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(54) 5-SUBSTITUTED-ALKYLAMINOPYRAZOLE DERIVATIVES AS PESTICIDES

5-SUBSTITUIERTE ALKYLAMINOPYRAZOL-DERIVATE ALS PESTIZIDE

ALKYLAMINO-PYRAZOLES SUBSTITUES EN POSITION 5 COMME PESTICIDES

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Description

[0001] The invention relates to the use for the control of pests (including insects arachnids and helminths (including nematodes)) of 5-substituted-alkylaminopyrazole derivatives, to novel compounds and compositions used therein, and to processes used for their preparation.

The control of insects, arachnids and helminths with 1-arylpyrazole compounds has been described in, for example, patent publication numbers WO 93/06089, WO 94/21606, WO 87/03781, EP 0295117, EP 659745, EP 679650, EP 201852 and U.S. 5,232,940. The control of parasites in animals with 1-arylpyrazole compounds has also been described in, for example, patent publication numbers WO 00/35884, EP 0846686, WO 98/24769 and WO 97/28126.

In addition, WO 02/066423 describes a process for preparing 1-arylpyrazole compounds.

[0002] However, the level of action and/or duration of action of these prior-art compounds is not entirely satisfactory in all fields of application, in particular against certain organisms or when low concentrations are applied.

[0003] Since modern pesticides must meet a wide range of demands, for example regarding level, duration and spectrum of action, use spectrum, toxicity, combination with other active substances, combination with formulation auxiliaries or synthesis, and since the occurrence of resistances is possible, the development of such substances can never be regarded as concluded, and there is constantly a high demand for novel compounds which are advantageous over the known compounds, at least as far as some aspects are concerned.

[0004] It was an object of the present invention to provide compounds which widen the spectrum of the pesticides in various aspects, specifically with regard to the control of parasites in animals.

[0005] The present invention provides a method of controlling parasites in or on an animal comprising administering to the animal a parasiticidally effective amount of a 5-substituted-alkylaminopyrazole derivative of formula (I):

![Chemical Structure](image)

wherein:

- $R^1$ is CN;
- $W$ is C-halogen or C-CH$_3$;
- $R^3$ is (C$_1$-C$_3$)-haloalkyl, (C$_1$-C$_3$)-haloalkoxy or S(O)$_p$(C$_1$-C$_3$)-haloalkyl;
- $R^4$ is hydrogen, (C$_2$-C$_6$)-alkenyl, (C$_2$-C$_6$)-haloalkenyl, (C$_2$-C$_6$)-alkynyl, (C$_2$-C$_6$)-haloalkynyl, (C$_3$-C$_7$)-cycloalkyl, CO-(CH$_2$)$_q$-$R^7$, -COR$_8$, CO-(CH$_2$)$_q$-$R^9$, -CO-(C$_1$-C$_4$)-alkyl-(C$_1$-C$_6$)-alkoxy, -CO$_2$-(CH$_2$)$_q$-$R^7$, CO$_2$R$_8$, -CO$_2$-(C$_2$-C$_6$)-$R^9$, -CO$_2$-(C$_3$-C$_7$)-cycloalkyl, -CO$_2$-(C$_1$-C$_4$)-alkyl-(C$_3$-C$_7$)-cycloalkyl, -CO$_2$-(C$_3$-C$_6$)-alkenyl, -CO$_2$-(C$_3$-C$_6$)-alkynyl, CONR$_{10}$R$_{11}$, -CH$_2$-$R^7$, -CH$_2$-$R^9$, OR$_7$, OR$_8$, OR$_9$; or (C$_1$-C$_6$)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C$_1$-C$_6$)-alkoxy, (C$_1$-C$_6$)-haloalkoxy, (C$_3$-C$_7$)-cycloalkyl, -(CH$_2$)$_q$-$R^7$, (C$_2$-C$_12$)-alkenylene or (C$_2$-C$_12$)-haloalkenylene;
- A is (C$_1$-C$_12$)-alkylene [preferably (C$_1$-C$_6$)-alkylene] or (C$_1$-C$_12$)-haloalkylene [preferably (C$_1$-C$_6$)-haloalkylene] in which 2, 3 or 4 adjacent carbon atoms optionally form part of a (C$_3$-C$_6$)-cycloalkyl ring which is unsubstituted or substituted by one or more radicals selected from the group consisting of (C$_1$-C$_6$)-alkyl and halogen; or is (C$_1$-C$_12$)-alkylene or (C$_1$-C$_12$)-haloalkylene in which last two mentioned groups a methylene moiety is replaced by a group selected from -C(=O)-, -C(=NH)-, -O-, -Sand- NR$_{15}$, with the proviso that the replacing group is not bonded to the adjacent O or N atom; or is (C$_2$-C$_12$)-alkenylene or (C$_2$-C$_12$)-haloalkenylene;
- $R^5$ is H, (C$_3$-C$_6$)-alkenyl, (C$_3$-C$_6$)-haloalkenyl, (C$_3$-C$_6$)-alkynyl, (C$_3$-C$_6$)-haloalkynyl, (C$_3$-C$_7$)-cycloalkyl, -(CH$_2$)$_q$-$R^7$,
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-(CH$_2$)$_n$R$^8$ or NR$_{10}$R$_{11}$; or is (C$_1$-C$_6$)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C$_1$-C$_6$)-alkoxy, (C$_1$-C$_6$)-haloalkoxy, (C$_3$-C$_6$)-alkenyl, (C$_3$-C$_6$)-alkenyloxy, (C$_3$-C$_6$)-haloalkenyloxy, (C$_3$-C$_6$)-alkynyl, (C$_3$-C$_6$)-haloalkynyl, (C$_3$-C$_6$)-cycloalkyl, S(O)$_p$R$^8$, CN, NO$_2$, OH, COR$^{10}$, NR$_{10}$COR$^{12}$, NR$_{10}$SO$_2$R$^8$, CONH$^{10}$R$_{11}$, NR$_{10}$R$_{11}$, SI(O)$_p$R$^8$, OR$_7$, OR$^8$ and CO$_2$R$_{10}$; or when A is (C$_1$-C$_6$)-alkylene or (C$_1$-C$_6$)-haloalkylene and R$^5$ is (C$_1$-C$_6$)-alkyl unsubstituted or substituted by one or more halogen radicals, one or more of the carbon atoms of R$^5$ may, together with O or one or more of the carbon atoms of A, form a 5- or 6-membered ring:

R$^6$ is (C$_1$-C$_6$)-alkyl, (C$_1$-C$_6$)-haloalkyl, (C$_2$-C$_6$)-alkenyl, (C$_2$-C$_6$)-alkenyloxy, (C$_2$-C$_6$)-haloalkenyloxy or (C$_2$-C$_6$)-alkynyl; R$^7$ is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C$_1$-C$_6$)-alkyl, (C$_1$-C$_6$)-haloalkyl, (C$_2$-C$_6$)-alkenyl, (C$_2$-C$_6$)-alkenyloxy, (C$_2$-C$_6$)-haloalkenyloxy, (C$_1$-C$_6$)-haloalkynyl; R$^8$ is (C$_1$-C$_6$)-alkyl or (C$_1$-C$_6$)-haloalkyl; R$^9$ is a heterocyclyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C$_1$-C$_6$)-alkyl, (C$_1$-C$_6$)-haloalkyl, (C$_1$-C$_6$)-alkenyl, (C$_1$-C$_6$)-alkenyloxy, (C$_1$-C$_6$)-haloalkenyloxy, (C$_1$-C$_6$)-alkynyl, (C$_1$-C$_6$)-haloalkynyl; R$^{10}$ and R$^{12}$ are each independently H, (C$_1$-C$_6$)-alkyl, (C$_1$-C$_6$)-haloalkyl, (C$_3$-C$_6$)-alkenyl, (C$_3$-C$_6$)-alkenyloxy, (C$_3$-C$_6$)-haloalkenyloxy, (C$_3$-C$_6$)-cycloalkyl, -(C$_1$-C$_6$)-alkyl-(C$_3$-C$_6$)-cycloalkyl,-(CH$_2$)$_q$R$_{13}$ or -(CH$_2$)$_q$R$^8$; or R$^{10}$ and R$^{11}$ and/or R$^{10}$ and R$^{12}$ each together with the respective attached N atom form a five- or six-membered saturated ring which optionally contains an additional hetero atom in the ring which is selected from O, S and N, the ring being unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C$_1$-C$_6$)-alkyl and (C$_1$-C$_6$)-haloalkyl; R$^{11}$ and R$^{14}$ are each independently H, (C$_1$-C$_6$)-alkyl, (C$_1$-C$_6$)-haloalkyl, (C$_3$-C$_6$)-cycloalkyl or -(C$_1$-C$_6$)-alkyl-(C$_3$-C$_6$)-cycloalkyl; R$^{13}$ is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C$_1$-C$_6$)-alkyl, (C$_1$-C$_6$)-haloalkyl, (C$_1$-C$_6$)-alkenyloxy, (C$_1$-C$_6$)-haloalkenyloxy, CN, NO$_2$, S(O)$_p$R$^8$ and NR$_{10}$R$_{11}$; R$^{15}$ is R$^{11}$ or -(CH$_2$)$_q$R$^{13}$; n and p are each independently zero, one or two; q is zero or one; and each heterocyclyl in the above-mentioned radicals is independently a heterocyclic radical having 3 to 7 ring atoms and 1, 2 or 3 hetero atoms in the ring selected from the group consisting of N, O and S; or a pesticidally acceptable salt thereof.

[0006] In a further aspect of the invention there is provided the use of compounds of formula (I) for the control of parasites in and on animals.

[0007] In yet a further aspect of the invention there is provided the use of compounds of formula (I) for preparing a veterinary medicament, preferably for the treatment of parasites, specifically ecto and endo parasites, in and on animals.

[0008] The invention also encompasses any stereoisomer, enantiomer or geometric isomer, and mixtures of the compounds of the formula (I).

By the term "pesticidally acceptable salts" is meant salts the anions or cations of which are known and accepted in the art for the formation of salts for pesticidal use. Suitable salts with bases, e.g. formed by compounds of formula (I) containing a carboxylic acid group, include alkali metal (e.g. sodium and potassium), alkaline earth metal (e.g. calcium and magnesium), ammonium and amine (e.g. diethanolamine, triethanolamine, octylamine, morpholine and dioctylmethylamine) salts. Suitable acid addition salts, e.g. formed by compounds of formula (I) containing an amino group, include alkali metal (e.g. sodium and potassium), alkaline earth metal (e.g. calcium and magnesium), ammonium and amine (e.g. diethanolamine, triethanolamine, octylamine, morpholine and dioctylmethylamine) salts. Suitable salts with inorganic acids, for example hydrochlorides, sulphates, phosphates and nitrates and salts with organic acids for example acetic acid.

[0009] It is to be understood that the above mentioned provisos are included only for reasons of chemical instability for the particular excluded moieties, and not for reasons of prior art.

[0010] In the present patent specification, including the accompanying claims, the aforementioned substituents have the following meanings:

Halogen atom means fluorine, chlorine, bromine or iodine.

The term "halo" before the name of a radical means that this radical is partially or completely halogenated, that is to say, substituted by F, Cl, Br, or I, in any combination, preferably by F or Cl.

Alkyl groups and portions thereof (unless otherwise defined) may be straight- or branched-chain.

The expression "(C$_1$-C$_6$)-alkyl" is to be understood as meaning an unbranched or branched hydrocarbon radical having 1, 2, 3, 4, 5 or 6 carbon atoms, such as, for example a methyl, ethyl, propyl, isopropyl, 1-butyl, 2-butyl, 2-methylpropyl or tert-butyl radical.
The term parasites embraces all kinds of pests that live in or on animals. The term pests means arthropod pests (including insects and arachnids), and helminths (including nematodes).

In compounds of formula (I) the following examples of radicals are provided:

- An example of alkyl substituted by alkoxy is methoxymethyl (CH₃OCH₂-);
- An example of alkyl substituted by cycloalkyl is cyclopropylmethyl;
- An example of alkyl substituted by alkylthio is methylthiomethyl (CH₃SCH₂-);
- An example of alkyl substituted by alkoxy is methoxymethyl (CH₃OCH₂-); and
- An example of alkyl substituted by alkylthio is methylthiomethyl (CH₃SCH₂-).

A "heterocyclyl" group can be saturated, unsaturated or heteroaromatic; it preferably contains one or more, in particular 1, 2 or 3, hetero atoms in the heterocyclic ring, preferably selected from the group consisting of N, O and S; it is preferably an aliphatic heterocyclyl radical having 3 to 7 ring atoms or a heteroaromatic radical having 5 to 7 ring atoms. The heterocyclyl radical can be, for example, a heteroaromatic radical or ring (heteroaryl) such as, for example, a mono-, bi- or polycyclic aromatic system in which at least 1 ring contains one or more hetero atoms, for example pyridyl, pyrimidinyl, pyrazinyl, triazinyl, thienyl, thiazolyl, oxazolyl, isoxazolyl, furyl, pyrrolyl, imidazolyl and triazolyl, or it is a partially or fully hydrogenated radical such as oxiranyl, oxetanyl, oxolanyl (= tetrahydrofuryl), oxanylyl, pyrrolidyl, piperidyl, piperazinyl, dioxolanyl, oxazolinyl, isoxazolinyl, oxazolidinyl, isoxazolidinyl and morpholinyl. The "heterocyclyl" group may be unsubstituted or substituted by one or more radicals (preferably 1, 2 or 3 radicals) selected from the group consisting of halogen, alkoxy, haloalkoxy, alkylthio, hydroxyl, amino, nitro, carbonyl, cyano, alkoxycarbonyl, alkylcarbonyl, formyl, carbamoyl, mono- and dialkylamino, substituted amino such as acylamino, mono- and dialkylamino, and alkylsulfanyl, haloalkylsulfanyl, alkylsulfonyl, haloalkylsulfonyl, alkyl and haloalkyl, and additionally also oxo. The oxo group can also be present at those hetero ring atoms where various oxidation numbers are possible, for example in the case of N and S.

The expression "(C₂-C₆)-alkenylene" is to be understood as meaning an unbranched or branched non-cyclic carbon chain having a number of carbon atoms which corresponds to this stated range and which contains at least one double bond which can be located in any position of the respective unsaturated radical. "(C₂-C₆)-alkenyl" accordingly denotes, for example, the vinyl, allyl, 2-methyl-2-propenyl, 2-butenyl, pentenyl, 2-methylpentenyl or the hexenyl group.

Cycloalkyl groups preferably have from three to seven carbon atoms in the ring and are optionally substituted by halogen or alkyl.

The term pests means arthropod pests (including insects and arachnids), and helminths (including nematodes). The term parasites embraces all kinds of pests that live in or on animals.
A is (C₁₋₆)-alkylene or (C₁₋₆)-haloalkylene, in which 2, 3 or 4 adjacent carbon atoms optionally form part of a (C₃₋₈)-cycloalkyl ring which is unsubstituted or substituted by one or more radicals selected from the group consisting of (C₁₋₆)-alkyl and halogen;

R⁵ is (C₂₋₆)-cycloalkyl, -(CH₂)ₚR⁷; or (C₁₋₆)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₂₋₆)-cycloalkyl, S(O)ₚR⁸ and CO₂-(C₁₋₆)-alkyl; or when A is (C₁₋₆)-alkyl or (C₁₋₆)-haloalkyl and R⁵ is (C₁₋₆)-alkyl or (C₁₋₆)-haloalkyl, one or more of the carbon atoms of the R⁵ group may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;

R⁸ and R⁹ are each independently (C₁₋₆)-alkyl or (C₁₋₆)-haloalkyl;

R⁷ is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁₋₆)-alkoxy, (C₁₋₆)-haloalkoxy, (C₃₋₆)-cycloalkyl, S(O)ₚR⁸ and CO₂-(C₁₋₆)-alkyl; or when R⁵ is (C₁₋₆)-alkyl or (C₁₋₆)-haloalkyl, one or more of the carbon atoms of the R⁵ group may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;

R⁸ and R⁹ are each independently (C₁₋₆)-alkyl or (C₁₋₆)-haloalkyl;

n and p are each independently zero, one or two; and q is zero or one.

Another preferred class of compounds of formula (I) for use in the invention are those in which:

R¹ is CN;
W is C-halogen;
R² is halogen;
R³ is CF₃ or OCF₃;
R⁴ is hydrogen, (C₂-C₆)-alkenyl, (C₂-C₆)-alkynyl, (C₂-C₆)-alkoxy, (C₂-C₆)-haloalkoxy, -CO₂-(C₁-C₆)-alkyl, -CO₂-(C₂-C₆)-cycloalkyl, -CO₂-(C₂-C₆)-cycloalkyl, -(CH₂)ₚR⁷ or -(CH₂)ₚR⁷; or (C₁-C₆)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₂-C₆)-alkoxy, (C₂-C₆)-cycloalkyl, (C₂-C₆)-haloalkoxy, S(O)ₚR⁸ and CO₂-(C₁-C₆)-alkyl; or when A is (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl and R⁵ is (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl, one or more of the carbon atoms of the R⁵ group may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;

R¹ and R⁵ are each independently (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl;

R⁷ is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkoxy, (C₁-C₆)-haloalkoxy, (C₃-C₇)-cycloalkyl, -CO₂-(C₁-C₃)-alkyl, -CO₂-(C₃-C₆)-cycloalkyl, -CO₂-(C₁-C₆)-alkyl-(C₃-C₆)-cycloalkyl, -CH₂R⁷ or -CH₂R⁷; or (C₁-C₆)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₂-C₆)-alkoxy, (C₂-C₆)-haloalkoxy, (C₂-C₆)-cycloalkyl, S(O)ₚR⁸ and CO₂-(C₁-C₆)-alkyl; or when A is (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl and R⁵ is (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl, one or more of the carbon atoms of the R⁵ group may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;

R⁸ and R⁹ are each independently (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl;

n and p are each independently zero, one or two; and q is zero or one.

[0014] A further preferred class of compounds of formula (I) for use in the invention are those in which:

R¹ is CN;
W is C-halogen;
R² is halogen;
R³ is CF₃ or OCF₃;
R⁴ is hydrogen, (C₂-C₆)-alkenyl, (C₂-C₆)-alkynyl, (C₂-C₆)-alkoxy, (C₂-C₆)-haloalkoxy, -CO₂-(C₁-C₆)-alkyl, -CO₂-(C₂-C₆)-cycloalkyl, -CO₂-(C₂-C₆)-cycloalkyl, -(CH₂)ₚR⁷ or -(CH₂)ₚR⁷; or (C₁-C₆)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₂-C₆)-alkoxy, (C₂-C₆)-cycloalkyl, (C₂-C₆)-haloalkoxy, S(O)ₚR⁸ and CO₂-(C₁-C₆)-alkyl; or when A is (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl and R⁵ is (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl, one or more of the carbon atoms of the R⁵ group may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;

R⁶ and R⁹ are each independently (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl;

R⁷ is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkoxy, (C₁-C₆)-haloalkoxy, (C₃-C₇)-cycloalkyl, -CO₂-(C₁-C₃)-alkyl, -CO₂-(C₃-C₆)-cycloalkyl, -CO₂-(C₁-C₆)-alkyl-(C₃-C₆)-cycloalkyl, -CH₂R⁷ or -CH₂R⁷; or (C₁-C₆)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₂-C₆)-alkoxy, (C₂-C₆)-haloalkoxy, (C₂-C₆)-cycloalkyl, S(O)ₚR⁸ and CO₂-(C₁-C₆)-alkyl; or when A is (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl and R⁵ is (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl, one or more of the carbon atoms of the R⁵ group may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;

R⁸ and R⁹ are each independently (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl;

n and p are each independently zero, one or two; and q is zero or one.

[0015] A further preferred class of compounds of formula (I) for use in the invention are those in which:

R¹ is CN;
W is C-halogen;
R² is halogen;
R³ is CF₃ or OCF₃;
R^4 is hydrogen, CO_2-(C_1-C_3)-alkyl, or (C_1-C_6)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen and (C_1-C_4)-alkoxy;

A is (C_1-C_4)-alkylene;

R^5 is (C_2-C_6)-cycloalkyl, -{(CH_2)_q}R^7, (C_1-C_6)-alkyl or (C_1-C_6)-haloalkyl; or when R^5 is (C_1-C_6)-alkyl, one or more of the carbon atoms of the R^5 group may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;

R^6 is CF_3, CF_2Cl, CFCI_2, CBrF_2 or CHF_2;

R^7 is phenyl;

n is zero, one or two; and

q is zero or one.

[0016] Another preferred class of compounds of formula (I) for use in the invention are those in which:

R^1 is CN;

W is C-halogen;

R^2 is hydrogen or halogen;

R^3 is CF_3 or OCF_3;

R^4 is hydrogen, (C_2-C_6)-alkenyl, (C_2-C_6)-haloalkenyl, (C_2-C_6)-alkynyl, (C_2-C_6)-haloalkynyl, (C_3-C_6)-cycloalkyl, -CO_2-(C_1-C_6)-alkyl or -CH_2R^7; or (C_1-C_6)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C_1-C_4)-alkoxy, (C_1-C_4)-haloalkoxy, (C_3-C_6)-cycloalkyl, S(O)_p R^8 and CO_2-(C_1-C_6)-alkyl;

A is (C_1-C_6)-alkylene or (C_1-C_6)-haloalkylene in which 2, 3 or 4 adjacent carbon atoms optionally form part of a (C_3-C_6)-cycloalkyl ring which is unsubstituted or substituted by one or more radicals selected from the group consisting of (C_1-C_4)-alkyl and halogen;

R^5 is (C_3-C_6)-cycloalkyl or -(CH_2)_q R^7; or is (C_1-C_6)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C_1-C_6)-alkoxy, (C_1-C_6)-haloalkoxy, (C_3-C_6)-cycloalkyl, S(O)_p R^8 and CO_2-(C_1-C_6)-alkyl; or when A is (C_1-C_6)-alkylene or (C_1-C_6)-haloalkylene and R^5 is (C_1-C_6)-alkyl unsubstituted or substituted by one or more halogen radicals, one or more of the carbon atoms of R^5 may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;

R^6 and R^8 are each independently (C_1-C_6)-alkyl or (C_1-C_6)-haloalkyl;

R^7 is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C_1-C_6)-alkyl, (C_1-C_6)-haloalkyl, (C_1-C_6)-alkoxy, CN, NO_2, S(O)_p R^8 and NR_10 R_11;

R^10 and R^11 are each independently H, (C_1-C_6)-alkyl or (C_1-C_6)-haloalkyl;

n and p are each independently zero, one or two; and

q is zero or one.

[0017] A further preferred class of compounds of formula (I) for use in the invention are those in which:

R^1 is CN;

W is C-halogen;

R^2 is hydrogen or halogen;

R^3 is CF_3 or OCF_3;

R^4 is hydrogen, (C_2-C_6)-alkenyl, (C_2-C_6)-haloalkenyl, (C_2-C_6)-alkynyl, (C_3-C_6)-cycloalkyl, -CO_2-(C_1-C_6)-alkyl, -(C_1-C_6)-alkyl-(C_3-C_7)-cycloalkyl, (C_1-C_4)-alkyl-(C_3-C_7)-cycloalkyl, (C_3-C_7)-cycloalkyl, -(C_1-C_6)-alkyl-(C_3-C_6)-cycloalkyl, (C_1-C_6)-alkyl-(C_3-C_7)-cycloalkyl, -(C_1-C_6)-alkyl-(C_3-C_4)-cycloalkyl, (C_3-C_4)-cycloalkyl or (C_2-C_4)-cycloalkyl;

R^5 is (C_1-C_6)-alkyl;

R^6 is CF_3, CF_2Cl, CFCI_2, CBrF_2 or CHF_2; and

n is zero, one or two.

[0018] Further especially preferred classes of compounds of formula (I) for use in the invention are those in which one or more of the following features are present:

R^4 is hydrogen, (C_1-C_4)-alkyl, -CO_2-(C_1-C_4)-alkyl, (C_3-C_4)-alkenyl, (C_1-C_2)-alkyl-(C_3-C_4)-cycloalkyl or (C_3-C_4)-cycloalkyl;

R^5 is (C_1-C_6)-alkyl; and

A is (C_2-C_3)-alkylene.

[0019] Another especially preferred class of compounds for use in the invention are those wherein:
R¹ is CN;  
R² is chlorine;  
R³ is CF₃;  
W is C-Cl;  
R⁴ is hydrogen, (C₁-C₄)-alkyl, -CO₂-(C₁-C₄)-alkyl, (C₂-C₄)-alkenyl, (C₁-C₂)-alkyl-(C₃-C₄)-cycloalkyl, or (C₂-C₄)-cycloalkyl;  
R⁵ is (C₁-C₂)-alkyl;  
R⁶ is CF₃;  
A is (C₂-C₃)-alkylene; and  
n is zero, one or two.

[0020] Another especially preferred class of compounds for use in the invention are those wherein:

R¹ is CN;  
R² is chlorine;  
R³ is CF₃;  
W is C-Cl;  
R⁴ is hydrogen, (C₁-C₄)-alkyl or -CH₂-(C₁-C₄)-alkoxy;  
R⁵ is hydrogen, (C₁-C₆)-alkyl or CO₂-(C₁-C₄)-alkyl;  
R⁶ is CF₃;  
A is (C₂-C₃)-alkylene; and  
n is zero, one or two.

[0021] A more preferred class of compounds of formula (I) for use in the invention are those in which:

R¹ is CN; R² is chlorine; R³ is CF₃ or OCF₃; W is C-Cl; R⁴ is hydrogen or (C₁-C₆)-alkyl; R⁵ is (C₁-C₆)-alkyl; R⁶ is CF₃; A is (C₁-C₄)-alkylene and n is zero, one or two.

[0022] Further especially preferred classes of compounds of formula (I) for use in the invention are those wherein one or more of the following features are present:

W is C-Cl;  
R² is chlorine;  
R³ is CF₃ or OCF₃;  
R⁴ is hydrogen, (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl;  
R⁵ is (C₁-C₂)-alkyl;  
R⁶ is (C₂-C₃)-haloalkyl (R⁶ is more preferably CF₃); and/or  
A is (C₂-C₃)-alkylene (more preferably A is (C₂-C₃)-alkylene).

[0023] WO 9828278 discloses a number of compounds which fall within the above formula (I) as intermediates, however there is no reference or suggestion that these compounds possess parasiticidal properties.

[0024] Some of the compounds of formula (I) are new and a further feature of the present invention is therefore directed to the novel compounds of formula (I).

[0025] One class of novel 5-substituted-alkylaminopyrazole derivatives of formula (I), or pesticidally acceptable salts thereof, are those wherein:

R¹ is CN;  
W is C-halogen or C-CH₃;  
R² is hydrogen, halogen or CH₃;  
R³ is (C₁-C₃)-haloalkyl, (C₁-C₃)-haloalkoxy or S(O)p(C₁-C₃)-haloalkyl;  
R⁴ is (C₂-C₆)-alkenyl, (C₂-C₆)-haloalkenyl, (C₂-C₆)-alkynyl, (C₂-C₆)-haloalkynyl, (C₃-C₇)-cycloalkyl, CO-(CH₂)q-R₇, CO-(CH₂)q-R₈, CO-(C₁-C₂)-alkyl-(C₁-C₈)-alkoxy, -CO₂-(CH₂)q-R₇, -CO₂-R₈, -CO₂-(CH₂)q-R₉, -CO₂-(C₂-C₆)-cycloalkyl, -CO₂-(C₂-C₆)-alkenyl-(C₃-C₇)-cycloalkyl, -CO₂-(C₂-C₆)-alkenyl, -CO₂-(C₂-C₆)-alkynyl, CONR₁₀R₁₁, -CH₂R₇, -CH₂R₉, OR₇, OR₈ or OR₉; or (C₁-C₆)-alkyl which is substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkoxy, (C₁-C₆)-haloalkoxy, (C₂-C₆)-cycloalkyl, S(O)pR₈, CO₂-(C₁-C₆)-alkyl, O(C=O)-(C₁-C₆)-alkyl, NR₁₀COR₁₂, NR₁₀R₁₁, CONR₁₀R₁₁, SO₂NR₁₀R₁₁, OH, CN, NO₂, OR₇, NR₁₀SO₂R₈, COR₈ and OR₉;  
A is (C₁-C₁₂)-alkylene [preferably (C₁-C₆)-alkylene] and (C₁-C₁₂)-haloalkylene [preferably (C₁-C₆)-haloalkylene] in
which 2, 3 or 4 adjacent carbon atoms optionally form part of a (C₃-C₈)-cycloalkyl ring which is unsubstituted or
substituted by one or more radicals selected from the group consisting of (C₁-C₆)-alkyl and halogen; or is
(C₁-C₆)-alkylene or (C₁-C₆)-haloalkylene in which last two mentioned groups a methylene moiety is replaced by a
group selected from -C(=O)-, -C(=NH)-, -O-, -S- and NO², with the proviso that the replacing group is not bonded
to the adjacent O or N atom; or is (C₂-C₁₂)-alkenylene or (C₂-C₁₂)-haloalkenylene;
R⁵ is (H, (C₁-C₆)-alkenyl, (C₁-C₆)-haloalkenyl, (C₁-C₆)-alkynyl, (C₁-C₆)-haloalkynyl, (C₁-C₇)-cycloalkyl, -(CH₂)ₙR⁷,
-(CH₃)ₚR⁸ or NR¹⁵R¹¹; or is (C₁-C₆)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkoxy, (C₁-C₆)-haloalkoxy, (C₁-C₆)-alkenyl, (C₁-C₆)-haloalkenyl, (C₁-C₆)-alkynyl, (C₁-C₆)-haloalkynyl, (C₁-C₆)-alkoxy, (C₁-C₆)-haloalkoxy, CN, NO₂, OH, COR¹⁰, NR¹⁰COR¹², NR¹⁰SO₂R⁸, CONR¹⁰R¹¹, NR¹⁰R¹¹, S(O)₂R⁸, S(O)ₙR⁹, OR⁷, OR⁸ and CO₂R¹⁰; or when A is (C₁-C₁₂)-alkenyl or (C₁-C₁₂)-haloalkenylene and R⁵ is (C₁-C₆)-alkyl unsubstituted or substituted by one or more halogen radicals, one or more of the carbon atoms of R⁵ may, together with O and one or more of the carbon atoms of A, form a 5- or 6-
membered ring;
R⁶ is (C₁-C₆)-alkyl, (C₂-C₆)-haloalkyl, (C₂-C₆)-alkenyl, (C₂-C₆)-haloalkenyl, (C₂-C₆)-alkynyl or (C₂-C₆)-haloalkynyl;
R⁷ is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkyl, (C₁-C₆)-alkoxy, (C₁-C₆)-haloalkoxy, CN, NO₂, S(O)ₙR⁸, COR¹¹, COR¹³, CONR¹⁰R¹¹, SO₂NR¹⁰R¹¹, NR¹⁰R¹¹, OH, SO₃H and (C₁-C₆)-alkylideneimine;
R⁸ is (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl;
R⁹ is heterocyclyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkyl, (C₂-C₆)-haloalkyl, (C₂-C₆)-alkenyl, (C₂-C₆)-haloalkenyl, (C₂-C₆)-alkynyl, (C₂-C₆)-haloalkynyl, (C₂-C₆)-alkoxy, (C₂-C₆)-haloalkoxy, NO₂, CN, CO₂R₈, S(O)ₙR⁸, OH and oxo;
R¹⁰ and R¹² are each independently H, (C₁-C₆)-alkyl, (C₁-C₆)-haloalkyl, (C₁-C₆)-alkenyl, (C₁-C₆)-haloalkenyl, (C₁-C₆)-alkynyl, (C₁-C₆)-haloalkynyl, (C₁-C₆)-cycloalkyl, -(C₁-C₆)-alkyl-(C₁-C₆)-cycloalkyl, -(CH₂)ₚR¹³ or -(CH₂)ₚR¹⁰; or
R¹⁰ and R¹¹ and/or R¹⁰ and R¹² each together with the respective attached N atom form a five- or six-membered
saturated ring which optionally contains an additional hetero atom in the ring which is selected from O, S and N, the
ring being unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkyl and (C₁-C₆)-haloalkyl;
R¹¹ and R¹³ are each independently H, (C₁-C₆)-alkyl, (C₁-C₆)-haloalkyl, (C₁-C₆)-cycloalkyl or
-(C₁-C₆)-alkyl-(C₁-C₆)-cycloalkyl;
R¹³ is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkyl, (C₁-C₆)-haloalkyl, (C₁-C₆)-alkenyl, (C₁-C₆)-haloalkenyl, (C₁-C₆)-alkynyl, (C₁-C₆)-haloalkynyl, (C₁-C₆)-cycloalkyl, -(C₁-C₆)-alkyl-(C₁-C₆)-cycloalkyl, -(CH₂)ₚR¹³ or -(CH₂)ₚR¹⁰; or
R¹⁵ is R¹¹ or -(CH₂)ₚR¹³;
R¹⁰ is (C₁-C₆)-alkenyl, (C₁-C₆)-haloalkenyl, (C₁-C₆)-alkynyl, (C₁-C₆)-haloalkynyl, (C₁-C₆)-alkoxy, (C₁-C₆)-haloalkoxy, (C₁-C₆)-alkylideneimino;
and each heterocyclyl in the above-mentioned radicals is independently a heterocyclic radical having 3 to 7 ring atoms
and 1, 2 or 3 hetero atoms in the ring selected from the group consisting of N, O and S.

[0026] A preferred class of compounds of formula (I) are those in which:

R¹ is CN;
W is C-halogen;
R² is hydrogen or halogen;
R³ is CF₃ or OCF₃;
R⁴ is (C₂-C₆)-alkenyl, (C₂-C₆)-haloalkenyl, (C₂-C₆)-alkynyl, (C₂-C₆)-haloalkynyl, (C₃-C₇)-cycloalkyl, CO₂R⁸,
-CO₂(C₃-C₆)-alkenyl, -CO₂(C₃-C₆)-alkynyl, -(CH₂)ₚR⁷, -(CH₂)ₚR⁸, OR⁷, OR⁸ or OR⁹; or (C₁-C₆)-alkyl which is substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkenyl, (C₁-C₆)-haloalkenyl, (C₁-C₆)-alkynyl, (C₁-C₆)-haloalkynyl, (C₁-C₆)-cycloalkyl, -(C₁-C₆)-alkyl-(C₁-C₆)-cycloalkyl, -(C₃-C₇)-cycloalkyl, S(O)₂R⁸ and CO₂-(C₁-C₆)-alkyl;
A is (C₁-C₆)-alkylene or (C₁-C₆)-haloalkylene, in which 2, 3 or 4 adjacent carbon atoms optionally form part of a
(C₃-C₇)-cycloalkyl ring which is unsubstituted or substituted by one or more radicals selected from the group consisting of (C₁-C₆)-alkenyl and halogen;
R⁵ is (C₃-C₇)-cycloalkyl, -(CH₂)ₚR⁷; or (C₁-C₆)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkenyl, (C₁-C₆)-haloalkenyl, (C₃-C₇)-cycloalkyl, S(O)₂R⁸ and CO₂-(C₁-C₆)-alkyl; or when A is (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl and R⁵ is (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl, one or more of the carbon atoms of the R⁵ group may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;
R⁶ and R⁸ are each independently (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl;
R⁷ is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen,
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(C₁₋₆)-alkyl, (C₁₋₆)-haloalkyl, (C₁₋₆)-alkoxy, CN, NO₂, S(O)ₚR₈ and NR¹¹R¹²;
R⁻ is heterocyclyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁₋₆)-alkyl, (C₁₋₄)-haloalkyl and (C₁₋₄)-alkoxy; R¹¹ and R¹² are each the same or different hydrogen, (C₁₋₆)-alkyl or (C₁₋₆)-haloalkyl;
n and p are each independently zero, one or two; and
q is zero or one.

[0027] Another preferred class of compounds of formula (I) are those in which:

R¹ is CN;
W is C-halogen;
R² is hydrogen or halogen;
R³ is CF₃ or OCF₃;
R⁴ is (C₂₋₆)-alkenyl, (C₂₋₆)-alkynyl, (C₂₋₆)-haloalkenyl, (C₂₋₆)-haloalkynyl, (C₂₋₆)-cycloalkyl, -CO₂R₈, -CO₂(C₁₋₆)-alkenyl, -OH, -CH₂R⁷ or -CH₂R⁹; or (C₂₋₆)-alkenyl which is substituted by one or more radicals selected from the group consisting of halogen, (C₁₋₆)-alkoxy, (C₁₋₆)-haloalkoxy, (C₁₋₆)-cycloalkyl, S(O)ₚR₈ and CO₂(C₁₋₆)-alkenyl;
R⁵ is (C₁₋₆)-alkene or (C₁₋₆)-haloalkene in which 2, 3 or 4 adjacent carbon atoms optionally form part of a (C₃₋₆)-cycloalkyl ring which is unsubstituted or substituted by one or more radicals selected from the group consisting of (C₃₋₆)-alkenyl and halogen;
R⁶ and R⁸ are each independently (C₁₋₆)-alkyl or (C₁₋₆)-haloalkyl;
R⁷ is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁₋₆)-alkyl, (C₁₋₆)-haloalkyl, (C₁₋₆)-alkoxy, CN, NO₂, S(O)ₚR₈ and NR¹⁰R¹¹;
R¹⁰ and R¹¹ are each independently H, (C₁₋₆)-alkyl or (C₁₋₆)-haloalkyl;
n and p are each independently zero, one or two; and
q is zero or one.

[0028] Another preferred class of compounds of formula (I) are those in which:

R¹ is CN;
W is C-halogen;
R² is hydrogen or halogen;
R³ is CF₃ or OCF₃;
R⁴ is (C₂₋₆)-alkenyl, (C₂₋₆)-alkynyl, (C₂₋₆)-haloalkenyl, (C₂₋₆)-haloalkynyl, (C₂₋₆)-cycloalkyl, -CO₂R₈, -CO₂(C₁₋₆)-alkenyl, -OH, -CH₂R⁷ or -CH₂R⁹; or (C₂₋₆)-alkenyl which is substituted by one or more radicals selected from the group consisting of halogen, (C₁₋₆)-alkoxy, (C₁₋₆)-haloalkoxy, (C₁₋₆)-cycloalkyl, S(O)ₚR₈ and CO₂(C₁₋₆)-alkenyl; or when A is (C₁₋₆)-alkene or (C₁₋₆)-haloalkene and R⁵ is (C₁₋₆)-alkenyl unsubstituted or substituted by one or more halogen radicals, one or more of the carbon atoms of R⁵ may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;
R⁶ and R⁸ are each independently (C₁₋₆)-alkyl or (C₁₋₆)-haloalkyl;
R⁷ is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁₋₆)-alkyl, (C₁₋₆)-haloalkyl, (C₁₋₆)-alkoxy, CN, NO₂, S(O)ₚR₈ and NR¹⁰R¹¹;
R¹⁰ and R¹¹ are each independently H, (C₁₋₆)-alkyl or (C₁₋₆)-haloalkyl;
n and p are each independently zero, one or two; and
q is zero or one.
(C1–C3)-alkyl-(C3–C6)-cycloalkyl;
R13 is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen,
(C1–C6)-haloalkyl, (C1–C2)-alkoxy, (C1–C2)-haloalkoxy, CN, NO2, S(O)OR and NR11R14;
n and p are each independently zero, one or two;
q is zero or one; and
each heterocyclyl in the above-mentioned radicals is independently a heteroaromatic radical having 5 or 6 ring
atoms and 1, 2 or 3 hetero atoms in the ring selected from the group consisting of N, O and S.

A further preferred class of compounds of formula (I) are those in which:

R1 is CN;
W is C-Cl;
R2 is chlorine;
R3 is CF3 or OCF3;
R4 is CO2-(C1–C3)-alkyl, or (C1–C6)-alkyl which is substituted by one or more radicals selected from the group
consisting of halogen and (C1–C3)-alkoxy;
A is (C1–C4)-alkylene;
R5 is (C3–C6)-cycloalkyl, -(CH2)qR7, (C1–C6)-alkyl or (C1–C6)-haloalkyl; or when R5 is (C1–C6)-alkyl, one or more of
the carbon atoms of the R5 group may, together with O and one or more of the carbon atoms of A, form a 5- or 6-
membered ring;
R6 is CF3, CF2Cl, CFCI2, CBrF2 or CHF2;
R7 is phenyl;
n is zero, one or two; and
q is zero or one.

A further preferred class of compounds of formula (I) are those in which:

R1 is CN;
W is C-halogen;
R2 is halogen;
R3 is CF3 or OCF3;
R4 is (C2–C6)-alkenyl, (C2–C6)-haloalkenyl, (C3–C7)-cycloalkyl, (C1–C2)-alkyl-(C3–C7)-cycloalkyl, -CO2-(C1–C6)-alkyl
or (C1–C6)-haloalkyl;
A is (C1–C12)-alkylene which is unsubstituted or substituted by one or more radicals selected from the group consisting
of (C1–C6)-alkyl and halogen;
R5 is (C1–C3)-alkyl;
R6 is CF3, CF2Cl, CFCI2, CBrF2 or CHF2; and
n is zero, one or two.

An especially preferred class of compounds of formula (I) are those wherein:

R1 is CN;
W is C-Cl;
R2 is chlorine;
R3 is CF3;
W is C-halogen;
R4 is CO2-(C1–C4)-alkyl, (C3–C4)-alkenyl, (C1–C2)-alkyl-(C3–C4)-cycloalkyl or (C3–C4)-cycloalkyl (more preferably
R4 is CO2-(C1–C4)-alkyl);
R5 is (C1–C2)-alkyl;
R6 is CF3;
A is (C2–C3)-alkylene; and
n is zero, one or two.

Another class of novel 5-substituted-alkylaminopyrazole derivatives of formula (I), or a pesticidally acceptable
salt thereof, are those wherein:

R1 is CN;
W is C-halogen or C-CH3;
R2 is hydrogen, halogen or CH3;
R^3 is (C_1-C_6)-haloalkyl, (C_1-C_3)-haloalkoxy or S(O)O-(C_1-C_3)-haloalkyl;
R^4 is hydrogen, (C_1-C_6)-alkyl or COR^8;
A is (C_1-C_12)-alkylene [preferably (C_1-C_6)-alkylene] and (C_1-C_12)-haloalkylene [preferably (C_1-C_6)-haloalkylene] in which 2, 3 or 4 adjacent carbon atoms optionally form part of a (C_3-C_6)-cycloalkyl ring which is unsubstituted or
substituted by one or more radicals selected from the group consisting of (C_1-C_6)-alkyl and halogen; or is
(C_1-C_6)-alkyl-haloalkylene in which last two mentioned groups a methylene moiety is replaced by a
group selected from -C(-=O)-,-C(-=NH)-,-O-,-Sand -NR^{15}, with the proviso that the replacing group is not bonded to
the adjacent O or N atom; or is (C_2-C_12)-alkylalkylene or (C_2-C_12)-haloalkylene;
R^5 is H, (C_1-C_6)-alkyl, (C_1-C_6)-haloalkenyl, (C_1-C_6)-alkenyl, (C_2-C_6)-cycloalkyl, -(CH_2)_q R^7,
-(CH_2)_q R^7 or NR^{10}R^{11} or is (C_1-C_6)-alkyl substituted by one or more radicals selected from the group consisting of halogen, (C_1-C_6)-alkoxy, (C_2-C_6)-alkenyl, (C_2-C_6)-alkoxyloxy, (C_2-C_6)-alkenyloxy, (C_3-C_6)-alkenynloxy, (C_3-C_6)-haloalkenynloxy, (C_3-C_6)-cycloalkyl, (C_1-C_6)-alkenylene or (C_1-C_6)-haloalkenylene and
R^6 is (C_1-C_6)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C_1-C_6)-alkyl, (C_1-C_6)-haloalkyl, (C_1-C_6)-alkoxy, (C_1-C_6)-haloalkoxy, CN, NO_2, S
or when A is (C_1-C_12)-alkylene or (C_1-C_12)-haloalkylene and
R^6 is (C_1-C_6)-alkyl unsubstituted or substituted by one or more halogen radicals, one or more of the carbon atoms
of R^6 may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;
R^6 is (C_1-C_6)-haloalkyl;
R^7 is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C_1-C_6)-alkyl, (C_1-C_6)-haloalkenyl, (C_1-C_6)-alkenyl, (C_1-C_6)-haloalkylene, (C_1-C_6)-alkoxy, (C_1-C_6)-haloalkoxy, CN, NO_2, S(O)O R^8, CONR^10 R^{11}, CO_2 R^10 R^{11},
R^8 is (C_1-C_6)-alkyl or (C_1-C_6)-haloalkyl;
R^6 is heterocyclic unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C_1-C_6)-alkyl, (C_1-C_6)-haloalkyl, (C_1-C_6)-alkoxy, (C_1-C_6)-haloalkoxy, CN, NO_2, S(O)O R^8, OH and
oxo;
R^{10} and R^{12} are each independently H, (C_1-C_6)-alkyl, (C_1-C_6)-haloalkenyl, (C_3-C_6)-alkenyl, (C_3-C_6)-haloalkenyl,
(C_3-C_6)-alkenyl, (C_3-C_6)-haloalkenyl, (C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkyl, -(C_3-C_6)-alkyl-(C_3-C_6)-cycloalkyl,
-(CH_2)_q R^{13} or -(CH_2)_q R^{14}; or
R^{10} and R^{11} and/or R^{10} and R^{12} each together with the respective attached N atom form a five- or six-membered
saturated ring which optionally contains an additional hetero atom in the ring which is selected from O, S and N, the
ring being unsubstituted or substituted by one or more radicals selected from the group consisting of halogen,
(C_1-C_6)-alkyl and (C_1-C_6)-haloalkyl;
R^{11} and R^{14} are each independently H, (C_1-C_6)-alkyl, (C_1-C_6)-haloalkyl, (C_2-C_6)-cycloalkyl or
-(C_1-C_6)-alkyl-(C_1-C_6)-cycloalkyl;
R^{13} is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen,
(C_1-C_6)-alkyl, (C_1-C_6)-haloalkyl, (C_1-C_6)-alkoxy, (C_1-C_6)-haloalkoxy, CN, NO_2, S(O)O R^8 and NR^{11} R^{14};
R^{15} is R^{11} or -(CH_2)_q R^{13};
n and p are each independently zero, one or two;
q is zero or one; and
each heterocyclic in the above-mentioned radicals is independently a heterocyclic radical having 3 to 7 ring atoms
and 1, 2 or 3 hetero atoms in the ring selected from the group consisting of N, O and S.

[0033] A preferred class of compounds of formula (I) are those in which:
R^1 is CN;
W is C-halogen;
R^2 is hydrogen or halogen;
R^3 is CF_3 or OCF_3;
R^4 is hydrogen, (C_1-C_6)-alkyl or COR^8;
A is (C_1-C_6)-alkylene or (C_1-C_6)-haloalkylene, in which 2, 3 or 4 adjacent carbon atoms optionally form part of a
(C_3-C_6)-cycloalkyl ring which is unsubstituted or substituted by one or more radicals selected from the group consisting of (C_1-C_6)-alkyl and halogen;
R^5 is (C_1-C_6)-cycloalkyl, -(CH_2)_q R^7; or (C_1-C_6)-alkyl substituted by one or more radicals selected from the group consisting of halogen, (C_1-C_6)-alkoxy, (C_1-C_6)-haloalkoxy, (C_2-C_6)-cycloalkyl, S(O)O R^8 and CO_2-(C_1-C_6)-alkyl; or
when A is (C_1-C_6)-alkyl or (C_1-C_6)-haloalkyl and R^5 is (C_1-C_6)-haloalkyl, one or more of the carbon atoms of the R^5
may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;
R^6 is (C_1-C_6)-haloalkyl;
R^7 is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen,
(C_1-C_6)-alkyl, (C_1-C_6)-haloalkyl, (C_1-C_6)-alkoxy, CN, NO_2, S(O)O R^8 and NR^{11} R^{12};
R³ is heterocyclyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁⁻C₄)-alkyl, (C₁⁻C₄)-haloalkyl and (C₁⁻C₄)-alkoxy; R¹¹ and R¹² are each the same or different hydrogen, (C₁⁻C₆)-alkyl or (C₁⁻C₆)-haloalkyl; n and p are each independently zero, one or two; and q is zero or one.

[0034] Another preferred class of compounds of formula (I) are those in which:

R¹ is CN;  
W is C-halogen;  
R² is hydrogen or halogen;  
R³ is CF₃ or OCF₃;  
R⁴ is hydrogen, (C₁⁻C₆)-alkyl or COR⁸;  
A is (C₁⁻C₆)-alkylene or (C₁⁻C₆)-haloalkylene in which 2, 3 or 4 adjacent carbon atoms optionally form part of a (C₃⁻C₆)-cycloalkyl ring which is unsubstituted or substituted by one or more radicals selected from the group consisting of (C₁⁻C₆)-alkyl and halogen;  
R⁵ is (C₃⁻C₆)-cycloalkyl or -(CH₂)ᵢ R⁷; or is (C₁⁻C₆)-alkyl substituted by one or more radicals selected from the group consisting of halogen, (C₁⁻C₆)-alkoxy, (C₁⁻C₆)-haloalkoxy, (C₃⁻C₆)-cycloalkyl, S(O)ₚ R⁸ and CO₂-(C₁⁻C₆)-alkyl; or when A is (C₁⁻C₆)-alkylene or (C₁⁻C₆)-haloalkylene and R⁵ is (C₁⁻C₆)-alkyl substituted by one or more halogen radicals, one or more of the carbon atoms of R⁵ may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;  
R⁶ is (C₁⁻C₆)-haloalkyl;  
R⁸ is (C₁⁻C₆)-alkyl or (C₁⁻C₆)-haloalkyl;  
R⁹ is heterocyclyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁⁻C₄)-alkyl, (C₁⁻C₄)-haloalkyl and (C₁⁻C₄)-alkoxy; R¹⁰ is H, (C₁⁻C₃)-alkyl, (C₃⁻C₆)-alkenyl, (C₃⁻C₆)-alkynyl, (C₃⁻C₆)-cycloalkyl, -(C₁⁻C₆)-alkyl-(C₃⁻C₆)-cycloalkyl or -(CH₂)ᵢ R¹₃; or

[0035] Another preferred class of compounds of formula (I) are those in which:

R¹ is CN;  
W is C-halogen;  
R² is halogen;  
R³ is CF₃ or OCF₃;  
R⁴ is hydrogen, (C₁⁻C₆)-alkyl or COR⁸;  
A is (C₁⁻C₆)-alkylene or (C₁⁻C₆)-haloalkylene in which 2, 3 or 4 adjacent carbon atoms optionally form part of a (C₃⁻C₆)-cycloalkyl ring which is unsubstituted or substituted by one or more radicals selected from the group consisting of (C₁⁻C₆)-alkyl and halogen;  
R⁵ is (C₃⁻C₆)-cycloalkyl or -(CH₂)ᵢ R⁷; or is (C₁⁻C₆)-alkyl substituted by one or more radicals selected from the group consisting of halogen, (C₁⁻C₆)-alkoxy, (C₁⁻C₆)-haloalkoxy, (C₃⁻C₆)-cycloalkyl, S(O)ₚ R⁸ and CN, NR₁₀ R₁₁, S(O)ₚ R⁷, S (O)₂ R⁵, OR⁷ and OR⁹;  
R⁶ is (C₁⁻C₆)-haloalkyl;  
R⁷ is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁⁻C₆)-alkyl, (C₁⁻C₆)-haloalkyl, (C₁⁻C₆)-alkoxy, (C₁⁻C₆)-haloalkoxy, CN, NO₂, S(O)ₚ R⁸ and NR₁₀ R₁₁;  
R¹⁰ and R¹₁ are each independently H, (C₁⁻C₆)-alkyl or (C₁⁻C₆)-haloalkyl;  
n and p are each independently zero, one or two; and q is zero or one.

R¹ is CN;  
W is C-halogen;  
R² is halogen;  
R³ is CF₃ or OCF₃;  
R⁴ is hydrogen, (C₁⁻C₆)-alkyl or COR⁸;  
A is (C₁⁻C₆)-alkylene or (C₁⁻C₆)-haloalkylene in which 2, 3 or 4 adjacent carbon atoms optionally form part of a (C₃⁻C₆)-cycloalkyl ring which is unsubstituted or substituted by one or more radicals selected from the group consisting of (C₁⁻C₆)-alkyl and halogen;  
R⁵ is (C₃⁻C₆)-cycloalkyl or -(CH₂)ᵢ R⁷; or is (C₁⁻C₆)-alkyl substituted by one or more radicals selected from the group consisting of halogen, (C₁⁻C₆)-alkoxy, (C₁⁻C₆)-haloalkoxy, (C₃⁻C₆)-cycloalkyl, S(O)ₚ R⁸ and CO₂-(C₁⁻C₆)-alkyl; or when A is (C₁⁻C₆)-alkylene or (C₁⁻C₆)-haloalkylene and R⁵ is (C₁⁻C₆)-alkyl substituted by one or more halogen radicals, one or more of the carbon atoms of R⁵ may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;  
R⁶ is (C₁⁻C₆)-haloalkyl;  
R⁷ is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁⁻C₆)-alkyl, (C₁⁻C₆)-haloalkyl, (C₁⁻C₆)-alkoxy, (C₁⁻C₆)-haloalkoxy, CN, NO₂, S(O)ₚ R⁸ and NR₁₀ R₁₁;  
R¹⁰ and R¹₁ are each independently H, (C₁⁻C₆)-alkyl or (C₁⁻C₆)-haloalkyl;  
n and p are each independently zero, one or two; and q is zero or one.

R¹ is CN;  
W is C-halogen;  
R² is halogen;  
R³ is CF₃ or OCF₃;  
R⁴ is hydrogen, (C₁⁻C₆)-alkyl or COR⁸;  
A is (C₁⁻C₆)-alkylene or (C₁⁻C₆)-haloalkylene in which 2, 3 or 4 adjacent carbon atoms optionally form part of a (C₃⁻C₆)-cycloalkyl ring which is unsubstituted or substituted by one or more radicals selected from the group consisting of (C₁⁻C₆)-alkyl and halogen;  
R⁵ is (C₃⁻C₆)-cycloalkyl or -(CH₂)ᵢ R⁷; or is (C₁⁻C₆)-alkyl substituted by one or more radicals selected from the group consisting of halogen, (C₁⁻C₆)-alkoxy, (C₁⁻C₆)-haloalkoxy, (C₃⁻C₆)-cycloalkyl, S(O)ₚ R⁸ and CN, NR₁₀ R₁₁, S(O)ₚ R⁷, S (O)₂ R⁵, OR⁷ and OR⁹;  
R⁶ is (C₁⁻C₆)-haloalkyl;  
R⁷ is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁⁻C₆)-alkyl, (C₁⁻C₆)-haloalkyl, (C₁⁻C₆)-alkoxy, (C₁⁻C₆)-haloalkoxy, CN, NO₂, S(O)ₚ R⁸ and NR₁₀ R₁₁;  
R¹⁰ and R¹₁ are each independently H, (C₁⁻C₆)-alkyl or (C₁⁻C₆)-haloalkyl;  
n and p are each independently zero, one or two; and q is zero or one.
each heterocyclyl in the above-mentioned radicals is independently a heteroaromatic radical having 5 or 6 ring atoms and 1, 2 or 3 hetero atoms in the ring selected from the group consisting of N, O and S.

[0036] A further preferred class of compounds of formula (I) are those in which:

- \( R^1 \) is CN;
- \( W \) is C-Cl;
- \( R^2 \) is chlorine;
- \( R^3 \) is CF₃ or OCF₃;
- \( R^4 \) is hydrogen, \((C_1-C_6)\)-alkyl or COR³;
- \( A \) is \((C_1-C_4)\)-alkylene;
- \( R^5 \) is \((C_2-C_6)\)-cycloalkyl, \((-CH_2)qR^7\) or \((C_1-C_6)\)-haloalkyl; or when \( R^5 \) is \((C_1-C_6)\)-haloalkyl, one or more of the carbon atoms of the \( R^5 \) group may, together with O and one or more of the carbon atoms of \( A \), form a 5- or 6-membered ring;
- \( R^6 \) is CF₃, CF₂Cl, CFCI₂, CBrF₂ or CHF₂;
- \( R^7 \) is phenyl;
- \( n \) is zero, one or two; and
- \( q \) is zero or one.

[0037] A further preferred class of compounds of formula (I) are those in which:

- \( R^1 \) is CN;
- \( W \) is C-halogen;
- \( R^2 \) is halogen;
- \( R^3 \) is CF₃ or OCF₃;
- \( R^4 \) is hydrogen, \((C_1-C_6)\)-alkyl or COR³;
- \( A \) is \((C_1-C_{12})\)-alkylene which is unsubstituted or substituted by one or more radicals selected from the group consisting of \((C_1-C_6)\)-alkyl and halogen;
- \( R^5 \) is \((C_1-C_6)\)-haloalkyl;
- \( R^6 \) is CF₃, CF₂Cl, CFCI₂, CBrF₂ or CHF₂; and
- \( n \) is zero, one or two.

[0038] An especially preferred class of compounds of formula (I) are those wherein:

- \( R^1 \) is CN;
- \( R^2 \) is chlorine;
- \( R^3 \) is CF₃;
- \( W \) is C-Cl;
- \( R^4 \) is hydrogen, \((C_1-C_6)\)-alkyl or COR³;
- \( R^5 \) is \((C_1-C_2)\)-haloalkyl;
- \( R^6 \) is CF₃;
- \( A \) is \((C_2-C_3)\)-alkylene; and
- \( n \) is zero, one or two.

[0039] Yet another class of novel 5-substituted-alkylaminopyrazole derivatives of formula (I), or a pesticidally acceptable salt thereof, are those wherein:

- \( R^1 \) is CN; \( R^2 \) is chlorine; \( R^3 \) is CF₃ or OCF₃; \( W \) is C-Cl; \( R^4 \) is hydrogen or \((C_1-C_6)\)-alkyl; \( R^5 \) is \((C_1-C_6)\)-alkyl; \( R^6 \) is CF₃; \( A \) is \((C_1-C_4)\)-alkylene (preferably \( A \) is \((C_2-C_3)\)-alkylene) and \( n \) is zero, one or two.

[0040] A further particularly preferred embodiment of the invention relates to novel 5-substituted-alkylaminopyrazole derivatives of formula (I), or pesticidally acceptable salts thereof, wherein:

- \( R^1 \) is CN;
- \( W \) is C-Cl;
- \( R^2 \) is chlorine;
- \( R^3 \) is CF₃;
- \( R^4 \) is hydrogen or \((C_1-C_3)\)-alkyl (more preferably \( R^4 \) is hydrogen or methyl);
- \( A \) is \(-CH₂-CH₂-\) or \(-CH₂CH₂-CH₂-\).
The compounds of general formula (I) can be prepared by the application or adaptation of known methods (i.e. methods heretofore used or described in the chemical literature).

In the following description of processes when symbols appearing in formulae are not specifically defined, it is understood that they are "as defined above" in accordance with the first definition of each symbol in the specification.

According to a further feature of the invention compounds of formula (I) wherein $R_1$, $R_2$, $R_3$, $R_6$, $W$ and $n$ are as defined above, $R_5$ is as defined above with the exclusion of hydrogen, $R_4$ is hydrogen and $A$ is $-\text{CH}_2-$, may be prepared by the reaction of a compound of formula (VIII):

\[
\begin{align*}
\text{R}_5\text{O}-
\end{align*}
\]

wherein $R_1$, $R_2$, $R_3$, $R_6$, $W$ and $n$ are as defined above, with a mixture of formaldehyde and a compound of formula (IX):

\[
\begin{align*}
\text{R}_5\text{O-H}
\end{align*}
\]

wherein $R_5$ is as defined above with the exclusion of hydrogen. The reaction may be performed in the presence or absence of a base such as potassium carbonate, in a solvent such as dioxan, tetrahydrofuran or $N,N$-dimethylformamide, at a temperature of from 0° to 100°C (preferably 0° to 50°C). Various forms of formaldehyde may be used, for example paraformaldehyde, when water may also be present in the reaction mixture.

Collections of compounds of the formula (I) which can be synthesized by the above mentioned process may also be prepared in a parallel manner, and this may be effected manually or in a semiautomated or fully automated manner. In this case, it is possible, for example, to automate the procedure of the reaction, work-up or purification of the products or of the intermediates. In total, this is to be understood as meaning a procedure as is described, for example, by S.H. DeWitt in "Annual Reports in Combinatorial Chemistry and Molecular Diversity: Automated Synthesis", Volume 1, Verlag Escom 1997, pages 69 to 77.

A series of commercially available apparatuses as are offered by, for example, Stem Corporation, Woodrolfe Road, Tollesbury, Essex, CM9 8SE, England or H+P Labortechnik GmbH, Bruckmannring 28, 85764 Oberschleißheim, Germany or Radleys, Shirehill, Safron Walden, Essex, England, may be used for the parallel procedure of the reaction and work-up. For the parallel purification of compounds of the formula (I), or of intermediates obtained during the preparation, use may be made, inter alia, of chromatography apparatuses, for example those by ISCO, Inc., 4700 Superior Street, Lincoln, NE 68504, USA.

The apparatuses mentioned lead to a modular procedure in which the individual process steps are automated, but manual operations must be performed between the process steps. This can be prevented by employing semi-integrated or fully integrated automation systems where the automation modules in question are operated by, for example, robots. Such automation systems can be obtained, for example, from Zymark Corporation, Zymark Center, Hopkinton, MA 01748, USA.

In addition to what has been described here, compounds of the formula (I) may be prepared in part or fully by solid-phase-supported methods. For this purpose, individual intermediate steps or all intermediate steps of the synthesis or of a synthesis adapted to suit the procedure in question are bound to a synthetic resin. Solid-phase-supported synthesis methods are described extensively in the specialist literature, for example Barry A. Bunin in "The Combinatorial Index", Academic Press, 1998.

The use of solid-phase-supported synthesis methods permits a series of protocols which are known from the literature.
and which, in turn, can be performed manually or in an automated manner. For example, the "tea-bag method" (Houghten, US 4,631,211; Houghten et al., Proc. Natl. Acad. Sci, 1985, 82, 5131-5135), in which products by IRORI, 11149 North Torrey Pines Road, La Jolla, CA 92037, USA, are employed, may be semiautomated. The automation of solid-phase-supported parallel syntheses is performed successfully, for example, by apparatuses by Argonaut Technologies, Inc., 887 Industrial Road, San Carlos, CA 94070, USA or MultiSynTech GmbH, Wullener Feld 4, 58454 Witten, Germany.

The preparation of the processes described herein yields compounds of the formula (I) in the form of substance collections which are termed libraries. The present invention also relates to libraries which comprise at least two compounds of the formula (I).

Chemical Examples

NMR spectra were run in deuterochloroform unless stated otherwise.

In the Examples which follow, quantities (also percentages) are weight-based, unless stated otherwise.

Example 1

Potassium carbonate (6.6 g, 47.5 mmol) was added to a solution of 5-amino-1-(2,6-dichloro-4-trifluoromethyl-phenyl)-3-cyano-4-trifluoromethylthiopyrazole (5.0 g, 11.87 mmol) in iso-propanol, and stirred for five minutes before paraformaldehyde (0.75 g) was added. The resulting mixture was stirred at 20°C for three days, then diluted with isopropanol (20 ml) and added to water and ethyl acetate. The organic layer was dried (sodium sulfate) and evaporated to give 1-(2,6-dichloro-4-trifluoromethylphenyl)-3-cyano-5-1-propyloxymethylamino-4-trifluoromethylthiopyrazole (Compound number 1-4, 5.3 g).

The following preferred compounds shown in Tables 1 to 6 also form part of the present invention, and were or may be prepared in accordance with, or analogously to, the above-mentioned Examples 1 to 4 or the above-described general methods. In the Tables i-Pr means isopropyl. Where subscripts are omitted after atoms it will be understood that they are intended, for example CH₃ means CH₃.

19F-NMR spectra shift values are given in ppm.

Compound numbers are given for reference purposes only.

Table I: Compounds of formula (I) in which the substituents have the following meanings: R¹=CN, R⁶ is CF₃, R⁴ is hydrogen, W = C-Cl, R² = Cl, R³ = CF₃.

<table>
<thead>
<tr>
<th>Compound Number</th>
<th>A</th>
<th>R⁵</th>
<th>n</th>
<th>m.p. (°C), or NMR(/ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1</td>
<td>CH₂CH₂</td>
<td>CH₃</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1-2</td>
<td>CH₂CH₂</td>
<td>CH₃</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1-3</td>
<td>CH₂CH₂</td>
<td>CH₃</td>
<td>2</td>
<td>164</td>
</tr>
<tr>
<td>1-4</td>
<td>CH₂</td>
<td>i-Pr</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1-5</td>
<td>CH₂CH₂(CH₃)</td>
<td>H</td>
<td>2</td>
<td>19F: -64.2; -80.9</td>
</tr>
<tr>
<td>1-6</td>
<td>CH₂CH₂</td>
<td>CH₂CH₃</td>
<td>2</td>
<td>151</td>
</tr>
<tr>
<td>1-7</td>
<td>CH₂CH₂CH₂</td>
<td>CH₃</td>
<td>2</td>
<td>107</td>
</tr>
</tbody>
</table>

Table II. R¹ = CN, R⁶ = CF₃, R⁴ = CH₃, W = C-Cl, R² = Cl, R³ = CF₃.

<table>
<thead>
<tr>
<th>Compound Number</th>
<th>A</th>
<th>R⁵</th>
<th>n</th>
<th>m.p. (°C); NMR(/ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-1</td>
<td>CH₂CH₂</td>
<td>CH₃</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2-2</td>
<td>CH₂CH₂</td>
<td>CH₃</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2-3</td>
<td>CH₂CH₂</td>
<td>CH₃</td>
<td>2</td>
<td>75</td>
</tr>
<tr>
<td>2-4</td>
<td>CH₂</td>
<td>CH₂CH₃</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2-5</td>
<td>CH₂</td>
<td>CH₂CH₃</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
(continued)

<table>
<thead>
<tr>
<th>Compound Number</th>
<th>A</th>
<th>R5</th>
<th>n</th>
<th>m. p. (°C); NMR(ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-6</td>
<td>CH2</td>
<td>i-Pr</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2-7</td>
<td>CH2</td>
<td>i-Pr</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2-8</td>
<td>CH2</td>
<td>CH3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2-9</td>
<td>CH2</td>
<td>CH3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2-10</td>
<td>CH2CH2</td>
<td>H</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2-11</td>
<td>CH2CH2CH2</td>
<td>H</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2-12</td>
<td>CH2CH2CH2</td>
<td>CH3</td>
<td>2</td>
<td>19F: -63.68; -78.57</td>
</tr>
</tbody>
</table>

Table III. R¹ = CN, R⁶ = CF₃, R⁴ = CO₂CH₂CH₃, W = C-Cl, R² = Cl, R³ = CF₃

<table>
<thead>
<tr>
<th>Cpd Number</th>
<th>A</th>
<th>R5</th>
<th>n</th>
<th>m. p. (°C) or NMR(ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-1</td>
<td>CH2CH2</td>
<td>CH3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3-2</td>
<td>CH2CH2</td>
<td>CH3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3-3</td>
<td>CH2CH2</td>
<td>CH3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3-4</td>
<td>CH2</td>
<td>CH2CH3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3-5</td>
<td>CH2</td>
<td>CH2CH3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3-6</td>
<td>CH2</td>
<td>i-Pr</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3-7</td>
<td>CH2</td>
<td>i-Pr</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3-8</td>
<td>CH2</td>
<td>CH3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3-9</td>
<td>CH2</td>
<td>CH3</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Table IV. R¹ = CN, R⁶ = CF₃, R⁴ = CH₂OCH₂CH₃, W = C-Cl, R² = Cl, R³ = CF₃

<table>
<thead>
<tr>
<th>Cpd Number</th>
<th>A</th>
<th>R5</th>
<th>n</th>
<th>m. p. (°C) or NMR(ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-1</td>
<td>CH2CH2</td>
<td>CH3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>4-2</td>
<td>CH2CH2</td>
<td>CH3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4-3</td>
<td>CH2CH2</td>
<td>CH3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>4-4</td>
<td>CH2</td>
<td>CH2CH3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>4-5</td>
<td>CH2</td>
<td>CH2CH3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4-6</td>
<td>CH2</td>
<td>i-Pr</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>4-7</td>
<td>CH2</td>
<td>i-Pr</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4-8</td>
<td>CH2</td>
<td>CH3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>4-9</td>
<td>CH2</td>
<td>CH3</td>
<td>1</td>
<td></td>
</tr>
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The term “compound of the invention” as used hereinafter embraces a 5-substituted-alkylaminopyrazole of formula (I) as defined above and a pesticidally acceptable salt thereof.

In a preferred aspect of the invention the compounds of formula (I) are used for the control of parasites of animals. Preferably the animal to be treated is a domestic companion animal such as a dog or a cat.

In a further aspect of the invention the compounds of formula (I) or salts or compositions thereof are used for the preparation of a veterinary medicament, preferably for the control of parasites, specifically ecto and endo parasites, in and on animals.

The compounds of the invention and methods of use thereof are of particular value in the control of arthropods or helminths which are injurious to, or spread or act as vectors of diseases domestic animals, for example those here-inbefore mentioned, and more especially in the control of ticks, mites, lice, fleas, midges, or biting, nuisance or myiasis flies. The compounds of the invention are particularly useful in controlling arthropods or helminths which are present inside domestic host animals or which feed in or on the skin or suck the blood of the animal, for which purpose they may be administered orally, parenterally, percutaneously or topically.

The compounds of formula (I) are particularly useful for the control of parasites of animals when applied orally, and in a further preferred aspect of the invention the compounds of formula (I) are used for the control of parasites of animals infested by or exposed to infestation by arthropods or helminths, by parenteral, oral or topical application of compositions in which the active ingredient exhibits an immediate and/or prolonged action over a period of time against the arthropods or helminths, for example by incorporation in feed or suitable orally-ingestible pharmaceutical formulations, edible baits, salt licks, dietary supplements, pour-on formulations, sprays, baths, dips, showers, jets, dusts, greases, shampoos, creams, wax smears or livestock self-treatment systems;

The compositions hereinafter described may, in general, be employed to animals infested by or exposed to infestation by arthropods or helminths, by parenteral, oral or topical application of compositions in which the active ingredient exhibits an immediate and/or prolonged action over a period of time against the arthropods or helminths, for example by incorporation in feed or suitable orally-ingestible pharmaceutical formulations, edible baits, salt licks, dietary supplements, pour-on formulations, sprays, baths, dips, showers, jets, dusts, greases, shampoos, creams, wax smears or livestock self-treatment systems;

The compounds of formula (I) are particularly useful for the control of parasites of animals when applied orally, and in a further preferred aspect of the invention the compounds of formula (I) are used for the control of parasites of animals infested by or exposed to infestation by arthropods or helminths, by parenteral, oral or topical application of compositions in which the active ingredient exhibits an immediate and/or prolonged action over a period of time against the arthropods or helminths, for example by incorporation in feed or suitable orally-ingestible pharmaceutical formulations, edible baits, salt licks, dietary supplements, pour-on formulations, sprays, baths, dips, showers, jets, dusts, greases, shampoos, creams, wax smears or livestock self-treatment systems;
animals by oral application. The compounds of the formula (I) or salts thereof may be administered before, during or after meals. The compounds of the formula (I) or salts thereof may be mixed with a carrier and/or foodstuffs.

The compound of the formula (I) or salt thereof is administered orally in a dose to the animal in a dose range generally from 0.1 to 500 mg/kg of the compound of the formula (I) or salt thereof per kilogram of animal body weight (mg/kg).

The frequency of treatment of the animal, preferably the domestic animal to be treated by the compound of the formula (I) or salt thereof is generally from about once per week to about once per year, preferably from about once every two weeks to once every three months.

The compounds of the invention may be administered most advantageously with another parasitically effective material, such as an endoparasiticide, and/or an ectoparasiticide, and/or an endectoparasiticide. For example, such compounds include macrocyclic lactones such as avermectins or milbemycins e.g., ivermectin, pyratri or an insect growth regulator such as lufenuron or methoprene.

According to a further feature of the present invention there is provided a method for the control of pests at a locus which comprises the application of an effective amount of a compound of formula (I) or a salt thereof. For this purpose, the said compound is normally used in the form of a pesticidal composition (i.e. in association with compatible diluents or carriers and/or surface active agents suitable for use in pesticidal compositions), for example as hereinafter described.

One aspect of the present invention as defined above is a method for the control of pests at a locus. The locus includes, for example, the pest itself, the place (plant, field, forest, orchard, waterway, soil, plant product, or the like) where the pest resides or feeds, or a place susceptible to future infestation by the pest. The compound of the invention may therefore be applied directly to the pest, to the place where the pest resides or feeds, or to the place susceptible to future infestation by the pest.

As is evident from the foregoing pesticidal uses, the present invention provides pesticidally active compounds and methods of use of said compounds for the control of a number of pest species which includes: arthropods, especially insects or mites, or plant nematodes. The compound of the invention may thus be advantageously employed in practical uses, for example, in veterinary medicine or livestock husbandry, in agricultural or horticultural crops, in forestry, or in public health.

The compounds of the invention may be used for example in the following applications and on the following pests:

In the field of veterinary medicine or livestock husbandry or in the maintenance of public health against arthropods which are parasitic internally or externally upon vertebrates, particularly warm-blooded vertebrates, for example domestic animals, e.g. cattle, sheep, goats, equines, swine, poultry, dogs or cats, for example Acarina, including ticks (e.g. sot-bodied ticks including Argasidae spp. e.g. Argas spp. and Ornithodoros spp. (e.g. Ornithodoros moubata)); hard-bodied ticks including Ixodidae spp., e.g. Boophilus spp. e.g. Boophilus microplus, Rhipicephalus spp. e.g. Rhipicephalus appendiculatus and Rhipicephalus sanguineus; mites (e.g. Damalinia spp.); fleas (e.g. Ctenocephalides spp. e.g. Ctenocephalides felis (cat flea) and Ctenocephalides canis (dog flea)); lice e.g. Menopen spp.; Diptera (e.g. Aedes spp., Anopheles spp., Musca spp., Hypoderma spp.); Hemiptera.; Dictyoptera (e.g. Periplaneta spp., Blatella spp.); Hymenoptera; for example against infections of the gastro-intestinal tract caused by parasitic nematode worms, for example members of the family Trichostrongylidae.

For the control of soil insects, such as corn rootworm, termites (especially for protection of structures), root maggots, wireworms, root weevils, stalkborers, cutworms, root aphids, or grubs. They may also be used to provide activity against plant pathogenic nematodes, such as root-knot, cyst, dagger, lesion, or stem or bulb nematodes, or against mites. For the control of soil pests, for example corn rootworm, the compounds are advantageously applied to or incorporated at an effective rate into the soil in which crops are planted or to be planted or to the seeds or growing plant roots.

In the area of public health, the compounds are especially useful in the control of many insects, especially filth flies or other Dipteran pests, such as houseflies, stableflies, soldierflies, hornflies, deerflies, horseflies, midges, punkies, blackflies, or mosquitoes.

In the protection of stored products, for example cereals, including grain or flour, groundnuts, animal feedstuffs, timber or household goods, e.g. carpets and textiles, compounds of the invention are useful against attack by arthropods, more especially beetles, including weevils, moths or mites, for example Ephestia spp. (flour moths), Anthrenus spp. (carpet beetles), Tribolium spp. (flour beetles), Sitophilus spp. (grain weevils) or Acarus spp. (mites).

In the control of cockroaches, ants or termites or similar arthropod pests in infested domestic or industrial premises or in the control of mosquito larvae in waterways, wells, reservoirs or other running or standing water.

For the treatment of foundations, structures or soil in the prevention of the attack on building by termites, for example, Reticulitermes spp., Heterotermites spp., Coptotermes spp.,

In agriculture against adults, larvae and eggs of Lepidoptera (butterflies and moths), e.g. Heliothis virescens (tobacco budworm), Heliothis armigera and Heliothis zea. Against adults and larvae of Coleoptera (beetles) e.g. Anthonomus spp. e.g. grandis (cotton boll weevil), Leptinotarsa decemlineata (Colorado potato beetle), Diabrotica spp. (corn rootworms). Against Heteroptera (Hemiptera and Homoptera) e.g. Psylla spp., Bemisia spp., Trialeurodes spp., Aphid spp., Myzus spp., Megoura vicieae, Phylloxera spp., Nephrotettix spp. (rice leaf hoppers), Nilapavarta spp.
Against Diptera e.g. Musca spp.. Against Thysanoptera such as Thrips tabaci. Against Orthoptera such as Locusta and Schistocerca spp., (locusts and crickets) e.g. Gryllus spp., and Acheta spp. for example, Blatta orientalis, Periplaneta americana, Blatella germanica, Locusta migratoria migratorioides, and Schistocerca gregaria. Against Collombola e.g. Periplaneta spp. and Blatella spp. (roachs). Against arthropods of agricultural significance such as Acari (mites) e.g. Tetranychus spp., and Panonychus spp..

Against nematodes which attack plants or trees of importance to agriculture, forestry or horticulture either directly or by spreading bacterial, viral, mycoplasma or fungal diseases of the plants. For example root-knot nematodes such as Meloidogyne spp. (e.g. M. incognita).

In practical use for the control of arthropods, especially insects or mites, or nematode pests of plants, a method, for example, comprises applying to the plants or to the medium in which they grow an effective amount of a compound of the invention. For such a method, the compound of the invention is generally applied to the locus in which the arthropod or nematode infestation is to be controlled at an effective rate in the range of about 2g to about 1 kg of the active compound per hectare of locus treated. Under ideal conditions, depending on the pest to be controlled, a lower rate may offer adequate protection. On the other hand, adverse weather conditions, resistance of the pest or other factors may require that the active ingredient be used at higher rates. The optimum rate depends usually upon a number of factors, for example, the type of pest being controlled, the type or the growth stage of the infested plant, the row spacing or also the method of application. Preferably an effective rate range of the active compound is from about 10g/ha to about 400g/ha, more preferably from about 50g/ha to about 200 g/ha.

When a pest is soil-borne, the active compound generally in a formulated composition, is distributed evenly over the area to be treated (ie, for example broadcast or band treatment) in any convenient manner and is applied at rates from about 10g/ha to about 400g ai/ha, preferably from about 50g/ha to about 200 g ai/ha. When applied as a root dip to seedlings or drip irrigation to plants the liquid solution or suspension contains from about 0.075 to about 1000 mg ai/l, preferably from about 25 to about 200 mg ai/l. Application may be made, if desired, to the field or crop-growing area generally or in close proximity to the seed or plant to be protected from attack. The compound of the invention can be washed into the soil by spraying with water over the area or can be left to the natural action of rainfall. During or after application, the formulated compound can, if desired, be distributed mechanically in the soil, for example by ploughing, diskng, or use of drag chains. Application can be prior to planting, at planting, after planting but before sprouting has taken place, or after spraying.

The compound of the invention and methods of control of pests therewith are of particular value in the protection of field, forage, plantation, glasshouse, orchard or vineyard crops, of ornamentals, or of plantation or forest trees, for example: cereals (such as wheat or rice), cotton, vegetables (such as peppers), field crops (such as sugar beets, soybeans or oil seed rape), grassland or forage crops (such as maize or sorghum), orchards or groves (such as of stone or pit fruit or citrus), ornamental plants, flowers or vegetables or shrubs under glass or in gardens or parks, or forest trees (both deciduous and evergreen) in forests, plantations or nurseries.

They are also valuable in the protection of timber (standing, felled, converted, stored or structural) from attack, for example, by sawflies or beetles or termites.

They have applications in the protection of stored products such as grains, fruits, nuts, spices or tobacco, whether whole, milled or compounded into products, from moth, beetle, mite or grain weevil attack. Also protected are stored animal products such as skins, hair, wool or feathers in natural or converted form (e.g. as carpets or textiles) from moth or beetle attack as well as stored meat, fish or grains from beetle, mite or fly attack.

The compositions hereinafter described for application to growing crops or crop growing loci or as a seed dressing may, in general, alternatively be employed in the protection of stored products, household goods, property or areas of the general environment. Suitable means of applying the compounds of the invention include: to growing crops as foliar sprays (for example as an in-furrow spray), dusts, granules, fogs or foams or also as suspensions of finely divided or encapsulated compositions as soil or root treatments by liquid drenches, dusts, granules, smokes or foams; to seeds of crops via application as seed dressings by liquid slurries or dusts; to the environment in general or to specific locations where pests may lurk, including stored products, timber, household goods, or domestic or industrial premises, as sprays, fogs, dusts, smokes, wax-smears, lacquers, granules or baits, or in tricklefeeds to waterways, wells, reservoirs or other running or standing water.

The compounds of the formula (I) can also be employed for controlling harmful organisms in crops of known genetically engineered plants or genetically engineered plants yet to be developed. As a rule, the transgenic plants are distinguished by especially advantageous properties, for example by resistances to particular crop protection agents, resistances to plant diseases or pathogens of plant diseases, such as particular insects or microorganisms such as fungi, bacteria or viruses. Other particular properties concern, for example, the harvested material with regard to quantity, quality, storage properties, composition and specific constituents. Thus, transgenic plants are known where the starch content is increased, or the starch quality is altered, or where the harvested material has a different fatty acid composition.

The use in economically important transgenic crops of useful plants and ornamentals is preferred, for example of cereals such as wheat, barley, rye, oats, millet, rice, cassava and maize or else crops of sugar beet, cotton, soya,
oilseed rape, potatoes, tomatoes, peas and other types of vegetables.

When used in transgenic crops, in particular those which have resistances to insects, effects are frequently observed, in addition to the effects against harmful organisms to be observed in other crops, which are specific for application in the transgenic crop in question, for example an altered or specifically widened spectrum of pests which can be controlled, or altered application rates which may be employed for application.

The invention therefore also relates to the use of compounds of the formula (I) for controlling harmful organisms in transgenic crop plants.

According to a further feature of the present invention there is provided a pesticidal composition comprising one or more compounds of the invention as defined above, in association with, and preferably homogeneously dispersed in one or more compatible pesticidally acceptable diluents or carriers and/or surface active agents [i.e. diluents or carriers and/or surface active agents of the type generally accepted in the art as being suitable for use in pesticidal compositions and which are compatible with compounds of the invention].

In practice, the compounds of the invention most frequently form part of compositions. These compositions can be employed to control arthropods, especially insects, or plant nematodes or mites. The compositions may be of any type known in the art suitable for application to the desired pest in any premises or indoor or outdoor area. These compositions contain at least one compound of the invention as the active ingredient in combination or association with one or more other compatible components which are for example, solid or liquid carriers or diluents, adjuvants, surface-active agents, or the like appropriate for the intended use and which are agronomically or medicinally acceptable. These compositions, which may be prepared by any manner known in the art, likewise form a part of this invention.

The compounds of the invention, in their commercially available formulations and in the use forms prepared from these formulations may be present in mixtures with other active substances such as insecticides, attractants, sterilants, acaricides, nematicides, fungicides, growth regulatory substances or herbicides.

The pesticides include, for example, phosphoric esters, carbamates, carboxylic esters, formamidines, tin compounds and materials produced by microorganisms.

Preferred components in mixtures are:

1. from the group of the phosphorus compounds
   acephate, azamethiphos, azinphos-ethyl, azinphos-methyl, bromophos, bromophos-ethyl, cadusafos (F-67825), chlorothrixoxiphos, chlorfenavinphos, chlorfenvinphos, chlorpyrifos, chlorpyrifos-methyl, demeton, demeton-S-methyl, demeton-S-methyl sulfone, diaflox, diazinon, dichlorvos, dicrotophos, dimethoate, disulfoton, EPN, ethion, ethopropophos, etrimfos, famphur, fenamiphos, fenitrothion, fensulfothion, fenthion, flupyrrozofos, fonofos, formothion, fosfiazate, heptenophos, isazophos, isofothion, malathion, methacril, methachrin, methidathion, methidathion, methidation, mexiton, mevinphos, monocrotophos, naled, omethoate, oxydemeton-methyl, parathion, parathion-methyl, phenthoate, phorate, phosalone, phosfolan, phosphacarb (BAS-301), phosmet, phosphamidon, phoxim, pirimiphos, pirimiphos-ethyl, pirimiphos-methyl, profenofos, propaphos, propetamphos, prothiofos, pyraclofos, pyridapenthion, quinaphos, sulprofos, temephos, tebufurimfos, tetrachlorvinphos, thionet, triazophos, trichlorphon, vasidation;

2. from the group of the carbamates
   alanycarb (OK-135), aldicarb, 2-sec-butylyphenyl methylcarbamate (BPMC), carbaryl, carbofuran, carbofuran, cloethocarbar, benfuranacarb, ethiofencar, furathiocarb, HCN-801, isoprocarb, methomyl, 5-methyl-5-methylnbutylaryl (methyl)carbamate, oxamyl, pirimicarb, propoxur, thiobencarb, thiofuranx, 1-methylthio(ethylideneaminio)-N-methyl-N-(morpholiniothio)carbamate (UC 51717), triazamate;

3. from the group of the carboxylic esters
   acrinathrin, allethrin, alphamethrin, 5-benzyl-3-furymethyl (E)- (1 R)-cis-2,2-dimethyl-3-(2-oxothiolan-3-yldene)methylcyclopropene carboxylate, beta-cyfluthrin, alpha-cypermethrin, beta-cypermethrin, bioallethrin, bioallethrin ((S)-cyclopropylisomer), bioremethrin, bifenthrin, (RS)-1-cyano-1-(6-phenoxo-2-pyridyl)methyl (1RS)-trans-3-(4-tert-butylyphenyl)-2,2-dimethylcyclopropene carboxylate (NCI 185193), cycloprothrin, cyfluthrin, cyhalothrin, cythrin, cypermethrin, cypheothrin, deltamethrin, empenthrin, esfenvalerate, fenfiprin, fenpropathrin, feralaerate, flucythrin, flumethrin, fluvinate (D isomer), imiprothrin (S-4311), lambdacyhalothrin, permethrin, phenothrin (® isomer), prallethrin, pyrethrin (natural products), resmethrin, tefluthrin, tetramethrin, theta-cypermethrin, tralomethrin, transfluthrin, zeta-cypermethrin (F-56701);

4. from the group of the amidines
   amitraz, chlordimeform;

5. from the group of the tin compounds

Other compatible components which are for example, solid or liquid carriers or diluents, adjuvants, surface-active agents, which may be prepared by any manner known in the art, likewise form a part of this invention.
cyhexatin, fenbutatin oxide;

6. others

abamectin, ABG-9008, acetamiprid, acequinocyl, Anagraphe falcitera, AKD-1022, AKD-3059, ANS-118, azadirachtin, Bacillus thuringiensis, Beauveria bassiana, bensultap, bifenazate, binapacryl, BJL-932, bromopropylate, BTG-504, BTG-505, bupropfen, camphechol, cartap, chlorobenzilate, chlorfenapyr, chlorfluanur, 2-(4-chlorophenyl)-4,5-diphenylthiophene (UBI-T 930), chlorfentezine, chlorprophoxyn, chromafenozide, clothianidine, 2-naphthylmethyl cyclopropane carboxylate (Ro12-0470), cyromazin, diaclofen (thiamethoxam), diafenthionur, DBl-3204, ethyl 2-chloro-N-(3,5-dichloro-4-{1,2,3,3,3-hexafluoro-1-propoxy}phenyl) carbamoyl-2-carboximidate, DDT, dicofox, di-flubenzuron, N-(2,3-dihydro-3-methyl-1-thiazol-2-ylidene)-2,4-xylidine, dihydroxymethyl dipropylypyrrolidine, dinobuton, dinocap, dionefolan, emamectin benzoate, endosulfan, ethiprole (sulphetiprole), ethofenprox, etoxazole, fenazaquin, fenoxycarb, fipronil, fluzuron, flumur, (flufenazine, SZI-121), 2-fluoro-5-(4-(4-ethoxyphenyl)-4-methyl-1-pentyl)diphenyl ether (MTI 800), granulosis and nuclear polyhedrosis viruses, fenpyroximate, fenthiocarb, fluacyprym, flubenzimine, flubrothrinate, flucycluron, flufoxuron, flufenazine, flufenprox, flupyrroloxy, gamma- HCH, halfenozide, halofenprox, hexafluronur (DE-473), hexythiazox, HOI-9004, hydramethylnon (AC 217300), IKI-220, indoxacarb, ivermectin, L-14165, imidacloprid, indoxacarb (DPX-MP062), kanemite (AKD-2023), lufenuron, M-020, M-020, methoxyfenozide, milbemectin, NC-196, neemgard, nidinterururan, nitenpyram, 2-nitromethyl-4,5-di-hydro-6H-thiazine (DS 52618), 2-nitromethyl-3,4-dihydrothiazole (SD 35651), 2-nitromethylene-1,2-thiazinan-3-ylcarbamalddehyde (WL 108477), novaluron, pirydaryl, propargite, prothifembute, pymethoxime, pyridaben, pyirimidifen, pyriproxyfen, NC-196, NC-1111, NNI-9768, novaluron (MCW-275), OK-9701, OK-9601, OK-9602, OK-9802, R-195, RH 0345, RH-2485, RYI-210, S-1283, S-1833, SI-8601, silafuomo, silomadine (CG-177), spinosad, spirodi- lufen, SU-9118, tebufenozide, tebufenpyrad, teflubenzuron, tetradifon, tetrasul, thiacloprid, thiocyclam, thiamethoxam, tolenpyrtrazol, triazamate, triethoxyspinosyn A, triflumuron, verbatim, vertalec (mykotal), Y1-5301.


[0073] The effective use doses of the compounds employed in the invention can vary within wide limits, particularly depending on the nature of the pest to be eliminated or degree of infestation, for example, of crops with these pests. In general, the compositions according to the invention usually contain about 0.05 to about 95% (by weight) of one or more active ingredients according to the invention, about 1 to about 95% of one or more solid or liquid carriers and, optionally, about 0.1 to about 50% of one or more other compatible components, such as surface-active agents or the like. In the present account, the term "carrier" denotes an organic or inorganic ingredient, natural or synthetic, with which the active ingredient is combined to facilitate its application, for example, to the plant, to seeds or to the soil. This carrier is therefore generally inert and it must be acceptable (for example, agronomically acceptable, particularly to the treated plant).

The carrier may be a solid, for example, clays, natural or synthetic silicates, silica, resins, waxes, solid fertilizers (for example ammonium salts), ground natural minerals, such as kaolins, clays, talc, chalk, quartz, attapulgite, montmorillonite, bentonite or diatomaceous earth, or ground synthetic minerals, such as silica, alumina, or silicates especially aluminium or magnesium silicates. As solid carriers for granules the following are suitable: crushed or fractionated natural rocks such as calcite, marble, pumice, sepiolite and dolomite; synthetic granules of inorganic or organic meals; granules of organic material such as sawdust, coconut shells, corn cobs, corn husks or tobacco stalks; kieselguhr, tricalcium phosphate, powdered cork, or absorbent carbon black; water soluble polymers, resins, waxes; or solid fertilizers. Such solid compositions may, if desired, contain one or more compatible wetting, dispersing, emulsifying or colouring agents which, when solid, may also serve as a diluent.

The carrier may also be liquid, for example: water; alcohols, particularly butanol or glycol, as well as their ethers or esters, particularly methylvycocatal acetate; ketones, particularly acetone, cyclohexanone, methylethyl ketone, methylisobutylketone, or isophorone; petroleum fractions such as paraffinic or aromatic hydrocarbons, particularly xylenes or alkyl naphthalenes; mineral or vegetable oils; aliphatic chlorinated hydrocarbons, particularly trichloroethane or methyl chloride; aromatic chlorinated hydrocarbons, particularly chlorobenzene; water-soluble or strongly polar solvents such as dimethylformamide, dimethyl sulfoxide, or N-methylpyrrolidone; liquified gases; or the like or a mixture thereof.

The surface-active agent may be an emulsifying, dispersing agent or wetting agent of the ionic or non-ionic type or a mixture of such surface-active agents. Amongst these are e.g., salts of polyacrylic acids, salts of lignosulphonic acids, salts of phenolsulphonic or naphthalenesulphonic acids, polycarboxylates of ethylene oxide with fatty alcohols or fatty acids or fatty esters or fatty amines, substituted phenols (particularly alklyphenols or arylphenols), salts of sulpho-succinic acid esters, taurine derivatives (particularly alkyltaurates), phosphoric esters of alcohols or of polycarboxylates of ethylene oxide with phenols, esters of fatty acids with polyls, or sulphate, sulphonate or phosphate functional derivatives of the above compounds. The presence of at least one surface-active agent is generally essential when the active ingredient and/or the inert carrier are only slightly water soluble or are not water soluble and the carrier agent of the composition for application is water. Compositions of the invention may further contain other additives such as adhesives.
The "water dispersible granules (WG)" (granules which are readily dispersible in water) have compositions which may be in various solid or liquid forms.

Solid forms of compositions which can be used are dusting powders (with a content of the compound of the invention, ranging up to 80%), wettable powders or granules (including water dispersible granules), particularly those obtained by extrusion, compacting, impregnation of a granular carrier, or granulation starting from a powder (the content of the compound of the invention, in these wettable powders or granules being between about 0.5 and about 80%). Solid homogeneous or heterogenous compositions containing one or more compounds of the invention, for example granules, pellets, briquettes or capsules, may be used to treat standing or running water over a period of time. A similar effect may be achieved using trickle or intermittent feeds of water dispersible concentrates as described herein.

Liquid compositions, for example, include aqueous or non-aqueous solutions or suspensions (such as emulsifiable concentrates, emulsions, flowables, dispersions, or solutions) or aerosols. Liquid compositions also include, in particular, emulsifiable concentrates, dispersions, emulsions, flowables, aerosols, wettable powders (or powder for spraying), dry flowables or pastes as forms of compositions which are liquid or intended to form liquid compositions when applied, for example as aqueous sprays (including low and ultra-low volume) or as foams or aerosols.

[0074] Liquid compositions, for example, in the form of emulsifiable or soluble concentrates most frequently comprise about 5 to about 80% by weight of the active ingredient, while the emulsions or solutions which are ready for application contain, in their case, about 0.01 to about 20% of the active ingredient. Besides the solvent, the emulsifiable or soluble concentrates may contain, when required, about 2 to about 50% of suitable additives, such as stabilizers, surface-active agents, penetrating agents, corrosion inhibitors, colorants or adhesives. Emulsions of any required concentration, which are particularly suitable for application, for example, to plants, may be obtained from these concentrates by dilution with water. These compositions are included within the scope of the compositions which may be employed in the present invention. The emulsions may be in the form of water-in-oil or oil-in-water type and they may have a thick consistency. The liquid compositions of this invention may, in addition to normal agricultural use applications be used for example to treat substrates or sites infested or liable to infestation by arthropods (or other pests controlled by compounds of this invention) including premises, outdoor or indoor storage or processing areas, containers or equipment or standing or running water.

All these aqueous dispersions or emulsions or spraying mixtures can be applied, for example, to crops by any suitable means, chiefly by spraying, at rates which are generally of the order of about 100 to about 1,200 liters of spraying mixture per hectare, but may be higher or lower (eg, low or ultra-low volume) depending upon the need or application technique.

The compound or compositions according to the invention are conveniently applied to vegetation and in particular to roots or leaves having pests to be eliminated. Another method of application of the compounds or compositions according to the invention is by chemigation, that is to say, the addition of a formulation containing the active ingredient to irrigation water. This irrigation may be sprinkler irrigation for foliar pesticides or it can be ground irrigation or underground irrigation for soil or for systemic pesticides.

The concentrated suspensions, which can be applied by spraying, are prepared so as to produce a stable fluid product which does not settle (fine grinding) and usually contain from about 10 to about 75% by weight of active ingredient, from about 0.5 to about 30% of surface-active agents, from about 0.1 to about 10% of thixotropic agents, from about 0 to about 20% of suitable additives, such as anti-foaming agents, corrosion inhibitors, stabilizers, penetrating agents, adhesives and, as the carrier, water or an organic liquid in which the active ingredient is poorly soluble or insoluble. Some organic solids or inorganic salts may be dissolved in the carrier to help prevent settling or as antifreezes for water.

The wettable powers (or powder for spraying) are usually prepared so that they contain from about 10 to about 80% by weight of active ingredient, from about 20 to about 90% of a solid carrier, from about 0 to about 5% of a wetting agent, from about 3 to about 10% of a dispersing agent and, when necessary, from about 0 to about 20% of one or more stabilizers and/or other additives, such as penetrating agents, adhesives, anti-caking agents, colorants, or the like. To obtain these wettable powders, the active ingredient is thoroughly mixed in a suitable blender with additional substances which may be impregnated on the porous filler and is ground using a mill or other suitable grinder. This produces wettable powders, the wettabiliy and the suspendability of which are advantageous. They may be suspended in water to give any desired concentration and this suspension can be employed very advantageously in particular for application to plant foliage.

The "water dispersible granules (WG)" (granules which are readily dispersible in water) have compositions which are substantially close to that of the wettable powders. They may be prepared by granulation of formulations described for the wettable powders, either by a wet route (contacting finely divided active ingredient with the inert filler and a little
water, e.g. 1 to 20% by weight, or with an aqueous solution of a dispersing agent or binder, followed by drying and screening), or by a dry route (compacting followed by grinding and screening).
The rates and concentrations of the formulated compositions may vary according to the method of application or the nature of the compositions or use thereof. Generally speaking, the compositions for application to control arthropod or plant nematode pests usually contain from about 0.00001 % to about 95%, more particularly from about 0.0005% to about 50% by weight of one or more compounds of the invention, or of total active ingredients (that is to say the compounds of the invention, together with other substances toxic to arthropods or plant nematodes, synergists, trace elements or stabilizers). The actual compositions employed and their rate of application will be selected to achieve the desired effect(s) by the farmer, livestock producer, medical or veterinary practitioner, pest control operator or other person skilled in the art.
Solid or liquid compositions for application topically to animals, timber, stored products or household goods usually contain from about 0.00005% to about 90%, more particularly from about 0.001 % to about 10%, by weight of one or more compounds of the invention. For administration to animals orally or parenterally, including percutaneously solid or liquid compositions, these normally contain from about 0.1 % to about 90% by weight of one or more compounds of the invention. Medicated feedstuffs normally contain from about 0.001 % to about 3% by weight of one or more compounds of the invention. Concentrates or supplements for mixing with feedstuffs normally contain from about 5% to about 90%, preferably from about 5% to about 50%, by weight of one or more compounds of the invention. Mineral salt licks normally contain from about 0.1% to about 10% by weight of one or more compounds of formula (I) or pesticidally acceptable salts thereof.
Dusts or liquid compositions for application to livestock, goods, premises or outdoor areas may contain from about 0.0001% to about 15%, more especially from about 0.005% to about 2.0%, by weight, of one or more compounds of the invention. Suitable concentrations in treated waters are between about 0.0001 ppm and about 20 ppm, more particularly about 0.001 ppm to about 5.0 ppm. of one or more compounds of the invention, and may be used therapeutically in fish farming with appropriate exposure times. Edible baits may contain from about 0.01% to about 5%, preferably from about 0.01% to about 1.0%, by weight, of one or more compounds of the invention.
When administered to vertebrates parenterally, orally or by percutaneous or other means, the dosage of compounds of the invention, will depend upon the species, age, or health of the vertebrate and upon the nature and degree of its actual or potential infestation by arthropod or helminth pests. A single dose of about 0.1 to about 100 mg, preferably about 2.0 to about 20.0 mg, per kg body weight of the animal or doses of about 0.01 to about 20.0 mg, preferably about 0.1 to about 5.0 mg, per kg body weight of the animal per day, for sustained medication, are generally suitable by oral or parenteral administration. By use of sustained release formulations or devices, the daily doses required over a period of months may be combined and administered to animals on a single occasion.
The following composition EXAMPLES 2A - 2M illustrate compositions for use against arthropods, especially mites or insects, or plant nematodes, which comprise, as active ingredient, compounds of the invention, such as those described in preparative examples. The compositions described in EXAMPLES 2A - 2M can each be diluted to give a sprayable composition at concentrations suitable for use in the field. Generic chemical descriptions of the ingredients (for which all of the following percentages are in weight percent), used in the composition EXAMPLES 2A - 2M exemplified below, are as follows:

<table>
<thead>
<tr>
<th>Trade Name</th>
<th>Chemical Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylan BCP</td>
<td>Nonylphenol ethylene oxide condensate</td>
</tr>
<tr>
<td>Soprophen BSU</td>
<td>Tristyrylphenol ethylene oxide condensate</td>
</tr>
<tr>
<td>Arylan CA</td>
<td>A 70% w/v solution of calcium dodecylbenzenesulfonate</td>
</tr>
<tr>
<td>Solvesso 150</td>
<td>Light $C_{10}$ aromatic solvent</td>
</tr>
<tr>
<td>Arylan S</td>
<td>Sodium dodecylbenzenesulfonate</td>
</tr>
<tr>
<td>Darvan NO2</td>
<td>Sodium lignosulphonate</td>
</tr>
<tr>
<td>Celite PF</td>
<td>Synthetic magnesium silicate carrier</td>
</tr>
<tr>
<td>Sopropon T36</td>
<td>Sodium salts of polycarboxylic acids</td>
</tr>
<tr>
<td>Rhodigel 23</td>
<td>Polysaccharide xanthan gum</td>
</tr>
<tr>
<td>Bentone 38</td>
<td>Organic derivative of magnesium montmorillonite</td>
</tr>
<tr>
<td>Aerosil</td>
<td>Microfine silicon dioxide</td>
</tr>
</tbody>
</table>

EXAMPLE 2A

[0075] A water soluble concentrate is prepared with the composition as follows:
To a solution of Ethylan BCP dissolved in a portion of N-methylpyrrolidone is added the active ingredient with heating and stirring until dissolved. The resulting solution is made up to volume with the remainder of the solvent.

EXAMPLE 2B

An emulsifiable concentrate (EC) is prepared with the composition as follows:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active ingredient</td>
<td>25% (max)</td>
</tr>
<tr>
<td>Soprophor BSU</td>
<td>10%</td>
</tr>
<tr>
<td>Arylan CA</td>
<td>5%</td>
</tr>
<tr>
<td>N-methylpyrrolidone</td>
<td>50%</td>
</tr>
<tr>
<td>Solvesso 150</td>
<td>10%</td>
</tr>
</tbody>
</table>

The first three components are dissolved in N-methylpyrrolidone and to this is then added the Solvesso 150 to give the final volume.

EXAMPLE 2C

A wettable powder (WP) is prepared with the composition as follows:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>40%</td>
</tr>
<tr>
<td>Arylan S</td>
<td>2%</td>
</tr>
<tr>
<td>Darvan NO2</td>
<td>5%</td>
</tr>
<tr>
<td>Celite PF</td>
<td>53%</td>
</tr>
</tbody>
</table>

The ingredients are mixed and ground in a hammer-mill to a powder with a particle size of less than 50 microns.

EXAMPLE 2D

An aqueous-flowable formulation is prepared with the composition as follows:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active ingredient</td>
<td>40.00%</td>
</tr>
<tr>
<td>Ethylan BCP</td>
<td>1.00%</td>
</tr>
<tr>
<td>Sopropon T360.</td>
<td>0.20%</td>
</tr>
<tr>
<td>Ethylene glycol</td>
<td>5.00%</td>
</tr>
<tr>
<td>Rhodigel 230.</td>
<td>0.15%</td>
</tr>
<tr>
<td>Water</td>
<td>53.65%</td>
</tr>
</tbody>
</table>

The ingredients are intimately mixed and are ground in a bead mill until a mean particle size of less than 3 microns is obtained.

EXAMPLE 2E

An emulsifiable suspension concentrate is prepared with the composition as follows:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active ingredient</td>
<td>30.0%</td>
</tr>
<tr>
<td>Ethylan BCP</td>
<td>10.0%</td>
</tr>
<tr>
<td>Bentone 38</td>
<td>0.5%</td>
</tr>
<tr>
<td>Solvesso 150</td>
<td>59.5%</td>
</tr>
</tbody>
</table>
The ingredients are intimately mixed and ground in a beadmill until a mean particle size of less than 3 microns is obtained.

**EXAMPLE 2F**

A water dispersible granule is prepared with the composition as follows:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active ingredient</td>
<td>30%</td>
</tr>
<tr>
<td>Darvan No 2</td>
<td>15%</td>
</tr>
<tr>
<td>Arylan S</td>
<td>8%</td>
</tr>
<tr>
<td>Celite PF</td>
<td>47%</td>
</tr>
</tbody>
</table>

The ingredients are mixed, micronized in a fluid-energy mill and then granulated in a rotating pelletizer by spraying with water (up to 10%). The resulting granules are dried in a fluid-bed drier to remove excess water.

**EXAMPLE 2G**

A dusting powder is prepared with the composition as follows:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active ingredient</td>
<td>1 to 10%</td>
</tr>
<tr>
<td>Talc powder-superfine</td>
<td>99 to 90%</td>
</tr>
</tbody>
</table>

The ingredients are intimately mixed and further ground as necessary to achieve a fine powder. This powder may be applied to a locus of arthropod infestation, for example refuse dumps, stored products or household goods or animals infested by, or at risk of infestation by, arthropods to control the arthropods by oral ingestion. Suitable means for distributing the dusting powder to the locus of arthropod infestation include mechanical blowers, handshakers or livestock self treatment devices.

**EXAMPLE 2H**

An edible bait is prepared with the composition as follows:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active ingredient</td>
<td>0.1 to 1.0%</td>
</tr>
<tr>
<td>Wheat flour</td>
<td>80%</td>
</tr>
<tr>
<td>Molasses</td>
<td>19.9 to 19%</td>
</tr>
</tbody>
</table>

The ingredients are intimately mixed and formed as required into a bait form. This edible bait may be distributed at a locus, for example domestic or industrial premises, e.g. kitchens, hospitals or stores, or outdoor areas, infested by arthropods, for example ants, locusts, cockroaches or flies, to control the arthropods by oral ingestion.

**EXAMPLE 2I**

A solution formulation is prepared with a composition as follows:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active ingredient</td>
<td>15%</td>
</tr>
<tr>
<td>Dimethyl sulfoxide</td>
<td>85%</td>
</tr>
</tbody>
</table>

The active ingredient is dissolved in dimethyl sulfoxide with mixing and or heating as required. This solution may be applied percutaneously as a pour-on application to domestic animals infested by arthropods or, after sterilization by filtration through a polytetrafluoroethylene membrane (0.22 micrometer pore size), by parenteral injection, at a rate of application of from 1.2 to 12 ml of solution per 100 kg of animal body weight.

**EXAMPLE 2J**

A wettable powder is prepared with the composition as follows:
The Ethylan BCP is absorbed onto the Aerosil which is then mixed with the other ingredients and ground in a hammer-mill to give a wettable powder, which may be diluted with water to a concentration of from 0.001 % to 2% by weight of the active compound and applied to a locus of infestation by arthropods, for example, dipterous larvae or plant nematodes, by spraying, or to domestic animals infested by, or at risk of infection by arthropods, by spraying or dipping, or by oral administration in drinking water, to control the arthropods.

EXAMPLE 2K

A slow release bolus composition is formed from granules containing the following components in varying percentages(similar to those described for the previous compositions) depending upon need:

<table>
<thead>
<tr>
<th>Active ingredient</th>
<th>Density agent</th>
<th>Slow-release agent</th>
<th>Binder</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>5%</td>
<td>5%</td>
<td>40%</td>
</tr>
</tbody>
</table>

The intimately mixed ingredients are formed into granules which are compressed into a bolus with a specific gravity of 2 or more. This can be administered orally to ruminant domestic animals for retention within the reticulo-rumen to give a continual slow release of active compound over an extended period of time to control infestation of the ruminant domestic animals by arthropods.

EXAMPLE 2L

A slow release composition in the form of granules, pellets, brickettes or the like can be prepared with compositions as follows:

<table>
<thead>
<tr>
<th>Active ingredient</th>
<th>Polyyvinyl chloride</th>
<th>Dioctyl phthalate (plasticizer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 to 25%</td>
<td>75 to 99.5%</td>
<td></td>
</tr>
</tbody>
</table>

The components are blended and then formed into suitable shapes by melt-extrusion or molding. These composition are useful, for example, for addition to standing water or for fabrication into collars or eartags for attachment to domestic animals to control pests by slow release.

EXAMPLE 2M

A water dispersible granule is prepared with the composition as follows:

<table>
<thead>
<tr>
<th>Active ingredient</th>
<th>Polyvinylpyrrolidone</th>
<th>Attapulgite clay</th>
<th>Sodium lauryl sulfate</th>
<th>Glycerine</th>
</tr>
</thead>
<tbody>
<tr>
<td>85%(max)</td>
<td>5%</td>
<td>6%</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>

The ingredients are mixed as a 45% slurry with water and wet milled to a particle size of 4 microns, then spray-dried to remove water.
METHODS OF PESTICIDAL USE

[0101] The following representative test procedures, using compounds of the invention, were conducted to determine the parasiticidal and pesticidal activity of compounds of the invention.

METHOD A: Screening method to test systemicity of compounds against Ctenocephalides felis (Cat flea)

[0102] A test container was filled with 10 adults of Ctenocephalides felis. A glass cylinder was closed on one end with parafilm and placed on top of the test container. The test compound solution was then pipetted into bovine blood and added to the glass cylinder. The treated Ctenocephalides felis were held in this artificial dog test (blood 37 °C, 40-60 % relative humidity; Ctenocephalides felis 20-22°C, 40-60 % relative humidity) and assessment performed at 24 and 48 hours after application. Representative compounds of the invention gave a good level of control of Ctenocephalides felis at a test concentration of 5ppm or less.

METHOD B: Diabrotica undecimpunctata (southern corn rootworm) screen

[0103] Two days before application, seeds of maize were soaked in water under warm conditions to elicit fast germination. One day before application, eggs of Diabrotica undecimpunctata were transferred to one half of a Japanese filter paper placed in a plastic petri dish. Afterwards, a sprouted maize seed was placed on a moistened pad beside the filter paper. Three drops of 200 microlitres of test compound solution were carefully pipetted onto the egg. The remainder of the solution was placed on the maize and then the Petri dish was closed. The treated eggs in the Petri dishes were held in a climate chamber for 6 days. The compound efficacy (percentage of dead eggs and/or larvae in comparison to untreated control) was assessed 6 days after application using a binocular microscope. Representative compounds of the invention gave a good level of control of Diabrotica undecimpunctata at a test concentration of 10ppm.

METHOD C: Nephotettix Cinciceps (rice leafhopper) screen

[0104] The leaves of 12 rice plants having a stem length of 8 cm were dipped for 5 seconds into an aqueous solution of the formulated test compound. After the solution had run off, the rice plants treated in this manner were placed in a Petri dish and populated with about 20 larvae (L3 stage) of Nephotettix cincticeps. The Petri dish was closed and then stored in a climate chamber (16 hours of light/day, 25°C, 40-60% relative humidity). After 6 days storage, the percentage mortality of leafhopper larvae was determined. Representative compounds of the invention gave a good level of control of Nephotettix cinciceps larvae at a test concentration of 100 ppm.

METHOD D: Screening method to test contact activity against Ctenocephalides felis (Cat flea)

[0105] Solutions of the test compounds were dropped onto filter paper, dried and the filter paper placed into test tubes and infested with 10 adults of Ctenocephalides felis. The treated Ctenocephalides felis were held in a climate chamber (26°C, 80% RH) and the percentage efficacy assessed 24 hours and 48 hours after application in comparison with the untreated control. Representative compounds of the invention gave a good level of contact control of Ctenocephalides felis at a test concentration of 1000 ppm.

[0106] METHOD E: Screening method to test contact activity against Rhipicephalus sanguineus (Brown dog tick)

Solutions of the test compounds were dropped onto filter paper, dried and the filter paper placed into test tubes and infested with 20-30 larvae (L1) of Rhipicephalus sanguineus and the tubes closed with a clip. The treated Rhipicephalus sanguineus were held in a climate chamber (25°C, 90% RH) and the percentage efficacy assessed 24 hours after application in comparison with the untreated control. Representative compounds of the invention gave a good level of contact control of Rhipicephalus sanguineus at a test concentration of 100 ppm.

Claims

1. A method of controlling parasites in or on an animal comprising administering to the animal a parasiticidally effective amount of a 5-substituted-alkylaminopyrazole derivative of formula (I):
wherein:

R₁ is CN;
W is C-halogen or C-CH₃;
R² is hydrogen, halogen or CH₃;
R³ is (C₁-C₃)-haloalkyl, (C₁-C₃)-haloalkoxy or S(O)ₓR₈(C₁-C₃)-haloalkyl;
R⁴ is hydrogen, (C₂-C₆)-alkenyl, (C₂-C₆)-haloalkenyl, (C₂-C₆)-alkynyl, -(C₂-C₆)-haloalkynyl, (C₃-C₇)-alkenyl, (C₃-C₇)-haloalkenyl, -(C₃-C₆)-alkynyl, -(C₃-C₆)-haloalkynyl, CONR₁₀R₁₁, -CH₂R₇, -CH₂R₉, OR₇, OR₈ or OR₉; or (C₁-C₆)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkoxy, (C₁-C₆)-haloalkoxy, (C₃-C₇)-cycloalkyl, CO-(CH₂)ₙR₇, -CO₂-(CH₂)ₙR₉, CO-(CH₂)ₙR₁₁, -CO₂-(C₁-C₆)-alkyl-(C₁-C₆)-alkoxy, -CO₂-(CH₂)ₙR₇, -CO₂R₈, -CO₂-(C₃-C₆)-alklyl, -CO₂-(C₃-C₆)-alklyl, CONR₁₀R₁₁, -CH₂R₇, -CH₂R₉, OR₇, OR₈ or OR₉; or (C₁-C₆)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkoxy, (C₁-C₆)-haloalkoxy, (C₃-C₇)-cycloalkyl, CO-(CH₂)ₙR₇, -CO₂-(CH₂)ₙR₉, -CO₂-(C₁-C₆)-alkyl-(C₁-C₆)-alkoxy, -CO₂-(CH₂)ₙR₇, -CO₂R₈, -CO₂-(C₃-C₆)-alklyl, -CO₂-(C₃-C₆)-alklyl, CONR₁₀R₁₁, -CH₂R₇, -CH₂R₉, OR₇, OR₈ or OR₉; or when A is (C₁-C₆)-alkyl unsubstituted or substituted by one or more halogen radicals, one or more of the carbon atoms of R₅ may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;

R⁵ is H, (C₃-C₆)-alkenyl, (C₃-C₆)-haloalkenyl, (C₃-C₆)-alkyl, (C₃-C₆)-haloalkyl, (C₂-C₆)-alkenyl, (C₂-C₆)-haloalkenyl, (C₂-C₆)-alkyl, (C₂-C₆)-haloalkyl, -(CH₂)ₙR₇, -(CH₂)ₙR₉ or NR₁⁰R₁¹; or is (C₁-C₆)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkoxy, (C₁-C₆)-haloalkoxy, (C₁-C₆)-alkenyl, (C₁-C₆)-haloalkenyl, (C₂-C₆)-alkenyl, (C₂-C₆)-haloalkenyl, -(C₂-C₆)-alkyl, -(C₂-C₆)-haloalkyl, (C₃-C₆)-alkenyl, (C₃-C₆)-haloalkenyl, (C₃-C₆)-alkyl, (C₃-C₆)-haloalkyl, -(CH₂)ₙR₇, -(CH₂)ₙR₉ or NR₁⁰R₁¹; or is (C₁-C₆)-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkoxy, (C₁-C₆)-haloalkoxy, (C₁-C₆)-alkenyl, (C₁-C₆)-haloalkenyl, (C₂-C₆)-alkenyl, (C₂-C₆)-haloalkenyl, -(C₂-C₆)-alkyl, -(C₂-C₆)-haloalkyl, (C₃-C₆)-alkenyl, (C₃-C₆)-haloalkenyl, (C₃-C₆)-alkyl, (C₃-C₆)-haloalkyl, -(CH₂)ₙR₇, -(CH₂)ₙR₉ or NR₁⁰R₁¹; or when A is (C₁-C₆)-alkenyl or (C₁-C₆)-haloalkenyl and R⁵ is (C₁-C₆)-alkyl unsubstituted or substituted by one or more halogen radicals, one or more of the carbon atoms of R₅ may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;

R⁶ is (C₁-C₆)-alkyl, (C₁-C₆)-haloalkyl, (C₂-C₆)-alkenyl, (C₂-C₆)-haloalkenyl, (C₂-C₆)-alkyl, (C₂-C₆)-haloalkyl or (C₂-C₆)-haloalkyl;
R⁷ is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkyl, (C₁-C₆)-haloalkyl, (C₁-C₆)-alkenyl, (C₁-C₆)-haloalkenyl, (C₁-C₆)-alkynyl, (C₁-C₆)-haloalkynyl, (C₂-C₆)-alkenyl, (C₂-C₆)-haloalkenyl, (C₂-C₆)-alkynyl, (C₂-C₆)-haloalkynyl, (C₃-C₆)-alkenyl, (C₃-C₆)-haloalkenyl, (C₃-C₆)-alkynyl, (C₃-C₆)-haloalkynyl, (C₃-C₆)-cycloalkyl, (C₃-C₆)-cycloalkyl, (C₁-C₆)-alkylideneimino:
R₈ is (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl;
R⁹ is heterocyclyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkyl, (C₁-C₆)-haloalkyl, (C₁-C₆)-alkenyl, (C₁-C₆)-haloalkenyl, (C₁-C₆)-alkynyl, (C₁-C₆)-haloalkynyl, (C₂-C₆)-alkenyl, (C₂-C₆)-haloalkenyl, (C₂-C₆)-alkynyl, (C₂-C₆)-haloalkynyl, (C₃-C₆)-alkenyl, (C₃-C₆)-haloalkenyl, (C₃-C₆)-alkynyl, (C₃-C₆)-haloalkynyl, (C₃-C₆)-cycloalkyl, (C₃-C₆)-cycloalkyl, -(C₁-C₆)-alkyl-(C₃-C₆)-cycloalkyl, -(CH₂)ₙR₁³ or -(CH₂)ₙR₁³; or R₁⁰ and R₁² are each independently H, (C₁-C₆)-alkyl, (C₁-C₆)-haloalkyl, (C₃-C₆)-alkenyl, (C₃-C₆)-haloalkenyl, (C₃-C₆)-alkynyl, (C₃-C₆)-haloalkynyl, -(C₁-C₆)-alkyl-(C₃-C₆)-cycloalkyl, -(CH₂)ₙR₁³ or -(CH₂)ₙR₁³; or R₁⁰ and R₁¹ and/or R₁⁰ and R₁² each together with the respective attached N atom form a five- or six-membered saturated ring which optionally contains an additional hetero atom in the ring which is selected from O, S and N, the ring being unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkyl and (C₁-C₆)-haloalkyl;
R\textsuperscript{11} and R\textsuperscript{14} are each independently H, (C\textsubscript{1}-C\textsubscript{6})-alkyl, (C\textsubscript{1}-C\textsubscript{6})-haloalkyl, (C\textsubscript{3}-C\textsubscript{6})-cycloalkyl or -(C\textsubscript{1}-C\textsubscript{6})-alkyl-(C\textsubscript{3}-C\textsubscript{6})-cycloalkyl;

R\textsuperscript{13} is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C\textsubscript{1}-C\textsubscript{6})-alkyl, (C\textsubscript{1}-C\textsubscript{6})-haloalkyl, (C\textsubscript{1}-C\textsubscript{6})-alkoxy, (C\textsubscript{1}-C\textsubscript{6})-haloalkoxy, CN, NO\textsubscript{2}, S(O)\textsubscript{p}R\textsubscript{8} and NR\textsubscript{11}R\textsubscript{14};

R\textsuperscript{15} is R\textsuperscript{11} or -(CH\textsubscript{2})\textsubscript{q}R\textsubscript{13};

n and p are each independently zero, one or two;

q is zero or one; and

each heterocyclyl in the above-mentioned radicals is independently a heterocyclic radical having 3 to 7 ring atoms and 1, 2 or 3 hetero atoms in the ring selected from the group consisting of N, O and S;
or a pesticidally acceptable salt thereof.

2. The method as claimed in claim 1, wherein the symbols and indices in formula (I) have the following meanings:

R\textsuperscript{1} is CN;

W is C-halogen;

R\textsuperscript{2} is chlorine;

R\textsuperscript{3} is CF\textsubscript{3} or OCF\textsubscript{3};

R\textsuperscript{4} is hydrogen, CO\textsubscript{2}-(C\textsubscript{1}-C\textsubscript{3})-alkyl, or (C\textsubscript{1}-C\textsubscript{6})-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen and (C\textsubscript{1}-C\textsubscript{6})-alkoxy;

A is (C\textsubscript{1}-C\textsubscript{4})-alkylene;

R\textsuperscript{5} is (C\textsubscript{3}-C\textsubscript{6})-cycloalkyl, -(CH\textsubscript{2})\textsubscript{q}R\textsubscript{7}, (C\textsubscript{1}-C\textsubscript{6})-alkyl or (C\textsubscript{1}-C\textsubscript{6})-haloalkyl; or when R\textsuperscript{5} is (C\textsubscript{1}-C\textsubscript{6})-alkyl, one or more of the carbon atoms of the R\textsuperscript{5} group may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;

R\textsuperscript{6} is CF\textsubscript{3}, CF\textsubscript{2}Cl, CFCl\textsubscript{2}, CBrF\textsubscript{2} or CHF\textsubscript{2};

R\textsuperscript{7} is phenyl;

n is zero, one or two; and

q is zero or one.

3. The method as claimed in claim 1, where the symbols and indices in formula (I) have the following meanings:

R\textsuperscript{1} is CN;

W is C-halogen;

R\textsuperscript{2} is hydrogen or halogen;

R\textsuperscript{3} is CF\textsubscript{3} or OCF\textsubscript{3};

R\textsuperscript{4} is hydrogen, (C\textsubscript{2}-C\textsubscript{6})-alkenyl, (C\textsubscript{2}-C\textsubscript{6})-haloalkenyl, (C\textsubscript{2}-C\textsubscript{6})-alkynyl, (C\textsubscript{2}-C\textsubscript{6})-haloalkynyl, (C\textsubscript{3}-C\textsubscript{6})-cycloalkyl, CO\textsubscript{2}-(C\textsubscript{1}-C\textsubscript{6})-alkyl or -CH\textsubscript{2}R\textsubscript{7}; or (C\textsubscript{1}-C\textsubscript{6})-alkyl unsubstituted or substituted from the group consisting of halogen, (C\textsubscript{1}-C\textsubscript{6})-alkoxy, (C\textsubscript{3}-C\textsubscript{6})-cycloalkyl, S(O)\textsubscript{p}R\textsubscript{8} and CO\textsubscript{2}-(C\textsubscript{1}-C\textsubscript{6})-alkyl;

A is (C\textsubscript{1}-C\textsubscript{9})-alkylene or (C\textsubscript{1}-C\textsubscript{9})-haloalkylene in which 2, 3 or 4 adjacent carbon atoms optionally form part of a (C\textsubscript{3}-C\textsubscript{6})-cycloalkyl ring which is unsubstituted or substituted by one or more radicals selected from the group consisting of (C\textsubscript{1}-C\textsubscript{6})-alkyl and halogen;

R\textsuperscript{5} is (C\textsubscript{3}-C\textsubscript{6})-cycloalkyl or -(CH\textsubscript{2})\textsubscript{q}R\textsubscript{7}; or is (C\textsubscript{1}-C\textsubscript{6})-alkyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C\textsubscript{1}-C\textsubscript{6})-alkoxy, (C\textsubscript{3}-C\textsubscript{6})-cycloalkyl, S(O)\textsubscript{p}R\textsubscript{8} and CO\textsubscript{2}-(C\textsubscript{1}-C\textsubscript{6})-alkyl; or when A is (C\textsubscript{1}-C\textsubscript{6})-alkylene or (C\textsubscript{1}-C\textsubscript{6})-haloalkylene and R\textsuperscript{5} is (C\textsubscript{1}-C\textsubscript{6})-alkyl unsubstituted or substituted by one or more halogen radicals, one or more of the carbon atoms of R\textsuperscript{5} may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring;

R\textsuperscript{8} and R\textsuperscript{6} are each independently (C\textsubscript{1}-C\textsubscript{6})-alkyl or (C\textsubscript{1}-C\textsubscript{6})-haloalkyl;

R\textsuperscript{7} is phenyl or substituted by one or more radicals selected from the group consisting of halogen, (C\textsubscript{1}-C\textsubscript{6})-alkyl, (C\textsubscript{1}-C\textsubscript{6})-haloalkyl, (C\textsubscript{1}-C\textsubscript{6})-alkoxy, CN, NO\textsubscript{2}, S(O)\textsubscript{p}R\textsubscript{8} and NR\textsubscript{10}R\textsubscript{11};

n and p are each independently zero, one or two; and

q is zero or one.

4. 5-Substituted-alkylaminopyrazole derivatives of formula (I) as in claim 1, or pesticidally acceptable salts thereof, wherein:

R\textsuperscript{1} is CN;

W is C-halogen or C-CH\textsubscript{3};
R² is hydrogen, halogen or CH₃;
R³ is (C₁₋C₃)-haloalkyl, (C₁₋C₂)-haloalkoxy or SO₂-(C₁₋C₃)-haloalkyl;
R⁴ is (C₂₋C₆)-alkenyl, (C₂₋C₆)-haloalkenyl, (C₂₋C₆)-alkynyl, (C₂₋C₆)-haloalkynyl, (C₃₋C₇)-cycloalkyl,
CO-(CH₂)ₙ-R², CO-(CH₃)₂-R², CO-(CH₂)ₙ-R⁹, CO-(C₁₋C₄)-alkyl-(C₁₋C₆)-alkoxy, CO₂-(CH₂)ₙ-R⁹, CO₂-(CH₂)ₙ-R⁹,
-CO₂-(C₃₋C₇)-cycloalkyl, -CO₂-(C₃₋C₆)-alkyl-(C₃₋C₇)-cycloalkyl, -CO₂-(C₃₋C₆)-alkynyl, -CO₂-(C₃₋C₆)-alkynyl,
CONR₁₀R₁₁, -CH₂R₇, -CH₂R₉, OR₇, OR₈ or OR₉; or (C₁₋C₆)-alkyl which is substituted by one or more radicals
selected from the group consisting of haloalkoxy, (C₁₋C₆)-haloalkoxy, (C₃₋C₇)-cycloalkyl, SO₂-(C₁₋C₆)R⁸,
CO₂-(C₁₋C₆)-alkyl, -O(C=O)-(C₁₋C₆)-alkyl or pesticidally acceptable salts thereof,
wherein:
R₁ is CN;
W is C-halogen or C-CH₃;
R⁵ is hydrogen, halogen or CH₃;
R₆ is (C₁₋C₆)-haloalkyl, (C₁₋C₆)-haloalkoxy or SO₂-(C₁₋C₆)-haloalkyl;
R⁷ is hydrogen, (C₁₋C₆)-alkyl or COR⁸;
A is (C₁₋C₁₂)-alkyl or (C₁₋C₁₂)-haloalkyl in which 2, 3 or 4 adjacent carbon atoms optionally form part
of a (C₃₋C₈)-cycloalkyl ring which is unsubstituted or substituted by one or more radicals selected from the
group consisting of (C₁₋C₆)-haloalkyl and haloalkoxy; or is (C₁₋C₁₂)-alkyl or (C₁₋C₁₂)-haloalkyl in which last
two mentioned groups a methylene moiety is replaced by a group selected from -C(=O)-, -C(=NH)-, -O-, -S-
and -NR₁₅, with the proviso that the replacing group is not bonded to the adjacent O or N atom; or is (C₂₋C₁₂)-alkyl
or (C₂₋C₁₂)-haloalkyl;
of a (C₃-C₆)-cycloalkyl ring which is unsubstituted or substituted by one or more radicals selected from the group consisting of (C₁-C₆)-alkyl and halogen; or is (C₁-C₁₂)-alkylidene in which last two mentioned groups a methylene moiety is replaced by a group selected from -C(=O)-, -C(=NH)-, -O-, -S- and -NR₁₅-, with the proviso that the replacing group is not bonded to the adjacent O or N atom; or is (C₂-C₁₂)-alkenyl or (C₂-C₁₂)-haloalkenyl; R⁵ is H, (C₃-C₆)-alkenyl, (C₃-C₆)-haloalkenyl, (C₃-C₆)-alkynyl, (C₃-C₆)-haloalkynyl, (C₃-C₇)-cycloalkyl, -(CH₂)ₙR⁷, -(CH₂)ₙR⁹ or NR₁₀R₁₁ or (C₃-C₇)-cycloalkynol, (C₃-C₇)-cycloalkyl, S(O)₂R₈, CN, NO₂, OH, COR₁₀, NR₁₀COR₁₂, NR₁₀SO₃R₈, CONR₁₀R₁₁, NR₁₀R₁₁, S(O)₂R₈, S(O)₂R₈, OR₈, OR₈ and CO₂R₁₀; or when A is (C₁-C₁₂)-alkylene or (C₂-C₁₂)-haloalkylene and R⁶ is R⁵ alkyl unsubstituted or substituted by one or more halogen radicals, one or more of the carbon atoms of R⁶ may, together with O and one or more of the carbon atoms of A, form a 5- or 6-membered ring; R⁶ is (C₁-C₆)-haloalkyl; R⁷ is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkyl, (C₁-C₆)-haloalkyl, (C₁-C₆)-alkoxy, (C₁-C₆)-haloalkoxy, CN, NO₂; S(O)₃R₈, OH and (C₁-C₆)-alkylideneimino; R₈ is (C₁-C₆)-alkyl or (C₁-C₆)-haloalkyl; R₉ is heterocyclyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkyl, (C₁-C₆)-haloalkyl, (C₁-C₆)-alkoxy, (C₁-C₆)-haloalkoxy, NO₂, CN, CO₂(C₁-C₆)-alkyl, S(O)₉R₉, OH and oxo; R¹₀ and R₁₂ are each independently H, (C₁-C₆)-alkyl, (C₁-C₆)-haloalkyl, (C₁-C₆)-alkenyl, (C₁-C₆)-haloalkenyl, (C₁-C₆)-alkynyl, (C₁-C₆)-haloalkynyl, (C₁-C₆)-cycloalkyl, -(C₁-C₆)-alkyl-(C₁-C₆)-cycloalkyl, -(CH₂)ₙR₁₃ or -(CH₂)ₙR₉; R₁₀ and R₁₁ and/or R₁₀ and R₁₂ each together with the respective attached N atom form a five- or six-membered saturated ring which optionally contains an additional hetero atom in the ring which is selected from O, S and N, the ring being unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkyl and (C₁-C₆)-haloalkyl; R¹₁ and R¹₄ are each independently H, (C₁-C₆)-alkyl, (C₁-C₆)-haloalkyl, (C₃-C₆)-cycloalkyl or -(C₁-C₆)-alkyl-(C₃-C₆)-cycloalkyl; R¹₃ is phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C₁-C₆)-alkyl, (C₁-C₆)-haloalkyl, (C₁-C₆)-alkoxy, (C₁-C₆)-haloalkoxy, NO₂, S(O)₉R₈ and NR₁₀R₁₁; R¹₅ is R¹₁ or -(CH₂)ₙR₁₃; p and n are each independently zero, one or two; q is zero or one; and each heterocyclyl in the above-mentioned radicals is independently a heterocyclic radical having 3 to 7 ring atoms, and 1, 2 or 3 hetero atoms in the ring selected from the group consisting of N, O and S.

6. 5-Substituted-alkylaminopyrazole derivatives of formula (I), or pesticidally acceptable salts thereof, wherein:

R¹ is CN; R² is chlorine; R³ is CF₃ or OCF₃; W is C-Cl; R⁴ is hydrogen or (C₁-C₆)-alkyl; R⁵ is (C₁-C₆)-alkyl; R⁶ is CF₃; A is (C₂-C₆)-alkyl and n is zero, one or two.

7. A pesticidal composition comprising a compound of formula (I) or a pesticidally acceptable salt thereof as defined in any one of claims 1 to 6, in association with a pesticidally acceptable diluent or carrier and/or surface active agent.

8. A process for the preparation of a compound of formula (I) of claim 1 or a salt thereof wherein R¹, R², R₃, R⁶, W and n are as defined in claim 1, R⁶ is as defined in claim 1 with the exclusion of hydrogen, R⁴ is hydrogen and A is -CH₂-, comprising reacting a compound of formula (VIII):
wherein \( R_1, R_2, R_3, R_6, W \) and \( n \) are as defined in claim 1, with a mixture of formaldehyde and a compound of formula (IX):

\[
R^5\cdot O\cdot H \tag{IX}
\]

wherein \( R^5 \) is as defined in claim 1 with the exclusion of hydrogen.

**Patentansprüche**

1. Verfahren zur steuernden Bekämpfung von Parasiten in oder auf einem Lebewesen, wobei man dem Lebewesen eine parasitizid wirkungsvolle Menge eines 5-substituierten Alkylaminopyrazolderivats der Formel (I) verabreicht:

\[
R^6\text{S(O)}_n
\]

worin gilt:

- \( R^1 \) ist CN;
- \( W \) ist C-Halogen oder C-CH₃;
- \( R^2 \) ist Wasserstoff, Halogen oder CH₃;
- \( R^3 \) ist C₁-₃-Haloalkyl, C₁-₃-Haloalkoxy oder S(O)ₖ₋₁-Cₓ₋₁-Haloalkyl;
- \( R^4 \) ist Wasserstoff, C₂-₆-Alkenyl, C₂-₆-Haloalkenyl, C₃-₇-Cycloalkyl, CO-(CH₂)ₖ-R⁷, CO-(CH₂)ₖ-R⁸, CO-Cₓ₋₁-Alkyl-Cₓ₋₁-alkoxy, CO₂-(CH₂)ₙ-R⁷, CO₂-(CH₂)ₙ-R⁸, CO₂-(CH₂)ₙ-R⁹, CO₂-Cₓ₋₁-Cycloalkyl, CO₂-Cₓ₋₁-alkyl-Cₓ₋₁-cycloalkyl, CO₂-Cₓ₋₁-Alkenyl, CO₂-Cₓ₋₁-Alkyl, CONR₁⁰,R¹¹, -CH₂R⁷, -CH₂R⁸, OR₇, OR₈ oder OR₉ oder C₁-₆-Alkyl, das unsubstituiert oder mit einem oder mehreren Resten substituiert ist, ausgewählt aus der Gruppe, bestehend aus Halogen, C₁-₆-Alkoxy, C₁-₆-Haloalkoxy, C₃-₇-Cycloalkyl, S(O)ₖ-R⁸, CO₂-Cₓ₋₁-Alkyl, -O(C=O)-Cₓ₋₁-Alkyl, NR¹⁰,COR¹², NR¹⁰,R¹¹, CONR¹⁰,R¹¹, SO₂,NR¹⁰,R¹¹, OH, CN, NO₂, OR₇, NR¹⁰,SO₂,R⁸, COR⁸ und aus OR⁸;
- \( A \) ist C₁₋₁₂-Alkyl oder C₁₋₁₂-Haloalkyl, worin 2, 3 oder 4 benachbarte Kohlenstoffatome gegebenenfalls den Teil eines C₃₋₈-Cycloalkylrings bilden, der unsubstituiert oder mit einem oder mehreren Resten substituiert ist;
Verfahren gemäß Anspruch 1, worin die Symbole und Indizes in Formel (I) die folgenden Bedeutungen haben:

- R ist CN;
- W ist C-Cl;
- R² ist Chlor;
- R² ist CF₃ oder OCF₃;
- R⁴ ist Wasserstoff, CO₂-C₁₃-Alkyl oder C₁₆-Alkyl, das unsubsitiuierter oder mit einem oder mehreren Resten substituiert ist, ausgewählt aus der Gruppe, bestehend aus Halogenen und aus A-
- R² ist C₃-₆-Cycloalkyl, (CH₂)₃qR⁷, C₁₆-Alkyl oder C₆-Haloalkyl; oder wenn R⁵ C₆-Alkyl ist, kann eines oder mehrere der Kohlenstoffatome der Gruppe R⁵ zusammen mit O und einem oder mehreren der Kohlenstoffatome von A einen 5- oder 6-gliedrigen Ring bilden;
- R⁶ ist C₆-Haloalkyl, C₂-₆-Alkenyl, C₂-₆-Haloalkenyl, C₂-₆-Alkinyl oder C₂-₆-Haloalkinyl;
- R⁷ ist Phenyl, das unsubsitiuierter oder mit einem oder mehreren Resten substituiert ist, ausgewählt aus der Gruppe, bestehend aus Halogenen, C₁₆-Alkyl, C₁₆-Haloalkyl, C₁₆-Alkoxy, C₁₆-Haloalkoxy, CN, NO₂, S(O)₄R⁶, COR¹⁰, NR¹⁰COR¹², NR¹⁰SO₃R⁸, CONR¹⁰R¹¹, NR¹⁰R¹¹, S(O)₂R⁶, S(O)₄R⁸, OR⁷, OR⁹ und aus CO₂R¹⁰; oder wenn A C₁₆-Alkenyl oder C₁₆-Haloalkenyl und R⁸ unsubstituiertes oder mit einem oder mehreren Halogenresten substituiertes R₁₆-Alkyl ist, eines oder mehrere der Kohlenstoffatome von R⁵ zusammen mit O und einem oder mehreren der Kohlenstoffatome von A einen 5- oder 6-gliedrigen Ring bilden;
- R⁹ ist C₁₆-Alkyl oder C₆-Haloalkyl;
- R⁹ ist Heterocyclus, das unsubsitiuierter oder mit einem oder mehreren Resten substituiert ist, ausgewählt aus der Gruppe, bestehend aus Halogenen, C₁₆-Alkyl und aus A-
- R¹₀ und R¹² sind jeweils unabhängig H, C₁₆-Alkyl, C₁₆-Haloalkyl, C₁₆-Alkoxy, C₁₆-Haloalkoxy, NO₂, CN, CO₂-C₁₆-Alkyl, S(O)₄R⁶, OH und aus Oxo;
- R¹₀ und R¹² sind jeweils unabhängig H, C₁₆-Alkyl, C₁₆-Haloalkyl, C₁₆-Alkoxy, C₁₆-Haloalkoxy, NO₂, CN, CO₂-C₁₆-Alkyl, S(O)₄R⁶, OH und aus Halogenen, C₁₆-Alkyl und aus A-
- R¹₀ und R¹² sind jeweils unabhängig H, C₁₆-Alkyl, C₁₆-Haloalkyl, C₁₆-Alkoxy, C₁₆-Haloalkoxy, NO₂, CN, CO₂-C₁₆-Alkyl, S(O)₄R⁶, OH und aus NR¹⁰R¹¹;
- R¹⁵ ist R¹¹ oder -(CH₂)₉R¹³;
- n und p sind jeweils unabhängig 0, 1 oder 2;
- q ist 0 oder 1; und
- jedes Heterocyclus in den oben genannten Resten ist unabhängig ein heterocycluscher Rest mit 3 bis 7 Ringatomen und 1, 2 oder 3 Heteroatomen im Ring, ausgewählt aus N, O und S;
- oder ein pestizid geeignetes Salz davon.
4. 5-Substitutierte Alkylaminopyrazolderivate der Formel (I) gemäß Anspruch 1 oder pestizid geeignete Salze davon, worin gilt:

\[ R^1 \text{ ist } \text{CN}; \]
\[ W \text{ ist } \text{C-Halogen oder } \text{C-CH}_3; \]
\[ R^2 \text{ ist Wasserstoff, Halogen oder } \text{CH}_3; \]
\[ R^3 \text{ ist C₃-₆-Haloalkyl, C₃-₆-Haloalkoxy oder } \text{S(O)}_n \text{C}_{1-₃}-\text{Haloalkyl;} \]
\[ R^4 \text{ ist Wasserstoff, } \text{C}_{2-₅}-\text{Alkenyl, C}_{2-₅}-\text{Alkynyl, C}_{2-₅}-\text{Haloalkyl, C}_{3-₆}-\text{Cycloalkyl, } \text{CO}(\text{CH}_2)_q-\text{R}^7, \text{COR}^8, \text{CO}(\text{CH}_2)_q\text{R}^9, \text{CO}(\text{CH}_2)_q\text{R}^{10}, \text{CO}(\text{CH}_2)_q\text{R}^{11}, \text{CO}_{1-₃}\text{C}_{₂-₅}-\text{alkoxy, } \text{CO}_{1-₃}\text{C}_{₂-₅}-\text{alkyl, } \text{CO}_{1-₃}\text{C}_{₂-₅}-\text{alkoxy, } \text{CO}_{1-₃}\text{N}_{1-₅}-\text{alkyl, } \text{CO}_{1-₃}\text{N}_{1-₅}-\text{alkyl, } \text{CO}_{1-₃}\text{N}_{1-₅}-\text{alkyl, } \text{CO}_{1-₃}\text{N}_{1-₅}-\text{alkyl, } \text{CONR}^{10}\text{R}^1, \text{CONR}^{10}\text{R}^1, \text{S(O)}_n \text{R}^2, \text{OR}^3, \text{OR}^4, \text{OR}^5, \text{OR}^6, \text{OR}^7, \text{OR}^8, \text{OR}^9, \text{OR}^{10}, \text{OR}^{11}, \text{OR}^{12}, \text{OR}^{13}, \text{OR}^{14}, \text{OR}^{15}, \text{OR}^{16}, \text{OR}^{17}, \text{OR}^{18}, \text{OR}^{19}, \text{OR}^{20}, \text{OR}^{21}, \text{OR}^{22}, \text{OR}^{23}, \text{OR}^{24}, \text{OR}^{25}, \text{OR}^{26}, \text{OR}^{27}; \]
\[ A \text{ ist } \text{C}_{1-₅}-\text{Alkylen oder } \text{C}_{1-₅}-\text{Haloxylen, vorin 2, 3 oder 4 benachbarte Kohlenstoffatome gegebenenfalls den Teil eines C₃-₆-Cycloalkylgrunds bilden, der unsubstituiert oder mit einem oder mehreren Resten substituiert ist, ausgewählt aus der Gruppe, bestehend aus Alkohol, } \text{C}_{1-₆}-\text{Alkoxy, } \text{C}_{1-₆}-\text{Haloalkoxy, } \text{C}_{3-₆}-\text{Cycloalkyl, } \text{S(O)}_n \text{R}^8 \text{ und aus } \text{CO}_{2}\text{C}_{1-₅}-\text{alkyl;} \]
\[ n \text{ und } p \text{ sind jeweils unabhängig } 0, 1 \text{ oder } 2; \]
\[ q \text{ ist } 0 \text{ oder } 1. \]
CO₂-C₆-Alkyl, S(O)₆R₆, OH und aus Oxo;
R¹ und R¹² sind jeweils unabhängig H, C₆-Alkyl, C₆-Haloalkyl, C₆-Alkylen, C₆-Haloalkeny1, C₆-Alkiny1, C₆-Haloalkiny1, C₆-Cycloalkyl, C₆-Alkyl-C₆-cycloalkyl, -(CH₂)₉R¹³ oder -(CH₂)₉R⁸; oder
R¹⁰ und R¹¹ und/oder R¹⁰ und R¹² bilden jeweils zusammen mit dem jeweils verbundenen N-Atom einen 5- oder 6-gliedrigen gesättigten Ring, der gegebenenfalls ein zusätzliches Heteroatom im Ring, ausgewählt aus O, S und N, enthalten kann, wobei der Ring unsubstituiert oder mit einem oder mehreren Resten substituiert ist, ausgewählt aus der Gruppe, bestehend aus Halogen, C₆-Alkyl und aus C₆-Haloalkyl;
R¹¹ und R¹⁴ sind jeweils unabhängig H, C₆-Alkyl, C₆-Haloalkyl, C₆-Cycloalkyl oder -C₆-Alkyl-C₆-cycloalkyl;
R¹³ ist Phenyl, das unsubstituiert oder mit einem oder mehreren Resten substituiert ist, ausgewählt aus der Gruppe, bestehend aus Halogen, C₆-Alkyl und aus C₆-Haloalkyl;
5. 5-Substituierte Alkylaminopyrazolderivate der Formel (I) gemäß Anspruch 1 oder pestizid geeignete Salze davon, worin gilt:
R¹ ist CN,
W ist C-Halogen oder C-CH₃;
R² ist Wasserstoff, Halogen oder CH₃;
R³ ist C₆-Haloalkyl, C₆-Haloalkoxy oder S(O)₆R₆-C₆-Haloalkyl;
R⁴ ist Wasserstoff, C₆-Alkyl oder COR⁸;
A ist C₆-Alkyle, die mit einem oder mehreren Resten substituiert ist, ausgewählt aus der Gruppe, bestehend aus Halogen, C₆-Alkyl und aus Halogen, oder C₆-Alkyle, die mit einem oder mehreren Halogenen substituiert, in denen zwei Halogenen durch eine Gruppe ersetzt sind, aus CH₃, -NH-, -O-, -S- und aus -NRⁱ⁵-, mit der Maßgabe, dass die ersetzende Gruppe nicht an ein benachbartes 0- oder N-Atom gebunden ist, oder C₂₂-Alkenyl oder C₂₂-Alkoxylen;
R⁵ ist H, C₆-Alkenyl, C₆-Haloalkenyl, C₆-Alkoxylen, C₆-Cycloalkyl, -(CH₂)₉R⁷, -(CH₂)₉R⁸ oder NR¹⁰R¹¹ oder C₆-Alkyl, das mit einem oder mehreren Resten substituiert ist, ausgewählt aus der Gruppe, bestehend aus Halogen, C₆-Alkoxy, C₆-Haloalkoxy, C₆-Alkenyloxy, C₆-Alkoxylen, C₆-Haloalkinyloxy, C₆-Cycloalkyl, S(O)₆R₆, CN, NO₂, OH, COR¹⁰, NR¹⁰COR¹, NR¹⁰SO₂R⁸, CONR¹⁰R¹¹, NR¹⁰R¹¹, SO₂NR¹⁰R¹¹, NR¹⁰R¹¹, OH, SO₃H und aus C₆-Alkylidenimin;
R⁶ ist C₆-Cycloalkyl oder C₆-Haloalkyl;
R⁷ ist Phenyl, das unsubstituiert oder mit einem oder mehreren Resten substituiert ist, ausgewählt aus der Gruppe, bestehend aus Halogen, C₆-Alkyl, C₆-Haloalkyl, C₆-Alkoxy, C₆-Haloalkoxy, CN, NO₂, S(O)₆R₆, COR¹¹, COR¹⁰R¹¹, SO₂NR¹⁰R¹¹, NR¹⁰R¹¹, OH, SO₃H und aus C₆-Alkylidenimin;
R⁸ ist C₆-Alkyl oder C₆-Haloalkyl;
R⁹ ist Heterocycl, das unsubstituiert oder mit einem oder mehreren Resten substituiert ist, ausgewählt aus der Gruppe, bestehend aus Halogen, C₆-Alkyl, C₆-Haloalkyl, C₆-Alkoxy, C₆-Haloalkoxy, NO₂, CN, CO₂-C₆-Alkyl, S(O)₆R₆, OH und aus Oxo;
R¹⁰ und R¹² sind jeweils H, C₆-Alkyl, C₆-Haloalkyl, C₆-Alkenyl, C₆-Haloalkeny1, C₆-Alkiny1, C₆-Haloalkiny1, C₆-Cycloalkyl, -(C₆-Alkyl-C₆-cycloalkyl, -(CH₂)₉R¹³ und aus (CH₂)₉R⁸; oder
R¹⁰ und R¹¹ und/oder R¹⁰ und R¹² bilden jeweils zusammen mit dem jeweils verbundenen N-Atom einen 5- oder 6-gliedrigen gesättigten Ring, der gegebenenfalls ein zusätzliches Heteroatom im Ring enthält, ausgewählt aus 0, S und N, wobei der Ring unsubstituiert oder mit einem oder mehreren Resten substituiert ist, ausgewählt aus der Gruppe, bestehend aus Halogen, C₆-Alkyl und aus C₆-Haloalkyl;
R¹¹ und R¹⁴ sind jeweils unabhängig H, C₆-Alkyl, C₆-Haloalkyl, C₆-Cycloalkyl oder -C₆-Alkyl-C₆-cycloalkyl;
R¹³ ist Phenyl, das unsubstituiert oder mit einem oder mehreren Resten substituiert ist, ausgewählt aus der Gruppe, bestehend aus Halogen, C₆-Alkyl, C₆-Haloalkyl, C₆-Alkoxy, C₆-Haloalkoxy, CN, NO₂, S(O)₆R₆.
und aus NR$^{11}$R$^{14}$;
R$^{15}$ ist R$^{11}$ oder -(CH$_2$)$_n$R$^{13}$;
n und p sind jeweils unabhängig 0, 1 oder 2;
q ist 0 oder 1; und
jedes Heterocycl in den oben genannten Resten ist unabhängig ein heterocyclischer Rest mit 3 bis 7 Ringatomen und 1, 2 oder 3 Heteroatome im Ring, ausgewählt aus N, 0 und S.

6. 5-Substituierte Alkylaminopyrazolderivate der Formel (I) oder pestizid geeignete Salze davon, worin
R$^1$ CN, R$^2$ Chlor, R$^3$ CF$_3$ oder OCF$_3$, W C-Cl, R$^4$ Wasserstoff oder C$_{1-6}$-Alkyl, R$^5$ C$_{1-6}$-Alkyl, R$^6$ CF$_3$, A C$_{2-3}$-Alkylen
und n 0, 1 oder 2 sind.

7. Pestizide Zusammensetzung, umfassend eine Verbindung der Formel (I) oder ein pestizid geeignetes Salz davon,
wie definiert in einem der Ansprüche 1 bis 6, zusammen mit pestizid geeigneten Verdünnungsmitteln oder Trägern
und/oder oberflächenaktiven Mitteln.

8. Verfahren zur Herstellung einer Verbindung der Formel (I) gemäß Anspruch 1 oder eines Salzes davon, worin R$^1$, R$^2$, R$^3$, R$^5$, W und n wie in Anspruch 1 definiert, R$^6$ wie in Anspruch 1 definiert, ausgenommen Wasserstoff, R$^6$ Wasserstoff und A -CH$_2$- sind, wobei man eine Verbindung der Formel (VIII):

![Chemical Structure](image)

worin R$^1$, R$^2$, R$^3$, R$^6$, W und n wie in Anspruch 1 definiert sind, mit einer Mischung aus Formaldehyd und einer
Verbindung der Formel (IX) reagieren lässt:

R$^5$-O-H
(IX),

worin R$^5$ wie in Anspruch 1 definiert ist, ausgenommen Wasserstoff.

**Revendications**

1. Procédé pour lutter contre des parasites dans ou sur un animal, comprenant l’administration à l’animal d’une quantité,
efficace du point de vue antiparasitaire, d’un déricé d’alkylaminopyrazole substitué en position 5, de formule (I) :
R\textsuperscript{1} représente un groupe CN ;
W représente un groupe C-halogéno ou C-CH\textsubscript{3} ;
R\textsuperscript{2} représente un atome d'hydrogène, un atome d'halogène ou un groupe CH\textsubscript{3} ;
R\textsuperscript{3} représente un groupe halogénalkyle en C\textsubscript{1} à C\textsubscript{3}, halogénalkoxy en C\textsubscript{1} à C\textsubscript{3} ou S(O)\textsubscript{p} (halogénalkyle en C\textsubscript{1} à C\textsubscript{3}) ;
R\textsuperscript{4} représente un atome d'hydrogène, un groupe alcényle en C\textsubscript{2} à C\textsubscript{6}, halogénalcényle en C\textsubscript{2} à C\textsubscript{6}, alcnyle en C\textsubscript{2} à C\textsubscript{6}, halogénalcényle en C\textsubscript{2} à C\textsubscript{6}, cycloalkyle en C\textsubscript{3} à C\textsubscript{7}, CO-(CH\textsubscript{2})\textsubscript{q}R\textsubscript{p}, COR\textsubscript{q}, CO-(CH\textsubscript{2})\textsubscript{p}R\textsubscript{q}, -CO-(alkyl en C\textsubscript{1} à C\textsubscript{4})-(alkoxy en C\textsubscript{1} à C\textsubscript{6}), -CO-(CH\textsubscript{2})\textsubscript{q}R\textsubscript{p}, -CO-(alkyl en C\textsubscript{1} à C\textsubscript{4})-(alkoxy en C\textsubscript{1} à C\textsubscript{6}), -CO-(alkyl en C\textsubscript{1} à C\textsubscript{4})-(alkoxy en C\textsubscript{1} à C\textsubscript{6}), -CO-(alkyl en C\textsubscript{1} à C\textsubscript{4})-(alkoxy en C\textsubscript{1} à C\textsubscript{6});
CONR\textsuperscript{10}R\textsuperscript{11}, -CH\textsubscript{2}R\textsubscript{7}, -CH\textsubscript{2}R\textsubscript{9}, OR\textsubscript{8}, OR\textsubscript{8} ou OR\textsubscript{9} ; ou alkylique en C\textsubscript{1} à C\textsubscript{9} non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux halogéno, alkylique en C\textsubscript{1} à C\textsubscript{9}, halogénalkoxy en C\textsubscript{1} à C\textsubscript{9}, cycloalkyle en C\textsubscript{3} à C\textsubscript{7}, S(O)\textsubscript{p}R\textsubscript{8}, CO-(alkyl en C\textsubscript{1} à C\textsubscript{6}), -O(C=O)-(alkyle en C\textsubscript{1} à C\textsubscript{6}), NR\textsuperscript{10}COR\textsubscript{12}, NR\textsuperscript{10}R\textsubscript{11}, CONR\textsuperscript{10}R\textsubscript{11}, SO\textsubscript{2}NR\textsubscript{10}R\textsubscript{11}, OH, CN, NO\textsubscript{2}, OR\textsubscript{7}, NR\textsuperscript{10}SO\textsubscript{2}R\textsubscript{8}, COR\textsubscript{8} et OR\textsubscript{9} ;
A représente un groupe alkyle en C\textsubscript{1} à C\textsubscript{12} ou halogénalkyle en C\textsubscript{1} à C\textsubscript{12} dans lequel 2, 3 et 4 atomes de carbone adjacents font facultativement partie d'un noyau cycloalkyle en C\textsubscript{3} à C\textsubscript{6} ;
le groupement méthyle dans les deux derniers groupes mentionnés étant remplacé par un groupe choisi entre des groupes -C(=O)-, -C(=NH)-, -O -S- et -NR\textsubscript{15} ;
ou bien représente un groupe alcényle en C\textsubscript{1} à C\textsubscript{12} ou halogénalcényle en C\textsubscript{1} à C\textsubscript{12}, un groupement méthyle dans les deux derniers groupes mentionnés étant remplacé par un groupe choisi entre des groupes -C(=O)-, -C(=NH)-, -O -S- et -NR\textsubscript{15}, sous réserve que le groupe de remplacement ne soit pas lié à l'atome de O ou N adjacent ;
or bien représente un groupe alcénylène en C\textsubscript{2} à C\textsubscript{12} ou halogénalcénylène en C\textsubscript{2} à C\textsubscript{12} ;
R\textsuperscript{6} représente H, un groupe alcénylène en C\textsubscript{3} à C\textsubscript{6}, halogénalcénylène en C\textsubscript{3} à C\textsubscript{6}, alcnyle en C\textsubscript{3} à C\textsubscript{6}, halogénalcényle en C\textsubscript{3} à C\textsubscript{6}, cycloalkyle en C\textsubscript{3} à C\textsubscript{7}, -(CH\textsubscript{2})\textsubscript{q}R\textsubscript{p}, -(CH\textsubscript{2})\textsubscript{q}R\textsubscript{p} ou NR\textsuperscript{10}R\textsubscript{11} ;
or un groupe alcényle en C\textsubscript{1} à C\textsubscript{9} non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux halogéno, alkylique en C\textsubscript{1} à C\textsubscript{9}, halogénalkoxy en C\textsubscript{1} à C\textsubscript{9}, halogénalcényle en C\textsubscript{1} à C\textsubscript{9}, alcnyle en C\textsubscript{3} à C\textsubscript{6}, halogénalcénylène en C\textsubscript{3} à C\textsubscript{6}, cycloalkyle en C\textsubscript{3} à C\textsubscript{7}, S(O)\textsubscript{p}R\textsubscript{8}, CN, NO\textsubscript{2}, OH, COR\textsubscript{10}, NR\textsuperscript{10}COR\textsubscript{12}, NR\textsuperscript{10}SO\textsubscript{2}R\textsubscript{8}, CONR\textsuperscript{10}R\textsubscript{11}, NR\textsuperscript{10}R\textsubscript{11}, S(O)\textsubscript{p}R\textsubscript{8}, S(O)\textsubscript{p}R\textsubscript{8}, OR\textsubscript{7}, OR\textsubscript{7} et CO\textsubscript{2}R\textsubscript{10} ;
or bien, lorsque A représente un groupe alkylène en C\textsubscript{1} à C\textsubscript{12} ou halogénalkylène en C\textsubscript{1} à C\textsubscript{12} et R\textsuperscript{5} représente un groupe alkylique en C\textsubscript{1} à C\textsubscript{9} non substitué ou substitué avec un ou plusieurs radicaux halogéno, un ou plusieurs des atomes de carbone de R\textsuperscript{5} peuvent, conjointement avec O et un ou plusieurs des atomes de carbone de A, former un noyau penta- ou hexagonal :
R\textsuperscript{5} représente un groupe alkylique en C\textsubscript{1} à C\textsubscript{9}, halogénalkyle en C\textsubscript{1} à C\textsubscript{9}, alcényle en C\textsubscript{2} à C\textsubscript{9}, halogénalcényle en C\textsubscript{2} à C\textsubscript{9}, alcnyle en C\textsubscript{2} à C\textsubscript{9}, halogénalcényle en C\textsubscript{2} à C\textsubscript{9} ;
R\textsuperscript{7} représente un groupe phényle non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux halogéno, alkylique en C\textsubscript{1} à C\textsubscript{6}, halogénalkyle en C\textsubscript{1} à C\textsubscript{6}, alkoxy en C\textsubscript{1} à C\textsubscript{6}, halogénalkoxy en C\textsubscript{1} à C\textsubscript{6}, CN, NO\textsubscript{2}, S(O)\textsubscript{p}R\textsubscript{8}, COR\textsubscript{11}, COR\textsubscript{13}, CONR\textsubscript{10}R\textsubscript{11}, SO\textsubscript{2}NR\textsubscript{10}R\textsubscript{11}, NR\textsuperscript{10}R\textsubscript{11}, OH, SO\textsubscript{2}H et alkylidène-ïmino en C\textsubscript{1} à C\textsubscript{6} ;
R\textsuperscript{8} représente un groupe alkylique en C\textsubscript{1} à C\textsubscript{6} ou halogénalkylène en C\textsubscript{1} à C\textsubscript{6} ;
R\textsuperscript{9} représente un groupe hétérocyclique non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux halogéno, alkylique en C\textsubscript{1} à C\textsubscript{6}, halogénalkylène en C\textsubscript{1} à C\textsubscript{6}, alkoxy en C\textsubscript{1} à C\textsubscript{6}, halogénalkoxy en C\textsubscript{1} à C\textsubscript{6}, CN, CO\textsubscript{2}(alkyle en C\textsubscript{1} à C\textsubscript{6}), S(O)\textsubscript{p}R\textsubscript{8}, OH et oxo ;
Procédé suivant la revendication 1, dans lequel les symboles et indices de la formule (I) ont les significations suivantes :

R10 et R12 représentent chacun indépendamment H, un groupe alkyle en C1 à C6, halogénalkyle en C1 à C6, alcényle en C2 à C6, halogénalcyényle en C2 à C6, alcyne en C2 à C6, halogénalcyényne en C2 à C6, cycloalkyle en C2 à C6, (alkyle en C1 à C6) · (cycloalkyle en C3 à C6), (CH2)3R13 ou -(CH2)3Q8 ; ou R10 et R11 et/ou R10 et R12, chacun conjointement avec l’atome de N fixé respectif, forment un noyau penta- ou hexagonal saturé qui contient facultativement dans le noyau un hétéroatome supplémentaire qui est choisi entre O, S et N, le noyau étant non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux halogéno, alkyle en C1 à C6 et halogénalkyle en C1 à C6 ;
R11 et R14 représentent, chacun indépendamment, H, un groupe alkyle en C1 à C6, halogénalkyle en C1 à C6, cycloalkyle en C2 à C6 ou -(alkyle en C1 à C6)-(cycloalkyle en C3 à C6) ;
R13 représente un groupe phényle non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux halogéno, alkyle en C1 à C6, halogénalkyle en C1 à C6, alkoxy en C1 à C6, halogénalkoxy en C1 à C6, CN, NO2, S(O)2R8 et NR11R14 ;
R15 représente un groupe RI1 ou -(CH2)qR13 ;
n et p sont chacun égaux indépendamment à zéro, un ou ) deux ;
q est égal à zéro ou un ; et
ej chaque groupe hétérocyclique dans les radicaux précités représente indépendamment un radical hétérocyclique ayant 3 à 7 atomes dans le noyau et 1, 2 ou 3 hétéroatomes dans le noyau choisis dans le groupe consistant en N, O et S ;
or d’un de ses sels acceptables du point de vue pesticide.

2. Procédé suivant la revendication 1, dans lequel les symboles et indices de la formule (I) ont les significations suivantes :

R1 représente un groupe CN ;
W représente un groupe C-C1 ;
R2 représente un atome de chlore ;
R3 représente un groupe CF3 ou OCF3 ;
R4 représente un atome d’hydrogène, un groupe CO2(alkyle en C1 à C3), ou alkyle en C1 à C6 non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux halogéno et alkoxy en C1 à C3 ;
A représente un groupe alkyliène en C1 à C4 ;
R5 représente un groupe cycloalkyle en C2 à C6, -(CH2)qR7, alkyle en C1 à C6 ou halogénalkyle en C1 à C6 ;
or bien, lorsque R5 représente un groupe alkyle en C1 à C6, un ou plusieurs des atomes de carbone du groupe R5 peuvent, conjointement avec O et un ou plusieurs des atomes de carbone de A, former un noyau penta- ou hexagonal :
R6 représente un groupe CF3, CF2Cl, CF2Cl2, CBrF2 ou CHF2 ;
R7 représente un groupe phényle ;
n est égal à zéro, un ou deux ; et
ej q est égal à zéro ou un.

3. Procédé suivant la revendication 1, dans lequel les symboles et indices de la formule (I) ont les significations suivantes :

R1 représente un groupe CN ;
W représente un groupe C-halogénéno ;
R2 représente un atome d’hydrogène ou d’halogéné ;
R3 représente un groupe CF3 ou OCF3 ;
R4 représente l’hydrogène, un groupe alcényle en C2 à C6, halogénalcyényle en C2 à C6, alcyne en C2 à C6, halogénalcyényne en C2 à C6, cycloalkyle en C2 à C6, CO2(alkyle en C1 à C6) ou -(CH2)R7 ; ou bien alkyle en C1 à C6 non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux halogéno, alkoxy en C1 à C6, halogénalkoxy en C1 à C6, cycloalkyle en C3 à C6, S(O)2R8 et CO2-(alkyle en C1 à C6) ;
A représente un groupe alkyliène en C1 à C6 ou halogénalkylène en C1 à C6 dans lequel 2, 3 ou 4 atomes de carbone adjacents font facultativement partie d’un noyau cycloalkylé en C3 à C6 qui est non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux alkyle en C1 à C6 et halogéno ;
R5 représente un groupe cycloalkyle en C3 à C6 ou -(CH2)2R7; ou bien un groupe alkyle en C1 à C6 non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux halogéno, alkoxy
Dérivés d’alkylaminopyrazole substitués en position 5 de formule (I) suivant la revendication 1, ou leurs sels acceptables du point de vue pesticide, dans lesquels :

- R<sub>1</sub> représente un groupe CN ;
- W représente un groupe C-halogéno ou C-CH<sub>3</sub> ;
- R<sub>2</sub> représente un atome d’hydrogène, un atome d’halogéne ou un groupe CH<sub>3</sub> ;
- R<sub>3</sub> représente un groupe halogénalkyle en C<sub>1</sub> à C<sub>6</sub> ; halogénalkyle ou S(O)<sub>p</sub> (halogénalkyle en C<sub>1</sub> à C<sub>3</sub>) ;
- R<sub>4</sub> représente un groupe alcényle en C<sub>2</sub> à C<sub>9</sub> ; halogénalcényle en C<sub>2</sub> à C<sub>9</sub> ; cicloalkyle en C<sub>2</sub> à C<sub>7</sub> ; CO-(CH=)<sub>2</sub> R<sup>8</sup> ; CO-(CH=)<sub>2</sub> R<sup>8</sup> ; CO-(alkyle en C<sub>1</sub> à C<sub>4</sub>) (alkoxy en C<sub>1</sub> à C<sub>6</sub> ; alkoxy en C<sub>3</sub> à C<sub>9</sub> ; S(O)<sub>p</sub> R<sup>8</sup> et NR<sub>11</sub> R<sup>11</sup> ;
- R<sub>10</sub> et R<sub>11</sub> représentent chacun indépendamment H, un groupe alcényle en C<sub>1</sub> à C<sub>6</sub> ; halogénalcényle en C<sub>1</sub> à C<sub>6</sub> ; cicloalkyle en C<sub>2</sub> à C<sub>7</sub> ; CO-(alkyle en C<sub>1</sub> à C<sub>6</sub>) ; CO-(alkyle en C<sub>1</sub> à C<sub>6</sub>) ; CO-(alkyle en C<sub>1</sub> à C<sub>6</sub>) ;
- n et p sont chacun égaux indépendamment à zéro, un ou deux : et q est égal à zéro ou un.

4. Dérivés d’alkylaminopyrazole substitués en position 5 de formule (I) suivant la revendication 1, ou leurs sels acceptables du point de vue pesticide, dans lesquels :
en C₃ à C₆, -(alkyle en C₃ à C₆)-(cycloalkyle en C₃ à C₆), -(CH₂)₂R¹ ou -(CH₂)₂R² ; ou R¹0 et R¹1 et/ou R¹9 et R¹2, chacun conjointement avec l’atome de N fixé respectif, forment un noyau penta- ou hexagonal saturé qui contient facultativement dans le noyau un hétéroatome supplémentaire qui est choisi entre 0, S et N, le noyau étant non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux halogéno, alkyle en C₁ à C₆ et halogénalkyle en C₁ à C₆ ;

R¹1 et R¹4 représentent chacun indépendamment H, un groupe alkyle en C₁ à C₆, halogénalkyle en C₁ à C₆, cycloalkyle en C₁ à C₆ ou -(alkyle en C₁ à C₆)-(cycloalkyle en C₁ à C₆) ;

R¹3 représente un groupe phényle non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux halogéno, alkyle en C₁ à C₆, halogénalkyle en C₁ à C₆, alcynyle en C₁ à C₆, halogénalcynyle en C₁ à C₆, CN, NO₂, S(O)₂R⁸ et NR¹¹R¹⁴ ;

R¹⁵ représente un groupe R¹ ou -(CH₂)₂R¹³ ;

n et p sont chacun égaux indépendamment à zéro, un ou deux ;

et chaque groupe hétérocyclique dans les radicaux précités représente indépendamment un radical hétérocyclique ayant 3 à 7 atomes dans le noyau et 1, 2 ou 3 hétéroatomes dans le noyau choisis dans le groupe consistant en N, O et S.

5. Dérivés d’alkylaminopyrazole substitués en position 5 de formule (I) suivant la revendication 1, ou leurs sels acceptables du point de vue pesticide, dans lesquels :

R¹ représente un groupe CN ;

W représente un groupe C-halogéno ou C-CH₃ ;

R² représente un atome d’hydrogène, un atome d’halogène ou un groupe CH₃ ;

R³ représente un groupe halogénalkyle en C₁ à C₃, halogénalkoxy en C₁ à C₃ ou S(O)₂R⁶ (halogénalkyle en C₁ à C₃) ;

R⁴ représente un atome d’hydrogène, un groupe alkyle en C₁ à C₆ ou COR⁸ ;

A représente un groupe alkylène en C₁ à C₁₂ ou halogénalkylène en C₁ à C₁₂ dans lequel 2, 3 ou 4 atomes de carbone adjacents forment indépendamment une fonction cyclique en C₃ à C₆ qui est non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux alkyle en C₁ à C₆ et halogénalkyle ; ou bien représente un groupe alkylène en C₁ à C₁₂ ou halogénalkylène en C₁ à C₁₂, un groupement méthyle dans les deux derniers groupes mentionnés étant remplacé par un groupe choisi entre des groupes -(C(=O)O), -(C(=NH)-), -O-, -S- et -NR¹⁵-, sous réserve que le groupe de remplacement ne soit pas lié à l’atome de O ou N adjacents ; ou bien représente un groupe alcoxyène en C₂ à C₁₂ ou halogénalcoxyène en C₂ à C₁₂ ;

R⁵ représente H, un groupe alcynyle en C₃ à C₆, halogénalcyloxyène en C₃ à C₆, alcynyle en C₃ à C₆, halogénalcynyle en C₃ à C₆, cycloalkyle en C₃ à C₇, -(CH₂)₂R⁷, -(CH₂)₂R⁸ ou NR¹⁰R¹¹ ; ou représente un groupe alkyle en C₁ à C₆ substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux halogéno, alkoxide en C₁ à C₆, halogénalkynoxide in C₁ à C₆, alcynyl en C₆ à C₉, halogénalcynylène en C₁ à C₁₂ ;

R⁶ représente un groupe alcynyle en C₁ à C₁₂ ou halogénalkynylène en C₁ à C₁₂ ;

R⁷ représente un groupe phényle non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux halogéno, alkylène en C₁ à C₆, halogénalkylène en C₁ à C₆, alcoxyène en C₁ à C₆, halogénalcoxyène en C₁ à C₆, CN, NO₂, S(O)₂R⁶, COR¹⁴, COR¹³, CONR¹¹R¹¹, NR¹⁰R¹⁰, SO₂R⁶, SO₂R⁹, OR⁷, OR⁸, COR⁹ et CO₂R¹⁰ ; ou bien lorsque A représente un groupe alcynyle en C₁ à C₁₂ ou halogénalkynylène en C₁ à C₁₂ et R² représente un groupe alkyle en C₁ à C₆ non substitué ou substitué avec un ou plusieurs radicaux halogéno, ou un ou plusieurs des atomes de carbone de R² peuvent, conjointement avec O et un ou plusieurs des atomes de carbone de A, former un noyau pentaa- ou hexagonal ;

R⁸ représente un groupe halogénalkyle en C₁ à C₆ ;

R⁹ représente un groupe phényle non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux halogéno, alkylène en C₁ à C₆, halogénalkylène en C₁ à C₆, alcoxyène en C₁ à C₆, halogénalcoxyène en C₁ à C₆, CN, NO₂, S(O)₂R⁶, COR¹⁴, COR¹³, CONR¹¹R¹¹, SO₂R¹⁰R¹¹, NR¹⁰R¹⁰, OH, SO₃H et alkylidène-imino en C₁ à C₆ ;

R¹⁰ représente un groupe alkyle en C₁ à C₆ ou halogénalkyle en C₁ à C₆ ;

R¹¹ représente un groupe hétérocyclique non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux halogéno, alkylène en C₁ à C₆, halogénalkylène en C₁ à C₆, alcoxyène en C₁ à C₆, halogénalcoxyène en C₁ à C₆, CN, CO₂ (alkylène en C₁ à C₆), S(O)₂R⁶, OH et oxo ;

R¹⁰ et R¹² représentent chacun indépendamment H, un groupe alkyle en C₁ à C₆, halogénalkylène en C₁ à C₆, alcynyle en C₆ à C₉, halogénalcynyle en C₆ à C₉, alcynylène en C₆ à C₉, halogénalcynylène en C₆ à C₉, alcynyle en C₆ à C₉, halogénalcoxyène en C₆ à C₉, cycloalkylène en C₆ à C₉, -(alkyle en C₆ à C₉)-(cycloalkylène en C₆ à C₉) ; -(CH₂)₂R¹³ ou -(CH₂)₂R⁸ ; ou R¹⁰ et R¹¹ et/ou R¹⁹ et R¹², chacun conjointement avec l’atome de N fixé respectif, forment un noyau penta- ou hexagonal saturé qui contient facultativement dans le noyau un hétéroatome supplémentaire qui est choisi entre 0, S et N, le noyau étant non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe.
consistant en des radicaux halogéno, alkyle en C₁ à C₆ et halogénalkyle en C₁ à C₆ ; R¹¹ et R¹⁴ représentent chacun indépendamment H, un groupe alkyle en C₁ à C₆, halogénalkyle en C₁ à C₆, cycloalkyle en C₃ à C₆ ou -(alkyle en C₁ à C₆)-(cycloalkyle en C₃ à C₆) ; R¹³ représente un groupe phényle non substitué ou substitué avec un ou plusieurs radicaux choisis dans le groupe consistant en des radicaux halogéno, alkyle en C₁ à C₆, halogénalkyle en C₁ à C₆, alkoxy en C₁ à C₆, halogénalkoxy en C₁ à C₆, CN, NO₂, S(O)ₗR⁸ et NR¹¹R¹⁴ ; R¹⁵ représente un groupe R¹¹ ou -(CH₂)ₗR¹³ ; n et p sont chacun égaux indépendamment à zéro, un ou deux ; q est égal à zéro ou un ; et chaque groupe hétérocyclique dans les radicaux précités représente indépendamment un radical hétérocyclique ayant 3 à 7 atomes dans le noyau et 1, 2 ou 3 hétéroatomes dans le noyau choisis dans le groupe consistant en N, 0 et S.

6. Dérivés d’alkylaminopyrazole substitués en position 5 de formule (I) suivant la revendication 1, ou leurs sels acceptables du point de vue pesticide, dans lesquels :

   R¹ représente un groupe CN ; R² représente un atome de chlore ; R³ représente un groupe CF₃ ou OCF₃ ; W représente un groupe C-Cl ; R⁴ représente un atome d’hydrogène ou un groupe alkyle en C₁ à C₆ ; R⁵ représente un groupe alkyle en C₁ à C₆ ; R⁶ représente un groupe CF₃ ; A représente un groupe alkylène en C₂ ou C₃ et n est égal à zéro, un ou deux.

7. Composition pesticide comprenant un composé de formule (I) ou un de ses sels acceptables du point de vue pesticide, répondant à la définition dans l’une quelconque des revendications 1 à 6, en association avec un diluant ou support et/ou agent tensioactif acceptable du point de vue pesticide.

8. Procédé pour la préparation d’un composé de formule (I) de la revendication 1 ou d’un de ses sels, formule dans laquelle R¹, R², R³, R⁶, W et n sont tels que définis dans la revendication 1, R⁴ est tel que défini dans la revendication 1 à l’exclusion de l’hydrogène, R⁵ représente un atome d’hydrogène et A représente un groupe -CH₂-, comprenant la réaction d’un composé de formule (VIII) :

   ![Diagram](VIII)

   dans laquelle R¹, R², R³, R⁶, W et n sont tels que définis dans la revendication 1, avec un mélange de formaldéhyde et d’un composé de formule (IX) :

   ![Diagram](IX)

   dans laquelle R⁵ est tel que défini dans la revendication 1 à l’exclusion de l’hydrogène.