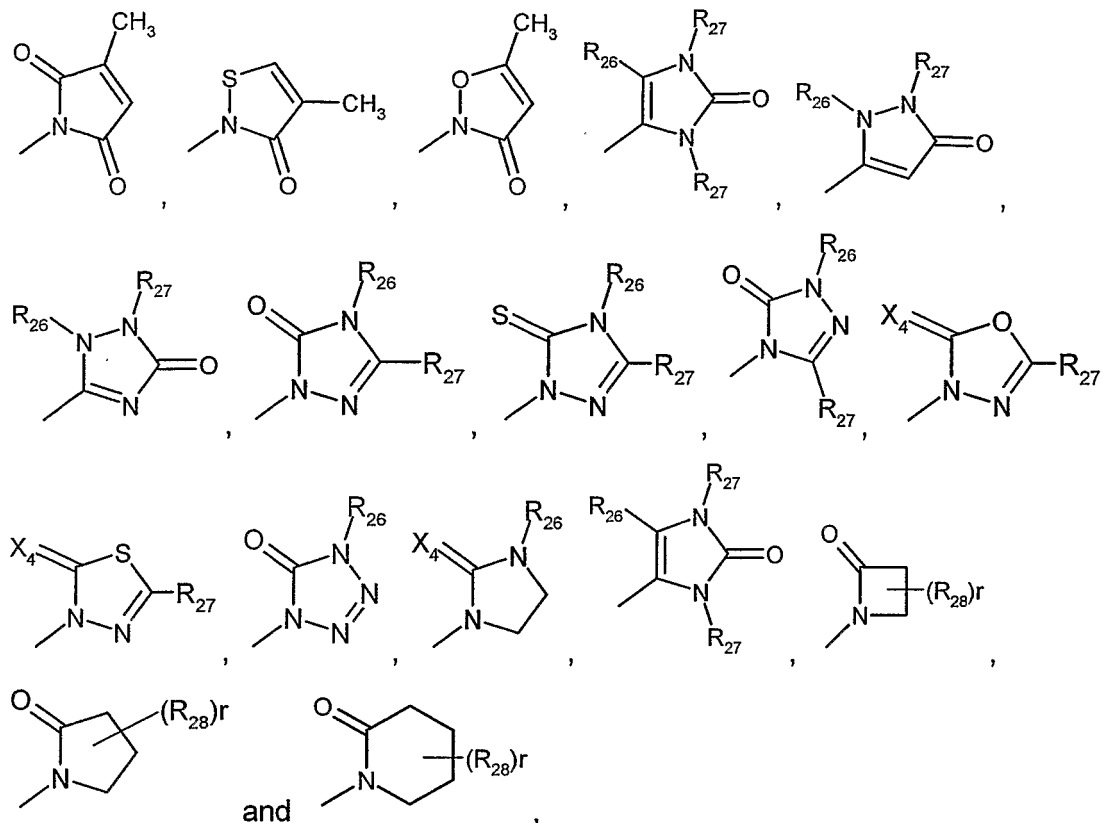
Where no free valency is indicated in those definitions, for example as in , the linkage

site is located at the carbon atom labelled "CH" or in a case such as, for example, , at the bonding site indicated at the bottom left. The second valence for the bivalent ring system of substituent A or Y can be located at any suitable position of the ring.

According to the present invention, a three- to ten-membered monocyclic or fused bicyclic

yl)-; (1-propyl-1H-pyrazol-3-yl)-; (1H-pyrazol-3-yl)-; (1,5-dimethyl-1H-pyrazol-3-yl)-; (4-chloro-1-methyl-1H-pyrazol-3-yl)-; (1H-pyrazol-1-yl)-; (3-methyl-1H-pyrazol-1-yl)-; (3,5-dimethyl-1H-pyrazol-1-yl)-; (3-isoxazolyl)-; (5-methyl-3-isoxazolyl)-; (3-methyl-5-isoxazolyl)-; (5-isoxazolyl)-; (1H-pyrrol-2-yl)-; (1-methyl-1H-pyrrol-2-yl)-; (1H-pyrrol-1-yl)-; (1-methyl-1H-pyrrol-3-yl)-; (2-furanyl)-; (5-methyl-2-furanyl)-; (3-furanyl)-; (5-methyl-2-thienyl)-; (2-thienyl)-; (3-thienyl)-; (1-methyl-1H-imidazol-2-yl)-; (1H-imidazol-2-yl)-; (1-methyl-1H-imidazol-4-yl)-; (1-methyl-1H-imidazol-5-yl)-; (4-methyl-2-oxazolyl)-; (5-methyl-2-oxazolyl)-; (2-oxazolyl)-; (2-methyl-5-oxazolyl)-; (2-methyl-4-oxazolyl)-; (4-methyl-2-thiazolyl)-; (5-methyl-2-thiazolyl)-; (2-thiazolyl)-; (2-methyl-5-thiazolyl)-; (2-methyl-4-thiazolyl)-; (3-methyl-4-isothiazolyl)-; (3-methyl-5-isothiazolyl)-; (5-methyl-3-isothiazolyl)-; (1-methyl-1H-1,2,3-triazol-4-yl)-; (2-methyl-2H-1,2,3-triazol-4-yl)-; (4-methyl-2H-1,2,3-triazol-2-yl)-; (1-methyl-1H-1,2,4-triazol-3-yl)-; (1,5-dimethyl-1H-1,2,4-triazol-3-yl)-; (3-methyl-1H-1,2,4-triazol-1-yl)-; (5-methyl-1H-1,2,4-triazol-1-yl)-; (4,5-dimethyl-4H-1,2,4-triazol-3-yl)-; (4-methyl-4H-1,2,4-triazol-3-yl)-; (4H-1,2,4-triazol-4-yl)-; (5-methyl-1,2,3-oxadiazol-4-yl)-; (1,2,3-oxadiazol-4-yl)-; (3-methyl-1,2,4-oxadiazol-5-yl)-; (5-methyl-1,2,4-oxadiazol-3-yl)-; (4-methyl-3-furazanyl)-; (3-furazanyl)-; (5-methyl-1,2,4-oxadiazol-2-yl)-; (5-methyl-1,2,3-thiadiazol-4-yl)-; (1,2,3-thiadiazol-4-yl)-; (3-methyl-1,2,4-thiadiazol-5-yl)-; (5-methyl-1,2,4-thiadiazol-3-yl)-; (4-methyl-1,2,5-thiadiazol-3-yl)-; (5-methyl-1,3,4-thiadiazol-2-yl)-; (1-methyl-1H-tetrazol-5-yl)-; (1H-tetrazol-5-yl)-; (5-methyl-1H-tetrazol-

- 13 -



wherein each R₂₆ is methyl, each R₂₇ and each R₂₈ are independently hydrogen, C₁-C₃alkyl, C₁-C₃alkoxy, C₁-C₃alkylthio or trifluoromethyl, X₄ is oxygen or sulfur and r = 1, 2, 3 or 4.

trisubstituted by halogen, cyano, nitro, halogen, C₁-C₆alkyl, C₂-C₆alkenyl, C₂-C₆alkynyl, C₃-C₆cycloalkyl, C₁-C₆haloalkyl, C₂-C₆haloalkenyl, C₂-C₆haloalkynyl, C₃-C₆halocycloalkyl, C₁-C₄alkoxy, C₁-C₄haloalkoxy, C₁-C₄alkylthio, C₁-C₄haloalkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, C₁-C₄alkylamino, C₂-C₄dialkylamino, C₃-C₆cycloalkylamino, C₁-C₆alkyl-C₃-C₆cycloalkylamino, C₂-C₄alkylcarbonyl, C₂-C₆alkoxycarbonyl, C₂-C₆alkylaminocarbonyl, C₃-C₆dialkylaminocarbonyl, C₂-C₆alkoxycarbonyloxy, C₂-C₆alkylaminocarbonyloxy, C₃-C₆dialkylaminocarbonyloxy or C₃-C₆trialkylsilyl.

In especially preferred compounds of formula I,

B is a three- to four-membered ring system which is fully or partially saturated, and it being possible for the three- to four-membered ring system itself to be mono-, di- or trisubstituted by halogen, cyano, nitro, hydroxy, C₁-C₆alkyl, C₂-C₆alkenyl, C₂-C₆alkynyl, C₃-C₆cycloalkyl, C₅-C₇cycloalkenyl, C₅-C₈cycloalkynyl, C₁-C₆haloalkyl, C₂-C₆haloalkenyl, C₂-C₆haloalkynyl, C₃-C₆halocycloalkyl, C₅-C₇halocycloalkenyl, C₅-C₈halocycloalkynyl, C₁-C₄alkoxy, C₁-C₄haloalkoxy, C₁-C₄alkylthio, C₁-C₄haloalkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, C₁-C₄alkylamino, C₂-C₄dialkylamino, C₃-C₆cycloalkylamino, C₁-C₆alkyl-C₃-C₆cycloalkylamino, C₂-C₄alkylcarbonyl, C₂-C₆alkoxycarbonyl, C₂-C₆alkylaminocarbonyl, C₃-C₆dialkylaminocarbonyl, C₂-C₆alkoxycarbonyloxy, C₂-C₆alkylaminocarbonyloxy, C₃-C₆dialkylaminocarbonyloxy, C₃-

- 15 -

C₃alkylthio, C₁-C₆alkylsulfinyl, C₁-C₆haloalkylsulfinyl, C₁-C₆alkylsulfonyl, C₁-C₆haloalkylsulfonyl, aminosulfonyl, C₁-C₂alkylaminosulfonyl, N,N-di(C₁-C₂alkyl)aminosulfonyl, di(C₁-C₄alkyl)amino, halogen, cyano or nitro; and substituents at nitrogen atoms in the ring systems being other than halogen.

Preference is given to subgroups of compounds of formula I wherein

- a) p and/or q is 0;
- b) E and/or Z is oxygen; and/or
- c) R₂ and/or R₃ is hydrogen.

X is preferably oxygen, NH; NMe or NEt.

Y is preferably C₁-C₄alkylene, C₂-C₆alkenylene or C₃-C₆alkynylene or, C₁-C₄alkylene, C₂-C₆alkenylene or C₃-C₆alkynylene substituted by halogen, C₃-C₆cycloalkyl, C₁-C₄alkylsulfonyl or C₁-C₄alkoxy.

Special mention should be made of compounds of formula I wherein R₁ is selected from C₁-C₄alkyl, halogen, C₁-C₅haloalkyl, nitro, C₁-C₄alkoxy, C₁-C₄-haloalkoxy, C₁-C₄alkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, C₁-C₄haloalkylthio, C₁-C₄haloalkylsulfinyl and C₁-C₆haloalkylsulfonyl, in particular from halogen and C₁-C₆alkyl, preferably selected from

- 16 -

preferably hydrogen and R_4 is halogen preferably chloro and bromo, C_1 - C_6 haloalkyl preferably trifluoromethyl, C_1 - C_4 haloalkoxy, preferably 2,2,2-trifluoroethoxy.

Preference is also given to compounds of formula I wherein B is cyclopropyl or cyclobutyl which may be mono- di-, or trisubstituted by halogen, C_1 - C_4 alkyl, hydroxy, cyano, C_1 - C_4 alkoxy or C_1 - C_4 alkylthio; or B is $CH(CH_2O)$, $CH(CHMeO)$, $CH-(CMe_2O)$, $CH(CH_2S)$, $CH(CH_2OCH_2)$, $CH(CHMeOCH_2)$, $CH(CMe_2OCH_2)$, $CH(CH_2S-(O)_2CH_2)$, $CH(CHMeS(O)_2CH_2)$, $CH(CMe_2S(O)_2CH_2)$, $C(Me)-(CH_2O)$, $C(Me)(CHMeO)$, $C(Me)-(CMe_2O)$, $C(Me)-(CH_2S)$, $C(Me)-(CH_2OCH_2)$, $C(Me)(CHMeOCH_2)$, $C(Me)-(CMe_2OCH_2)$, $C(Me)-(CH_2S(O)_2CH_2)$, $C(Me)-(CHMe-S(O)_2CH_2)$ or $C(Me)-(CMe_2-S(O)_2CH_2)$. In especially preferred compounds of formula I B is cyclopropyl or cyclobutyl which may be substituted by halogen or methyl, in particular by chloro, bromo and methyl; preferably B is cyclopropyl.

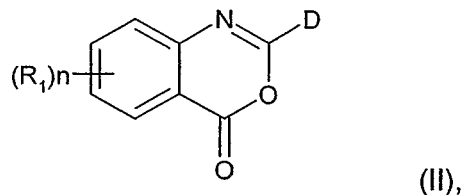
In an outstanding group of compounds of formula I the substituents have the following meanings:

n is 2 and one R_1 is C_1 - C_4 alkyl, preferably methyl, or halogen, preferably chloro, the other R_1 is halogen preferably chloro or bromo; wherein most preferably one R_1 with the meaning C_1 - C_4 alkyl occupies the ortho position with regard to the group $-N(R_2)-C(E)-D$.

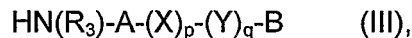
- 17 -

The process for the preparation of a compound of formula I or, where appropriate, a tautomer thereof, in each case in free form or in salt form, comprises

a) for the preparation of a compound of formula I, in which R_2 is hydrogen and E and Z are oxygen, or, where appropriate, a tautomer and/or salt thereof, reacting a compound of formula II



in which R_1 , n , and D have the meanings given for formula I in claim 1, or, where appropriate, a tautomer and/or salt thereof with a compound of formula III



in which R_3 , A, X, Y, p , q and B have the meanings given for formula I, or, where appropriate, with a tautomer and/or salt thereof,

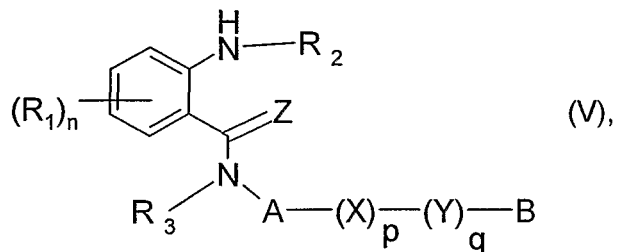
b) for the preparation of a compound of formula I, or, where appropriate, a tautomer and/or

- 18 -

in which R_3 , A, X, Y, p, q and B have the meanings given for formula I, or, where appropriate, with a tautomer and/or salt thereof or,

c) for the preparation of a compound of formula I, or, where appropriate, a tautomer and/or salt thereof,

reacting a compound of formula V



in which R_1 , R_2 , R_3 , n, A, X, Y, Z and B have the meanings given for the formula I in claim 1, or, where appropriate, a tautomer and/or salt thereof with a compound of formula VI



In especially preferred compounds of formula III

R₃ is hydrogen;

A is C₁-C₆alkylene which may be substituted by C₃-C₆cycloalkyl, C₂-C₆alkenyl, cyano, C₁-C₄alkylthio, C₁-C₄alkylsulfonyl, C₁-C₄alkoxy, halogen or C₁-C₆haloalkyl; or A is C₃-C₆cycloalkylene;

p and q are, independently from each other, 0 or 1;

X is oxygen, NH; NCH₃ or NC₂H₅;

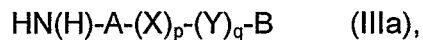
Y is C₁-C₄alkylene, C₂-C₆alkenylene or C₃-C₆alkynylene or, C₁-C₄alkylene, C₂-C₆alkenylene or C₃-C₆alkynylene substituted by halogen, C₃-C₆cycloalkyl, C₁-C₄alkylsulfonyl or C₁-C₄alkoxy;

B is cyclopropyl or cyclobutyl which may be mono- di-, or trisubstituted by halogen, C₁-C₄alkyl, hydroxy, cyano, C₁-C₄alkoxy or C₁-C₄alkylthio; or B is CH(CH₂O), CH(CHMeO), CH-(CMe₂O), CH(CH₂S), CH(CH₂OCH₂), CH(CHMeOCH₂), CH(CMe₂OCH₂), CH(CH₂S-(O)₂CH₂), CH(CHMeS(O)₂CH₂), CH(CMe₂S(O)₂CH₂), C(Me)-(CH₂O), C(Me)(CHMeO), C(Me)-(CMe₂O), C(Me)-(CH₂S), C(Me)-(CH₂OCH₂), C(Me)(CHMeOCH₂), C(Me)-(CMe₂OCH₂), C(Me)-(CH₂S(O)₂CH₂), C(Me)-(CHMe-S(O)₂CH₂) or C(Me)-(CMe₂-S(O)₂CH₂), preferably B is cyclopropyl or cyclobutyl which may be mono- di-, or trisubstituted by halogen, C₁-C₄alkyl, hydroxy, cyano, C₁-C₄alkoxy or C₁-C₄alkylthio.

- 20 -

C(Me)-(CH₂S), C(Me)-(CH₂OCH₂), C(Me)(CHMeOCH₂), C(Me)-(CMe₂OCH₂), C(Me)-(CH₂S(O)₂CH₂), C(Me)-(CHMe-S(O)₂CH₂) or C(Me)-(CMe₂-S(O)₂CH₂), preferably B is cyclopropyl or cyclobutyl which may be mono- di-, or trisubstituted by halogen, C₁-C₄alkyl, hydroxy, cyano, C₁-C₄alkoxy or C₁-C₄alkylthio.

Table B: Preferred compounds of formula III represented by the formula IIIa:



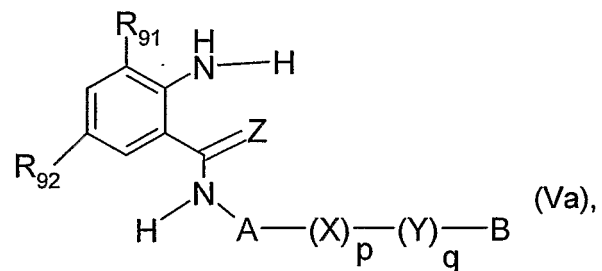
Cpd No.	A	X	Y	B
B1	CH ₂	-	-	cyclopropyl
B2	CHMe	-	-	cyclopropyl
B3	C(CH ₂ CH ₂)	-	-	cyclopropyl

- 21 -

Cpd No.	A	X	Y	B
B16	CH ₂	-	-	C(Me)-(CH ₂ OCH ₂)
B17	CH ₂	-	-	CH(CMe ₂ (CH-CH=CMe ₂))
B18	CH ₂	-	-	C(CH ₂ OCH ₃)-(CH ₂ OCH ₂)
B19	CH ₂	-	-	CH(CH ₂ O)
B20	CHCOOMe	-	-	cyclopropyl
B21	CH ₂	-	CH ₂	CH(CH ₂ -CFCl)
B22	CH ₂	-	CH ₂	cyclopropyl
B23	CH ₂	-	-	C(Me)-(CH ₂ CH ₂)
B24	CH ₂	-	-	CH(CH ₂ -CMe ₂)
B25	CH ₂	-	-	CH(CH ₂ CH ₂ O)
B26	CH	-	-	C(C(O)NCOOEt)(Me)-(CH ₂ CH ₂ CH ₂)

Cpd No.	A	X	Y	B
B37	C(CH ₂ CH ₂)	-	-	C(COOiBr)-(CH ₂ CH ₂)
B38	C(CH ₂ CH ₂)	-	-	CH(CH ₂ -CMe ₂)
B39	CMe ₂	-	-	cyclopropyl
B40	C(CH ₂ CH ₂)	-	-	C(Me)-(CH ₂ CH ₂)

Table D: Preferred compounds of formula V represented by formula Va:



- 23 -

Cpd No.	R ₉₁	R ₉₂	A	X	Y	B
D8	Me	Cl	CH ₂	-	-	1-methyl-2,2-dibromo-cyclo-propyl
D9	Me	Cl	CH ₂	-	-	2,2,3,3-tetrafluoro-cyclobutyl
D12	Me	Cl	CH ₂	-	-	C(SMe)-(CH ₂ CH ₂ CH ₂)
D13	Me	Cl	CH ₂	-	-	C(S(O)Me)-(CH ₂ CH ₂ CH ₂)
D14	Me	Cl	CH ₂	-	-	C(S(O) ₂ Me)-(CH ₂ CH ₂ CH ₂)
D15	Me	Cl	CH ₂	-	-	cyclobutyl
D16	Me	Cl	CH ₂	-	-	C(Me)-(CH ₂ OCH ₂)
D17	Me	Cl	CH ₂	-	-	CH(CMe ₂ (CH-CH=CMe ₂))
D18	Me	Cl	CH ₂	-	-	C(CH ₂ OCH ₃)-(CH ₂ OCH ₂)

- 24 -

Cpd No.	R ₉₁	R ₉₂	A	X	Y	B
D29	Me	Cl	CH ₂	-	-	C(SMe)-(CH ₂ CH ₂)
D30	Me	Cl	CH ₂	-	-	C(S(O) ₂ Me)-(CH ₂ CH ₂)
D31	Me	Cl	CH ₂	-	-	C(CF ₃)-(CH ₂ CH ₂)
D32	Me	Cl	CH ₂	-	-	CH(CH ₂ -CFCI)
D33	Me	Cl	CH ₂	-	-	C(S(O)Me)-(CH ₂ CH ₂)
D34	Me	Cl	CH ₂	-	-	C(S(O)(NCOCF ₃)Me)- (CH ₂ CH ₂)
D35	Me	Cl	CH ₂	-	-	C(S(O)(NH)Me)-(CH ₂ CH ₂)
D36	Me	Cl	C(CH ₂ CH ₂)	-	-	C(COOEt)-(CH ₂ CH ₂)
D37	Me	Cl	C(CH ₂ CH ₂)	-	-	C(COOiDr)-(CH ₂ CH ₂)
D38	Me	Cl	C(CH ₂ CH ₂)	-	-	CH(CH ₂ -CMe ₂)

- 25 -

Cpd No.	R _{g1}	R _{g2}	A	X	Y	B
D50	Me	Cl	C(CH ₂ CH ₂)	-	-	cyclopropyl
D51	Me	Cl	C(CH ₂ CH ₂)	-	-	cyclopropyl
D52	Me	NH ₂	C(CH ₂ CH ₂)	-	-	cyclopropyl
D53	Me	NH ₂	CH ₂	-	-	cyclopropyl
D54	Me	I	C(CH ₂ CH ₂)	-	-	cyclopropyl
D55	Me	Br	CH ₂	-	-	cyclopropyl
D56	Me	Br	CH ₂	-	-	cyclopropyl
D57	Me	Br	C(CH ₂ CH ₂)	-	-	cyclopropyl
D58	Me	Br	CH ₂	-	-	cyclopropyl
D59	Me	Br	C(CH ₂ CH ₂)	-	-	cyclopropyl
D60	Me	NO	CH			cyclopropyl

Physical data for compounds of formula Va according to Table D:

Compound No.	melting point
D1	128-129 °C
D3	177-178 °C

What has been said above for tautomers and/or salts of compounds I applies analogously to starting materials mentioned hereinabove and hereinbelow with regard to the tautomers and/or salts thereof.

The reactions described hereinabove and hereinbelow are carried out in a manner known per se, for example in the absence or, normally, in the presence of a suitable solvent or diluent or of a mixture of these, the process being carried out, as required, with cooling, at room temperature or with heating, for example in a temperature range of from approximately -80°C to the boiling point of the reaction mixture, preferably from approximately -20°C to approximately +150°C, and, if required, in a sealed vessel, under reduced, normal or elevated pressure, in an inert gas atmosphere and/or under anhydrous conditions. Especially

methyl ether, ethyleneglycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol dimethyl ether, dimethoxydiethyl ether, tetrahydrofuran or dioxane; ketones, such as acetone, methyl ethyl ketone or methyl isobutyl ketone; alcohols, such as methanol, ethanol, propanol, isopropanol, butanol, ethylene glycol or glycerol; amides such as N,N-dimethylformamide, N,N-diethylformamide, N,N-dimethylacetamide, N-methylpyrrolidone or hexamethylphosphoric triamide; nitriles, such as acetonitrile or propionitrile; and sulfoxides, such as dimethyl sulfoxide.

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

Variant b)

Examples of suitable leaving groups X_1 in the compounds IV are hydroxy, C_1 - C_8 alkoxy, halo- C_1 - C_8 alkoxy, C_1 - C_8 alkanoyloxy, mercapto, C_1 - C_8 alkylthio, halo- C_1 - C_8 alkylthio, C_1 - C_8 alkylsulfonyloxy, halo- C_1 - C_8 alkylsulfonyloxy, benzenesulfonyloxy, toluenesulfonyloxy and halogen, such as chlorine. Preferred are hydroxy, C_1 - C_8 alkoxy and chlorine.

- 28 -

The reactants can be reacted in the presence of a base. Examples of suitable bases for facilitating the detachment of HX_2 are alkali metal or alkaline earth metal hydroxides, alkali metal or alkaline earth metal hydrides, alkali metal or alkaline earth metal amides, alkali metal or alkaline earth metal alkoxides, alkali metal or alkaline earth metal acetates, alkali metal or alkaline earth metal carbonates, alkali metal or alkaline earth metal dialkylamides or alkali metal or alkaline earth metal alkylsilylamides, alkylamines, alkylenediamines, free or N-alkylated saturated or unsaturated cycloalkylamines, basic heterocycles, ammonium hydroxides and carbocyclic amines. Examples which may be mentioned are sodium hydroxide, sodium hydride, sodium amide, sodium methoxide, sodium acetate, sodium carbonate, potassium tert-butoxide, potassium hydroxide, potassium carbonate, potassium hydride, lithium diisopropylamide, potassium bis(trimethylsilyl)amide, calcium hydride, triethylamine, diisopropylethylamine, triethylenediamine, cyclohexylamine, N-cyclohexyl-N,N-dimethylamine, N,N-diethylaniline, pyridine, 4-(N,N-dimethylamino)pyridine, quinuclidine, N-methylmorpholine, benzyltrimethylammonium hydroxide and 1,8-diazabicyclo[5.4.0]undec-7-ene (DBU).

The reactants can be reacted with each other as such, i.e. without adding a solvent or diluent. In most cases, however, it is advantageous to add an inert solvent or diluent or a

- 29 -

- in compounds I, in which R_3 is hydrogen, this hydrogen R_3 can be replaced by a substituent R_3 , which is different from hydrogen.

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

Salts of compounds I can be prepared in a manner known per se. Thus, for example, acid addition salts of compounds I are obtained by treatment with a suitable acid or a suitable ion exchanger reagent and salts with bases are obtained by treatment with a suitable base or with a suitable ion exchanger reagent.

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

depending on the configuration of non-aromatic double bonds which occur in the molecule; the invention relates to the pure isomers and also to all isomer mixtures which are possible and is to be understood in each case in this sense hereinabove and hereinbelow, even when stereochemical details are not mentioned specifically in each case.

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

Enantiomer mixtures, such as racemates, which can be obtained in a similar manner can be resolved into the optical antipodes by known methods, for example by recrystallization from an optically active solvent, by chromatography on chiral adsorbents, for example high-performance liquid chromatography (HPLC) on acetyl cellulose, with the aid of suitable microorganisms, by cleavage with specific, immobilized enzymes, via the formation of inclusion compounds, for example using chiral crown ethers, where only one enantiomer is complexed, or by conversion into diastereomeric salts, for example by reacting a basic end-pro-

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

The compounds I according to the invention are preventively and/or curatively valuable active ingredients in the field of pest control, even at low rates of application, which have a very favorable biocidal spectrum and are well tolerated by warm-blooded species, fish and plants. The active ingredients according to the invention act against all or individual developmental stages of normally sensitive, but also resistant, animal pests, such as insects or representatives of the order Acarina. The insecticidal or acaricidal activity of the active ingredients according to the invention can manifest itself directly, i. e. in destruction of the pests, which takes place either immediately or only after some time has elapsed, for example during ecdysis, or indirectly, for example in a reduced oviposition and/or hatching rate, a good activity corresponding to a destruction rate (mortality) of at least 50 to 60%.

Examples of the abovementioned animal pests are:
from the order *Acarina*, for example,

- 32 -

Aedes spp., *Antherigona soccata*, *Bibio hortulanus*, *Calliphora erythrocephala*, *Ceratitis* spp., *Chrysomyia* spp., *Culex* spp., *Cuterebra* spp., *Dacus* spp., *Drosophila melanogaster*, *Fannia* spp., *Gastrophilus* spp., *Glossina* spp., *Hypoderma* spp., *Hyppobosca* spp., *Liriomyza* spp., *Lucilia* spp., *Melanagromyza* spp., *Musca* spp., *Oestrus* spp., *Orseolia* spp., *Oscinella* frit, *Pegomyia hyoscyami*, *Phorbia* spp., *Rhagoletis pomonella*, *Sciara* spp., *Stomoxys* spp., *Tabanus* spp., *Tannia* spp. and *Tipula* spp.;

from the order *Heteroptera*, for example,

Cimex spp., *Distantiella theobroma*, *Dysdercus* spp., *Euchistus* spp., *Eurygaster* spp., *Lep-tocorisa* spp., *Nezara* spp., *Piesma* spp., *Rhodnius* spp., *Sahlbergella singularis*, *Scotino-phara* spp. and *Triatoma* spp.;

from the order *Homoptera*, for example,

Aleurothrixus floccosus, *Aleyrodes brassicae*, *Aonidiella* spp., *Aphididae*, *Aphis* spp., *Aspi-diotus* spp., *Bemisia tabaci*, *Ceroplaster* spp., *Chrysomphalus aonidium*, *Chrysomphalus dictyospermi*, *Coccus hesperidum*, *Empoasca* spp., *Eriosoma larigerum*, *Erythroneura* spp., *Gascardia* spp., *Laodelphax* spp., *Lecanium corni*, *Lepidosaphes* spp., *Macrosiphus* spp., *Myzus* spp., *Nephotettix* spp., *Nilaparvata* spp., *Parlatoria* spp., *Pemphigus* spp., *Planococ-cus* spp., *Pseudaulacaspis* spp., *Pseudococcus* spp., *Psylla* spp., *Pulvinaria aethiopica*,

lycopersicella, Leucoptera scitella, Lithocollethis spp., Lobesia botrana, Lymantria spp., Lyonetia spp., Malacosoma spp., Mamestra brassicae, Manduca sexta, Operophtera spp., Ostrinia nubilalis, Pammene spp., Pandemis spp., Panolis flammea, Pectinophora gossypiella, Phthorimaea operculella, Pieris rapae, Pieris spp., Plutella xylostella, Prays spp., Scirpophaga spp., Sesamia spp., Sparganothis spp., Spodoptera spp., Synanthedon spp., Thaumetopoea spp., Tortrix spp., Trichoplusia ni and Yponomeuta spp.;

from the order *Mallophaga*, for example,

Damalinea spp. and Trichodectes spp.;

from the order *Orthoptera*, for example,

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

from the order *Psocoptera*, for example,

Liposcelis spp.;

from the order *Siphonaptera*, for example,

Ceratophyllus spp., Ctenocephalides spp. and Xenopsylla cheopis;

from the order *Thysanoptera*, for example,

Frankliniella spp., Hercinothrips spp., Scirtothrips aurantii, Taeniothrips spp., Thrips palmi and Thrips tabaci; and

plants, such as cotton, flax, hemp or jute; citrus fruit, such as oranges, lemons, grapefruit or tangerines; vegetables, such as spinach, lettuce, asparagus, cabbages, carrots, onions, tomatoes, potatoes or bell peppers; Lauraceae, such as avocado, Cinnamomum or camphor; and also tobacco, nuts, coffee, eggplants, sugarcane, tea, pepper, grapevines, hops, the plantain family, latex plants and ornamentals.

The active ingredients according to the invention are especially suitable for controlling *Aphis craccivora*, *Diabrotica balteata*, *Heliothis virescens*, *Myzus persicae*, *Plutella xylostella* and *Spodoptera littoralis* in cotton, vegetable, maize, rice and soya crops. The active ingredients according to the invention are further especially suitable for controlling *Mamestra* (preferably in vegetables), *Cydia pomonella* (preferably in apples), *Empoasca* (preferably in vegetables, vineyards), *Leptinotarsa* (preferably in potatoes) and *Chilo suppressalis* (preferably in rice).

The term "crops" is to be understood as including also crops that have been rendered tolerant to herbicides like bromoxynil or classes of herbicides (such as, for example, HPPD inhibitors, ALS inhibitors, for example primisulfuron, prosulfuron and trifloxysulfuron, EPSPS (5-enol-pyrovyl-shikimate-3-phosphate-synthase) inhibitors, GS (glutamine synthetase) inhibitors) as a result of conventional methods of breeding or genetic engineering. An

proteins (VIP), e.g. VIP1, VIP2, VIP3 or VIP3A; or insecticidal proteins of bacteria colonising nematodes, for example *Photorhabdus* spp. or *Xenorhabdus* spp., such as *Photorhabdus luminescens*, *Xenorhabdus nematophilus*; toxins produced by animals, such as scorpion toxins, arachnid toxins, wasp toxins and other insect-specific neurotoxins; toxins produced by fungi, such as *Streptomyces* toxins, plant lectins, such as pea lectins, barley lectins or snowdrop lectins; agglutinins; proteinase inhibitors, such as trypsin inhibitors, serine protease inhibitors, patatin, cystatin, papain inhibitors; ribosome-inactivating proteins (RIP), such as ricin, maize-RIP, abrin, luffin, saporin or bryodin; steroid metabolism enzymes, such as 3-hydroxysteroidoxidase, ecdysteroid-UDP-glycosyl-transferase, cholesterol oxidases, ecdysone inhibitors, HMG-CoA-reductase, ion channel blockers, such as blockers of sodium or calcium channels, juvenile hormone esterase, diuretic hormone receptors, stilbene synthase, bibenzyl synthase, chitinases and glucanases.

In the context of the present invention there are to be understood by δ -endotoxins, for example CryIA(b), CryIA(c), CryIF, CryIF(a2), CryIIA(b), CryIIIA, CryIIIB(b1) or Cry9c, or vegetative insecticidal proteins (VIP), for example VIP1, VIP2, VIP3 or VIP3A, expressly also hybrid toxins, truncated toxins and modified toxins. Hybrid toxins are produced recombinantly by a new combination of different domains of those proteins (see, for example, WO

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

Transgenic plants containing one or more genes that code for an insecticidal resistance and express one or more toxins are known and some of them are commercially available. Examples of such plants are: YieldGard® (maize variety that expresses a CryIA(b) toxin); YieldGard Rootworm® (maize variety that expresses a CryIIIB(b1) toxin); YieldGard Plus® (maize variety that expresses a CryIA(b) and a CryIIIB(b1) toxin); Starlink® (maize variety that expresses a Cry9(c) toxin); Herculex I® (maize variety that expresses a CryIF(a2) toxin and the enzyme phosphinothricine N-acetyltransferase (PAT) to achieve tolerance to the herbicide glufosinate ammonium); NuCOTN 33B® (cotton variety that expresses a CryIA(c) toxin); Bollgard I® (cotton variety that expresses a CryIA(c) toxin); Bollgard II® (cotton variety that expresses a CryIA(c) and a CryIIA(b) toxin); VIPCOT® (cotton variety that expresses a VIP toxin); NewLeaf® (potato variety that expresses a CryIIIA toxin); Nature-Gard® Agrisure® GT Advantage (GA21 glyphosate-tolerant trait), Agrisure® CB Advantage (Bt11 corn borer (CB) trait) and Protecta®.

3. **MIR604 Maize** from Syngenta Seeds SAS, Chemin de l'Hobit 27, F-31 790 St. Sauveur, France, registration number C/FR/96/05/10. Maize which has been rendered insect-resistant by transgenic expression of a modified CryIIIA toxin. This toxin is Cry3A055 modified by insertion of a cathepsin-D-protease recognition sequence. The preparation of such transgenic maize plants is described in WO 03/018810.
4. **MON 863 Maize** from Monsanto Europe S.A. 270-272 Avenue de Tervuren, B-1150 Brussels, Belgium, registration number C/DE/02/9. MON 863 expresses a CryIIIB(b1) toxin and has resistance to certain Coleoptera insects.
5. **IPC 531 Cotton** from Monsanto Europe S.A. 270-272 Avenue de Tervuren, B-1150 Brussels, Belgium, registration number C/ES/96/02.
6. **1507 Maize** from Pioneer Overseas Corporation, Avenue Tedesco, 7 B-1160 Brussels, Belgium, registration number C/NL/00/10. Genetically modified maize for the expression of the protein Cry1F for achieving resistance to certain Lepidoptera insects and of the PAT protein for achieving tolerance to the herbicide glufosinate ammonium.

so-called "pathogenesis-related proteins" (PRPs, see e.g. EP-A-0 392 225). Examples of such antipathogenic substances and transgenic plants capable of synthesising such antipathogenic substances are known, for example, from EP-A-0 392 225, WO 95/33818, and EP-A-0 353 191. The methods of producing such transgenic plants are generally known to the person skilled in the art and are described, for example, in the publications mentioned above.

Antipathogenic substances which can be expressed by such transgenic plants include, for example, ion channel blockers, such as blockers for sodium and calcium channels, for example the viral KP1, KP4 or KP6 toxins; stilbene synthases; bibenzyl synthases; chitinases; glucanases; the so-called "pathogenesis-related proteins" (PRPs; see e.g. EP-A-0 392 225); antipathogenic substances produced by microorganisms, for example peptide antibiotics or heterocyclic antibiotics (see e.g. WO 95/33818) or protein or polypeptide factors involved in plant pathogen defence (so-called "plant disease resistance genes", as described in WO 03/000906).

Further areas of use of the compositions according to the invention are the protection of stored goods and storerooms and the protection of raw materials, such as wood, textiles,

Lutzomyia spp., Culicoides spp., Chrysops spp., Hybomitra spp., Atylotus spp., Tabanus spp., Haematopota spp., Philipomyia spp., Braula spp., Musca spp., Hydrotaea spp., Stomoxys spp., Haematobia spp., Morellia spp., Fannia spp., Glossina spp., Calliphora spp., Lucilia spp., Chrysomyia spp., Wohlfahrtia spp., Sarcophaga spp., Oestrus spp., Hypoderma spp., Gasterophilus spp., Hippobosca spp., Lipoptena spp. and Melophagus spp..

Of the order Siphonaptera, for example Pulex spp., Ctenocephalides spp., Xenopsylla spp., Ceratophyllus spp..

Of the order Heteroptera, for example Cimex spp., Triatoma spp., Rhodnius spp., Panstrongylus spp..

Of the order Blattellidae, for example Blatta orientalis, Periplaneta americana, Blattella germanica and Supella spp..

Of the subclass Acaria (Acarida) and the orders Meta- and Meso-stigmata, for example Argas spp., Ornithodoros spp., Otobius spp., Ixodes spp., Amblyomma spp., Boophilus spp., Dermacentor spp., Haemaphysalis spp., Hyalomma spp., Rhipicephalus spp., Dermacentor spp..

carpini, *Lyctus brunneus*, *Lyctus africanus*, *Lyctus planicollis*, *Lyctus linearis*, *Lyctus pubescens*, *Trogoxylon aequale*, *Minthesrugicollis*, *Xyleborus spec.*, *Tryptodendron spec.*, *Apate monachus*, *Bostrychus capucins*, *Heterobostrychus brunneus*, *Sinoxylon spec.* and *Dinoderus minutus*, and also hymenopterans such as *Sirex juvencus*, *Urocerus gigas*, *Urocerus gigas taignus* and *Urocerus augur*, and termites such as *Kaloterms flavicollis*, *Cryptoterms brevis*, *Heteroterms indicola*, *Reticulitermes flavipes*, *Reticulitermes santonensis*, *Reticulitermes lucifugus*, *Mastoterms darwiniensis*, *Zootermopsis nevadensis* and *Coptoterms formosanus*, and bristletails such as *Lepisma saccharina*.

The invention therefore also relates to pesticidal compositions such as emulsifiable concentrates, suspension concentrates, directly sprayable or dilutable solutions, spreadable pastes, dilute emulsions, soluble powders, dispersible powders, wettable powders, dusts, granules or encapsulations in polymeric substances, which comprise - at least - one of the active ingredients according to the invention and which are to be selected to suit the intended aims and the prevailing circumstances.

In these compositions, the active ingredient is employed in pure form, a solid active ingredient for example in a specific particle size, or, preferably, together with - at least - one of the auxiliaries conventionally used in the art of formulation, such as extenders, for example sol-

- 41 -

perse absorbative polymers. Suitable particulate adsorptive carriers for granules are porous types, such as pumice, brick grit, sepiolite or bentonite, and suitable non-sorptive carrier materials are calcite or sand. In addition, a large number of granulated materials of inorganic or organic nature can be used, in particular dolomite or comminuted plant residues.

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

Suitable non-ionic surfactants are, especially, polyglycol ether derivatives of aliphatic or cycloaliphatic alcohols, of saturated or unsaturated fatty acids or of alkyl phenols which may contain approximately 3 to approximately 30 glycol ether groups and approximately 8 to approximately 20 carbon atoms in the (cyclo)aliphatic hydrocarbon radical or approximately 6 to approximately 18 carbon atoms in the alkyl moiety of the alkyl phenols. Also suitable are water-soluble polyethylene oxide adducts with polypropylene glycol, ethylenediaminopo-

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

- 43 -

Dusts:

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

Suspension concentrates:

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

Wettable powders:

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

Granulates:

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

The compositions can also comprise further solid or liquid auxiliaries, such as stabilizers, for

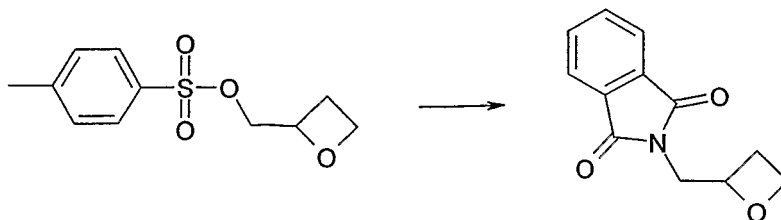
- 44 -

stances - and the use of the compositions for controlling pests of the abovementioned type are other subjects of the invention. Typical rates of concentration are between 0.1 and 1000 ppm, preferably between 0.1 and 500 ppm, of active ingredient. The rate of application per hectare is generally 1 to 2000 g of active ingredient per hectare, in particular 10 to 1000 g/ha, preferably 10 to 600 g/ha.

A preferred method of application in the field of crop protection is application to the foliage of the plants (foliar application), it being possible to select frequency and rate of application to match the danger of infestation with the pest in question. Alternatively, the active ingredient can reach the plants via the root system (systemic action), by drenching the locus of the plants with a liquid composition or by incorporating the active ingredient in solid form into the locus of the plants, for example into the soil, for example in the form of granules (soil application). In the case of paddy rice crops, such granules can be metered into the flooded paddy-field.

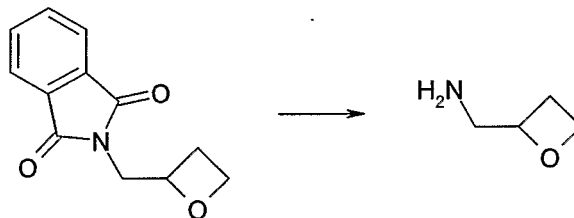
The compositions according to the invention are also suitable for the protection of plant propagation material, for example seeds, such as fruit, tubers or kernels, or nursery plants, against pests of the abovementioned type. The propagation material can be treated with the

- 45 -

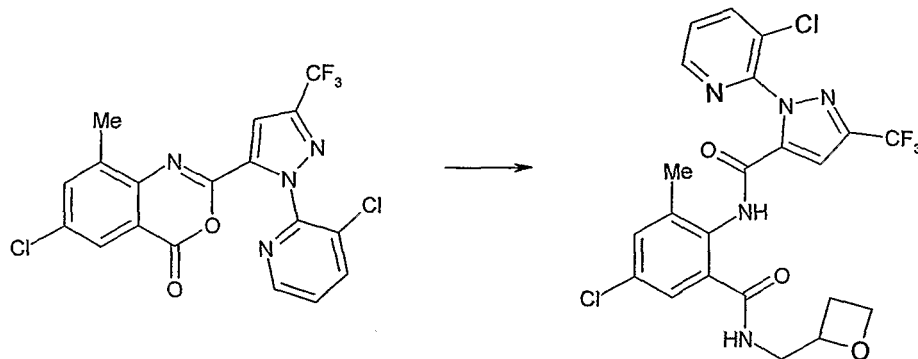


A solution of 2-(tosyloxymethyl)oxetane (27g, 111.4 mmol) (prepared according to A.O. Fitton et al., Synthesis 1987, (12), 1140-2) and potassium phthalimide (20.64g, 111.4 mmol) in DMF (200ml) is stirred at a temperature of 120°C for 18 hours, then evaporated in vacuo. The residue is taken up in ethyl acetate, the organic layer washed with water and brine, dried (Na₂SO₄), filtered, and evaporated to dryness. The crude solid product (19.8 g, 82%) is used in the next step without further purification.

Step 2: Preparation of 2-aminomethyloxetane:



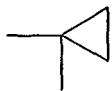
- 46 -



To a solution of 6-chloro-2-[1-(3-chloro-2-pyridinyl)-3-(trifluoromethyl)-1H-pyrazol-5-yl]-8-methyl-4H-3,1-benzoxazin-4-one (200 mg, 0.45 mmol) (prepared according to WO 02/48115, example 2D) in tetrahydrofurane (4 ml), is added 2-aminomethyloxetane (the product of step 2) (79 mg, 0.91 mmol), and the mixture is heated to reflux for 30 minutes. The solution is allowed to cool to ambient temperature and the solvent evaporated in vacuo. The residue is purified by prep. HPLC (hexane/ethyl acetate gradient on LiChrospher Si 60, Merck NW25 column) to afford 180 mg (71%) of the title compound as a white solid. [¹H-NMR (CDCl₃): 10.21 (s, 1H), 8.48 (d, 1H), 7.88 (d, 1H), 7.41 (m, 1H), 7.32 (s, 1H), 7.29 (m, 2H), 6.63 (m, 1H), 4.98 (m, 1H), 4.68 (m, 1H), 4.48 (m, 1H), 3.71 (m, 1H), 3.59 (m, 1H), 2.68 (m, 1H), 2.43 (m, 1H), 2.19 (s, 3H); MS (electrospray ES⁺): 528, 530 ((M+H)⁺)].

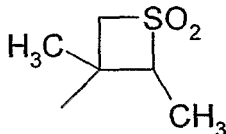
- 47 -

The compounds listed in the following Tables P, P' and A can be prepared analogous to the procedures described above (m.p. = melting point in °C): If no definition for substituent X is given, then p is 0, if X is a substituent, then p is 1. If no definition for substituent Y is given, then q is 0, if Y is a substituent, then q is 1. The group $C(CH_2CH_2)$ for the substituent A means cyclopropyl with two free valences:



Designations for substituent B like $CH(CH_2O)$, $CH(CHMeO)$, $CH-(CMe_2O)$, $CH(CH_2S)$, $CH(CH_2OCH_2)$, $CH(CHMeOCH_2)$, $CH(CMe_2OCH_2)$, $CH(CH_2S-(O)_2CH_2)$, $CH(CHMeS(O)_2CH_2)$, $CH(CMe_2S(O)_2CH_2)$, $C(Me)-(CH_2O)$, $C(Me)-(CHMeO)$, $C(Me)-(CMe_2O)$, $C(Me)-(CH_2S)$, $C(Me)-(CH_2OCH_2)$, $C(Me)-(CHMeOCH_2)$, $C(Me)-(CMe_2OCH_2)$, $C(Me)-(CH_2S(O)_2CH_2)$, $C(Me)-(CHMe-S(O)_2CH_2)$ or $C(Me)-(CMe_2-S(O)_2CH_2)$ define cyclic

rings. For example, $CH(CH_2O)$ is , $C(Me)-(CH-MeO)$ is , and



- 48 -

Cpd No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B	Phys. Data
P1	Me	Cl	CF ₃	CH ₂	-	-	cyclopropyl	MS (-ve) 510 (M-1) ⁻
P2	Me	Cl	CF ₃	CHMe	-	-	cyclopropyl	MS (+ve) 525 (M ⁺) MS (-ve) 524 (M-H) ⁻
P3	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	cyclopropyl	MS (-ve) 536 (M-H) ⁻
P4	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	cyclobutyl	MS (-ve) 550 (M-H) ⁻
P5	Me	Cl	CF ₃	CH ₂	-	-	2,2-dichloro-cyclopropyl	MS (-ve) 580 (M-H) ⁻
P6	Me	Cl	CF ₃	CH ₂	-	-	1-methyl-2,2-dichloro-cyclopropyl	MS (-ve) 594 (M-H) ⁻
P7	Me	Cl	CF ₃	CH	-	-	2,2-dibromo-	MS (-ve)

- 49 -

Cpd No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B	Phys. Data
P14	Me	Cl	CF ₃	CH ₂	-	-	C(S(O) ₂ Me)- (CH ₂ CH ₂ CH ₂)	>250°C MS(ES+) 604/606 (M+H) ⁺
P15	Me	Cl	CF ₃	CH ₂	-	-	cyclobutyl	206-208°C
P16	Me	Cl	CF ₃	CH ₂	-	-	C(Me)- (CH ₂ OCH ₂)	201-203°C
P17	Me	Cl	CF ₃	CH ₂	-	-	CH(CMe ₂ (CH- CH=CMe ₂))	178-179°C
P18	Me	Cl	CF ₃	CH ₂	-	-	C(CH ₂ OCH ₃)- (CH ₂ OCH ₂)	190-192°C
P19	Me	Cl	CF ₃	CH ₂	-	-	CH(CH ₂ O)	MS(ES+) 514/516 (M+H) ⁺
P20	Me	Cl	CF ₃	CHCOOMe	-	-	cyclopropyl	MS (ES-) 568 (M+H) ⁺

- 50 -

Cpd No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B	Phys. Data
							(CH ₂ CH ₂ CH ₂)	603/605 (M+H) ⁺
P28	Me	Cl	CF ₃	CH ₂	-	-	CH(CMe ₂ CMe ₂)	206-208°C
P29	Me	Cl	CF ₃	CH ₂	-	-	C(SMe)-(CH ₂ CH ₂)	214-215°C
P30	Me	Cl	CF ₃	CH ₂	-	-	C(S(O) ₂ Me)- (CH ₂ CH ₂)	212-214°C
P31	Me	Cl	CF ₃	CH ₂	-	-	C(CF ₃)-(CH ₂ CH ₂)	198-200°C
P32	Me	Cl	CF ₃	CH ₂	-	-	CH(CH ₂ -CFCl)	228-229°C
P33	Me	Cl	CF ₃	CH ₂	-	-	C(S(O)Me)- (CH ₂ CH ₂)	212-214°C
P34	Me	Cl	CF ₃	CH ₂	-	-	C(S(O)(NCOCF ₃) Me)-(CH ₂ CH ₂)	210-212°C
P35	Me	Cl	CF ₃	CH ₂	-	-	C(S(O)(NH)Me)- (CH ₂ CH ₂)	208-210°C

Cpd No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B	Phys. Data
P44	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	C(Me)-(CH ₂ CH ₂)	MS(ES+) 552/554 (M+H) ⁺
P45	Me	2-pyridyl	CF ₃	CH ₂	-	-	cyclopropyl	220-221°C
P46	Me	Cl	OCH ₂ CF ₃	CH ₂	-	-	cyclopropyl	174-176°C
P47	Me	2-pyridyl	CF ₃	C(CH ₂ CH ₂)	-	-	cyclopropyl	224-225°C
P48	Me	Cl	OCH ₂ CF ₃	C(CH ₂ CH ₂)	-	-	cyclopropyl	168-170°C
P49	Me	3-pyridyl	CF ₃	CH ₂	-	-	cyclopropyl	214-215°C
P50	Me	Cl	Cl	C(CH ₂ CH ₂)	-	-	cyclopropyl	222-225°C

- 52 -

Cpd No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B	Phys. Data
P61	Me	NO ₂	CF ₃	C(CH ₂ CH ₂)			cyclopropyl	215-217 ⁰ C
P62	Me	NO ₂	Br	C(CH ₂ CH ₂)			cyclopropyl	209-215 ⁰ C
P63	Me	NO ₂	Cl	C(CH ₂ CH ₂)			cyclopropyl	213-216 ⁰ C
P64	Me	NO ₂	OCH ₂ CF ₃	C(CH ₂ CH ₂)			cyclopropyl	218-221 ⁰ C
P65	Me	Cl	CF ₃	CH ₂	-	-	cyclobutyl	MS (ES+) 526 (MH ⁺) MS (ES-) 524 (M-H) ⁻
P66	Me	Cl	CF ₃	CHMe	-	-	cyclobutyl	MS (ES+) 540 (MH ⁺) MS (ES-) 538 (M-H) ⁻
P67	Me	Cl	CF ₃	CH(CH ₂)C	-	-	C(CH ₂) ₂	157-163 ⁰ C

- 53 -

Cpd No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B	Phys. Data
P69	Me	Cl	OCH ₂ CF ₃	CH ₂	-	-	cyclopropyl	174-181°C
P70	Me	Cl	OCH ₂ CF ₃	C(CH ₂ CH ₂)	-	-	cyclopropyl	150-154°C
P71	Me	I	OCH ₂ CF ₃	C(CH ₂ CH ₂)	-	-	cyclopropyl	180-184°C
P72	Me	I	OCH ₂ CF ₃	CH ₂	-	-	cyclopropyl	205-211 °C

The examples which follow are intended to illustrate the invention and show preferred compounds of formula I. Me means the methyl group. Et means the ethyl group. tBu is tert.-butyl. If no definition for substituent X is given, then p is 0, if X is a substituent, then p is 1. If

- 54 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.1	Me	Br	CF ₃	CH ₂	-	-	cyclo-propyl
A.1.2	Me	Br	CF ₃	CHMe	-	-	cyclo-propyl
A.1.3	Me	Br	CF ₃	CMe ₂	-	-	cyclo-propyl
A.1.4	Me	Br	CF ₃	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.5	Me	F	CF ₃	CH ₂	-	-	cyclo-propyl
A.1.6	Me	F	CF ₃	CHMe	-	-	cyclo-propyl
A.1.7	Me	F	CF ₃	CMe ₂	-	-	cyclo-propyl
A.1.8	Me	F	CF ₃	C(CH ₂ CH ₂)	-	-	cyclo-propyl

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							propyl
A.1.17	Cl	Br	CF ₃	CH ₂	-	-	cyclo-propyl
A.1.18	Cl	Br	CF ₃	CHMe	-	-	cyclo-propyl
A.1.19	Cl	Br	CF ₃	CMe ₂	-	-	cyclo-propyl
A.1.20	Cl	Br	CF ₃	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.21	Cl	F	CF ₃	CH ₂	-	-	cyclo-propyl
A.1.22	Cl	F	CF ₃	CHMe	-	-	cyclo-propyl
A.1.23	Cl	F	CF ₃	CMe ₂	-	-	cyclo-propyl
A.1.24	Cl	F	CF ₃	C(CH ₂ CH ₂)	-	-	cyclo-

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.32	Br	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.33	Br	Br	CF ₃	CH ₂	-	-	cyclo-propyl
A.1.34	Br	Br	CF ₃	CHMe	-	-	cyclo-propyl
A.1.35	Br	Br	CF ₃	CMe ₂	-	-	cyclo-propyl
A.1.36	Br	Br	CF ₃	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.37	Br	F	CF ₃	CH ₂	-	-	cyclo-propyl
A.1.38	Br	F	CF ₃	CHMe	-	-	cyclo-propyl
A.1.39	Br	F	CF ₃	CMe ₂	-	-	cyclo-propyl

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							propyl
A.1.48	Me	Cl	Cl	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.49	Me	Br	Cl	CH ₂	-	-	cyclo-propyl
A.1.50	Me	Br	Cl	CHMe	-	-	cyclo-propyl
A.1.51	Me	Br	Cl	CMe ₂	-	-	cyclo-propyl
A.1.52	Me	Br	Cl	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.53	Me	F	Cl	CH ₂	-	-	cyclo-propyl
A.1.54	Me	F	Cl	CHMe	-	-	cyclo-propyl
A.1.55	Me	F	Cl	CMe ₂	-	-	cyclo-

- 58 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.63	Cl	Cl	Cl	CMe ₂	-	-	cyclo-propyl
A.1.64	Cl	Cl	Cl	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.65	Cl	Br	Cl	CH ₂	-	-	cyclo-propyl
A.1.66	Cl	Br	Cl	CHMe	-	-	cyclo-propyl
A.1.67	Cl	Br	Cl	CMe ₂	-	-	cyclo-propyl
A.1.68	Cl	Br	Cl	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.69	Cl	F	Cl	CH ₂	-	-	cyclo-propyl
A.1.70	Cl	F	Cl	CHMe	-	-	cyclo-propyl

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							propyl
A.1.79	Br	Cl	Cl	CMe ₂	-	-	cyclo- propyl
A.1.80	Br	Cl	Cl	C(CH ₂ CH ₂)	-	-	cyclo- propyl
A.1.81	Br	Br	Cl	CH ₂	-	-	cyclo- propyl
A.1.82	Br	Br	Cl	CHMe	-	-	cyclo- propyl
A.1.83	Br	Br	Cl	CMe ₂	-	-	cyclo- propyl
A.1.84	Br	Br	Cl	C(CH ₂ CH ₂)	-	-	cyclo- propyl
A.1.85	Br	F	Cl	CH ₂	-	-	cyclo- propyl
A.1.86	Br	F	Cl	CHMe	-	-	cyclo-

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.94	Me	Cl	Br	CHMe	-	-	cyclo-propyl
A.1.95	Me	Cl	Br	CMe ₂	-	-	cyclo-propyl
A.1.96	Me	Cl	Br	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.97	Me	Br	Br	CH ₂	-	-	cyclo-propyl
A.1.98	Me	Br	Br	CHMe	-	-	cyclo-propyl
A.1.99	Me	Br	Br	CMe ₂	-	-	cyclo-propyl
A.1.100	Me	Br	Br	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.101	Me	F	Br	CH ₂	-	-	cyclo-propyl

- 61 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							propyl
A.1.110	Cl	Cl	Br	CHMe	-	-	cyclo- propyl
A.1.111	Cl	Cl	Br	CMe ₂	-	-	cyclo- propyl
A.1.112	Cl	Cl	Br	C(CH ₂ CH ₂)	-	-	cyclo- propyl
A.1.113	Cl	Br	Br	CH ₂	-	-	cyclo- propyl
A.1.114	Cl	Br	Br	CHMe	-	-	cyclo- propyl
A.1.115	Cl	Br	Br	CMe ₂	-	-	cyclo- propyl
A.1.116	Cl	Br	Br	C(CH ₂ CH ₂)	-	-	cyclo- propyl
A.1.117	Cl	F	Br	CH ₂	-	-	cyclo-

- 62 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.125	Br	Cl	Br	CH ₂	-	-	cyclopropyl
A.1.126	Br	Cl	Br	CHMe	-	-	cyclopropyl
A.1.127	Br	Cl	Br	CMe ₂	-	-	cyclopropyl
A.1.128	Br	Cl	Br	C(CH ₂ CH ₂)	-	-	cyclopropyl
A.1.129	Br	Br	Br	CH ₂	-	-	cyclopropyl
A.1.130	Br	Br	Br	CHMe	-	-	cyclopropyl
A.1.131	Br	Br	Br	CMe ₂	-	-	cyclopropyl
A.1.132	Br	Br	Br	C(CH ₂ CH ₂)	-	-	cyclopropyl

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							propyl
A.1.141	Me	Cl	OCHF ₂	CH ₂	-	-	cyclo- propyl
A.1.142	Me	Cl	OCHF ₂	CHMe	-	-	cyclo- propyl
A.1.143	Me	Cl	OCHF ₂	CMe ₂	-	-	cyclo- propyl
A.1.144	Me	Cl	OCHF ₂	C(CH ₂ CH ₂)	-	-	cyclo- propyl
A.1.145	Me	Br	OCHF ₂	CH ₂	-	-	cyclo- propyl
A.1.146	Me	Br	OCHF ₂	CHMe	-	-	cyclo- propyl
A.1.147	Me	Br	OCHF ₂	CMe ₂	-	-	cyclo- propyl
A.1.148	Me	Br	OCHF ₂	C(CH ₂ CH ₂)	-	-	cyclo-

- 64 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.156	Me	I	OCHF ₂	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.157	Cl	Cl	OCHF ₂	CH ₂	-	-	cyclo-propyl
A.1.158	Cl	Cl	OCHF ₂	CHMe	-	-	cyclo-propyl
A.1.159	Cl	Cl	OCHF ₂	CMe ₂	-	-	cyclo-propyl
A.1.160	Cl	Cl	OCHF ₂	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.161	Cl	Br	OCHF ₂	CH ₂	-	-	cyclo-propyl
A.1.162	Cl	Br	OCHF ₂	CHMe	-	-	cyclo-propyl
A.1.163	Cl	Br	OCHF ₂	CMe ₂	-	-	cyclo-propyl

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							propyl
A.1.172	Cl	I	OCHF ₂	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.173	Br	Cl	OCHF ₂	CH ₂	-	-	cyclo-propyl
A.1.174	Br	Cl	OCHF ₂	CHMe	-	-	cyclo-propyl
A.1.175	Br	Cl	OCHF ₂	CMe ₂	-	-	cyclo-propyl
A.1.176	Br	Cl	OCHF ₂	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.177	Br	Br	OCHF ₂	CH ₂	-	-	cyclo-propyl
A.1.178	Br	Br	OCHF ₂	CHMe	-	-	cyclo-propyl
A.1.179	Br	Br	OCHF ₂	CMe ₂	-	-	cyclo-

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.187	Br	I	OCHF ₂	CMe ₂	-	-	cyclo- propyl
A.1.188	Br	I	OCHF ₂	C(CH ₂ CH ₂)	-	-	cyclo- propyl
A.1.189	Me	Cl	OCH ₂ CF ₃	CH ₂	-	-	cyclo- propyl
A.1.190	Me	Cl	OCH ₂ CF ₃	CHMe	-	-	cyclo- propyl
A.1.191	Me	Cl	OCH ₂ CF ₃	CMe ₂	-	-	cyclo- propyl
A.1.192	Me	Cl	OCH ₂ CF ₃	C(CH ₂ CH ₂)	-	-	cyclo- propyl
A.1.193	Me	Br	OCH ₂ CF ₃	CH ₂	-	-	cyclo- propyl
A.1.194	Me	Br	OCH ₂ CF ₃	CHMe	-	-	cyclo- propyl

- 67 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							propyl
A.1.203	Me	I	OCH ₂ CF ₃	CMe ₂	-	-	cyclo- propyl
A.1.204	Me	I	OCH ₂ CF ₃	C(CH ₂ CH ₂)	-	-	cyclo- propyl
A.1.205	Cl	Cl	OCH ₂ CF ₃	CH ₂	-	-	cyclo- propyl
A.1.206	Cl	Cl	OCH ₂ CF ₃	CHMe	-	-	cyclo- propyl
A.1.207	Cl	Cl	OCH ₂ CF ₃	CMe ₂	-	-	cyclo- propyl
A.1.208	Cl	Cl	OCH ₂ CF ₃	C(CH ₂ CH ₂)	-	-	cyclo- propyl
A.1.209	Cl	Br	OCH ₂ CF ₃	CH ₂	-	-	cyclo- propyl
A.1.210	Cl	Br	OCH ₂ CF ₃	CHMe	-	-	cyclo-

- 68 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.218	Cl	I	OCH ₂ CF ₃	CHMe	-	-	cyclo-propyl
A.1.219	Cl	I	OCH ₂ CF ₃	CMe ₂	-	-	cyclo-propyl
A.1.220	Cl	I	OCH ₂ CF ₃	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.221	Br	Cl	OCH ₂ CF ₃	CH ₂	-	-	cyclo-propyl
A.1.222	Br	Cl	OCH ₂ CF ₃	CHMe	-	-	cyclo-propyl
A.1.223	Br	Cl	OCH ₂ CF ₃	CMe ₂	-	-	cyclo-propyl
A.1.224	Br	Cl	OCH ₂ CF ₃	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.225	Br	Br	OCH ₂ CF ₃	CH ₂	-	-	cyclo-propyl

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							propyl
A.1.234	Br	I	OCH ₂ CF ₃	CHMe	-	-	cyclo- propyl
A.1.235	Br	I	OCH ₂ CF ₃	CMe ₂	-	-	cyclo- propyl
A.1.236	Br	I	OCH ₂ CF ₃	C(CH ₂ CH ₂)	-	-	cyclo- propyl
A.1.237	Me	Cl	CHF ₂	CH ₂	-	-	cyclo- propyl
A.1.238	Me	Cl	CHF ₂	CHMe	-	-	cyclo- propyl
A.1.239	Me	Cl	CHF ₂	CMe ₂	-	-	cyclo- propyl
A.1.240	Me	Cl	CHF ₂	C(CH ₂ CH ₂)	-	-	cyclo- propyl
A.1.241	Me	Br	CHF ₂	CH ₂	-	-	cyclo-

- 70 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.249	Me	I	CHF ₂	CH ₂	-	-	cyclopropyl
A.1.250	Me	I	CHF ₂	CHMe	-	-	cyclopropyl
A.1.251	Me	I	CHF ₂	CMe ₂	-	-	cyclopropyl
A.1.252	Me	I	CHF ₂	C(CH ₂ CH ₂)	-	-	cyclopropyl
A.1.253	Cl	Cl	CHF ₂	CH ₂	-	-	cyclopropyl
A.1.254	Cl	Cl	CHF ₂	CHMe	-	-	cyclopropyl
A.1.255	Cl	Cl	CHF ₂	CMe ₂	-	-	cyclopropyl
A.1.256	Cl	Cl	CHF ₂	C(CH ₂ CH ₂)	-	-	cyclopropyl

- 71 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							propyl
A.1.265	Cl	I	CHF ₂	CH ₂	-	-	cyclo- propyl
A.1.266	Cl	I	CHF ₂	CHMe	-	-	cyclo- propyl
A.1.267	Cl	I	CHF ₂	CMe ₂	-	-	cyclo- propyl
A.1.268	Cl	I	CHF ₂	C(CH ₂ CH ₂)	-	-	cyclo- propyl
A.1.269	Br	Cl	CHF ₂	CH ₂	-	-	cyclo- propyl
A.1.270	Br	Cl	CHF ₂	CHMe	-	-	cyclo- propyl
A.1.271	Br	Cl	CHF ₂	CMe ₂	-	-	cyclo- propyl
A.1.272	Br	Cl	CHF ₂	C(CH ₂ CH ₂)	-	-	cyclo-

- 72 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.280	Br	F	CHF ₂	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.281	Br	I	CHF ₂	CH ₂	-	-	cyclo-propyl
A.1.282	Br	I	CHF ₂	CHMe	-	-	cyclo-propyl
A.1.283	Br	I	CHF ₂	CMe ₂	-	-	cyclo-propyl
A.1.284	Br	I	CHF ₂	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.285	Me	Cl	CH ₂ CF ₃	CH ₂	-	-	cyclo-propyl
A.1.286	Me	Cl	CH ₂ CF ₃	CHMe	-	-	cyclo-propyl
A.1.287	Me	Cl	CH ₂ CF ₃	CMe ₂	-	-	cyclo-propyl

- 73 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							propyl
A.1.296	Me	F	CH ₂ CF ₃	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.297	Me	I	CH ₂ CF ₃	CH ₂	-	-	cyclo-propyl
A.1.298	Me	I	CH ₂ CF ₃	CHMe	-	-	cyclo-propyl
A.1.299	Me	I	CH ₂ CF ₃	CMe ₂	-	-	cyclo-propyl
A.1.300	Me	I	CH ₂ CF ₃	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.301	Cl	Cl	CH ₂ CF ₃	CH ₂	-	-	cyclo-propyl
A.1.302	Cl	Cl	CH ₂ CF ₃	CHMe	-	-	cyclo-propyl
A.1.303	Cl	Cl	CH ₂ CF ₃	CMe ₂	-	-	cyclo-

- 74 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.311	Cl	F	CH ₂ CF ₃	CMe ₂	-	-	cyclo-propyl
A.1.312	Cl	F	CH ₂ CF ₃	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.313	Cl	I	CH ₂ CF ₃	CH ₂	-	-	cyclo-propyl
A.1.314	Cl	I	CH ₂ CF ₃	CHMe	-	-	cyclo-propyl
A.1.315	Cl	I	CH ₂ CF ₃	CMe ₂	-	-	cyclo-propyl
A.1.316	Cl	I	CH ₂ CF ₃	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.317	Br	Cl	CH ₂ CF ₃	CH ₂	-	-	cyclo-propyl
A.1.318	Br	Cl	CH ₂ CF ₃	CHMe	-	-	cyclo-propyl

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							propyl
A.1.327	Br	F	CH ₂ CF ₃	CMe ₂	-	-	cyclo-propyl
A.1.328	Br	F	CH ₂ CF ₃	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.329	Br	I	CH ₂ CF ₃	CH ₂	-	-	cyclo-propyl
A.1.330	Br	I	CH ₂ CF ₃	CHMe	-	-	cyclo-propyl
A.1.331	Br	I	CH ₂ CF ₃	CMe ₂	-	-	cyclo-propyl
A.1.332	Br	I	CH ₂ CF ₃	C(CH ₂ CH ₂)	-	-	cyclo-propyl
A.1.333	Me	Cl	CF ₃	CH ₂	-	-	cyclo-propyl
A.1.334	Me	Cl	CF ₃	CHMe	-	-	cyclo-

- 76 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.342	Me	Cl	CF ₃	CH(CMe=CH ₂)	-	-	cyclo-propyl
A.1.343	Me	Cl	CF ₃	CH(CH ₂ CH=CH ₂)	-	-	cyclo-propyl
A.1.344	Me	Cl	CF ₃	CH(C=CH)	-	-	cyclo-propyl
A.1.345	Me	Cl	CF ₃	CMe ₂	-	-	cyclo-propyl
A.1.346	Me	Cl	CF ₃	CHCN	-	-	cyclo-propyl
A.1.347	Me	Cl	CF ₃	CH(CH ₂ SMe)	-	-	cyclo-propyl
A.1.348	Me	Cl	CF ₃	CH(CH ₂ S(O) ₂ Me)	-	-	cyclo-propyl
A.1.349	Me	Cl	CF ₃	CH(CH ₂ OMe)	-	-	cyclo-propyl

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							propyl
A.1.358	Me	Cl	CF ₃	C(CH ₂ CBr ₂)	-	-	cyclo- propyl
A.1.359	Me	Cl	CF ₃	C(CH ₂ CHMe)	-	-	cyclo- propyl
A.1.360	Me	Cl	CF ₃	C(CH ₂ CMe ₂)	-	-	cyclo- propyl
A.1.361	Me	Cl	CF ₃	C(CH ₂ CHEt)	-	-	cyclo- propyl
A.1.362	Me	Cl	CF ₃	C(CH ₂ CEt ₂)	-	-	cyclo- propyl
A.1.363	Me	Cl	CF ₃	CH ₂ CH ₂	-	-	cyclo- propyl
A.1.364	Me	Cl	CF ₃	CH=CH	-	-	cyclo- propyl
A.1.365	Me	Cl	CF ₃	CHMeCH ₂	-	-	cyclo-

- 78 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.373	Me	Cl	CF ₃	CMe ₂	N-iso-butyl	-	cyclo-propyl
A.1.374	Me	Cl	CF ₃	CH ₂	NH	-	cyclo-propyl
A.1.375	Me	Cl	CF ₃	CHMe	NMe	-	cyclo-propyl
A.1.376	Me	Cl	CF ₃	CMe ₂	NEt	-	cyclo-propyl
A.1.377	Me	Cl	CF ₃	CH ₂	O	CH ₂	cyclo-propyl
A.1.378	Me	Cl	CF ₃	CHMe	O	CH ₂	cyclo-propyl
A.1.379	Me	Cl	CF ₃	CMe ₂	O	CH ₂	cyclo-propyl
A.1.380	Me	Cl	CF ₃	C(CH ₂ CH ₂)	O	CH ₂	cyclo-propyl

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							propyl
A.1.389	Me	Cl	CF ₃	CH ₂	O	CH-(cyclo-propyl)	cyclo-propyl
A.1.390	Me	Cl	CF ₃	CH ₂	O	CHnPr	cyclo-propyl
A.1.391	Me	Cl	CF ₃	CH ₂	O	CHtBu	cyclo-propyl
A.1.392	Me	Cl	CF ₃	CH ₂	O	CH(CH=CH ₂)	cyclo-propyl
A.1.393	Me	Cl	CF ₃	CH ₂	O	CH(CH=CHMe)	cyclo-propyl
A.1.394	Me	Cl	CF ₃	CH ₂	O	CH-(CMe=CH ₂)	cyclo-propyl
A.1.395	Me	Cl	CF ₃	CH ₂	O	CH(CH ₂ CH=CH ₂)	cyclo-propyl
A.1.396	Me	Cl	CF ₃	CH ₂	O	CH(C=CH)	cyclo-

- 80 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.404	Me	Cl	CF ₃	CH ₂	O	C(CH ₂ CHF)	cyclo-propyl
A.1.405	Me	Cl	CF ₃	CH ₂	O	C(CH ₂ CF ₂)	cyclo-propyl
A.1.406	Me	Cl	CF ₃	CH ₂	O	C(CH ₂ CHCl)	cyclo-propyl
A.1.407	Me	Cl	CF ₃	CH ₂	O	C(CH ₂ CFCI)	cyclo-propyl
A.1.408	Me	Cl	CF ₃	CH ₂	O	C(CH ₂ CCl ₂)	cyclo-propyl
A.1.409	Me	Cl	CF ₃	CH ₂	O	C(CH ₂ CHBr)	cyclo-propyl
A.1.410	Me	Cl	CF ₃	CH ₂	O	C(CH ₂ CBr ₂)	cyclo-propyl
A.1.411	Me	Cl	CF ₃	CH ₂	O	C(CH ₂ CHMe)	cyclo-propyl

- 81 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.419	Me	Cl	CF ₃	CH ₂	-	-	1-chloro-cyclo-propyl
A.1.420	Me	Cl	CF ₃	CH ₂	-	-	1-bromo-cyclo-propyl
A.1.421	Me	Cl	CF ₃	CH ₂	-	-	1-methyl--cyclo-propyl
A.1.422	Me	Cl	CF ₃	CH ₂	-	-	1-ethyl-cyclo-propyl
A.1.423	Me	Cl	CF ₃	CH ₂	-	-	1-cyano-cyclo-propyl
A.1.424	Me	Cl	CF ₃	CH ₂	-	-	1-methyl--

- 82 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.429	Me	Cl	CF ₃	CH ₂	-	-	2,2- difluoro- cyclo- propyl
A.1.430	Me	Cl	CF ₃	CH ₂	-	-	2-chloro- cyclo- propyl
A.1.431	Me	Cl	CF ₃	CH ₂	-	-	2,2- dichloro- cyclo- propyl
A.1.432	Me	Cl	CF ₃	CH ₂	-	-	2-bromo- cyclo- propyl
A.1.433	Me	Cl	CF ₃	CH ₂	-	-	2,2- dibromo-

- 83 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.438	Me	Cl	CF ₃	CH ₂	-	-	2,2-diethyl- cyclo- propyl
A.1.439	Me	Cl	CF ₃	CH ₂	-	-	2- cyanocycl o-propyl
A.1.440	Me	Cl	CF ₃	CH ₂	-	-	2-methyl-- thiocyclo- propyl
A.1.441	Me	Cl	CF ₃	CH ₂	-	-	2- methoxy- cyclo- propyl
A.1.442	Me	Cl	CF ₃	CH ₂	-	-	2-hydroxy- cyclo-

- 84 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							cyclo-butyl
A.1.449	Me	Cl	CF ₃	CH ₂	-	-	2-bromo-cyclo-butyl
A.1.450	Me	Cl	CF ₃	CH ₂	-	-	2,2-dibromo-cyclo-butyl
A.1.451	Me	Cl	CF ₃	CH ₂	-	-	2-chloro-2-fluoro-cyclo-butyl
A.1.452	Me	Cl	CF ₃	CH ₂	-	-	2-methyl-cyclo-butyl
A.1.453	Me	Cl	CF ₃	CH ₂	-	-	2,2-dimethyl-cyclo-butyl
A.1.454	Me	Cl	CF ₃	CH ₂	-	-	2-ethyl-cyclo-butyl

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							cyclo-butyl
A.1.461	Me	Cl	CF ₃	CH ₂	-	-	3-methyl-cyclo-butyl
A.1.462	Me	Cl	CF ₃	CH ₂	-	-	3,3-dimethyl-cyclo-butyl
A.1.463	Me	Cl	CF ₃	CH ₂	-	-	3-chloro-cyclo-butyl
A.1.464	Me	Cl	CF ₃	CH ₂	-	-	3,3-dichloro-cyclo-butyl
A.1.465	Me	Cl	CF ₃	CHMe	-	-	1-fluoro-cyclo-propyl
A.1.466	Me	Cl	CF ₃	CHMe	-	-	1-chlorocycl

- 86 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							propyl
A.1.472	Me	Cl	CF ₃	CHMe	-	-	1-methoxy-cyclo-propyl
A.1.473	Me	Cl	CF ₃	CHMe	-	-	1-hydroxy-cyclo-propyl
A.1.474	Me	Cl	CF ₃	CHMe	⊙	-	1-trifluoro-methyl-cyclo-propyl
A.1.475	Me	Cl	CF ₃	CHMe	-	-	2-fluoro-cyclo-propyl
A.1.476	Me	Cl	CF ₃	CHMe	-	-	2,2-

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							propyl
A.1.481	Me	Cl	CF ₃	CHMe	-	-	2-chloro- 2-fluoro- cyclo- propyl
A.1.482	Me	Cl	CF ₃	CHMe	-	-	2-methyl-- cyclo- propyl
A.1.483	Me	Cl	CF ₃	CHMe	-	-	2,2- dimethyl-- cyclo- propyl
A.1.484	Me	Cl	CF ₃	CHMe	-	-	2-ethyl- cyclo- propyl
A.1.485	Me	Cl	CF ₃	CHMe	-	-	2,2-

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.490	Me	Cl	CF ₃	CHMe	-	-	2-trifluoro- methyl-- cyclo- propyl
A.1.491	Me	Cl	CF ₃	CHMe	-	-	cyclo-butyl
A.1.492	Me	Cl	CF ₃	CHMe	-	-	2-fluoro- cyclo-butyl
A.1.493	Me	Cl	CF ₃	CHMe	-	-	2,2- difluoro- cyclo-butyl
A.1.494	Me	Cl	CF ₃	CHMe	-	-	2- chlorocycl o-butyl
A.1.495	Me	Cl	CF ₃	CHMe	-	-	2,2- dichloro- cyclo-butyl

- 89 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.502	Me	Cl	CF ₃	CHMe	-	-	2,2- diethyl- cyclo-butyl
A.1.503	Me	Cl	CF ₃	CHMe	-	-	2- cyanocycl o-butyl
A.1.504	Me	Cl	CF ₃	CHMe	-	-	2-methyl-- thiocyclo- butyl
A.1.505	Me	Cl	CF ₃	CHMe	-	-	2- methoxy- cyclo-butyl
A.1.506	Me	Cl	CF ₃	CHMe	-	-	2-hydroxy- cyclo-butyl
A.1.507	Me	Cl	CF ₃	CHMe	-	-	2-trifluoro- methyl-

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							cyclo- propyl
A.1.514	Me	Cl	CF ₃	CMe ₂	-	-	1-bromo- cyclo- propyl
A.1.515	Me	Cl	CF ₃	CMe ₂	-	-	1-methyl-- cyclo- propyl
A.1.516	Me	Cl	CF ₃	CMe ₂	-	-	1-ethyl- cyclo- propyl
A.1.517	Me	Cl	CF ₃	CMe ₂	-	-	1-cyano- cyclo- propyl
A.1.518	Me	Cl	CF ₃	CMe ₂	-	-	1-methyl-- thiocyclo-

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.523	Me	Cl	CF ₃	CMe ₂	-	-	2,2-difluoro-cyclo-propyl
A.1.524	Me	Cl	CF ₃	CMe ₂	-	-	2-chloro-cyclo-propyl
A.1.525	Me	Cl	CF ₃	CMe ₂	-	-	2,2-dichloro-cyclo-propyl
A.1.526	Me	Cl	CF ₃	CMe ₂	-	-	2-bromo-cyclo-propyl
A.1.527	Me	Cl	CF ₃	CMe ₂	-	-	2,2-dibromo-

- 92 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A.1.532	Me	Cl	CF ₃	CMe ₂	-	-	2,2-diethyl-cyclo-propyl
A.1.533	Me	Cl	CF ₃	CMe ₂	-	-	2-cyano-cyclo-propyl
A.1.534	Me	Cl	CF ₃	CMe ₂	-	-	2-methyl-thiocyclo-propyl
A.1.535	Me	Cl	CF ₃	CMe ₂	-	-	2-methoxy-cyclo-propyl
A.1.536	Me	Cl	CF ₃	CMe ₂	-	-	2-hydroxy-cyclo-

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							cyclo-butyl
A.1.543	Me	Cl	CF ₃	CMe ₂	-	-	2-bromo- cyclo-butyl
A.1.544	Me	Cl	CF ₃	CMe ₂	-	-	2,2- dibromo- cyclo-butyl
A.1.545	Me	Cl	CF ₃	CMe ₂	-	-	2-chloro- 2-fluoro- cyclo-butyl
A.1.546	Me	Cl	CF ₃	CMe ₂	-	-	2-methyl- cyclo-butyl
A.1.547	Me	Cl	CF ₃	CMe ₂	-	-	2,2- dimethyl- cyclo-butyl
A.1.548	Me	Cl	CF ₃	CMe ₂	-	-	2-ethyl- cyclo-butyl

- 94 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							cyclo-butyl
A.1.555	Me	Cl	CF ₃	CMe ₂	-	-	3-methyl-- cyclo-butyl
A.1.556	Me	Cl	CF ₃	CMe ₂	-	-	3,3- dimethyl-- cyclo-butyl
A.1.557	Me	Cl	CF ₃	CMe ₂	-	-	3-chloro- cyclo-butyl
A.1.558	Me	Cl	CF ₃	CMe ₂	-	-	3,3- dichloro- cyclo-butyl
A.1.559	Me	Cl	CF ₃	CMe ₂	-	-	2-hydroxy- cyclo-butyl
A.1.560	Me	Cl	CF ₃	CMe ₂	-	-	2-trifluoro- methyl-- cyclo-butyl

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							propyl
A.1.567	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	1-bromo-cyclo-propyl
A.1.568	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	1-methyl--cyclo-propyl
A.1.569	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	1-ethyl-cyclo-propyl
A.1.570	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	1-cyano-cyclo-propyl
A.1.571	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	1-methyl--thiocyclo-propyl

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							difluoro- cyclo- propyl
A.1.577	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	2-chloro- cyclo- propyl
A.1.578	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	2,2- dichloro- cyclo- propyl
A.1.579	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	2-bromo- cyclo- propyl
A.1.580	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	2,2- dibromo- cyclo-

- 97 -

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
							diethyl- cyclo- propyl
A.1.586	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	2-cyano- cyclo- propyl
A.1.587	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	2-methyl- thiocyclo- propyl
A.1.588	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	2- methoxy- cyclo- propyl
A.1.589	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	2-hydroxy- cyclo- propyl

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A1.596	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	2-bromo- cyclo-butyl
A1.597	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	2,2- dibromo- cyclo-butyl
A1.598	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	2-chloro- 2-fluoro- cyclo-butyl
A1.599	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	2-methyl- cyclo-butyl
A1.600	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	2,2- dimethyl-- cyclo-butyl
A1.601	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	2-ethyl- cyclo-butyl
A1.602	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	2,2-

Comp. No.	R ₉₁	R ₉₂	R ₉₃	A	X	Y	B
A1.608	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	3-methyl-cyclo-butyl
A1.609	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	3,3-dimethyl--cyclo-butyl
A1.610	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	3-chloro-cyclo-butyl
A1.611	Me	Cl	CF ₃	C(CH ₂ CH ₂)	-	-	3,3-dichloro-cyclo-butyl
A1.612	Me	Cl	CF ₃	CH ₂	-	-	1-methyl-2,2-dichloro-cyclo-propyl
A1.613	Me	Cl	CF ₃	CH ₂	-	-	1-methyl-

- 100 -

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

Example F2: Solutions

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

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

Example F3: Granules

	a)	b)	c)	d)
Active ingredient	5 %	10 %	8 %	21 %
Kaolin	94 %	-	79 %	54 %
Highly disperse silica	1 %	-	13 %	7 %

- 101 -

Sodium lauryl sulfate	3 %	-	5 %
Sodium diisobutyl naphthalenesulfonate	-	6 %	10 %
Octylphenoxypolyethylene glycol ether (7-8 mol of EO)	-	2 %	-
Highly disperse silica	5 %	10 %	10 %
Kaolin	62 %	27 %	-

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

Example F6: Extruder granules

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

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

- 102 -

Silicone oil (75 % aqueous emulsion)	0.8 %
Water	32 %

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

The activity of the compositions according to the invention can be broadened considerably, and adapted to prevailing circumstances, by adding other insecticidally, acaricidally and/or fungicidally active ingredients. Suitable additions to active ingredients here are, for example, representatives of the following classes of active ingredients: organophosphorus compounds, nitrophenol derivatives, thioureas, juvenile hormones, formamidines, benzophenone derivatives, ureas, pyrrole derivatives, carbamates, pyrethroids, chlorinated hydrocarbons, acylureas, pyridylmethyleamino derivatives, macrolides, neonicotinoids and *Bacillus thuringiensis* preparations.

The following mixtures of the compounds of formula I with active ingredients are preferred (the abbreviation "TX" means "one compound selected from the group consisting of the compounds specifically described in tables B, B' and A of the present invention"):

- 103 -

[CCN] + TX, bifenazate (74) + TX, bifenthrin (76) + TX, binapacryl (907) + TX, brofenvalerate (alternative name) + TX, bromocyclen (918) + TX, bromophos (920) + TX, bromophos-ethyl (921) + TX, bromopropylate (94) + TX, buprofezin (99) + TX, butocarboxim (103) + TX, butoxycarboxim (104) + TX, butylpyridaben (alternative name) + TX, calcium polysulfide (IUPAC name) (111) + TX, camphechlor (941) + TX, carbanolate (943) + TX, carbaryl (115) + TX, carbofuran (118) + TX, carbophenothion (947) + TX, CGA 50'439 (development code) (125) + TX, chinomethionat (126) + TX, chlorbenside (959) + TX, chlordimeform (964) + TX, chlordimeform hydrochloride (964) + TX, chlorfenapyr (130) + TX, chlorfenethol (968) + TX, chlorfenson (970) + TX, chlorfensulphide (971) + TX, chlorfenvinphos (131) + TX, chlorobenzilate (975) + TX, chloromebuform (977) + TX, chloromethiuron (978) + TX, chloropropylate (983) + TX, chlorpyrifos (145) + TX, chlorpyrifos-methyl (146) + TX, chlorthiophos (994) + TX, cinerin I (696) + TX, cinerin II (696) + TX, cinerins (696) + TX, clofentezine (158) + TX, closantel (alternative name) [CCN] + TX, coumaphos (174) + TX, crotamiton (alternative name) [CCN] + TX, crotoxyphos (1010) + TX, cufraneb (1013) + TX, cyanthoate (1020) + TX, cyflumetofen (CAS Reg. No.: 400882-07-7) + TX, cyhalothrin (196) + TX, cyhexatin (199) + TX, cypermethrin (201) + TX, DCPM (1032) + TX, DDT (219) + TX, demephion (1037) + TX, demephion-O (1037) + TX, demephion-S (1037) + TX, demeton

fentrifanil (1161) + TX, fenvalerate (349) + TX, fipronil (354) + TX, fluacrypyrim (360) + TX, fluazuron (1166) + TX, flubenzimine (1167) + TX, flucycloxuron (366) + TX, flucythrinate (367) + TX, fluenetil (1169) + TX, flufenoxuron (370) + TX, flumethrin (372) + TX, fluorbenside (1174) + TX, fluvalinate (1184) + TX, FMC 1137 (development code) (1185) + TX, formetanate (405) + TX, formetanate hydrochloride (405) + TX, formothion (1192) + TX, formparanate (1193) + TX, gamma-HCH (430) + TX, glyodin (1205) + TX, halfenprox (424) + TX, heptenophos (432) + TX, hexadecyl cyclopropanecarboxylate (IUPAC/Chemical Abstracts name) (1216) + TX, hexythiazox (441) + TX, iodomethane (IUPAC name) (542) + TX, isocarbophos (alternative name) (473) + TX, isopropyl O-(methoxyaminothiophosphoryl)salicylate (IUPAC name) (473) + TX, ivermectin (alternative name) [CCN] + TX, jasmolin I (696) + TX, jasmolin II (696) + TX, jodfenphos (1248) + TX, lindane (430) + TX, lufenuron (490) + TX, malathion (492) + TX, malonoben (1254) + TX, mecarbam (502) + TX, mephosfolan (1261) + TX, mesulfen (alternative name) [CCN] + TX, methacrifos (1266) + TX, methamidophos (527) + TX, methidathion (529) + TX, methiocarb (530) + TX, methomyl (531) + TX, methyl bromide (537) + TX, metolcarb (550) + TX, mevinphos (556) + TX, mexacarbate (1290) + TX, milbemectin (557) + TX, milbemycin oxime (alternative name) [CCN] + TX, mipafox (1293) + TX, monocrotophos (561) + TX, morphothion (1300) + TX, moxidectin (alternative name)

sebufos (alternative name) + TX, selamectin (alternative name) [CCN] + TX, SI-0009 (compound code) + TX, sophamide (1402) + TX, spirodiclofen (738) + TX, spiromesifen (739) + TX, SSI-121 (development code) (1404) + TX, sulfiram (alternative name) [CCN] + TX, sulfluramid (750) + TX, sulfotep (753) + TX, sulfur (754) + TX, SZI-121 (development code) (757) + TX, tau-fluvalinate (398) + TX, tebufenpyrad (763) + TX, TEPP (1417) + TX, terbam (alternative name) + TX, tetrachlorvinphos (777) + TX, tetradifon (786) + TX, tetranactin (alternative name) (653) + TX, tetrasul (1425) + TX, thiafenox (alternative name) + TX, thiocarboxime (1431) + TX, thiofanox (800) + TX, thiometon (801) + TX, thioquinox (1436) + TX, thuringiensin (alternative name) [CCN] + TX, triamiphos (1441) + TX, triarathene (1443) + TX, triazophos (820) + TX, triazuron (alternative name) + TX, trichlorfon (824) + TX, trifenofos (1455) + TX, trinactin (alternative name) (653) + TX, vamidothion (847) + TX, vaniliprole [CCN] and YI-5302 (compound code) + TX,

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

- 106 -

(alternative name) [CCN] + TX, kasugamycin (483) + TX, kasugamycin hydrochloride hydrate (483) + TX, nickel bis(dimethyldithiocarbamate) (IUPAC name) (1308) + TX, nitrapyrin (580) + TX, octhlinone (590) + TX, oxolinic acid (606) + TX, oxytetracycline (611) + TX, potassium hydroxyquinoline sulfate (446) + TX, probenazole (658) + TX, streptomycin (744) + TX, streptomycin sesquisulfate (744) + TX, tecloftalam (766) + TX, and thiomersal (alternative name) [CCN] + TX,

a biological agent selected from the group of substances consisting of *Adoxophyes orana* GV (alternative name) (12) + TX, *Agrobacterium radiobacter* (alternative name) (13) + TX, *Amblyseius* spp. (alternative name) (19) + TX, *Anagrapha falcifera* NPV (alternative name) (28) + TX, *Anagrus atomus* (alternative name) (29) + TX, *Aphelinus abdominalis* (alternative name) (33) + TX, *Aphidius colemani* (alternative name) (34) + TX, *Aphidoletes aphidimyza* (alternative name) (35) + TX, *Autographa californica* NPV (alternative name) (38) + TX, *Bacillus firmus* (alternative name) (48) + TX, *Bacillus sphaericus* Neide (scientific name) (49) + TX, *Bacillus thuringiensis* Berliner (scientific name) (51) + TX, *Bacillus thuringiensis* subsp. *aizawai* (scientific name) (51) + TX, *Bacillus thuringiensis* subsp. *israelensis* (scientific name) (51) + TX, *Bacillus thuringiensis* subsp. *japonensis* (scientific name) (51) + TX, *Bacillus thuringiensis* subsp. *kurstaki* (scientific name) (51) + TX, *Bacillus thuringiensis* subsp. *tenebrionis* (scientific name) (51) + TX, *Beauveria*

feltiae (alternative name) (742) + TX, *Steinernema glaseri* (alternative name) (742) + TX, *Steinernema riobrave* (alternative name) (742) + TX, *Steinernema riobrans* (alternative name) (742) + TX, *Steinernema scapterisci* (alternative name) (742) + TX, *Steinernema* spp. (alternative name) (742) + TX, *Trichogramma* spp. (alternative name) (826) + TX, *Typhlodromus occidentalis* (alternative name) (844) and *Verticillium lecanii* (alternative name) (848) + TX,

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

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

an insect pheromone selected from the group of substances consisting of (*E*)-dec-5-en-1-yl acetate with (*E*)-dec-5-en-1-ol (IUPAC name) (222) + TX, (*E*)-tridec-4-en-1-yl acetate (IUPAC name) (829) + TX, (*E*)-6-methylhept-2-en-4-ol (IUPAC name) (541) + TX,

name) [CCN] + TX, frontalin (alternative name) [CCN] + TX, gossyplure (alternative name) (420) + TX, grandlure (421) + TX, grandlure I (alternative name) (421) + TX, grandlure II (alternative name) (421) + TX, grandlure III (alternative name) (421) + TX, grandlure IV (alternative name) (421) + TX, hexalure [CCN] + TX, ipsdienol (alternative name) [CCN] + TX, ipsenol (alternative name) [CCN] + TX, japonilure (alternative name) (481) + TX, lineatin (alternative name) [CCN] + TX, litlure (alternative name) [CCN] + TX, looplure (alternative name) [CCN] + TX, medlure [CCN] + TX, megatomoic acid (alternative name) [CCN] + TX, methyl eugenol (alternative name) (540) + TX, muscalure (563) + TX, octadeca-2 + TX, 13-dien-1-yl acetate (IUPAC name) (588) + TX, octadeca-3 + TX, 13-dien-1-yl acetate (IUPAC name) (589) + TX, orfralure (alternative name) [CCN] + TX, oryctalure (alternative name) (317) + TX, ostramone (alternative name) [CCN] + TX, siglure [CCN] + TX, sordidin (alternative name) (736) + TX, sulcatol (alternative name) [CCN] + TX, tetradec-11-en-1-yl acetate (IUPAC name) (785) + TX, trimedlure (839) + TX, trimedlure A (alternative name) (839) + TX, trimedlure B₁ (alternative name) (839) + TX, trimedlure B₂ (alternative name) (839) + TX, trimedlure C (alternative name) (839) and trunc-call (alternative name) [CCN] + TX,

an insect repellent selected from the group of substances consisting of 2-(octylthio)-ethanol (IUPAC name) (591) + TX, butopyronoxyl (933) + TX, butoxy(polypropylene

name) (1084) + TX, 2-(4-chloro-3 + TX, 5-xylyloxy)ethanol (IUPAC name) (986) + TX, 2-chlorovinyl diethyl phosphate (IUPAC name) (984) + TX, 2-imidazolidone (IUPAC name) (1225) + TX, 2-isovalerylindan-1 + TX, 3-dione (IUPAC name) (1246) + TX, 2-methyl(prop-2-ynyl)aminophenyl methylcarbamate (IUPAC name) (1284) + TX, 2-thiocyanatoethyl laurate (IUPAC name) (1433) + TX, 3-bromo-1-chloroprop-1-ene (IUPAC name) (917) + TX, 3-methyl-1-phenylpyrazol-5-yl dimethylcarbamate (IUPAC name) (1283) + TX, 4-methyl(prop-2-ynyl)amino-3 + TX, 5-xylyl methylcarbamate (IUPAC name) (1285) + TX, 5 + TX, 5-dimethyl-3-oxocyclohex-1-enyl dimethylcarbamate (IUPAC name) (1085) + TX, abamectin (1) + TX, acephate (2) + TX, acetamiprid (4) + TX, acethion (alternative name) [CCN] + TX, acetoprole [CCN] + TX, acrinathrin (9) + TX, acrylonitrile (IUPAC name) (861) + TX, alanycarb (15) + TX, aldicarb (16) + TX, aldoxycarb (863) + TX, aldrin (864) + TX, allethrin (17) + TX, allosamidin (alternative name) [CCN] + TX, allyxycarb (866) + TX, alpha-cypermethrin (202) + TX, alpha-ecdysone (alternative name) [CCN] + TX, aluminium phosphide (640) + TX, amidithion (870) + TX, amidothioate (872) + TX, aminocarb (873) + TX, amiton (875) + TX, amiton hydrogen oxalate (875) + TX, amitraz (24) + TX, anabasine (877) + TX, athidathion (883) + TX, AVI 382 (compound code) + TX, AZ 60541 (compound code) + TX, azadirachtin (alternative name) (41) + TX, azamethiphos (42) + TX, azinphos-ethyl (44) + TX, azinphos-methyl (45) + TX,

- 110 -

(IUPAC/Chemical Abstracts name) (945) + TX, carbon tetrachloride (IUPAC name) (946) + TX, carbophenothion (947) + TX, carbosulfan (119) + TX, cartap (123) + TX, cartap hydrochloride (123) + TX, cevadine (alternative name) (725) + TX, chlorbicyclen (960) + TX, chlordane (128) + TX, chlordecone (963) + TX, chlordimeform (964) + TX, chlordimeform hydrochloride (964) + TX, chlorethoxyfos (129) + TX, chlorfenapyr (130) + TX, chlorfenvinphos (131) + TX, chlorfluazuron (132) + TX, chlormephos (136) + TX, chloroform [CCN] + TX, chloropicrin (141) + TX, chlorphoxim (989) + TX, chlorprazophos (990) + TX, chlorpyrifos (145) + TX, chlorpyrifos-methyl (146) + TX, chlorthiophos (994) + TX, chromafenozide (150) + TX, cinerin I (696) + TX, cinerin II (696) + TX, cinerins (696) + TX, cis-resmethrin (alternative name) + TX, cismethrin (80) + TX, clocythrin (alternative name) + TX, cloethocarb (999) + TX, closantel (alternative name) [CCN] + TX, clothianidin (165) + TX, copper acetoarsenite [CCN] + TX, copper arsenate [CCN] + TX, copper oleate [CCN] + TX, coumaphos (174) + TX, coumithoate (1006) + TX, crotamiton (alternative name) [CCN] + TX, crotoxyphos (1010) + TX, crufomate (1011) + TX, cryolite (alternative name) (177) + TX, CS 708 (development code) (1012) + TX, cyanofenphos (1019) + TX, cyanophos (184) + TX, cyanthoate (1020) + TX, cyclethrin [CCN] + TX, cycloprothrin (188) + TX, cyfluthrin (193) + TX, cyhalothrin (196) + TX, cypermethrin (201) + TX, cyphenothrin (206) + TX, cyromazine (209) + TX, cythioate

- 111 -

dithicrofos (1108) + TX, DNOC (282) + TX, doramectin (alternative name) [CCN] + TX, DSP (1115) + TX, ecdysterone (alternative name) [CCN] + TX, EI 1642 (development code) (1118) + TX, emamectin (291) + TX, emamectin benzoate (291) + TX, EMPC (1120) + TX, empenothrin (292) + TX, endosulfan (294) + TX, endothion (1121) + TX, endrin (1122) + TX, EPBP (1123) + TX, EPN (297) + TX, epofenonane (1124) + TX, eprinomectin (alternative name) [CCN] + TX, esfenvalerate (302) + TX, etaphos (alternative name) [CCN] + TX, ethiofencarb (308) + TX, ethion (309) + TX, ethiprole (310) + TX, ethoate-methyl (1134) + TX, ethoprophos (312) + TX, ethyl formate (IUPAC name) [CCN] + TX, ethyl-DDD (alternative name) (1056) + TX, ethylene dibromide (316) + TX, ethylene dichloride (chemical name) (1136) + TX, ethylene oxide [CCN] + TX, etofenprox (319) + TX, etrimfos (1142) + TX, EXD (1143) + TX, famphur (323) + TX, fenamiphos (326) + TX, fenazaflor (1147) + TX, fenchlorphos (1148) + TX, fenethacarb (1149) + TX, fenfluthrin (1150) + TX, fenitrothion (335) + TX, fenobucarb (336) + TX, fenoxacrim (1153) + TX, fenoxycarb (340) + TX, fenpirithrin (1155) + TX, fenpropathrin (342) + TX, fenpyrad (alternative name) + TX, fensulfothion (1158) + TX, fenthion (346) + TX, fenthion-ethyl [CCN] + TX, fenvalerate (349) + TX, fipronil (354) + TX, flonicamid (358) + TX, flubendiamide (CAS. Reg. No.: 272451-65-7) + TX, flucofuron (1168) + TX, flucycloxuron (366) + TX, flucythrinate (367) + TX, fluenetil (1169) + TX, flufenerim

- 112 -

(alternative name) [CCN] + TX, jasmolin I (696) + TX, jasmolin II (696) + TX, jodfenphos (1248) + TX, juvenile hormone I (alternative name) [CCN] + TX, juvenile hormone II (alternative name) [CCN] + TX, juvenile hormone III (alternative name) [CCN] + TX, kelevan (1249) + TX, kinoprene (484) + TX, lambda-cyhalothrin (198) + TX, lead arsenate [CCN] + TX, lepimectin (CCN) + TX, leptophos (1250) + TX, lindane (430) + TX, lirimfos (1251) + TX, lufenuron (490) + TX, lythidathion (1253) + TX, *m*-cumenyl methylcarbamate (IUPAC name) (1014) + TX, magnesium phosphide (IUPAC name) (640) + TX, malathion (492) + TX, malonoben (1254) + TX, mazidox (1255) + TX, mecarbam (502) + TX, mecarphon (1258) + TX, menazon (1260) + TX, mephosfolan (1261) + TX, mercurous chloride (513) + TX, mesulfenfos (1263) + TX, metaflumizone (CCN) + TX, metam (519) + TX, metam-potassium (alternative name) (519) + TX, metam-sodium (519) + TX, methacrifos (1266) + TX, methamidophos (527) + TX, methanesulfonyl fluoride (IUPAC/Chemical Abstracts name) (1268) + TX, methidathion (529) + TX, methiocarb (530) + TX, methocrotophos (1273) + TX, methomyl (531) + TX, methoprene (532) + TX, methoquin-butyl (1276) + TX, methothrin (alternative name) (533) + TX, methoxychlor (534) + TX, methoxyfenozide (535) + TX, methyl bromide (537) + TX, methyl isothiocyanate (543) + TX, methylchloroform (alternative name) [CCN] + TX, methylene chloride [CCN] + TX, metofluthrin [CCN] + TX, metolcarb (550) + TX, metoxadiazone

- 113 -

[CCN] + TX, parathion (615) + TX, parathion-methyl (616) + TX, penfluron (alternative name) [CCN] + TX, pentachlorophenol (623) + TX, pentachlorophenyl laurate (IUPAC name) (623) + TX, permethrin (626) + TX, petroleum oils (alternative name) (628) + TX, PH 60-38 (development code) (1328) + TX, phenkapton (1330) + TX, phenothrin (630) + TX, phenthoate (631) + TX, phorate (636) + TX, phosalone (637) + TX, phosfolan (1338) + TX, phosmet (638) + TX, phosnichlor (1339) + TX, phosphamidon (639) + TX, phosphine (IUPAC name) (640) + TX, phoxim (642) + TX, phoxim-methyl (1340) + TX, pirimetaphos (1344) + TX, pirimicarb (651) + TX, pirimiphos-ethyl (1345) + TX, pirimiphos-methyl (652) + TX, polychlorodicyclopentadiene isomers (IUPAC name) (1346) + TX, polychloroterpenes (traditional name) (1347) + TX, potassium arsenite [CCN] + TX, potassium thiocyanate [CCN] + TX, prallethrin (655) + TX, precocene I (alternative name) [CCN] + TX, precocene II (alternative name) [CCN] + TX, precocene III (alternative name) [CCN] + TX, primidophos (1349) + TX, profenofos (662) + TX, profluthrin [CCN] + TX, promacyl (1354) + TX, promecarb (1355) + TX, propaphos (1356) + TX, propetamphos (673) + TX, propoxur (678) + TX, prothidathion (1360) + TX, prothiofos (686) + TX, prothoate (1362) + TX, protrifenbute [CCN] + TX, pymetrozine (688) + TX, pyraclofos (689) + TX, pyrazophos (693) + TX, pyresmethrin (1367) + TX, pyrethrin I (696) + TX, pyrethrin II (696) + TX, pyrethrins (696) + TX, pyridaben (699) + TX, pyridalyl (700) + TX,

TX, sulprofos (1408) + TX, tar oils (alternative name) (758) + TX, tau-fluvalinate (398) + TX, tazimcarb (1412) + TX, TDE (1414) + TX, tebufenozide (762) + TX, tebufenpyrad (763) + TX, tebupirimfos (764) + TX, teflubenzuron (768) + TX, tefluthrin (769) + TX, temephos (770) + TX, TEPP (1417) + TX, terallethrin (1418) + TX, terbam (alternative name) + TX, terbufos (773) + TX, tetrachloroethane [CCN] + TX, tetrachlorvinphos (777) + TX, tetramethrin (787) + TX, theta-cypermethrin (204) + TX, thiachlopid (791) + TX, thiafenox (alternative name) + TX, thiamethoxam (792) + TX, thicofos (1428) + TX, thiocarboxime (1431) + TX, thiocyclam (798) + TX, thiocyclam hydrogen oxalate (798) + TX, thiodicarb (799) + TX, thiofanox (800) + TX, thiometon (801) + TX, thionazin (1434) + TX, thiosultap (803) + TX, thiosultap-sodium (803) + TX, thuringiensin (alternative name) [CCN] + TX, tolfenpyrad (809) + TX, tralomethrin (812) + TX, transluthrin (813) + TX, transpermethrin (1440) + TX, triamiphos (1441) + TX, triazamate (818) + TX, triazophos (820) + TX, triazuron (alternative name) + TX, trichlorfon (824) + TX, trichlormetaphos-3 (alternative name) [CCN] + TX, trichloronat (1452) + TX, trifenofos (1455) + TX, triflumuron (835) + TX, trimethacarb (840) + TX, triprene (1459) + TX, vamidothion (847) + TX, vaniliprole [CCN] + TX, veratridine (alternative name) (725) + TX, veratrine (alternative name) (725) + TX, XMC (853) + TX, xylylcarb (854) + TX, YI-5302 (compound code) + TX, zeta-cypermethrin (205) + TX, zetamethrin (alternative name) +

- 115 -

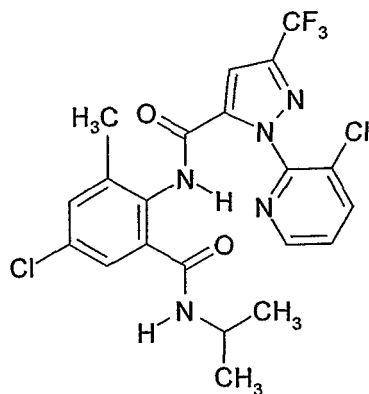
TX, 1-dioxide (IUPAC/Chemical Abstracts name) (1065) + TX, 3-(4-chlorophenyl)-5-methylrhodanine (IUPAC name) (980) + TX, 5-methyl-6-thioxo-1 + TX, 3 + TX, 5-thiadiazinan-3-ylacetic acid (IUPAC name) (1286) + TX, 6-isopentenylaminopurine (alternative name) (210) + TX, abamectin (1) + TX, acetoprole [CCN] + TX, alanycarb (15) + TX, aldicarb (16) + TX, aldoxycarb (863) + TX, AZ 60541 (compound code) + TX, benclothiaz [CCN] + TX, benomyl (62) + TX, butylpyridaben (alternative name) + TX, cadusafos (109) + TX, carbofuran (118) + TX, carbon disulfide (945) + TX, carbosulfan (119) + TX, chloropicrin (141) + TX, chlorpyrifos (145) + TX, cloethocarb (999) + TX, cytokinins (alternative name) (210) + TX, dazomet (216) + TX, DBCP (1045) + TX, DCIP (218) + TX, diamidafos (1044) + TX, dichlofenthion (1051) + TX, dicliphos (alternative name) + TX, dimethoate (262) + TX, doramectin (alternative name) [CCN] + TX, emamectin (291) + TX, emamectin benzoate (291) + TX, eprinomectin (alternative name) [CCN] + TX, ethoprophos (312) + TX, ethylene dibromide (316) + TX, fenamiphos (326) + TX, fenpyrad (alternative name) + TX, fensulfothion (1158) + TX, fosthiazate (408) + TX, fosthietan (1196) + TX, furfural (alternative name) [CCN] + TX, GY-81 (development code) (423) + TX, heterophos [CCN] + TX, iodomethane (IUPAC name) (542) + TX, isamidofos (1230) + TX, isazofos (1231) + TX, ivermectin (alternative name) [CCN] + TX, kinetin (alternative name) (210) + TX, mecarphon (1258) + TX, metam (519) + TX,

- 116 -

a rodenticide selected from the group of substances consisting of 2-isovalerylindan-1 + TX, 3-dione (IUPAC name) (1246) + TX, 4-(quinoxalin-2-ylamino)benzenesulfonamide (IUPAC name) (748) + TX, alpha-chlorohydrin [CCN] + TX, aluminium phosphide (640) + TX, antu (880) + TX, arsenous oxide (882) + TX, barium carbonate (891) + TX, bithiosemi (912) + TX, brodifacoum (89) + TX, bromadiolone (91) + TX, bromethalin (92) + TX, calcium cyanide (444) + TX, chloralose (127) + TX, chlorophacinone (140) + TX, cholecalciferol (alternative name) (850) + TX, coumachlor (1004) + TX, coumafuryl (1005) + TX, coumatetralyl (175) + TX, crimidine (1009) + TX, difenacoum (246) + TX, difethialone (249) + TX, diphacinone (273) + TX, ergocalciferol (301) + TX, flocoumafen (357) + TX, fluoroacetamide (379) + TX, flupropadine (1183) + TX, flupropadine hydrochloride (1183) + TX, gamma-HCH (430) + TX, HCH (430) + TX, hydrogen cyanide (444) + TX, iodomethane (IUPAC name) (542) + TX, lindane (430) + TX, magnesium phosphide (IUPAC name) (640) + TX, methyl bromide (537) + TX, norbormide (1318) + TX, phosacetim (1336) + TX, phosphine (IUPAC name) (640) + TX, phosphorus [CCN] + TX, pindone (1341) + TX, potassium arsenite [CCN] + TX, pyrinuron (1371) + TX, scilliroside (1390) + TX, sodium arsenite [CCN] + TX, sodium cyanide (444) + TX, sodium fluoroacetate (735) + TX, strychnine (745) + TX, thallium sulfate [CCN] + TX, warfarin (851) and zinc phosphide (640) + TX,

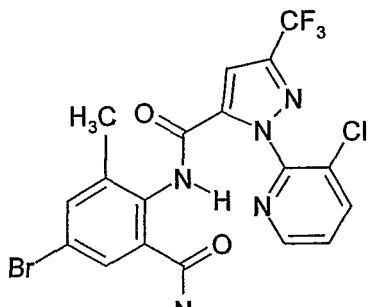
- 117 -

and a wound protectant selected from the group of substances consisting of mercuric oxide (512) + TX, octhilinone (590) and thiophanate-methyl (802) + TX, the compound of formula A-1



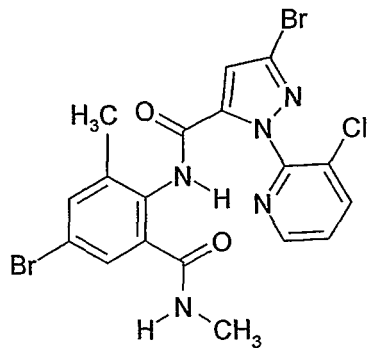
(A-1) + TX,

the formula A-2



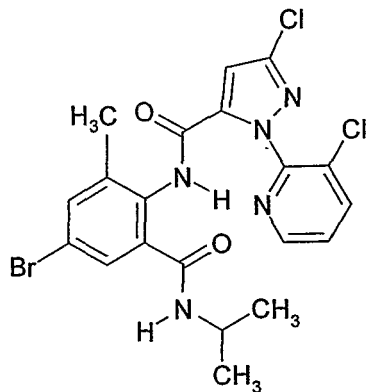
(A-2) + TX,

- 118 -



(A-4) + TX,

the formula A-5



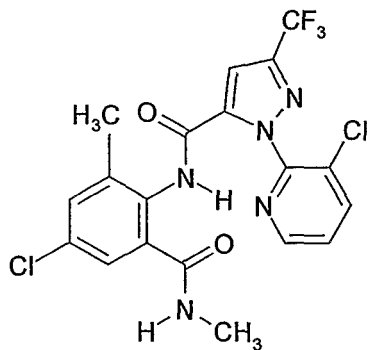
(A-5) + TX,

the formula A-6

Cl

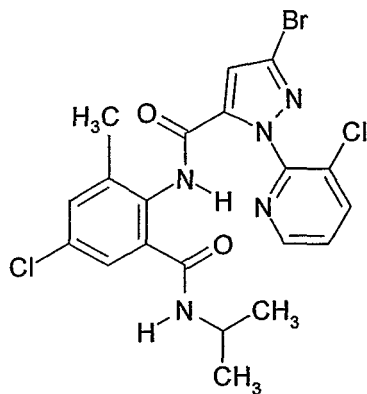
- 119 -

the formula A-8



(A-8) + TX,

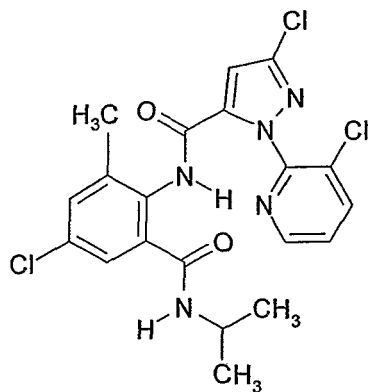
the formula A-9



(A-9) + TX,

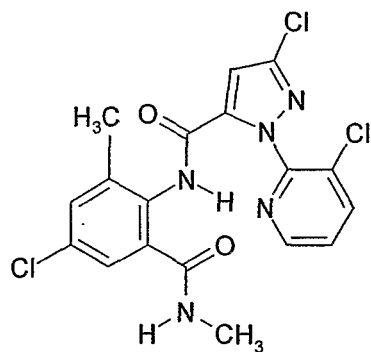
the formula A-10

- 120 -



(A-11) + TX,

the formula A-12



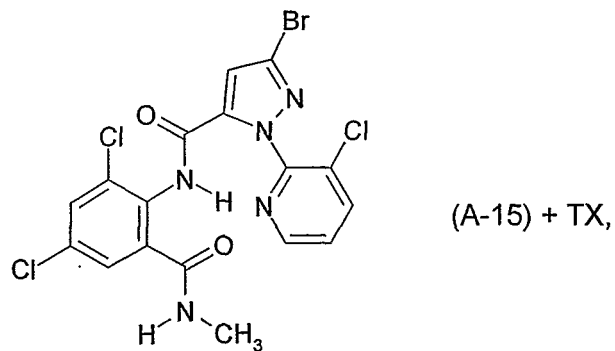
(A-12) + TX,

the formula A-13

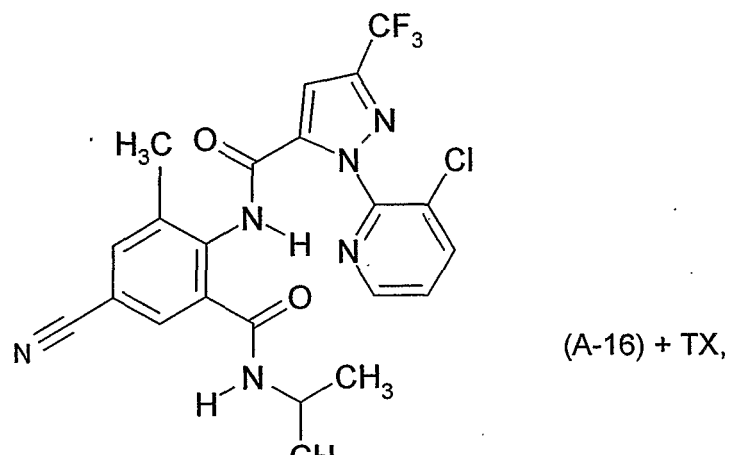
OCH₂CF₃

- 121 -

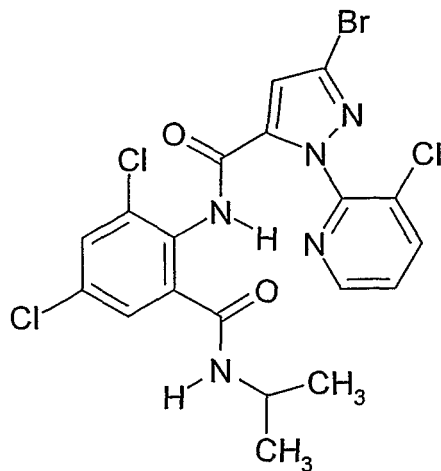
the formula A-15



the formula A-16

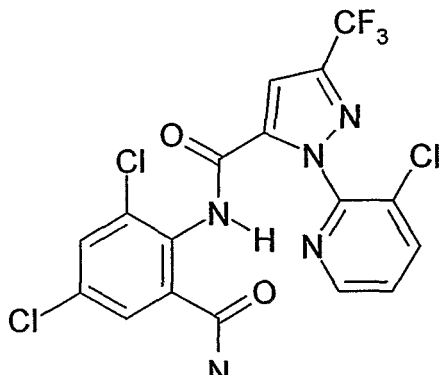


- 122 -



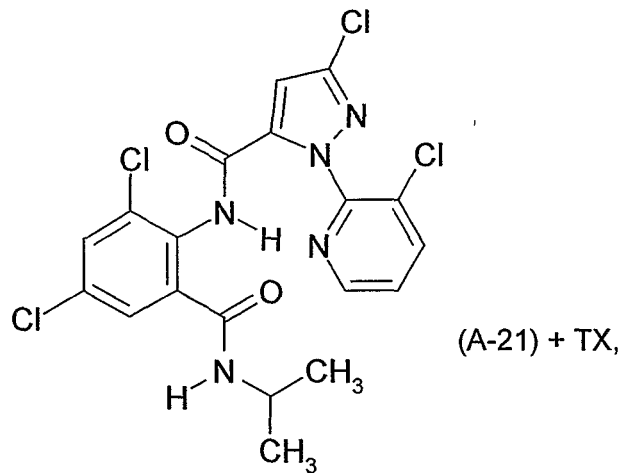
(A-18) + TX,

the formula A-19

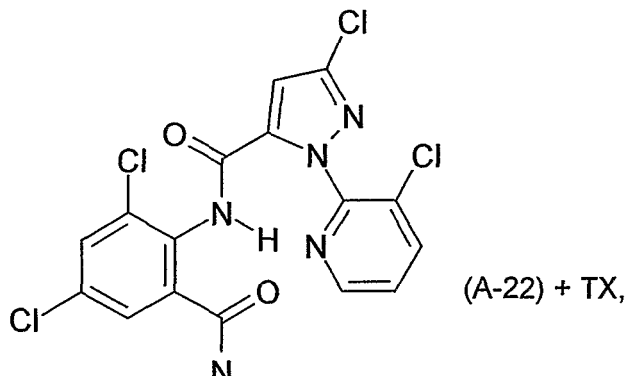


(A-19) + TX,

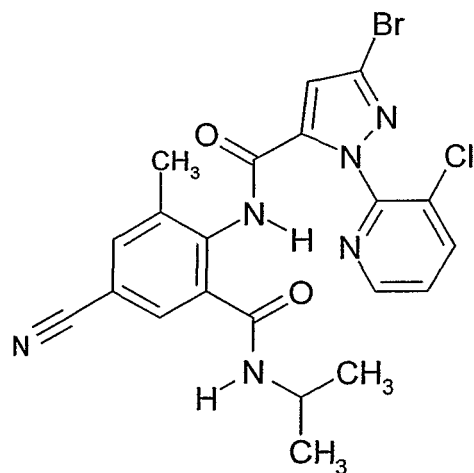
- 123 -



the formula A-22

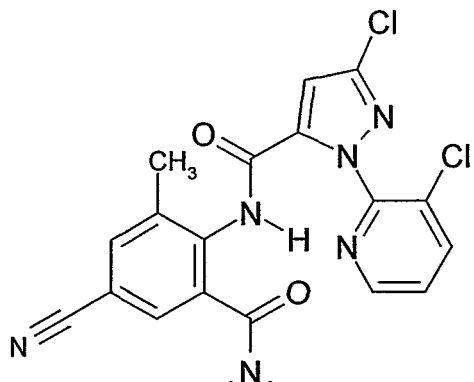


- 124 -



(A-24) + TX,

the formula A-25

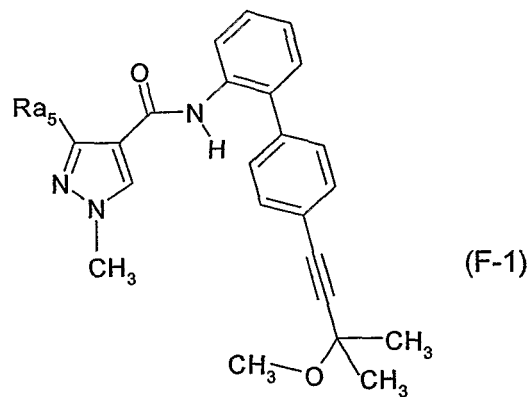


(A-25) + TX,

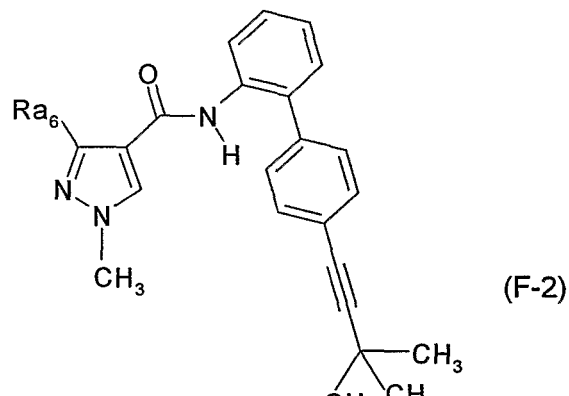
Fenbuconazole [114369-43-6] + TX, Fluquinconazole [136426-54-5] + TX, Flusilazole [85509-19-9] + TX, Flutriafol [76674-21-0] + TX, Hexaconazole [79983-71-4] + TX, Imazalil [35554-44-0] + TX, Imibenconazole [86598-92-7] + TX, Ipconazole [125225-28-7] + TX, Metconazole [125116-23-6] + TX, Myclobutanil [88671-89-0] + TX, Pefurazoate [101903-30-4] + TX, Penconazole [66246-88-6] + TX, Prothioconazole [178928-70-6] + TX, Pyrifenox [88283-41-4] + TX, Prochloraz [67747-09-5] + TX, Propiconazole [60207-90-1] + TX, Simeconazole [149508-90-7] + TX, Tebuconazole [107534-96-3] + TX, Tetraconazole [112281-77-3] + TX, Triadimefon [43121-43-3] + TX, Triadimenol [55219-65-3] + TX, Triflumizole [99387-89-0] + TX, Triticonazole [131983-72-7] + TX, Ancymidol [12771-68-5] + TX, Fenarimol [60168-88-9] + TX, Nuarimol [63284-71-9] + TX, Bupirimate [41483-43-6] + TX, Dimethirimol [5221-53-4] + TX, Ethirimol [23947-60-6] + TX, Dodemorph [1593-77-7] + TX, Fenpropidine [67306-00-7] + TX, Fenpropimorph [67564-91-4] + TX, Spiroxamine [118134-30-8] + TX, Tridemorph [81412-43-3] + TX, Cyprodinil [121552-61-2] + TX, Mepanipyrim [110235-47-7] + TX, Pyrimethanil [53112-28-0] + TX, Fenpiclonil [74738-17-3] + TX, Fludioxonil [131341-86-1] + TX, Benalaxyl [71626-11-4] + TX, Furalaxyl [57646-30-7] + TX, Metalaxyl [57837-19-1] + TX, R-Metalaxyl [70630-17-0] + TX, Ofurace [58810-

[175013-18-0] + TX, Ferbam [14484-64-1] + TX, Mancozeb [8018-01-7] + TX, Maneb [12427-38-2] + TX, Metiram [9006-42-2] + TX, Propineb [12071-83-9] + TX, Thiram [137-26-8] + TX, Zineb [12122-67-7] + TX, Ziram [137-30-4] + TX, Captafol [2425-06-1] + TX, Captan [133-06-2] + TX, Dichlofluanid [1085-98-9] + TX, Fluoroimide [41205-21-4] + TX, Folpet [133-07-3] + TX, Tolyfluanid [731-27-1] + TX, Bordeaux Mixture [8011-63-0] + TX, Copperhydroxid [20427-59-2] + TX, Copperoxychlorid [1332-40-7] + TX, Coppersulfat [7758-98-7] + TX, Copperoxid [1317-39-1] + TX, Mancopper [53988-93-5] + TX, Oxine-copper [10380-28-6] + TX, Dinocap [131-72-6] + TX, Nitrothal-isopropyl [10552-74-6] + TX, Edifenphos [17109-49-8] + TX, Iprobenphos [26087-47-8] + TX, Isoprothiolane [50512-35-1] + TX, Phosdiphen [36519-00-3] + TX, Pyrazophos [13457-18-6] + TX, Tolclofos-methyl [57018-04-9] + TX, Acibenzolar-S-methyl [135158-54-2] + TX, Anilazine [101-05-3] + TX, Benthiavalicarb [413615-35-7] + TX, Blasticidin-S [2079-00-7] + TX, Chinomethionat [2439-01-2] + TX, Chloroneb [2675-77-6] + TX, Chlorothalonil [1897-45-6] + TX, Cyflufenamid [180409-60-3] + TX, Cymoxanil [57966-95-7] + TX, Dichlone [117-80-6] + TX, Diclocymet [139920-32-4] + TX, Diclomezine [62865-36-5] + TX, Dicloran [99-30-9] + TX, Diethofencarb [87130-20-9] + TX, Dimethomorph [110488-70-5] + TX, SYP-LI90 (Flumorph) [211867-47-9] + TX,

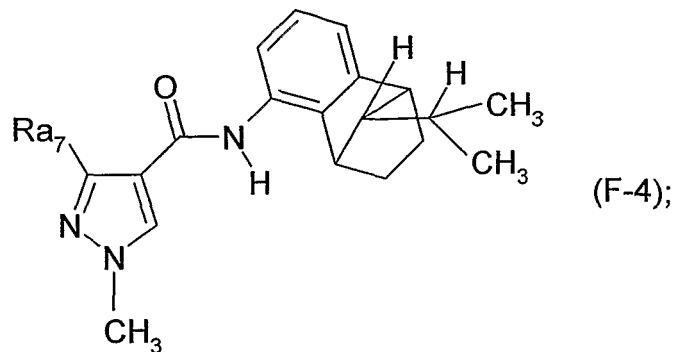
- 127 -



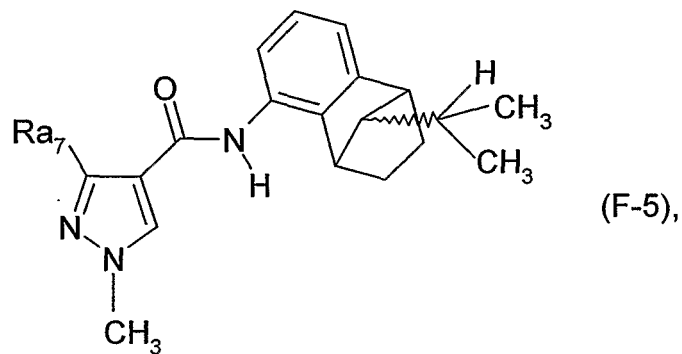
wherein Ra_5 is trifluoromethyl or difluoromethyl (WO2004/058723) + TX, ; the compound of formula F-2



- 128 -

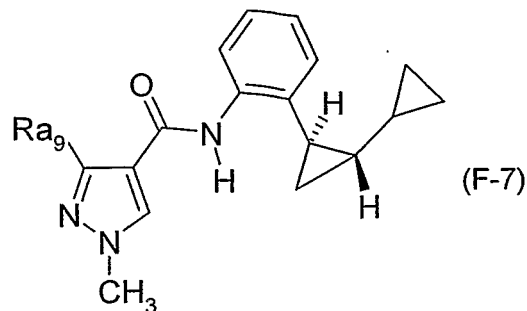


wherein Ra_7 is trifluoromethyl or difluoromethyl (WO2004/035589) + TX, the compound of formula F-5

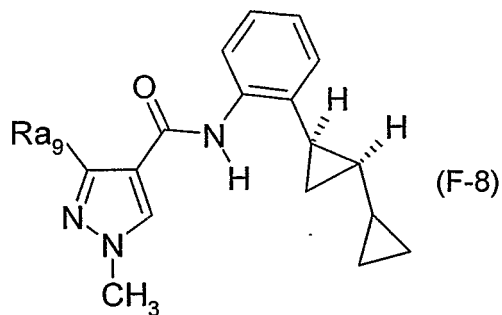


which is an epimeric mixture of racemic compounds of formulae F-3 (syn) and F-4 (anti),

- 129 -

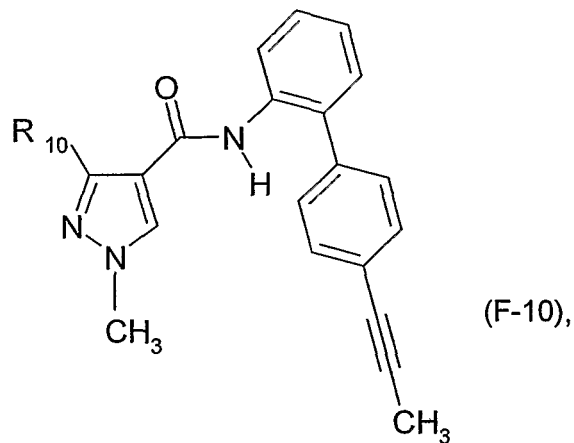


wherein Ra₉ is trifluoromethyl or difluoromethyl (WO03/074491) + TX, the racemic compound of formula F-8 (cis)

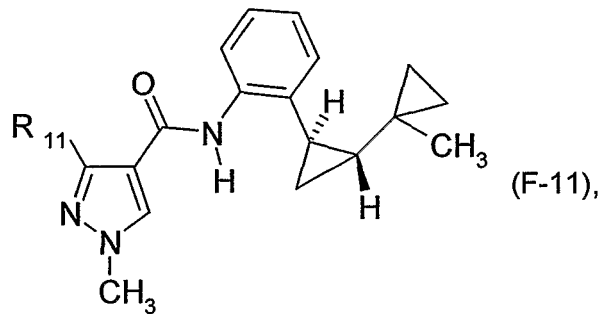


wherein Ra₉ is trifluoromethyl or difluoromethyl (WO03/074491) + TX, the compound of formula F-9

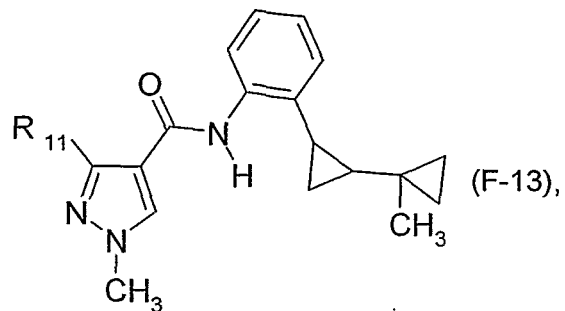
- 130 -



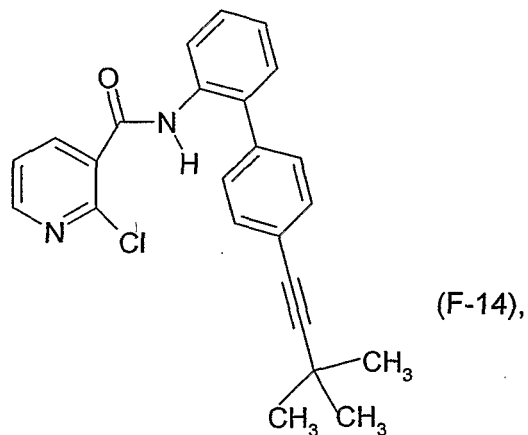
wherein R₁₀ is trifluoromethyl or difluoromethyl (WO2004/058723) + TX, the racemic compound of formula F-11 (trans)



- 131 -



which is a racemic mixture of formulae F-11 (trans) and F-12 (cis), and wherein R₁₁ is trifluoromethyl or difluoromethyl (WO 03/074491) + TX, and the compound of formula F-14



Protection Council], they are described therein under the entry number given in round brackets hereinabove for the particular compound; for example, the compound "abamectin" is described under entry number (1). Where "[CCN]" is added hereinabove to the particular compound, the compound in question is included in the "Compendium of Pesticide Common Names", which is accessible on the internet [A. Wood; Compendium of Pesticide Common Names, Copyright © 1995-2004]; for example, the compound "acetoprole" is described under the internet address <http://www.alanwood.net/pesticides/acetoprole.html>.

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

The mixtures comprising a compound of formula I and one or more active ingredients as

Example B2: Activity against *Diabrotica balteata*

Maize seedlings are sprayed with an aqueous emulsion spray mixture comprising 400 ppm of active ingredient and, after the spray coating has dried on, populated with 10 larvae (2nd instar) of *Diabrotica balteata* and introduced into a plastic container. 6 days later, the percentage reduction in the population (% activity) is determined by comparing the number of dead larvae between the treated and untreated plants.

In this test, compounds listed in the Tables above show good activity. In particular compounds P1, P2, P6, P7, P24, P29, P25, P60, P62, P63, P48, P46, P50, P23, P8, P66, P22, P14, P21, P11 P67, P68 have an activity of over 80%.

Example B3: Activity against *Heliothis virescens* (foliar application)

Young soya plants are sprayed with an aqueous emulsion spray mixture comprising 400 ppm of active ingredient and, after the spray coating has dried on, populated with 10 caterpillars (1st instar) of *Heliothis virescens* and introduced into a plastic container. 6 days later, the percentage reduction in the population and in the feeding damage (% activity) are determined by comparing the number of dead caterpillars and the feeding damage between the treated and untreated plants.

Example B5: Activity against Myzus persicae (foliar application)

Pea seedlings are infected with *Myzus persicae*, subsequently sprayed with a spray mixture comprising 400 ppm of active ingredient and then incubated at 20°. 3 and 6 days later, the percentage reduction in the population (% activity) is determined by comparing the number of dead aphids between the treated and untreated plants.

In this test, compounds listed in the Tables above show good activity.

Example B6: Activity against Myzus persicae (systemic application)

Pea seedlings are infected with *Myzus persicae*, and their roots are subsequently placed into a spray mixture comprising 400 ppm of active ingredient. The seedlings are then incubated at 20°. 3 and 6 days later, the percentage reduction in the population (% activity) is determined by comparing the number of dead aphids between the treated and untreated plants.

In this test, compounds listed in the Tables above show good activity.

Example B7: Activity against Plutella xylostella

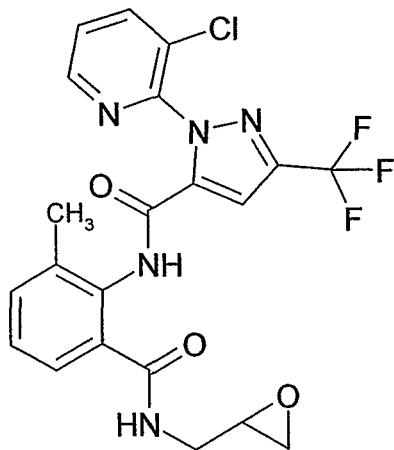
Young cabbage plants are sprayed with an aqueous emulsion spray mixture comprising 400 ppm of active ingredient and, after the spray coating has dried on, populated with 10

determined by comparing the number of dead caterpillars and the feeding damage between the treated and untreated plants.

In this test, compounds listed in the Tables above show good activity. In particular compounds P1, P2, P3, P6, P39, P41, P10, P63, P62, P61, P60, P64, P24, P7, P10, P67, P68, P29, P31, P25, P8, P32, P30, P9, P23, P14, P65, P66, P21, P11, P35, P34, P33, P38, P40, P69, P52, P53, P70 have an activity of over 80%.

Example B9: Activity against Cydia

Standard Cydia diet cubes (1.5 cm width) are pierced with a tooth-pick and are immersed in liquid paraffin (ca. 80°C). After the paraffin coat has hardened, an aqueous emulsion containing 400 ppm of active ingredient is applied using a De Vilbis sprayer (25 ml, 1 bar). After the spray coating has dried, the cubes are put into plastic containers which are then populated with two freshly hatched Cydia pomonella (1st instar). The containers are then closed with a plastic cap. After 14 days incubation at 26°C and 40-60% relative humidity, the survival rate of the caterpillars as well as their growth regulation is determined. In this test, compounds listed in the Tables above show good activity. In particular compounds P22, P6, P11, P65, P66, P17, P63, P62, P61, P60, P2, P3, P14, P67, P68, P15, P7, P21, P10, P24, P8, P13, P9, P23, P12 have an activity of over 80%.



(Cpd No. 566 according to the state of the art)

B10 a: Systemic Insecticide Test for *Spodoptera littoralis* (cotton leafworm):

Four day old maize seedlings (*Zea mays*, variety Stoneville) are placed individual in vials containing 24ml water into which the chemical is diluted at the prescribed concentrations (12.5, 3 and 0.8ppm). Seedlings are allowed to grow for six days. Subsequently leaves are cut and placed in a Petri dish (5 cm diameter), inoculated with twelve to fifteen 1st instar *S. littoralis* larvae and incubated for four days in a growth chamber (25°C, 50% r.h., 18:6 L:D photo period). Number of alive insects are counted and percentage of dead calculated. Tests

Table B10a shows that compound No. P41 according to the invention exerts a substantially better insecticidal action on *Spodoptera littoralis* than the compound from the state of the art. Especially at low application rates (3 and 0.8 ppm) the compound according to the invention is far superior to the compound of the state of the art. This enhanced effect was not to be expected on the basis of the structural similarity of these compounds.

B10 b: Insecticide Test for *Heliothis virescens* (tobacco budworm):

50-60 newly laid *H. virescens* eggs were placed on artificial diet in Petri dishes (5 cm diameter) and topically treated with 0.8ml solution of compounds at the following rates: 3, 0.8, 0.2, 0.05. Petri dishes are maintained at $26 \pm 2^\circ\text{C}$, $50 \pm 10\%$ r.h. in a dark room and assessment conducted one week after application (two replicates/treatment). Larvae mortality and effects on larvae growth were compared to the control. Results are shown in Table B10b:

Table B10 b: Insecticide Test for *Heliothis virescens*

Compound:	Concentration	Percent larvae	Percent larvae
-----------	---------------	----------------	----------------

invention is far superior to the compound of the state of the art. This enhanced effect was not to be expected on the basis of the structural similarity of these compounds.

B10 c: Insecticide Test for *Plutella xylostella* (diamond back moth):

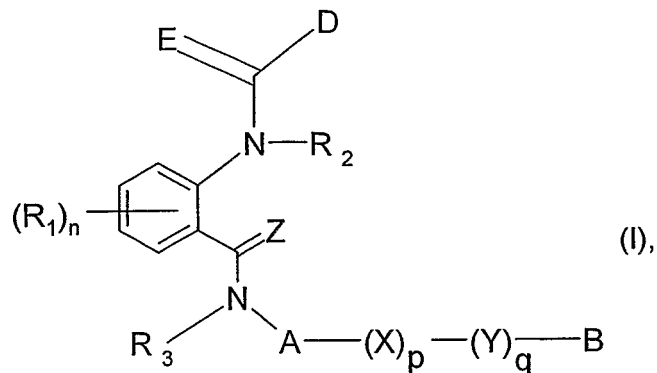
Chinese cabbage plants were sprayed with insecticide at 3, 0.8, 0.2 and 0.05ppm. Five cm diameter leaf disks were cut and placed in a Petri dish containing 6ml agar (0.8%). Five *P. xylostella* larvae L3 were introduced into Petri dishes and kept at $26 \pm 2^{\circ}\text{C}$, $50 \pm 10\%$ r.h. in a dark room (two replicates per treatment). Number of alive insects were counted and percentage of dead calculated after three days. Results are shown in Table B10c:

Table B10 c: Insecticide Test for *Plutella xylostella*

Compound:	Concentration (ppm)	Death rate (%) after 5 days
Comp. 566 (state of the art)	3	25
Comp. 566 (state of the art)	0.8	5
Comp. 566 (state of the art)	0.2	10

What is claimed is:

1. A compound of formula I



wherein

each of E and Z, which may be the same or different, represents oxygen or sulfur;

A is C₁-C₆alkylene, C₂-C₆alkenylene, C₂-C₆alkynylene, or a bivalent three- to ten-membered monocyclic or fused bicyclic ring system which can be partially saturated or fully saturated and can contain 1 to 4 hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, it not being possible for each ring system to contain more than 2 oxygen atoms

the three- to ten-membered ring system itself to be mono-, di- or trisubstituted by halogen, cyano, nitro, hydroxy, C₁-C₆alkyl, C₂-C₆alkenyl, C₂-C₆alkynyl, C₃-C₆cycloalkyl, C₅-C₇cycloalkenyl, C₅-C₈cycloalkynyl, C₁-C₆haloalkyl, C₂-C₆haloalkenyl, C₂-C₆haloalkynyl, C₃-C₆halocycloalkyl, C₅-C₇halocycloalkenyl, C₅-C₈halocycloalkynyl, C₁-C₄alkoxy, C₁-C₄haloalkoxy, C₁-C₄alkylthio, C₁-C₄haloalkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, C₁-C₄alkylamino, C₂-C₄dialkylamino, C₃-C₆cycloalkylamino, C₁-C₆alkyl-C₃-C₆cycloalkylamino, C₂-C₄alkylcarbonyl, C₂-C₆alkoxycarbonyl, C₂-C₆alkylaminocarbonyl, C₃-C₆dialkylaminocarbonyl, C₂-C₆alkoxycarbonyloxy, C₂-C₆alkylaminocarbonyloxy, C₃-C₆dialkylaminocarbonyloxy, C₃-C₆trialkylsilyl or phenyl, it being possible for the phenyl group in turn to be substituted by hydroxy, C₁-C₆alkyl, C₁-C₆haloalkyl, C₁-C₆alkylthio, C₁-C₆haloalkylthio, C₃-C₆alkenylthio, C₃-C₆haloalkenylthio, C₃-C₆alkynylthio, C₁-C₃alkoxy-C₁-C₃alkylthio, C₂-C₄alkylcarbonyl-C₁-C₃alkylthio, C₂-C₄alkoxycarbonyl-C₁-C₃alkylthio, cyano-C₁-C₃alkylthio, C₁-C₆alkylsulfinyl, C₁-C₆haloalkylsulfinyl, C₁-C₆alkylsulfonyl, C₁-C₆haloalkylsulfonyl, aminosulfonyl, C₁-C₂alkylaminosulfonyl, N,N-di(C₁-C₂alkyl)aminosulfonyl, di(C₁-C₄alkyl)amino, halogen, cyano or nitro; and substituents at nitrogen atoms in the ring systems being other than halogen; X is oxygen, NH or C₁-C₄alkyl-N;

Y is C₁-C₆alkylene, C₂-C₆alkenylene, C₂-C₆alkynylene, or a bivalent three- to ten-membered monocyclic or fused bicyclic ring system which can be partially saturated or fully saturated

wherein the substituents are 1 to 4 hetero atoms selected from the group consisting of nitrogen, oxygen

being possible for the three- to ten-membered ring system itself to be mono-, di- or trisubstituted by halogen, cyano, nitro, hydroxy, C₁-C₆alkyl, C₂-C₆alkenyl, C₂-C₆alkynyl, C₃-C₆cycloalkyl, C₅-C₇cycloalkenyl, C₅-C₈cycloalkynyl, C₁-C₆haloalkyl, C₂-C₆haloalkenyl, C₂-C₆haloalkynyl, C₃-C₆halocycloalkyl, C₅-C₇halocycloalkenyl, C₅-C₈halocycloalkynyl, C₁-C₄alkoxy, C₁-C₄haloalkoxy, C₁-C₄alkylthio, C₁-C₄haloalkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, C₁-C₄alkylamino, C₂-C₄dialkylamino, C₃-C₆cycloalkylamino, C₁-C₆alkyl-C₃-C₆cycloalkylamino, C₂-C₄alkylcarbonyl, C₂-C₆alkoxycarbonyl, C₂-C₆alkylaminocarbonyl, C₃-C₆dialkylaminocarbonyl, C₂-C₆alkoxycarbonyloxy, C₂-C₆alkylaminocarbonyloxy, C₃-C₆dialkylaminocarbonyloxy, C₃-C₆trialkylsilyl or phenyl, it being possible for the phenyl group in turn to be substituted by hydroxy, C₁-C₆alkyl, C₁-C₆haloalkyl, C₁-C₆alkylthio, C₁-C₆haloalkylthio, C₃-C₆alkenylthio, C₃-C₆haloalkenylthio, C₃-C₆alkynylthio, C₁-C₃alkoxy-C₁-C₃alkylthio, C₂-C₄alkylcarbonyl-C₁-C₃alkylthio, C₂-C₄alkoxycarbonyl-C₁-C₃alkylthio, cyano-C₁-C₃alkylthio, C₁-C₆alkylsulfinyl, C₁-C₆haloalkylsulfinyl, C₁-C₆alkylsulfonyl, C₁-C₆haloalkylsulfonyl, aminosulfonyl, C₁-C₂alkylaminosulfonyl, N,N-di(C₁-C₂alkyl)aminosulfonyl, di(C₁-C₄alkyl)amino, halogen, cyano or nitro; and substituents at nitrogen atoms in the ring systems being other than halogen;

p is 0 or 1;

q is 0 or 1;

B is cyclopropyl or cyclobutyl which may be mono-di-, or trisubstituted by halogen, C₁-C₄alkyl, hydroxy, cyano, C₁-C₄alkoxy or C₁-C₄alkylthio.

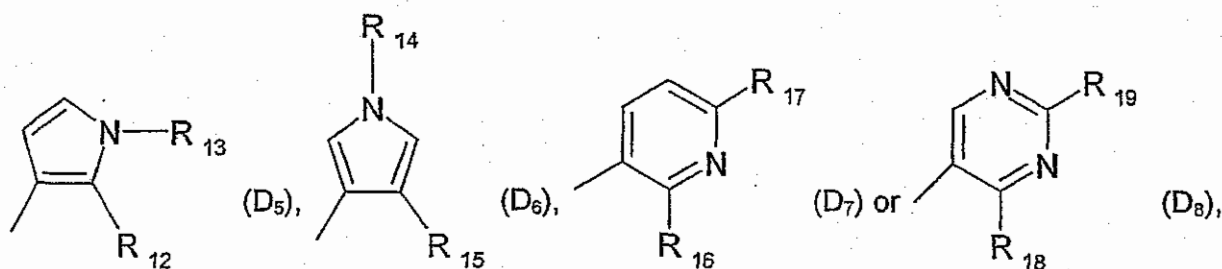
each R₁ independently is halogen, nitro, hydroxy, C₁-C₆alkyl, C₂-C₆alkenyl, C₂-C₆alkynyl, C₃-C₆cycloalkyl, C₁-C₆haloalkyl, C₂-C₆haloalkenyl, C₂-C₆haloalkynyl, C₃-C₆halocycloalkyl, C₁-C₄alkoxy, C₁-C₄haloalkoxy, C₁-C₄alkylthio, C₁-C₄haloalkylthio, C₁-C₄haloalkylsulfinyl, C₁-C₄haloalkylsulfonyl, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, C₁-C₄alkylamino, C₂-C₄dialkylamino, C₃-C₆cycloalkylamino, C₁-C₆alkyl-C₃-C₆cycloalkylamino, C₂-C₄alkylcarbonyl, C₂-C₆alkoxycarbonyl, C₂-C₆alkylaminocarbonyl, C₃-C₆dialkylaminocarbonyl, C₂-C₆alkoxycarbonyloxy, C₂-C₆alkylaminocarbonyloxy, C₃-C₆dialkylaminocarbonyloxy or C₃-C₆trialkylsilyl, phenyl, benzyl or phenoxy, or phenyl, benzyl or phenoxy mono-, di- or trisubstituted by halogen, cyano, nitro, halogen, C₁-C₆alkyl, C₂-C₆alkenyl, C₂-C₆alkynyl, C₃-C₆cycloalkyl, C₁-C₆haloalkyl, C₂-C₆haloalkenyl, C₂-C₆haloalkynyl, C₃-C₆halocycloalkyl, C₁-C₄alkoxy, C₁-C₄haloalkoxy, C₁-C₄alkylthio, C₁-C₄haloalkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, C₁-C₄alkylamino, C₂-C₄dialkylamino, C₃-C₆cycloalkylamino, C₁-C₆alkyl-C₃-C₆cycloalkylamino, C₂-C₄alkylcarbonyl, C₂-C₆alkoxycarbonyl, C₂-C₆alkylaminocarbonyl, C₃-C₆dialkylaminocarbonyl, C₂-C₆alkoxycarbonyloxy, C₂-C₆alkylaminocarbonyloxy, C₃-C₆dialkylaminocarbonyloxy or C₃-C₆trialkylsilyl;

or each R₁ independently is amino, formyl, C₂-C₆cyanoalkenyl, C₂-C₆alkylcarbonylamino, phenylcarbonylamino which can be mono-, di- or trisubstituted by halogen, cyano, nitro, halogen, C₁-C₆alkyl, C₂-C₆alkenyl, C₂-C₆alkynyl, C₃-C₆cycloalkyl, C₁-C₆haloalkyl, C₂-C₆haloalkenyl, C₂-C₆haloalkynyl, C₃-C₆halocycloalkyl, C₁-C₄alkoxy, C₁-C₄haloalkoxy, C₁-C₄alkylthio, C₁-C₄haloalkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, C₁-C₄alkylamino, C₂-

C₄dialkylamino, C₃-C₆cycloalkylamino, C₁-C₆alkyl-C₃-C₆cycloalkylamino, C₂-C₄alkylcarbonyl, C₂-C₆alkoxycarbonyl, C₂-C₆alkylaminocarbonyl, C₃-C₆dialkylaminocarbonyl, C₂-C₆alkoxycarbonyloxy, C₂-C₆alkylaminocarbonyloxy, C₃-C₆dialkylaminocarbonyloxy or C₃-C₆trialkylsilyl; or each R₁ independently is 2-, 3- or 4-pyridylcarbonylamino which can be mono-, di- or trisubstituted by halogen, cyano, nitro, halogen, C₁-C₆alkyl, C₂-C₆alkenyl, C₂-C₆alkynyl, C₃-C₆cycloalkyl, C₁-C₆haloalkyl, C₂-C₆haloalkenyl, C₂-C₆haloalkynyl, C₃-C₆halocycloalkyl, C₁-C₄alkoxy, C₁-C₄haloalkoxy, C₁-C₄alkylthio, C₁-C₄haloalkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, C₁-C₄alkylamino, C₂-C₄dialkylamino, C₃-C₆cycloalkylamino, C₁-C₆alkyl-C₃-C₆cycloalkylamino, C₂-C₄alkylcarbonyl, C₂-C₆alkoxycarbonyl, C₂-C₆alkylaminocarbonyl, C₃-C₆dialkylaminocarbonyl, C₂-C₆alkoxycarbonyloxy, C₂-C₆alkylaminocarbonyloxy, C₃-C₆dialkylaminocarbonyloxy or C₃-C₆trialkylsilyl; or each R₁ independently is C₂-C₆alkoxycarbonylamino, C₂-C₆alkylaminocarbonylamino, C₃-C₆dialkylaminocarbonylamino, C₂-C₆haloalkylcarbonyl or is a group R_xON=C(R_y)-, wherein R_x and R_y independently are hydrogen or C₁-C₆alkyl;

n is 0, 1, 2, 3 or 4;

each of R₂ and R₃, which may be the same or different, represents hydrogen, C₁-C₆alkyl, C₂-C₆alkenyl, C₂-C₆alkynyl or C₃-C₆cycloalkyl; or C₁-C₆alkyl, C₂-C₆alkenyl, C₂-C₆alkynyl or C₃-C₆cycloalkyl substituted by one or more substituents selected from halogen nitro, cyano, hydroxy, C₁-C₆alkoxy, C₁-C₆haloalkoxy, C₁-C₆alkylthio, C₁-C₆haloalkylthio, C₁-C₆alkylsulfinyl,



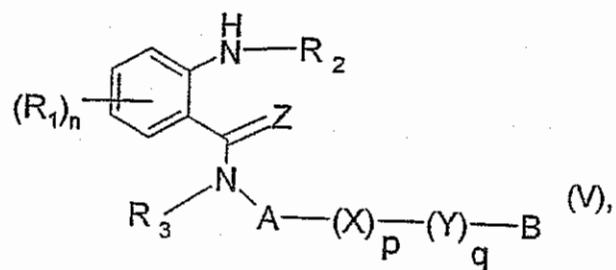
R₄, R_{4'}, R₁₀, R₁₇, and R₁₉ independently from each other, are hydrogen, C₁-C₆alkyl, C₃-C₆cycloalkyl, C₁-C₆haloalkyl, halogen, cyano, C₁-C₄alkoxy, C₁-C₄haloalkoxy, C₂-C₄alkoxycarbonyl, C₁-C₄alkylthio, C₁-C₄haloalkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, C₁-C₄haloalkylsulfinyl or C₁-C₄haloalkylsulfonyl;

R₅, R₆, R₈, R₁₁, R₁₂, R₁₅, R₁₆ and R₁₈ independently from each other, are C₁-C₆alkyl or C₁-C₆alkyl mono-, di- or trisubstituted by halogen, cyano, nitro, hydroxy, C₁-C₄alkoxy, C₂-C₄alkoxycarbonyl, C₁-C₄alkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, C₁-C₄alkylamino, C₂-C₄dialkylamino or C₃-C₆cycloalkylamino; or are phenyl, 2-pyridyl, 3-pyridyl, 4-pyridyl; or are phenyl, 2-pyridyl, 3-pyridyl or 4-pyridyl mono-, di- or trisubstituted by C₁-C₆alkyl, C₃-C₆cycloalkyl, C₁-C₆haloalkyl, halogen, cyano, C₁-C₄alkoxy, C₁-C₄haloalkoxy, C₁-C₄alkylthio, C₁-C₄haloalkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, C₁-C₄haloalkylsulfinyl or C₁-C₄haloalkylsulfonyl;

R₇, R₉, R₁₃ and R₁₄ independently from each other, are hydrogen, C₁-C₆alkyl, C₁-C₆haloalkyl, C₂-C₆alkenyl, C₂-C₆haloalkenyl, C₃-C₆alkenyl or C₃-C₆haloalkenyl; and agronomically acceptable salts/isomers/enantiomers/tautomers/N-oxides of those compounds with the exception of the compound 2-(3-chloro-pyridin-2-yl)-5-trifluoromethyl-2H-pyrazole-3-carboxylic acid [2-methyl-6-(oxiranylmethyl-carbamoyl)-phenyl]-amide.

2. A pesticidal composition, which comprises at least one compound according to claim 1 of formula I or, where appropriate, a tautomer thereof, in each case in free form or in agrochemically utilizable salt form, as active ingredient and at least one auxiliary.
3. A composition according to claim 2 for controlling insects or representatives of the order Acarina.
4. A method for controlling pests, which comprises applying a composition according to claim 6 to the pests or their environment.
5. A method according to claim 4 for controlling insects or representatives of the order Acarina.
6. A method according to claim 4 for the protection of plant propagation material from the attack by pests, which comprises treating the propagation material or the site, where the propagation material is planted.
7. Plant propagation material treated in accordance with the method described in claim 6.

8. A compound of formula V



wherein

R₁ is C₁-C₄alkyl, halogen, C₁-C₆haloalkyl, nitro, C₁-C₄alkoxy, C₁-C₄-haloalkoxy, C₁-C₄alkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, C₁-C₄haloalkylthio, C₁-C₄haloalkylsulfinyl or C₁-C₄haloalkylsulfonyl;

R₂ and R₃ are hydrogen;

A is C₁-C₆alkylene which may be substituted by C₃-C₆cycloalkyl, C₂-C₆alkenyl, cyano, C₁-C₄alkylthio, C₁-C₄alkylsulfonyl, C₁-C₄alkoxy, halogen or C₁-C₆haloalkyl; or A is C₃-C₆cycloalkylene;

p and q are, independently from each other, 0 or 1;

X is oxygen, NH; NCH₃ or NC₂H₅;

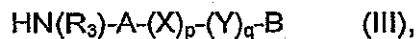
Y is C₁-C₄alkylene, C₂-C₆alkenylene or C₃-C₆alkynylene or, C₁-C₄alkylene, C₂-C₆alkenylene or C₃-C₆alkynylene substituted by halogen, C₃-C₆cycloalkyl, C₁-C₄alkylsulfonyl or C₁-C₄alkoxy;

B is cyclopropyl or cyclobutyl which may be mono- di-, or trisubstituted by halogen, C₁-C₄alkyl, hydroxy, cyano, C₁-C₄alkoxy or C₁-C₄alkylthio; or B is CH(CH₂O), CH(CHMeO), CH(CMe₂O), CH(CH₂S), CH(CH₂OCH₂), CH(CHMeOCH₂), CH(CMe₂OCH₂), CH(CH₂S-(O)₂CH₂), CH(CHMeS(O)₂CH₂), CH(CMe₂S(O)₂CH₂), C(Me)-(CH₂O), C(Me)(CHMeO), C(Me)-(CMe₂O), C(Me)-(CH₂S), C(Me)-(CH₂OCH₂), C(Me)(CHMeOCH₂), C(Me)-(CMe₂OCH₂), C(Me)-(CH₂S(O)₂CH₂), C(Me)-(CHMe-S(O)₂CH₂) or C(Me)-(CMe₂-S(O)₂CH₂).

9. A compound according to claim 8, wherein

B is cyclopropyl or cyclobutyl which may be mono- di-, or trisubstituted by halogen, C₁-C₄alkyl, hydroxy, cyano, C₁-C₄alkoxy or C₁-C₄alkylthio.

10. A compound of formula III



in which R₃, A, X, Y, p, q and B have the meanings given for formula I in claim 1.

11. A compound according to claim 10, wherein

R₃ is hydrogen;

A is C₁-C₆alkylene which may be substituted by C₃-C₆cycloalkyl, C₂-C₆alkenyl, cyano, C₁-C₄alkylthio, C₁-C₄alkylsulfonyl, C₁-C₄alkoxy, halogen or C₁-C₆haloalkyl; or A is C₃-C₆cycloalkylene;

p and q are, independently from each other, 0 or 1;

X is oxygen, NH; NCH₃ or NC₂H₅;

Y is C₁-C₄alkylene, C₂-C₆alkenylene or C₃-C₆alkynylene or, C₁-C₄alkylene, C₂-C₆alkenylene or C₃-C₆alkynylene substituted by halogen, C₃-C₆cycloalkyl, C₁-C₄alkylsulfonyl or C₁-C₄alkoxy;

B is cyclopropyl or cyclobutyl which may be mono- di-, or trisubstituted by halogen, C₁-C₄alkyl, hydroxy, cyano, C₁-C₄alkoxy or C₁-C₄alkylthio; or B is CH(CH₂O), CH(CHMeO), CH(CMe₂O), CH(CH₂S), CH(CH₂OCH₂), CH(CHMeOCH₂), CH(CMe₂OCH₂), CH(CH₂S-(O)₂CH₂), CH(CHMeS(O)₂CH₂), CH(CMe₂S(O)₂CH₂), C(Me)-(CH₂O), C(Me)(CHMeO), C(Me)-(CMe₂O), C(Me)-(CH₂S), C(Me)-(CH₂OCH₂), C(Me)(CHMeOCH₂), C(Me)-(CMe₂OCH₂), C(Me)-(CH₂S(O)₂CH₂), C(Me)-(CHMe-S(O)₂CH₂) or C(Me)-(CMe₂-S(O)₂CH₂).

12. A compound according to claim 11, wherein

B is cyclopropyl or cyclobutyl which may be mono- di-, or trisubstituted by halogen, C₁-C₄alkyl, hydroxy, cyano, C₁-C₄alkoxy or C₁-C₄alkylthio.