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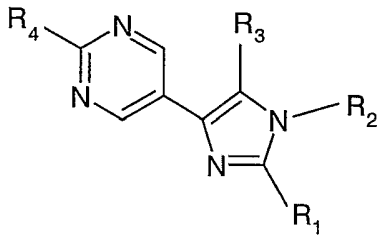
(54) Title: NOVEL HERBICIDES



(I)

(57) Abstract: Compounds of formula (I), wherein the substituents are as defined in claim 1, are suitable for use as herbicides.

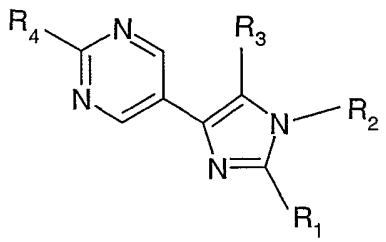
Novel herbicides

The present invention relates to novel, herbicidally active pyrimidino-imidazoles, to processes for their preparation, to compositions comprising those compounds, and to their use in controlling weeds, especially in crops of useful plants, or in inhibiting plant growth.

Pyrimidino-imidazoles are described, for example, as intermediates for the synthesis of angiotensin II antagonists in WO 95/22543 and also as antibacterials in WO 03/004509 and WO 02/083111.

Novel pyrimidino-imidazoles that have herbicidal and growth-inhibiting properties have now been found.

The present invention accordingly relates to compounds of formula I



(I),

wherein

R_1 is hydrogen, halogen, cyano, amino, hydroxy, nitro, formyl, -COOH, -$CONH_2$, -$CSNH_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6-alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring which may contain a further hetero atom selected from N, O and S, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)$S(O)_m$, (halo-C_1-C_6alkyl)$S(O)_m$, (C_1-C_6alkylamino)$S(O)_m$, (C_1-C_6dialkylamino)$S(O)_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)$S(O)_m$ wherein the alkyl groups are the same or different, C_1-C_6alkylsulfonyloxy, halo-C_1-C_6alkylsulfonyloxy, C_1-C_6alkyl$S(O)_m$amino; C_1-C_6alkyl-

$S(O)_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyl, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyl, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyloxy, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkylamino, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkyl-aminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6alkenyl)$S(O)_m$, (halo-C_2-C_6alkenyl)$S(O)_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluorothio, C_2-C_6alkynyl; C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)$S(O)_m$, (halo-C_3-C_6alkynyl)$S(O)_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, halo-C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, -Q or -A-Q;

R_2 is hydrogen, cyano, hydroxy, amino, formyl, $-CONH_2$, $-CSNH_2$, C_1-C_6alkyl; C_1-C_6alkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; C_1-C_6alkoxy; C_1-C_6alkoxy substituted by halogen, amino, C_1-C_6alkyl-

amino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylamino, halo-C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6alkyl)S(O)$_m$, (C_1-C_6alkylamino)S(O)$_m$, (C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_2-C_6alkenyloxy, halo-C_2-C_6-alkenyloxy, (C_2-C_6alkenyl)S(O)$_m$, (halo-C_2-C_6alkenyl)S(O)$_m$, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_2-C_6alkynyl; C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, -Q or -A-Q;

R_3 is hydrogen, halogen, cyano, amino, hydroxy, nitro, formyl, -COOH, -CONH$_2$, -CSNH$_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6-alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring which may be interrupted by N, O or S, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6alkyl)S(O)$_m$, (C_1-C_6alkylamino)S(O)$_m$, (C_1-C_6dialkyl-amino)S(O)$_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)-S(O)$_m$ wherein the alkyl groups are the same or different, C_1-C_6alkylsulfonyloxy, halo-C_1-C_6-

alkylsulfonyloxy, C_1-C_6alkylS(O)$_m$amino; C_1-C_6alkylS(O)$_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-carbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkyl-amino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyl-oxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkyl-amino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6alkenyl)S(O)$_m$, (halo-C_2-C_6alkenyl)S(O)$_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluorothio, C_2-C_6alkynyl; C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)S(O)$_m$, (halo-C_3-C_6alkynyl)S(O)$_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, or halo-C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different;

R_4 is hydrogen, halogen, cyano, amino, nitro, formyl, -COOH, -CONH$_2$, -CSNH$_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, C_1-C_6dialkylamino wherein

the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6alkyl)S(O)$_m$, C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; tri(C_1-C_6alkyl)silyl, C_2-C_6alkynyl; or C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl;

A is C_1-C_4alkylene; C_1-C_4alkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6-dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4oxyalkylene; C_1-C_4oxyalkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4alkyleneoxy; C_1-C_4alkyleneoxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4oxy-alkyleneoxy; C_1-C_4oxyalkyleneoxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6di-alkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4aminoalkylene; C_1-C_4amino-alkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4alkyleneamino; C_1-C_4alkyleneamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4-aminoalkyleneamino; C_1-C_4aminoalkyleneamino substituted by halogen, amino, C_1-C_6alkyl-amino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4thioalkylene; C_1-C_4thioalkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_3-C_6cycloalkylene; C_3-C_6cycloalkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by

formyl; C_2-C_4alkenylene; C_2-C_4alkenylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_2-C_4alkynylene; C_2-C_4alkynylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; O, S, NH, formylamino, C_1-C_4alkylamino, $S(O)_m$, oxysulfonyl, sulfonyloxy, aminosulfonyl, sulfonylamino, carbonyl, oxycarbonyl, carbonyloxy, oxycarbonyloxy, carbonylamino, aminocarbonyl, aminocarbonyloxy, oxycarbonylamino or aminocarbonylamino;

Q is aryl, aryl substituted one or more times by halogen, cyano, hydroxy, amino, nitro, formyl, -COOH, $-CONH_2$, $-CSNH_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)$S(O)_m$, (halo-C_1-C_6alkyl)$S(O)_m$, (C_1-C_6alkylamino)$S(O)_m$, (C_1-C_6dialkylamino)$S(O)_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)-$S(O)_m$ wherein the alkyl groups are the same or different, C_1-C_6alkylsulfonyloxy, halo-C_1-C_6-alkylsulfonyloxy, C_1-C_6alkyl$S(O)_m$amino; C_1-C_6alkyl$S(O)_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyl, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyl, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyloxy, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkylamino, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-carbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6-dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkyl-carbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonyl-amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkyl-amino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or

different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6-alkenyl)S(O)$_m$, (halo-C_2-C_6alkenyl)S(O)$_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6-dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenyl-amino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluoro-thio; C_2-C_6alkynyl, or C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6-dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)S(O)$_m$, (halo-C_3-C_6alkynyl)S(O)$_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, halo-C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, or Q is a monocyclic heterocycle, or a monocyclic heterocycle substituted one or more times by halogen, cyano, hydroxy, amino, nitro, formyl, -COOH, -CONH$_2$, -CSNH$_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring, halo-C_1-C_6dialkyl-amino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6-alkyl)S(O)$_m$, (C_1-C_6alkylamino)S(O)$_m$, (C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, C_1-C_6alkylsulfonyloxy, halo-C_1-C_6alkylsulfonyloxy, C_1-C_6alkylS(O)$_m$amino; C_1-C_6alkylS(O)$_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6-alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkyl-amino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, C_1-C_6alkyl-S(O)$_m$-C_1-C_6alkylamino, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by

formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6-dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylamino-carbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6alkenyl)-$S(O)_m$, (halo-C_2-C_6alkenyl)$S(O)_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluorothio; C_2-C_6alkynyl, or C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)$S(O)_m$, (halo-C_3-C_6alkynyl)-$S(O)_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, halo-C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, and

m is 0, 1 or 2, and also to

enantiomers, mixtures of enantiomers, tautomers, mixtures of tautomers, agrochemically acceptable salts of compounds of formula I, N-oxides of those compounds and enantiomers, mixtures of enantiomers, tautomers, mixtures of tautomers and agrochemically acceptable salts thereof, with the exclusion of 5-(2-butyl-3H-imidazol-4-yl)-pyrimidine, 5-(5-ethyl-2-(4-fluorophenyl)-1H-imidazol-4-yl)-pyrimidine hydrochloride, N-{5-[2-(4-fluorophenyl)-5-propyl-1H-imidazol-4-yl]-pyrimidin-2-yl}-acetamide dihydrochloride, 5-(1H-imidazol-4-yl)-pyrimidine dihydrochloride and 4-(4-pyrimidin-5-yl-imidazol-1-yl)-butylamine.

In the compounds of formula I, alkyl, as a group *per se* or as a structural element in other substituents, for example in alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylcarbonyl, alkoxycarbonyl, alkylamino, alkoxyiminomethyl, alkylaminocarbonyl and alkylaminothio-carbonyl, is either straight-chain alkyl, that is to say, for example, methyl, ethyl, propyl, butyl, pentyl or hexyl, or branched alkyl, for example isopropyl, isobutyl, sec-butyl, tert-butyl, isopentyl, neopentyl or isohexyl. The alkyl radicals may be substituted by one or more substituents such as halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano,

formyl or C_1-C_4alkoxy. In radicals such as dialkyl-, dialkenyl- or dialkynyl-amino, both the alkyl groups may have the number of carbon atoms specified in the definition.

Alkenyl, as a group *per se* or as a structural element in other substituents, for example in alkenyloxy, is either straight-chained, for example vinyl, 1-methylvinyl, allyl, 1-butenyl or 2-hexenyl, or branched, for example isopropenyl. The alkenyl radicals may be substituted by one or more substituents such as halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, formyl or C_1-C_4alkoxy.

Alkynyl, as a group *per se* or as a structural element in other substituents, for example in alkynyloxy, is either straight-chained, for example propargyl, 2-butynyl or 5-hexynyl, or branched, for example 2-ethynylpropyl or 2-propargylisopropyl. The alkynyl radicals may be substituted by one or more substituents such as halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, tri(C_1-C_6alkyl)silyl, formyl or C_1-C_4alkoxy.

C_3-C_6Cycloalkyl is cyclopropyl, cyclobutyl, cyclopentyl or cyclohexyl. The cycloalkyl radicals may be substituted by one or more radicals such as halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, formyl or C_1-C_4alkoxy. Alkylene, as a group *per se* or as a structural element in other groups, for example in haloalkylene, is either straight-chained, for example -CH_2CH_2-, -$CH_2CH_2CH_2$- or -$CH_2CH_2CH_2CH_2$-, or branched, for example -$CH(CH_3)$-, -$CH(C_2H_5)$-, -$C(CH_3)_2$-, -$CH(CH_3)CH_2$- or -$CH(CH_3)CH(CH_3)$-. The alkylene radicals may be substituted by one or more radicals such as halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, formyl or C_1-C_4alkoxy.

Aryl is preferably phenyl or naphthyl, especially phenyl. The aryl radicals may be substituted by one or more radicals such as halogen, cyano, hydroxy, amino, nitro, formyl, -COOH, -$CONH_2$, -$CSNH_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)$S(O)_m$, (halo-C_1-C_6alkyl)$S(O)_m$, (C_1-C_6alkylamino)$S(O)_m$, (C_1-C_6dialkylamino)-$S(O)_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)$S(O)_m$ wherein the alkyl groups are the same or different, C_1-C_6alkylsulfonyloxy, halo-C_1-C_6alkylsulfonyloxy, C_1-C_6alkyl$S(O)_m$amino; C_1-C_6alkyl$S(O)_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkyl-

$S(O)_m$-C_1-C_6alkyl, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyl, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyloxy, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkylamino, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6-alkenyl)$S(O)_m$, (halo-C_2-C_6alkenyl)$S(O)_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6-dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluorothio; C_2-C_6alkynyl, or C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)$S(O)_m$, (halo-C_3-C_6alkynyl)$S(O)_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, halo-C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different.

Among the heterocycles in the definitions of Q preference is given to 5- or 6-membered aromatic rings containing one to three hetero atoms especially selected from the group consisting of N, O and S. Preferred heterocycles are pyrazinyl, pyridyl(3'), pyridyl(2'), pyridyl(4'), pyrimidinyl(2'), pyrimidinyl(4'), pyrimidinyl(5'), pyridazinyl(3'), pyridazinyl(4'), thiazolyl(2'), thiazolyl(4'), thiazolyl(5'), pyrrolyl(2'), pyrrolyl(3'), pyrazolyl(3'), pyrazolyl(4'), pyrazolyl(5'), oxazolyl(2'), oxazolyl(4'), oxazolyl(5'), furyl(2'), furyl(3'), thienyl(2'), thienyl(3'), isothiazolyl(3'), isothiazolyl(4'), isothiazolyl(5'), isothiazolyl(3'), isothiazolyl(4'), isothiazolyl(5'),

triazolyl(3'), triazolyl(4'), triazolyl(5'), and also 3- to 7-membered non-aromatic heterocycles such as, especially, oxiranyl(2'), thiranyl(2'), aziridinyl(2'), oxetanyl(2'), oxetanyl(3'), thietanyl(2'), thietanyl(3'), azetidinyl(1'), azetidinyl(2'), azetidinyl(3'), tetrahydrofuranyl(2'), tetrahydrofuranyl(3'), 1,3-dioxolanyl(2'), 1,3-dioxolanyl(4'), tetrahydrothiophenyl(2'), tetrahydrothiophenyl(3'), tetramethylenesulfoxidyl(2'), tetramethylenesulfonyl(2'), 1,3-dithiolanyl(2'), pyrrolidinyl(1'), pyrrolidinyl(2'), pyrrolidinyl(3'), tetrahydropyranyl(2'), tetrahydropyranyl(3'), tetrahydropyranyl(4'), 1,3-dioxanyl(2'), 1,3-dioxanyl(4'), 1,3-dioxanyl(4'), pentamethylenesulfidyl(2'), pentamethylenesulfidyl(3'), pentamethylene-sulfidyl(4'), pentamethylenesulfoxidyl(2'), pentamethylenesulfonyl(2'), 1,3-dithianyl(2'), piperidyl(1'), piperidyl(2'), piperidyl(3'), piperidyl(4'), morpholinyl(4'), thiomorpholinyl(4'), oxepanyl(2') and hexamethyleneimino(1'). The heterocycles may be substituted by one or more radicals such as halogen, cyano, hydroxy, amino, nitro, formyl, -COOH, $-CONH_2$, $-CSNH_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)$S(O)_m$, (halo-C_1-C_6alkyl)$S(O)_m$, (C_1-C_6alkylamino)$S(O)_m$, (C_1-C_6dialkylamino)$S(O)_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)$S(O)_m$ wherein the alkyl groups are the same or different, C_1-C_6alkylsulfonyloxy, halo-C_1-C_6alkylsulfonyloxy, C_1-C_6alkyl-$S(O)_m$amino; C_1-C_6alkyl$S(O)_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyl, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyl, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyloxy, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkylamino, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-carbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkyl-amino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyl-oxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by

formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6alkenyl)S(O)$_m$, (halo-C_2-C_6alkenyl)S(O)$_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluorothio; C_2-C_6alkynyl, or C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)S(O)$_m$, (halo-C_3-C_6alkynyl)S(O)$_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, halo-C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different.

The non-aromatic heterocycles may, in addition, contain one or more carbonyl groups, for example 2-pyrrolidonyl(1'), succinimidyl(1'), gamma-butyrolactonyl(3'), ethylene-carbonatyl(4'), tetrahydrothiophen-3-onyl(2'), tetrahydro-2H-pyran-2-onyl(3'), tetrahydro-4H-pyran-4-onyl(3'), 2-piperidonyl(1'), epsilon-caprolactamyl(1').

Halogen, as a group *per se* or as a structural element in other substituents, for example in haloalkyl, haloalkenyl and haloalkynyl, is fluorine, chlorine, bromine or iodine, especially fluorine, chlorine or bromine, more especially fluorine or chlorine, very especially fluorine.

Halo-substituted substituents, such as haloalkyl, haloalkenyl and haloalkynyl, may be partially halogenated or perhalogenated, it being possible in the case of polyhalogenation for the halogen substituents to be the same or different. Examples of haloalkyl, as a group *per se* or as a structural element in other substituents such as haloalkenyl, are methyl substituted from one to three times by fluorine, chlorine and/or bromine, such as CHF_2 or CF_3; ethyl substituted from one to five times by fluorine, chlorine and/or bromine, such as CH_2CF_3, CF_2CF_3, CF_2CCl_3, CF_2CHCl_2, CF_2CHF_2, CF_2CFCl_2, CF_2CHBr_2, CF_2CHClF, CF_2CHBrF or $CClFCHClF$; propyl or isopropyl substituted from one to seven times by fluorine, chlorine and/or bromine, such as $CH_2CHBrCH_2Br$, CF_2CHFCF_3, $CH_2CF_2CF_3$, $CF(CF_3)_2$ or $CH(CF_3)_2$; and butyl or one of its isomers substituted from one to nine times by

fluorine, chlorine and/or bromine, such as $CF(CF_3)CHFCF_3$ or $CH_2(CF_2)_2CF_3$. Haloalkenyl is, for example, $CH_2CH=CHCl$, $CH_2CH=CCl_2$, $CH_2CF=CF_2$ or $CH_2CH=CHCH_2Br$. Haloalkynyl is, for example, $CH_2C\equiv CF$, $CH_2C\equiv CCH_2Cl$ or $CF_2CF_2C\equiv CCH_2F$.

Compounds of formula I having at least one basic centre are capable of forming acid addition salts. Those acid addition salts are formed, for example, with strong inorganic acids, such as mineral acids, e.g. perchloric acid, sulfuric acid, nitric acid, nitrous acid, a phosphoric acid or a hydrohalic acid, with strong organic carboxylic acids, such as substituted, e.g. halo-substituted, C_1-C_4alkanecarboxylic acids, e.g. acetic acid, saturated or unsaturated dicarboxylic acids, e.g. oxalic, malonic, succinic, maleic, fumaric and phthalic acid, hydroxycarboxylic acids, e.g. ascorbic, lactic, malic, tartaric and citric acid, or benzoic acid, or with organic sulfonic acids, such as unsubstituted or substituted, e.g. halo-substituted, C_1-C_4alkane- or aryl-sulfonic acids, e.g. methane- or p-toluene-sulfonic acid.

Furthermore, compounds of formula I having at least one acid group are capable of forming salts with bases. Suitable salts with bases are, for example, metal salts, such as alkali metal and alkaline earth metal salts, e.g. sodium, potassium and magnesium salts, and salts with ammonia or an organic amine, such as morpholine, piperidine, pyrrolidine, a mono-, di- or tri-lower alkylamine, e.g. ethyl-, diethyl-, triethyl- or dimethyl-propyl-amine, or a mono-, di- or tri-hydroxy-lower alkylamine, e.g. mono-, di- or tri-ethanolamine. In addition, corresponding internal salts may optionally be formed.

Preferred compounds of formula I are those wherein the substituent R_4 is hydrogen.

A further group of preferred compounds of formula I comprises those wherein R_4 is hydrogen and R_3 is halogen or methyl.

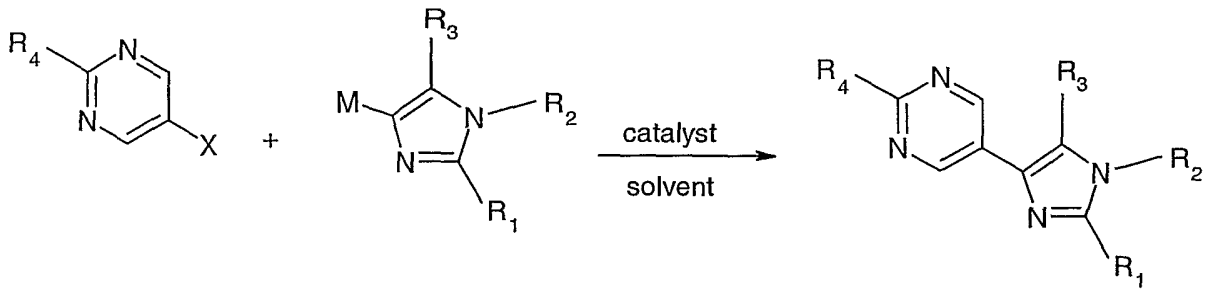
Preference is also given to those compounds wherein R_4 is hydrogen and R_1 is halogen, halo-C_1-C_6alkyl or (C_1-C_6alkyl)$S(O)_m$, wherein m is 0, 1 or 2.

Preference is moreover given to compounds wherein R_4 is hydrogen, R_3 is bromine, chlorine or methyl, and R_1 is halogen, halo-C_1-C_6alkyl or (C_1-C_6alkyl)$S(O)_m$, wherein m is 0, 1 or 2.

Special significance is given to the compounds of formula I wherein R_4 is hydrogen, R_3 is bromine, chlorine or methyl, and R_1 is halogen or halo-C_1-C_3alkyl.

Very special significance is given to the compounds of formula I wherein R_4 is hydrogen, R_3 is bromine, chlorine or methyl, and R_1 is CF_3.

The compounds of formula I can be prepared by means of processes, known *per se* and described, for example, in WO 95/22543, wherein pyrimidines functionalised in the 5-position and imidazoles functionalised in the 4-position are linked catalytically or 5-(2-haloalkyl-carbonyl)-pyrimidines are cyclised with amidines, by, for example, reacting a suitable trialkyltin-imidazole with a suitable 5-bromo-pyrimidine under palladium catalysis. Instead of the trialkyltin-imidazoles, other imidazole compounds, e.g. imidazole-boronic acids, imidazole zinc compounds or imidazole magnesium compounds, can also be reacted with 5-halo- or 5-triflate-pyrimidines under transition metal catalysis, preferably palladium or nickel catalysis.



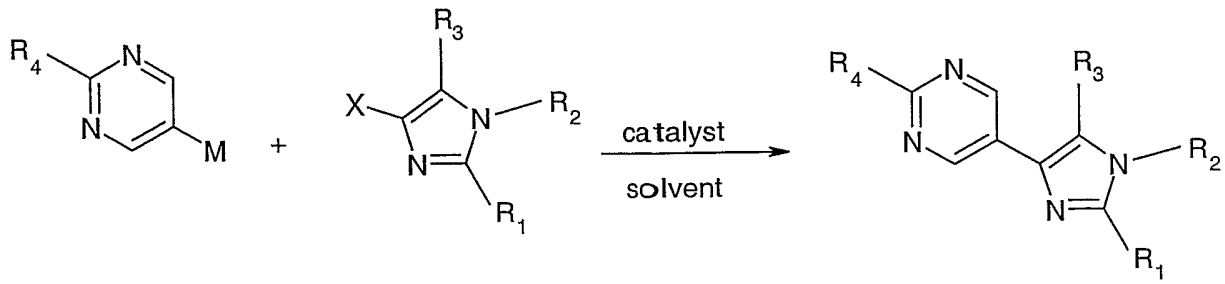
X = leaving group, e.g. Br, Cl, OSO_2CF_3

M = metal, e.g. Mg, Zn, $Sn(alkyl)_3$ or $B(OH)_2$

catalyst = transition metal, e.g. Pd or Ni, and suitable ligand, e.g. triphenylphosphine

The trialkyltin-imidazoles, imidazole-boronic acids, imidazole zinc compounds and imidazole magnesium compounds can be prepared using methods known *per se* from the imidazole unsubstituted in the 4-position by deprotonation using an organolithium compound, e.g. n-butyllithium, and subsequent transmetallation. In addition, the trialkyltin-imidazoles, imidazole-boronic acids, imidazole zinc compounds and imidazole magnesium compounds can be prepared by halogen-metal exchange starting from a 4-halo-imidazole and using an organolithium compound, e.g. n-butyllithium, or using magnesium or an organomagnesium compound and subsequent transmetallation.

A further method for the preparation of compounds of formula I is the reaction of 5-trialkyltin-pyrimidines, pyrimidine-5-boronic acids, pyrimidine-5-zinc compounds or pyrimidine-5-magnesium compounds with halo- or triflate-imidazoles under transition metal catalysis, preferably palladium or nickel catalysis.



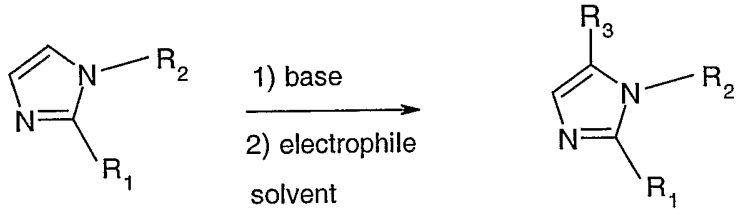
M = metal, e.g. Mg, Zn, $Sn(alkyl)_3$ or $B(OH)_2$

X = leaving group, e.g. Br, Cl, OSO_2CF_3

catalyst = e.g. Pd or Ni, and suitable ligand, e.g. triphenylphosphine

The 5-trialkyltin-pyrimidines, pyrimidine-5-boronic acids, pyrimidine-5-zinc compounds and pyrimidine-5-magnesium compounds can be prepared using methods known *per se* from the pyrimidine unsubstituted in the 5-position by deprotonation using an organolithium compound, e.g. n-butyllithium, and subsequent transmetallation. In addition, the 5-trialkyltin-pyrimidines, pyrimidine-5-boronic acids, pyrimidine-5-zinc compounds and pyrimidine-5-magnesium compounds can be prepared by halogen-metal exchange starting from a 5-halo-pyrimidine and using an organolithium compound, e.g. n-butyllithium, or using magnesium or an organomagnesium compound and subsequent transmetallation.

Selective substitution at the 5-position of the imidazole (R_1 and R_2 are not hydrogen) can be achieved by deprotonation using a strong base, e.g. n-butyllithium, and subsequent reaction with an electrophile.

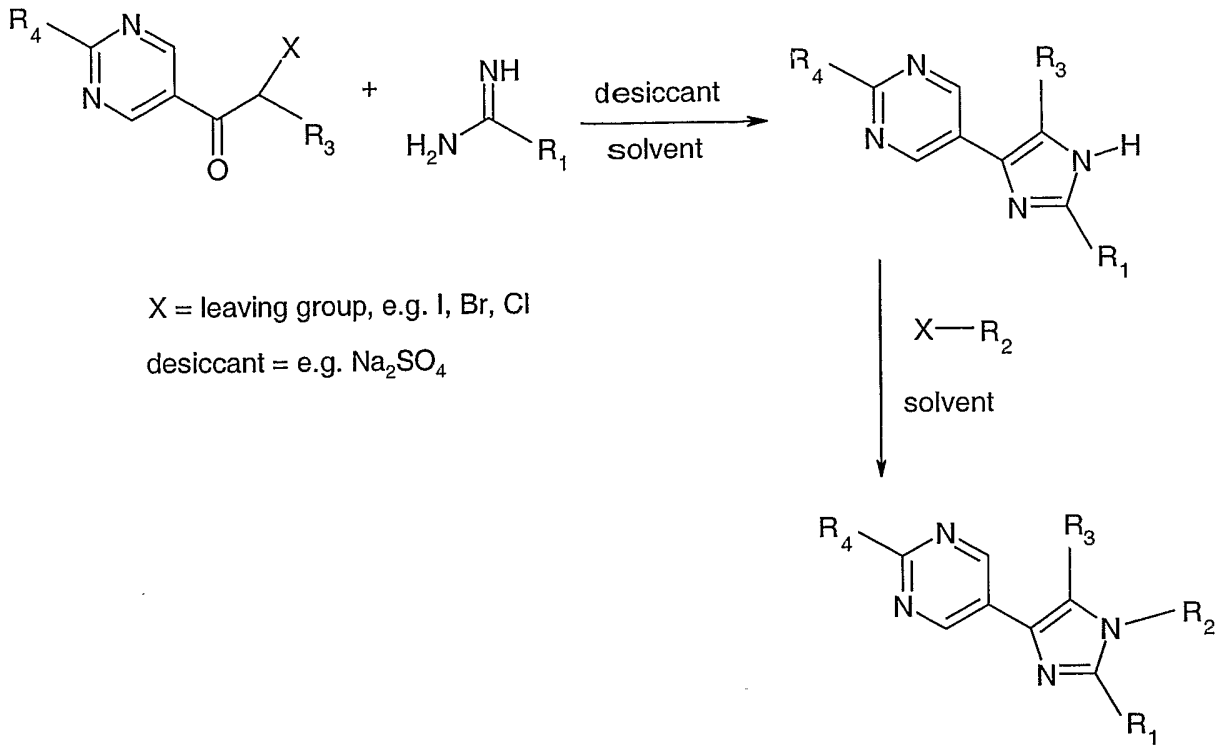


base = e.g. n-butyllithium

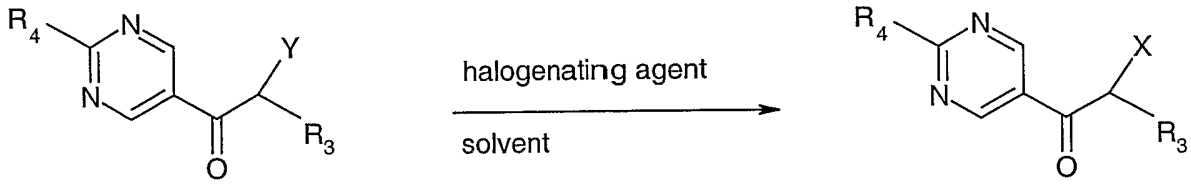
electrophile = R_3-X

X = leaving group, e.g. Br, Cl, SO_2NMe_2

The compounds of formula I can also be obtained by cyclisation of 5-(2-haloalkylcarbonyl)-pyrimidines, especially 5-(2-bromoalkylcarbonyl)-pyrimidines with amidines. The NH group of the imidazole can subsequently be derivatised with an electrophile.

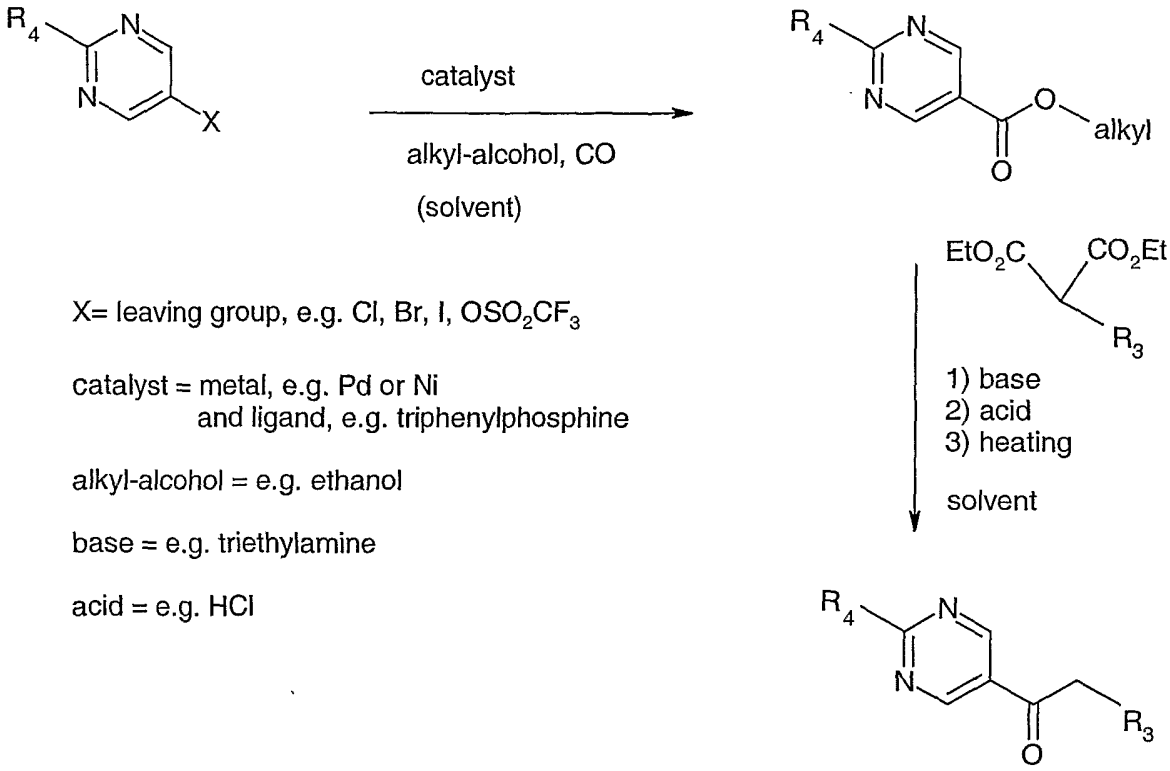


5-(2-Haloalkylcarbonyl)-pyrimidines are obtained, for example, by halogenation of 5-(alkylcarbonyl)-pyrimidines or 5-(2-hydroxyalkylcarbonyl)-pyrimidines using a halogenating agent.



Y = H, OH halogenating agent = e.g. HBr, Br_2 X = I, Br, Cl

A further method for the preparation of 5-(alkylcarbonyl)-pyrimidines starts from 5-halo-pyrimidines, preferably 5-bromo-pyrimidines, which, under transition metal catalysis, preferably palladium or nickel catalysis, in the presence of carbon monoxide and an alcohol, are converted into the 5-alkyloxycarbonyl compounds. The 5-alkyloxycarbonyl compounds can be converted into the 5-(alkylcarbonyl)-pyrimidines by methods known *per se*, e.g. by reaction with malonic acid derivatives and subsequent hydrolysis.



X= leaving group, e.g. Cl, Br, I, OSO_2CF_3

catalyst = metal, e.g. Pd or Ni
and ligand, e.g. triphenylphosphine

alkyl-alcohol = e.g. ethanol

base = e.g. triethylamine

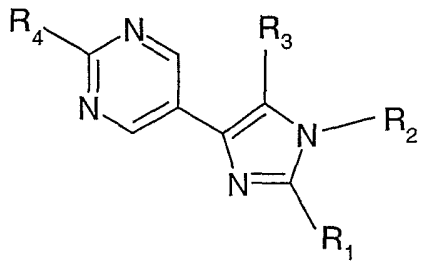
acid = e.g. HCl

The reactions resulting in compounds of formula I are advantageously carried out in aprotic, inert, organic solvents. Such solvents are hydrocarbons, e.g. benzene, toluene, xylene or cyclohexane, chlorinated hydrocarbons, e.g. dichloromethane, trichloromethane, tetrachloromethane or chlorobenzene, ethers, e.g. diethyl ether, ethylene glycol dimethyl ether, diethylene glycol dimethyl ether, tetrahydrofuran or dioxane, nitriles, e.g. acetonitrile or propionitrile, and amides, e.g. N,N-dimethylformamide, diethylformamide or N-methylpyrrolidinone. The reaction temperatures are preferably from -78°C to +120°C. The reactions are generally slightly exothermic and may usually be carried out at room temperature. In order to shorten the reaction time or else to initiate the reaction, brief heating up to the boiling point of the reaction mixture may be carried out, where appropriate. The reaction times may also be reduced by adding a few drops of base as reaction catalyst. Especially suitable bases are tertiary amines, e.g. trimethylamine, triethylamine, quinuclidine, 1,4-diazabicyclo[2.2.2]octane, 1,5-diazabicyclo[4.3.0]non-5-ene or 1,5-diazabicyclo[5.4.0]undec-7-ene. It is, however, also possible for inorganic bases such as hydrides, e.g. sodium or calcium hydride, hydroxides, e.g. sodium or potassium hydroxide, carbonates, e.g. sodium or potassium carbonate, or hydrogen carbonates, e.g. potassium or sodium hydrogen carbonate, to be used as bases.

The compounds of formula I may be isolated in conventional manner by concentration and/or evaporation of the solvent and purified by recrystallisation or trituration of the solid

residue in solvents in which they are not readily soluble, such as ethers, aromatic hydrocarbons or chlorinated hydrocarbons.

The present invention relates also to herbicidal compositions which, in addition to comprising customary inert formulation adjuvants, comprise as active ingredient a compound of formula I



(I),

wherein

R_1 is hydrogen, halogen, cyano, amino, hydroxy, nitro, formyl, -COOH, $-CONH_2$, $-CSNH_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6-alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring which may be interrupted by a further N, O or S, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6alkyl)S(O)$_m$, (C_1-C_6alkylamino)S(O)$_m$, (C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkyl-amino)S(O)$_m$ wherein the alkyl groups are the same or different, C_1-C_6alkylsulfonyloxy, halo-C_1-C_6alkylsulfonyloxy, C_1-C_6alkylS(O)$_m$amino; C_1-C_6alkylS(O)$_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-carbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkyl-amino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyl-oxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano,

C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6alkenyl)S(O)$_m$, (halo-C_2-C_6alkenyl)S(O)$_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluorothio, C_2-C_6alkynyl; C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)S(O)$_m$, (halo-C_3-C_6alkynyl)S(O)$_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, halo-C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, -Q or -A-Q;

R_2 is hydrogen, cyano, hydroxy, amino, formyl, -$CONH_2$, -$CSNH_2$, C_1-C_6alkyl; C_1-C_6alkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; C_1-C_6alkoxy; C_1-C_6alkoxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylamino, halo-C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6alkyl)S(O)$_m$, (C_1-C_6alkylamino)S(O)$_m$, (C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkyl-

carbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_2-C_6alkenyloxy, halo-C_2-C_6-alkenyloxy, (C_2-C_6alkenyl)S(O)$_m$, (halo-C_2-C_6alkenyl)S(O)$_m$, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_2-C_6alkynyl; C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, -Q or -A-Q;

R_3 is hydrogen, halogen, cyano, amino, hydroxy, nitro, formyl, -COOH, -CONH$_2$, -CSNH$_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6-alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring which may be interrupted by a hetero atom such as N, O or S, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6alkyl)S(O)$_m$, (C_1-C_6alkyl-amino)S(O)$_m$, (C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, C_1-C_6-alkylsulfonyloxy, halo-C_1-C_6alkylsulfonyloxy, C_1-C_6alkylS(O)$_m$amino; C_1-C_6alkylS(O)$_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkyl-carbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino,

C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6alkenyl)S(O)$_m$, (halo-C_2-C_6alkenyl)S(O)$_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6-dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluorothio, C_2-C_6alkynyl; C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)S(O)$_m$, (halo-C_3-C_6alkynyl)S(O)$_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, or halo-C_3-C_6-dialkynylamino wherein the alkynyl radicals are the same or different;

R_4 is hydrogen, halogen, cyano, amino, nitro, formyl, -COOH, -$CONH_2$, -$CSNH_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6alkyl)S(O)$_m$, C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino,

C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; tri(C_1-C_6alkyl)silyl, C_2-C_6alkynyl; or C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl;

A is C_1-C_4alkylene; C_1-C_4alkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6-dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4oxyalkylene; C_1-C_4oxyalkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4alkyleneoxy; C_1-C_4alkyleneoxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4oxy-alkyleneoxy; C_1-C_4oxyalkyleneoxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6di-alkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4aminoalkylene; C_1-C_4amino-alkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4alkyleneamino; C_1-C_4alkyleneamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4-aminoalkyleneamino; C_1-C_4aminoalkyleneamino substituted by halogen, amino, C_1-C_6alkyl-amino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4thioalkylene; C_1-C_4thioalkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_3-C_6cycloalkylene; C_3-C_6cycloalkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_2-C_4alkenylene; C_2-C_4alkenylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_2-C_4alkynylene; C_2-C_4alkynyl-ene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; O, S, NH, formylamino, C_1-C_4alkylamino, $S(O)_m$, oxysulfonyl, sulfonyloxy, aminosulfonyl, sulfonylamino, carbonyl, oxycarbonyl, carbonyloxy, oxycarbonyloxy, carbonylamino, aminocarbonyl, aminocarbonyloxy, oxycarbonylamino or aminocarbonylamino;

Q is aryl, aryl substituted one or more times by halogen, cyano, hydroxy, amino, nitro, formyl, -COOH, $-CONH_2$, $-CSNH_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-

membered ring, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6alkyl)S(O)$_m$, (C_1-C_6alkylamino)S(O)$_m$, (C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)-S(O)$_m$ wherein the alkyl groups are the same or different, C_1-C_6alkylsulfonyloxy, halo-C_1-C_6-alkylsulfonyloxy, C_1-C_6alkylS(O)$_m$amino; C_1-C_6alkylS(O)$_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-carbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6-dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkyl-carbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonyl-amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkyl-amino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6-alkenyl)S(O)$_m$, (halo-C_2-C_6alkenyl)S(O)$_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6-dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenyl-amino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluoro-thio; C_2-C_6alkynyl, or C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6-dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)S(O)$_m$, (halo-C_3-C_6alkynyl)S(O)$_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, halo-C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different,

or Q is a monocyclic heterocycle, or a monocyclic heterocycle substituted one or more times by halogen, cyano, hydroxy, amino, nitro, formyl, -COOH, -$CONH_2$, -$CSNH_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6alkyl)S(O)$_m$, (C_1-C_6alkylamino)S(O)$_m$, (C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, C_1-C_6alkylsulfonyloxy, halo-C_1-C_6alkylsulfonyloxy, C_1-C_6alkylS(O)$_m$amino; C_1-C_6alkylS(O)$_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6-dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6alkenyl)-S(O)$_m$, (halo-C_2-C_6alkenyl)S(O)$_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl;

pentafluorothio; C_2-C_6alkynyl, or C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkyl-amino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)S(O)$_m$, (halo-C_3-C_6alkynyl)S(O)$_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, halo-C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, and
m is 0, 1 or 2, or
an enantiomer, a mixture of enantiomers, a tautomer, a mixture of tautomers, or an agrochemically acceptable salt of a compound of formula I, an N-oxide of such a compound or an enantiomer, a mixture of enantiomers, a tautomer, a mixture of tautomers or an agrochemically acceptable salt thereof.

For the use according to the invention of the compounds of formula I, or of compositions comprising them, there come into consideration all methods of application customary in agriculture, for example pre-emergence application, post-emergence application and seed dressing, and also various methods and techniques such as, for example, the controlled release of active ingredient. For that purpose a solution of the active ingredient is applied to mineral granule carriers or polymerised granules (urea/formaldehyde) and dried. If required, it is also possible to apply a coating (coated granules), which allows the active ingredient to be released in metered amounts over a specific period of time.

The compounds of formula I may be used as herbicides in their unmodified form, that is to say as obtained in the synthesis, but they are preferably formulated in customary manner together with the adjuvants conventionally employed in formulation technology, for example into emulsifiable concentrates, directly sprayable or dilutable solutions, dilute emulsions, wettable powders, soluble powders, dusts, granules or microcapsules. Such formulations are described, for example, on pages 9 to 13 of WO 97/34485. As with the nature of the compositions, the methods of application, such as spraying, atomising, dusting, wetting, scattering or pouring, are chosen in accordance with the intended objectives and the prevailing circumstances.

The formulations, that is to say the compositions, preparations or mixtures comprising the compound (active ingredient) of formula I, or at least one compound of formula I, and, usually, one or more solid or liquid formulation adjuvants, are prepared in known manner, e.g. by homogeneously mixing and/or grinding the active ingredient(s) with the formulation adjuvants, for example solvents or solid carriers. Surface-active compounds (surfactants)

may also be used in addition in the preparation of the formulations. Examples of solvents and solid carriers are given, for example, on page 6 of WO 97/34485.

Depending upon the nature of the compound of formula I to be formulated, suitable surface-active compounds are non-ionic, cationic and/or anionic surfactants and surfactant mixtures having good emulsifying, dispersing and wetting properties.
Examples of suitable anionic, non-ionic and cationic surfactants are listed, for example, on pages 7 and 8 of WO 97/34485. In addition, the surfactants conventionally employed in formulation technology, which are described, *inter alia*, in "McCutcheon's Detergents and Emulsifiers Annual" MC Publishing Corp., Ridgewood New Jersey, 1981, Stache, H., "Tensid-Taschenbuch", Carl Hanser Verlag, Munich/Vienna, 1981, and M. and J. Ash, "Encyclopedia of Surfactants", Vol. I-III, Chemical Publishing Co., New York, 1980-81, are also suitable for the preparation of the herbicidal compositions according to the invention.

The herbicidal formulations generally contain from 0.1 to 99 % by weight, especially from 0.1 to 95 % by weight, of herbicide, from 1 to 99.9 % by weight, especially from 5 to 99.8 % by weight, of a solid or liquid formulation adjuvant, and from 0 to 25 % by weight, especially from 0.1 to 25 % by weight, of a surfactant. Whereas commercial products will preferably be in the form of concentrates, the end user will normally employ dilute formulations. The compositions may also comprise further ingredients, such as stabilisers, for example vegetable oils or epoxidised vegetable oils (epoxidised coconut oil, rapeseed oil or soybean oil), anti-foams, for example silicone oil, preservatives, viscosity regulators, binders, tackifiers, and also fertilisers or other active ingredients.

The compounds of formula I are generally applied to the plant or the locus thereof at rates of application of from 0.001 to 4 kg/ha, especially from 0.005 to 2 kg/ha. The concentration required to achieve the desired effect can be determined by experiment. It is dependent on the nature of the action, the stage of development of the cultivated plant and of the weed and on the application (place, time, method) and may vary within wide limits as a function of those parameters.

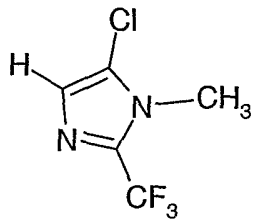
The compounds of formula I are distinguished by herbicidal and growth-inhibiting properties, allowing them to be used in crops of useful plants, especially cereals, cotton, soybeans, sugar beet, sugar cane, plantation crops, rape, maize and rice, and also for non-selective weed control. The term "crops" is to be understood as including also crops that have been made tolerant to herbicides or classes of herbicides as a result of conventional methods of

breeding or genetic engineering techniques. The weeds to be controlled may be either monocotyledonous or dicotyledonous weeds, such as, for example, Stellaria, Nasturtium, Agrostis, Digitaria, Avena, Setaria, Sinapis, Lolium, Solanum, Echinochloa, Scirpus, Monochoria, Sagittaria, Bromus, Alopecurus, Sorghum halepense, Rottboellia, Cyperus, Abutilon, Sida, Xanthium, Amaranthus, Chenopodium, Ipomoea, Chrysanthemum, Galium, Viola and Veronica.

The following Examples further illustrate the invention, without limiting it.

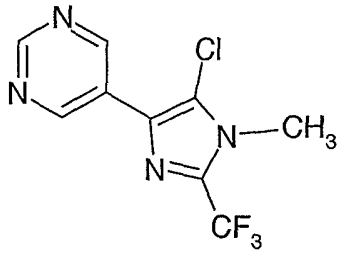
Preparation Examples:

Example P-1 A: Preparation of 5-chloro-1-methyl-2-trifluoromethyl-1H-imidazole



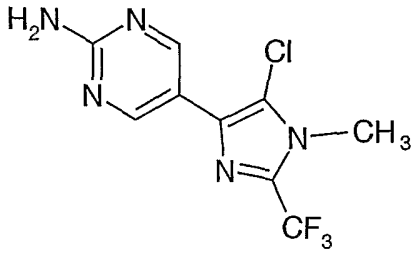
24 g of 1-methyl-2-trifluoromethyl-1H-imidazole are dissolved in THF (about 80 ml) and, at -70°C, 100 ml of n-butyllithium (about 1.6M in hexane) are added. After 10 minutes, 23 g of N,N-dimethylsulfamoyl chloride are added. After a further 10 minutes, acetic acid (25 ml) is added and the mixture is allowed to come to room temperature. Extraction by shaking with hexane and water is carried out and also washing with saturated $NaHCO_3$ solution, drying ($MgSO_4$) and concentrating. 29.5 g of crude product are obtained. Distillation at 100-110°C (high vacuum) yields 18.6 g of 5-chloro-1-methyl-2-trifluoromethyl-1H-imidazole.
^1H NMR (300 MHz, $CDCl_3$) 3.74 (s, 3H, CH3); 7.04 (s, 1H, H-C(4))

Example P-1 B: Preparation of 5-(5-chloro-1-methyl-2-trifluoromethyl-1H-imidazol-4-yl)-pyrimidine



To 1.1 g of 5-chloro-1-methyl-2-trifluoromethyl-1H-imidazole in 180 ml of THF, under an argon atmosphere at -78°C, there are added first 72 ml of 2M lithium diisopropylamide solution and then 120 ml of 1M $ZnCl_2$ solution in THF. After one hour at -78°C, 6.9 g of tetrakis(triphenylphosphine)palladium(0) and 11.4 g of 5-bromopyrimidine are added. The reaction mixture is allowed to come to room temperature and is stirred for 16 hours at room temperature. The reaction mixture is concentrated and the residue is taken up in ethyl acetate. The organic phase is washed with EDTA·2Na solution and 10 % $NaHCO_3$ solution, dried and concentrated. After chromatography of the crude product on silica gel using ethyl acetate/hexane (1:3), 7.6 g of the title product having a melting point of 90-91°C (compound 1-1.) are obtained.

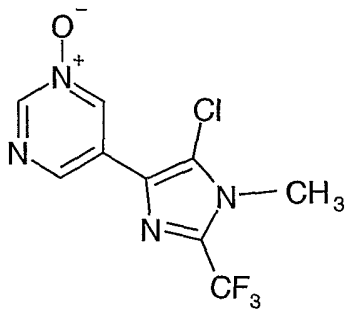
Example P-2: Preparation of 2-amino-5-(5-chloro-1-methyl-2-trifluoromethyl-1H-imidazol-4-yl)-pyrimidine



To 0.55 g of 5-chloro-1-methyl-2-trifluoromethyl-1H-imidazole in 24 ml of THF, under an argon atmosphere at -78°C, there are added first 1.5 ml of 2M lithium diisopropylamide solution and then 6 ml of 1M $ZnCl_2$ solution in THF. After one hour at -78°C, there are added 0.35 g of tetrakis(triphenylphosphine)palladium(0) and 0.52 g of 2-amino-5-bromopyrimidine. The reaction mixture is allowed to come to room temperature and is stirred for 36 hours at room temperature. The reaction mixture is concentrated and the residue is taken up in ethyl

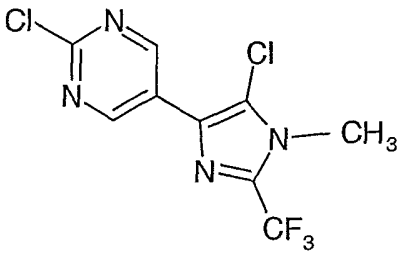
acetate. The organic phase is washed with saturated EDTA·2Na solution and 10 % $NaHCO_3$ solution, dried and concentrated. After chromatography of the crude product on silica gel using diethyl ether/hexane (2:1), 59 mg of the title product having a melting point of 262-263°C (compound 1-2.) are obtained.

Example P-3: Preparation of 5-(5-chloro-1-methyl-2-trifluoromethyl-1H-imidazol-4-yl)-pyrimidine 1-oxide



To 0.79 g of 5-(5-chloro-1-methyl-2-trifluoromethyl-1H-imidazol-4-yl)-pyrimidine and 0.37 g of urea-hydrogen peroxide complex in 24 ml of methylene chloride, at 0°C, there is added 0.54 ml of trifluoroacetic anhydride and stirring is carried out for 48 hours at room temperature. The reaction mixture is diluted with methylene chloride and is washed with 10 % $NaHCO_3$ solution, dried and concentrated. After chromatography of the crude product on silica gel using ethyl acetate/hexane (1:1), 0.12 g of the title product having a melting point of 90-91°C (compound 2-1.) is obtained.

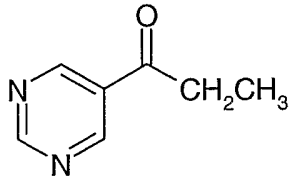
Example P-4: Preparation of 2-chloro-5-(5-chloro-1-methyl-2-trifluoromethyl-1H-imidazol-4-yl)-pyrimidine



To 0.11 g of 5-(5-chloro-1-methyl-2-trifluoromethyl-1H-imidazol-4-yl)-pyrimidine 1-oxide in 2 ml of ethylene dichloride, at room temperature, there is added 0.073 ml of phosphorus

oxychloride and stirring is carried out for 24 hours at 80°C. The reaction mixture is diluted with ethyl acetate and is washed with 10 % $NaHCO_3$ solution, dried and concentrated. After chromatography of the crude product on silica gel using methylene chloride/hexane (1:1), 32 mg of the title product having a melting point of 128-129°C (compound 1-4.) are obtained.

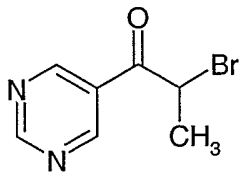
Example P-5 A: Preparation of 5-propionyl-pyrimidine



5.6 g of pyrimidine-5-carboxaldehyde in 100 ml of ether are slowly added dropwise, at 0-5°C, to 18 ml of 3M ethylmagnesium bromide solution in ether. The yellowish suspension is stirred for 1 hour at 5°C and then 30 ml of saturated NH_4Cl are added, with cooling. The phases are separated and the reaction solution is extracted 3 times with diethyl ether. The combined organic phases are washed with brine, filtered and concentrated. 3.14 g of a yellow oil are obtained, which - as the crude product - is reacted further.

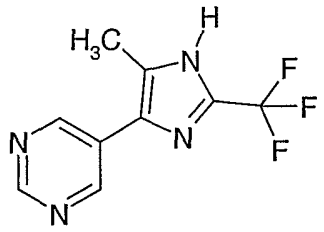
The intermediate is dissolved in 100 ml of methylene chloride and, after adding 10.26 g (1.2 eq.) of pyridinium dichromate, is stirred for 20 hours at room temperature. The reaction mixture is filtered over Hyflo. The organic phase is washed with H_2O/brine, dried and concentrated. After chromatography of the crude product on silica gel using ethyl acetate/hexane (1:2), 0.95 g of the title product is obtained in the form of a colourless oil.

Example P-5 B: Preparation of 5-(2-bromo-propionyl)-pyrimidine



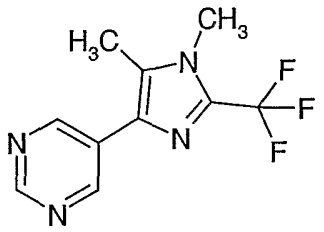
To 950 mg of 5-propionyl-pyrimidine in 10 ml of 30 % HBr in AcOH there is added dropwise, at 0 – 5°C, 0.32 ml of Br_2. The reaction solution is stirred for one hour and is then poured into ice-water. Extraction with ethyl acetate, washing and drying yield 910 mg of 5-(2-bromo-propionyl)-pyrimidine in the form of a brown oil.

Example P-5 C: Preparation of 5-(5-methyl-2-trifluoromethyl-1H-imidazol-4-yl)-pyrimidine



To a suspension of 910 mg of 5-(2-bromo-propionyl)-pyrimidine and 2.4 g of sodium sulfate in 50 ml of acetonitrile there are added 2.76 g of trifluoroacetamidine (3 eq., 85 %). The reaction mixture is stirred for one hour in an ultrasonic bath and then for 60 hours at RT. The reaction mixture is filtered, concentrated and dried. 1.54 g of 5-(5-methyl-2-trifluoromethyl-1H-imidazol-4-yl)-pyrimidine are obtained in the form of a brown oil. The product is reacted further without purification.

Example P-5 D: Preparation of 5-(1,5-dimethyl-2-trifluoromethyl-1H-imidazol-4-yl)-pyrimidine

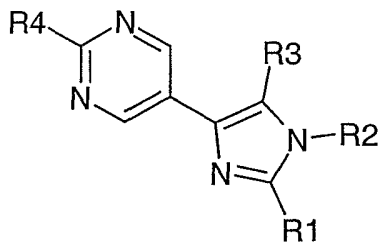


1.54 g of 5-(5-methyl-2-trifluoromethyl-1H-imidazol-4-yl)-pyrimidine are dissolved in 50 ml of acetone, and 1.87 g of potassium carbonate and 2.52 ml of methyl iodide are added. The reaction mixture is stirred for 6 hours at RT and is then poured into water. The aqueous phase is extracted with ethyl acetate, washed, dried and concentrated. After chromatography of the crude product on silica gel using ethyl acetate, 0.33 g of the title product (compound 1-92.) is obtained in the form of an oil.

The compounds listed in the following Tables can be prepared in analogous manner.

Table 1 :

Compounds of formula I:



(I)

Cmp.	R1	R2	R3	R4	Phys. data
1-1.	CF_3	H	H	H	m.p. 204-206°C
1-2.	CF_3	H	Cl	H	m.p. 187-189°C
1-3.	CF_3	CH_3	Cl	H	m.p. 90-91°C
1-4.	CF_3	CH_3	Cl	NH_2	m.p. 262-263°C
1-5.	CF_3	CH_3	Cl	F	m.p. 97-98°C
1-6.	CF_3	CH_3	Cl	Cl	m.p. 128-129°C
1-7.	CF_3	CH_3	Cl	Br	m.p. 107-108°C
1-8.	CF_3	CH_3	Cl	I	m.p. 115-116°C
1-9.	CF_3	CH_3	Cl	CN	m.p. 91-93°C
1-10.	CF_3	CH_3	Cl	CH_3	resin
1-11.	CF_3	CH_3	Cl	CH_2CH_3	
1-12.	CF_3	CH_3	Cl	OH	m.p. 230°C
1-13.	CF_3	CH_3	Cl	OCH_3	m.p. 121-122°C
1-14.	CF_3	CH_3	Cl	$O(CH_2)_2CH_3$	
1-15.	CF_3	CH_3	Cl	SCH_3	m.p. 102-103°C
1-16.	CF_3	CH_3	Cl	$SOCH_3$	
1-17.	CF_3	CH_3	Cl	SO_2CH_3	m.p. 166-167°C
1-18.	CF_3	CH_3	Cl	$N(C_2H_3)_2$	m.p. 57-58°C
1-19.	CF_3	CH_3	Cl	trimethylsilyl-ethynyl	m.p. 57-58°C
1-20.	CF_3	CH_3	Cl	ethynyl	resin
1-21.	CF_3	CH_3	Cl	$NHSO_2CH_3$	
1-22.	CF_3	CH_3	Cl	NO_2	
1-23.	CF_3	CH_3	Cl	morpholinyl(4')	m.p. 152-153°C

Cmp.	R1	R2	R3	R4	Phys. data
1-24.	CF_3	CH_3	Cl	CF_3	
1-25.	CF_3	CH_3	Cl	OCF_3	
1-26.	CF_3	CH_3	Cl	NHC(O)H	
1-27.	CF_3	CH_3	Cl	$NH(CH_2)_3F$	
1-28.	CF_3	CH_3	Cl	OCH_2OCH_3	
1-29.	CF_3	CH_3	Cl	OCH_2SCH_3	
1-30.	CF_3	CH_3	Cl	CO_2H	m.p. 217-218°C
1-31.	CF_3	CH_3	Cl	CO_2CH_3	m.p. 136-137°C
1-32.	CF_3	CH_3	Cl	$CO_2CH_2CH_3$	m.p. 71-72°C
1-33.	CF_3	CH_3	Cl	$CONH_2$	m.p. 248-250°C
1-34.	CF_3	CH_3	Cl	$OCOCH_3$	
1-35.	CF_3	CH_3	Cl	$NHC(O)CH_3$	
1-36.	CF_3	CH_3	Cl	$NHC(O)CF_3$	m.p. 211-215°C
1-37.	CF_3	CH_3	Cl	$CH_2CH=CH_2$	
1-38.	CF_3	CH_3	Cl	$CH_2CH=CCl_2$	
1-39.	CF_3	CH_3	Cl	$OCH_2CH=CH_2$	
1-40.	CF_3	CH_3	Cl	cyclopropyl	
1-41.	CF_3	CH_3	SCH_3	H	m.p. 93-94°C
1-42.	CF_3	CH_3	SO_2CH_3	H	m.p. 211-213°C
1-43.	CF_3	CH_3	CO_2H	H	m.p. 235-237°C
1-44.	CF_3	CH_3	CO_2CH_3	H	m.p. 99-100°C
1-45.	CF_3	CH_3	$CO_2CH_2CH_3$	H	resin
1-46.	CF_3	CH_3	$CONH_2$	H	m.p. 236-237°C
1-47.	CF_3	CH_3	CN	H	m.p. 89-90°C
1-48.	CF_3	CH_3	$CO_2CH_2CH_3$	$CO_2CH_2CH_3$	resin
1-49.	CF_3	CH_3	$CO_2CH_2CH_3$	$N(CH_2CH_3)_2$	resin
1-50.	CF_3	CH_3	$CO_2CH_2CH_3$	OCH_2CH_3	resin
1-51.	CF_3	CH_3	CH_3	H	oil
1-52.	CF_3	CHF_2	CH_3	H	
1-53.	CF_3	propargyl	CH_3	H	
1-54.	CF_3	SO_2CH_3	CH_3	H	
1-55.	CF_3	acetyl	CH_3	H	
1-56.	CF_3	CH_3	Et	H	
1-57.	CF_3	CH_3	cyclopropyl	H	

Cmp.	R1	R2	R3	R4	Phys. data
1-58.	CF_3	CH_3	propargyl	H	
1-59.	CF_3	CH_3	phenyl	H	m.p. 111-114°C
1-60.	CF_3	$CH_2OCH_2CH_3$	4-Cl-phenyl	H	solid
1-61.	CF_3	CH_3	H	H	m.p. 80-82°C
1-62.	CF_3	CH_2CH_3	H	H	oil
1-63.	CF_3	CH_2CN	H	H	
1-64.	CF_3	CH_2COOCH_3	H	H	
1-65.	CF_3	$CH_2OCH_2CH_3$	H	H	
1-66.	CF_3	$CH_2CH_2OCH_3$	H	H	
1-67.	CF_3	$(CH_2)_9CH_3$	H	H	
1-68.	CF_3	$(CH_2)_4CO_2CH_2CH_3$	H	H	
1-69.	CF_3	CHF_2	H	H	
1-70.	CF_3	allyl	H	H	oil
1-71.	CF_3	propargyl	H	H	
1-72.	CF_3	acetyl	H	H	
1-73.	CF_3	SO_2CH_3	H	H	
1-74.	CF_3	CH_2phenyl	H	H	m.p. 137-138°C
1-75.	CF_3	CH_2CH_2phenyl	H	H	
1-76.	CF_3	$(CH_2)_3$phenyl	H	H	
1-77.	CF_3	CH_2-(3-CF_3-phenyl)	H	H	
1-78.	CF_3	CH_2OCH_2phenyl	H	H	oil
1-79.	CF_3	CH_2OCH_2-(2-Cl-phenyl)	H	H	
1-80.	CF_3	CH_2OCH_2-(3-Cl-phenyl)	H	H	
1-81.	CF_3	CH_2OCH_2-(4-Cl-phenyl)	H	H	
1-82.	CF_3	CH_2CH_3	Cl	H	m.p. 52-53°C
1-83.	CF_3	CH_2CN	Cl	H	oil
1-84.	CF_3	CH_2COOCH_3	Cl	H	resin
1-85.	CF_3	$CH_2OCH_2CH_3$	Cl	H	m.p. 54-57°C
1-86.	CF_3	$CH_2CH_2OCH_3$	Cl	H	m.p. 65-66°C
1-87.	CF_3	$(CH_2)_9CH_3$	Cl	H	oil
1-88.	CF_3	$(CH_2)_4CO_2CH_2CH_3$	Cl	H	oil

Cmp.	R1	R2	R3	R4	Phys. data
1-89.	CF_3	CHF_2	Cl	H	
1-90.	CF_3	allyl	Cl	H	solid
1-91.	CF_3	propargyl	Cl	H	oil
1-92.	CF_3	acetyl	Cl	H	
1-93.	CF_3	SO_2CH_3	Cl	H	
1-94.	CF_3	CH_2phenyl	Cl	H	m.p. 114-116°C
1-95.	CF_3	CH_2CH_2phenyl	Cl	H	m.p. 85-87°C
1-96.	CF_3	$(CH_2)_3$phenyl	Cl	H	oil
1-97.	CF_3	CH_2-(3-CF_3-phenyl)	Cl	H	m.p. 96-98°C
1-98.	CF_3	CH_2OCH_2phenyl	Cl	H	oil
1-99.	CF_3	CH_2OCH_2-(2-Cl-phenyl)	Cl	H	solid
1-100.	CF_3	CH_2OCH_2-(3-Cl-phenyl)	Cl	H	m.p. 101-103°C
1-101.	CF_3	CH_2OCH_2-(4-Cl-phenyl)	Cl	H	m.p. 126-129°C
1-102.	CF_3	CH_3	Br	H	m.p. 109-111°C
1-103.	CF_3	CHF_2	Br	H	
1-104.	CF_3	acetyl	Br	H	
1-105.	CF_3	propargyl	Br	H	
1-106.	CF_3	SO_2CH_3	Br	H	
1-107.	CF_3	CH_2CH_3	Br	H	
1-108.	CF_2CF_3	CH_3	H	H	
1-109.	CF_2CF_3	CH_3	Cl	H	
1-110.	CF_2CF_3	CH_3	Br	H	
1-111.	$CF_2COOCH_2CH_3$	CH_3	H	H	
1-112.	$CF_2COOCH_2CH_3$	CH_3	Cl	H	solid
1-113.	CH_3	CH_2OCH_2phenyl	H	H	m.p. 121-123°C
1-114.	CH_3	CH_3	CH_3	H	
1-115.	CH_3	CHF_2	CH_3	H	
1-116.	CH_3	propargyl	CH_3	H	
1-117.	CH_3	SO_2CH_3	CH_3	H	
1-118.	CH_3	acetyl	CH_3	H	
1-119.	CH_3	CH_3	H	H	m.p. 108-109°C

Cmp.	R1	R2	R3	R4	Phys. data
1-120.	CH_3	CHF_2	H	H	
1-121.	CH_3	acetyl	H	H	
1-122.	CH_3	propargyl	H	H	
1-123.	CH_3	SO_2CH_3	H	H	
1-124.	CH_3	$SO_2N(CH_3)_2$	H	H	m.p. 120-122°C
1-125.	CH_3	CH_2CH_3	H	H	
1-126.	CH_3	H	Cl	H	solid
1-127.	CH_3	CH_3	Cl	H	
1-128.	CH_3	CHF_2	Cl	H	
1-129.	CH_3	acetyl	Cl	H	
1-130.	CH_3	propargyl	Cl	H	
1-131.	CH_3	SO_2CH_3	Cl	H	
1-132.	CH_3	CH_2CH_3	Cl	H	
1-133.	CH_3	CH_2OCH_2phenyl	Cl	H	solid
1-134.	CH_3	H	Br	H	m.p. 201-202°C
1-135.	CH_3	CH_3	Br	H	m.p. 207-208°C
1-136.	CH_3	CHF_2	Br	H	m.p. 197-199°C
1-137.	CH_3	acetyl	Br	H	
1-138.	CH_3	propargyl	Br	H	m.p. 138-139°C
1-139.	CH_3	SO_2CH_3	Br	H	resin
1-140.	CH_3	CH_2CH_3	Br	H	
1-141.	CH_2Cl	H	H	H	
1-142.	CH_2Cl	H	Cl	H	
1-143.	CH_2Cl	CH_3	H	H	
1-144.	CH_2Cl	CH_3	Cl	H	m.p. 104-107°C
1-145.	CH_2OCH_3	H	H	H	
1-146.	CH_2OCH_3	H	Cl	H	
1-147.	CH_2OCH_3	CH_3	H	H	
1-148.	CH_2OCH_3	CH_3	Cl	H	m.p. 123-125°C
1-149.	phenyl	CH_3	H	H	
1-150.	phenyl	CHF_2	H	H	
1-151.	phenyl	acetyl	H	H	
1-152.	phenyl	propargyl	H	H	
1-153.	phenyl	SO_2CH_3	H	H	

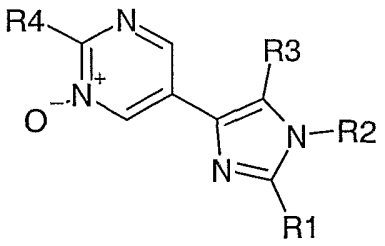
Cmp.	R1	R2	R3	R4	Phys. data
1-154.	phenyl	CH_2CH_3	H	H	
1-155.	phenyl	CH_3	Cl	H	m.p. 110-113°C
1-156.	phenyl	CHF_2	Cl	H	
1-157.	phenyl	acetyl	Cl	H	
1-158.	phenyl	propargyl	Cl	H	
1-159.	phenyl	SO_2CH_3	Cl	H	
1-160.	phenyl	CH_2CH_3	Cl	H	
1-161.	phenyl	CH_3	Br	H	
1-162.	phenyl	CHF_2	Br	H	
1-163.	phenyl	acetyl	Br	H	
1-164.	phenyl	propargyl	Br	H	
1-165.	phenyl	SO_2CH_3	Br	H	
1-166.	phenyl	CH_2CH_3	Br	H	
1-167.	cyclopropyl	CHF_2	H	H	
1-168.	cyclopropyl	acetyl	H	H	
1-169.	cyclopropyl	propargyl	H	H	
1-170.	cyclopropyl	SO_2CH_3	H	H	
1-171.	cyclopropyl	CH_2CH_3	H	H	
1-172.	cyclopropyl	CH_3	Cl	H	
1-173.	cyclopropyl	CHF_2	Cl	H	
1-174.	cyclopropyl	acetyl	Cl	H	
1-175.	cyclopropyl	propargyl	Cl	H	
1-176.	cyclopropyl	SO_2CH_3	Cl	H	
1-177.	cyclopropyl	CH_2CH_3	Cl	H	
1-178.	cyclopropyl	CH_3	Br	H	
1-179.	cyclopropyl	CHF_2	Br	H	
1-180.	cyclopropyl	acetyl	Br	H	
1-181.	cyclopropyl	propargyl	Br	H	
1-182.	cyclopropyl	SO_2CH_3	Br	H	
1-183.	cyclopropyl	CH_2CH_3	Br	H	
1-184.	cyclopropyl	CHF_2	H	H	
1-185.	SCF_3	CH_3	H	H	
1-186.	SCF_3	CHF_2	H	H	
1-187.	SCF_3	acetyl	H	H	

Cmp.	R1	R2	R3	R4	Phys. data
1-188.	SCF_3	propargyl	H	H	
1-189.	SCF_3	SO_2CH_3	H	H	
1-190.	SCF_3	CH_2CH_3	H	H	
1-191.	SCF_3	CH_3	Cl	H	m.p. 97-98°C
1-192.	SCF_3	CHF_2	Cl	H	
1-193.	SCF_3	acetyl	Cl	H	
1-194.	SCF_3	propargyl	Cl	H	
1-195.	SCF_3	SO_2CH_3	Cl	H	
1-196.	SCF_3	CH_2CH_3	Cl	H	
1-197.	SCF_3	CH_3	Br	H	
1-198.	SCF_3	CHF_2	Br	H	
1-199.	SCF_3	acetyl	Br	H	
1-200.	SCF_3	propargyl	Br	H	
1-201.	SCF_3	SO_2CH_3	Br	H	
1-202.	SCF_3	CH_2CH_3	Br	H	
1-203.	SCF_3	CHF_2	Br	H	
1-204.	SCH_3	CH_3	Cl	H	m.p. 128-129°C
1-205.	$SOCH_3$	CH_3	Cl	H	
1-206.	SO_2CH_3	CH_3	Cl	H	m.p. 173-175°C
1-207.	SCH_3	cyclopropyl	$CO_2CH_2CH_3$	H	m.p. 92-94°C
1-208.	$SOCH_3$	cyclopropyl	$CO_2CH_2CH_3$	H	m.p. 110-112°C
1-209.	SO_2CH_3	cyclopropyl	$CO_2CH_2CH_3$	H	m.p. 119-122°C
1-210.	$SOCF_3$	CH_3	Cl	H	
1-211.	SO_2CF_3	CH_3	Cl	H	
1-212.	OCH_3	CH_3	Cl	H	m.p. 144-146°C
1-213.	OCH_2CH_3	CH_3	Cl	H	m.p. 107-110°C
1-214.	CN	CH_3	Cl	H	solid
1-215.	$COCF_3$	CH_3	Cl	H	
1-216.	$CO_2CH_2CH_3$	CH_3	Cl	H	solid
1-217.	C(O)H	CH_3	H	H	m.p. 175-178°C
1-218.	$C(O)CH_3$	CH_3	H	H	m.p. 194-195°C
1-219.	C(O)phenyl	CH_3	H	H	m.p. 180-182°C
1-220.	C(O)H	CH_3	Cl	H	m.p. 180-182°C
1-221.	$C(O)CH_3$	CH_3	Cl	H	m.p. 126-127°C

Cmp.	R1	R2	R3	R4	Phys. data
1-222.	C(O)phenyl	CH_3	Cl	H	m.p. 125-127°C
1-223.	Br	CH_3	H	H	resin
1-224.	Br	CH_3	Cl	H	
1-225.	Br	CH_3	Br	H	m.p. 139-141°C
1-226.	Cl	CH_3	H	H	resin
1-227.	Cl	CH_3	Cl	H	m.p. 108-111°C
1-228.	Cl	CH_2OCH_3	Cl	H	oil
1-229.	Cl	CH_3	Br	H	
1-230.	H	CH_3	H	H	m.p. 160-163°C
1-231.	H	CH_2OCH_3	H	H	m.p. 116-118°C
1-232.	NO_2	CH_3	H	H	m.p. 191-192°C
1-233.	NO_2	CH_3	Cl	H	m.p. 135-137°C
1-234.	3-CF_3-phenyl	CH_3	H	H	
1-235.	3-CF_3-phenyl	CH_3	Cl	H	m.p. 114-117°C
1-236.	4-CF_3-phenyl	CH_3	H	H	
1-237.	4-CF_3-phenyl	CH_3	Cl	H	m.p. 144-147°C
1-238.	3,4,5-trifluoro-phenyl	CH_3	H	H	
1-239.	3,4,5-trifluoro-phenyl	CH_3	Cl	H	m.p. 161-163°C
1-240.	3-pyridyl	CH_3	H	H	solid
1-241.	3-pyridyl	CH_3	Cl	H	m.p. 197-200°C
1-242.	3-pyridyl	allyl	H	H	m.p. 168°C
1-243.	3-pyridyl	allyl	Cl	H	m.p. 92-94°C
1-244.	3-pyridyl	CH_2phenyl	H	H	solid
1-245.	3-pyridyl	CH_2phenyl	Cl	H	amorphous
1-246.	5-pyrimidinyl	CH_3	H	H	
1-247.	5-pyrimidinyl	CH_3	Cl	H	m.p. 226-229°C
1-248.	2-thiophenyl	CH_3	H	H	
1-249.	2-thiophenyl	CH_3	Cl	H	m.p. 128-130°C
1-250.	3-thiophenyl	CH_3	H	H	
1-251.	3-thiophenyl	CH_3	Cl	H	m.p. 143-145°C

Table 2:

Compounds of formula II A:



(IIA),

Cmp.	R1	R2	R3	R4	Phys. data
2-1.	CF_3	CH_3	Cl	H	m.p. 145-147°C
2-2.	CF_3	CH_3	Cl	F	
2-3.	CF_3	CH_3	Cl	Cl	
2-4.	CF_3	CH_3	Cl	Br	
2-5.	CF_3	CH_3	Cl	I	
2-6.	CF_3	CH_3	Cl	CN	
2-7.	CF_3	CH_3	Cl	CH_3	
2-8.	CF_3	CH_3	Cl	CH_2CH_3	
2-9.	CF_3	CH_3	Cl	OCH_3	
2-10.	CF_3	CH_3	Cl	CO_2CH_3	

Biological Examples

Example B1: Herbicidal action prior to emergence of the plants (pre-emergence action)
Monocotyledonous and dicotyledonous test plants are sown in standard soil in pots. Immediately after sowing, the test compounds, in the form of an aqueous suspension (prepared from a wettable powder (Example F3, b) according to WO 97/34485) or in the form of an emulsion (prepared from an emulsifiable concentrate (Example F1, c) according to WO 97/34485), are applied by spraying, in an optimum concentration (500 litres of water per ha). The test plants are then grown in a greenhouse under optimum conditions.
The test is evaluated after a test duration of 4 weeks. The compounds according to Tables 1 and 2 exhibit good to very good herbicidal action.

The same results are obtained when the compounds of formula I are formulated in accordance with the other Examples according to WO 97/34485.

Example B2: Post-emergence herbicidal action

Monocotyledonous and dicotyledonous test plants are sown in standard soil in pots. When the test plants are at the 2- to 3-leaf stage, the test compounds, in the form of an aqueous suspension (prepared from a wettable powder (Example F3, b) according to WO 97/34485) or in the form of an emulsion (prepared from an emulsifiable concentrate (Example F1, c) according to WO 97/34485), are applied by spraying, in an optimum concentration (500 litres of water per ha). The test plants are then grown on in a greenhouse under optimum conditions.

The test is evaluated after a test duration of 2 to 3 weeks. The compounds according to Tables 1 and 2 exhibit good to very good herbicidal action.

The same results are obtained when the compounds of formula I are formulated in accordance with the other Examples according to WO 97/34485.

Example B3: Microscreen

Monocotyledonous and dicotyledonous test plants are sown in sterilised standard soil in seed trays each having 96 cells. After about 9 days' cultivation under controlled conditions in a climatic chamber (cultivation at 17/23°C; 13 hours' light; 50-60 % humidity; after application at 19/24°C), the plants *Digitaria sanguinalis* and *Setaria italica* are treated with an aqueous spray solution of 1 g/l, 0.250 g/l or 0.063 g/l of the active ingredient used, including 10 % DMSO as solvent (rate of application corresponding to 1000, 250 and 63 g/ha, respectively). The plants are grown on in the climatic chamber until the test is evaluated (100 % = total damage to plant, 0 % = no damage to plant) after 8 days.

Table B3: Damage at 1000 g/ha

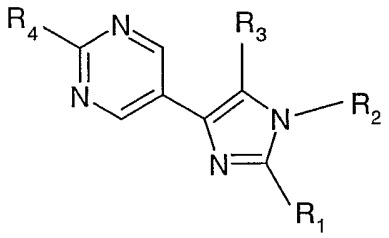
Compound no.	Digitaria	Setaria
1-83.	70	80
1-204.	40	70
1-98.	60	80
1-94.	80	90
1-45.	50	80

1-82.	100	90
1-96.	70	80
1-227.	50	90
1-3.	80	90
1-90.	100	90
1-51.	30	70
1-86.	90	90
1-91.	80	80
2-1.	70	40
1-85.	50	80

The compounds tested exhibit good to very good control of *Digitaria sanguinalis* and *Setaria italica*.

What is claimed is:

1. A compound of formula I



(I),

wherein

R_1 is hydrogen, halogen, cyano, amino, hydroxy, nitro, formyl, -COOH, -$CONH_2$, -$CSNH_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6-alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring which may contain a further hetero atom selected from N, O and S, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6alkyl)S(O)$_m$, (C_1-C_6alkylamino)S(O)$_m$, (C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, C_1-C_6alkylsulfonyloxy, halo-C_1-C_6alkylsulfonyloxy, C_1-C_6alkylS(O)$_m$amino; C_1-C_6alkyl-S(O)$_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, C_1-C_6alkyl-S(O)$_m$-C_1-C_6alkylamino, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by

formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6alkenyl)S(O)$_m$, (halo-C_2-C_6alkenyl)S(O)$_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluorothio, C_2-C_6alkynyl; C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)S(O)$_m$, (halo-C_3-C_6alkynyl)S(O)$_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, halo-C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, -Q or -A-Q;

R_2 is hydrogen, cyano, hydroxy, amino, formyl, -$CONH_2$, -$CSNH_2$, C_1-C_6alkyl; C_1-C_6alkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; C_1-C_6alkoxy; C_1-C_6alkoxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylamino, halo-C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6alkyl)S(O)$_m$, (C_1-C_6alkylamino)S(O)$_m$, (C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino,

hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_2-C_6alkenyloxy, halo-C_2-C_6-alkenyloxy, (C_2-C_6alkenyl)S(O)$_m$, (halo-C_2-C_6alkenyl)S(O)$_m$, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_2-C_6alkynyl; C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, -Q or -A-Q;

R_3 is hydrogen, halogen, cyano, amino, hydroxy, nitro, formyl, -COOH, -CONH$_2$, -CSNH$_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6-alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring which may be interrupted by a hetero atom such as N, O or S, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6alkyl)S(O)$_m$, (C_1-C_6alkylamino)S(O)$_m$, (C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, C_1-C_6alkylsulfonyloxy, halo-C_1-C_6alkylsulfonyloxy, C_1-C_6alkylS(O)$_m$amino; C_1-C_6alkyl-S(O)$_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, C_1-C_6alkyl-S(O)$_m$-C_1-C_6alkylamino, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyloxy substituted by

halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6alkenyl)S(O)$_m$, (halo-C_2-C_6alkenyl)S(O)$_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluorothio, C_2-C_6alkynyl; C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)S(O)$_m$, (halo-C_3-C_6alkynyl)S(O)$_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, or halo-C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different;

R_4 is hydrogen, halogen, cyano, amino, nitro, formyl, -COOH, -$CONH_2$, -$CSNH_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6alkyl)S(O)$_m$, C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or

different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; tri(C_1-C_6alkyl)silyl, C_2-C_6alkynyl; or C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl;

A is C_1-C_4alkylene; C_1-C_4alkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6-dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4oxyalkylene; C_1-C_4oxyalkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4alkyleneoxy; C_1-C_4alkyleneoxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4oxy-alkyleneoxy; C_1-C_4oxyalkyleneoxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6di-alkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4aminoalkylene; C_1-C_4amino-alkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4alkyleneamino; C_1-C_4alkyleneamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4-aminoalkyleneamino; C_1-C_4aminoalkyleneamino substituted by halogen, amino, C_1-C_6alkyl-amino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4thioalkylene; C_1-C_4thioalkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_3-C_6cycloalkylene; C_3-C_6cycloalkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_2-C_4alkenylene; C_2-C_4alkenylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_2-C_4alkynylene; C_2-C_4alkynyl-ene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; O, S, NH, formylamino, C_1-C_4alkylamino, $S(O)_m$, oxysulfonyl, sulfonyloxy, aminosulfonyl, sulfonylamino, carbonyl, oxycarbonyl, carbonyloxy, oxycarbonyloxy, carbonylamino, aminocarbonyl, aminocarbonyloxy, oxycarbonylamino or aminocarbonylamino;

Q is aryl, aryl substituted one or more times by halogen, cyano, hydroxy, amino, nitro, formyl, -COOH, -$CONH_2$, -$CSNH_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the

same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6alkyl)S(O)$_m$, (C_1-C_6alkylamino)S(O)$_m$, (C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)-S(O)$_m$ wherein the alkyl groups are the same or different, C_1-C_6alkylsulfonyloxy, halo-C_1-C_6-alkylsulfonyloxy, C_1-C_6alkylS(O)$_m$amino; C_1-C_6alkylS(O)$_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-carbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6-dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkyl-carbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonyl-amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkyl-amino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6-alkenyl)S(O)$_m$, (halo-C_2-C_6alkenyl)S(O)$_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6-dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenyl-amino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluoro-thio; C_2-C_6alkynyl, or C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6-dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)S(O)$_m$, (halo-C_3-C_6alkynyl)S(O)$_m$, C_3-C_6alkynylamino,

halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, halo-C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, or Q is a monocyclic heterocycle, or a monocyclic heterocycle substituted one or more times by halogen, cyano, hydroxy, amino, nitro, formyl, -COOH, -$CONH_2$, -$CSNH_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)$S(O)_m$, (halo-C_1-C_6alkyl)$S(O)_m$, (C_1-C_6alkylamino)$S(O)_m$, (C_1-C_6dialkylamino)$S(O)_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)$S(O)_m$ wherein the alkyl groups are the same or different, C_1-C_6alkylsulfonyloxy, halo-C_1-C_6alkylsulfonyloxy, C_1-C_6alkyl$S(O)_m$amino; C_1-C_6alkyl$S(O)_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyl, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyl, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyloxy, C_1-C_6alkyl-$S(O)_m$-C_1-C_6alkylamino, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6-dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylamino-carbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6alkenyl)-$S(O)_m$, (halo-C_2-C_6alkenyl)$S(O)_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy,

cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluorothio; C_2-C_6alkynyl, or C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)S(O)$_m$, (halo-C_3-C_6alkynyl)S(O)$_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, halo-C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, and

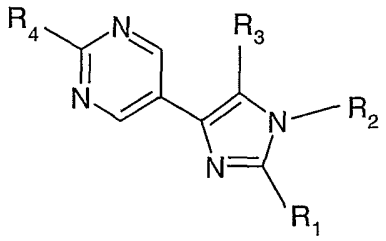
m is 0, 1 or 2, or

an enantiomer, a mixture of enantiomers, a tautomer, a mixture of tautomers or an agrochemically acceptable salt of a compound of formula I, an N-oxide of such a compound or an enantiomer, a mixture of enantiomers, a tautomer, a mixture of tautomers or an agrochemically acceptable salt thereof, with the exclusion of 5-(2-butyl-3H-imidazol-4-yl)-pyrimidine, 5-(5-ethyl-2-(4-fluorophenyl)-1H-imidazol-4-yl)-pyrimidine hydrochloride, N-{5-[2-(4-fluorophenyl)-5-propyl-1H-imidazol-4-yl]-pyrimidin-2-yl}-acetamide dihydrochloride, 5-(1H-imidazol-4-yl)-pyrimidine dihydrochloride and 4-(4-pyrimidin-5-yl-imidazol-1-yl)-butylamine.

2. A process for the preparation of a compound of formula I according to claim 1, which comprises coupling together a pyrimidine functionalised in the 5-position and an imidazole functionalised in the 4-position by means of transition metal catalysis.

3. A process for the preparation of a compound of formula I according to claim 1, which comprises cyclising a 5-(2-haloalkylcarbonyl)-pyrimidine with an amidine.

4. A herbicidal and plant-growth-inhibiting composition which comprises, on an inert carrier, a herbicidally effective amount of a compound of formula I



(I),

wherein

R_1 is hydrogen, halogen, cyano, amino, hydroxy, nitro, formyl, -COOH, $-CONH_2$, $-CSNH_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6-alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring which may contain a further hetero atom selected from N, O and S, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)$S(O)_m$, (halo-C_1-C_6alkyl)$S(O)_m$, (C_1-C_6alkylamino)$S(O)_m$, (C_1-C_6dialkylamino)$S(O)_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)$S(O)_m$ wherein the alkyl groups are the same or different, C_1-C_6alkylsulfonyloxy, halo-C_1-C_6alkylsulfonyloxy, C_1-C_6alkyl$S(O)_m$amino; C_1-C_6alkyl-$S(O)_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyl, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyl, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyloxy, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkylamino, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino,

C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6alkenyl)$S(O)_m$, (halo-C_2-C_6alkenyl)$S(O)_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluorothio, C_2-C_6alkynyl; C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)$S(O)_m$, (halo-C_3-C_6alkynyl)$S(O)_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, halo-C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, -Q or -A-Q;

R_2 is hydrogen, cyano, hydroxy, amino, formyl, $-CONH_2$, $-CSNH_2$, C_1-C_6alkyl; C_1-C_6alkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; C_1-C_6alkoxy; C_1-C_6alkoxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylamino, halo-C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)$S(O)_m$, (halo-C_1-C_6alkyl)$S(O)_m$, (C_1-C_6alkylamino)$S(O)_m$, (C_1-C_6dialkylamino)$S(O)_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)$S(O)_m$ wherein the alkyl groups are the same or different, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyl, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyl, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkyl-carbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl

substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_2-C_6alkenyloxy, halo-C_2-C_6-alkenyloxy, (C_2-C_6alkenyl)S(O)$_m$, (halo-C_2-C_6alkenyl)S(O)$_m$, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_2-C_6alkynyl; C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, -Q or -A-Q;

R_3 is hydrogen, halogen, cyano, amino, hydroxy, nitro, formyl, -COOH, -$CONH_2$, -$CSNH_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6-alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring which may be interrupted by a hetero atom such as N, O or S, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6alkyl)S(O)$_m$, (C_1-C_6alkyl-amino)S(O)$_m$, (C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, C_1-C_6-alkylsulfonyloxy, halo-C_1-C_6alkylsulfonyloxy, C_1-C_6alkylS(O)$_m$amino; C_1-C_6alkylS(O)$_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkyl-carbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkyl-

aminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6alkenyl)S(O)$_m$, (halo-C_2-C_6alkenyl)S(O)$_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6-dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluorothio, C_2-C_6alkynyl; C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)S(O)$_m$, (halo-C_3-C_6alkynyl)S(O)$_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, or halo-C_3-C_6-dialkynylamino wherein the alkynyl radicals are the same or different;

R_4 is hydrogen, halogen, cyano, amino, nitro, formyl, -COOH, -$CONH_2$, -$CSNH_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6alkyl)S(O)$_m$, C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl

substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; tri(C_1-C_6alkyl)silyl, C_2-C_6alkynyl; or C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl;

A is C_1-C_4alkylene; C_1-C_4alkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6-dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4oxyalkylene; C_1-C_4oxyalkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4alkyleneoxy; C_1-C_4alkyleneoxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4oxy-alkyleneoxy; C_1-C_4oxyalkyleneoxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6di-alkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4aminoalkylene; C_1-C_4amino-alkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4alkyleneamino; C_1-C_4alkyleneamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4-aminoalkyleneamino; C_1-C_4aminoalkyleneamino substituted by halogen, amino, C_1-C_6alkyl-amino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_4thioalkylene; C_1-C_4thioalkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_3-C_6cycloalkylene; C_3-C_6cycloalkylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_2-C_4alkenylene; C_2-C_4alkenylene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_2-C_4alkynylene; C_2-C_4alkynyl-ene substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; O, S, NH, formylamino, C_1-C_4alkylamino, $S(O)_m$, oxysulfonyl, sulfonyloxy, aminosulfonyl, sulfonylamino, carbonyl, oxycarbonyl, carbonyloxy, oxycarbonyloxy, carbonylamino, aminocarbonyl, aminocarbonyloxy, oxycarbonylamino or aminocarbonylamino;

Q is aryl, aryl substituted one or more times by halogen, cyano, hydroxy, amino, nitro, formyl, -COOH, $-CONH_2$, $-CSNH_2$, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)$S(O)_m$, (halo-C_1-C_6alkyl)$S(O)_m$, (C_1-C_6alkylamino)$S(O)_m$, (C_1-C_6dialkyl-

amino)$S(O)_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)-$S(O)_m$ wherein the alkyl groups are the same or different, C_1-C_6alkylsulfonyloxy, halo-C_1-C_6-alkylsulfonyloxy, C_1-C_6alkyl$S(O)_m$amino; C_1-C_6alkyl$S(O)_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyl, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyl, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkyloxy, C_1-C_6alkyl$S(O)_m$-C_1-C_6alkylamino, halo-C_1-C_6alkyl$S(O)_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-carbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6-dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkyl-carbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonyl-amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkyl-amino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6-alkenyl)$S(O)_m$, (halo-C_2-C_6alkenyl)$S(O)_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6-dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenyl-amino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4-alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluoro-thio; C_2-C_6alkynyl, or C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6-dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl; C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)$S(O)_m$, (halo-C_3-C_6alkynyl)$S(O)_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, halo-C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, or Q is a monocyclic heterocycle, or a monocyclic heterocycle substituted one or more times by halogen, cyano, hydroxy, amino, nitro, formyl, -COOH, -$CONH_2$, -$CSNH_2$, C_1-C_6alkyl,

halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6alkoxy, C_1-C_6alkylamino, halo-C_1-C_6alkylamino, C_1-C_6dialkylamino wherein the alkyl groups are the same or different or together with the nitrogen atom to which they are bonded form a 4- to 7-membered ring, halo-C_1-C_6dialkylamino wherein the alkyl groups are the same or different, (C_1-C_6alkyl)S(O)$_m$, (halo-C_1-C_6-alkyl)S(O)$_m$, (C_1-C_6alkylamino)S(O)$_m$, (C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, (halo-C_1-C_6dialkylamino)S(O)$_m$ wherein the alkyl groups are the same or different, C_1-C_6alkylsulfonyloxy, halo-C_1-C_6alkylsulfonyloxy, C_1-C_6alkylS(O)$_m$amino; C_1-C_6alkylS(O)$_m$amino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxy-C_1-C_6alkyl, halo-C_1-C_6alkoxy-C_1-C_6-alkyl, C_1-C_6alkoxy-C_1-C_6alkyloxy, halo-C_1-C_6alkoxy-C_1-C_6alkyloxy, C_1-C_6alkoxy-C_1-C_6alkylamino, halo-C_1-C_6alkoxy-C_1-C_6alkylamino, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyl, C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkyloxy, C_1-C_6alkyl-S(O)$_m$-C_1-C_6alkylamino, halo-C_1-C_6alkylS(O)$_m$-C_1-C_6alkylamino, C_1-C_6alkylcarbonyl; C_1-C_6alkylcarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkoxycarbonyl; C_1-C_6alkoxycarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylcarbonyloxy; C_1-C_6alkylcarbonyloxy substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; formylamino, C_1-C_6alkylcarbonylamino; C_1-C_6alkylcarbonylamino substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6alkylaminocarbonyl; C_1-C_6alkylaminocarbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; C_1-C_6-dialkylaminocarbonyl wherein the alkyl groups are the same or different; C_1-C_6dialkylamino-carbonyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl, wherein the alkyl groups are the same or different; C_2-C_6alkenyl, halo-C_2-C_6alkenyl, C_3-C_6alkenyloxy, halo-C_3-C_6alkenyloxy, (C_2-C_6alkenyl)-S(O)$_m$, (halo-C_2-C_6alkenyl)S(O)$_m$, C_3-C_6alkenylamino, halo-C_3-C_6alkenylamino, C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, halo-C_3-C_6dialkenylamino wherein the alkenyl radicals are the same or different, C_3-C_6cycloalkyl; C_3-C_6cycloalkyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; tri(C_1-C_6alkyl)silyl; tri(C_1-C_6alkyl)silyl substituted by halogen, amino, C_1-C_6alkylamino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy or by formyl; pentafluorothio; C_2-C_6alkynyl, or C_2-C_6alkynyl substituted by halogen, amino, C_1-C_6alkyl-amino, C_1-C_6dialkylamino, hydroxy, cyano, C_1-C_4alkoxy, tri(C_1-C_6alkyl)silyl or by formyl;

C_3-C_6alkynyloxy, halo-C_3-C_6alkynyloxy, (C_3-C_6alkynyl)S(O)$_m$, (halo-C_3-C_6alkynyl)S(O)$_m$, C_3-C_6alkynylamino, halo-C_3-C_6alkynylamino, C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, halo-C_3-C_6dialkynylamino wherein the alkynyl radicals are the same or different, and
m is 0, 1 or 2, or
an enantiomer, a mixture of enantiomers, a tautomer, a mixture of tautomers, or an agrochemically acceptable salt of a compound of formula I, an N-oxide of such a compound or an enantiomer, a mixture of enantiomers, a tautomer, a mixture of tautomers or an agrochemically acceptable salt thereof.

5. A method of controlling undesired plant growth, which comprises applying a herbicidally effective amount of a composition according to claim 4 to the plants or to the locus thereof.

6. A method of inhibiting plant growth, which comprises applying a herbicidally effective amount of a composition according to claim 4 to the plants or to the locus thereof.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP2004/012878

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C07D403/04 A01N43/54

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C07D A01N

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, PAJ, WPI Data, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 595 015 A (BAYER AG) 4 May 1994 (1994-05-04) page 14, line 54 - page 15, line 26; claims 1-9; example 1	1-6
A	EP 0 581 086 A (BAYER AG) 2 February 1994 (1994-02-02) page 29, line 28 - page 30, line 49; claims 1-10; examples 1-22	1-6

☐ *Further documents are listed in the continuation of box C.*

☒ *Patent family members are listed in annex.*

° Special categories of cited documents :

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

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

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

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

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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP2004/012878

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0595015 A	04-05-1994	DE 4233028 A1	07-04-1994
		BR 9303988 A	05-04-1994
		EP 0595015 A1	04-05-1994
		JP 6199836 A	19-07-1994
EP 0581086 A	02-02-1994	DE 4224163 A1	27-01-1994
		BR 9302935 A	16-02-1994
		EP 0581086 A1	02-02-1994
		JP 6184138 A	05-07-1994