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(54) **SUBSTITUTED PYRAZINE (THIO)PYRANS WITH A HERBICIDAL ACTION**

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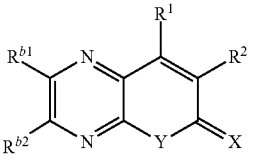
(57) **ABSTRACT**

Substituted pyrazines of the formula I

I

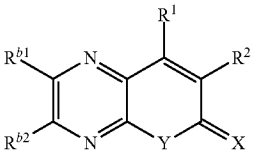


in which the variables are defined according to the description, their agriculturally suitable salts, processes and intermediates for preparing the pyrazines of the formula I, compositions comprising them and their use as herbicides, i.e. for controlling harmful plants, and also a method for controlling unwanted vegetation which comprises allowing a herbicidally effective amount of at least one pyrazine compound of the formula I to act on plants, their seed and/or their habitat.

SUBSTITUTED PYRAZINE (THIO)PYRANS WITH A HERBICIDAL ACTION

[0001] The present invention relates to substituted pyrazines of the formula I

I



in which the variables have the following meaning:

[0002] R^1 is O—R^A, or $S(O)_n$—R^A or $OS(O)_n$—R^A;

[0003] R^A is hydrogen, C_1-C_4-alkyl, Z—C_3-C_6-cycloalkyl, C_1-C_4-haloalkyl, C_2-C_6-alkenyl, Z—C_3-C_6-cycloalkenyl, C_2-C_6-alkynyl, Z—C(=O)—R^a, Z—P(=O)$(R^a)_2$, a 3- to 7-membered monocyclic or 9- or 10-membered bicyclic saturated, unsaturated or aromatic heterocycle which contains 1, 2, 3 or 4 heteroatoms selected from the group consisting of O, N and S, which may be partially or fully substituted by groups R^a and/or R^b and which is attached via carbon or nitrogen,

[0004] R^a is hydrogen, OH, C_1-C_8-alkyl, C_1-C_4-haloalkyl, Z—C_3-C_6-cycloalkyl, C_2-C_8-alkenyl, Z—C_5-C_6-cycloalkenyl, C_2-C_8-alkynyl, Z—C_1-C_6-alkoxy, Z—C_1-C_4-haloalkoxy, Z—C_3-C_8-alkenyloxy, Z—C_3-C_8-alkynyloxy, NR^iR^{ii}, C_1-C_6-alkylsulfonyl, Z-(tri-C_1-C_4-alkyl)silyl, Z-phenyl, Z-phenoxy, Z-phenylamino or a 5- or 6-membered monocyclic or 9- or 10-membered bicyclic heterocycle which contains 1, 2, 3 or 4 heteroatoms selected from the group consisting of O, N and S, where the cyclic groups are unsubstituted or substituted by 1, 2, 3 or 4 groups R^b;

[0005] R^i, R^{ii} independently of one another are hydrogen, C_1-C_8-alkyl, C_1-C_4-halo-alkyl, C_3-C_8-alkenyl, C_3-C_8-alkynyl, Z—C_3-C_6-cycloalkyl, Z—C_1-C_8-alkoxy, Z—C_1-C_8-haloalkoxy;

[0006] R^i and R^{ii} together with the nitrogen atom to which they are attached may also form a 5- or 6-membered monocyclic or 9- or 10-membered bicyclic heterocycle which contains 1, 2, 3 or 4 heteroatoms selected from the group consisting of O, N and S;

[0007] Z is a covalent bond or C_1-C_4-alkylene;

[0008] n is 0, 1 or 2;

[0009] R^2 is phenyl, naphthyl or a 5- or 6-membered monocyclic or 9- or 10-membered bicyclic aromatic heterocycle which contains 1, 2, 3 or 4 heteroatoms selected from the group consisting of O, N and S, where the cyclic groups are unsubstituted or substituted by 1, 2, 3 or 4 groups R^b;

[0010] R^b independently of one another are Z—CN, Z—OH, Z—NO_2, Z-halogen, C_1-C_8-alkyl, C_1-C_4-haloalkyl, C_2-C_8-alkenyl, C_2-C_8-alkynyl, Z—C_1-C_8-alkoxy, Z—C_1-C_8-haloalkoxy, Z—C_3-C_{10}-cycloalkyl, O—Z—C_3-C_{10}-cycloalkyl, Z—C(=O)—R^a, NR^iR^{ii}, Z-(tri-C_1-C_4-alkyl)silyl, Z-phenyl and $S(O)_nR^{bb}$,

[0011] where R^{bb} is C_1-C_8-alkyl or C_1-C_6-haloalkyl and

[0012] n is 0, 1 or 2;

[0013] R^{b1}, R^{b2} are one of the groups mentioned for R^b;

[0014] R^b, R^{b1}, R^{b2} independently of one another together with the group R^b, R^{b1} or R^{b2} attached to the adjacent carbon atom may also form a five- or six-membered saturated or partially or fully unsaturated ring which, in addition to carbon atoms, may contain 1, 2 or 3 heteroatoms selected from the group consisting of O, N and S;

[0015] Y is O or S;

[0016] X is O, S or N—R^3;

[0017] R^3 is hydrogen, C_1-C_6-alkyl, C_1-C_4-haloalkyl, C_2-C_6-alkenyl, C_3-C_6-alkynyl, Z—C_3-C_{10}-cycloalkyl, C_1-C_6-alkoxy-C_1-C_6-alkyl, C_1-C_6-cyanoalkyl, Z-phenyl, Z—C(=O)—R^{a2} or tri-C_1-C_4-alkylsilyl;

[0018] R^{a2} is C_1-C_6-alkyl, C_1-C_4-haloalkyl, Z—C_1-C_6-alkoxy, Z—C_1-C_4-haloalkoxy or NR^iR^{ii};

where in the groups R^A, R^2, R^3 and their subsubtituents, the carbon chains and/or the cyclic groups may be partially or fully substituted by groups R^a, or a N-oxide or an agriculturally suitable salt thereof.

[0019] Moreover, the invention relates to processes and intermediates for preparing the pyrazines of the formula I and the N-oxides thereof, the agriculturally usable salts thereof, and also to active compound combinations comprising them, to compositions comprising them and to their use as herbicides, i.e. for controlling harmful plants, and also to a method for controlling unwanted vegetation which comprises allowing a herbicidally effective amount of at least one pyrazine compound of the formula I or of an agriculturally suitable salt of I to act on plants, their seed and/or their habitat.

[0020] Further embodiments of the present invention can be found in the claims, the description and the examples. It is to be understood that the features mentioned above and those still to be illustrated below of the subject matter of the invention can be applied not only in the respective given combination but also in other combinations without leaving the scope of the invention.

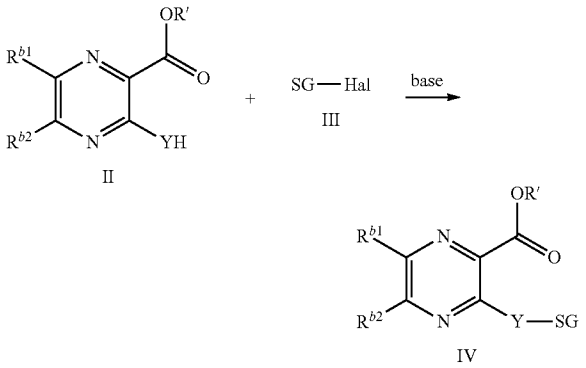
[0021] WO 2008/009908 and WO 2008/071918 describe herbicidal pyrazines; however, their herbicidal action at low application rates and/or their compatibility with crop plants leave scope for improvement.

[0022] It is an object of the present invention to provide compounds having herbicidal action. To be provided are in particular active compounds having strong herbicidal action, in particular even at low application rates, whose compatibility with crop plants is sufficient for commercial application.

[0023] These and further objects are achieved by the compounds of the formula I defined at the outset and by their N-oxides and also their agriculturally suitable salts.

[0024] The compounds according to the invention can be prepared according to standard processes of organic chemistry, for example according to the following synthesis route:

[0025] Pyridine carboxylic acids of the formula II can be reacted with compounds of the formula III to give compounds of the formula IV. In the formulae II and III, the variables have the meaning given for formula I. The group R^1 is C_1-C_4-alkoxy, Hal is a halogen atom or another suitable nucleophilic leaving group, such as alkoxy or phenoxy, and SG is a protective group which lowers the reactivity of Y, such as, for example, optionally substituted benzyl.



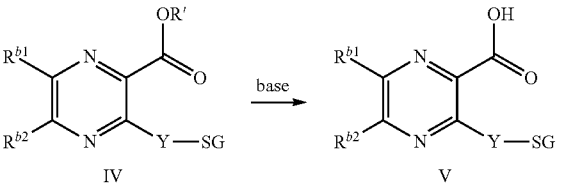
II III IV

[0026] This reaction is usually carried out at temperatures of from −78° C. to 120° C., preferably from −20° C. to 50° C., in an inert organic solvent in the presence of a base (cf. Greene's Protective Groups in Organic Synthesis, Wiley).

[0027] Suitable solvents are aliphatic hydrocarbons, such as pentane, hexane, cyclohexane and petroleum ether, aromatic hydrocarbons, such as toluene, o-, m- and p-xylene, halogenated hydrocarbons, such as methylene chloride, chloroform and chlorobenzene, ethers, such as diethyl ether, diisopropyl ether, tert-butyl methyl ether, dioxane, anisole and tetrahydrofuran, nitriles, such as acetonitrile and propionitrile, ketones, such as acetone, methyl ethyl ketone, diethyl ketone and tert-butyl methyl ketone, and also dimethyl sulfoxide, dimethylformamide (DMF) and dimethylacetamide, particularly preferably halogenated hydrocarbons, such as methylene chloride, chloroform and chlorobenzene. It is also possible to use mixtures of the solvents mentioned.

[0028] Suitable bases are, in general, inorganic compounds, such as alkali metal and alkaline earth metal hydroxides, such as lithium hydroxide, sodium hydroxide, potassium hydroxide and calcium hydroxide, alkali metal and alkaline earth metal oxides, such as lithium oxide, sodium oxide, calcium oxide and magnesium oxide, alkali metal and alkaline earth metal hydrides, such as lithium hydride, sodium hydride, potassium hydride and calcium hydride, alkali metal amides, such as lithium amide, sodium amide and potassium amide, alkali metal and alkaline earth metal carbonates, such as lithium carbonate, potassium carbonate and calcium carbonate, and also alkali metal bicarbonates, such as sodium bicarbonate, organometallic compounds, in particular alkali metal alkyls, such as methyllithium, butyllithium and phenyllithium, alkylmagnesium halides, such as methylmagnesium chloride, and also alkali metal and alkaline earth metal alkoxides, such as sodium methoxide, sodium ethoxide, potassium ethoxide, potassium tert-butoxide and dimethoxymagnesium, moreover organic bases, for example tertiary amines, such as trimethylamine, triethylamine, tributylamine, diisopropylethylamine and N-methylpiperidine, pyridine, substituted pyridines, such as collidine, lutidine and 4-dimethylaminopyridine, and also bicyclic amines. Preference is given to alkali metal and alkaline earth metal hydroxides, particularly preferably sodium hydroxide. The bases are generally employed in catalytic amounts; however, they can also be used in equimolar amounts, in excess or, if appropriate, as solvents.

[0029] The starting materials are generally reacted with one another in equimolar amounts.



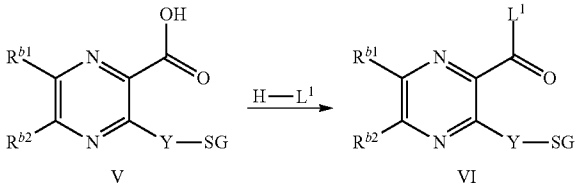
IV V

[0030] The appropriate acid of the formula V is released from the compounds of the formula IV. This reaction is usually carried out at temperatures of from −78° C. to 120° C., preferably from −20° C. to 50° C., in an inert organic solvent in the presence of a base (cf. Bioorganic and Medicinal Chemistry Letters (2006) vol. 16(3), 718-721).

[0031] Suitable solvents are water, alcohols, such as methanol, ethanol and isopropanol, aliphatic hydrocarbons, such as pentane, hexane, cyclohexane and petroleum ether, aromatic hydrocarbons, such as toluene, o-, m- and p-xylene, halogenated hydrocarbons, such as methylene chloride, chloroform and chlorobenzene, ethers, such as diethyl ether, diisopropyl ether, tert-butyl methyl ether, dioxane, anisole and tetrahydrofuran, nitriles, such as acetonitrile and propionitrile, ketones, such as acetone, methyl ethyl ketone, diethyl ketone and tert-butyl methyl ketone, and also dimethyl sulfoxide, DMF and dimethylacetamide, particularly preferably halogenated hydrocarbons, such as methylene chloride, chloroform and chlorobenzene. It is also possible to use mixtures of the solvents mentioned.

[0032] Suitable bases are, in general, inorganic compounds, such as alkali metal and alkaline earth metal hydroxides, such as lithium hydroxide, sodium hydroxide, potassium hydroxide and calcium hydroxide, alkali metal and alkaline earth metal oxides, such as lithium oxide, sodium oxide, calcium oxide and magnesium oxide, alkali metal and alkaline earth metal hydrides, such as lithium hydride, sodium hydride, potassium hydride and calcium hydride, alkali metal amides, such as lithium amide, sodium amide and potassium amide, alkali metal and alkaline earth metal carbonates, such as lithium carbonate, potassium carbonate and calcium carbonate, and also alkali metal bicarbonates, such as sodium bicarbonate, organometallic compounds, in particular alkali metal alkyls, such as methyllithium, butyllithium and phenyllithium, alkylmagnesium halides, such as methylmagnesium chloride, and also alkali metal and alkaline earth metal alkoxides, such as sodium methoxide, sodium ethoxide, potassium ethoxide, potassium tert-butoxide and dimethoxymagnesium, moreover organic bases, for example tertiary amines, such as trimethylamine, triethylamine, tributylamine, diisopropylethylamine and N-methylpiperidine, pyridine, substituted pyridines, such as collidine, lutidine and 4-dimethylaminopyridine, and also bicyclic amines. Preference is given to alkali metal and alkaline earth metal hydroxides, particularly preferably lithium hydroxide. The bases are generally employed in catalytic amounts; however, they can also be used in equimolar amounts, in excess or, if appropriate, as solvents.

[0033] The compounds of the formula V are activated by introducing a leaving group L^1. Suitable leaving groups L^1 are, in general, groups which increase the electrophilicity of the carbonyl group, for example O-alkyl, O-aryl, halides, activated esters or aldehydes (such as, for example, Weinreb amide), in particular pentafluorophenoxy.



V VI

[0034] This reaction is usually carried out at temperatures of from −78° C. to 120° C., preferably from −20° C. to 50° C., in an inert organic solvent in the presence of a base, such as, for example, triethylamine (cf. J. Agric. and Food Chem. 1994, 42(4), 1019-1025), a catalyst, such as, for example, dicyclohexylcarbodiimide (cf. Egyptian Journal of Chemistry 1994, 37(3), 273-282) or other known coupling agents.

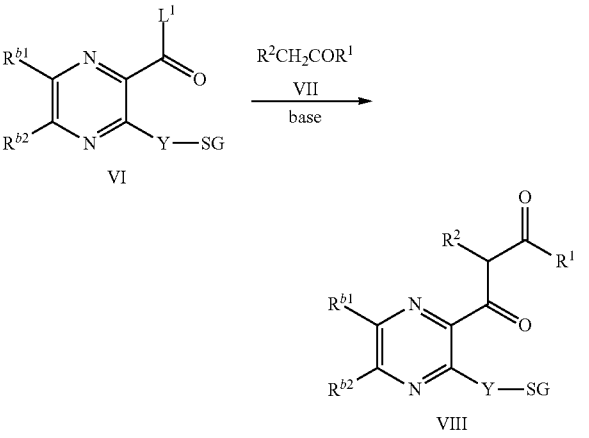
[0035] Suitable solvents are aliphatic hydrocarbons, such as pentane, hexane, cyclohexane and petroleum ether, aromatic hydrocarbons, such as toluene, o-, m- and p-xylene, halogenated hydrocarbons, such as methylene chloride, chloroform and chlorobenzene, ethers, such as diethyl ether, diisopropyl ether, tert-butyl methyl ether, dioxane, anisole and tetrahydrofuran, nitriles, such as acetonitrile and propionitrile, ketones, such as acetone, methyl ethyl ketone, diethyl ketone and tert-butyl methyl ketone, and also dimethyl sulfoxide, DMF and dimethylacetamide, particularly preferably methylene chloride and toluene. It is also possible to use mixtures of the solvents mentioned.

[0036] Suitable bases are, in general, inorganic compounds, such as alkali metal and alkaline earth metal hydroxides, such as lithium hydroxide, sodium hydroxide, potassium hydroxide and calcium hydroxide, alkali metal and alkaline earth metal oxides, such as lithium oxide, sodium oxide, calcium oxide and magnesium oxide, alkali metal and alkaline earth metal hydrides, such as lithium hydride, sodium hydride, potassium hydride and calcium hydride, alkali metal amides, such as lithium amide, sodium amide and potassium amide, alkali metal and alkaline earth metal carbonates, such as lithium carbonate, potassium carbonate and calcium carbonate, and also alkali metal bicarbonates, such as sodium bicarbonate, organometallic compounds, in particular alkali metal alkyls, such as methyllithium, butyllithium and phenyllithium, alkylmagnesium halides, such as methylmagnesium chloride, and also alkali metal and alkaline earth metal alkoxides, such as sodium methoxide, sodium ethoxide, potassium ethoxide, potassium tert-butoxide and dimethoxymagnesium, moreover organic bases, for example tertiary amines, such as trimethylamine, triethylamine, tributylamine, diisopropylethylamine and N-methylpiperidine, pyridine, substituted pyridines, such as collidine, lutidine and 4-dimethylaminopyridine, and also bicyclic amines. Particular preference is given to alkali metal and alkaline earth metal carbonates, such as lithium carbonate, potassium carbonate, calcium carbonate, cesium carbonate and rubidium carbonate. The bases are generally employed in catalytic amounts; however, they can also be used in equimolar amounts, in excess or, if appropriate, as solvents.

[0037] The starting materials are generally reacted with one another in equimolar amounts.

[0038] Suitable agents H-L^1 are alcohols, optionally subst. phenols, N,O-dialkyl-hydroxylamine, in particular pentafluorophenol or N,O-dimethylhydroxylamine.

[0039] The compounds of the formula VI are reacted with acetic acid derivatives of the formula VII to give the compounds of the formula VIII.



VI VIII

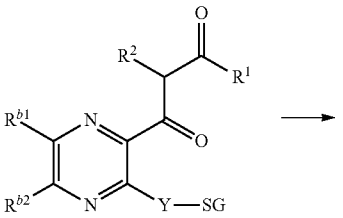
[0040] This reaction is usually carried out at temperatures of from −78° C. to 120° C., preferably from −20° C. to 50° C., in an inert organic solvent in the presence of a base or a Lewis acid or a catalyst [cf. Bioorganic & Medicinal Chemistry (2004) vol. 12(6), 1357-1366].

[0041] Suitable solvents are aliphatic hydrocarbons, such as pentane, hexane, cyclohexane and petroleum ether, aromatic hydrocarbons, such as toluene, o-, m- and p-xylene, halogenated hydrocarbons, such as methylene chloride, chloroform and chloro-benzene, ethers, such as diethyl ether, diisopropyl ether, tert-butyl methyl ether, dioxane, anisole and tetrahydrofuran, nitriles, such as acetonitrile and propionitrile, ketones, such as acetone, methyl ethyl ketone, diethyl ketone and tert-butyl methyl ketone, and also dimethyl sulfoxide, DMF and dimethylacetamide, particularly preferably acetonitrile and DMF. It is also possible to use mixtures of the solvents mentioned.

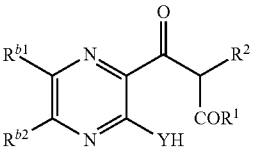
[0042] Suitable bases are, in general, inorganic compounds, such as alkali metal and alkaline earth metal hydroxides, such as lithium hydroxide, sodium hydroxide, potassium hydroxide and calcium hydroxide, alkali metal and alkaline earth metal oxides, such as lithium oxide, sodium oxide, calcium oxide and magnesium oxide, alkali metal and alkaline earth metal hydrides, such as lithium hydride, sodium hydride, potassium hydride and calcium hydride, alkali metal amides, such as lithium amide, sodium amide and potassium amide, alkali metal and alkaline earth metal carbonates, such as lithium carbonate, potassium carbonate, calcium carbonate, cesium carbonate and rubidium carbonate, and also alkali metal bicarbonates, such as sodium bicarbonate, organometallic compounds, in particular alkali metal alkyls, such as methyllithium, butyllithium and phenyllithium, alkylmagnesium halides, such as methylmagnesium chloride, and also alkali metal and alkaline earth metal alkoxides, such as sodium methoxide, sodium ethoxide, potassium ethoxide, potassium tert-butoxide and dimethoxymagnesium, moreover organic bases, for example tertiary amines, such as trimethylamine, triethylamine, tributylamine, diisopropylethylamine and N-methylpiperidine, pyridine, substituted pyridines, such as collidine, lutidine and 4-dimethylaminopyridine, and also bicyclic amines. Preference is given to alkali metal and alkaline earth metal alkoxides, particularly preferably potassium tert-butoxide.

[0043] The bases are generally employed in catalytic amounts; however, they can also be used in equimolar amounts, in excess or, if appropriate, as solvents.

[0044] The starting materials are generally reacted with one another in equimolar amounts.



VIII

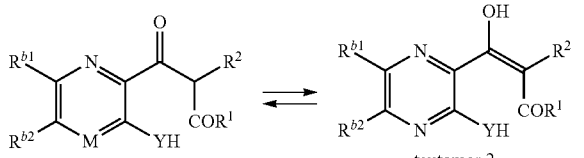


IX

[0045] By removing the protective group, the compounds of the formula IX can be released from the compounds of the formula VIII. The reaction conditions depend on the nature of the protective group SG; the removal of an optionally subst. benzyl group succeeds, for example, using trifluoroacetic acid at temperatures of from −78° C. to 100° C., preferably from −20° C. to 50° C., in an inert organic solvent [cf. Greene's Protective Groups in Organic Synthesis, Wiley].

[0046] The introduction of the groups X and Y different from oxygen into the compounds of the formula I or their precursors is carried out using generally known methods.

[0047] The compounds of the formula IX and their precursors can be present in two tautomeric forms. The invention relates to both tautomers. For clarity, the description generally mentions only one tautomer.

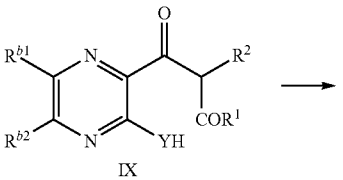


tautomer 1

tautomer 2

IX

[0048] The compounds of the formula IX can be converted by cyclization into compounds of the formula I. The cyclization succeeds, for example, with sat. sodium chloride solution and an organic solvent at temperatures of from −30° C. to 150° C., preferably from 30° C. to 100°.



IX

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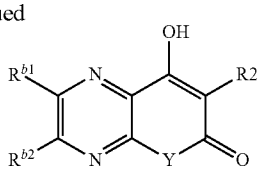
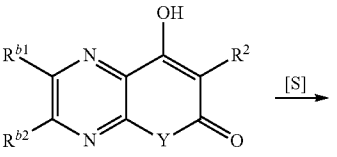


I

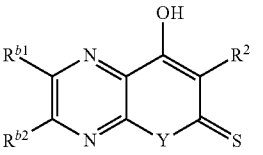
[0049] This reaction is usually carried out at temperatures of from −78° C. to 120° C., preferably from −20° C. to 50° C.

[0050] Suitable solvents are water, alcohols, such as methanol, ethanol, isopropanol, aliphatic hydrocarbons, such as pentane, hexane, cyclohexane and petroleum ether, aromatic hydrocarbons, such as toluene, o-, m- and p-xylene, halogenated hydrocarbons such as methylene chloride, chloroform and chlorobenzene, ethers, such as diethyl ether, diisopropyl ether, tert-butyl methyl ether, dioxane, anisole and tetrahydrofuran, nitriles, such as acetonitrile and propionitrile, ketones, such as acetone, methyl ethyl ketone, diethyl ketone and tert-butyl methyl ketone, and also dimethyl sulfoxide, DMF and dimethylacetamide, particularly preferably halogenated hydrocarbons, such as methylene chloride, chloroform and chlorobenzene. It is also possible to use mixtures of the solvents mentioned.

[0051] The sulfurization of the compounds of the formula I is carried out under conditions known per se using a sulfurizing agent [S]; it is usually carried out at temperatures of from 0° C. to 180° C., preferably from 20° C. to 140° C., in an inert organic solvent [cf. Liebigs Ann. Chem., p. 177 (1989)].



I (X = S; R^1 = OH)



I (X = S; R^1 = OH)

[0052] Suitable solvents are aliphatic hydrocarbons, such as pentane, hexane, cyclohexane and petroleum ether, aromatic hydrocarbons, such as toluene, o-, m- and p-xylene, halogenated hydrocarbons, such as methylene chloride, chloroform and chlorobenzene, ethers, such as diethyl ether, diisopropyl ether, tert-butyl methyl ether, dioxane, anisole and tetrahydrofuran, nitriles, such as acetonitrile and propionitrile, and also dimethyl sulfoxide, particularly preferably toluene and tetrahydrofuran. It is also possible to use mixtures of the solvents mentioned.

[0053] Suitable sulfurizing agents are, for example, phosphorus pentasulfide or Lawesson's reagent.

The introduction of the groups N—R^3 in the compounds of the formula I, or of R^1, or R^4, is carried out under generally known conditions.

The compounds of the formula I in which R^1 is a group attached via S can be obtained, for example, via a reaction sequence according to Newman-Kwart starting with chlorothiocarbonyl compounds [cf.: J. Org. Chem., Vol. 59(21), pp. 6318-21 (1994)].

[0054] The reaction mixtures are worked up in a customary manner, for example by mixing with water, separating the phases and, if appropriate, chromatographic purification of the crude products. Some of the intermediates and end products are obtained in the form of colorless or slightly brownish viscous oils which are purified or freed from volatile components under reduced pressure and at moderately elevated temperature. If the intermediates and end products are obtained as solids, the purification can also be carried out by recrystallization or digestion.

[0055] If individual compounds I cannot be obtained by the routes described above, they can be prepared by derivatization of other compounds I.

[0056] If the synthesis yields mixtures of isomers, a separation is generally however not necessarily required since in some cases the individual isomers can be interconverted during work-up for use or during application (for example under the action of light, acids or bases). Such conversions may also take place after application, for example in the case of the treatment of plants in the treated plant or in the harmful plant to be controlled.

[0057] The organic moieties mentioned for the substituents of the compounds according to the invention are collective terms for individual enumerations of the individual group members. All hydrocarbon chains, such as alkyl, haloalkyl, alkenyl, alkynyl, and the alkyl moieties and alkenyl moieties in alkoxy, haloalkoxy, alkylamino, dialkylamino, N-alkylsulfonylamino, alkenyloxy, alkynyloxy, alkoxyamino, alkylaminosulfonylamino, dialkylaminosulfonylamino, alkenylamino, alkynylamino, N-(alkenyl)-N-(alkyl)amino, N-(alkynyl)-N-(alkyl)amino, N-(alkoxy)-N-(alkyl)amino, N-(alkenyl)-N-(alkoxy)amino or N-(alkynyl)-N-(alkoxy) amino can be straight-chain or branched.

[0058] The prefix C_n-C_m-indicates the respective number of carbons of the hydrocarbon unit. Unless indicated otherwise, halogenated substituents preferably carry one to five identical or different halogen atoms, in particular fluorine atoms or chlorine atoms.

[0059] The meaning halogen denotes in each case fluorine, chlorine, bromine or iodine.

[0060] Examples of other meanings are:

[0061] alkyl and the alkyl moieties for example in alkoxy, alkylamino, dialkylamino, N-alkyl-sulfonylamino, alkylaminosulfonylamino, dialkylaminosulfonylamino, N-(alkenyl)-N-(alkyl)amino, N-(alkynyl)-N-(alkyl)amino, N-(alkoxy)-N-(alkyl)amino: saturated straight-chain or branched hydrocarbon radicals having one or more carbon atoms, for example 1 or 2, 1 to 4 or 1 to 6 carbon atoms, for example C_1-C_6-alkyl, such as methyl, ethyl, propyl, 1-methylethyl, butyl, 1-methylpropyl, 2-methylpropyl, 1,1-dimethylethyl, pentyl, 1-methylbutyl, 2-methylbutyl, 3-methylbutyl, 2,2-dimethylpropyl, 1-ethylpropyl, hexyl, 1,1-dimethylpropyl, 1,2-dimethylpropyl, 1-methylpentyl, 2-methylpentyl, 3-methylpentyl, 4-methylpentyl, 1,1-dimethylbutyl, 1,2-dimethylbutyl, 1,3-dimethylbutyl, 2,2-dimethyl-butyl, 2,3-dimethylbutyl, 3,3-dimethylbutyl, 1-ethylbutyl, 2-ethylbutyl, 1,1,2-trimethyl-propyl, 1,2,2-trimethylpropyl, 1-ethyl-1-methylpropyl, 1-ethyl-2-methylpropyl. In one embodiment according to the invention, alkyl denotes small alkyl groups, such as C_1-C_4-alkyl. In another embodiment according to the invention, alkyl denotes relatively large alkyl groups, such as C_5-C_6-alkyl.

[0062] Haloalkyl: an alkyl radical as mentioned above, some or all of whose hydrogen atoms are substituted by halogen atoms, such as fluorine, chlorine, bromine and/or iodine, for example chloromethyl, dichloromethyl, trichloromethyl, fluoromethyl, difluoro-methyl, trifluoromethyl, chlorofluoromethyl, dichlorofluoromethyl, chlorodifluoromethyl, 2-fluoroethyl, 2-chloroethyl, 2-bromoethyl, 2-iodoethyl, 2,2-difluoroethyl, 2,2,2-trifluoro-ethyl, 2-chloro-2-fluoroethyl, 2-chloro-2,2-difluoroethyl, 2,2-dichloro-2-fluoroethyl, 2,2,2-trichloroethyl, pentafluoroethyl, 2-fluoropropyl, 3-fluoropropyl, 2,2-difluoropropyl, 2,3-difluoropropyl, 2-chloropropyl, 3-chloropropyl, 2,3-dichloropropyl, 2-bromopropyl, 3-bromopropyl, 3,3,3-trifluoropropyl, 3,3,3-trichloropropyl, 2,2,3,3,3-pentafluoropropyl, heptafluoropropyl, 1-(fluoromethyl)-2-fluoroethyl, 1-(chloromethyl)-2-chloroethyl, 1-(bromomethyl)-2-bromoethyl, 4-fluorobutyl, 4-chlorobutyl, 4-bromobutyl and nonafluorobutyl.

[0063] Cycloalkyl and the cycloalkyl moieties for example in cycloalkoxy or cycloalkylcarbonyl: monocyclic saturated hydrocarbon groups having three or more carbon atoms, for example 3 to 6 carbon ring members, such as cyclopropyl, cyclobutyl, cyclopentyl and cyclohexyl.

[0064] Alkenyl and the alkenyl moieties for example in alkenylamino, alkenyloxy, N-(alkenyl)-N-(alkyl)amino, N-(alkenyl)-N-(alkoxy)amino: monounsaturated straight-chain or branched hydrocarbon radicals having two or more carbon atoms, for example 2 to 4, 2 to 6 or 3 to 6 carbon atoms, and a double bond in any position, for example C_2-C_6-alkenyl, such as ethenyl, 1-propenyl, 2-propenyl, 1-methylethenyl, 1-butenyl, 2-butenyl, 3-butenyl, 1-methyl-1-propenyl, 2-methyl-1-propenyl, 1-methyl-2-propenyl, 2-methyl-2-propenyl, 1-pentenyl, 2-pentenyl, 3-pentenyl, 4-pentenyl, 1-methyl-1-butenyl, 2-methyl-1-butenyl, 3-methyl-1-butenyl, 1-methyl-2-butenyl, 2-methyl-2-butenyl, 3-methyl-2-butenyl, 1-methyl-3-butenyl, 2-methyl-3-butenyl, 3-methyl-3-butenyl, 1,1-dimethyl-2-propenyl, 1,2-dimethyl-1-propenyl, 1,2-dimethyl-2-propenyl, 1-ethyl-1-propenyl, 1-ethyl-2-propenyl, 1-hexenyl, 2-hexenyl, 3-hexenyl, 4-hexenyl, 5-hexenyl, 1-methyl-1-pentenyl, 2-methyl-1-pentenyl, 3-methyl-1-pentenyl, 4-methyl-1-pentenyl, 1-methyl-2-pentenyl, 2-methyl-2-pentenyl, 3-methyl-2-pentenyl, 4-methyl-2-pentenyl, 1-methyl-3-pentenyl, 2-methyl-3-pentenyl, 3-methyl-3-pentenyl, 4-methyl-3-pentenyl, 1-methyl-4-pentenyl, 2-methyl-4-pentenyl, 3-methyl-4-pentenyl, 4-methyl-4-pentenyl, 1,1-dimethyl-2-butenyl, 1,1-dimethyl-3-butenyl, 1,2-dimethyl-1-butenyl, 1,2-dimethyl-2-butenyl, 1,2-dimethyl-3-butenyl, 1,3-dimethyl-1-butenyl, 1,3-dimethyl-2-butenyl, 1,3-dimethyl-3-butenyl, 2,2-dimethyl-3-butenyl, 2,3-dimethyl-1-butenyl, 2,3-dimethyl-2-butenyl, 2,3-dimethyl-3-butenyl, 3,3-dimethyl-1-butenyl, 3,3-dimethyl-2-butenyl, 1-ethyl-1-butenyl, 1-ethyl-2-butenyl, 1-ethyl-3-butenyl, 2-ethyl-1-butenyl, 2-ethyl-2-butenyl, 2-ethyl-3-butenyl, 1,1,2-trimethyl-2-propenyl, 1-ethyl-1-methyl-2-propenyl, 1-ethyl-2-methyl-1-propenyl, 1-ethyl-2-methyl-2-propenyl.

[0065] Cycloalkenyl: monocyclic monounsaturated hydrocarbon groups having 3 to 6, preferably 5 or 6, carbon ring members, such as cyclopenten-1-yl, cyclopenten-3-yl, cyclohexen-1-yl, cyclohexen-3-yl, cyclohexen-4-yl.

[0066] Alkynyl and the alkynyl moieties for example in alkynyloxy, alkynylamino, N-(alkynyl)-N-(alkyl)amino or N-(alkynyl)-N-(alkoxy)amino: straight-chain or branched hydrocarbon groups having two or more carbon atoms, for example 2 to 4, 2 to 6 or 3 to 6 carbon atoms, and a triple bond in any position, for example C_2-C_6-alkynyl, such as ethynyl, 1-propynyl, 2-propynyl, 1-butynyl, 2-butynyl, 3-butynyl, 1-methyl-2-propynyl, 1-pentynyl, 2-pentynyl, 3-pentynyl, 4-pentynyl, 1-methyl-2-butynyl, 1-methyl-3-butynyl, 2-methyl-3-butynyl, 3-methyl-1-butynyl, 1,1-dimethyl-2-propynyl, 1-ethyl-2-propynyl, 1-hexynyl, 2-hexynyl, 3-hexynyl, 4-hexynyl, 5-hexynyl, 1-methyl-2-pentynyl, 1-methyl-3-pentynyl, 1-methyl-4-pentynyl, 2-methyl-3-pentynyl, 2-methyl-4-pentynyl, 3-methyl-1-pentynyl, 3-methyl-4-pentynyl, 4-methyl-1-pentynyl, 4-methyl-2-pentynyl, 1,1-dimethyl-2-butynyl, 1,1-dimethyl-3-butynyl, 1,2-dimethyl-3-butynyl, 2,2-dimethyl-3-butynyl, 3,3-dimethyl-1-butynyl, 1-ethyl-2-butynyl, 1-ethyl-3-butynyl, 2-ethyl-3-butynyl, 1-ethyl-1-methyl-2-propynyl.

[0067] Alkoxy: alkyl as defined above which is attached via an oxygen atom, for example methoxy, ethoxy, n-propoxy, 1-methylethoxy, butoxy, 1-methylpropoxy, 2-methyl-propoxy or 1,1-dimethylethoxy, pentoxy, 1-methylbutoxy, 2-methylbutoxy, 3-methyl-butoxy, 1,1-dimethylpropoxy, 1,2-dimethylpropoxy, 2,2-dimethylpropoxy, 1-ethyl-propoxy, hexoxy, 1-methylpentoxy, 2-methylpentoxy, 3-methylpentoxy, 4-methyl-pentoxy, 1,1-dimethylbutoxy, 1,2-dimethylbutoxy, 1,3-dimethylbutoxy, 2,2-dimethyl-butoxy, 2,3-dimethylbutoxy, 3,3-dimethylbutoxy, 1-ethylbutoxy, 2-ethylbutoxy, 1,1,2-trimethylpropoxy, 1,2,2-trimethylpropoxy, 1-ethyl-1-methylpropoxy or 1-ethyl-2-methylpropoxy.

[0068] A 5- or 6-membered heterocycle: a cyclic group which has 5 or 6 ring atoms, 1, 2, 3 or 4 ring atoms being heteroatoms selected from the group consisting of O, S and N, where the cyclic group is saturated, partially unsaturated or aromatic.

[0069] The compounds of the formula I may, depending on the substitution pattern, contain one or more further centers of chirality. Accordingly, the compounds according to the invention can be present as pure enantiomers or diastereomers or as enantiomer or diastereomer mixtures. The invention provides both the pure enantiomers or diastereomers and their mixtures.

[0070] The compounds of the formula I may also be present in the form of the N-oxides and/or of their agriculturally useful salts, the type of salt generally not being important. Suitable salts are generally the salts of those cations or the acid addition salts of those acids whose cations and anions, respectively, have no adverse effect on the herbicidal activity of the compounds I.

[0071] Suitable cations are in particular ions of the alkali metals, preferably lithium, sodium or potassium, of the alkaline earth metals, preferably calcium or magnesium, and of the transition metals, preferably manganese, copper, zinc or iron. Another cation that may be used is ammonium, where, if desired, one to four hydrogen atoms may be replaced by C_1-C_4-alkyl, hydroxy-C_1-C_4-alkyl, C_1-C_4-alkoxy-C_1-C_4-alkyl, hydroxy-C_1-C_4-alkoxy-C_1-C_4-alkyl, phenyl or benzyl, preferably ammonium, dimethylammonium, diisopropylammonium, tetramethylammonium, tetrabutylammonium, 2-(2-hydroxyeth-1-oxy)eth-1-ylammonium, di(2-hydroxyeth-1-yl)ammonium, trimethylbenzylammonium. Another suitable ammonium cation is the pyridine nitrogen atom of the formula I quaternized by alkylation or arylation. Also suitable are phosphonium ions, sulfonium ions, preferably tri(C_1-C_4-alkyl)sulfonium, or sulfoxonium ions, preferably tri(C_1-C_4-alkyl)sulfoxonium.

[0072] Anions of suitable acid addition salts are primarily chloride, bromide, fluoride, hydrogensulfate, sulfate, dihydrogenphosphate, hydrogenphosphate, nitrate, bicarbonate, carbonate, hexafluorosilicate, hexafluorophosphate, benzoate and also the anions of C_1-C_4-alkanoic acids, preferably formate, acetate, propionate, butyrate or trifluoroacetate.

[0073] With respect to the variables, the particularly preferred embodiments of the intermediates correspond to those of the groups of the formula I.

[0074] In a particular embodiment, the variables of the compounds of the formula I have the following meanings, these meanings, both on their own and in combination with one another, being particular embodiments of the compounds of the formula I:

[0075] In a first preferred embodiment of the invention, R^1 is O—R^A.

[0076] In a further preferred embodiment of the invention, R^1 is $S(O)_n$—R^A where n is preferably 0 or 2, in particular 0.

[0077] R^A is in particular H, C_1-C_6-alkylcarbonyl, such as $C(O)CH_3$, $C(O)CH_2CH_3$, $C(O)CH(CH_3)_2$ or $C(O)C(CH_3)_3$; C_1-C_6-cycloalkylcarbonyl, such as cyclopropylcarbonyl, cyclopentylcarbonyl or cyclohexylcarbonyl; C_2-C_6-alkenylcarbonyl, such as C(O)CH═CH_2 or $C(O)CH_2CH$═CH_2, optionally subst. benzoyl, such as $C(O)C_6H_5$, C(O)[2-CH_3—C_6H_4], C(O)[4-CH_3—C_6H_4], C(O)[2-F—C_6H_4], C(O)[4-F—C_6H_4], or optionally subst. heteroaryl, such as pyridine, which is attached via a carbonyl group.

[0078] In a further preferred aspect, R^A is H, C_1-C_6-alkyl, optionally subst. phenyl, di-C_1-C_6-alkylaminocarbonyl, C_1-C_6-alkylcarbonyl or benzoyl.

[0079] Particularly preferably, R^A is H or C_1-C_6-alkylcarbonyl.

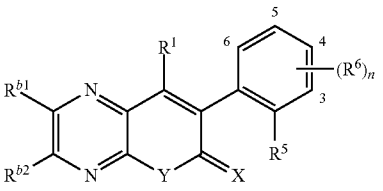
[0080] In a further preferred embodiment of the invention, R^A is a 5- or 6-membered heterocycle optionally substituted by R^b as defined above, which preferably has either 1, 2, 3 or 4 nitrogen atoms or 1 oxygen or 1 sulfur atom and if appropriate 1 or 2 nitrogen atoms as ring members and which is unsubstituted or may have 1 or 2 substituents selected from R^b. Preference is given to saturated or unsaturated groups attached via nitrogen, such as, for example:

[0081] Heteroaromatic groups: pyridazin-3-yl, pyridazin-4-yl, pyrimidin-2-yl, pyrimidin-4-yl, pyrimidin-5-yl, pyrazin-2-yl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, pyrazol-1-yl, pyrazol-3-yl, pyrazol-4-yl, isoxazol-3-yl, isoxazol-4-yl, isoxazol-5-yl, isothiazol-3-yl, isothiazol-4-yl, isothiazol-5-yl, imidazol-1-yl, imidazol-2-yl, imidazol-4-yl, oxazol-2-yl, oxazol-4-yl, oxazol-5-yl, thiazol-2-yl, thiazol-4-yl and thiazol-5-yl;

In another aspect, R^A is a heteroaromatic group attached via carbon, such as pyrazol-3-yl, imidazol-5-yl, oxazol-2-yl, thiazol-2-yl, thiazol-4-yl, thiazol-5-yl, pyridin-2-yl, pyridin-3-yl, pyridin-4-yl, pyrimidin-2-yl, pyrimidin-4-yl, pyrimidin-5-yl, pyridazin-4-yl, pyrazin-2-yl, [1H]-tetrazol-5-yl and [2H]-tetrazol-5-yl, where each of the heterocycles mentioned here in an exemplary manner may have 1 or 2 substituents selected from R^b. Preferred groups R^b are in particular F, Cl, CN, NO_2, CH_3, C_2H_5, OCH_3, OC_2H_5, $OCHF_2$, OCF_3 and CF_3.

[0082] In a further preferred aspect, R^2 is phenyl which is unsubstituted or partially or fully substituted by groups R^b. Particular preference is given to compounds in which a group R^b is located in the ortho-position. Such compounds of the formula I are described by the formula I.A:

I.A



[0083] In formula I.A, the index n is an integer from zero to four, preferably 0, 1 or 2, in particular 0 or 1. R^5 and R^6 are groups R^b as defined at the outset, preferably halogen, NO_2, C_1-C_2-haloalkyl and C_1-C_4-alkoxy. One group R^6 is preferably located in position 5.

[0084] In a preferred embodiment, X is O.

[0085] In a further embodiment, X is S.

[0086] In a further embodiment, X is NR^3.

[0087] R^3 is preferably H, C_1-C_6-alkyl, such as CH_3, C_2H_5, n-C_3H_7, $CH(CH_3)_2$, n-C_3H_9, or $C(CH_3)_3$; C_3-C_6-cycloalkyl-C_1-C_4-alkyl, such as cyclopropylmethyl, C_3-C_6-alkenyl, such as $CH_2CH{=}CH_2$, $CH_2C(CH_3){=}CH_2$, $CH_2CH_2H{=}CH_2$, $CH_2CH_2C(CH_3){-}CH_2$, $CH_2CH_2CH_2CH{=}CH_2$, $CH_2CH_2CH_2C(CH_3){=}CH_2$, or optionally subst. phenyl, such as CH_6H_5, 4-CH_3—C_6H_4, 4-F—C_6H_4 or $S(O)_n$—R^N, where R^N is C_1-C_6-haloalkyl, such as CH_2CF_3, CH_2CHF_2. R^3 is particularly preferably not hydrogen. Especially preferably, R^3 is C_1-C_6-haloalkyl, such as CH_2CF_3 or CH_2CHF_2.

[0088] In a preferred embodiment, Y is O.

[0089] In a further embodiment, Y is S.

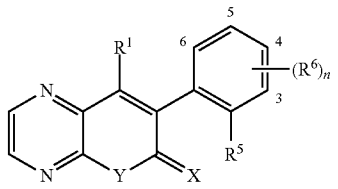
[0090] A further embodiment relates to compounds of the formula I in which R^{b1} and R^{b2} are each hydrogen.

[0091] A further embodiment relates to the N-oxides of the compounds of the formula I.

[0092] A further embodiment relates to salts of the compounds of the formula I, in particular those which are obtainable by quaternization of at least one pyrazine nitrogen atom, which may preferably take place by alkylation or arylation of the compounds of the formula I. Preferred salts of the compounds are thus the N-alkyl salts, in particular the N-methyl salts, and the N-phenyl salts.

[0093] In particular with a view to their use, preference is given to the compounds of the formula I compiled in the tables below, which compounds correspond to the formula I.A, in which R^{b1} and R^{b2} are each hydrogen (formula I.AA).

I.AA



[0094] The groups mentioned for a substituent in the tables are furthermore per se, independently of the combination in which they are mentioned, a particularly preferred aspect of the substituent in question.

[0095] Table 1

Compounds of the formula I in which X and Y are 0 and the combination of R^1, R^5 and $(R^6)_n$ for a compound corresponds in each case to one row of table A

[0096] Table 2

Compounds of the formula I in which X is O and Y is S and the combination of R^1, R^5 and $(R^6)_n$ for a compound corresponds in each case to one row of table A

[0097] Table 3

Compounds of the formula I in which X and Y are S and the combination of R^1, R^5 and $(R^6)_n$ for a compound corresponds in each case to one row of table A

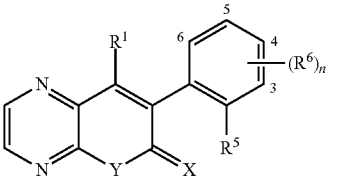
[0098] Table 4

Compounds of the formula I in which X is S and Y is O and the combination of R^1, R^5 and $(R^6)_n$ for a compound corresponds in each case to one row of table A

Table A

[0099] Compounds of the formula I which correspond to the formula I.A, in which R^{b1} and R^{b2} are each hydrogen (formula I.AA)

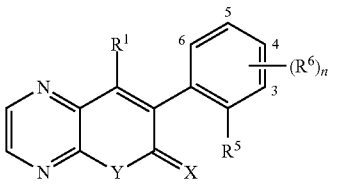
I.AA



No.	R^1	R^5	$(R^6)_n$
A-1	SH	CF_3	—
A-2	SH	CF_3	4-F
A-3	SH	CF_3	5-F
A-4	SH	CF_3	5-Cl
A-5	SCH_3	CF_3	—
A-6	SCH_3	CF_3	4-F
A-7	SCH_3	CF_3	5-F
A-8	SCH_3	CF_3	5-Cl
A-9	SC_6H_5	CF_3	—
A-10	SC_6H_5	CF_3	4-F
A-11	SC_6H_5	CF_3	5-F
A-12	SC_6H_5	CF_3	5-Cl
A-13	$SC(O)N(CH_3)_2$	CF_3	—
A-14	$SC(O)N(CH_3)_2$	CF_3	4-F
A-15	$SC(O)N(CH_3)_2$	CF_3	5-F
A-16	$SC(O)N(CH_3)_2$	CF_3	5-Cl
A-17	$SC(O)CH_3$	CF_3	—
A-18	$SC(O)CH_3$	CF_3	4-F
A-19	$SC(O)CH_3$	CF_3	5-F
A-20	$SC(O)CH_3$	CF_3	5-Cl
A-21	$SC(O)CH(CH_3)_2$	CF_3	—
A-22	$SC(O)CH(CH_3)_2$	CF_3	4-F
A-23	$SC(O)CH(CH_3)_2$	CF_3	5-F
A-24	$SC(O)CH(CH_3)_2$	CF_3	5-Cl
A-25	$SC(O)C(CH_3)_3$	CF_3	—
A-26	$SC(O)C(CH_3)_3$	CF_3	4-F
A-27	$SC(O)C(CH_3)_3$	CF_3	5-F
A-28	$SC(O)C(CH_3)_3$	CF_3	5-Cl
A-29	$SC(O)C_6H_5$	CF_3	—
A-30	$SC(O)C_6H_5$	CF_3	4-F
A-31	$SC(O)C_6H_5$	CF_3	5-F

-continued

I.AA



No.	R^1	R^5	$(R^6)_n$
A-32	$SC(O)C_6H_5$	CF_3	5-Cl
A-33	$S(O)CH_3$	CF_3	—
A-34	$S(O)CH_3$	CF_3	4-F
A-35	$S(O)CH_3$	CF_3	5-F
A-36	$S(O)CH_3$	CF_3	5-Cl
A-37	$S(O)C_6H_5$	CF_3	—
A-38	$S(O)C_6H_5$	CF_3	4-F
A-39	$S(O)C_6H_5$	CF_3	5-F
A-40	$S(O)C_6H_5$	CF_3	5-Cl
A-41	$S(O)_2CH_3$	CF_3	—
A-42	$S(O)_2CH_3$	CF_3	4-F
A-43	$S(O)_2CH_3$	CF_3	5-F
A-44	$S(O)_2CH_3$	CF_3	5-Cl
A-45	$S(O)_2C_6H_5$	CF_3	—
A-46	$S(O)_2C_6H_5$	CF_3	4-F
A-47	$S(O)_2C_6H_5$	CF_3	5-F
A-48	$S(O)_2C_6H_5$	CF_3	5-Cl
A-49	OH	Br	—
A-50	OCH_3	Br	—
A-51	$OC(O)CH_3$	Br	—
A-52	$OC(O)CH_2CH_3$	Br	—
A-53	$OC(O)CH(CH_3)_2$	Br	—
A-54	$OC(O)C(CH_3)_3$	Br	—
A-55	OC(O)c—C_3H_5	Br	—
A-56	$OC(O)C_6H_5$	Br	—
A-57	$OC(O)CH_2C_6H_5$	Br	—
A-58	$OC(O)CH_2Cl$	Br	—
A-59	$OC(O)CF_3$	Br	—
A-60	$OC(O)CH_2OCH_3$	Br	—
A-61	$OC(O)N(CH_3)_2$	Br	—
A-62	$OC(O)OCH_2CH_3$	Br	—
A-63	OH	Cl	—
A-64	OCH_3	Cl	—
A-65	$OC(O)CH_3$	Cl	—
A-66	$OC(O)CH_2CH_3$	Cl	—
A-67	$OC(O)CH(CH_3)_2$	Cl	—
A-68	$OC(O)C(CH_3)_3$	Cl	—
A-69	OC(O)c-C_3H_5	Cl	—
A-70	$OC(O)C_6H_5$	Cl	—
A-71	$OC(O)CH_2C_6H_5$	Cl	—
A-72	$OC(O)CH_2Cl$	Cl	—
A-73	$OC(O)CF_3$	Cl	—
A-74	$OC(O)CH_2OCH_3$	Cl	—
A-75	$OC(O)N(CH_3)_2$	Cl	—
A-76	$OC(O)OCH_2CH_3$	Cl	—
A-77	OH	F	—
A-78	OCH_3	F	—
A-79	$OC(O)CH_3$	F	—
A-80	$OC(O)CH_2CH_3$	F	—
A-81	$OC(O)CH(CH_3)_2$	F	—
A-82	$OC(O)C(CH_3)_3$	F	—
A-83	OC(O)c-C_3H_5	F	—
A-84	$OC(O)C_6H_5$	F	—
A-85	$OC(O)CH_2C_6H_5$	F	—
A-86	$OC(O)CH_2Cl$	F	—
A-87	$OC(O)CF_3$	F	—
A-88	$OC(O)CH_2OCH_3$	F	—
A-89	$OC(O)N(CH_3)_2$	F	—
A-90	$OC(O)OCH_2CH_3$	F	—
A-91	OH	NO_2	—
A-92	OCH_3	NO_2	—
A-93	$OC(O)CH_3$	NO_2	—
A-94	$OC(O)CH_2CH_3$	NO_2	—

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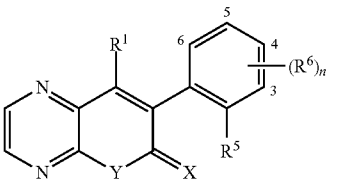

No.	R^1	R^5	$(R^6)_n$
A-95	$OC(O)CH(CH_3)_2$	NO_2	—
A-96	$OC(O)C(CH_3)_3$	NO_2	—
A-97	OC(O)c-C_3H_5	NO_2	—
A-98	$OC(O)C_6H_5$	NO_2	—
A-99	$OC(O)CH_2C_6H_5$	NO_2	—
A-100	$OC(O)CH_2Cl$	NO_2	—
A-101	$OC(O)CF_3$	NO_2	—
A-102	$OC(O)CH_2OCH_3$	NO_2	—
A-103	$OC(O)N(CH_3)_2$	NO_2	—
A-104	$OC(O)OCH_2CH_3$	NO_2	—
A-105	OH	CN	—
A-106	OCH_3	CN	—
A-107	$OC(O)CH_3$	CN	—
A-108	$OC(O)CH_2CH_3$	CN	—
A-109	$OC(O)CH(CH_3)_2$	CN	—
A-110	$OC(O)C(CH_3)_3$	CN	—
A-111	OC(O)c-C_3H_5	CN	—
A-112	$OC(O)C_6H_5$	CN	—
A-113	$OC(O)CH_2C_6H_5$	CN	—
A-114	$OC(O)CH_2Cl$	CN	—
A-115	$OC(O)CF_3$	CN	—
A-116	$OC(O)CH_2OCH_3$	CN	—
A-117	$OC(O)N(CH_3)_2$	CN	—
A-118	$OC(O)OCH_2CH_3$	CN	—
A-119	OH	CH_3	—
A-120	OCH_3	CH_3	—
A-121	$OC(O)CH_3$	CH_3	—
A-122	$OC(O)CH_2CH_3$	CH_3	—
A-123	$OC(O)CH(CH_3)_2$	CH_3	—
A-124	$OC(O)C(CH_3)_3$	CH_3	—
A-125	OC(O)c-C_3H_5	CH_3	—
A-126	$OC(O)C_6H_5$	CH_3	—
A-127	$OC(O)CH_2C_6H_5$	CH_3	—
A-128	$OC(O)CH_2Cl$	CH_3	—
A-129	$OC(O)CF_3$	CH_3	—
A-130	$OC(O)CH_2OCH_3$	CH_3	—
A-131	$OC(O)N(CH_3)_2$	CH_3	—
A-132	$OC(O)OCH_2CH_3$	CH_3	—
A-133	OH	OCH_3	—
A-134	OCH_3	OCH_3	—
A-135	$OC(O)CH_3$	OCH_3	—
A-136	$OC(O)CH_2CH_3$	OCH_3	—
A-137	$OC(O)CH(CH_3)_2$	OCH_3	—
A-138	$OC(O)C(CH_3)_3$	OCH_3	—
A-139	OC(O)c-C_3H_5	OCH_3	—
A-140	$OC(O)C_6H_5$	OCH_3	—
A-141	$OC(O)CH_2C_6H_5$	OCH_3	—
A-142	$OC(O)CH_2Cl$	OCH_3	—
A-143	$OC(O)CF_3$	OCH_3	—
A-144	$OC(O)CH_2OCH_3$	OCH_3	—
A-145	$OC(O)N(CH_3)_2$	OCH_3	—
A-146	$OC(O)OCH_2CH_3$	OCH_3	—
A-147	OH	CHF_2	—
A-148	OCH_3	CHF_2	—
A-149	$OC(O)CH_3$	CHF_2	—
A-150	$OC(O)CH_2CH_3$	CHF_2	—
A-151	$OC(O)CH(CH_3)_2$	CHF_2	—
A-152	$OC(O)C(CH_3)_3$	CHF_2	—
A-153	OC(O)c-C_3H_5	CHF_2	—
A-154	$OC(O)C_6H_5$	CHF_2	—
A-155	$OC(O)CH_2C_6H_5$	CHF_2	—
A-156	$OC(O)CH_2Cl$	CHF_2	—
A-157	$OC(O)CF_3$	CHF_2	—

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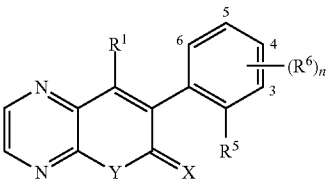

No.	R^1	R^5	$(R^6)_n$
A-158	$OC(O)CH_2OCH_3$	CHF_2	—
A-159	$OC(O)N(CH_3)_2$	CHF_2	—
A-160	$OC(O)OCH_2CH_3$	CHF_2	—
A-161	OH	CF_3	—
A-162	OCH_3	CF_3	—
A-163	$OC(O)CH_3$	CF_3	—
A-164	$OC(O)CH_2CH_3$	CF_3	—
A-165	$OC(O)CH(CH_3)_2$	CF_3	—
A-166	$OC(O)C(CH_3)_3$	CF_3	—
A-167	$OC(O)c\text{-}C_3H_5$	CF_3	—
A-168	$OC(O)C_6H_5$	CF_3	—
A-169	$OC(O)CH_2C_6H_5$	CF_3	—
A-170	$OC(O)CH_2Cl$	CF_3	—
A-171	$OC(O)CF_3$	CF_3	—
A-172	$OC(O)CH_2OCH_3$	CF_3	—
A-173	$OC(O)N(CH_3)_2$	CF_3	—
A-174	$OC(O)OCH_2CH_3$	CF_3	—
A-175	OH	$OCHF_2$	—
A-176	OCH_3	$OCHF_2$	—
A-177	$OC(O)CH_3$	$OCHF_2$	—
A-178	$OC(O)CH_2CH_3$	$OCHF_2$	—
A-179	$OC(O)CH(CH_3)_2$	$OCHF_2$	—
A-180	$OC(O)C(CH_3)_3$	$OCHF_2$	—
A-181	$OC(O)c\text{-}C_3H_5$	$OCHF_2$	—
A-182	$OC(O)C_6H_5$	$OCHF_2$	—
A-183	$OC(O)CH_2C_6H_5$	$OCHF_2$	—
A-184	$OC(O)CH_2Cl$	$OCHF_2$	—
A-185	$OC(O)CF_3$	$OCHF_2$	—
A-186	$OC(O)CH_2OCH_3$	$OCHF_2$	—
A-187	$OC(O)N(CH_3)_2$	$OCHF_2$	—
A-188	$OC(O)OCH_2CH_3$	$OCHF_2$	—
A-189	OH	OCF_3	—
A-190	OCH_3	OCF_3	—
A-191	$OC(O)CH_3$	OCF_3	—
A-192	$OC(O)CH_2CH_3$	OCF_3	—
A-193	$OC(O)CH(CH_3)_2$	OCF_3	—
A-194	$OC(O)C(CH_3)_3$	OCF_3	—
A-195	$OC(O)c\text{-}C_3H_5$	OCF_3	—
A-196	$OC(O)C_6H_5$	OCF_3	—
A-197	$OC(O)CH_2C_6H_5$	OCF_3	—
A-198	$OC(O)CH_2Cl$	OCF_3	—
A-199	$OC(O)CF_3$	OCF_3	—
A-200	$OC(O)CH_2OCH_3$	OCF_3	—
A-201	$OC(O)N(CH_3)_2$	OCF_3	—
A-202	$OC(O)OCH_2CH_3$	OCF_3	—
A-203	OH	Cl	4-Cl
A-204	OCH_3	Cl	4-Cl
A-205	$OC(O)CH_3$	Cl	4-Cl
A-206	$OC(O)CH_2CH_3$	Cl	4-Cl
A-207	$OC(O)CH(CH_3)_2$	Cl	4-Cl
A-208	$OC(O)C(CH_3)_3$	Cl	4-Cl
A-209	$OC(O)c\text{-}C_3H_5$	Cl	4-Cl
A-210	$OC(O)C_6H_5$	Cl	4-Cl
A-211	$OC(O)CH_2C_6H_5$	Cl	4-Cl
A-212	$OC(O)CH_2Cl$	Cl	4-Cl
A-213	$OC(O)CF_3$	Cl	4-Cl
A-214	$OC(O)CH_2OCH_3$	Cl	4-Cl
A-215	$OC(O)N(CH_3)_2$	Cl	4-Cl
A-216	$OC(O)OCH_2CH_3$	Cl	4-Cl
A-217	OH	Cl	4-F
A-218	OCH_3	Cl	4-F
A-219	$OC(O)CH_3$	Cl	4-F
A-220	$OC(O)CH_2CH_3$	Cl	4-F

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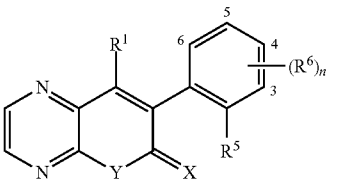

No.	R^1	R^5	$(R^6)_n$
A-221	$OC(O)CH(CH_3)_2$	Cl	4-F
A-222	$OC(O)C(CH_3)_3$	Cl	4-F
A-223	$OC(O)c\text{-}C_3H_5$	Cl	4-F
A-224	$OC(O)C_6H_5$	Cl	4-F
A-225	$OC(O)CH_2C_6H_5$	Cl	4-F
A-226	$OC(O)CH_2Cl$	Cl	4-F
A-227	$OC(O)CF_3$	Cl	4-F
A-228	$OC(O)CH_2OCH_3$	Cl	4-F
A-229	$OC(O)N(CH_3)_2$	Cl	4-F
A-230	$OC(O)OCH_2CH_3$	Cl	4-F
A-231	OH	F	4-F
A-232	OCH_3	F	4-F
A-233	$OC(O)CH_3$	F	4-F
A-234	$OC(O)CH_2CH_3$	F	4-F
A-235	$OC(O)CH(CH_3)_2$	F	4-F
A-236	$OC(O)C(CH_3)_3$	F	4-F
A-237	$OC(O)c\text{-}C_3H_5$	F	4-F
A-238	$OC(O)C_6H_5$	F	4-F
A-239	$OC(O)CH_2C_6H_5$	F	4-F
A-240	$OC(O)CH_2Cl$	F	4-F
A-241	$OC(O)CF_3$	F	4-F
A-242	$OC(O)CH_2OCH_3$	F	4-F
A-243	$OC(O)N(CH_3)_2$	F	4-F
A-244	$OC(O)OCH_2CH_3$	F	4-F
A-245	OH	NO_2	4-F
A-246	OCH_3	NO_2	4-F
A-247	$OC(O)CH_3$	NO_2	4-F
A-248	$OC(O)CH_2CH_3$	NO_2	4-F
A-249	$OC(O)CH(CH_3)_2$	NO_2	4-F
A-250	$OC(O)C(CH_3)_3$	NO_2	4-F
A-251	$OC(O)c\text{-}C_3H_5$	NO_2	4-F
A-252	$OC(O)C_6H_5$	NO_2	4-F
A-253	$OC(O)CH_2C_6H_5$	NO_2	4-F
A-254	$OC(O)CH_2Cl$	NO_2	4-F
A-255	$OC(O)CF_3$	NO_2	4-F
A-256	$OC(O)CH_2OCH_3$	NO_2	4-F
A-257	$OC(O)N(CH_3)_2$	NO_2	4-F
A-258	$OC(O)OCH_2CH_3$	NO_2	4-F
A-259	OH	CH_3	4-F
A-260	OCH_3	CH_3	4-F
A-261	$OC(O)CH_3$	CH_3	4-F
A-262	$OC(O)CH_2CH_3$	CH_3	4-F
A-263	$OC(O)CH(CH_3)_2$	CH_3	4-F
A-264	$OC(O)C(CH_3)_3$	CH_3	4-F
A-265	$OC(O)c\text{-}C_3H_5$	CH_3	4-F
A-266	$OC(O)C_6H_5$	CH_3	4-F
A-267	$OC(O)CH_2C_6H_5$	CH_3	4-F
A-268	$OC(O)CH_2Cl$	CH_3	4-F
A-269	$OC(O)CF_3$	CH_3	4-F
A-270	$OC(O)CH_2OCH_3$	CH_3	4-F
A-271	$OC(O)N(CH_3)_2$	CH_3	4-F
A-272	$OC(O)OCH_2CH_3$	CH_3	4-F
A-273	OH	OCH_3	4-F
A-274	OCH_3	OCH_3	4-F
A-275	$OC(O)CH_3$	OCH_3	4-F
A-276	$OC(O)CH_2CH_3$	OCH_3	4-F
A-277	$OC(O)CH(CH_3)_2$	OCH_3	4-F
A-278	$OC(O)C(CH_3)_3$	OCH_3	4-F
A-279	$OC(O)c\text{-}C_3H_5$	OCH_3	4-F
A-280	$OC(O)C_6H_5$	OCH_3	4-F
A-281	$OC(O)CH_2C_6H_5$	OCH_3	4-F
A-282	$OC(O)CH_2Cl$	OCH_3	4-F
A-283	$OC(O)CF_3$	OCH_3	4-F

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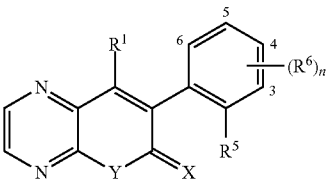

No.	R^1	R^5	$(R^6)_n$
A-284	$OC(O)CH_2OCH_3$	OCH_3	4-F
A-285	$OC(O)N(CH_3)_2$	OCH_3	4-F
A-286	$OC(O)OCH_2CH_3$	OCH_3	4-F
A-287	OH	CHF_2	4-F
A-288	OCH_3	CHF_2	4-F
A-289	$OC(O)CH_3$	CHF_2	4-F
A-290	$OC(O)CH_2CH_3$	CHF_2	4-F
A-291	$OC(O)CH(CH_3)_2$	CHF_2	4-F
A-292	$OC(O)C(CH_3)_3$	CHF_2	4-F
A-293	$OC(O)c\text{-}C_3H_5$	CHF_2	4-F
A-294	$OC(O)C_6H_5$	CHF_2	4-F
A-295	$OC(O)CH_2C_6H_5$	CHF_2	4-F
A-296	$OC(O)CH_2Cl$	CHF_2	4-F
A-297	$OC(O)CF_3$	CHF_2	4-F
A-298	$OC(O)CH_2OCH_3$	CHF_2	4-F
A-299	$OC(O)N(CH_3)_2$	CHF_2	4-F
A-300	$OC(O)OCH_2CH_3$	CHF_2	4-F
A-301	OH	CF_3	4-F
A-302	OCH_3	CF_3	4-F
A-303	$OC(O)CH_3$	CF_3	4-F
A-304	$OC(O)CH_2CH_3$	CF_3	4-F
A-305	$OC(O)CH(CH_3)_2$	CF_3	4-F
A-306	$OC(O)C(CH_3)_3$	CF_3	4-F
A-307	$OC(O)c\text{-}C_3H_5$	CF_3	4-F
A-308	$OC(O)C_6H_5$	CF_3	4-F
A-309	$OC(O)CH_2C_6H_5$	CF_3	4-F
A-310	$OC(O)CH_2Cl$	CF_3	4-F
A-311	$OC(O)CF_3$	CF_3	4-F
A-312	$OC(O)CH_2OCH_3$	CF_3	4-F
A-313	$OC(O)OCH_2CH_3$	CF_3	4-F
A-314	$OC(O)N(CH_3)_2$	CF_3	4-F
A-315	OH	$OCHF_2$	4-F
A-316	OCH_3	$OCHF_2$	4-F
A-317	$OC(O)CH_3$	$OCHF_2$	4-F
A-318	$OC(O)CH_2CH_3$	$OCHF_2$	4-F
A-319	$OC(O)CH(CH_3)_2$	$OCHF_2$	4-F
A-320	$OC(O)C(CH_3)_3$	$OCHF_2$	4-F
A-321	$OC(O)c\text{-}C_3H_5$	$OCHF_2$	4-F
A-322	$OC(O)C_6H_5$	$OCHF_2$	4-F
A-323	$OC(O)CH_2C_6H_5$	$OCHF_2$	4-F
A-324	$OC(O)CH_2Cl$	$OCHF_2$	4-F
A-325	$OC(O)CF_3$	$OCHF_2$	4-F
A-326	$OC(O)CH_2OCH_3$	$OCHF_2$	4-F
A-327	$OC(O)N(CH_3)_2$	$OCHF_2$	4-F
A-328	$OC(O)OCH_2CH_3$	$OCHF_2$	4-F
A-329	OH	OCF_3	4-F
A-330	OCH_3	OCF_3	4-F
A-331	$OC(O)CH_3$	OCF_3	4-F
A-332	$OC(O)CH_2CH_3$	OCF_3	4-F
A-333	$OC(O)CH(CH_3)_2$	OCF_3	4-F
A-334	$OC(O)C(CH_3)_3$	OCF_3	4-F
A-335	$OC(O)c\text{-}C_3H_5$	OCF_3	4-F
A-336	$OC(O)C_6H_5$	OCF_3	4-F
A-337	$OC(O)CH_2C_6H_5$	OCF_3	4-F
A-338	$OC(O)CH_2Cl$	OCF_3	4-F
A-339	$OC(O)CF_3$	OCF_3	4-F
A-340	$OC(O)CH_2OCH_3$	OCF_3	4-F
A-341	$OC(O)N(CH_3)_2$	OCF_3	4-F
A-342	$OC(O)OCH_2CH_3$	OCF_3	4-F
A-343	OH	Cl	5-F
A-344	OCH_3	Cl	5-F
A-345	$OC(O)CH_3$	Cl	5-F
A-346	$OC(O)CH_2CH_3$	Cl	5-F

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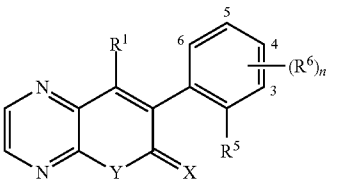

No.	R^1	R^5	$(R^6)_n$
A-347	$OC(O)CH(CH_3)_2$	Cl	5-F
A-348	$OC(O)C(CH_3)_3$	Cl	5-F
A-349	$OC(O)c\text{-}C_3H_5$	Cl	5-F
A-350	$OC(O)C_6H_5$	Cl	5-F
A-351	$OC(O)CH_2C_6H_5$	Cl	5-F
A-352	$OC(O)CH_2Cl$	Cl	5-F
A-353	$OC(O)CF_3$	Cl	5-F
A-354	$OC(O)CH_2OCH_3$	Cl	5-F
A-355	$OC(O)N(CH_3)_2$	Cl	5-F
A-356	$OC(O)OCH_2CH_3$	Cl	5-F
A-357	OH	F	5-F
A-358	OCH_3	F	5-F
A-359	$OC(O)CH_3$	F	5-F
A-360	$OC(O)CH_2CH_3$	F	5-F
A-361	$OC(O)CH(CH_3)_2$	F	5-F
A-362	$OC(O)C(CH_3)_3$	F	5-F
A-363	$OC(O)c\text{-}C_3H_5$	F	5-F
A-364	$OC(O)C_6H_5$	F	5-F
A-365	$OC(O)CH_2C_6H_5$	F	5-F
A-366	$OC(O)CH_2Cl$	F	5-F
A-367	$OC(O)CF_3$	F	5-F
A-368	$OC(O)CH_2OCH_3$	F	5-F
A-369	$OC(O)N(CH_3)_2$	F	5-F
A-370	$OC(O)OCH_2CH_3$	F	5-F
A-371	OH	NO_2	5-F
A-372	OCH_3	NO_2	5-F
A-373	$OC(O)CH_3$	NO_2	5-F
A-374	$OC(O)CH_2CH_3$	NO_2	5-F
A-375	$OC(O)CH(CH_3)_2$	NO_2	5-F
A-376	$OC(O)C(CH_3)_3$	NO_2	5-F
A-377	$OC(O)c\text{-}C_3H_5$	NO_2	5-F
A-378	$OC(O)C_6H_5$	NO_2	5-F
A-379	$OC(O)CH_2C_6H_5$	NO_2	5-F
A-380	$OC(O)CH_2Cl$	NO_2	5-F
A-381	$OC(O)CF_3$	NO_2	5-F
A-382	$OC(O)CH_2OCH_3$	NO_2	5-F
A-383	$OC(O)N(CH_3)_2$	NO_2	5-F
A-384	$OC(O)OCH_2CH_3$	NO_2	5-F
A-385	OH	CH_3	5-F
A-386	OCH_3	CH_3	5-F
A-387	$OC(O)CH_3$	CH_3	5-F
A-388	$OC(O)CH_2CH_3$	CH_3	5-F
A-389	$OC(O)CH(CH_3)_2$	CH_3	5-F
A-390	$OC(O)C(CH_3)_3$	CH_3	5-F
A-391	$OC(O)c\text{-}C_3H_5$	CH_3	5-F
A-392	$OC(O)C_6H_5$	CH_3	5-F
A-393	$OC(O)CH_2C_6H_5$	CH_3	5-F
A-394	$OC(O)CH_2Cl$	CH_3	5-F
A-395	$OC(O)CF_3$	CH_3	5-F
A-396	$OC(O)CH_2OCH_3$	CH_3	5-F
A-397	$OC(O)N(CH_3)_2$	CH_3	5-F
A-398	$OC(O)OCH_2CH_3$	CH_3	5-F
A-399	OH	OCH_3	5-F
A-400	OCH_3	OCH_3	5-F
A-401	$OC(O)CH_3$	OCH_3	5-F
A-402	$OC(O)CH_2CH_3$	OCH_3	5-F
A-403	$OC(O)CH(CH_3)_2$	OCH_3	5-F
A-404	$OC(O)C(CH_3)_3$	OCH_3	5-F
A-405	$OC(O)c\text{-}C_3H_5$	OCH_3	5-F
A-406	$OC(O)C_6H_5$	OCH_3	5-F
A-407	$OC(O)CH_2C_6H_5$	OCH_3	5-F
A-408	$OC(O)CH_2Cl$	OCH_3	5-F
A-409	$OC(O)CF_3$	OCH_3	5-F

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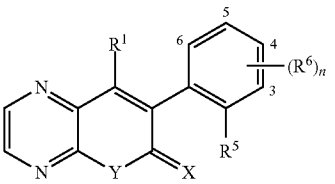

No.	R^1	R^5	$(R^6)_n$
A-410	$OC(O)CH_2OCH_3$	OCH_3	5-F
A-411	$OC(O)N(CH_3)_2$	OCH_3	5-F
A-412	$OC(O)OCH_2CH_3$	OCH_3	5-F
A-413	OH	CHF_2	5-F
A-414	OCH_3	CHF_2	5-F
A-415	$OC(O)CH_3$	CHF_2	5-F
A-416	$OC(O)CH_2CH_3$	CHF_2	5-F
A-417	$OC(O)CH(CH_3)_2$	CHF_2	5-F
A-418	$OC(O)C(CH_3)_3$	CHF_2	5-F
A-419	$OC(O)c\text{-}C_3H_5$	CHF_2	5-F
A-420	$OC(O)C_6H_5$	CHF_2	5-F
A-421	$OC(O)CH_2C_6H_5$	CHF_2	5-F
A-422	$OC(O)CH_2Cl$	CHF_2	5-F
A-423	$OC(O)CF_3$	CHF_2	5-F
A-424	$OC(O)CH_2OCH_3$	CHF_2	5-F
A-425	$OC(O)N(CH_3)_2$	CHF_2	5-F
A-426	$OC(O)OCH_2CH_3$	CHF_2	5-F
A-427	OH	CF_3	5-F
A-428	OCH_3	CF_3	5-F
A-429	$OC(O)CH_3$	CF_3	5-F
A-430	$OC(O)CH_2CH_3$	CF_3	5-F
A-431	$OC(O)CH(CH_3)_2$	CF_3	5-F
A-432	$OC(O)C(CH_3)_3$	CF_3	5-F
A-433	$OC(O)c\text{-}C_3H_5$	CF_3	5-F
A-434	$OC(O)C_6H_5$	CF_3	5-F
A-435	$OC(O)CH_2C_6H_5$	CF_3	5-F
A-436	$OC(O)CH_2Cl$	CF_3	5-F
A-437	$OC(O)CF_3$	CF_3	5-F
A-438	$OC(O)CH_2OCH_3$	CF_3	5-F
A-439	$OC(O)N(CH_3)_2$	CF_3	5-F
A-440	$OC(O)OCH_2CH_3$	CF_3	5-F
A-441	OH	$OCHF_2$	5-F
A-442	OCH_3	$OCHF_2$	5-F
A-443	$OC(O)CH_3$	$OCHF_2$	5-F
A-444	$OC(O)CH_2CH_3$	$OCHF_2$	5-F
A-445	$OC(O)CH(CH_3)_2$	$OCHF_2$	5-F
A-446	$OC(O)C(CH_3)_3$	$OCHF_2$	5-F
A-447	$OC(O)c\text{-}C_3H_5$	$OCHF_2$	5-F
A-448	$OC(O)C_6H_5$	$OCHF_2$	5-F
A-449	$OC(O)CH_2C_6H_5$	$OCHF_2$	5-F
A-450	$OC(O)CH_2Cl$	$OCHF_2$	5-F
A-451	$OC(O)CF_3$	$OCHF_2$	5-F
A-452	$OC(O)CH_2OCH_3$	$OCHF_2$	5-F
A-453	$OC(O)N(CH_3)_2$	$OCHF_2$	5-F
A-454	$OC(O)OCH_2CH_3$	$OCHF_2$	5-F
A-455	OH	OCF_3	5-F
A-456	OCH_3	OCF_3	5-F
A-457	$OC(O)CH_3$	OCF_3	5-F
A-458	$OC(O)CH_2CH_3$	OCF_3	5-F
A-459	$OC(O)CH(CH_3)_2$	OCF_3	5-F
A-460	$OC(O)C(CH_3)_3$	OCF_3	5-F
A-461	$OC(O)c\text{-}C_3H_5$	OCF_3	5-F
A-462	$OC(O)C_6H_5$	OCF_3	5-F
A-463	$OC(O)CH_2C_6H_5$	OCF_3	5-F
A-464	$OC(O)CH_2Cl$	OCF_3	5-F
A-465	$OC(O)CF_3$	OCF_3	5-F
A-466	$OC(O)CH_2OCH_3$	OCF_3	5-F
A-467	$OC(O)N(CH_3)_2$	OCF_3	5-F
A-468	$OC(O)OCH_2CH_3$	OCF_3	5-F
A-469	OH	Cl	6-F
A-470	OCH_3	Cl	6-F
A-471	$OC(O)CH_3$	Cl	6-F
A-472	$OC(O)CH_2CH_3$	Cl	6-F

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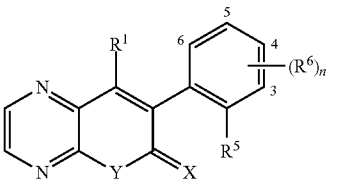

No.	R^1	R^5	$(R^6)_n$
A-473	$OC(O)CH(CH_3)_2$	Cl	6-F
A-474	$OC(O)C(CH_3)_3$	Cl	6-F
A-475	$OC(O)c\text{-}C_3H_5$	Cl	6-F
A-476	$OC(O)C_6H_5$	Cl	6-F
A-477	$OC(O)CH_2C_6H_5$	Cl	6-F
A-478	$OC(O)CH_2Cl$	Cl	6-F
A-479	$OC(O)CF_3$	Cl	6-F
A-480	$OC(O)CH_2OCH_3$	Cl	6-F
A-481	$OC(O)N(CH_3)_2$	Cl	6-F
A-482	$OC(O)OCH_2CH_3$	Cl	6-F
A-483	OH	F	6-F
A-484	OCH_3	F	6-F
A-485	$OC(O)CH_3$	F	6-F
A-486	$OC(O)CH_2CH_3$	F	6-F
A-487	$OC(O)CH(CH_3)_2$	F	6-F
A-488	$OC(O)C(CH_3)_3$	F	6-F
A-489	$OC(O)c\text{-}C_3H_5$	F	6-F
A-490	$OC(O)C_6H_5$	F	6-F
A-491	$OC(O)CH_2C_6H_5$	F	6-F
A-492	$OC(O)CH_2Cl$	F	6-F
A-493	$OC(O)CF_3$	F	6-F
A-494	$OC(O)CH_2OCH_3$	F	6-F
A-495	$OC(O)N(CH_3)_2$	F	6-F
A-496	$OC(O)OCH_2CH_3$	F	6-F
A-497	OH	NO_2	6-F
A-498	OCH_3	NO_2	6-F
A-499	$OC(O)CH_3$	NO_2	6-F
A-500	$OC(O)CH_2CH_3$	NO_2	6-F
A-501	$OC(O)CH(CH_3)_2$	NO_2	6-F
A-502	$OC(O)C(CH_3)_3$	NO_2	6-F
A-503	$OC(O)c\text{-}C_3H_5$	NO_2	6-F
A-504	$OC(O)C_6H_5$	NO_2	6-F
A-505	$OC(O)CH_2C_6H_5$	NO_2	6-F
A-506	$OC(O)CH_2Cl$	NO_2	6-F
A-507	$OC(O)CF_3$	NO_2	6-F
A-508	$OC(O)CH_2OCH_3$	NO_2	6-F
A-509	$OC(O)N(CH_3)_2$	NO_2	6-F
A-510	$OC(O)OCH_2CH_3$	NO_2	6-F
A-511	OH	CH_3	6-F
A-512	OCH_3	CH_3	6-F
A-513	$OC(O)CH_3$	CH_3	6-F
A-514	$OC(O)CH_2CH_3$	CH_3	6-F
A-515	$OC(O)CH(CH_3)_2$	CH_3	6-F
A-516	$OC(O)C(CH_3)_3$	CH_3	6-F
A-517	$OC(O)c\text{-}C_3H_5$	CH_3	6-F
A-518	$OC(O)C_6H_5$	CH_3	6-F
A-519	$OC(O)CH_2C_6H_5$	CH_3	6-F
A-520	$OC(O)CH_2Cl$	CH_3	6-F
A-521	$OC(O)CF_3$	CH_3	6-F
A-522	$OC(O)CH_2OCH_3$	CH_3	6-F
A-523	$OC(O)N(CH_3)_2$	CH_3	6-F
A-524	$OC(O)OCH_2CH_3$	CH_3	6-F
A-525	OH	OCH_3	6-F
A-526	OCH_3	OCH_3	6-F
A-527	$OC(O)CH_3$	OCH_3	6-F
A-528	$OC(O)CH_2CH_3$	OCH_3	6-F
A-529	$OC(O)CH(CH_3)_2$	OCH_3	6-F
A-530	$OC(O)C(CH_3)_3$	OCH_3	6-F
A-531	$OC(O)c\text{-}C_3H_5$	OCH_3	6-F
A-532	$OC(O)C_6H_5$	OCH_3	6-F
A-533	$OC(O)CH_2C_6H_5$	OCH_3	6-F
A-534	$OC(O)CH_2Cl$	OCH_3	6-F
A-535	$OC(O)CF_3$	OCH_3	6-F

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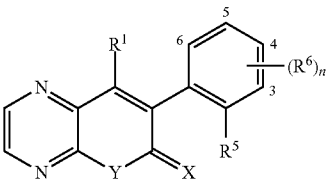

No.	R^1	R^5	$(R^6)_n$
A-536	$OC(O)CH_2OCH_3$	OCH_3	6-F
A-537	$OC(O)N(CH_3)_2$	OCH_3	6-F
A-538	$OC(O)OCH_2CH_3$	OCH_3	6-F
A-539	OH	CHF_2	6-F
A-540	OCH_3	CHF_2	6-F
A-541	$OC(O)CH_3$	CHF_2	6-F
A-542	$OC(O)CH_2CH_3$	CHF_2	6-F
A-543	$OC(O)CH(CH_3)_2$	CHF_2	6-F
A-544	$OC(O)C(CH_3)_3$	CHF_2	6-F
A-545	$OC(O)c\text{-}C_3H_5$	CHF_2	6-F
A-546	$OC(O)C_6H_5$	CHF_2	6-F
A-547	$OC(O)CH_2C_6H_5$	CHF_2	6-F
A-548	$OC(O)CH_2Cl$	CHF_2	6-F
A-549	$OC(O)CF_3$	CHF_2	6-F
A-550	$OC(O)CH_2OCH_3$	CHF_2	6-F
A-551	$OC(O)N(CH_3)_2$	CHF_2	6-F
A-552	$OC(O)OCH_2CH_3$	CHF_2	6-F
A-553	OH	CF_3	6-F
A-554	OCH_3	CF_3	6-F
A-555	$OC(O)CH_3$	CF_3	6-F
A-556	$OC(O)CH_2CH_3$	CF_3	6-F
A-557	$OC(O)CH(CH_3)_2$	CF_3	6-F
A-558	$OC(O)C(CH_3)_3$	CF_3	6-F
A-559	$OC(O)c\text{-}C_3H_5$	CF_3	6-F
A-560	$OC(O)C_6H_5$	CF_3	6-F
A-561	$OC(O)CH_2C_6H_5$	CF_3	6-F
A-562	$OC(O)CH_2Cl$	CF_3	6-F
A-563	$OC(O)CF_3$	CF_3	6-F
A-564	$OC(O)CH_2OCH_3$	CF_3	6-F
A-565	$OC(O)N(CH_3)_2$	CF_3	6-F
A-566	$OC(O)OCH_2CH_3$	CF_3	6-F
A-567	OH	$OCHF_2$	6-F
A-568	OCH_3	$OCHF_2$	6-F
A-569	$OC(O)CH_3$	$OCHF_2$	6-F
A-570	$OC(O)CH_2CH_3$	$OCHF_2$	6-F
A-571	$OC(O)CH(CH_3)_2$	$OCHF_2$	6-F
A-572	$OC(O)C(CH_3)_3$	$OCHF_2$	6-F
A-573	$OC(O)c\text{-}C_3H_5$	$OCHF_2$	6-F
A-574	$OC(O)C_6H_5$	$OCHF_2$	6-F
A-575	$OC(O)CH_2C_6H_5$	$OCHF_2$	6-F
A-576	$OC(O)CH_2Cl$	$OCHF_2$	6-F
A-577	$OC(O)CF_3$	$OCHF_2$	6-F
A-578	$OC(O)CH_2OCH_3$	$OCHF_2$	6-F
A-579	$OC(O)N(CH_3)_2$	$OCHF_2$	6-F
A-580	$OC(O)OCH_2CH_3$	$OCHF_2$	6-F
A-581	OH	OCF_3	6-F
A-582	OCH_3	OCF_3	6-F
A-583	$OC(O)CH_3$	OCF_3	6-F
A-584	$OC(O)CH_2CH_3$	OCF_3	6-F
A-585	$OC(O)CH(CH_3)_2$	OCF_3	6-F
A-586	$OC(O)C(CH_3)_3$	OCF_3	6-F
A-587	$OC(O)c\text{-}C_3H_5$	OCF_3	6-F
A-588	$OC(O)C_6H_5$	OCF_3	6-F
A-589	$OC(O)CH_2C_6H_5$	OCF_3	6-F
A-590	$OC(O)CH_2Cl$	OCF_3	6-F
A-591	$OC(O)CF_3$	OCF_3	6-F
A-592	$OC(O)CH_2OCH_3$	OCF_3	6-F
A-593	$OC(O)N(CH_3)_2$	OCF_3	6-F
A-594	$OC(O)OCH_2CH_3$	OCF_3	6-F
A-595	OH	Cl	4-CF_3
A-596	OCH_3	Cl	4-CF_3
A-597	$OC(O)CH_3$	Cl	4-CF_3
A-598	$OC(O)CH_2CH_3$	Cl	4-CF_3

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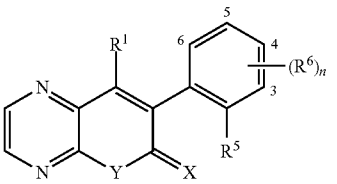

No.	R^1	R^5	$(R^6)_n$
A-599	$OC(O)CH(CH_3)_2$	Cl	4-CF_3
A-600	$OC(O)C(CH_3)_3$	Cl	4-CF_3
A-601	$OC(O)c\text{-}C_3H_5$	Cl	4-CF_3
A-602	$OC(O)C_6H_5$	Cl	4-CF_3
A-603	$OC(O)CH_2C_6H_5$	Cl	4-CF_3
A-604	$OC(O)CH_2Cl$	Cl	4-CF_3
A-605	$OC(O)CF_3$	Cl	4-CF_3
A-606	$OC(O)CH_2OCH_3$	Cl	4-CF_3
A-607	$OC(O)N(CH_3)_2$	Cl	4-CF_3
A-608	$OC(O)OCH_2CH_3$	Cl	4-CF_3
A-609	OH	F	4-CF_3
A-610	OCH_3	F	4-CF_3
A-611	$OC(O)CH_3$	F	4-CF_3
A-612	$OC(O)CH_2CH_3$	F	4-CF_3
A-613	$OC(O)CH(CH_3)_2$	F	4-CF_3
A-614	$OC(O)C(CH_3)_3$	F	4-CF_3
A-615	$OC(O)c\text{-}C_3H_5$	F	4-CF_3
A-616	$OC(O)C_6H_5$	F	4-CF_3
A-617	$OC(O)CH_2C_6H_5$	F	4-CF_3
A-618	$OC(O)CH_2Cl$	F	4-CF_3
A-619	$OC(O)CF_3$	F	4-CF_3
A-620	$OC(O)CH_2OCH_3$	F	4-CF_3
A-621	$OC(O)N(CH_3)_2$	F	4-CF_3
A-622	$OC(O)OCH_2CH_3$	F	4-CF_3
A-623	OH	NO_2	4-CF_3
A-624	OCH_3	NO_2	4-CF_3
A-625	$OC(O)CH_3$	NO_2	4-CF_3
A-626	$OC(O)CH_2CH_3$	NO_2	4-CF_3
A-627	$OC(O)CH(CH_3)_2$	NO_2	4-CF_3
A-628	$OC(O)C(CH_3)_3$	NO_2	4-CF_3
A-629	$OC(O)c\text{-}C_3H_5$	NO_2	4-CF_3
A-630	$OC(O)C_6H_5$	NO_2	4-CF_3
A-631	$OC(O)CH_2C_6H_5$	NO_2	4-CF_3
A-632	$OC(O)CH_2Cl$	NO_2	4-CF_3
A-633	$OC(O)CF_3$	NO_2	4-CF_3
A-634	$OC(O)CH_2OCH_3$	NO_2	4-CF_3
A-635	$OC(O)N(CH_3)_2$	NO_2	4-CF_3
A-636	$OC(O)OCH_2CH_3$	NO_2	4-CF_3
A-637	OH	CH_3	4-CF_3
A-638	OCH_3	CH_3	4-CF_3
A-639	$OC(O)CH_3$	CH_3	4-CF_3
A-640	$OC(O)CH_2CH_3$	CH_3	4-CF_3
A-641	$OC(O)CH(CH_3)_2$	CH_3	4-CF_3
A-642	$OC(O)C(CH_3)_3$	CH_3	4-CF_3
A-643	$OC(O)c\text{-}C_3H_5$	CH_3	4-CF_3
A-644	$OC(O)C_6H_5$	CH_3	4-CF_3
A-645	$OC(O)CH_2C_6H_5$	CH_3	4-CF_3
A-646	$OC(O)CH_2Cl$	CH_3	4-CF_3
A-647	$OC(O)CF_3$	CH_3	4-CF_3
A-648	$OC(O)CH_2OCH_3$	CH_3	4-CF_3
A-649	$OC(O)N(CH_3)_2$	CH_3	4-CF_3
A-650	$OC(O)OCH_2CH_3$	CH_3	4-CF_3
A-651	OH	OCH_3	4-CF_3
A-652	OCH_3	OCH_3	4-CF_3
A-653	$OC(O)CH_3$	OCH_3	4-CF_3
A-654	$OC(O)CH_2CH_3$	OCH_3	4-CF_3
A-655	$OC(O)CH(CH_3)_2$	OCH_3	4-CF_3
A-656	$OC(O)C(CH_3)_3$	OCH_3	4-CF_3
A-657	$OC(O)c\text{-}C_3H_5$	OCH_3	4-CF_3
A-658	$OC(O)C_6H_5$	OCH_3	4-CF_3
A-659	$OC(O)CH_2C_6H_5$	OCH_3	4-CF_3
A-660	$OC(O)CH_2Cl$	OCH_3	4-CF_3
A-661	$OC(O)CF_3$	OCH_3	4-CF_3

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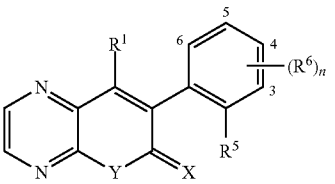

No.	R^1	R^5	$(R^6)_n$
A-662	$OC(O)CH_2OCH_3$	OCH_3	4-CF_3
A-663	$OC(O)N(CH_3)_2$	OCH_3	4-CF_3
A-664	$OC(O)OCH_2CH_3$	OCH_3	4-CF_3
A-665	OH	CHF_2	4-CF_3
A-666	OCH_3	CHF_2	4-CF_3
A-667	$OC(O)CH_3$	CHF_2	4-CF_3
A-668	$OC(O)CH_2CH_3$	CHF_2	4-CF_3
A-669	$OC(O)CH(CH_3)_2$	CHF_2	4-CF_3
A-670	$OC(O)C(CH_3)_3$	CHF_2	4-CF_3
A-671	$OC(O)c\text{-}C_3H_5$	CHF_2	4-CF_3
A-672	$OC(O)C_6H_5$	CHF_2	4-CF_3
A-673	$OC(O)CH_2C_6H_5$	CHF_2	4-CF_3
A-674	$OC(O)CH_2Cl$	CHF_2	4-CF_3
A-675	$OC(O)CF_3$	CHF_2	4-CF_3
A-676	$OC(O)CH_2OCH_3$	CHF_2	4-CF_3
A-677	$OC(O)N(CH_3)_2$	CHF_2	4-CF_3
A-678	$OC(O)OCH_2CH_3$	CHF_2	4-CF_3
A-679	OH	CF_3	4-CF_3
A-680	OCH_3	CF_3	4-CF_3
A-681	$OC(O)CH_3$	CF_3	4-CF_3
A-682	$OC(O)CH_2CH_3$	CF_3	4-CF_3
A-683	$OC(O)CH(CH_3)_2$	CF_3	4-CF_3
A-684	$OC(O)C(CH_3)_3$	CF_3	4-CF_3
A-685	$OC(O)c\text{-}C_3H_5$	CF_3	4-CF_3
A-686	$OC(O)C_6H_5$	CF_3	4-CF_3
A-687	$OC(O)CH_2C_6H_5$	CF_3	4-CF_3
A-688	$OC(O)CH_2Cl$	CF_3	4-CF_3
A-689	$OC(O)CF_3$	CF_3	4-CF_3
A-690	$OC(O)CH_2OCH_3$	CF_3	4-CF_3
A-691	$OC(O)N(CH_3)_2$	CF_3	4-CF_3
A-692	$OC(O)OCH_2CH_3$	CF_3	4-CF_3
A-693	OH	$OCHF_2$	4-CF_3
A-694	OCH_3	$OCHF_2$	4-CF_3
A-695	$OC(O)CH_3$	$OCHF_2$	4-CF_3
A-696	$OC(O)CH_2CH_3$	$OCHF_2$	4-CF_3
A-697	$OC(O)CH(CH_3)_2$	$OCHF_2$	4-CF_3
A-698	$OC(O)C(CH_3)_3$	$OCHF_2$	4-CF_3
A-699	$OC(O)c\text{-}C_3H_5$	$OCHF_2$	4-CF_3
A-700	$OC(O)C_6H_5$	$OCHF_2$	4-CF_3
A-701	$OC(O)CH_2C_6H_5$	$OCHF_2$	4-CF_3
A-702	$OC(O)CH_2Cl$	$OCHF_2$	4-CF_3
A-703	$OC(O)CF_3$	$OCHF_2$	4-CF_3
A-704	$OC(O)CH_2OCH_3$	$OCHF_2$	4-CF_3
A-705	$OC(O)N(CH_3)_2$	$OCHF_2$	4-CF_3
A-706	$OC(O)OCH_2CH_3$	$OCHF_2$	4-CF_3
A-707	OH	OCF_3	4-CF_3
A-708	OCH_3	OCF_3	4-CF_3
A-709	$OC(O)CH_3$	OCF_3	4-CF_3
A-710	$OC(O)CH_2CH_3$	OCF_3	4-CF_3
A-711	$OC(O)CH(CH_3)_2$	OCF_3	4-CF_3
A-712	$OC(O)C(CH_3)_3$	OCF_3	4-CF_3
A-713	$OC(O)c\text{-}C_3H_5$	OCF_3	4-CF_3
A-714	$OC(O)C_6H_5$	OCF_3	4-CF_3
A-715	$OC(O)CH_2C_6H_5$	OCF_3	4-CF_3
A-716	$OC(O)CH_2Cl$	OCF_3	4-CF_3
A-717	$OC(O)CF_3$	OCF_3	4-CF_3
A-718	$OC(O)CH_2OCH_3$	OCF_3	4-CF_3
A-719	$OC(O)N(CH_3)_2$	OCF_3	4-CF_3
A-720	$OC(O)OCH_2CH_3$	OCF_3	4-CF_3
A-721	OH	Cl	5-CF_3
A-722	OCH_3	Cl	5-CF_3
A-723	$OC(O)CH_3$	Cl	5-CF_3
A-724	$OC(O)CH_2CH_3$	Cl	5-CF_3

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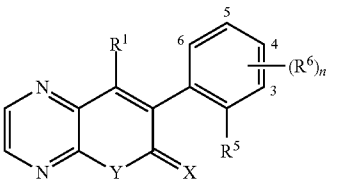

No.	R^1	R^5	$(R^6)_n$
A-725	$OC(O)CH(CH_3)_2$	Cl	5-CF_3
A-726	$OC(O)C(CH_3)_3$	Cl	5-CF_3
A-727	$OC(O)c\text{-}C_3H_5$	Cl	5-CF_3
A-728	$OC(O)C_6H_5$	Cl	5-CF_3
A-729	$OC(O)CH_2C_6H_5$	Cl	5-CF_3
A-730	$OC(O)CH_2Cl$	Cl	5-CF_3
A-731	$OC(O)CF_3$	Cl	5-CF_3
A-732	$OC(O)CH_2OCH_3$	Cl	5-CF_3
A-733	$OC(O)N(CH_3)_2$	Cl	5-CF_3
A-734	$OC(O)OCH_2CH_3$	Cl	5-CF_3
A-735	OH	F	5-CF_3
A-736	OCH_3	F	5-CF_3
A-737	$OC(O)CH_3$	F	5-CF_3
A-738	$OC(O)CH_2CH_3$	F	5-CF_3
A-739	$OC(O)CH(CH_3)_2$	F	5-CF_3
A-740	$OC(O)C(CH_3)_3$	F	5-CF_3
A-741	$OC(O)c\text{-}C_3H_5$	F	5-CF_3
A-742	$OC(O)C_6H_5$	F	5-CF_3
A-743	$OC(O)CH_2C_6H_5$	F	5-CF_3
A-744	$OC(O)CH_2Cl$	F	5-CF_3
A-745	$OC(O)CF_3$	F	5-CF_3
A-746	$OC(O)CH_2OCH_3$	F	5-CF_3
A-747	$OC(O)N(CH_3)_2$	F	5-CF_3
A-748	$OC(O)OCH_2CH_3$	F	5-CF_3
A-749	OH	NO_2	5-CF_3
A-750	OCH_3	NO_2	5-CF_3
A-751	$OC(O)CH_3$	NO_2	5-CF_3
A-752	$OC(O)CH_2CH_3$	NO_2	5-CF_3
A-753	$OC(O)CH(CH_3)_2$	NO_2	5-CF_3
A-754	$OC(O)C(CH_3)_3$	NO_2	5-CF_3
A-755	$OC(O)c\text{-}C_3H_5$	NO_2	5-CF_3
A-756	$OC(O)C_6H_5$	NO_2	5-CF_3
A-757	$OC(O)CH_2C_6H_5$	NO_2	5-CF_3
A-758	$OC(O)CH_2Cl$	NO_2	5-CF_3
A-759	$OC(O)CF_3$	NO_2	5-CF_3
A-760	$OC(O)CH_2OCH_3$	NO_2	5-CF_3
A-761	$OC(O)N(CH_3)_2$	NO_2	5-CF_3
A-762	$OC(O)OCH_2CH_3$	NO_2	5-CF_3
A-763	OH	CH_3	5-CF_3
A-764	OCH_3	CH_3	5-CF_3
A-765	$OC(O)CH_3$	CH_3	5-CF_3
A-766	$OC(O)CH_2CH_3$	CH_3	5-CF_3
A-767	$OC(O)CH(CH_3)_2$	CH_3	5-CF_3
A-768	$OC(O)C(CH_3)_3$	CH_3	5-CF_3
A-769	$OC(O)c\text{-}C_3H_5$	CH_3	5-CF_3
A-770	$OC(O)C_6H_5$	CH_3	5-CF_3
A-771	$OC(O)CH_2C_6H_5$	CH_3	5-CF_3
A-772	$OC(O)CH_2Cl$	CH_3	5-CF_3
A-773	$OC(O)CF_3$	CH_3	5-CF_3
A-774	$OC(O)CH_2OCH_3$	CH_3	5-CF_3
A-775	$OC(O)N(CH_3)_2$	CH_3	5-CF_3
A-776	$OC(O)OCH_2CH_3$	CH_3	5-CF_3
A-777	OH	OCH_3	5-CF_3
A-778	OCH_3	OCH_3	5-CF_3
A-779	$OC(O)CH_3$	OCH_3	5-CF_3
A-780	$OC(O)CH_2CH_3$	OCH_3	5-CF_3
A-781	$OC(O)CH(CH_3)_2$	OCH_3	5-CF_3
A-782	$OC(O)C(CH_3)_3$	OCH_3	5-CF_3
A-783	$OC(O)c\text{-}C_3H_5$	OCH_3	5-CF_3
A-784	$OC(O)C_6H_5$	OCH_3	5-CF_3
A-785	$OC(O)CH_2C_6H_5$	OCH_3	5-CF_3
A-786	$OC(O)CH_2Cl$	OCH_3	5-CF_3
A-787	$OC(O)CF_3$	OCH_3	5-CF_3

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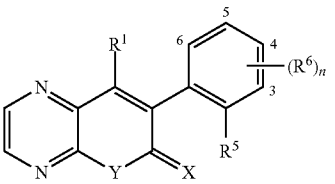

No.	R^1	R^5	$(R^6)_n$
A-788	$OC(O)CH_2OCH_3$	OCH_3	5-CF_3
A-789	$OC(O)N(CH_3)_2$	OCH_3	5-CF_3
A-790	$OC(O)OCH_2CH_3$	OCH_3	5-CF_3
A-791	OH	CHF_2	5-CF_3
A-792	OCH_3	CHF_2	5-CF_3
A-793	$OC(O)CH_3$	CHF_2	5-CF_3
A-794	$OC(O)CH_2CH_3$	CHF_2	5-CF_3
A-795	$OC(O)CH(CH_3)_2$	CHF_2	5-CF_3
A-796	$OC(O)C(CH_3)_3$	CHF_2	5-CF_3
A-797	$OC(O)c\text{-}C_3H_5$	CHF_2	5-CF_3
A-798	$OC(O)C_6H_5$	CHF_2	5-CF_3
A-799	$OC(O)CH_2C_6H_5$	CHF_2	5-CF_3
A-800	$OC(O)CH_2Cl$	CHF_2	5-CF_3
A-801	$OC(O)CF_3$	CHF_2	5-CF_3
A-802	$OC(O)CH_2OCH_3$	CHF_2	5-CF_3
A-803	$OC(O)N(CH_3)_2$	CHF_2	5-CF_3
A-804	$OC(O)OCH_2CH_3$	CHF_2	5-CF_3
A-805	OH	CF_3	5-CF_3
A-806	OCH_3	CF_3	5-CF_3
A-807	$OC(O)CH_3$	CF_3	5-CF_3
A-808	$OC(O)CH_2CH_3$	CF_3	5-CF_3
A-809	$OC(O)CH(CH_3)_2$	CF_3	5-CF_3
A-810	$OC(O)C(CH_3)_3$	CF_3	5-CF_3
A-811	$OC(O)c\text{-}C_3H_5$	CF_3	5-CF_3
A-812	$OC(O)C_6H_5$	CF_3	5-CF_3
A-813	$OC(O)CH_2C_6H_5$	CF_3	5-CF_3
A-814	$OC(O)CH_2Cl$	CF_3	5-CF_3
A-815	$OC(O)CF_3$	CF_3	5-CF_3
A-816	$OC(O)CH_2OCH_3$	CF_3	5-CF_3
A-817	$OC(O)N(CH_3)_2$	CF_3	5-CF_3
A-818	$OC(O)OCH_2CH_3$	CF_3	5-CF_3
A-819	OH	$OCHF_2$	5-CF_3
A-820	OCH_3	$OCHF_2$	5-CF_3
A-821	$OC(O)CH_3$	$OCHF_2$	5-CF_3
A-822	$OC(O)CH_2CH_3$	$OCHF_2$	5-CF_3
A-823	$OC(O)CH(CH_3)_2$	$OCHF_2$	5-CF_3
A-824	$OC(O)C(CH_3)_3$	$OCHF_2$	5-CF_3
A-825	$OC(O)c\text{-}C_3H_5$	$OCHF_2$	5-CF_3
A-826	$OC(O)C_6H_5$	$OCHF_2$	5-CF_3
A-827	$OC(O)CH_2C_6H_5$	$OCHF_2$	5-CF_3
A-828	$OC(O)CH_2Cl$	$OCHF_2$	5-CF_3
A-829	$OC(O)CF_3$	$OCHF_2$	5-CF_3
A-830	$OC(O)CH_2OCH_3$	$OCHF_2$	5-CF_3
A-831	$OC(O)N(CH_3)_2$	$OCHF_2$	5-CF_3
A-832	$OC(O)OCH_2CH_3$	$OCHF_2$	5-CF_3
A-833	OH	OCF_3	5-CF_3
A-834	OCH_3	OCF_3	5-CF_3
A-835	$OC(O)CH_3$	OCF_3	5-CF_3
A-836	$OC(O)CH_2CH_3$	OCF_3	5-CF_3
A-837	$OC(O)CH(CH_3)_2$	OCF_3	5-CF_3
A-838	$OC(O)C(CH_3)_3$	OCF_3	5-CF_3
A-839	$OC(O)c\text{-}C_3H_5$	OCF_3	5-CF_3
A-840	$OC(O)C_6H_5$	OCF_3	5-CF_3
A-841	$OC(O)CH_2C_6H_5$	OCF_3	5-CF_3
A-842	$OC(O)CH_2Cl$	OCF_3	5-CF_3
A-843	$OC(O)CF_3$	OCF_3	5-CF_3
A-844	$OC(O)CH_2OCH_3$	OCF_3	5-CF_3
A-845	$OC(O)N(CH_3)_2$	OCF_3	5-CF_3
A-846	$OC(O)OCH_2CH_3$	OCF_3	5-CF_3
A-847	OH	Cl	3,6-F_2
A-848	OCH_3	Cl	3,6-F_2
A-849	$OC(O)CH_3$	Cl	3,6-F_2
A-850	$OC(O)CH_2CH_3$	Cl	3,6-F_2

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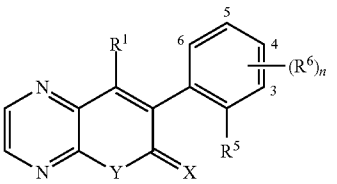

No.	R^1	R^5	$(R^6)_n$
A-851	$OC(O)CH(CH_3)_2$	Cl	3,6-F_2
A-852	$OC(O)C(CH_3)_3$	Cl	3,6-F_2
A-853	$OC(O)c\text{-}C_3H_5$	Cl	3,6-F_2
A-854	$OC(O)C_6H_5$	Cl	3,6-F_2
A-855	$OC(O)CH_2C_6H_5$	Cl	3,6-F_2
A-856	$OC(O)CH_2Cl$	Cl	3,6-F_2
A-857	$OC(O)CF_3$	Cl	3,6-F_2
A-858	$OC(O)CH_2OCH_3$	Cl	3,6-F_2
A-859	$OC(O)N(CH_3)_2$	Cl	3,6-F_2
A-860	$OC(O)OCH_2CH_3$	Cl	3,6-F_2
A-861	OH	F	3,6-F_2
A-862	OCH_3	F	3,6-F_2
A-863	$OC(O)CH_3$	F	3,6-F_2
A-864	$OC(O)CH_2CH_3$	F	3,6-F_2
A-865	$OC(O)CH(CH_3)_2$	F	3,6-F_2
A-866	$OC(O)C(CH_3)_3$	F	3,6-F_2
A-867	$OC(O)c\text{-}C_3H_5$	F	3,6-F_2
A-868	$OC(O)C_6H_5$	F	3,6-F_2
A-869	$OC(O)CH_2C_6H_5$	F	3,6-F_2
A-870	$OC(O)CH_2Cl$	F	3,6-F_2
A-871	$OC(O)CF_3$	F	3,6-F_2
A-872	$OC(O)CH_2OCH_3$	F	3,6-F_2
A-873	$OC(O)N(CH_3)_2$	F	3,6-F_2
A-874	$OC(O)OCH_2CH_3$	F	3,6-F_2
A-875	OH	NO_2	3,6-F_2
A-876	OCH_3	NO_2	3,6-F_2
A-877	$OC(O)CH_3$	NO_2	3,6-F_2
A-878	$OC(O)CH_2CH_3$	NO_2	3,6-F_2
A-879	$OC(O)CH(CH_3)_2$	NO_2	3,6-F_2
A-880	$OC(O)C(CH_3)_3$	NO_2	3,6-F_2
A-881	$OC(O)c\text{-}C_3H_5$	NO_2	3,6-F_2
A-882	$OC(O)C_6H_5$	NO_2	3,6-F_2
A-883	$OC(O)CH_2C_6H_5$	NO_2	3,6-F_2
A-884	$OC(O)CH_2Cl$	NO_2	3,6-F_2
A-885	$OC(O)CF_3$	NO_2	3,6-F_2
A-886	$OC(O)CH_2OCH_3$	NO_2	3,6-F_2
A-887	$OC(O)N(CH_3)_2$	NO_2	3,6-F_2
A-888	$OC(O)OCH_2CH_3$	NO_2	3,6-F_2
A-889	OH	CH_3	3,6-F_2
A-890	OCH_3	CH_3	3,6-F_2
A-891	$OC(O)CH_3$	CH_3	3,6-F_2
A-892	$OC(O)CH_2CH_3$	CH_3	3,6-F_2
A-893	$OC(O)CH(CH_3)_2$	CH_3	3,6-F_2
A-894	$OC(O)C(CH_3)_3$	CH_3	3,6-F_2
A-895	$OC(O)c\text{-}C_3H_5$	CH_3	3,6-F_2
A-896	$OC(O)C_6H_5$	CH_3	3,6-F_2
A-897	$OC(O)CH_2C_6H_5$	CH_3	3,6-F_2
A-898	$OC(O)CH_2Cl$	CH_3	3,6-F_2
A-899	$OC(O)CF_3$	CH_3	3,6-F_2
A-900	$OC(O)CH_2OCH_3$	CH_3	3,6-F_2
A-901	$OC(O)N(CH_3)_2$	CH_3	3,6-F_2
A-902	$OC(O)OCH_2CH_3$	CH_3	3,6-F_2
A-903	OH	OCH_3	3,6-F_2
A-904	OCH_3	OCH_3	3,6-F_2
A-905	$OC(O)CH_3$	OCH_3	3,6-F_2
A-906	$OC(O)CH_2CH_3$	OCH_3	3,6-F_2
A-907	$OC(O)CH(CH_3)_2$	OCH_3	3,6-F_2
A-908	$OC(O)C(CH_3)_3$	OCH_3	3,6-F_2
A-909	$OC(O)c\text{-}C_3H_5$	OCH_3	3,6-F_2
A-910	$OC(O)C_6H_5$	OCH_3	3,6-F_2
A-911	$OC(O)CH_2C_6H_5$	OCH_3	3,6-F_2
A-912	$OC(O)CH_2Cl$	OCH_3	3,6-F_2
A-913	$OC(O)CF_3$	OCH_3	3,6-F_2

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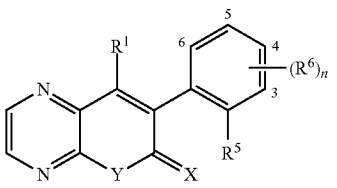


No.	R^1	R^5	$(R^6)_n$
A-914	$OC(O)CH_2OCH_3$	OCH_3	3,6-F_2
A-915	$OC(O)N(CH_3)_2$	OCH_3	3,6-F_2
A-916	$OC(O)OCH_2CH_3$	OCH_3	3,6-F_2
A-917	OH	CHF_2	3,6-F_2
A-918	OCH_3	CHF_2	3,6-F_2
A-919	$OC(O)CH_3$	CHF_2	3,6-F_2
A-920	$OC(O)CH_2CH_3$	CHF_2	3,6-F_2
A-921	$OC(O)CH(CH_3)_2$	CHF_2	3,6-F_2
A-922	$OC(O)C(CH_3)_3$	CHF_2	3,6-F_2
A-923	$OC(O)c\text{-}C_3H_5$	CHF_2	3,6-F_2
A-924	$OC(O)C_6H_5$	CHF_2	3,6-F_2
A-925	$OC(O)CH_2C_6H_5$	CHF_2	3,6-F_2
A-926	$OC(O)CH_2Cl$	CHF_2	3,6-F_2
A-927	$OC(O)CF_3$	CHF_2	3,6-F_2
A-928	$OC(O)CH_2OCH_3$	CHF_2	3,6-F_2
A-929	$OC(O)N(CH_3)_2$	CHF_2	3,6-F_2
A-930	$OC(O)OCH_2CH_3$	CHF_2	3,6-F_2
A-931	OH	CF_3	3,6-F_2
A-932	OCH_3	CF_3	3,6-F_2
A-933	$OC(O)CH_3$	CF_3	3,6-F_2
A-934	$OC(O)CH_2CH_3$	CF_3	3,6-F_2
A-935	$OC(O)CH(CH_3)_2$	CF_3	3,6-F_2
A-936	$OC(O)C(CH_3)_3$	CF_3	3,6-F_2
A-937	$OC(O)c\text{-}C_3H_5$	CF_3	3,6-F_2
A-938	$OC(O)C_6H_5$	CF_3	3,6-F_2
A-939	$OC(O)CH_2C_6H_5$	CF_3	3,6-F_2
A-940	$OC(O)CH_2Cl$	CF_3	3,6-F_2
A-941	$OC(O)CF_3$	CF_3	3,6-F_2
A-942	$OC(O)CH_2OCH_3$	CF_3	3,6-F_2
A-943	$OC(O)N(CH_3)_2$	CF_3	3,6-F_2
A-944	$OC(O)OCH_2CH_3$	CF_3	3,6-F_2
A-945	OH	$OCHF_2$	3,6-F_2
A-946	OCH_3	$OCHF_2$	3,6-F_2
A-947	$OC(O)CH_3$	$OCHF_2$	3,6-F_2
A-948	$OC(O)CH_2CH_3$	$OCHF_2$	3,6-F_2
A-949	$OC(O)CH(CH_3)_2$	$OCHF_2$	3,6-F_2
A-950	$OC(O)C(CH_3)_3$	$OCHF_2$	3,6-F_2
A-951	$OC(O)c\text{-}C_3H_5$	$OCHF_2$	3,6-F_2
A-952	$OC(O)C_6H_5$	$OCHF_2$	3,6-F_2
A-953	$OC(O)CH_2C_6H_5$	$OCHF_2$	3,6-F_2
A-954	$OC(O)CH_2Cl$	$OCHF_2$	3,6-F_2
A-955	$OC(O)CF_3$	$OCHF_2$	3,6-F_2
A-956	$OC(O)CH_2OCH_3$	$OCHF_2$	3,6-F_2
A-957	$OC(O)N(CH_3)_2$	$OCHF_2$	3,6-F_2
A-958	$OC(O)OCH_2CH_3$	$OCHF_2$	3,6-F_2
A-959	OH	OCF_3	3,6-F_2
A-960	OCH_3	OCF_3	3,6-F_2
A-961	$OC(O)CH_3$	OCF_3	3,6-F_2
A-962	$OC(O)CH_2CH_3$	OCF_3	3,6-F_2
A-963	$OC(O)CH(CH_3)_2$	OCF_3	3,6-F_2
A-964	$OC(O)C(CH_3)_3$	OCF_3	3,6-F_2
A-965	$OC(O)c\text{-}C_3H_5$	OCF_3	3,6-F_2
A-966	$OC(O)C_6H_5$	OCF_3	3,6-F_2
A-967	$OC(O)CH_2C_6H_5$	OCF_3	3,6-F_2
A-968	$OC(O)CH_2Cl$	OCF_3	3,6-F_2
A-969	$OC(O)CF_3$	OCF_3	3,6-F_2
A-970	$OC(O)CH_2OCH_3$	OCF_3	3,6-F_2
A-971	$OC(O)N(CH_3)_2$	OCF_3	3,6-F_2
A-972	$OC(O)OCH_2CH_3$	OCF_3	3,6-F_2

[0100] The compounds I and their agriculturally useful salts are suitable, both as isomer mixtures and in the form of the pure isomers, as herbicides. They are suitable as such or as an appropriately formulated composition. The herbicidal compositions comprising the compound I, in particular the preferred aspects thereof, control vegetation on non-crop areas very efficiently, especially at high rates of application. They act against broad-leaved weeds and weed grasses in crops such as wheat, rice, corn, soybeans and cotton without causing any significant damage to the crop plants. This effect is mainly observed at low rates of application.

[0101] Depending on the application method in question, the compounds I, in particular the preferred aspects thereof, or compositions comprising them can additionally be employed in a further number of crop plants for eliminating unwanted plants. Examples of suitable crops are the following:

[0102] *Allium cepa, Ananas comosus, Arachis hypogaea, Asparagus officinalis, Avena sativa, Beta vulgaris* spec. *altissima, Beta vulgaris* spec. *rapa, Brassica napus* var. *napus, Brassica napus* var. *napobrassica, Brassica rapa* var. *silvestris, Brassica oleracea, Brassica nigra, Camellia sinensis, Carthamus tinctorius, Carya illinoinensis, Citrus limon, Citrus sinensis, Coffea arabica* (*Coffea canephora, Coffea liberica*), *Cucumis sativus, Cynodon dactylon, Daucus carota, Elaeis guineensis, Fragaria vesca, Glycine max, Gossypium hirsutum*, (*Gossypium arboreum, Gossypium herbaceum, Gossypium vitifolium*), *Helianthus annuus, Hevea brasiliensis, Hordeum vulgare, Humulus lupulus, Ipomoea batatas, Juglans regia, Lens culinaris, Linum usitatissimum, Lycopersicon lycopersicum, Malus* spec., *Manihot esculenta, Medicago sativa, Musa* spec., *Nicotiana tabacum* (*N. rustica*), *Olea europaea, Oryza sativa, Phaseolus lunatus, Phaseolus vulgaris, Picea abies, Pinus* spec., *Pistacia vera, Pisum sativum, Prunus avium, Prunus persica, Pyrus communis, Prunus armeniaca, Prunus cerasus, Prunus dulcis* and *Prunus domestica, Ribes sylvestre, Ricinus communis, Saccharum officinarum, Secale cereale, Sinapis alba, Solanum tuberosum, Sorghum bicolor* (*s. vulgare*), *Theobroma cacao, Trifolium pratense, Triticum aestivum, Triticale, Triticum durum, Vicia faba, Vitis vinifera, Zea mays.*

[0103] The term "crop plants" also includes plants which have been modified by breeding, mutagenesis or genetic engineering. Genetically modified plants are plants whose genetic material has been modified in a manner which does not occur under natural conditions by crossing, mutations or natural recombination (i.e. reassembly of the genetic information). Here, in general, one or more genes are integrated into the genetic material of the plant to improve the properties of the plant.

[0104] Accordingly, the term "crop plants" also includes plants which, by breeding and genetic engineering, have acquired tolerance to certain classes of herbicides, such as hydroxyphenylpyruvate dioxygenase (HPPD) inhibitors, acetolactate synthase (ALS) inhibitors, such as, for example, sulfonylureas (EP-A 257 993, U.S. Pat. No. 5,013,659) or imidazolinones (see, for example, U.S. Pat. No. 6,222,100, WO 01/82685, WO 00/26390, WO 97/41218, WO 98/02526, WO 98/02527, WO 04/106529, WO 05/20673, WO 03/14357, WO 03/13225, WO 03/14356, WO 04/16073), enolpyruvylshikimate 3-phosphate synthase (EPSPS) inhibitors, such as, for example, glyphosate (see, for example, WO 92/00377), glutamine synthetase (GS) inhibitors, such as, for example, glufosinate (see, for example, EP-A 242 236, EP-A 242 246), or oxynil herbicides (see, for example, U.S. Pat. No. 5,559,024).

[0105] Numerous crop plants, for example Clearfield® oilseed rape, tolerant to imidazolinones, for example imazamox, have been generated with the aid of classic breeding methods (mutagenesis). Crop plants such as soybeans, cotton, corn, beet and oilseed rape, resistant to glyphosate or glufosinate, which are available under the tradenames RoundupReady® (glyphosate) and Liberty Link® (glufosinate) have been generated with the aid of genetic engineering methods.

[0106] Accordingly, the term "crop plants" also includes plants which, with the aid of genetic engineering, produce one or more toxins, for example those of the bacterial strain *Bacillus* ssp. Toxins which are produced by such genetically modified plants include, for example, insecticidal proteins of *Bacillus* spp., in particular *B. thuringiensis*, such as the endotoxins Cry1Ab, Cry1Ac, Cry1F, Cry1Fa2, Cry2Ab, Cry3A, Cry3Bb1, Cry9c, Cry34Ab1 or Cry35Ab1; or vegetative insecticidal proteins (VIPs), for example VIP1, VIP2, VIP3, or VIP3A; insecticidal proteins of nematode-colonizing bacteria, for example *Photorhabdus* spp. or *Xenorhabdus* spp.; toxins of animal organisms, for example wasp, spider or scorpion toxins; fungal toxins, for example from Streptomycetes; plant lectins, for example from peas or barley; agglutinins; proteinase inhibitors, for example trypsin inhibitors, serine protease inhibitors, patatin, cystatin or papain inhibitors, ribosome-inactivating proteins (RIPs), for example ricin, corn-RIP, abrin, luffin, saporin or bryodin; steroid-metabolizing enzymes, for example 3-hydroxysteroid oxidase, ecdysteroid-IDP glycosyl transferase, cholesterol oxidase, ecdysone inhibitors, or HMG-CoA reductase; ion channel blockers, for example inhibitors of sodium channels or calcium channels; juvenile hormone esterase; receptors of the diuretic hormone (helicokinin receptors); stilbene synthase, bibenzyl synthase, chitinases and glucanases. In the plants, these toxins may also be produced as pretoxins, hybrid proteins or truncated or otherwise modified proteins. Hybrid proteins are characterized by a novel combination of different protein domains (see, for example, WO 2002/015701). Further examples of such toxins or genetically modified plants which produce these toxins are disclosed in EP-A 374 753, WO 93/007278, WO 95/34656, EP-A 427 529, EP-A 451 878, WO 03/018810 and WO 03/052073. The methods for producing these genetically modified plants are known to the person skilled in the art and disclosed, for example, in the publications mentioned above. Numerous of the toxins mentioned above bestow, upon the plants by which they are produced, tolerance to pests from all taxonomic classes of arthropods, in particular to beetles (Coeleropta), dipterans (Diptera) and butterflies (Lepidoptera) and to nematodes (Nematoda).

[0107] Genetically modified plants which produce one or more genes coding for insecticidal toxins are described, for example, in the publications mentioned above, and some of them are commercially available, such as, for example, YieldGard® (corn varieties producing the toxin Cry1Ab), YieldGard® Plus (corn varieties which produce the toxins Cry1Ab and Cry3Bb1), Starlink® (corn varieties which produce the toxin Cry9c), Herculex® RW (corn varieties which produce the toxins Cry34Ab1, Cry35Ab1 and the enzyme phosphinothricin-N-acetyltransferase [PAT]); NuCOTN® 33B (cotton varieties which produce the toxin Cry1Ac), Bollgard® I (cotton varieties which produce the toxin Cry1Ac), Bollgard® II (cotton varieties which produce the toxins Cry1Ac and Cry2Ab2); VIPCOT® (cotton varieties which produce a VIP toxin); NewLeaf® (potato varieties which produce the toxin Cry3A); Bt-Xtra®, NatureGard®, KnockOut®, BiteGard®, Protecta®, Bt11 (for example Agrisure® CB) and Bt176 from Syngenta Seeds SAS, France (corn varieties which produce the toxin Cry1Ab and the PAT enyzme), MIR604 from Syngenta Seeds SAS, France (corn varieties which produce a modified version of the toxin Cry3A, see WO 03/018810), MON 863 from Monsanto Europe S.A., Belgium (corn varieties which produce the toxin Cry3Bb1), IPC 531 from Monsanto Europe S.A., Belgium (cotton varieties which produce a modified version of the toxin Cry1Ac) and 1507 from Pioneer Overseas Corporation, Belgium (corn varieties which produce the toxin Cry1F and the PAT enzyme).

[0108] Accordingly, the term "crop plants" also includes plants which, with the aid of genetic engineering, produce one or more proteins which are more robust or have increased resistance to bacterial, viral or fungal pathogens, such as, for example, pathogenesis-related proteins (PR proteins, see EP-A 392 225), resistance proteins (for example potato varieties producing two resistance genes against *Phytophthora infestans* from the wild Mexican potato *Solanum bulbocastanum*) or T4 lysozyme (for example potato cultivars which, by producing this protein, are resistant to bacteria such as *Erwinia amylvora*).

[0109] Accordingly, the term "crop plants" also includes plants whose productivity has been improved with the aid of genetic engineering methods, for example by enhancing the potential yield (for example biomass, grain yield, starch, oil or protein content), tolerance to drought, salt or other limiting environmental factors or resistance to pests and fungal, bacterial and viral pathogens.

[0110] The term "crop plants" also includes plants whose ingredients have been modified with the aid of genetic engineering methods in particular for improving human or animal diet, for example by oil plants producing health-promoting long-chain omega 3 fatty acids or monounsaturated omega 9 fatty acids (for example Nexera® oilseed rape).

[0111] The term "crop plants" also includes plants which have been modified with the aid of genetic engineering methods for improving the production of raw materials, for example by increasing the amylopectin content of potatoes (Amflora® potato).

[0112] Furthermore, it has been found that the compounds of the formula I are also suitable for the defoliation and/or desiccation of plant parts, for which crop plants such as cotton, potato, oilseed rape, sunflower, soybean or field beans, in particular cotton, are suitable. In this regard, there have been found compositions for the desiccation and/or defoliation of plants, processes for preparing these compositions and methods for desiccating and/or defoliating plants using the compounds of the formula I.

[0113] As desiccants, the compounds of the formula I are particularly suitable for desiccating the above-ground parts of crop plants such as potato, oilseed rape, sunflower and soybean, but also cereals. This makes possible the fully mechanical harvesting of these important crop plants.

[0114] Also of economic interest is to facilitate harvesting, which is made possible by concentrating within a certain period of time the dehiscence, or reduction of adhesion to the tree, in citrus fruit, olives and other species and varieties of pomaceous fruit, stone fruit and nuts. The same mechanism, i.e. the promotion of the development of abscission tissue between fruit part or leaf part and shoot part of the plants is also essential for the readily controllable defoliation of useful plants, in particular cotton.

[0115] Moreover, a shortening of the time interval in which the individual cotton plants mature leads to an increased fiber quality after harvesting.

[0116] The compounds I, or the herbicidal compositions comprising the compounds I, can be used, for example, in the form of ready-to-spray aqueous solutions, powders, suspensions, also highly concentrated aqueous, oily or other suspensions or dispersions, emulsions, oil dispersions, pastes, dusts, materials for broadcasting, or granules, by means of spraying, atomizing, dusting, spreading, watering or treatment of the seed or mixing with the seed. The use forms depend on the intended purpose; in each case, they should ensure the finest possible distribution of the active ingredients according to the invention.

[0117] The herbicidal compositions comprise a herbicidally effective amount of at least one compound of the formula I or an agriculturally useful salt of I, and auxiliaries which are customary for the formulation of crop protection agents.

[0118] Examples of auxiliaries customary for the formulation of crop protection agents are inert auxiliaries, solid carriers, surfactants (such as dispersants, protective colloids, emulsifiers, wetting agents and tackifiers), organic and inorganic thickeners, bactericides, antifreeze agents, antifoams, if appropriate colorants and, for seed formulations, adhesives.

[0119] Examples of thickeners (i.e. compounds which impart to the formulation modified flow properties, i.e. high viscosity in the state of rest and low viscosity in motion) are polysaccharides, such as xanthan gum (Kelzan® from Kelco), Rhodopol® 23 (Rhone Poulenc) or Veegum® (from R.T. Vanderbilt), and also organic and inorganic sheet minerals, such as Attaclay® (from Engelhardt).

[0120] Examples of antifoams are silicone emulsions (such as, for example, Silikon® SRE, Wacker or Rhodorsil® from Rhodia), long-chain alcohols, fatty acids, salts of fatty acids, organofluorine compounds and mixtures thereof.

[0121] Bactericides can be added for stabilizing the aqueous herbicidal formulation. Examples of bactericides are bactericides based on dichlorophen and benzyl alcohol hemiformal (Proxel® from ICI or Acticide® RS from Thor Chemie and Kathon® MK from Rohm & Haas), and also isothiazolinone derivates, such as alkylisothiazolinones and benzisothiazolinones (Acticide MBS from Thor Chemie).

[0122] Examples of antifreeze agents are ethylene glycol, propylene glycol, urea or glycerol.

[0123] Examples of colorants are both sparingly water-soluble pigments and water-soluble dyes. Examples which may be mentioned are the dyes known under the names Rhodamin B, C.I. Pigment Red 112 and C.I. Solvent Red 1, and also pigment blue 15:4, pigment blue 15:3, pigment blue 15:2, pigment blue 15:1, pigment blue 80, pigment yellow 1, pigment yellow 13, pigment red 112, pigment red 48:2, pigment red 48:1, pigment red 57:1, pigment red 53:1, pigment orange 43, pigment orange 34, pigment orange 5, pigment green 36, pigment green 7, pigment white 6, pigment brown 25, basic violet 10, basic violet 49, acid red 51, acid red 52, acid red 14, acid blue 9, acid yellow 23, basic red 10, basic red 108.

[0124] Examples of adhesives are polyvinylpyrrolidone, polyvinyl acetate, polyvinyl alcohol and tylose.

[0125] Suitable inert auxiliaries are, for example, the following:

[0126] mineral oil fractions of medium to high boiling point, such as kerosene and diesel oil, furthermore coal tar oils and oils of vegetable or animal origin, aliphatic, cyclic and aromatic hydrocarbons, for example paraffin, tetrahydronaphthalene, alkylated naphthalenes and their derivatives, alkylated benzenes and their derivatives, alcohols such as methanol, ethanol, propanol, butanol and cyclohexanol, ketones such as cyclohexanone or strongly polar solvents, for example amines such as N-methylpyrrolidone, and water.

[0127] Solid carriers are mineral earths such as silicas, silica gels, silicates, talc, kaolin, limestone, lime, chalk, bole, loess, clay, dolomite, diatomaceous earth, calcium sulfate, magnesium sulfate and magnesium oxide, ground synthetic materials, fertilizers such as ammonium sulfate, ammonium phosphate, ammonium nitrate and ureas, and products of vegetable origin, such as cereal meal, tree bark meal, wood meal and nutshell meal, cellulose powders, or other solid carriers.

[0128] Suitable surfactants (adjuvants, wetting agents, tackifiers, dispersants and also emulsifiers) are the alkali metal salts, alkaline earth metal salts and ammonium salts of aromatic sulfonic acids, for example lignosulfonic acids (e.g. Borrespers-types, Borregaard), phenolsulfonic acids, naphthalenesulfonic acids (Morwet types, Akzo Nobel) and dibutylnaphthalenesulfonic acid (Nekal types, BASF SE), and of fatty acids, alkyl- and alkylarylsulfonates, alkyl sulfates, lauryl ether sulfates and fatty alcohol sulfates, and salts of sulfated hexa-, hepta- and octadecanols, and also of fatty alcohol glycol ethers, condensates of sulfonated naphthalene and its derivatives with formaldehyde, condensates of naphthalene or of the naphthalenesulfonic acids with phenol and formaldehyde, polyoxyethylene octylphenol ether, ethoxylated isooctyl-, octyl- or nonylphenol, alkylphenyl or tributylphenyl polyglycol ether, alkylaryl polyether alcohols, isotridecyl alcohol, fatty alcohol/ethylene oxide condensates, ethoxylated castor oil, polyoxyethylene alkyl ethers or polyoxypropylene alkyl ethers, lauryl alcohol polyglycol ether acetate, sorbitol esters, lignosulfite waste liquors and proteins, denatured proteins, polysaccharides (e.g. methylcellulose), hydrophobically modified starches, polyvinyl alcohol (Mowiol types Clariant), polycarboxylates (BASF SE, Sokalan types), polyalkoxylates, polyvinylamine (BASF SE, Lupamine types), polyethyleneimine (BASF SE, Lupasol types), polyvinylpyrrolidone and copolymers thereof.

[0129] Powders, materials for broadcasting and dusts can be prepared by mixing or grinding the active ingredients together with a solid carrier.

[0130] Granules, for example coated granules, impregnated granules and homogeneous granules, can be prepared by binding the active ingredients to solid carriers.

[0131] Aqueous use forms can be prepared from emulsion concentrates, suspensions, pastes, wettable powders or water-dispersible granules by adding water. To prepare emulsions, pastes or oil dispersions, the compounds of the formula I or Ia, either as such or dissolved in an oil or solvent, can be homogenized in water by means of a wetting agent, tackifier, dispersant or emulsifier. Alternatively, it is also possible to prepare concentrates comprising active substance, wetting agent, tackifier, dispersant or emulsifier and, if desired, solvent or oil, which are suitable for dilution with water.

[0132] The concentrations of the compounds of the formula I in the ready-to-use preparations can be varied within wide ranges. In general, the formulations comprise from 0.001 to 98% by weight, preferably 0.01 to 95% by weight of at least one active compound. The active compounds are employed in a purity of from 90% to 100%, preferably 95% to 100% (according to NMR spectrum).

[0133] The compounds I of the invention can for example be formulated as follows:

[0134] 1. Products for Dilution with Water

[0135] A Water-Soluble Concentrates

[0136] 10 parts by weight of active compound are dissolved in 90 parts by weight of water or a water-soluble solvent. As an alternative, wetters or other adjuvants are added. The active compound dissolves upon dilution with water. This gives a formulation with an active compound content of 10% by weight.

[0137] B Dispersible Concentrates

[0138] 20 parts by weight of active compound are dissolved in 70 parts by weight of cyclohexanone with addition of 10 parts by weight of a dispersant, for example polyvinylpyrrolidone. Dilution with water gives a dispersion. The active compound content is 20% by weight

[0139] C Emulsifiable Concentrates

[0140] 15 parts by weight of active compound are dissolved in 75 parts by weight of an organic solvent (e.g. alkylaromatics) with addition of calcium dodecylbenzenesulfonate and castor oil ethoxylate (in each case 5 parts by weight). Dilution with water gives an emulsion. The formulation has an active compound content of 15% by weight.

[0141] D Emulsions

[0142] 25 parts by weight of active compound are dissolved in 35 parts by weight of an organic solvent (e.g. alkylaromatics) with addition of calcium dodecylbenzenesulfonate and castor oil ethoxylate (in each case 5 parts by weight). This mixture is introduced into 30 parts by weight of water by means of an emulsifier (e.g. Ultraturrax) and made into a homogeneous emulsion. Dilution with water gives an emulsion. The formulation has an active compound content of 25% by weight.

[0143] E Suspensions

[0144] In an agitated ball mill, 20 parts by weight of active compound are comminuted with addition of 10 parts by weight of dispersants and wetters and 70 parts by weight of water or an organic solvent to give a fine active compound suspension. Dilution with water gives a stable suspension of the active compound. The active compound content in the formulation is 20% by weight.

[0145] F Water-Dispersible Granules and Water-Soluble Granules

[0146] 50 parts by weight of active compound are ground finely with addition of 50 parts by weight of dispersants and wetters and made into water-dispersible or water-soluble granules by means of technical appliances (for example extrusion, spray tower, fluidized bed). Dilution with water gives a stable dispersion or solution of the active compound. The formulation has an active compound content of 50% by weight.

[0147] G Water-Dispersible Powders and Water-Soluble Powders

[0148] 75 parts by weight of active compound are ground in a rotor-stator mill with addition of 25 parts by weight of dispersants, wetters and silica gel. Dilution with water gives a stable dispersion or solution of the active compound. The active compound content of the formulation is 75% by weight.

[0149] H Gel Formulations

[0150] In a ball mill, 20 parts by weight of active compound, 10 parts by weight of dispersant, 1 part by weight of gelling agent and 70 parts by weight of water or of an organic solvent are ground to give a fine suspension. Dilution with water gives a stable suspension with active compound content of 20% by weight.

[0151] 2. Products to be Applied Undiluted

[0152] I Dusts

[0153] 5 parts by weight of active compound are ground finely and mixed intimately with 95 parts by weight of finely divided kaolin. This gives a dusting powder with an active compound content of 5% by weight.

[0154] J Granules (GR, FG, GG, MG)

[0155] 0.5 parts by weight of active compound are ground finely and associated with 99.5 parts by weight of carriers. Current methods here are extrusion, spray-drying or the fluidized bed. This gives granules to be applied undiluted with an active compound content of 0.5% by weight.

[0156] K ULV Solutions (UL)

[0157] 10 parts by weight of active compound are dissolved in 90 parts by weight of an organic solvent, for example xylene. This gives a product to be applied undiluted with an active compound content of 10% by weight.

[0158] The compounds I or the herbicidal compositions comprising them can be applied pre- or post-emergence, or together with the seed of a crop plant. It is also possible to apply the herbicidal compositions or active compounds by applying seed, pretreated with the herbicidal compositions or active compounds, of a crop plant. If the active compounds are less well tolerated by certain crop plants, application techniques may be used in which the herbicidal compositions are sprayed, with the aid of the spraying equipment, in such a way that as far as possible they do not come into contact with the leaves of the sensitive crop plants, while the active compounds reach the leaves of undesirable plants growing underneath, or the bare soil surface (post-directed, lay-by).

[0159] In a further embodiment, the compounds of the formula I or the herbicidal compositions can be applied by treating seed.

[0160] The treatment of seed comprises essentially all procedures familiar to the person skilled in the art (seed dressing, seed coating, seed dusting, seed soaking, seed film coating, seed multilayer coating, seed encrusting, seed dripping and seed pelleting) based on the compounds of the formula I according to the invention or the compositions prepared therefrom. Here, the herbicidal compositions can be applied diluted or undiluted.

[0161] The term seed comprises seed of all types, such as, for example, corns, seeds, fruits, tubers, cuttings and similar forms. Here, preferably, the term seed describes corns and seeds.

[0162] The seed used can be seed of the useful plants mentioned above, but also the seed of transgenic plants or plants obtained by customary breeding methods.

[0163] The rates of application of active compound are from 0.001 to 3.0, preferably 0.01 to 1.0, kg/ha of active substance (a.s.), depending on the control target, the season, the target plants and the growth stage. To treat the seed, the compounds I are generally employed in amounts of from 0.001 to 10 kg per 100 kg of seed.

[0164] It may also be advantageous to use the compounds of the formula I in combination with safeners. Safeners are chemical compounds which prevent or reduce damage to useful plants without substantially affecting the herbicidal action of the compounds of the formula I on unwanted plants. They can be used both before sowing (for example in the treatment of seed, or on cuttings or seedlings) and before or

after the emergence of the useful plant. The safeners and the compounds of the formula I can be used simultaneously or in succession. Suitable safeners are, for example, (quinolin-8-oxy)acetic acids, 1-phenyl-5-haloalkyl-1H-1,2,4-triazole-3-carboxylic acids, 1-phenyl-4,5-dihydro-5-alkyl-1H-pyrazole-3,5-dicarboxylic acids, 4,5-dihydro-5,5-diaryl-3-isoxazolecarboxylic acids, dichloroacetamides, alpha-oximinophenylacetonitriles, acetophenone oximes, 4,6-dihalo-2-phenylpyrimidines, N-[[4-(aminocarbonyl) phenyl]-sulfonyl]-2-benzamides, 1,8-naphthalic anhydride, 2-halo-4-(haloalkyl)-5-thiazole-carboxylic acids, phosphorothiolates and O-phenyl N-alkylcarbamates and their agriculturally useful salts and, provided that they have an acid function, their agriculturally useful derivatives, such as amides, esters and thioesters.

[0165] To broaden the activity spectrum and to obtain synergistic effects, the compounds of the formula I can be mixed and jointly applied with numerous representatives of other herbicidal or growth-regulating groups of active compounds or with safeners. Suitable mixing partners are, for example, 1,2,4-thiadiazoles, 1,3,4-thiadiazoles, amides, aminophosphoric acid and its derivatives, aminotriazoles, anilides, aryloxy/heteroaryl-oxyalkanoic acids and their derivatives, benzoic acid and its derivatives, benzothiadiazinones, 2-(hetaroyl/aroyl)-1,3-cyclohexanediones, heteroaryl aryl ketones, benzylisoxazolidinones, meta-CF_3-phenyl derivatives, carbamates, quinoline carboxylic acid and its derivatives, chloroacetanilides, cyclohexenone oxime ether derivates, diazines, dichloropropionic acid and its derivatives, dihydrobenzofurans, dihydrofuran-3-ones, dinitroanilines, dinitrophenols, diphenyl ethers, dipyridyls, halocarboxylic acids and their derivatives, ureas, 3-phenyluracils, imidazoles, imidazolinones, N-phenyl-3,4,5,6-tetrahydrophthalimides, oxadiazoles, oxiranes, phenols, aryloxy- and heteroaryloxyphenoxypropionic esters, phenylacetic acid and its derivatives, 2-phenylpropionic acid and its derivatives, pyrazoles, phenylpyrazoles, pyridazines, pyridinecarboxylic acid and its derivatives, pyrimidyl ethers, sulfonamides, sulfonylureas, triazines, triazinones, triazolinones, triazolecarboxamides, uracils and also phenylpyrazolines and isoxazolines and their derivatives.

[0166] Moreover, it may be useful to apply the compounds I alone or in combination with other herbicides or else also mixed with further crop protection agents, jointly, for example with compositions for controlling pests or phytopathogenic fungi or bacteria. Also of interest is the miscibility with mineral salt solutions which are employed for alleviating nutritional and trace element deficiencies. Other additives such as nonphytotoxic oils and oil concentrates may also be added.

[0167] Examples of herbicides which can be used in combination with the pyridine compounds of the formula I according to the present invention are:

[0168] b1) from the group of the lipid biosynthesis inhibitors:

[0169] alloxydim, alloxydim-sodium, butroxydim, clethodim, clodinafop, clodinafop-propargyl, cycloxydim, cyhalofop, cyhalofop-butyl, diclofop, diclofop-methyl, fenoxaprop, fenoxaprop-ethyl, fenoxaprop-P, fenoxaprop-P-ethyl, fluazifop, fluazifop-butyl, fluazifop-P, fluazifop-P-butyl, haloxyfop, haloxyfop-methyl, haloxyfop-P, haloxyfop-P-methyl, metamifop, pinoxaden, profoxydim, propaquizafop, quizalofop, quizalofop-ethyl, quizalofop-tefuryl, quizalofop-P, quizalofop-P-ethyl, quizalofop-P-tefuryl, sethoxydim, tepraloxydim, tralkoxydim, benfuresate, butylate, cycloate, dalapon, dimepiperate, EPTC, esprocarb, ethofumesate, flupropanate, molinate, orbencarb, pebulate, prosulfocarb, TCA, thiobencarb, tiocarbazil, triallate and vernolate;

[0170] b2) from the group of the ALS inhibitors:

[0171] amidosulfuron, azimsulfuron, bensulfuron, bensulfuron-methyl, bispyribac, bispyribac-sodium, chlorimuron, chlorimuron-ethyl, chlorsulfuron, cinosulfuron, cloransulam, cloransulam-methyl, cyclosulfamuron, diclosulam, ethametsulfuron, ethametsulfuron-methyl, ethoxysulfuron, flazasulfuron, florasulam, flucarbazone, flucarbazone-sodium, flucetosulfuron, flumetsulam, flupyrsulfuron, flupyrsulfuron-methyl-sodium, foramsulfuron, halosulfuron, halosulfuron-methyl, imazamethabenz, imazamethabenz-methyl, imazamox, imazapic, imazapyr, imazaquin, imazethapyr, imazosulfuron, iodosulfuron, iodosulfuron-methyl-sodium, mesosulfuron, metosulam, metsulfuron, metsulfuron-methyl, nicosulfuron, orthosulfamuron, oxasulfuron, penoxsulam, primisulfuron, primisulfuron-methyl, propoxycarbazone, propoxycarbazone-sodium, prosulfuron, pyrazosulfuron, pyrazosulfuron-ethyl, pyribenzoxim, pyrimisulfan, pyriftalid, pyriminobac, pyriminobac-methyl, pyrithiobac, pyrithiobac-sodium, pyroxsulam, rimsulfuron, sulfometuron, sulfometuron-methyl, sulfosulfuron, thiencarbazone, thiencarbazone-methyl, thifensulfuron, thifensulfuron-methyl, triasulfuron, tribenuron, tribenuron-methyl, trifloxysulfuron, triflusulfuron, triflusulfuron-methyl and tritosulfuron;

[0172] b3) from the group of the photosynthesis inhibitors:

[0173] ametryn, amicarbazone, atrazine, bentazone, bentazone-sodium, bromacil, bromofenoxim, bromoxynil and its salts and esters, chlorobromuron, chloridazone, chlorotoluron, chloroxuron, cyanazine, desmedipham, desmetryn, dimefuron, dimethametryn, diquat, diquat-dibromide, diuron, fluometuron, hexazinone, ioxynil and its salts and esters, isoproturon, isouron, karbutilate, lenacil, linuron, metamitron, methabenzthiazuron, metobenzuron, metoxuron, metribuzin, monolinuron, neburon, paraquat, paraquat-dichloride, paraquat-dimetilsulfate, pentanochlor, phenmedipham, phenmedipham-ethyl, prometon, prometryn, propanil, propazine, pyridafol, pyridate, siduron, simazine, simetryn, tebuthiuron, terbacil, terbumeton, terbuthylazine, terbutryn, thidiazuron and trietazine;

[0174] b4) from the group of the protoporphyrinogen-IX oxidase inhibitors:

[0175] acifluorfen, acifluorfen-sodium, azafenidin, bencarbazone, benzfendizone, bifenox, butafenacil, carfentrazone, carfentrazone-ethyl, chlomethoxyfen, cinidon-ethyl, fluazolate, flufenpyr, flufenpyr-ethyl, flumiclorac, flumiclorac-pentyl, flumioxazin, fluoroglycofen, fluoroglycofen-ethyl, fluthiacet, fluthiacet-methyl, fomesafen, halosafen, lactofen, oxadiargyl, oxadiazon, oxyfluorfen, pentoxazone, profluazol, pyraclonil, pyraflufen, pyraflufen-ethyl, saflufenacil, sulfentrazone, thidiazimin, 2-chloro-5-[3,6-dihydro-3-methyl-2,6-dioxo-4-(trifluoromethyl)-1(2H)-pyrimidinyl]-4-fluoro-N-[(isopropyl)-methylsulfamoyl]benzamide (B-1; CAS 372137-35-4), ethyl [3-[2-chloro-4-fluoro-5-(1-methyl-6-trifluoromethyl-2,4-dioxo-1,2,3,4-tetrahydropyrimidin-3-yl)phenoxy]-2-pyridyloxy]acetate (B-2; CAS 353292-31-6), N-ethyl-3-(2,6-dichloro-4-trifluoro-methylphenoxy)-5-methyl-1H-pyrazole-1-carboxamide (B-3; CAS 452098-92-9),

N-tetrahydrofurfuryl-3-(2,6-dichloro-4-trifluoromethylphenoxy)-5-methyl-1H-pyrazole-1-carboxamide (B-4; CAS 915396-43-9), N-ethyl-3-(2-chloro-6-fluoro-4-trifluoromethyl-phenoxy)-5-methyl-1H-pyrazole-1-carboxamide (B-5; CAS 452099-05-7) and N-tetrahydrofurfuryl-3-(2-chloro-6-fluoro-4-trifluoromethylphenoxy)-5-methyl-1H-pyrazole-1-carboxamide (B-6; CAS 45100-03-7);

[0176] b5) from the group of the bleacher herbicides:

[0177] aclonifen, amitrol, beflubutamid, benzobicyclon, benzofenap, clomazone, diflufenican, fluridone, fluorochloridone, flurtamone, isoxaflutole, mesotrione, norflurazon, picolinafen, pyrasulfutole, pyrazolynate, pyrazoxyfen, sulcotrione, tefuryltrione, tembotrione, topramezone, 4-hydroxy-3-[[2-[(2-methoxyethoxy)methyl]-6-(trifluoromethyl)-3-pyridyl]carbonyl]bicyclo[3.2.1]oct-3-en-2-one (B-7; CAS 352010-68-5) and 4-(3-trifluoromethylphenoxy)-2-(4-trifluoromethylphenyl)pyrimidine (B-8; CAS 180608-33-7);

[0178] b6) from the group of the EPSP synthase inhibitors:

[0179] glyphosate, glyphosate-isopropylammonium and glyphosate-trimesium (sulfosate);

[0180] b7) from the group of the glutamine synthase inhibitors:

[0181] bilanaphos (bialaphos), bilanaphos-sodium, glufosinate and glufosinate-ammonium;

[0182] b8) from the group of the DHP synthase inhibitors:

[0183] asulam;

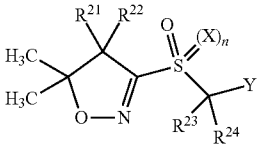
[0184] b9) from the group of the mitose inhibitors:

[0185] amiprophos, amiprophos-methyl, benfluralin, butamiphos, butralin, carbetamide, chlorpropham, chlorthal, chlorthal-dimethyl, dinitramine, dithiopyr, ethalfiuralin, fluchloralin, oryzalin, pendimethalin, prodiamine, propham, propyzamide, tebutam, thiazopyr and trifluralin;

[0186] b10) from the group of the VLCFA inhibitors:

[0187] acetochlor, alachlor, anilofos, butachlor, cafenstrole, dimethachlor, dimethanamid, dimethenamid-P, diphenamid, fentrazamide, flufenacet, mefenacet, metazachlor, metolachlor, metolachlor-S, naproanilide, napropamide, pethoxamid, piperophos, pretilachlor, propachlor, propisochlor, pyroxasulfone (KIH-485) and thenylchlor;

[0188] Compounds of the formula 2:



2

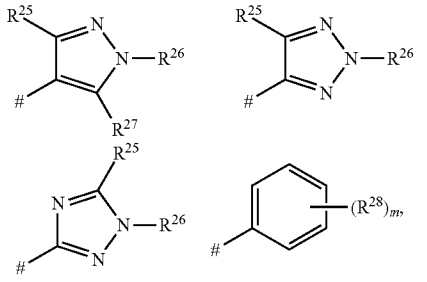
in which the variables have the following meanings:

Y is phenyl or 5- or 6-membered heteroaryl as defined at the outset, which radicals may be substituted by one to three groups R^{aa}; R^{21}, R^{22}, R^{23}, R^{24} are H, halogen or C_1-C_4-alkyl; X is O or NH; N is 0 or 1.

[0189] Compounds of the formula 2 have in particular the following meanings:

Y is

[0190]

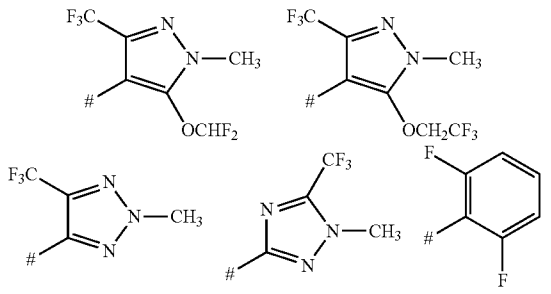


where # denotes the bond to the skeleton of the molecule; and R^{21}, R^{22}, R^{23}, R^{24} are H, Cl, F or CH_3; R^{25} is halogen, C_1-C_4-alkyl or C_1-C_4-haloalkyl; R^{26} is C_1-C_4-alkyl; R^{27} is halogen, C_1-C_4-alkoxy or C_1-C_4-haloalkoxy; R^{28} is H, halogen, C_1-C_4-alkyl, C_1-C_4-haloalkyl or C_1-C_4-haloalkoxy; M is 0, 1, 2 or 3; X is oxygen; N is 0 or 1

[0191] Preferred compounds of the formula 2 have the following meanings:

Y is

[0192]



R^{21} is H; R^{22}, R^{23} are F; R^{24} is H or F; X is oxygen; N is 0 or 1.

[0193] Particularly preferred compounds of the formula 2 are: 3-[5-(2,2-difluoroethoxy)-1-methyl-3-trifluoromethyl-1H-pyrazol-4-ylmethane-sulfonyl]-4-fluoro-5,5-dimethyl-4,5-dihydroisoxazole (2-1); 3-{[5-(2,2-difluoro-ethoxy)-1-methyl-3-trifluoromethyl-1H-pyrazol-4-yl] fluoromethanesulfonyl}-5,5-dimethyl-4,5-dihydroisoxazole (2-2); 4-(4-fluoro-5,5-dimethyl-4,5-dihydroisoxazole-3-sulfonyl-methyl)-2-methyl-5-trifluoromethyl-2H-[1,2,3]triazole (2-3); 4-[(5,5-dimethyl-4,5-dihydroisoxazole-3-sulfonyl) fluoromethyl]-2-methyl-5-trifluoromethyl-2H-[1,2,3] triazole (2-4); 4-(5,5-dimethyl-4,5-dihydroisoxazole-3-sulfonylmethyl)-2-methyl-5-trifluoro-methyl-2H-[1,2,3] triazole (2-5); 3-{[5-(2,2-difluoroethoxy)-1-methyl-3-trifluoromethyl-1H-pyrazol-4-yl]difluoromethanesulfonyl}-5,5-dimethyl-4,5-dihydroisoxazole (2-6); 4-[(5,5-dimethyl-4,5-dihydroisoxazole-3-sulfonyl)difluoromethyl]-2-methyl-5-trifluoro-methyl-2H-[1,2,3]-triazole (2-7); 3-{[5-(2,2-

difluoroethoxy)-1-methyl-3-trifluoromethyl-1H-pyrazol-4-yl]difluoromethanesulfonyl}-4-fluoro-5,5-dimethyl-4,5-dihydroisoxazole (2-8); 4-[difluoro-(4-fluoro-5,5-dimethyl-4,5-dihydroisoxazole-3-sulfonyl)methyl]-2-methyl-5-trifluoromethyl-2H-[1,2,3]triazole (2-9);

[0194] b11) from the group of the cellulose biosynthesis inhibitors:

[0195] chlorthiamid, dichlobenil, flupoxam and isoxaben;

[0196] b12) from the group of the decoupler herbicides: dinoseb, dinoterb and DNOC and its salts;

[0197] b13) from the group of the auxin herbicides:

[0198] 2,4-D and its salts and esters, 2,4-DB and its salts and esters, aminopyralid and its salts such as aminopyralid-tris(2-hydroxypropyl)ammonium and its esters, benazolin, benazolin-ethyl, chloramben and its salts and esters, clomeprop, clopyralid and its salts and esters, dicamba and its salts and esters, dichlorpropand its salts and esters, dichlorprop-P and its salts and esters, fluoroxypyr, fluoroxypyr-butomethyl, fluoroxypyr-meptyl, MCPA and its salts and esters, MCPA-thioethyl, MCPB and its salts and esters, mecopropand its salts and esters, mecoprop-P and its salts and esters, picloram and its salts and esters, quinclorac, quinmerac, TBA (2,3,6) and its salts and esters, triclopyr and its salts and esters, and 5,6-dichloro-2-cyclopropyl-4-pyrimidinecarboxylic acid (B-9; CAS 858956-08-8) and its salts and esters;

[0199] b14) from the group of the auxin transport inhibitors: diflufenzopyr, diflufenzopyr-sodium, naptalam and naptalam-sodium;

[0200] b15) from the group of the other herbicides: bromobutide, chlorflurenol, chlorflurenol-methyl, cinmethylin, cumyluron, dalapon, dazomet, difenzoquat, difenzoquat-metilsulfate, dimethipin, DSMA, dymron, endothal and its salts, etobenzanid, flamprop, flamprop-isopropyl, flamprop-methyl, flamprop-M-isopropyl, flamprop-M-methyl, flurenol, flurenol-butyl, flurprimidol, fosamine, fosamine-ammonium, indanofan, maleic hydrazide, mefluidide, metam, methyl azide, methyl bromide, methyl-dymron, methyl iodide, MSMA, oleic acid, oxaziclomefone, pelargonic acid, pyributicarb, quinoclamine, triaziflam, tridiphane and 6-chloro-3-(2-cyclopropyl-6-methylphenoxy)-4-pyridazinol (B-10; CAS 499223-49-3) and its salts and esters.

[0201] Examples of preferred safeners C are benoxacor, cloquintocet, cyometrinil, cyprosulfamide, dichlormid, dicyclonone, dietholate, fenchlorazole, fenclorim, flurazole, fluxofenim, furilazole, isoxadifen, mefenpyr, mephenate, naphthalic anhydride, oxabetrinil, 4-(dichloroacetyl)-1-oxa-4-azaspiro[4.5]decane (B-11; MON4660, CAS 71526-07-3) and 2,2,5-trimethyl-3-(dichloroacetyl)-1,3-oxazolidine (B-12; R-29148, CAS 52836-31-4).

The active compounds of groups b1) to b15) and the safeners C are known herbicides and safeners, see, for example, The Compendium of Pesticide Common Names (http://www.alanwood.net/pesticides/); B. Hock, C. Fedtke, R. R. Schmidt, Herbizide [Herbicides], Georg Thieme Verlag, Stuttgart, 1995. Further herbicidally active compounds are known from WO 96/26202, WO 97/41116, WO 97/41117, WO 97/41118, WO 01/83459 and WO 2008/074991 and from W. Kramer et al. (ed.) "Modern Crop Protection Compounds", Vol. 1, Wiley VCH, 2007 and the literature quoted therein.

[0202] The invention also relates to compositions in the form of a crop protection composition formulated as a 1-component composition comprising an active compound combination comprising at least one pyridine compound of the formula I and at least one further active compound, preferably selected from the active compounds of groups b1 to b15, and at least one solid or liquid carrier and/or one or more surfactants and, if desired, one or more further auxiliaries customary for crop protection compositions.

[0203] The invention also relates to compositions in the form of a crop protection composition formulated as a 2-component composition comprising a first component comprising at least one pyridine compound of the formula I, a solid or liquid carrier and/or one or more surfactants and a second component comprising at least one further active compound selected from the active compounds of groups b1 to b15, a solid or liquid carrier and/or one or more surfactants, where additionally both components may also comprise further auxiliaries customary for crop protection compositions.

[0204] In binary compositions comprising at least one compound of the formula I as component A and at least one herbicide B, the weight ratio of the active compounds A:B is generally in the range of from 1:1000 to 1000:1, preferably in the range of from 1:500 to 500:1, in particular in the range of from 1:250 to 250:1 and particularly preferably in the range of from 1:75 to 75:1.

[0205] In binary compositions comprising at least one compound of the formula I as component A and at least one safener C, the weight ratio of the active compounds A:C is generally in the range of from 1:1000 to 1000:1, preferably in the range of from 1:500 to 500:1, in particular in the range of from 1:250 to 250:1 and particularly preferably in the range of from 1:75 to 75:1.

[0206] In ternary compositions comprising both at least one compound of the formula I as component A, at least one herbicide B and at least one safener C, the relative parts by weight of the components A:B are generally in the range of from 1:1000 to 1000:1, preferably in the range of from 1:500 to 500:1, in particular in the range of from 1:250 to 250:1 and particularly preferably in the range of from 1:75 to 75:1; the weight ratio of the components A:C is generally in the range of from 1:1000 to 1000:1, preferably in the range of from 1:500 to 500:1, in particular in the range of from 1:250 to 250:1 and particularly preferably in the range of from 1:75 to 75:1; and the weight ratio of the components B:C is generally in the range of from 1:1000 to 1000:1, preferably in the range of from 1:500 to 500:1, in particular in the range of from 1:250 to 250:1 and particularly preferably in the range of from 1:75 to 75:1. Preferably, the weight ratio of the components A+B to the component C is in the range of from 1:500 to 500:1, in particular in the range of from 1:250 to 250:1 and particularly preferably in the range of from 1:75 to 75:1.

[0207] Examples of particularly preferred compositions according to the invention comprising in each case one individualized compound of the formula I and one mixing partner or a mixing partner combination are given in Table B below.

[0208] A further aspect of the invention relates to the compositions B-1 to B-1235 listed in Table B below, where in each case one row of Table B corresponds to a herbicidal composition comprising one of the compounds of the formula I individualized in the above description (component 1) and the further active compound from groups b1) to b15) and/or safener C stated in each case in the row in question (component 2). The active compounds in the compositions described are in each case preferably present in synergistically effective amounts.

TABLE B

	Herbicide(s) B	Safener C
B-1	clodinafop-propargyl	—
B-2	cycloxydim	—
B-3	cyhalofop-butyl	—
B-4	fenoxaprop-P-ethyl	—
B-5	pinoxaden	—
B-6	profoxydim	—
B-7	tepraloxydim	—
B-8	tralkoxydim	—
B-9	esprocarb	—
B-10	prosulfocarb	—
B-11	thiobencarb	—
B-12	triallate	—
B-13	bensulfuron-methyl	—
B-14	bispyribac-sodium	—
B-15	cyclosulfamuron	—
B-16	flumetsulam	—
B-17	flupyrsulfuron-methyl-sodium	—
B-18	foramsulfuron	—
B-19	imazamox	—
B-20	imazapic	—
B-21	imazapyr	—
B-22	imazaquin	—
B-23	imazethapyr	—
B-24	imazosulfuron	—
B-25	iodosulfuron-methyl-sodium	—
B-26	mesosulfuron	—
B-27	nicosulfuron	—
B-28	penoxsulam	—
B-29	propoxycarbazone-sodium	—
B-30	pyrazosulfuron-ethyl	—
B-31	pyroxsulam	—
B-32	rimsulfuron	—
B-33	sulfosulfuron	—
B-34	thiencarbazone-methyl	—
B-35	tritosulfuron	—
B-36	2,4-D and its salts and esters	—
B-37	aminopyralid and its salts and esters	—
B-38	clopyralid and its salts and esters	—
B-39	dicamba and its salts and esters	—
B-40	fluroxypyr-meptyl	—
B-41	quinclorac	—
B-42	quinmerac	—
B-43	B-9	—
B-44	diflufenzopyr	—
B-45	diflufenzopyr-sodium	—
B-46	clomazone	—
B-47	diflufenican	—
B-48	fluorochloridone	—
B-49	isoxaflutol	—
B-50	mesotrione	—
B-51	picolinafen	—
B-52	sulcotrione	—
B-53	tefuryltrione	—
B-54	tembotrione	—
B-55	topramezone	—
B-56	B-7	—
B-57	atrazine	—
B-58	diuron	—
B-59	fluometuron	—
B-60	hexazinone	—
B-61	isoproturon	—
B-62	metribuzin	—
B-63	propanil	—
B-64	terbuthylazine	—
B-65	paraquat dichloride	—
B-66	flumioxazin	—
B-67	oxyfluorfen	—
B-68	saflufenacil	—
B-69	sulfentrazone	—
B-70	B-1	—
B-71	B-2	—
B-72	glyphosate	—
B-73	glyphosate-isopropylammonium	—
B-74	glyphosate-trimesium (sulfosate)	—

TABLE B-continued

	Herbicide(s) B	Safener C
B-75	glufosinate	—
B-76	glufosinate-ammonium	—
B-77	pendimethalin	—
B-78	trifluralin	—
B-79	acetochlor	—
B-80	cafenstrole	—
B-81	dimethenamid-P	—
B-82	fentrazamide	—
B-83	flufenacet	—
B-84	mefenacet	—
B-85	metazachlor	—
B-86	metolachlor-S	—
B-87	pyroxasulfone	—
B-88	isoxaben	—
B-89	dymron	—
B-90	indanofan	—
B-91	oxaziclomefone	—
B-92	triaziflam	—
B-93	atrazine + B-1	—
B-94	atrazine + glyphosate	—
B-95	atrazine + mesotrione	—
B-96	atrazine + nicosulfuron	—
B-97	atrazine + tembotrione	—
B-98	atrazine + topramezone	—
B-99	clomazone + glyphosate	—
B-100	diflufenican + clodinafop-propargyl	—
B-101	diflufenican + fenoxaprop-p-ethyl	—
B-102	diflufenican + flupyrsulfuron-methyl-sodium	—
B-103	diflufenican + glyphosate	—
B-104	diflufenican + mesosulfuron-methyl	—
B-105	diflufenican + pinoxaden	—
B-106	diflufenican + pyroxsulam	—
B-107	flumetsulam + glyphosate	—
B-108	flumioxazin + glyphosate	—
B-109	imazapic + glyphosate	—
B-110	imazethapyr + glyphosate	—
B-111	Isoxaflutol + B-1	—
B-112	isoxaflutol + glyphosate	—
B-113	metazachlor + B-1	—
B-114	metazachlor + glyphosate	—
B-115	metazachlor + mesotrione	—
B-116	metazachlor + nicosulfuron	—
B-117	metazachlor + terbuthylazin	—
B-118	metazachlor + topramezone	—
B-119	metribuzin + glyphosate	—
B-120	pendimethalin + B-1	—
B-121	pendimethalin + clodinafop-propargyl	—
B-122	pendimethalin + fenoxaprop-P-ethyl	—
B-123	pendimethalin + flupyrsulfuron-methyl-sodium	—
B-124	pendimethalin + glyphosate	—
B-125	pendimethalin + mesosulfuron-methyl	—
B-126	pendimethalin + mesotrionee	—
B-127	pendimethalin + nicosulfuron	—
B-128	pendimethalin + pinoxaden	—
B-129	pendimethalin + pyroxsulam	—
B-130	pendimethalin + tembotrione	—
B-131	pendimethalin + topramezone	—
B-132	pyroxasulfone + tembotrione	—
B-133	pyroxasulfone + topramezone	—
B-134	sulfentrazone + glyphosate	—
B-135	terbuthylazin + B-1	—
B-136	terbuthylazin + foramsulfuron	—
B-137	terbuthylazin + glyphosate	—
B-138	terbuthylazin + mesotrione	—
B-139	terbuthylazin + nicosulfuron	—
B-140	terbuthylazin + tembotrione	—
B-141	terbuthylazin + topramezone	—
B-142	trifluralin + glyphosate	—
B-143	—	benoxacor
B-144	—	cloquintocet
B-145	—	cyprosulfamide
B-146	—	dichlormid
B-147	—	fenchlorazole
B-148	—	isoxadifen

TABLE B-continued

	Herbicide(s) B	Safener C
B-149	—	mefenpyr
B-150	—	B-11
B-151	—	B-12
B-152	clodinafop-propargyl	benoxacor
B-153	cycloxydim	benoxacor
B-154	cyhalofop-butyl	benoxacor
B-155	fenoxaprop-P-ethyl	benoxacor
B-156	pinoxaden	benoxacor
B-157	profoxydim	benoxacor
B-158	tepraloxydim	benoxacor
B-159	tralkoxydim	benoxacor
B-160	esprocarb	benoxacor
B-161	prosulfocarb	benoxacor
B-162	thiobencarb	benoxacor
B-163	triallate	benoxacor
B-164	bensulfuron-methyl	benoxacor
B-165	bispyribac-sodium	benoxacor
B-166	cyclosulfamuron	benoxacor
B-167	flumetsulam	benoxacor
B-168	flupyrsulfuron-methyl-sodium	benoxacor
B-169	foramsulfuron	benoxacor
B-170	imazamox	benoxacor
B-171	imazapic	benoxacor
B-172	imazapyr	benoxacor
B-173	imazaquin	benoxacor
B-174	imazethapyr	benoxacor
B-175	imazosulfuron	benoxacor
B-176	iodosulfuron-methyl-sodium	benoxacor
B-177	mesosulfuron	benoxacor
B-178	nicosulfuron	benoxacor
B-179	penoxsulam	benoxacor
B-180	propoxycarbazone-sodium	benoxacor
B-181	pyrazosulfuron-ethyl	benoxacor
B-182	pyroxsulam	benoxacor
B-183	rimsulfuron	benoxacor
B-184	sulfosulfuron	benoxacor
B-185	thiencarbazone-methyl	benoxacor
B-186	tritosulfuron	benoxacor
B-187	2,4-D and its salts and esters	benoxacor
B-188	aminopyralid and its salts and esters	benoxacor
B-189	clopyralid and its salts and esters	benoxacor
B-190	dicamba and its salts and esters	benoxacor
B-191	fluroxypyr-meptyl	benoxacor
B-192	quinclorac	benoxacor
B-193	quinmerac	benoxacor
B-194	B-9	benoxacor
B-195	diflufenzopyr	benoxacor
B-196	diflufenzopyr-sodium	benoxacor
B-197	clomazone	benoxacor
B-198	diflufenican	benoxacor
B-199	fluorochloridone	benoxacor
B-200	isoxaflutol	benoxacor
B-201	mesotrione	benoxacor
B-202	picolinafen	benoxacor
B-203	sulcotrione	benoxacor
B-204	tefuryltrione	benoxacor
B-205	tembotrione	benoxacor
B-206	topramezone	benoxacor
B-207	B-7	benoxacor
B-208	atrazine	benoxacor
B-209	diuron	benoxacor
B-210	fluometuron	benoxacor
B-211	hexazinone	benoxacor
B-212	isoproturon	benoxacor
B-213	metribuzin	benoxacor
B-214	propanil	benoxacor
B-215	terbuthylazin	benoxacor
B-216	paraquat dichloride	benoxacor
B-217	flumioxazin	benoxacor
B-218	oxyfluorfen	benoxacor
B-219	saflufenacil	benoxacor
B-220	sulfentrazone	benoxacor
B-221	B-1	benoxacor
B-222	B-2	benoxacor

TABLE B-continued

	Herbicide(s) B	Safener C
B-223	glyphosate	benoxacor
B-224	glyphosate-isopropylammonium	benoxacor
B-225	glyphosate-trimesium (sulfosate)	benoxacor
B-226	glufosinate	benoxacor
B-227	glufosinate-ammonium	benoxacor
B-228	pendimethalin	benoxacor
B-229	trifluralin	benoxacor
B-230	acetochlor	benoxacor
B-231	cafenstrole	benoxacor
B-232	dimethenamid-P	benoxacor
B-233	fentrazamide	benoxacor
B-234	flufenacet	benoxacor
B-235	mefenacet	benoxacor
B-236	metazachlor	benoxacor
B-237	metolachlor-S	benoxacor
B-238	pyroxasulfone	benoxacor
B-239	isoxaben	benoxacor
B-240	dymron	benoxacor
B-241	indanofan	benoxacor
B-242	oxaziclomefone	benoxacor
B-243	triaziflam	benoxacor
B-244	atrazine + B-1	benoxacor
B-245	atrazine + glyphosate	benoxacor
B-246	atrazine + mesotrione	benoxacor
B-247	atrazine + nicosulfuron	benoxacor
B-248	atrazine + tembotrione	benoxacor
B-249	atrazine + topramezone	benoxacor
B-250	clomazone + glyphosate	benoxacor
B-251	diflufenican + clodinafop-propargyl	benoxacor
B-252	diflufenican + fenoxaprop-P-ethyl	benoxacor
B-253	diflufenican + flupyrsulfuron-methyl-sodium	benoxacor
B-254	diflufenican + glyphosate	benoxacor
B-255	diflufenican + mesosulfuron-methyl	benoxacor
B-256	diflufenican + pinoxaden	benoxacor
B-257	diflufenican + pyroxsulam	benoxacor
B-258	flumetsulam + glyphosate	benoxacor
B-259	flumioxazin + glyphosate	benoxacor
B-260	imazapic + glyphosate	benoxacor
B-261	imazethapyr + glyphosate	benoxacor
B-262	isoxaflutol + B-1	benoxacor
B-263	isoxaflutol + glyphosate	benoxacor
B-264	metazachlor + B-1	benoxacor
B-265	metazachlor + glyphosate	benoxacor
B-266	metazachlor + mesotrione	benoxacor
B-267	metazachlor + nicosulfuron	benoxacor
B-268	metazachlor + terbuthylazin	benoxacor
B-269	metazachlor + topramezone	benoxacor
B-270	metribuzin + glyphosate	benoxacor
B-271	pendimethalin + B-1	benoxacor
B-272	pendimethalin + clodinafop-propargyl	benoxacor
B-273	pendimethalin + fenoxaprop-P-ethyl	benoxacor
B-274	pendimethalin + flupyrsulfuron-methyl-sodium	benoxacor
B-275	pendimethalin + glyphosate	benoxacor
B-276	pendimethalin + mesosulfuron-methyl	benoxacor
B-277	pendimethalin + mesotrionee	benoxacor
B-278	pendimethalin + nicosulfuron	benoxacor
B-279	pendimethalin + pinoxaden	benoxacor
B-280	pendimethalin + pyroxsulam	benoxacor
B-281	pendimethalin + tembotrione	benoxacor
B-282	pendimethalin + topramezone	benoxacor
B-283	pyroxasulfone + tembotrione	benoxacor
B-284	pyroxasulfone + topramezone	benoxacor
B-285	sulfentrazone + glyphosate	benoxacor
B-286	terbuthylazin + B-1	benoxacor
B-287	terbuthylazin + foramsulfuron	benoxacor
B-288	terbuthylazin + glyphosate	benoxacor
B-289	terbuthylazin + mesotrione	benoxacor
B-290	terbuthylazin + nicosulfuron	benoxacor
B-291	terbuthylazin + tembotrione	benoxacor
B-292	terbuthylazin + topramezone	benoxacor
B-293	trifluralin + glyphosate	benoxacor
B-294	clodinafop-propargyl	cloquintocet
B-295	cycloxydim	cloquintocet
B-296	cyhalofop-butyl	cloquintocet

TABLE B-continued

	Herbicide(s) B	Safener C
B-297	fenoxaprop-P-ethyl	cloquintocet
B-298	pinoxaden	cloquintocet
B-299	profoxydim	cloquintocet
B-300	tepraloxydim	cloquintocet
B-301	tralkoxydim	cloquintocet
B-302	esprocarb	cloquintocet
B-303	prosulfocarb	cloquintocet
B-304	thiobencarb	cloquintocet
B-305	triallate	cloquintocet
B-306	bensulfuron-methyl	cloquintocet
B-307	bispyribac-sodium	cloquintocet
B-308	cyclosulfamuron	cloquintocet
B-309	flumetsulam	cloquintocet
B-310	flupyrsulfuron-methyl-sodium	cloquintocet
B-311	foramsulfuron	cloquintocet
B-312	imazamox	cloquintocet
B-313	imazapic	cloquintocet
B-314	imazapyr	cloquintocet
B-315	imazaquin	cloquintocet
B-316	imazethapyr	cloquintocet
B-317	imazosulfuron	cloquintocet
B-318	iodosulfuron-methyl-sodium	cloquintocet
B-319	mesosulfuron	cloquintocet
B-320	nicosulfuron	cloquintocet
B-321	penoxsulam	cloquintocet
B-322	propoxycarbazone-sodium	cloquintocet
B-323	pyrazosulfuron-ethyl	cloquintocet
B-324	pyroxsulam	cloquintocet
B-325	rimsulfuron	cloquintocet
B-326	sulfosulfuron	cloquintocet
B-327	thiencarbazone-methyl	cloquintocet
B-328	tritosulfuron	cloquintocet
B-329	2,4-D and its salts and esters	cloquintocet
B-330	aminopyralid and its salts and esters	cloquintocet
B-331	clopyralid and its salts and esters	cloquintocet
B-332	dicamba and its salts and esters	cloquintocet
B-333	fluroxypyr-meptyl	cloquintocet
B-334	quinclorac	cloquintocet
B-335	quinmerac	cloquintocet
B-336	B-9	cloquintocet
B-337	diflufenzopyr	cloquintocet
B-338	diflufenzopyr-sodium	cloquintocet
B-339	clomazone	cloquintocet
B-340	diflufenican	cloquintocet
B-341	fluorochloridone	cloquintocet
B-342	isoxaflutol	cloquintocet
B-343	mesotrione	cloquintocet
B-344	picolinafen	cloquintocet
B-345	sulcotrione	cloquintocet
B-346	tefuryltrione	cloquintocet
B-347	tembotrione	cloquintocet
B-348	topramezone	cloquintocet
B-349	B-7	cloquintocet
B-350	atrazine	cloquintocet
B-351	diuron	cloquintocet
B-352	fluometuron	cloquintocet
B-353	hexazinone	cloquintocet
B-354	isoproturon	cloquintocet
B-355	metribuzin	cloquintocet
B-356	propanil	cloquintocet
B-357	terbuthylazin	cloquintocet
B-358	paraquat dichloride	cloquintocet
B-359	flumioxazin	cloquintocet
B-360	oxyfluorfen	cloquintocet
B-361	saflufenacil	cloquintocet
B-362	sulfentrazone	cloquintocet
B-363	B-1	cloquintocet
B-364	B-2	cloquintocet
B-365	glyphosate	cloquintocet
B-366	glyphosate-isopropylammonium	cloquintocet
B-367	glyphosate-trimesium (sulfosate)	cloquintocet
B-368	glufosinate	cloquintocet
B-369	glufosinate-ammonium	cloquintocet
B-370	pendimethalin	cloquintocet

TABLE B-continued

	Herbicide(s) B	Safener C
B-371	trifluralin	cloquintocet
B-372	acetochlor	cloquintocet
B-373	cafenstrole	cloquintocet
B-374	dimethenamid-P	cloquintocet
B-375	fentrazamide	cloquintocet
B-376	flufenacet	cloquintocet
B-377	mefenacet	cloquintocet
B-378	metazachlor	cloquintocet
B-379	metolachlor-S	cloquintocet
B-380	pyroxasulfone	cloquintocet
B-381	isoxaben	cloquintocet
B-382	dymron	cloquintocet
B-383	indanofan	cloquintocet
B-384	oxaziclomefone	cloquintocet
B-385	triaziflam	cloquintocet
B-386	atrazine + B-1	cloquintocet
B-387	atrazine + glyphosate	cloquintocet
B-388	atrazine + mesotrione	cloquintocet
B-389	atrazine + nicosulfuron	cloquintocet
B-390	atrazine + tembotrione	cloquintocet
B-391	atrazine + topramezone	cloquintocet
B-392	clomazone + glyphosate	cloquintocet
B-393	diflufenican + clodinafop-propargyl	cloquintocet
B-394	diflufenican + fenoxaprop-p-ethyl	cloquintocet
B-395	diflufenican + flupyrsulfuron-methyl-sodium	cloquintocet
B-396	diflufenican + glyphosate	cloquintocet
B-397	diflufenican + mesosulfuron-methyl	cloquintocet
B-398	diflufenican + pinoxaden	cloquintocet
B-399	diflufenican + pyroxsulam	cloquintocet
B-400	flumetsulam + glyphosate	cloquintocet
B-401	flumioxazin + glyphosate	cloquintocet
B-402	imazapic + glyphosate	cloquintocet
B-403	imazethapyr + glyphosate	cloquintocet
B-404	isoxaflutol + B-1	cloquintocet
B-405	isoxaflutol + glyphosate	cloquintocet
B-406	metazachlor + B-1	cloquintocet
B-407	metazachlor + glyphosate	cloquintocet
B-408	metazachlor + mesotrione	cloquintocet
B-409	metazachlor + nicosulfuron	cloquintocet
B-410	metazachlor + terbuthylazin	cloquintocet
B-411	metazachlor + topramezone	cloquintocet
B-412	metribuzin + glyphosate	cloquintocet
B-413	pendimethalin + B-1	cloquintocet
B-414	pendimethalin + clodinafop-propargyl	cloquintocet
B-415	pendimethalin + fenoxaprop-P-ethyl	cloquintocet
B-416	pendimethalin + flupyrsulfuron-methyl-sodium	cloquintocet
B-417	pendimethalin + glyphosate	cloquintocet
B-418	pendimethalin + mesosulfuron-methyl	cloquintocet
B-419	pendimethalin + mesotrione	cloquintocet
B-420	pendimethalin + nicosulfuron	cloquintocet
B-421	pendimethalin + pinoxaden	cloquintocet
B-422	pendimethalin + pyroxsulam	cloquintocet
B-423	pendimethalin + tembotrione	cloquintocet
B-424	pendimethalin + topramezone	cloquintocet
B-425	pyroxasulfone + tembotrione	cloquintocet
B-426	pyroxasulfone + topramezone	cloquintocet
B-427	sulfentrazone + glyphosate	cloquintocet
B-428	terbuthylazin + B-1	cloquintocet
B-429	terbuthylazin + foramsulfuron	cloquintocet
B-430	terbuthylazin + glyphosate	cloquintocet
B-431	terbuthylazin + mesotrione	cloquintocet
B-432	terbuthylazin + nicosulfuron	cloquintocet
B-433	terbuthylazin + tembotrione	cloquintocet
B-434	terbuthylazin + topramezone	cloquintocet
B-435	trifluralin + glyphosate	cloquintocet
B-436	clodinafop-propargyl	dichlormid
B-437	cycloxydim	dichlormid
B-438	cyhalofop-butyl	dichlormid
B-439	fenoxaprop-P-ethyl	dichlormid
B-440	pinoxaden	dichlormid
B-441	profoxydim	dichlormid
B-442	tepraloxydim	dichlormid
B-443	tralkoxydim	dichlormid
B-444	esprocarb	dichlormid

TABLE B-continued

	Herbicide(s) B	Safener C
B-445	prosulfocarb	dichlormid
B-446	thiobencarb	dichlormid
B-447	triallate	dichlormid
B-448	bensulfuron-methyl	dichlormid
B-449	bispyribac-sodium	dichlormid
B-450	cyclosulfamuron	dichlormid
B-451	flumetsulam	dichlormid
B-452	flupyrsulfuron-methyl-sodium	dichlormid
B-453	foramsulfuron	dichlormid
B-454	imazamox	dichlormid
B-455	imazapic	dichlormid
B-456	imazapyr	dichlormid
B-457	imazaquin	dichlormid
B-458	imazethapyr	dichlormid
B-459	imazosulfuron	dichlormid
B-460	iodosulfuron-methyl-sodium	dichlormid
B-461	mesosulfuron	dichlormid
B-462	nicosulfuron	dichlormid
B-463	penoxsulam	dichlormid
B-464	propoxycarbazone-sodium	dichlormid
B-465	pyrazosulfuron-ethyl	dichlormid
B-466	pyroxsulam	dichlormid
B-467	rimsulfuron	dichlormid
B-468	sulfosulfuron	dichlormid
B-469	thiencarbazone-methyl	dichlormid
B-470	tritosulfuron	dichlormid
B-471	2,4-D and its salts and esters	dichlormid
B-472	aminopyralid and its salts and esters	dichlormid
B-473	clopyralid and its salts and esters	dichlormid
B-474	dicamba and its salts and esters	dichlormid
B-475	fluroxypyr-meptyl	dichlormid
B-476	quinclorac	dichlormid
B-477	quinmerac	dichlormid
B-478	B-9	dichlormid
B-479	diflufenzopyr	dichlormid
B-480	diflufenzopyr-sodium	dichlormid
B-481	clomazone	dichlormid
B-482	diflufenican	dichlormid
B-483	fluorochloridone	dichlormid
B-484	isoxaflutol	dichlormid
B-485	mesotrione	dichlormid
B-486	picolinafen	dichlormid
B-487	sulcotrione	dichlormid
B-488	tefuryltrione	dichlormid
B-489	tembotrione	dichlormid
B-490	topramezone	dichlormid
B-491	B-7	dichlormid
B-492	atrazine	dichlormid
B-493	diuron	dichlormid
B-494	fluometuron	dichlormid
B-495	hexazinone	dichlormid
B-496	isoproturon	dichlormid
B-497	metribuzin	dichlormid
B-498	propanil	dichlormid
B-499	terbuthylazin	dichlormid
B-500	paraquat dichloride	dichlormid
B-501	flumioxazin	dichlormid
B-502	oxyfluorfen	dichlormid
B-503	saflufenacil	dichlormid
B-504	sulfentrazone	dichlormid
B-505	B-1	dichlormid
B-506	B-2	dichlormid
B-507	glyphosate	dichlormid
B-508	glyphosate-isopropylammonium	dichlormid
B-509	glyphosate-trimesium (sulfosate)	dichlormid
B-510	glufosinate	dichlormid
B-511	glufosinate-ammonium	dichlormid
B-512	pendimethalin	dichlormid
B-513	trifluralin	dichlormid
B-514	acetochlor	dichlormid
B-515	cafenstrole	dichlormid
B-516	dimethenamid-P	dichlormid
B-517	fentrazamide	dichlormid
B-518	flufenacet	dichlormid

TABLE B-continued

	Herbicide(s) B	Safener C
B-519	mefenacet	dichlormid
B-520	metazachlor	dichlormid
B-521	metolachlor-S	dichlormid
B-522	pyroxasulfone	dichlormid
B-523	isoxaben	dichlormid
B-524	dymron	dichlormid
B-525	indanofan	dichlormid
B-526	oxaziclomefone	dichlormid
B-527	triaziflam	dichlormid
B-528	atrazine + B-1	dichlormid
B-529	atrazine + glyphosate	dichlormid
B-530	atrazine + mesotrione	dichlormid
B-531	atrazine + nicosulfuron	dichlormid
B-532	atrazine + tembotrione	dichlormid
B-533	atrazine + topramezone	dichlormid
B-534	clomazone + glyphosate	dichlormid
B-535	diflufenican + clodinafop-propargyl	dichlormid
B-536	diflufenican + fenoxaprop-p-ethyl	dichlormid
B-537	diflufenican + flupyrsulfuron-methyl-sodium	dichlormid
B-538	diflufenican + glyphosate	dichlormid
B-539	diflufenican + mesosulfuron-methyl	dichlormid
B-540	diflufenican + pinoxaden	dichlormid
B-541	diflufenican + pyroxsulam	dichlormid
B-542	flumetsulam + glyphosate	dichlormid
B-543	flumioxazin + glyphosate	dichlormid
B-544	imazapic + glyphosate	dichlormid
B-545	imazethapyr + glyphosate	dichlormid
B-546	isoxaflutol + B-1	dichlormid
B-547	isoxaflutol + glyphosate	dichlormid
B-548	metazachlor + B-1	dichlormid
B-549	metazachlor + glyphosate	dichlormid
B-550	metazachlor + mesotrione	dichlormid
B-551	metazachlor + nicosulfuron	dichlormid
B-552	metazachlor + terbuthylazin	dichlormid
B-553	metazachlor + topramezone	dichlormid
B-554	metribuzin + glyphosate	dichlormid
B-555	pendimethalin + B-1	dichlormid
B-556	pendimethalin + clodinafop-propargyl	dichlormid
B-557	pendimethalin + fenoxaprop-P-ethyl	dichlormid
B-558	pendimethalin + flupyrsulfuron-methyl-sodium	dichlormid
B-559	pendimethalin + glyphosate	dichlormid
B-560	pendimethalin + mesosulfuron-methyl	dichlormid
B-561	pendimethalin + mesotrione	dichlormid
B-562	pendimethalin + nicosulfuron	dichlormid
B-563	pendimethalin + pinoxaden	dichlormid
B-564	pendimethalin + pyroxsulam	dichlormid
B-565	pendimethalin + tembotrione	dichlormid
B-566	pendimethalin + topramezone	dichlormid
B-567	pyroxasulfone + tembotrione	dichlormid
B-568	pyroxasulfone + topramezone	dichlormid
B-569	sulfentrazone + glyphosate	dichlormid
B-570	terbuthylazin + B-1	dichlormid
B-571	terbuthylazin + foramsulfuron	dichlormid
B-572	terbuthylazin + glyphosate	dichlormid
B-573	terbuthylazin + mesotrione	dichlormid
B-574	terbuthylazin + nicosulfuron	dichlormid
B-575	terbuthylazin + tembotrione	dichlormid
B-576	terbuthylazin + topramezone	dichlormid
B-577	trifluralin + glyphosate	dichlormid
B-578	clodinafop-propargyl	fenchlorazole
B-579	cycloxydim	fenchlorazole
B-580	cyhalofop-butyl	fenchlorazole
B-581	fenoxaprop-P-ethyl	fenchlorazole
B-582	pinoxaden	fenchlorazole
B-583	profoxydim	fenchlorazole
B-584	tepraloxydim	fenchlorazole
B-585	tralkoxydim	fenchlorazole
B-586	esprocarb	fenchlorazole
B-587	prosulfocarb	fenchlorazole
B-588	thiobencarb	fenchlorazole
B-589	triallate	fenchlorazole
B-590	bensulfuron-methyl	fenchlorazole
B-591	bispyribac-sodium	fenchlorazole
B-592	cyclosulfamuron	fenchlorazole

TABLE B-continued

	Herbicide(s) B	Safener C
B-593	flumetsulam	fenchlorazole
B-594	flupyrsulfuron-methyl-sodium	fenchlorazole
B-595	foramsulfuron	fenchlorazole
B-596	imazamox	fenchlorazole
B-597	imazapic	fenchlorazole
B-598	imazapyr	fenchlorazole
B-599	imazaquin	fenchlorazole
B-600	imazethapyr	fenchlorazole
B-601	imazosulfuron	fenchlorazole
B-602	iodosulfuron-methyl-sodium	fenchlorazole
B-603	mesosulfuron	fenchlorazole
B-604	nicosulfuron	fenchlorazole
B-605	penoxsulam	fenchlorazole
B-606	propoxycarbazone-sodium	fenchlorazole
B-607	pyrazosulfuron-ethyl	fenchlorazole
B-608	pyroxsulam	fenchlorazole
B-609	rimsulfuron	fenchlorazole
B-610	sulfosulfuron	fenchlorazole
B-611	thiencarbazone-methyl	fenchlorazole
B-612	tritosulfuron	fenchlorazole
B-613	2,4-D and its salts and esters	fenchlorazole
B-614	aminopyralid and its salts and esters	fenchlorazole
B-615	clopyralid and its salts and esters	fenchlorazole
B-616	dicamba and its salts and esters	fenchlorazole
B-617	fluroxypyr-meptyl	fenchlorazole
B-618	quinclorac	fenchlorazole
B-619	quinmerac	fenchlorazole
B-620	B-9	fenchlorazole
B-621	diflufenzopyr	fenchlorazole
B-622	diflufenzopyr-sodium	fenchlorazole
B-623	clomazone	fenchlorazole
B-624	diflufenican	fenchlorazole
B-625	fluorochloridone	fenchlorazole
B-626	isoxaflutol	fenchlorazole
B-627	mesotrione	fenchlorazole
B-628	picolinafen	fenchlorazole
B-629	sulcotrione	fenchlorazole
B-630	tefuryltrione	fenchlorazole
B-631	tembotrione	fenchlorazole
B-632	topramezone	fenchlorazole
B-633	B-7	fenchlorazole
B-634	atrazine	fenchlorazole
B-635	diuron	fenchlorazole
B-636	fluometuron	fenchlorazole
B-637	hexazinone	fenchlorazole
B-638	isoproturon	fenchlorazole
B-639	metribuzin	fenchlorazole
B-640	propanil	fenchlorazole
B-641	terbuthylazin	fenchlorazole
B-642	paraquat dichloride	fenchlorazole
B-643	flumioxazin	fenchlorazole
B-644	oxyfluorfen	fenchlorazole
B-645	saflufenacil	fenchlorazole
B-646	sulfentrazone	fenchlorazole
B-647	B-1	fenchlorazole
B-648	B-2	fenchlorazole
B-649	glyphosate	fenchlorazole
B-650	glyphosate-isopropylammonium	fenchlorazole
B-651	glyphosate-trimesium (sulfosate)	fenchlorazole
B-652	glufosinate	fenchlorazole
B-653	glufosinate-ammonium	fenchlorazole
B-654	pendimethalin	fenchlorazole
B-655	trifluralin	fenchlorazole
B-656	acetochlor	fenchlorazole
B-657	cafenstrole	fenchlorazole
B-658	dimethenamid-P	fenchlorazole
B-659	fentrazamide	fenchlorazole
B-660	flufenacet	fenchlorazole
B-661	mefenacet	fenchlorazole
B-662	metazachlor	fenchlorazole
B-663	metolachlor-S	fenchlorazole
B-664	pyroxasulfone	fenchlorazole
B-665	isoxaben	fenchlorazole
B-666	dymron	fenchlorazole

TABLE B-continued

	Herbicide(s) B	Safener C
B-667	indanofan	fenchlorazole
B-668	oxaziclomefone	fenchlorazole
B-669	friaziflam	fenchlorazole
B-670	atrazine + B-1	fenchlorazole
B-671	atrazine + glyphosate	fenchlorazole
B-672	atrazine + mesotrione	fenchlorazole
B-673	atrazine + nicosulfuron	fenchlorazole
B-674	atrazine + tembotrione	fenchlorazole
B-675	atrazine + topramezone	fenchlorazole
B-676	clomazone + glyphosate	fenchlorazole
B-677	diflufenican + clodinafop-propargyl	fenchlorazole
B-678	diflufenican + fenoxaprop-P-ethyl	fenchlorazole
B-679	diflufenican + flupyrsulfuron-methyl-sodium	fenchlorazole
B-680	diflufenican + glyphosate	fenchlorazole
B-681	diflufenican + mesosulfuron-methyl	fenchlorazole
B-682	diflufenican + pinoxaden	fenchlorazole
B-683	diflufenican + pyroxsulam	fenchlorazole
B-684	flumetsulam + glyphosate	fenchlorazole
B-685	flumioxazin + glyphosate	fenchlorazole
B-686	imazapic + glyphosate	fenchlorazole
B-687	imazethapyr + glyphosate	fenchlorazole
B-688	isoxaflutol + B-1	fenchlorazole
B-689	isoxaflutol + glyphosate	fenchlorazole
B-690	metazachlor + B-1	fenchlorazole
B-691	metazachlor + glyphosate	fenchlorazole
B-692	metazachlor + mesotrione	fenchlorazole
B-693	metazachlor + nicosulfuron	fenchlorazole
B-694	metazachlor + terbuthylazin	fenchlorazole
B-695	metazachlor + topramezone	fenchlorazole
B-696	metribuzin + glyphosate	fenchlorazole
B-697	pendimethalin + B-1	fenchlorazole
B-698	pendimethalin + clodinafop-propargyl	fenchlorazole
B-699	pendimethalin + fenoxaprop-P-ethyl	fenchlorazole
B-700	pendimethalin + flupyrsulfuron-methyl-sodium	fenchlorazole
B-701	pendimethalin + glyphosate	fenchlorazole
B-702	pendimethalin + mesosulfuron-methyl	fenchlorazole
B-703	pendimethalin + mesotrione	fenchlorazole
B-704	pendimethalin + nicosulfuron	fenchlorazole
B-705	pendimethalin + pinoxaden	fenchlorazole
B-706	pendimethalin + pyroxsulam	fenchlorazole
B-707	pendimethalin + tembotrione	fenchlorazole
B-708	pendimethalin + topramezone	fenchlorazole
B-709	pyroxasulfone + tembotrione	fenchlorazole
B-710	pyroxasulfone + topramezone	fenchlorazole
B-711	sulfentrazone + glyphosate	fenchlorazole
B-712	terbuthylazin + B-1	fenchlorazole
B-713	terbuthylazin + foramsulfuron	fenchlorazole
B-714	terbuthylazin + glyphosate	fenchlorazole
B-715	terbuthylazin + mesotrione	fenchlorazole
B-716	terbuthylazin + nicosulfuron	fenchlorazole
B-717	terbuthylazin + tembotrione	fenchlorazole
B-718	terbuthylazin + topramezone	fenchlorazole
B-719	trifluralin + glyphosate	fenchlorazole
B-720	clodinafop-propargyl	isoxadifen
B-721	cycloxydim	isoxadifen
B-722	cyhalofop-butyl	isoxadifen
B-723	fenoxaprop-P-ethyl	isoxadifen
B-724	pinoxaden	isoxadifen
B-725	profoxydim	isoxadifen
B-726	tepraloxydim	isoxadifen
B-727	tralkoxydim	isoxadifen
B-728	esprocarb	isoxadifen
B-729	prosulfocarb	isoxadifen
B-730	thiobencarb	isoxadifen
B-731	triallate	isoxadifen
B-732	bensulfuron-methyl	isoxadifen
B-733	bispyribac-sodium	isoxadifen
B-734	cyclosulfamuron	isoxadifen
B-735	flumetsulam	isoxadifen
B-736	flupyrsulfuron-methyl-sodium	isoxadifen
B-737	foramsulfuron	isoxadifen
B-738	imazamox	isoxadifen
B-739	imazapic	isoxadifen
B-740	imazapyr	isoxadifen

TABLE B-continued

	Herbicide(s) B	Safener C
B-741	imazaquin	isoxadifen
B-742	imazethapyr	isoxadifen
B-743	imazosulfuron	isoxadifen
B-744	iodosulfuron-methyl-sodium	isoxadifen
B-745	mesosulfuron	isoxadifen
B-746	nicosulfuron	isoxadifen
B-747	penoxsulam	isoxadifen
B-748	propoxycarbazone-sodium	isoxadifen
B-749	pyrazosulfuron-ethyl	isoxadifen
B-750	pyroxsulam	isoxadifen
B-751	rimsulfuron	isoxadifen
B-752	sulfosulfuron	isoxadifen
B-753	thiencarbazone-methyl	isoxadifen
B-754	tritosulfuron	isoxadifen
B-755	2,4-D and its salts and esters	isoxadifen
B-756	aminopyralid and its salts and esters	isoxadifen
B-757	clopyralid and its salts and esters	isoxadifen
B-758	dicamba and its salts and esters	isoxadifen
B-759	fluroxypyr-meptyl	isoxadifen
B-760	quinclorac	isoxadifen
B-761	quinmerac	isoxadifen
B-762	B-9	isoxadifen
B-763	diflufenzopyr	isoxadifen
B-764	diflufenzopyr-sodium	isoxadifen
B-765	clomazone	isoxadifen
B-766	diflufenican	isoxadifen
B-767	fluorochloridone	isoxadifen
B-768	isoxaflutol	isoxadifen
B-769	mesotrione	isoxadifen
B-770	picolinafen	isoxadifen
B-771	sulcotrione	isoxadifen
B-772	tefuryltrione	isoxadifen
B-773	tembotrione	isoxadifen
B-774	topramezone	isoxadifen
B-775	B-7	isoxadifen
B-776	atrazine	isoxadifen
B-777	diuron	isoxadifen
B-778	fluometuron	isoxadifen
B-779	hexazinone	isoxadifen
B-780	isoproturon	isoxadifen
B-781	metribuzin	isoxadifen
B-782	propanil	isoxadifen
B-783	terbuthylazin	isoxadifen
B-784	paraquat dichloride	isoxadifen
B-785	flumioxazin	isoxadifen
B-786	oxyfluorfen	isoxadifen
B-787	saflufenacil	isoxadifen
B-788	sulfentrazone	isoxadifen
B-789	B-1	isoxadifen
B-790	B-2	isoxadifen
B-791	glyphosate	isoxadifen
B-792	glyphosate-isopropylammonium	isoxadifen
B-793	glyphosate-trimesium (sulfosate)	isoxadifen
B-794	glufosinate	isoxadifen
B-795	glufosinate-ammonium	isoxadifen
B-796	pendimethalin	isoxadifen
B-797	trifluralin	isoxadifen
B-798	acetochlor	isoxadifen
B-799	cafenstrole	isoxadifen
B-800	dimethenamid-P	isoxadifen
B-801	fentrazamide	isoxadifen
B-802	flufenacet	isoxadifen
B-803	mefenacet	isoxadifen
B-804	metazachlor	isoxadifen
B-805	metolachlor-S	isoxadifen
B-806	pyroxasulfone	isoxadifen
B-807	isoxaben	isoxadifen
B-808	dymron	isoxadifen
B-809	indanofan	isoxadifen
B-810	oxaziclomefone	isoxadifen
B-811	triaziflam	isoxadifen
B-812	atrazine + B-1	isoxadifen
B-813	atrazine + glyphosate	isoxadifen
B-814	atrazine + mesotrione	isoxadifen

TABLE B-continued

	Herbicide(s) B	Safener C
B-815	atrazine + nicosulfuron	isoxadifen
B-816	atrazine + tembotrione	isoxadifen
B-817	atrazine + topramezone	isoxadifen
B-818	clomazone + glyphosate	isoxadifen
B-819	diflufenican + clodinafop-propargyl	isoxadifen
B-820	diflufenican + fenoxaprop-P-ethyl	isoxadifen
B-821	diflufenican + flupyrsulfuron-methyl-sodium	isoxadifen
B-822	diflufenican + glyphosate	isoxadifen
B-823	diflufenican + mesosulfuron-methyl	isoxadifen
B-824	diflufenican + pinoxaden	isoxadifen
B-825	diflufenican + pyroxsulam	isoxadifen
B-826	flumetsulam + glyphosate	isoxadifen
B-827	flumioxazin + glyphosate	isoxadifen
B-828	imazapic + glyphosate	isoxadifen
B-829	imazethapyr + glyphosate	isoxadifen
B-830	isoxaflutol + B-1	isoxadifen
B-831	isoxaflutol + glyphosate	isoxadifen
B-832	metazachlor + B-1	isoxadifen
B-833	metazachlor + glyphosate	isoxadifen
B-834	metazachlor + mesotrione	isoxadifen
B-835	metazachlor + nicosulfuron	isoxadifen
B-836	metazachlor + terbuthylazin	isoxadifen
B-837	metazachlor + topramezone	isoxadifen
B-838	metribuzin + glyphosate	isoxadifen
B-839	pendimethalin + B-1	isoxadifen
B-840	pendimethalin + clodinafop-propargyl	isoxadifen
B-841	pendimethalin + fenoxaprop-P-ethyl	isoxadifen
B-842	pendimethalin + flupyrsulfuron-methyl-sodium	isoxadifen
B-843	pendimethalin + glyphosate	isoxadifen
B-844	pendimethalin + mesosulfuron-methyl	isoxadifen
B-845	pendimethalin + mesotrione	isoxadifen
B-846	pendimethalin + nicosulfuron	isoxadifen
B-847	pendimethalin + pinoxaden	isoxadifen
B-848	pendimethalin + pyroxsulam	isoxadifen
B-849	pendimethalin + tembotrione	isoxadifen
B-850	pendimethalin + topramezone	isoxadifen
B-851	pyroxasulfone + tembotrione	isoxadifen
B-852	pyroxasulfone + topramezone	isoxadifen
B-853	sulfentrazone + glyphosate	isoxadifen
B-854	terbuthylazin + B-1	isoxadifen
B-855	terbuthylazin + foramsulfuron	isoxadifen
B-856	terbuthylazin + glyphosate	isoxadifen
B-857	terbuthylazin + mesotrione	isoxadifen
B-858	terbuthylazin + nicosulfuron	isoxadifen
B-859	terbuthylazin + tembotrione	isoxadifen
B-860	terbuthylazin + topramezone	isoxadifen
B-861	trifluralin + glyphosate	isoxadifen
B-862	clodinafop-propargyl	mefenpyr
B-863	cycloxydim	mefenpyr
B-864	cyhalofop-butyl	mefenpyr
B-865	fenoxaprop-P-ethyl	mefenpyr
B-866	pinoxaden	mefenpyr
B-867	profoxydim	mefenpyr
B-868	tepraloxydim	mefenpyr
B-869	tralkoxydim	mefenpyr
B-870	esprocarb	mefenpyr
B-871	prosulfocarb	mefenpyr
B-872	thiobencarb	mefenpyr
B-873	triallate	mefenpyr
B-874	bensulfuron-methyl	mefenpyr
B-875	bispyribac-sodium	mefenpyr
B-876	cyclosulfamuron	mefenpyr
B-877	flumetsulam	mefenpyr
B-878	flupyrsulfuron-methyl-sodium	mefenpyr
B-879	foramsulfuron	mefenpyr
B-880	imazamox	mefenpyr
B-881	imazapic	mefenpyr
B-882	imazapyr	mefenpyr
B-883	imazaquin	mefenpyr
B-884	imazethapyr	mefenpyr
B-885	imazosulfuron	mefenpyr
B-886	iodosulfuron-methyl-sodium	mefenpyr
B-887	mesosulfuron	mefenpyr
B-888	nicosulfuron	mefenpyr

TABLE B-continued

	Herbicide(s) B	Safener C
B-889	penoxsulam	mefenpyr
B-890	propoxycarbazone-sodium	mefenpyr
B-891	pyrazosulfuron-ethyl	mefenpyr
B-892	pyroxsulam	mefenpyr
B-893	rimsulfuron	mefenpyr
B-894	sulfosulfuron	mefenpyr
B-895	thiencarbazone-methyl	mefenpyr
B-896	tritosulfuron	mefenpyr
B-897	2,4-D and its salts and esters	mefenpyr
B-898	aminopyralid and its salts and esters	mefenpyr
B-899	clopyralid and its salts and esters	mefenpyr
B-900	dicamba and its salts and esters	mefenpyr
B-901	fluroxypyr-meptyl	mefenpyr
B-902	quinclorac	mefenpyr
B-903	quinmerac	mefenpyr
B-904	B-9	mefenpyr
B-905	diflufenzopyr	mefenpyr
B-906	diflufenzopyr-sodium	mefenpyr
B-907	clomazone	mefenpyr
B-908	diflufenican	mefenpyr
B-909	fluorochloridone	mefenpyr
B-910	isoxaflutol	mefenpyr
B-911	mesotrione	mefenpyr
B-912	picolinafen	mefenpyr
B-913	sulcotrione	mefenpyr
B-914	tefuryltrione	mefenpyr
B-915	tembotrione	mefenpyr
B-916	topramezone	mefenpyr
B-917	B-7	mefenpyr
B-918	atrazine	mefenpyr
B-919	diuron	mefenpyr
B-920	fluometuron	mefenpyr
B-921	hexazinone	mefenpyr
B-922	isoproturon	mefenpyr
B-923	metribuzin	mefenpyr
B-924	propanil	mefenpyr
B-925	terbuthylazin	mefenpyr
B-926	paraquat dichloride	mefenpyr
B-927	flumioxazin	mefenpyr
B-928	oxyfluorfen	mefenpyr
B-929	saflufenacil	mefenpyr
B-930	sulfentrazone	mefenpyr
B-931	B-1	mefenpyr
B-932	B-2	mefenpyr
B-933	glyphosate	mefenpyr
B-934	glyphosate-isopropylammonium	mefenpyr
B-935	glyphosate-trimesium (sulfosate)	mefenpyr
B-936	glufosinate	mefenpyr
B-937	glufosinate-ammonium	mefenpyr
B-938	pendimethalin	mefenpyr
B-939	trifluralin	mefenpyr
B-940	acetochlor	mefenpyr
B-941	cafenstrole	mefenpyr
B-942	dimethenamid-p	mefenpyr
B-943	fentrazamide	mefenpyr
B-944	flufenacet	mefenpyr
B-945	mefenacet	mefenpyr
B-946	metazachlor	mefenpyr
B-947	metolachlor-S	mefenpyr
B-948	pyroxasulfone	mefenpyr
B-949	isoxaben	mefenpyr
B-950	dymron	mefenpyr
B-951	indanofan	mefenpyr
B-952	oxaziclomefone	mefenpyr
B-953	triaziflam	mefenpyr
B-954	atrazine + B-1	mefenpyr
B-955	atrazine + glyphosate	mefenpyr
B-956	atrazine + mesotrione	mefenpyr
B-957	atrazine + nicosulfuron	mefenpyr
B-958	atrazine + tembotrione	mefenpyr
B-959	atrazine + topramezone	mefenpyr
B-960	clomazone + glyphosate	mefenpyr
B-961	diflufenican + clodinafop-propargyl	mefenpyr
B-962	diflufenican + fenoxaprop-P-ethyl	mefenpyr

TABLE B-continued

	Herbicide(s) B	Safener C
B-963	diflufenican + flupyrsulfuron-methyl-sodium	mefenpyr
B-964	diflufenican + glyphosate	mefenpyr
B-965	diflufenican + mesosulfuron-methyl	mefenpyr
B-966	diflufenican + pinoxaden	mefenpyr
B-967	diflufenican + pyroxsulam	mefenpyr
B-968	flumetsulam + glyphosate	mefenpyr
B-969	flumioxazin + glyphosate	mefenpyr
B-970	imazapic + glyphosate	mefenpyr
B-971	imazethapyr + glyphosate	mefenpyr
B-972	isoxaflutol + B-1	mefenpyr
B-973	isoxaflutol + glyphosate	mefenpyr
B-974	metazachlor + B-1	mefenpyr
B-975	metazachlor + glyphosate	mefenpyr
B-976	metazachlor + mesotrione	mefenpyr
B-977	metazachlor + nicosulfuron	mefenpyr
B-978	metazachlor + terbuthylazin	mefenpyr
B-979	metazachlor + topramezone	mefenpyr
B-980	metribuzin + glyphosate	mefenpyr
B-981	pendimethalin + B-1	mefenpyr
B-982	pendimethalin + clodinafop-propargyl	mefenpyr
B-983	pendimethalin + fenoxaprop-P-ethyl	mefenpyr
B-984	pendimethalin + flupyrsulfuron-methyl-sodium	mefenpyr
B-985	pendimethalin + glyphosate	mefenpyr
B-986	pendimethalin + mesosulfuron-methyl	mefenpyr
B-987	pendimethalin + mesotrione	mefenpyr
B-988	pendimethalin + nicosulfuron	mefenpyr
B-989	pendimethalin + pinoxaden	mefenpyr
B-990	pendimethalin + pyroxsulam	mefenpyr
B-991	pendimethalin + tembotrione	mefenpyr
B-992	pendimethalin + topramezone	mefenpyr
B-993	pyroxasulfone + tembotrione	mefenpyr
B-994	pyroxasulfone + topramezone	mefenpyr
B-995	sulfentrazone + glyphosate	mefenpyr
B-996	terbuthylazin + B-1	mefenpyr
B-997	terbuthylazin + foramsulfuron	mefenpyr
B-998	terbuthylazin + glyphosate	mefenpyr
B-999	terbuthylazin + mesotrione	mefenpyr
B-1000	terbuthylazin + nicosulfuron	mefenpyr
B-1001	terbuthylazin + tembotrione	mefenpyr
B-1002	terbuthylazin + topramezone	mefenpyr
B-1003	trifluralin + glyphosate	mefenpyr
B-1004	clodinafop-propargyl	B-12
B-1005	cycloxydim	B-12
B-1006	cyhalofop-butyl	B-12
B-1007	fenoxaprop-P-ethyl	B-12
B-1008	pinoxaden	B-12
B-1009	profoxydim	B-12
B-1010	tepraloxydim	B-12
B-1011	tralkoxydim	B-12
B-1012	esprocarb	B-12
B-1013	prosulfocarb	B-12
B-1014	thiobencarb	B-12
B-1015	triallate	B-12
B-1016	bensulfuron-methyl	B-12
B-1017	bispyribac-sodium	B-12
B-1018	cyclosulfamuron	B-12
B-1019	flumetsulam	B-12
B-1020	flupyrsulfuron-methyl-sodium	B-12
B-1021	foramsulfuron	B-12
B-1022	imazamox	B-12
B-1023	imazapic	B-12
B-1024	imazapyr	B-12
B-1025	imazaquin	B-12
B-1026	imazethapyr	B-12
B-1027	imazosulfuron	B-12
B-1028	iodosulfuron-methyl-sodium	B-12
B-1029	mesosulfuron	B-12
B-1030	nicosulfuron	B-12
B-1031	penoxsulam	B-12
B-1032	propoxycarbazone-sodium	B-12
B-1033	pyrazosulfuron-ethyl	B-12
B-1034	pyroxsulam	B-12
B-1035	rimsulfuron	B-12
B-1036	sulfosulfuron	B-12

TABLE B-continued

	Herbicide(s) B	Safener C
B-1037	thiencarbazone-methyl	B-12
B-1038	tritosulfuron	B-12
B-1039	2,4-D and its salts and esters	B-12
B-1040	aminopyralid and its salts and esters	B-12
B-1041	clopyralid and its salts and esters	B-12
B-1042	dicamba and its salts and esters	B-12
B-1043	fluroxypyr-meptyl	B-12
B-1044	quinclorac	B-12
B-1045	quinmerac	B-12
B-1046	B-9	B-12
B-1047	diflufenzopyr	B-12
B-1048	diflufenzopyr-sodium	B-12
B-1049	clomazone	B-12
B-1050	diflufenican	B-12
B-1051	fluorochloridone	B-12
B-1052	isoxaflutol	B-12
B-1053	mesotrione	B-12
B-1054	picolinafen	B-12
B-1055	sulcotrione	B-12
B-1056	tefuryltrione	B-12
B-1057	tembotrione	B-12
B-1058	topramezone	B-12
B-1059	B-7	B-12
B-1060	atrazine	B-12
B-1061	diuron	B-12
B-1062	fluometuron	B-12
B-1063	hexazinone	B-12
B-1064	isoproturon	B-12
B-1065	metribuzin	B-12
B-1066	propanil	B-12
B-1067	terbuthylazin	B-12
B-1068	paraquat dichloride	B-12
B-1069	flumioxazin	B-12
B-1070	oxyfluorfen	B-12
B-1071	saflufenacil	B-12
B-1072	sulfentrazone	B-12
B-1073	B-1	B-12
B-1074	B-2	B-12
B-1075	glyphosate	B-12
B-1076	glyphosate-isopropylammonium	B-12
B-1077	glyphosate-trimesium (sulfosate)	B-12
B-1078	glufosinate	B-12
B-1079	glufosinate-ammonium	B-12
B-1080	pendimethalin	B-12
B-1081	trifluralin	B-12
B-1082	acetochlor	B-12
B-1083	cafenstrole	B-12
B-1084	dimethenamid-P	B-12
B-1085	fentrazamide	B-12
B-1086	flufenacet	B-12
B-1087	mefenacet	B-12
B-1088	metazachlor	B-12
B-1089	metolachlor-S	B-12
B-1090	pyroxasulfone	B-12
B-1091	isoxaben	B-12
B-1092	dymron	B-12
B-1093	indanofan	B-12
B-1094	oxaziclomefone	B-12
B-1095	triaziflam	B-12
B-1096	atrazine + B-1	B-12
B-1097	atrazine + glyphosate	B-12
B-1098	atrazine + mesotrione	B-12
B-1099	atrazine + nicosulfuron	B-12
B-1100	atrazine + tembotrione	B-12
B-1101	atrazine + topramezone	B-12
B-1102	clomazone + glyphosate	B-12
B-1103	diflufenican + clodinafop-propargyl	B-12
B-1104	diflufenican + fenoxaprop-P-ethyl	B-12
B-1105	diflufenican + flupyrsulfuron-methyl-sodium	B-12
B-1106	diflufenican + glyphosate	B-12
B-1107	diflufenican + mesosulfuron-methyl	B-12
B-1108	diflufenican + pinoxaden	B-12
B-1109	diflufenican + pyroxsulam	B-12
B-1110	flumetsulam + glyphosate	B-12

TABLE B-continued

	Herbicide(s) B	Safener C
B-1111	flumioxazin + glyphosate	B-12
B-1112	imazapic + glyphosate	B-12
B-1113	imazethapyr + glyphosate	B-12
B-1114	isoxaflutol + B-1	B-12
B-1115	isoxaflutol + glyphosate	B-12
B-1116	metazachlor + B-1	B-12
B-1117	metazachlor + glyphosate	B-12
B-1118	metazachlor + mesotrione	B-12
B-1119	metazachlor + nicosulfuron	B-12
B-1120	metazachlor + terbuthylazin	B-12
B-1121	metazachlor + topramezone	B-12
B-1122	metribuzin + glyphosate	B-12
B-1123	pendimethalin + B-1	B-12
B-1124	pendimethalin + clodinafop-propargyl	B-12
B-1125	pendimethalin + fenoxaprop-P-ethyl	B-12
B-1126	pendimethalin + flupyrsulfuron-methyl-sodium	B-12
B-1127	pendimethalin + glyphosate	B-12
B-1128	pendimethalin + mesosulfuron-methyl	B-12
B-1129	pendimethalin + mesotrionee	B-12
B-1130	pendimethalin + nicosulfuron	B-12
B-1131	pendimethalin + pinoxaden	B-12
B-1132	pendimethalin + pyroxsulam	B-12
B-1133	pendimethalin + tembotrione	B-12
B-1134	pendimethalin + topramezone	B-12
B-1135	pyroxasulfone + tembotrione	B-12
B-1136	pyroxasulfone + topramezone	B-12
B-1137	sulfentrazone + glyphosate	B-12
B-1138	terbuthylazin + B-1	B-12
B-1139	terbuthylazin + foramsulfuron	B-12
B-1140	terbuthylazin + glyphosate	B-12
B-1141	terbuthylazin + mesotrione	B-12
B-1142	terbuthylazin + nicosulfuron	B-12
B-1143	terbuthylazin + tembotrione	B-12
B-1144	terbuthylazin + topramezone	B-12
B-1145	trifluralin + glyphosate	B-12
B-1146	2-1	—
B-1147	2-2	—
B-1148	2-3	—
B-1149	2-4	—
B-1150	2-5	—
B-1151	2-6	—
B-1152	2-7	—
B-1153	2-8	—
B-1154	2-9	—
B-1155	2-1	benoxacor
B-1156	2-2	benoxacor
B-1157	2-3	benoxacor
B-1158	2-4	benoxacor
B-1159	2-5	benoxacor
B-1160	2-6	benoxacor
B-1161	2-7	benoxacor
B-1162	2-8	benoxacor
B-1163	2-9	benoxacor
B-1164	2-1	cloquintocet
B-1165	2-2	cloquintocet
B-1166	2-3	cloquintocet
B-1167	2-4	cloquintocet
B-1168	2-5	cloquintocet
B-1169	2-6	cloquintocet
B-1170	2-7	cloquintocet
B-1171	2-8	cloquintocet
B-1172	2-9	cloquintocet
B-1173	2-1	cyprosulfamide
B-1174	2-2	cyprosulfamide
B-1175	2-3	cyprosulfamide
B-1176	2-4	cyprosulfamide
B-1177	2-5	cyprosulfamide
B-1178	2-6	cyprosulfamide
B-1179	2-7	cyprosulfamide
B-1180	2-8	cyprosulfamide
B-1181	2-9	cyprosulfamide
B-1182	2-1	dichlormid
B-1183	2-2	dichlormid
B-1184	2-3	dichlormid

TABLE B-continued

	Herbicide(s) B	Safener C
B-1185	2-4	dichlormid
B-1186	2-5	dichlormid
B-1187	2-6	dichlormid
B-1188	2-7	dichlormid
B-1189	2-8	dichlormid
B-1190	2-9	dichlormid
B-1191	2-1	fenchlorazole
B-1192	2-2	fenchlorazole
B-1193	2-3	fenchlorazole
B-1194	2-4	fenchlorazole
B-1195	2-5	fenchlorazole
B-1196	2-6	fenchlorazole
B-1197	2-7	fenchlorazole
B-1198	2-8	fenchlorazole
B-1199	2-9	fenchlorazole
B-1200	2-1	isoxadifen
B-1201	2-2	isoxadifen
B-1202	2-3	isoxadifen
B-1203	2-4	isoxadifen
B-1204	2-5	isoxadifen
B-1205	2-6	isoxadifen
B-1206	2-7	isoxadifen
B-1207	2-8	isoxadifen
B-1208	2-9	isoxadifen
B-1209	2-1	mefenpyr
B-1210	2-2	mefenpyr
B-1211	2-3	mefenpyr
B-1212	2-4	mefenpyr
B-1213	2-5	mefenpyr
B-1214	2-6	mefenpyr
B-1215	2-7	mefenpyr
B-1216	2-8	mefenpyr
B-1217	2-9	mefenpyr
B-1218	2-1	B-11
B-1219	2-2	B-11
B-1220	2-3	B-11
B-1221	2-4	B-11
B-1222	2-5	B-11
B-1223	2-6	B-11
B-1224	2-7	B-11
B-1225	2-8	B-11
B-1226	2-9	B-11
B-1227	2-1	B-12
B-1228	2-2	B-12
B-1229	2-3	B-12
B-1230	2-4	B-12
B-1231	2-5	B-12
B-1232	2-6	B-12
B-1233	2-7	B-12
B-1234	2-8	B-12
B-1235	2-9	B-12

[0209] The compounds I and the compositions according to the invention may also have a plant-strengthening action. Accordingly, they are suitable for mobilizing the defense system of the plants against attack by unwanted microorganisms, such as harmful fungi, but also viruses and bacteria. Plant-strengthening (resistance-inducing) substances are to be understood as meaning, in the present context, those substances which are capable of stimulating the defense system of treated plants in such a way that, when subsequently inoculated by unwanted microorganisms, the treated plants display a substantial degree of resistance to these microorganisms.

[0210] The compounds I can be employed for protecting plants against attack by unwanted microorganisms within a certain period of time after the treatment. The period of time within which their protection is effected generally extends from 1 to 28 days, preferably from 1 to 14 days, after the treatment of the plants with the compounds I, or, after treatment of the seed, for up to 9 months after sowing.

[0211] The compounds I and the compositions according to the invention are also suitable for increasing the harvest yield.

[0212] Moreover, they have reduced toxicity and are tolerated well by the plants.

Hereinbelow, the preparation of pyridine compounds of the formula I is illustrated by way of examples, without limiting the subject matter of the present invention to the examples shown.

SYNTHESIS EXAMPLES

[0213] With appropriate modification of the starting materials, the procedures given in the synthesis examples below were used to obtain further compounds I. The compounds obtained in this manner are listed in the table below, together with physical data.

[0214] The products shown below were characterized by determination of the masses determined by MS spectrometry [m/z] (M+H) (quadrupol electrospray ionization, 80 V positive mode).

Example 1

Preparation of 8-hydroxy-7-o-tolylpyrano[2,3-b] pyrazin-6-one [I-2]

Step 1: 3-(4-Methoxybenzyloxy)pryazine-2-carboxylic acid

[0215] After addition of 12.2 g of p-methoxybenzyl chloride and 84.7 g of Cs_2CO_3, a solution of 10 g of methyl 3-hydroxypyrazine-2-carboxylate in DMF was stirred at 20° C. for about 14 hours. After filtration, the filtrate was washed with saturated NaCl solution and extracted with ethyl acetate, and the organic phase was, after drying, freed from the solvent. 81.4 g of LiOH were added to 8 g of crude methyl 3-(4-methoxybenzyloxy)-pyrazine-2-carboxylate from the residue, which had been taken up in methanol/water 2:1, and the mixture was stirred at 20-25° C. for 2 hours. After removal of the methanol by distillation, the solution was adjusted to pH 3-4 and extracted with ethyl acetate. Distillative removal of the solvent gave 5.54 g of the title compound.

Step 2: Methyl 3-hydroxy-3-[3-(4-methoxybenzyloxy)pyrazin-2-yl]-2-(2-trifluoro-methylphenyl)acrylate

[0216] 5.2 g of the carboxylic acid from step 1 were dissolved in DMF, carbonyldiimidazole was added and the solution was stirred at 20-25° C. for 30 min. After addition of 4.8 g of methyl 2-trifluoromethylphenylacetate and 1.6 g of 60% NaH, the mixture was stirred for a further 2 hours, and saturated NH_4Cl solution was then added. After extraction with ethyl acetate, the organic phase was washed with NaCl solution, dried and freed from the solvent. Chromatography of the residue on silica gel gave 2.5 g of the title compound having a mass (m/z) of 461.

Step 3: Methyl 3-hydroxy-3-(3-hydroxypyrazin-2-yl)-2-(2-trifluoromethylphenyl)acrylate

[0217] At 40° C., 2.5 g of the ester from step 2 were stirred in trifluoroacetic acid for about 14 hours, and the trifluoroacetic acid was evaporated and the product was chromatographed on silica gel. This gave 1.0 g of the title compound.

Step 4:
8-Hydroxy-7-o-tolylpyrano[2,3-b]pyrazin-6-one

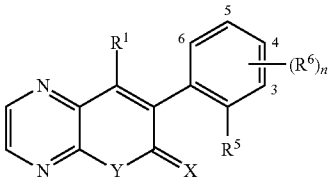
[0218] At 100° C., 1.0 g of the ester from step 3 was stirred in 5 ml of a mixture of DMSO/saturated aqueous NaCl solution (5:1) for 2 hours. The mixture was washed with HCl/NaCl solution and then extracted with ethyl acetate. After drying, the organic phase was freed from the solvent and the residue was purified by preparative HPLC. This gave 135 mg of the title compound.

[0219] ^{1}H NMR (MeOD; 400 MHz): δ 8.69-8.64 (d, J=2.4 Hz, 2H), 7.81 (d, J=8 Hz, 1H), 7.71 (d, J=8 Hz, 1H), 7.61 (d, J=8 Hz, 1H), 7.44 (d, J=8 Hz, 1H).

TABLE I

Compounds of the formula I which correspond to the formula I.AA

I.AA



No.	R^1	R^5	$(R^6)_n$	Y	X	Phys. data: MS [m/z]
I-1	OH	OCF_3	—	O	O	325
I-2	OH	CF_3	—	O	O	309
I-3	$OC(O)C(CH_3)_3$	CF_3	—	O	O	393
I-4	OH	CHF_2	—	O	O	291
I-5	OH	Br	—	O	O	319
I-6	OH	Cl	4-Cl	O	O	309
I-7	OH	$OCHF_2$	—	O	O	308
I-8	OH	Cl	4-OCF_3-6-Cl	O	O	393
I-9	$OC(O)C(CH_3)_3$	Cl	4-OCF_3-6-Cl	O	O	482

[0220] Use Examples

[0221] The herbicidal activity of the compounds of the formula I was demonstrated by the following greenhouse experiments:

[0222] The culture containers used were plastic flowerpots containing loamy sand with approximately 3.0% of humus as the substrate. The seeds of the test plants were sown separately for each species.

[0223] For the pre-emergence treatment, the active compounds, which had been suspended or emulsified in water, were applied directly after sowing by means of finely distributing nozzles. The containers were irrigated gently to promote germination and growth and subsequently covered with transparent plastic hoods until the plants had rooted. This cover caused uniform germination of the test plants, unless this has been impaired by the active compounds.

[0224] For the post-emergence treatment, the test plants were first grown to a height of 3 to 15 cm, depending on the plant habit, and then treated with the active compounds which had been suspended or emulsified in water. For this purpose, the test plants were either sown directly and grown in the same containers, or they were first grown separately as seedlings and transplanted into the test containers a few days prior to treatment.

[0225] Depending on the species, the plants were kept at 10-25° C. or 20-35° C. The test period extended over 2 to 4 weeks. During this time, the plants were tended, and their response to the individual treatments was evaluated.

[0226] Evaluation was carried out using a scale from 0 to 100. 100 means no emergence of the plants, or complete destruction of at least the aerial moieties, and 0 means no damage, or normal course of growth. A good herbicidal activity is given at values of at least 70 and a very good herbicidal activity is given at values of at least 85.

[0227] The plants used in the greenhouse experiments belonged to the following species:

Bayer code	Scientific name	Common name
CHEAL	*Chenopodium album*	Pigweed
ECHCG	*Echinochloa crus-galli*	Cockspur
SETVI	*Setaria viridis*	Bottlegrass

[0228] 1) At an application rate of 0.5 kg/ha, the active compounds I-1, I-2, I-3 and I-4, applied by the post-emergence method, showed very good herbicidal activity against CHEAL.

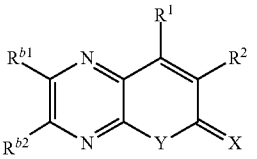
[0229] 2) At an application rate of 0.5 kg/ha, the active compounds I-1 and I-2, applied by the post-emergence method, showed good herbicidal activity against ECHCG.

[0230] 3) At an application rate of 0.5 kg/ha, the active compounds I-1 and I-2, applied by the post-emergence method, showed very good herbicidal activity against SETVI.

1-13. (canceled)

14. A compound of formula I

I



wherein:

R^1 is O—R^A, S(O)$_n$—R^A or OS(O)$_n$—R^A;

R^A is hydrogen, C_1-C_4-alkyl, Z—C_3-C_6-cycloalkyl, C_1-C_4-haloalkyl, C_2-C_6-alkenyl, Z—C_3-C_6-cycloalkenyl, C_2-C_6-alkynyl, Z-(tri-C_1-C_4-alkyl)silyl, Z—C(=O)—R^a, Z—P(=O)(R^a)$_2$, a 3- to 7-membered monocyclic or 9- or 10-membered bicyclic saturated, unsaturated or aromatic heterocycle which contains 1, 2, 3 or 4 heteroatoms selected from the group consisting of O, N and S, which may be partially or fully substituted by groups R^a and/or R^b and which is attached via carbon or nitrogen,

R^a is hydrogen, OH, C_1-C_8-alkyl, C_1-C_4-haloalkyl, Z—C_3-C_6-cycloalkyl, C_2-C_8-alkenyl, Z—C_3-C_6-cycloalkenyl, C_2-C_8-alkynyl, Z—C_1-C_6-alkoxy, Z—C_1-C_4-haloalkoxy, Z—C_3-C_8-alkenyloxy, Z—C_3-C_8-alkynyloxy, NR^iR^{ii}, C_1-C_6-alkylsulfonyl, Z-(tri-C_1-C_4-alkyl)silyl, Z-phenyl, Z-phenoxy, Z-phenylamino or a 5- or 6-membered monocyclic or 9- or 10-membered bicyclic heterocycle which contains 1, 2, 3 or 4 heteroatoms selected from the group consisting of O, N and S, where the cyclic groups are unsubstituted or substituted by 1, 2, 3 or 4 groups R^b;

R^i, R^{ii} independently of one another are hydrogen, C_1-C_8-alkyl, C_1-C_4-haloalkyl, C_3-C_8-alkenyl, C_3-C_8-alkynyl, Z—C_3-C_6-cycloalkyl, Z—C_1-C_8alkoxy, or Z—C_1-C_8-haloalkoxy;

R^i and R^{ii} together with the nitrogen atom to which they are attached may form a 5- or 6-membered monocyclic or 9- or 10-membered bicyclic heterocycle which contains 1, 2, 3 or 4 heteroatoms selected from the group consisting of O, N and S;

Z is a covalent bond or C_1-C_4-alkylene;

n is 0, 1 or 2;

R^2 is phenyl, naphthyl or a 5- or 6-membered monocyclic or 9- or 10-membered bicyclic aromatic heterocycle which contains 1, 2, 3 or 4 heteroatoms selected from the group consisting of O, N and S, where the cyclic groups are unsubstituted or substituted by 1, 2, 3 or 4 groups R^b;

R^b are independently of one another selected from the group consisting of Z—CN, Z—OH, Z—NO_2, Z-halogen, C_1-C_8-alkyl, C_1-C_4-haloalkyl, C_2-C_8-alkenyl, C_2-C_8-alkynyl, Z—C_1-C_8-alkoxy, Z—C_1-C_8-haloalkoxy, Z—C_3-C_{10}-cycloalkyl, O—Z—C_3-C_{10}-cycloalkyl, Z—C(=O)—R^a, NR^iR^{ii}, Z-(tri-C_1-C_4-alkyl)silyl, Z-phenyl and $S(O)_nR^{bb}$,

wherein R^{bb} is C_1-C_8-alkyl or C_1-C_6-haloalkyl and n is 0, 1 or 2;

R^{b1}, R^{b2} are one of the groups mentioned for R^b;

R^b, R^{b1}, R^{b2} independently of one another together with the group R^b, R^{b1} or R^{b2} attached to the adjacent carbon atom may form a five- or six-membered saturated or partially or fully unsaturated ring which, in addition to carbon atoms, may contain 1, 2 or 3 heteroatoms selected from the group consisting of O, N and S;

Y is O or S;

X is O, S or N—R^3;

R^3 is hydrogen, C_1-C_6-alkyl, C_1-C_4-haloalkyl, C_2-C_6-alkenyl, C_3-C_6-alkynyl, Z—C_3-C_{10}-cycloalkyl, C_1-C_6-alkoxy-C_1-C_6-alkyl, C_1-C_6-cyanoalkyl, Z-phenyl, Z—C(=O)—R^{a2} or tri-C_1-C_4-alkylsilyl;

R^{a2} is C_1-C_6-alkyl, C_1-C_4-haloalkyl, Z—C_1-C_6-alkoxy, Z—C_1-C_4-haloalkoxy or NR^iR^{ii};

wherein the groups R^A, R^2, R^3 and their subsubtituents, the carbon chains and/or the cyclic groups may be partially or fully substituted by groups R^a,

or a N-oxide or an agriculturally suitable salt thereof.

15. The compound of claim **14**, wherein Y is O.

16. The compound of claim **14**, wherein Y is S.

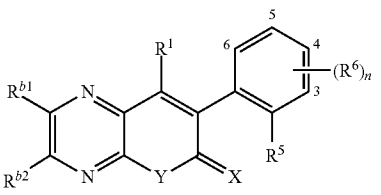
17. The compound of claim **14**, wherein R^A is hydrogen or C_1-C_6-alkylcarbonyl.

18. The compound of claim **14**, wherein X is O.

19. The compound of claim **14**, wherein X is S.

20. The compound of claim **14** having formula I.A

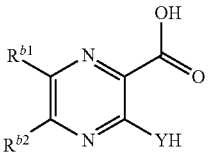
I.A



wherein R^5 and R^6 are groups R^b and n is an integer from zero to four.

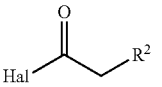
21. A process for preparing the compound of claim **14**, comprising reacting a compound of formula II

II



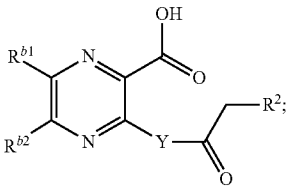
under basic conditions with a compound of formula III

III



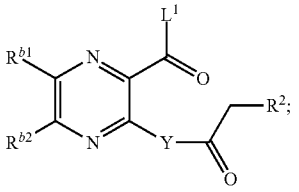
wherein Hal is a halogen atom or another suitable nucleophilic leaving group, to give a compound of formula IV

IV



reacting the compound of formula IV with a compound of formula H-L^1 in which L^1 is a nucleophilic leaving group, to obtain a compound of formula V

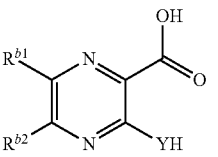
V



cyclizing the compound of formula V under basic conditions to give the compound of claim **14**.

22. A process for preparing the compound of claim **14**, comprising reacting a compound of formula II

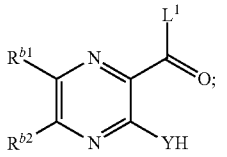
II



with a compound of formula H-L^1 in which L^1 is a nucleophilic leaving group;

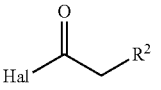
to give a compound of formula VI

VI



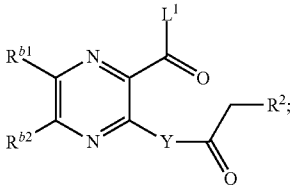
reacting the compound of formula VI with a compound of formula III

III



to give a compound of the formula V

V



cyclizing the compound of formula V under basic conditions to give the compound of claim **14**.

23. A composition comprising a herbicidally effective amount of a compound of the formula I or an agriculturally suitable salt thereof, as defined in claim **14**, and auxiliaries customary for formulating crop protection agents.

24. The composition of claim **23**, comprising at least one further active compound.

25. The composition of claim **23**, comprising two further active compounds selected from the group consisting of the herbicides and safeners.

26. A method for controlling unwanted vegetation, comprising allowing a herbicidally effective amount of a compound of the formula I or of an agriculturally suitable salt thereof, as defined in claim **14**, to act on plants, their seed and/or their habitat.

27. The method of claim **26**, wherein Y is O.

28. The method of claim **26**, wherein Y is S.

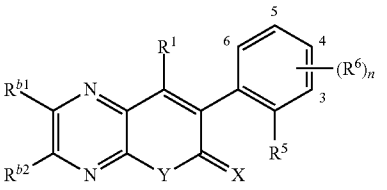
29. The method of claim **26**, wherein R^A is hydrogen or C_1-C_6-alkylcarbonyl.

30. The method of claim **26**, wherein X is O.

31. The method of claim **26**, wherein X is S.

32. The method of claim **26**, wherein the compound has formula I.A

I.A



wherein R^5 and R^6 are groups R^b and n is an integer from zero to four.

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