

(12) PATENT
(19) AUSTRALIAN PATENT OFFICE

(11) Application No. AU 199911279 B2
(10) Patent No. 719657

(54) Title
Herbicidal composition

(51)⁷ International Patent Classification(s)
A01N 047/38 A01N 025/32

(21) Application No: **199911279**

(22) Application Date: **1999.01.07**

(30) Priority Data

(31) Number	(32) Date	(33) Country
135/98	1998.01.21	CH

(43) Publication Date : **1999.12.09**

(43) Publication Journal Date : **1999.12.09**

(44) Accepted Journal Date : **2000.05.11**

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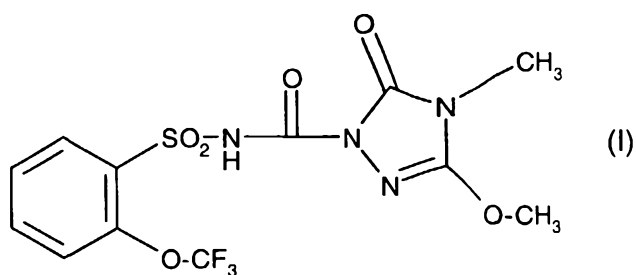
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(56) Related Art
EP 507171

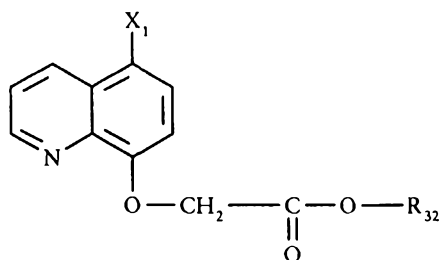
Abstract of the disclosure

A selective herbicidal composition for controlling grasses and weeds in crops of cultivated plants, comprising

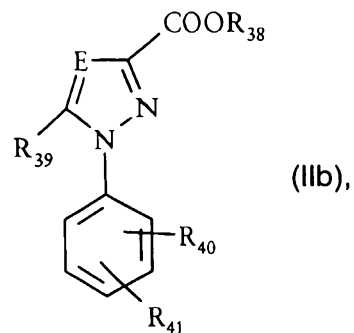
a) a herbicidally effective amount of a herbicide of formula I



and b) to antagonise the herbicide, an antidotally effective amount of a safener of formula IIa

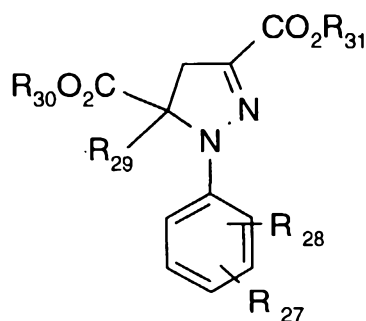


(IIa), or of formula IIb

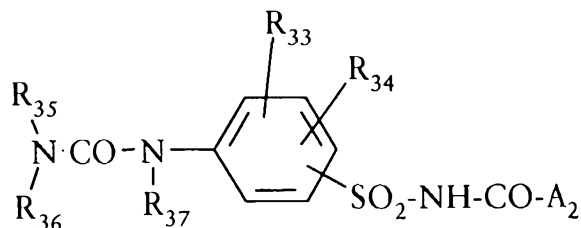


(IIb),

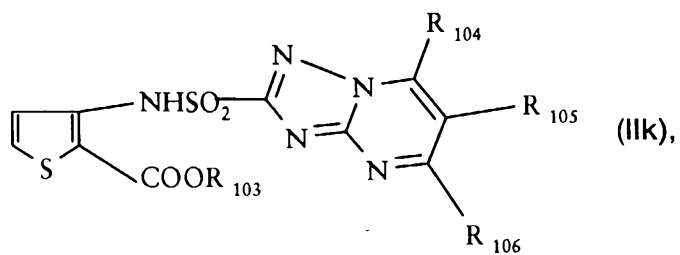
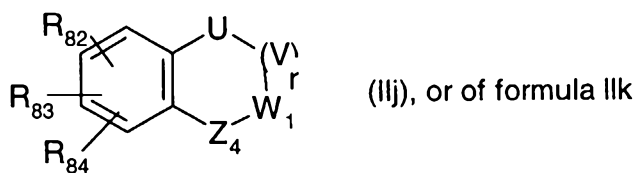
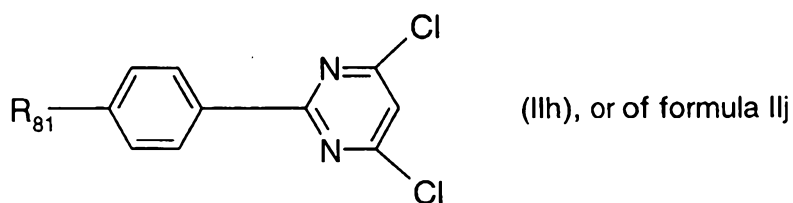
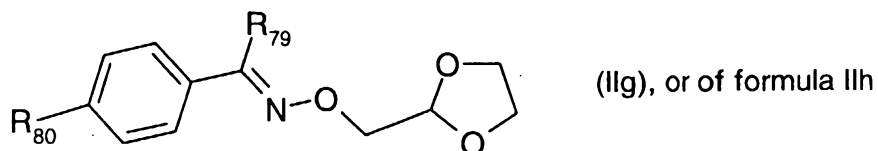
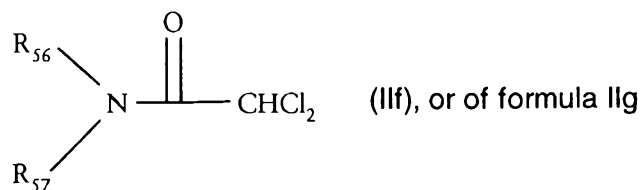
or of formula IIc



(IIc), or of formula IId



(IId), or of formula IIIf



wherein the substituents are as defined in claim 1.

AUSTRALIA
PATENTS ACT 1990
COMPLETE SPECIFICATION

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INVENTION TITLE:

Herbicidal composition

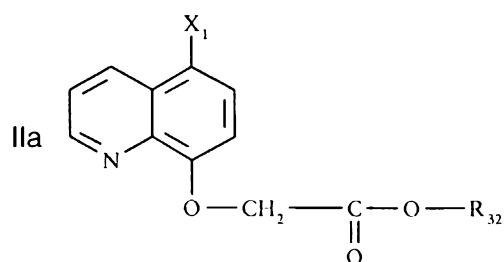
The following statement is a full description of this invention, including the best method of performing it known to me/us:-

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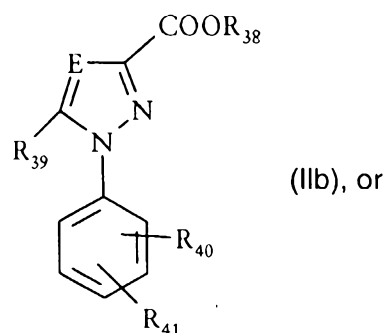
The present invention relates to new selectively herbicidal compositions to combat grasses and weeds in crops of cultivated plants, especially in crops of cereals and rice which comprise a herbicide and a safener (antidote) and which protect the cultivated plants but not the weeds against the phytotoxic effect of the herbicide, and to the use of this composition for weed control in crops of cultivated plants.

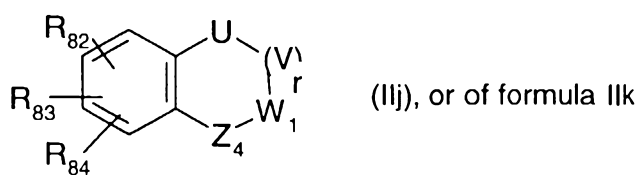
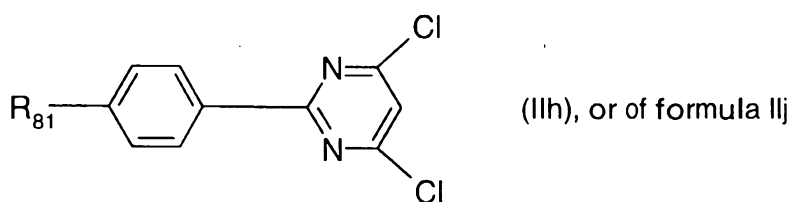
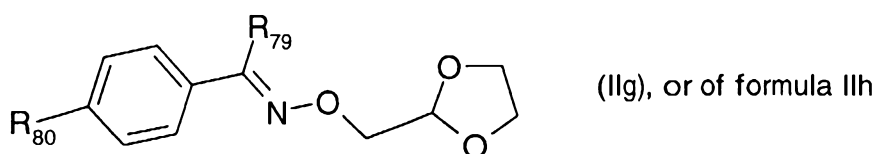
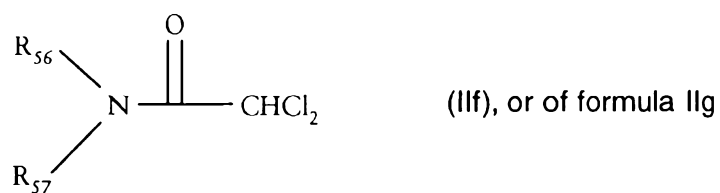
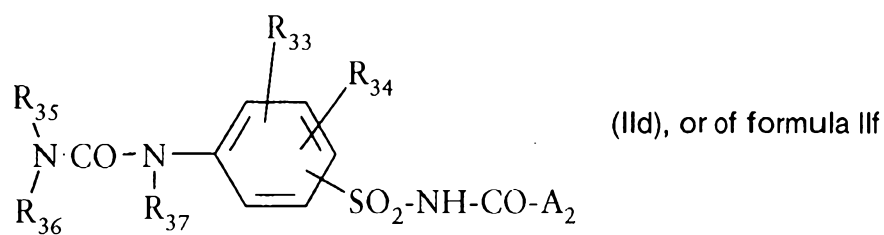
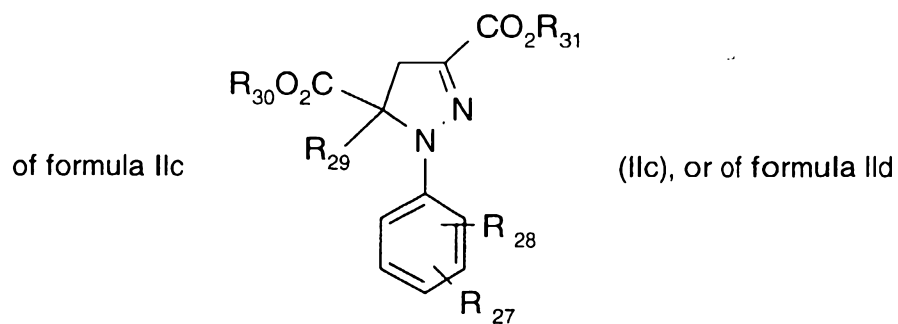
When applying herbicides, the cultivated plants may also suffer severe damage owing to factors that include the concentration of the herbicide and the mode of application, the cultivated plant itself, the nature of the soil, and the climatic conditions such as exposure to light, temperature and rainfall.

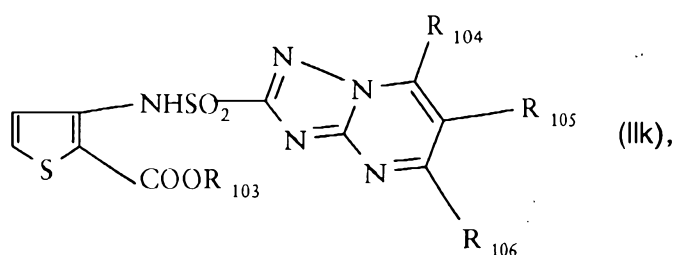
To counteract this problem and similar ones, the proposal has already been made to use different compounds as safeners which are able to antagonise the harmful action of the herbicide on the cultivated plant, i.e. to protect the cultivated plant while leaving the herbicidal action on the weeds to be controlled virtually unimpaired. It has, however, been found that the proposed safeners often have a very specific action with respect not only to the cultivated plants but also to the herbicide, and in some cases also subject to the mode of application, i.e. a specific safener will often be suitable only for a specific cultivated plant and a specific class of herbicide or a specific herbicide. Compounds are known for example from WO 97/18712 which protect crop plants against the phytotoxic effect of specific herbicides. It has now been found that compounds of formula



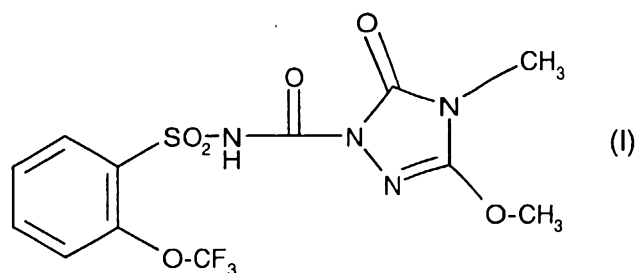
(IIa), or of formula IIb





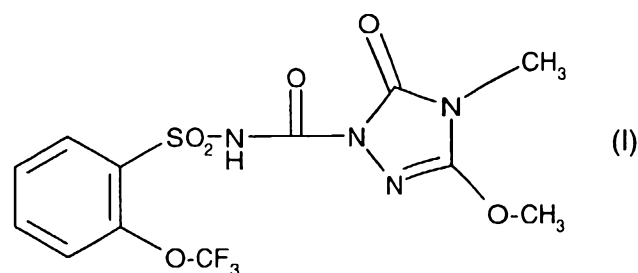


wherein the substituents are as defined hereinafter, are suitable for the protection of crop plants against the phytotoxic effect of a compound of formula I



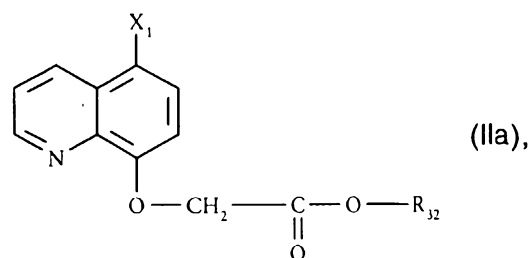
Accordingly, the invention provides a selective herbicidal composition comprising, in addition to customary inert formulation assistants such as carriers, solvents and wetting agents, a mixture of

a) a herbicidally effective amount of a herbicide of formula I



and

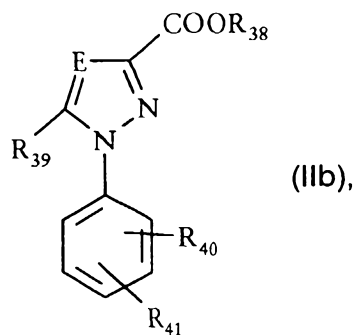
b) to antagonise the herbicide, an antidotally effective amount of a safener of formula IIa



wherein

R_{32} is hydrogen, C_1 - C_8 alkyl or C_1 - C_8 alkyl substituted by C_1 - C_6 alkoxy or C_3 - C_6 alkenyloxy and

X_1 is hydrogen or chlorine; or of formula IIb



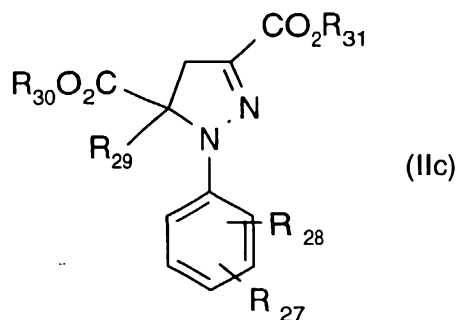
wherein E is nitrogen or methine;

R_{38} is C_1 - C_4 alkyl;

R_{39} is $-CCl_3$, phenyl or phenyl substituted by halogen, and

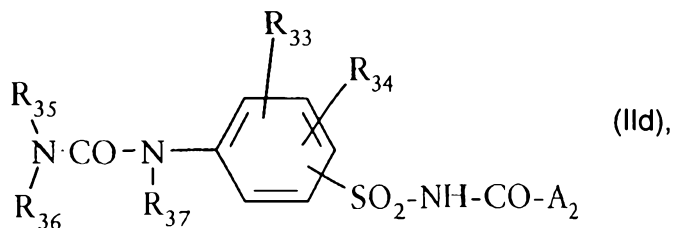
R_{40} and R_{41} independently of one another are hydrogen or halogen;

or of formula IIc

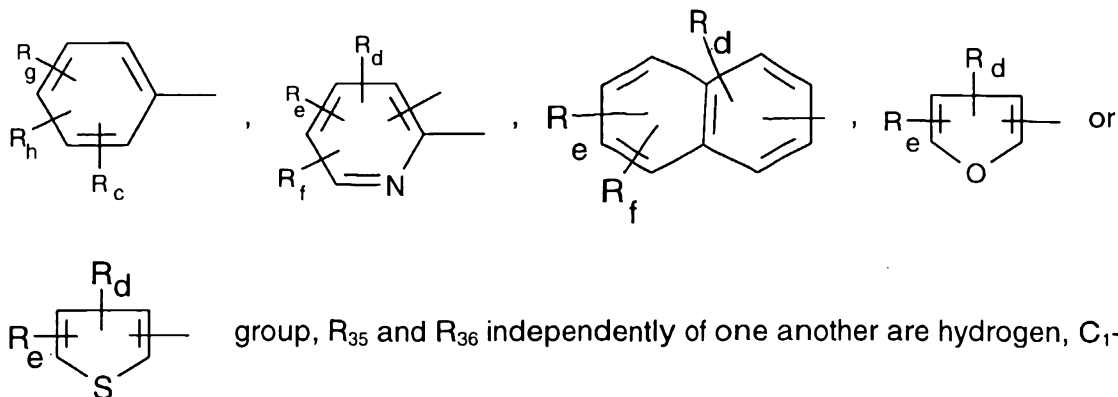


wherein R_{27} and R_{28} independently of one another are hydrogen or halogen, and

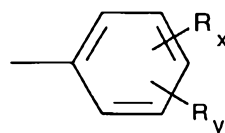
R_{29} , R_{30} and R_{31} independently of one another are C_1 - C_4 alkyl; or of formula IId



wherein A_2 is a

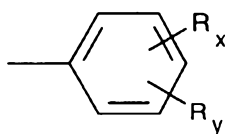


C_8 alkyl, C_3 - C_8 cycloalkyl, C_3 - C_6 alkenyl, C_3 - C_6 alkinyl,



, or C_1 - C_4 alkyl

substituted by C_1 - C_4 alkoxy or



; or R_{35} and R_{36} together form a C_4 -

C_6 alkylene bridge, which may be broken by oxygen, sulfur, SO, SO_2 , NH or $-N(C_1-C_4alkyl)-$; R_{37} is hydrogen or C_1 - C_4 alkyl;

R_{33} is hydrogen, halogen, cyano, trifluoromethyl, nitro, C_1 - C_4 alkyl, C_1 - C_4 alkoxy, C_1 - C_4 alkylthio, C_1 - C_4 alkylsulfinyl, C_1 - C_4 alkylsulfonyl, $-COOR_j$, $-CONR_kR_m$, $-COR_n$, $-SO_2NR_kR_m$ or $-OSO_2-C_1-C_4alkyl$;

R_9 is hydrogen, halogen, cyano, nitro, C_1 - C_4 alkyl, C_1 - C_4 halogenalkyl, C_1 - C_4 alkylthio, C_1 - C_4 alkylsulfinyl, C_1 - C_4 alkylsulfonyl, $-COOR_j$, $-CONR_kR_m$, $-COR_n$, $-SO_2NR_kR_m$, $-OSO_2-C_1-C_4alkyl$, C_1 - C_6 alkoxy, or C_1 - C_6 alkoxy substituted by C_1 - C_4 alkoxy or halogen, C_3 - C_6 alkenyloxy, or C_3 - C_6 alkenyloxy substituted by halogen, or C_3 - C_6 alkinyloxy, or R_{33} and R_{34} together form a C_3 - C_4 alkylene bridge, which may be substituted by halogen or C_1 - C_4 alkyl, or they form a C_3 - C_4 alkenylene bridge, which may be substituted by halogen or C_1 - C_4 alkyl, or they form a C_4 alkadienylene bridge, which may be substituted by halogen or C_1 - C_4 alkyl;

R_{34} and R_h independently of one another are hydrogen, halogen, C_1 - C_4 alkyl, trifluoromethyl, C_1 - C_6 alkoxy, C_1 - C_6 alkylthio or $-COOR_j$;

R_c is hydrogen, halogen, nitro, C_1 - C_4 alkyl or methoxy; R_d is hydrogen, halogen, nitro, C_1 - C_4 alkyl, C_1 - C_4 alkoxy, C_1 - C_4 alkylthio, C_1 - C_4 alkylsulfinyl, C_1 - C_4 alkylsulfonyl, $-COOR_j$ or $CONR_kR_m$;

R_e is hydrogen, halogen, C_1 - C_4 alkyl, $-COOR_j$, trifluoromethyl or methoxy, or R_d and R_e together form a C_3 - C_4 alkylene bridge;

R_f is hydrogen, halogen or C_1 - C_4 alkyl;

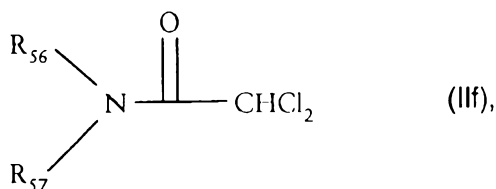
R_x and R_y independently of one another are hydrogen, halogen, C_1 - C_4 alkyl, C_1 - C_4 alkoxy, C_1 - C_4 alkylthio, $-COOR_{38}$, trifluoromethyl, nitro or cyano;

R_j , R_k and R_m independently of one another are hydrogen or C_1 - C_4 alkyl; or

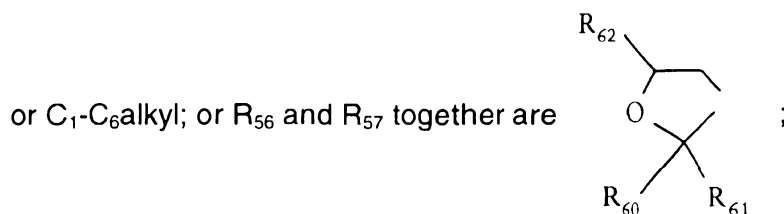
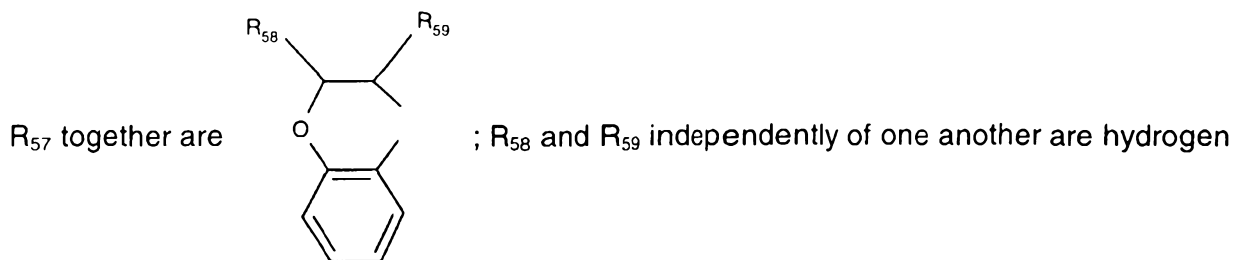
R_k and R_m together form a C_4 - C_6 alkylene bridge, which may be broken by oxygen, NH or $-N(C_1$ - C_4 alkyl)-;

R_n is C_1 - C_4 alkyl, phenyl, or phenyl substituted by halogen, C_1 - C_4 alkyl, methoxy, nitro or trifluoromethyl;

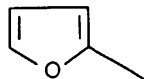
R_{38} is hydrogen, C_1 - C_{10} alkyl, C_1 - C_4 alkoxy- C_1 - C_4 alkyl, C_1 - C_4 alkylthio- C_1 - C_4 alkyl, di- C_1 - C_4 alkylamino- C_1 - C_4 alkyl, halogen- C_1 - C_8 alkyl, C_2 - C_8 alkenyl, halogen- C_2 - C_8 alkenyl, C_3 - C_8 alkinyl, C_3 - C_7 cycloalkyl, halogen- C_3 - C_7 -cycloalkyl, C_1 - C_8 alkylcarbonyl, allylcarbonyl, C_3 - C_7 cycloalkylcarbonyl, benzoyl which is unsubstituted or substituted on the phenyl ring up to three times identically or differently by halogen, C_1 - C_4 alkyl, halogen- C_1 - C_4 alkyl, halogen- C_1 - C_4 alkoxy or C_1 - C_4 alkoxy; or furoyl, thienyl; or C_1 - C_4 alkyl substituted by phenyl, halogenphenyl, C_1 - C_4 alkylphenyl, C_1 - C_4 alkoxyphenyl, halogen- C_1 - C_4 alkylphenyl, halogen- C_1 - C_4 alkoxyphenyl, C_1 - C_6 alkoxycarbonyl, C_1 - C_4 alkoxy- C_1 - C_8 alkoxycarbonyl, C_3 - C_8 alkenyloxycarbonyl, C_3 - C_8 alkinyloxycarbonyl, C_1 - C_8 alkylthiocarbonyl, C_3 - C_8 alkenylthiocarbonyl, C_3 - C_8 alkinylthiocarbonyl, carbamoyl, mono- C_1 - C_4 alkylaminocarbonyl, di- C_1 - C_4 alkylaminocarbonyl; or phenylaminocarbonyl, which is unsubstituted or substituted on the phenyl ring up to three times identically or differently by halogen, C_1 - C_4 alkyl, halogen- C_1 - C_4 alkyl, halogen- C_1 - C_4 alkoxy or C_1 - C_4 alkoxy, or once by cyano or nitro, or dioxolan-2-yl which is unsubstituted or substituted by one or two C_1 - C_4 alkyl radicals, or dioxan-2-yl, which is unsubstituted or substituted by one or two C_1 - C_4 alkyl radicals, or C_1 - C_4 alkyl which is substituted by cyano, nitro, carboxyl or C_1 - C_8 alkylthio- C_1 - C_8 alkoxycarbonyl; or a compound of formula II f

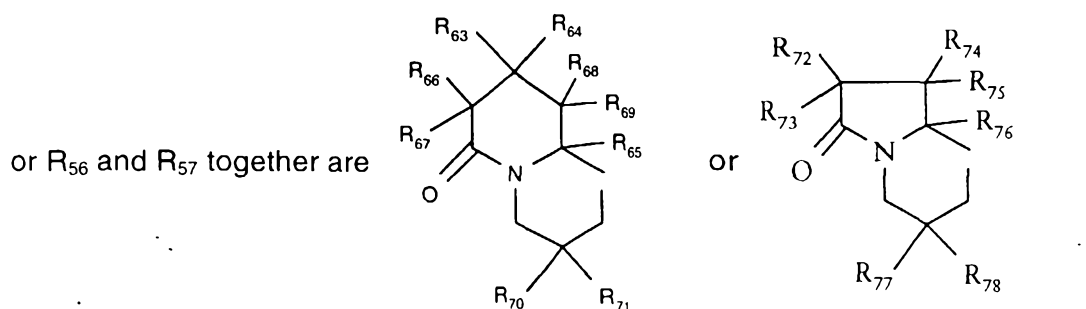


wherein R_{56} and R_{57} independently of one another are C_1 - C_6 alkyl or C_2 - C_6 alkenyl; or R_{56} and

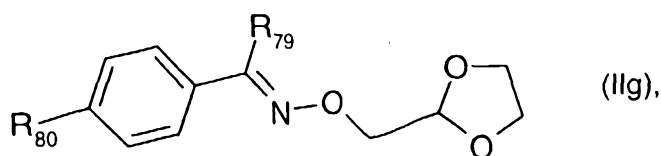


R_{60} and R_{61} independently of one another are C_1 - C_4 alkyl, or R_{46} and R_{47} together are - $(CH_2)_5$ - ;

R_{62} is hydrogen, C_1 - C_4 alkyl or 

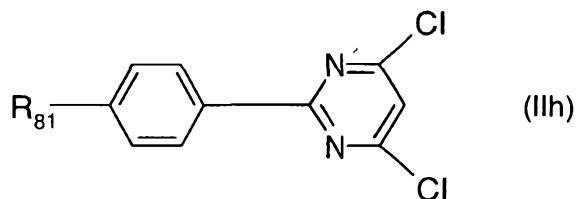


R_{63} , R_{64} , R_{65} , R_{66} , R_{67} , R_{68} , R_{69} , R_{70} , R_{71} , R_{72} , R_{73} , R_{74} , R_{75} , R_{76} , R_{77} and R_{78} independently of one another are hydrogen or C_1 - C_4 alkyl; or a compound of formula IIg

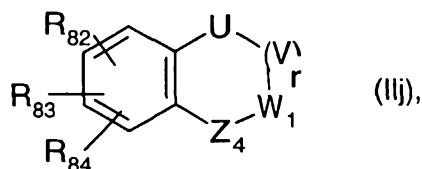


wherein R_{79} is cyano or trifluoromethyl and R_{80} is hydrogen or chlorine, or a compound of formula IIh





wherein R_{81} is hydrogen or methyl,
or of formula IIj



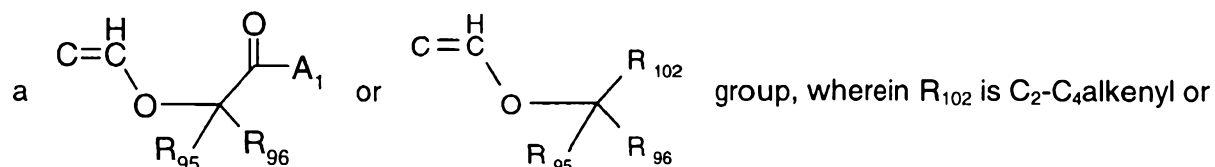
wherein

R_{82} is hydrogen, C_1 - C_4 alkyl, C_1 - C_4 alkyl substituted by C_1 - C_4 alkyl- X_2 - or C_1 - C_4 halogenalkyl- X_2 -, C_1 - C_4 halogenalkyl, nitro, cyano, $-COOR_{85}$, $-NR_{86}R_{87}$, $-SO_2NR_{88}R_{89}$ or $-CONR_{90}R_{91}$;

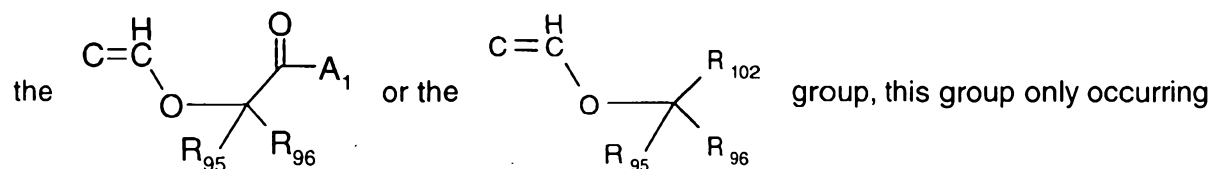
R_{83} is hydrogen, halogen, C_1 - C_4 alkyl, trifluoromethyl, C_1 - C_4 alkoxy or C_1 - C_4 halogenalkoxy;

R_{84} is hydrogen, halogen or C_1 - C_4 alkyl;

U, V, W_1 and Z_4 independently of one another are oxygen, sulfur, $C(R_{92})R_{93}$, carbonyl, NR_{94} ,



C_2 - C_4 alkynyl; subject to the proviso that a) at least one of the ring members U, V, W_1 or Z_4 is carbonyl, and a ring member adjacent to this or these ring members is either



once; and

b) two adjacent ring members U and V, V and W_1 and W_1 and Z_4 cannot simultaneously be oxygen;

R_{95} and R_{96} independently of one another are hydrogen or C_1 - C_8 alkyl; or

R_{95} and R_{96} together form a C_2 - C_6 alkylene group;

A_1 is $R_{99}-Y_1$ - or $-NR_{97}R_{98}$;

X_2 is oxygen or $-S(O)_s$;

Y_1 is oxygen or sulfur;

R₉₉ is hydrogen, C₁-C₈alkyl, C₁-C₈halogenalkyl, C₁-C₄alkoxy-C₁-C₈alkyl, C₃-C₆alkenyloxy-C₁-C₈alkyl or phenyl-C₁-C₈alkyl, wherein the phenyl ring may be substituted by halogen, C₁-C₄-a, trifluoromethyl, methoxy or methyl-S(O)₂-, C₃-C₆alkenyl, C₃-C₆halogenalkenyl, phenyl-C₃-C₆alkenyl, C₃-C₆alkinyl, p-C₃-C₆alkinyl, oxetanyl, furyl or tetrahydrofuryl;

R₈₅ is hydrogen or C₁-C₄alkyl;

R₈₆ is hydrogen, C₁-C₄alkyl or C₁-C₄alkylcarbonyl;

R₈₇ is hydrogen or C₁-C₄alkyl; or

R₈₆ and R₈₇ together form a C₄ or C₅alkylene group;

R₈₈, R₈₉, R₉₀ and R₉₁ independently of one another are hydrogen or C₁-C₄alkyl; or R₈₈ and

R₈₉ or R₉₀ and R₉₁ are independently of one another C₄ or C₅alkylene, in which a carbon atom may be substituted by oxygen or sulfur, or one or two carbon atoms by -NR₁₀₀-;

R₉₂ and R₁₀₀ independently of one another are hydrogen or C₁-C₈alkyl; or

R₉₂ and R₉₃ together are C₂-C₆alkylene;

R₉₄ is hydrogen or C₁-C₈alkyl;

R₉₇ is hydrogen, C₁-C₈alkyl, phenyl, phenyl-C₁-C₈alkyl (in which the phenyl ring may be substituted by fluorine, chlorine, bromine, nitro, cyano, -OCH₃, C₁-C₄alkyl or CH₃SO₂-), C₁-C₄alkoxy-C₁-C₈alkyl, C₃-C₆alkenyl or C₃-C₆alkinyl;

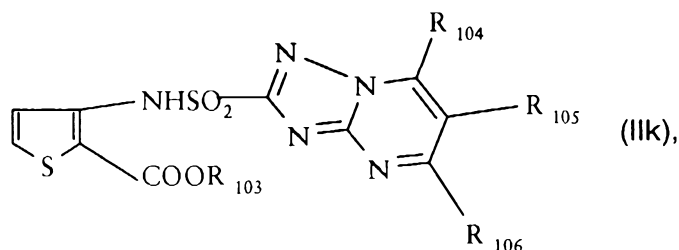
R₉₈ is hydrogen, C₁-C₈alkyl, C₃-C₆alkenyl or C₃-C₆alkinyl; or

R₉₇ and R₉₈ together are C₄ or C₅alkylene, in which a carbon atom may be substituted by oxygen or sulfur, or one or two carbon atoms by -NR₁₀₁-;

R₁₀₁ is hydrogen or C₁-C₄alkyl;

r is 0 or 1; and

s is 0, 1 or 2, or a compound of formula IIk



wherein R₁₀₃ is hydrogen, C₁-C₆alkyl, C₃-C₆cycloalkyl, C₃-C₆alkenyl or C₃-C₆alkinyl; and R₁₀₄, R₁₀₅ and R₁₀₆ are independently of one another hydrogen, C₁-C₆alkyl, C₃-C₆cycloalkyl or C₁-C₆alkoxy, subject to the proviso that one of the substituents R₁₀₄, R₁₀₅ or R₁₀₆ is different from hydrogen.

The alkyl groups occurring in the substituent definitions may be straight-chained or branched, and may for example be methyl, ethyl, propyl, butyl, pentyl, hexyl, heptyl or octyl, as well as their branched isomers. Alkoxy, alkylthio, alkoxycarbonyl, alkylcarbonyl, alkylsulfonyl, and alkylsulfinyl groups are derived from the said alkyl groups. Halogen is usually fluorine, chlorine, bromine or iodine, preferably fluorine, chlorine or bromine. In substituents such as $-NR_kR_m$, the alkyl radicals may be the same or different. In the preferred embodiment, they are the same. The term "substituted" may mean in the context of the present invention monosubstituted and, as far as possible, also polysubstituted.

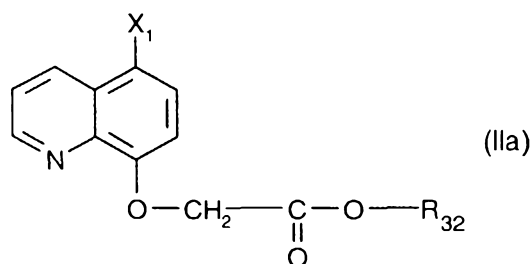
The compound of formula 1 is described in EP-A-0 507 171. Compounds of formulae IIa, IIb, IIc, IId, IIe, IIg, IIh, IIj, and IIk are known from US-A-5,041,157, US-A-5,541,148, US-A-5,006,656, EP-A-0 094 349, EP-A-0 551 650, EP-A-0 268 554, EP-A-0 375 061, EP-A-0 174 562, EP-A-492 366, WO 91/7874, WO 94/987, DE-A-19612943, WO 96/29870, WO 98/13361, and WO 97/18712.

The compound of formula I may preferably be used according to the invention with the safeners of formulae IIa, IIb and IIc.

A very especially preferred composition according to the invention comprises the compound of formula I and the safener of formula IIa, wherein X_1 is chlorine and R_{22} is $-\text{CH}(\text{CH}_3)\text{C}_5\text{H}_{11-n}$.

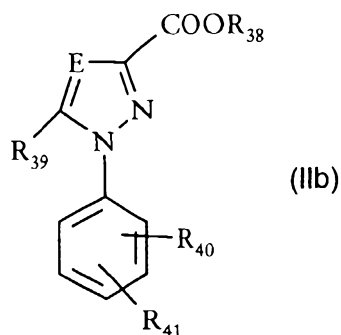
Especially preferred compounds of the formulae and IIa to IIk are listed in the following tables (formula IIe is the preferred compound of formula IId, and formulae IIm, IIo, IIp and IIq are the preferred compounds of formula IIh):

Table 1: Compounds of formula IIa:



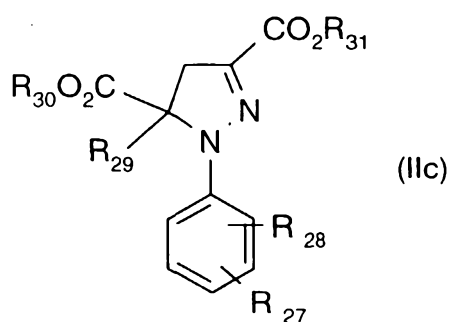
Comp. no.	X ₁	R ₃₂
1.01	Cl	-CH(CH ₃)-C ₅ H ₁₁ -n
1.02	Cl	-CH(CH ₃)-CH ₂ OCH ₂ CH=CH ₂
1.03	Cl	H
1.04	Cl	C ₄ H ₉ -n

Table 2: Compounds of formula IIb:



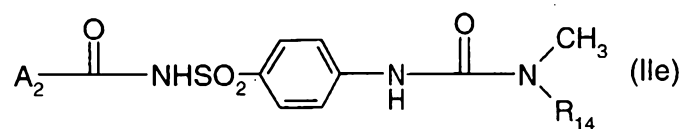
Comp. no.	R ₃₈	R ₃₉	R ₄₀	R ₄₁	E
2.01	CH ₃	Phenyl	2-Cl	H	CH
2.02	CH ₃	Phenyl	2-Cl	4-Cl	CH
2.03	CH ₃	Phenyl	2-F	H	CH
2.04	CH ₃	2-Chlorophenyl	2-F	H	CH
2.05	C ₂ H ₅	CCl ₃	2-Cl	4-Cl	N
2.06	CH ₃	Phenyl	2-Cl	4-CF ₃	N
2.07	CH ₃	Phenyl	2-Cl	4-CF ₃	N
2.08	CH ₃	2-Fluorophenyl	2-Cl	H	CH

Table 3: Compounds of formula IIc



Comp. no.	R ₂₉	R ₃₀	R ₃₁	R ₂₇	R ₂₈
3.01	CH ₃	CH ₃	CH ₃	2-Cl	4-Cl
3.02	CH ₃	C ₂ H ₅	CH ₃	2-Cl	4-Cl
3.03	CH ₃	C ₂ H ₅	C ₂ H ₅	2-Cl	4-Cl

Table 4: Compounds of formula IIe:



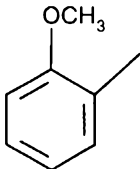
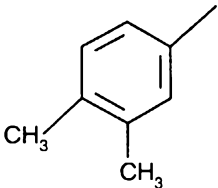
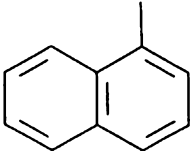
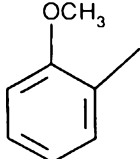
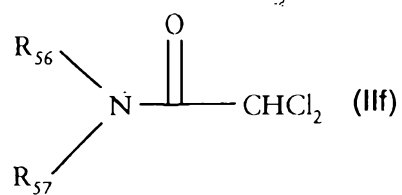
Comp. no.	A ₂	R ₁₄
4.001		H
4.002		H
4.003		CH ₃
4.004		CH ₃

Table 5: Compounds of formula If:

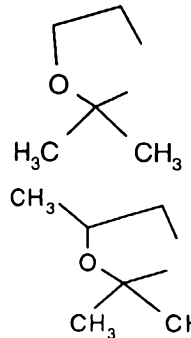
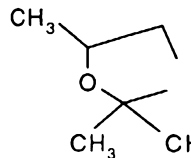
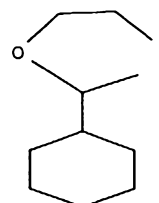
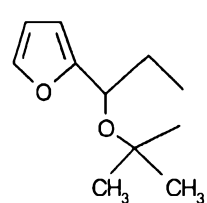
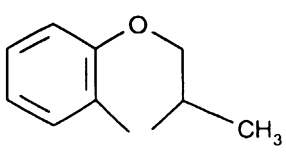
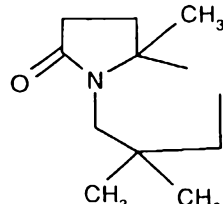
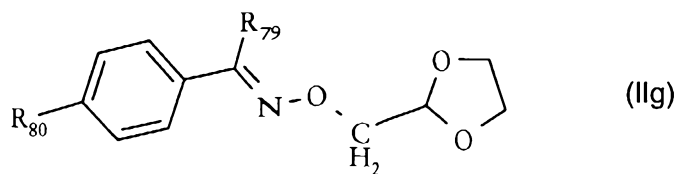
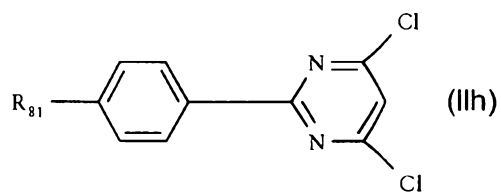
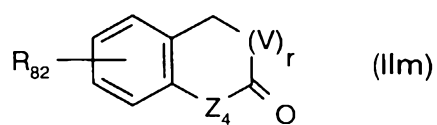
Comp. no.	R ₅₆	R ₅₇	R ₅₆ +R ₅₇
5.001	CH ₂ =CHCH ₂	CH ₂ =CHCH ₂	-
5.002	--	--	
5.003	--	--	
5.004	-	-	
5.005	--	--	
5.006	--	--	
5.007	--	--	

Table 6: Compounds of formula IIg:

Comp. no.	R ₈₀	R ₇₉
6.01	H	CN
6.02	Cl	CF ₃

Table 7: Compounds of formula IIh:

Comp. no.	R ₈₁
7.01	H
7.02	CH ₃

Table 8: Compounds of formula IIIm

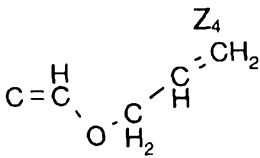
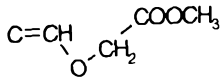
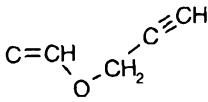
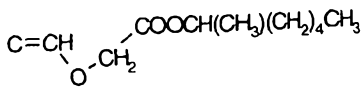
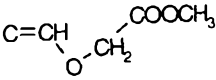
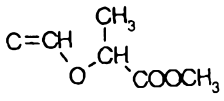
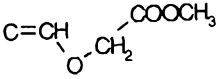
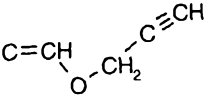
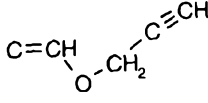
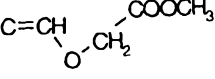
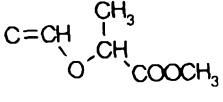
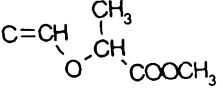
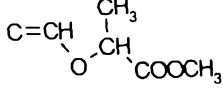
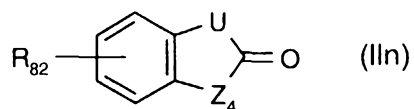
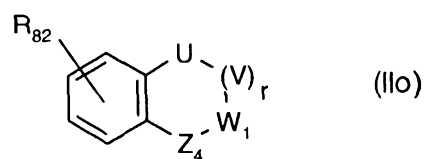
Comp. no.	R ₈₂		V	r
8.001	H		O	1
8.002	H		O	1
8.003	H		O	1
8.004	H		O	1
8.005	H		CH ₂	1
8.006	H		CH ₂	1
8.007	H		S	1
8.008	H		S	1
8.009	H		NCH ₃	1
8.010	H		NCH ₃	1
8.011	H		NCH ₃	1
8.012	H		O	1
8.013	H		S	1

Table 9: Compounds of formula IIa



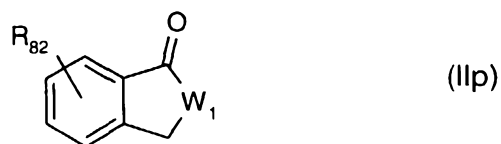
Comp. no.	U	R ₈₂	Z ₄
9.001	O	H	
9.002	O	H	
9.003	O	5-Cl	
9.004	CH ₂	H	
9.005	CH ₂	H	
9.006	CH ₂	H	
9.007	NH	5-Cl	
9.008	NH	5-Cl	
9.009	NH	H	
9.010	NH	H	
9.011	NCH ₃	H	
9.012	NCH ₃	H	

Table 10: Compounds of formula IIo



Comp. no.	U	V	r	W ₁	Z ₄	R ₈₂
10.001	O	C=O	1		CH ₂	H
10.002	O	C=O	1		CH ₂	H
10.003	CH ₂	C=O	1		CH ₂	H
10.004	CH ₂	C=O	1		CH ₂	H
10.005	CH ₂	CH ₂	1		C=O	H
10.006	CH ₂	CH ₂	1		C=O	H
10.007	NCH ₃	C=O	1		CH ₂	H

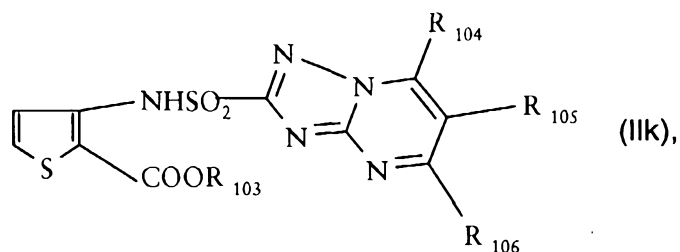
Table 11: Compounds of formula IIp



Comp. no.	R ₈₂	W ₁
11.001	6-Cl	
11.002	6-Cl	
11.003	H	

Comp. no.	R ₈₂	W ₁
11.004	H	
11.005	H	

Table 12: Compounds of formula IIk



Comp no.	R ₁₀₃	R ₁₀₄	R ₁₀₅	R ₁₀₆
12.01	CH ₃	H	Cyclopropyl	H
12.02	CH ₃	C ₂ H ₅	Cyclopropyl	H
12.03	CH ₃	Cyclopropyl	C ₂ H ₅	H
12.04	CH ₃	CH ₃	H	H
12.05	CH ₃	CH ₃	Cyclopropyl	H
12.06	CH ₃	OCH ₃	OCH ₃	H
12.07	CH ₃	CH ₃	OCH ₃	H
Comp. no.	R ₁₀₃	R ₁₀₄	R ₁₀₅	R ₁₀₆
12.08	CH ₃	OCH ₃	CH ₃	H
12.09	CH ₃	CH ₃	CH ₃	H
12.10	C ₂ H ₅	CH ₃	CH ₃	H
12.11	C ₂ H ₅	OCH ₃	OCH ₃	H
12.12	H	OCH ₃	OCH ₃	H
12.13	H	CH ₃	CH ₃	H
12.14	C ₂ H ₅	H	H	CH ₃
12.15	H	H	H	CH ₃
12.16	CH ₃	H	H	CH ₃

The invention also relates to a method of selectively controlling weeds in crops of cultivated plants, which comprises treating said cultivated plants, the seeds or seedlings or the crop area thereof, concurrently or separately, with a herbicidally effective amount of the herbicide of formula I and, to antagonise the herbicide, an antidotally effective amount of the safener of formula IIa, IIb, IIc IId, IIe, IIg, IIh, IIj or IIk.

Crop plants which may be protected by the safeners of formula IIa, IIb, IIc IId, IIe, IIg, IIh, IIj or IIk from the damaging effect of the herbicides mentioned hereinbefore are in particular cereals and rice. Crops will also be understood as meaning those crops that have been made tolerant to herbicides or classes of herbicides by conventional breeding or genetic engineering methods.

The weeds to be controlled may be monocot as well as dicot weeds, typically *Stellaria*, *Nasturtium*, *Agrostis*, *Digitaria*, *Avena*, *Setaria*, *Sinapis*, *Lolium*, *Solanum*, *Echinochloa*, *Scirpus*, *Monochoria*, *Sagittaria*, *Bromus*, *Alopecurus*, *Sorghum halepense*, *Rottboellia*, *Cyperus*, *Abutilon*, *Sida*, *Xanthium*, *Amaranthus*, *Chenopodium*, *Ipomoea*, *Chrysanthemum*, *Galium*, *Viola*, and *Veronica*.

Crop areas will be understood as meaning the areas already under cultivation with the cultivated plants or seeds thereof, as well as the areas intended for cropping with said cultivated plants.

Depending on the end use, a safener of formula II can be used for pretreating seeds of the crop plants (dressing of seeds or seedlings) or it can be incorporated in the soil before or after sowing. It can, however, also be applied by itself alone or together with the herbicide postemergence. Treatment of the plant or the seeds with the safener can therefore in principle be carried out irrespective of the time of application of the herbicide. Treatment can, however, also be carried out by simultaneous application of the phytotoxic chemical and safener (e.g. as tank mixture). The concentration of safener with respect to the herbicide will depend substantially on the mode of application. Where a field treatment is carried out either by using a tank mixture with a combination of safener and herbicide or by separate application of safener and herbicide, the ratio of safener to herbicide will usually be from 1:100 to 1:1, and preferably 1:50 to 5:1.

In field treatment it is usual to apply 0.001 to 5.0 kg safener/ha, preferably 0.001 to 0.5 kg safener/ha.

The rate of application of herbicide is usually in the range from 0.001 to 2 kg/ha, but will preferably be from 0.005 to 1 kg/ha.

The compositions of this invention are suitable for all methods of application commonly used in agriculture, including preemergence application, postemergence application and seed dressing.

For seed dressing, 0.001 to 10 g of safener/kg of seeds, preferably 0.05 to 2 g of safener/kg of seeds, is usually applied. If the safener is used in liquid form shortly before sowing to effect soaking, then it is preferred to use safener solutions that contain the active ingredient in a concentration of 1 to 10000 ppm, preferably of 100 to 1000 ppm.

For application, it is expedient to process the safeners of formula II, or mixtures of the safeners of formula II and the herbicides of formula I, together with the customary assistants of formulation technology to formulations, typically to emulsifiable concentrates, coatable pastes, directly sprayable or dilutable solutions, dilute emulsions, wettable powders, soluble powders, dusts, granulates or microcapsules.

Such formulations are described, for example, in WO 97/34485 on pages 9 to 13. The formulations are prepared in known manner, for example by homogeneously mixing or grinding the active ingredients with liquid or solid formulation assistants, typically solvents or solid carriers. Surface-active compounds (surfactants) may additionally be used for preparing the formulations. Suitable solvents and solid carriers for this purpose are described in WO 97/34485 on page 6.

Depending on the herbicide of formula I to be formulated, suitable surface-active compounds are nonionic, cationic and/or anionic surfactants and surfactant mixtures having good emulsifying, dispersing and wetting properties. Examples of suitable anionic, nonionic, and cationic surfactants are listed in WO 97/34485 on pages 7 and 8. Also the surfactants customarily employed in the art of formulation and described, *inter alia*, in "Mc Cutcheon's Detergents and Emulsifiers Annual" MC Publishing Corp., Ridgewood New Jersey, 1981, Stache, H., "Tensid-Taschenbuch" (Handbook of Surfactants), Carl Hanser Verlag, Munich/Vienna, 1981, and M. and J. Ash, "Encyclopedia of Surfactants", Vol I-III, Chemical Publishing Co., New York, 1980-81 are suitable for manufacture of the herbicides according to the invention.

The herbicidal compositions will usually contain from 0.1 to 99% by weight, preferably from 0.1 to 95% by weight, of compound mixture of the compound of formula I and the compounds of formula IIa, IIb, IIc IId, IIe, IIg, IIh, IIj, or IIk, from 1 to 99.9% by weight of a solid or liquid formulation assistant, and from 0 to 25% by weight, preferably from 0.1 to 25% by weight, of a surfactant.

Whereas it is customarily preferred to formulate commercial products as concentrates, the end user will normally use dilute formulations.

The compositions may also contain further ingredients, such as: stabilisers, e.g. where appropriate epoxidised vegetable oils (epoxidised coconut oil, rapeseed oil, or soybean oil); antifoams, typically silicone oil; preservatives; viscosity regulators; binders; and tackifiers; as well as fertilisers or other chemical agents. Different methods and techniques may suitably be used for applying the safeners of formula II or compositions containing them for protecting cultivated plants from the harmful effects of herbicides of formula I, conveniently the following:

i) Seed dressing

a) Dressing the seeds with a wettable powder formulation of the active ingredient of formula II by shaking in a vessel until the safener is uniformly distributed on the surface of the seeds (dry treatment). About 1 to 500 g of active ingredient of formula IIa, IIb, IIc IId, IIe, IIg, IIh, IIj, or IIk (4 g to 2 kg of wettable powder) are used per 100 kg of seeds.

Dressing the seeds with an emulsifiable concentrate of the active ingredient of formula IIa, IIb, IIc IId, IIe, IIg, IIh, IIj, or IIk according to method a) (wet treatment).

c) Dressing by immersing the seeds in a mixture containing 100–1000 ppm of active ingredient of formula IIa, IIb, IIc IId, IIe, IIg, IIh, IIj, or IIk for 1 to 72 hours and, where appropriate, subsequently drying them (seed soaking).

In keeping with the natural environment, the preferred method of application is either seed dressing or treatment of the germinated seedlings, because the safener treatment is fully concentrated on the target crop. Usually 1 to 1000 g, preferably 5 to 250 g, of safener is used per 100 kg of seeds. However, depending on the method employed, which also permits the use of other chemical agents or micronutrients, the concentrations may deviate above or below the indicated limit values (repeat dressing).

ii) Application as a tank mixture

A liquid formulation of a mixture of safener and herbicide (reciprocal ratio from 10:1 to 1:100) is used, the concentration of herbicide being from 0.005 to 5.0 kg/ha. This tank mixture is applied before or after sowing.

iii) Application in the furrow

The active ingredient of formula IIa, IIb, IIc IId, IIe, IIg, IIh, IIj, or IIk formulated as emulsifiable concentrate, wettable powder or granulate is applied to the open furrow in which the seeds have been sown. After covering the furrow, the herbicide is applied pre-emergence in conventional manner.

iv) Controlled release of compound

The compound of formula Formel IIa, IIb, IIc IId, IIe, IIg, IIh, IIj, or IIk is applied in solution to a mineral granular carrier or to polymerised granules (urea/formaldehyde) and then dried. A coating can then be applied (coated granules) that allows the herbicide to be released at a controlled rate over a specific period of time.

Particularly preferred formulations are made up as follows:

(% = per cent by weight)

Emulsifiable concentrates:

Compound mixture:	1 to 90 %, preferably 5 to 20%
Surfactant:	1 to 30%, preferably 10 to 20%
Liquid carrier:	5 to 94 %, preferably 70 to 85 %

Dusts:

Compound mixture:	0.1 to 10 %, preferably 0,1 to 5 %
Solid carrier:	99.9 to 90 %, preferably 99,9 to 99 %

Suspension concentrates:

Compound mixture:	5 to 75 %, preferably 10 to 50 %
Water:	94 to 30%, preferably 88 to 20%
Surfactant:	1 to 30%, preferably 2 to 20%

Wettable powders:

Compound mixture:	1 to 90 %, preferably 10 to 80 %
-------------------	----------------------------------

Surfactant: 1 to 30%, preferably 10 to 20%
 Solid carrier: 5 to 95 %, preferably 15 to 90 %

Granulates:

Compound mixture: 0.1 to 30%, preferably 0,1 to 15 %
 Solid carrier: 99.5 to 70 %, preferably 97 to 85 %

The invention is illustrated by the following non-limitative Examples.

Formulation Examples for mixtures of herbicides of formula I and safeners of formula IIa, IIb, IIc IId, IIe, IIg, IIh, IIj, or IIk (% = per cent by weight)

<u>F1. Emulsifiable concentrates</u>	a)	b)	c)	d)
Compound mixture	5 %	10 %	25 %	50 %
Calcium dodecylbenzenesulfonate	6 %	8 %	6 %	8 %
Polyethoxylated castor oil (36 mol EO)	4 %	-	4 %	4 %
Octylphenol polyethoxylate (7-8 mol EO)	-	4 %	-	2 %
Cyclohexanone	-	-	10 %	20 %
Arom. hydrocarbon mixture C ₉ -C ₁₂	85 %	78 %	55 %	16 %

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

<u>F2. Solutions</u>	a)	b)	c)	d)
Compound mixture	5 %	10 %		50 % 90 %
1-Methoxy-3-(3-methoxy-propoxy)-propane	-	20 %	20 %	-
Polyethylene glycol MG 400	20 %	10 %	-	-
N-Methyl-2-pyrrolidone		-	-	30 % 10 %
Arom. hydrocarbon mixture C ₉ -C ₁₂	75 %	60 %	-	-

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

<u>F3. Wettable powders</u>	a)	b)	c)	d)
Compound mixture	5 %	25 %	50 %	80 %
Sodium ligninsulfonate		4 %	-	3 % -

Sodium lauryl sulfate	2 %	3 %	-	4 %
Sodium diisobutylphthalene	-	6 %	5 %	6 %
Octylphenol polyethoxylate (7-8 mol EO)	-	1 %	2 %	-
Highly dispersed silicic acid	1 %	3 %	5 %	10 %
Kaolin	88 %	62 %	35 %	-

The compound is thoroughly mixed with the adjuvants and this mixture is ground in a suitable mill to give wettable powders which can be diluted with water to give suspensions of any desired concentration.

<u>F4. Coated granulates</u>	a)	b)	c)
Compound mixture	0.1 %	5 %	15 %
Highly dispersed silicic acid	0.9 %	2 %	2 %
Inorganic substrate	99.0 %	93 %	83 %

($\bar{A}$ 0.1–1 mm)

such as CaCO_3 or SiO_2

The compound mixture is dissolved in dichloromethane, the solution is sprayed on to the carrier, and the solvent is removed under vacuum.

<u>F5. Coated granulates</u>	a)	b)	c)
Compound mixture	0.1 %	5 %	15 %
Polyethylene glycol MG 200	1.0 %	2 %	3 %
Highly dispersed silicic acid	0.9 %	1 %	2 %
Inorganic substrate	98.0 %	92 %	80 %

($\bar{A}$ 0.1–1 mm)

such as CaCO_3 or SiO_2

The finely ground active substance is uniformly applied in a mixer to the carrier moistened with polyethylene glycol. Non-dusty coated granulates are obtained in this manner.

<u>F6. Extruder granulates</u>	a)	b)	c)	d)
Compound mixture	0.1 %	3 %	5 %	15 %
Sodium ligninsulfonate	1.5 %	2 %	3 %	4 %
Carboxymethylcellulose	1.4 %	2 %	2 %	2 %
Kaolin	97.0 %	93 %	90 %	79 %

The compound is mixed and ground with the adjuvants, and the mixture is moistened with water. This mixture is extruded and then dried in a stream of air.

F7. Dusts

	a)	b)	c)
Compound mixture	0.1 %	1 %	5 %
Talc	39.9 %	49 %	35 %
Kaolin	60.0 %	50 %	60 %

Ready for use dusts are obtained by mixing the active ingredient with the carriers on a suitable mill.

F8. Suspension concentrates

	a)	b)	c)	d)
Compound mixture	3 %	10 %	25 %	50 %
Ethylene glycol	5 %	5 %	5 %	5 %
Nonylphenol polyethoxylate (15 mol EO)	-	1 %	2 %	-
Sodium ligninsulfonate	3 %	3 %	4 %	5 %
Carboxymethylcellulose	1 %	1 %	1 %	1 %
37% aqueous formaldehyde solution	0.2 %	0.2 %	0.2 %	0.2 %
Silicone oil emulsion	0.8 %	0.8 %	0.8 %	0.8 %
Water	87 %	79 %	62 %	38 %

The finely ground active substance is intimately mixed with the adjuvants to give a suspension concentrate from which suspensions of any desired concentration can be prepared by dilution with water.

It is often expedient to formulate the compound of formula I and the components of formulae IIa to IIk individually and only to combine them shortly before application in the applicator in the desired mixture ratio as tank mixture in water.

The following Examples illustrate the ability of the safeners of formula IIa, IIb, IIc IIId, IIe, IIg, IIh, IIj, or IIk to protect cultivated plants from the phytotoxic action of herbicides of formula I.

Biological Examples

Example B1: Post-emergent applications of mixtures of a herbicide of formula I with a safener of formulae IIa to IIk to cereals.

Under greenhouse conditions, wheat is grown in plastic pots to the 2.5-leaf stage. In this stage, both the herbicide of formula I alone and the mixture of the herbicide with a safener

of formulae IIa to IIk are applied to the test plants. The test substances (Formulation Examples F3 a) and b)) are applied as aqueous suspension with 500 l water/ha. Ten days after the application, the results are evaluated on a percent scale. The results obtained show that, with the safeners of formulae IIa to IIk, the damage caused to wheat can be markedly reduced by the herbicide of formula I.

Examples of the selective effect of the compositions of the invention are given in Tables B1 to B4:

Table B1:

Plant:	Herbicide of formula 1: 60 g/ha	Herbicide of formula 1: 60 g/ha Safener no. 6.02: 15 g/ha
Wheat	20	10
Chenopodium	90	80
Emex	90	90
Raphanus	80	80
Setaria	80	80

Table B2:

Plant:	Herbicide of formula 1: 15 g/ha	Herbicide of formula 1: 15 g/ha Safener no. 1,01: 4 g/ha
Wheat	10	5
Chenopodium	90	90
Emex	80	90
Raphanus	80	80
Setaria	70	70

Table B3:

Plant:	Herbicide of formula 1: 15 g/ha	Herbicide of formula 1: 15 g/ha Safener no. 4.001: 4 g/ha
Wheat	10	5
Chenopodium	80	80
Emex	80	90
Raphanus	80	80
Setaria	70	80

Table B4:

Plant:	Herbicide of formula 1: 15 g/ha	Herbicide of formula 1: 15 g/ha Safener no. 3,003: 4 g/ha
Wheat	10	5
Chenopodium	90	90
Emex	80	90
Raphanus	80	80
Setaria	70	70

The same results are obtained by formulating a compound of formulae I and IIa to IIk in accordance with Examples F1, F2 and F4 to F7.

Example B2: Post-emergent applications of mixtures of a herbicide of formula I with a safener of formulae IIa to IIk to barley.

Under greenhouse conditions, barley is grown in plastic pots to the 2.5-leaf stage. In this stage, both the herbicide of formula I alone and the mixture of the herbicide with a safener of formulae IIa to IIk are applied to the test plants. The test substances (Formulation Examples F3 a) and b)) are applied as aqueous suspension with 500 l water/ha. Ten days after the application, the results are evaluated on a percent scale. The results obtained show that, with the safeners of formulae IIa to IIk, the damage caused to barley can be markedly reduced by the herbicide of formula I.

Examples of the selective effect of the compositions of the invention are given in Tables B5 to B11:

Table B5:

Plant:	Herbicide of formula 1: 60 g/ha	Herbicide of formula 1: 60 g/ha Safener no. 3.03: 15 g/ha
Barley	40	30
Chenopodium	90	80
Emex	90	90
Raphanus	80	80
Setaria	80	80

Table B6:

Plant:	Herbicide of formula 1: 60 g/ha	Herbicide of formula 1: 60 g/ha Safener no. 6.02: 15 g/ha
Barley	40	30
Chenopodium	90	80
Emex	90	90
Raphanus	80	80
Setaria	80	80

Table B7:

Plant:	Herbicide of formula 1: 60 g/ha	Herbicide of formula 1: 60 g/ha Safener no. 4.001: 15 g/ha
Barley	40	30
Chenopodium	90	80
Emex	90	90
Raphanus	80	80
Setaria	80	80

Table B8:

Plant:	Herbicide of formula 1: 60 g/ha	Herbicide of formula 1: 60 g/ha Safener no. 2,05: 15 g/ha
Barley	40	30
Chenopodium	90	90
Emex	90	90
Raphanus	80	90
Setaria	80	80

Table B9:

Plant:	Herbicide of formula 1: 60 g/ha	Herbicide of formula 1: 60 g/ha Safener no. 2,01: 15 g/ha
Barley	40	10
Chenopodium	90	90
Emex	90	90
Raphanus	80	80
Setaria	80	70

Table B10:

Plant:	Herbicide of formula 1: 15 g/ha	Herbicide of formula 1: 15 g/ha Safener no. 2,01: 4 g/ha
Barley	30	0
Chenopodium	90	90
Emex	80	90
Raphanus	80	80
Setaria	70	70

Table B11:

Plant:	Herbicide of formula 1: 60 g/ha	Herbicide of formula 1: 60 g/ha Safener no. 5.006: 15 g/ha
Barley	40	30
Chenopodium	90	80

Emex	90	90
Raphanus	80	70
Setaria	80	80

The same results are obtained by formulating a compound of formulae I and IIa to IIk in accordance with Examples F1, F2 and F4 to F7.

Example B3: Post-emergent applications of mixtures of a herbicide of formula I with a safener of formulae IIa to IIk to durum wheat.

Under greenhouse conditions, durum wheat is grown in plastic pots to the 2.5-leaf stage. In this stage, both the herbicide of formula I alone and the mixture of the herbicide with a safener of formulae IIa to IIk are applied to the test plants. The test substances (Formulation Examples F3 a) and b)) are applied as aqueous suspension with 500 l water/ha. Ten days after the application, the results are evaluated on a percent scale. The results obtained show that, with the safeners of formulae IIa to IIk, the damage caused to durum wheat can be markedly reduced by the herbicide of formula I. Examples of the selective effect of the compositions of the invention are given in Table B12:

Table B12:

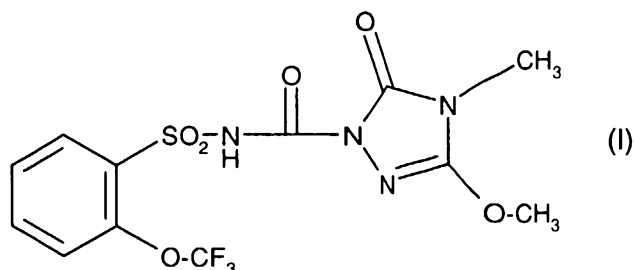
Plant:	Herbicide of formula 1: 250 g/ha	Herbicide of formula 1: 250 g/ha Safener no. 2,01: 60 g/ha
Durum wheat	30	10
Chenopodium	90	95
Emex	90	90
Raphanus	90	80
Setaria	80	80

Throughout this specification and the claims which follow, unless the context requires otherwise, the word "comprise", and variations such as "comprises" and "comprising", will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

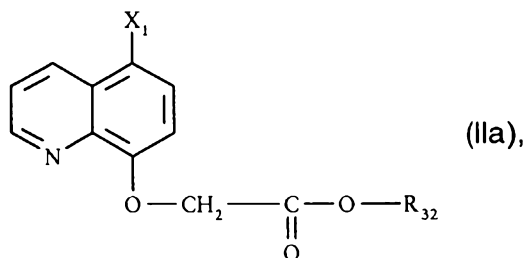
1. A selective herbicidal composition comprising, in addition to customary inert formulation assistants, a mixture of

a) a herbicidally effective amount of a herbicide of formula I



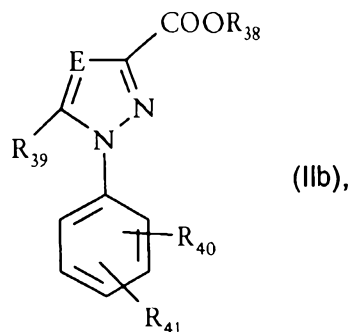
and

b) to antagonise the herbicide, an antidotally effective amount of a safener of formula II



wherein R₃₂ is hydrogen, C₁-C₈alkyl or C₁-C₈alkyl substituted by C₁-C₆alkoxy or C₃-C₆alkenyloxy and

X₁ is hydrogen or chlorine; or of formula IIb



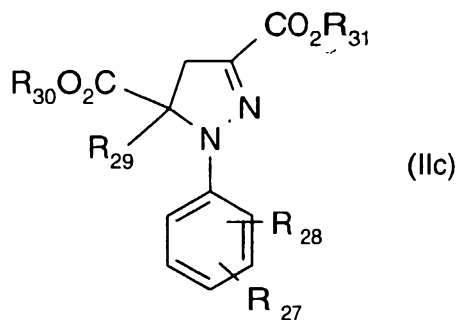
wherein E is nitrogen or methine;

R₃₈ is C₁-C₄alkyl;

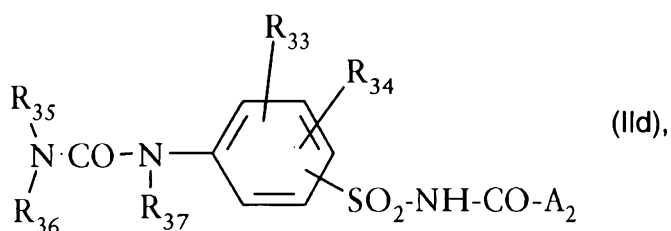
R₃₉ -CCl₃, phenyl or phenyl substituted by halogen, and

R₄₀ and R₄₁ independently of one another are hydrogen or halogen;

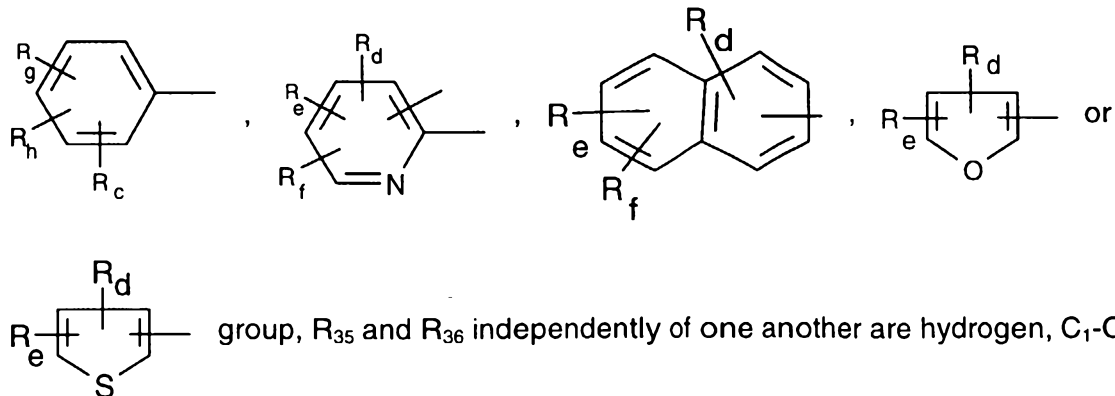
or of formula IIc



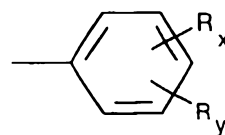
wherein R_{27} and R_{28} independently of one another are hydrogen or halogen and R_{29} , R_{30} and R_{31} independently of one another are C_1 - C_4 alkyl; or of formula IIId



wherein A_2 is a

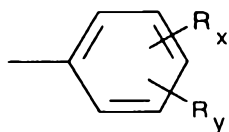


C_3 - C_8 cycloalkyl, C_3 - C_6 alkenyl, C_3 - C_6 alkinyl,



, or C_1 - C_4 alkyl substituted

by C_1 - C_4 alkoxy or



; or R_{35} and R_{36} together form a C_4 - C_6 alkylene

bridge, which may be broken by oxygen, sulfur, SO, SO_2 , NH or $-N(C_1-C_4alkyl)-$,

R_{37} is hydrogen or C_1 - C_4 alkyl;

R_{33} is hydrogen, halogen, cyano, trifluoromethyl, nitro, C_1 - C_4 alkyl, C_1 - C_4 alkoxy, C_1 - C_4 alkylthio, C_1 - C_4 alkylsulfinyl, C_1 - C_4 alkylsulfonyl, $-COOR_j$, $-CONR_kR_m$, $-COR_n$, $-SO_2NR_kR_m$ or $-OSO_2-C_1-C_4$ alkyl;

R_g is hydrogen, halogen, cyano, nitro, C_1 - C_4 alkyl, C_1 - C_4 halogenalkyl, C_1 - C_4 alkylthio, C_1 - C_4 alkylsulfinyl, C_1 - C_4 alkylsulfonyl, $-COO_j$, $-CONR_kR_m$, $-COR_n$, $-SO_2NR_kR_m$, $-OSO_2-C_1-C_4$ alkyl, C_1 - C_6 alkoxy, or C_1 - C_6 alkoxy substituted by C_1 - C_4 alkoxy or halogen, C_3 - C_6 alkenyloxy, or C_3 - C_6 alkenyloxy substituted by halogen, or C_3 - C_6 alkinyloxy, or R_{33} and R_{34} together form a C_3 - C_4 alkylene bridge, which may be substituted by halogen or C_1 - C_4 alkyl, or a C_3 - C_4 alkenylene bridge, which may be substituted by halogen or C_1 - C_4 alkyl, or a C_4 -alkadienylene bridge, which may be substituted by halogen or C_1 - C_4 alkyl;

R_{34} and R_h independently of one another are hydrogen, halogen, C_1 - C_4 alkyl, trifluoromethyl, C_1 - C_6 alkoxy, C_1 - C_6 alkylthio or $-COOR_j$;

R_c is hydrogen, halogen, nitro, C_1 - C_4 alkyl or methoxy; R_d is hydrogen, halogen, nitro, C_1 - C_4 alkyl, C_1 - C_4 alkoxy, C_1 - C_4 alkylthio, C_1 - C_4 alkylsulfinyl, C_1 - C_4 alkylsulfonyl, $-COOR_j$ or $CONR_kR_m$;

R_e is hydrogen, halogen, C_1 - C_4 alkyl, $-COOR_j$, trifluoromethyl or methoxy, or R_d and R_e together form a C_3 - C_4 alkylene bridge;

R_f is hydrogen, halogen or C_1 - C_4 alkyl;

R_x and R_y independently of one another are hydrogen, halogen, C_1 - C_4 alkyl, C_1 - C_4 alkoxy, C_1 - C_4 alkylthio, $-COOR_{38}$, trifluoromethyl, nitro or cyano;

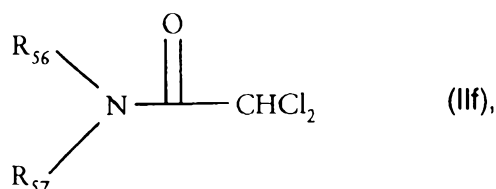
R_j , R_k and R_m independently of one another are hydrogen or C_1 - C_4 alkyl; or

R_k and R_m together form a C_4 - C_6 alkylene bridge, which may be broken by oxygen, NH or $-N(C_1-C_4alkyl)-$;

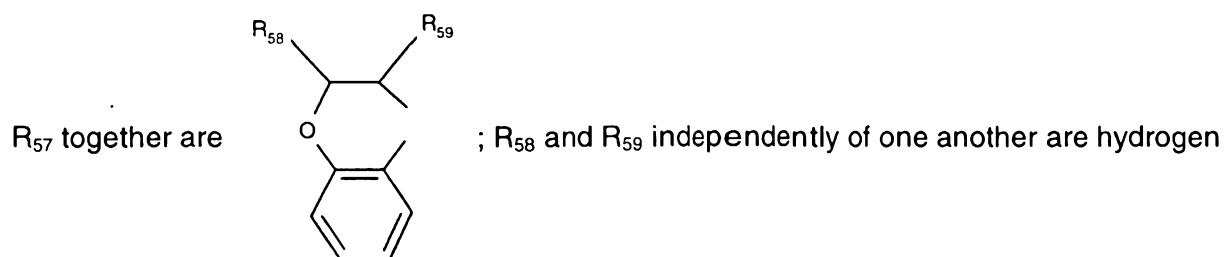
R_n is C_1 - C_4 alkyl, phenyl, or phenyl substituted by halogen, C_1 - C_4 alkyl, methoxy, nitro or trifluoromethyl;

R_{38} is hydrogen, C_1 - C_{10} alkyl, C_1 - C_4 alkoxy- C_1 - C_4 alkyl, C_1 - C_4 alkylthio- C_1 - C_4 alkyl, di- C_1 - C_4 alkylamino- C_1 - C_4 alkyl, halogen- C_1 - C_8 alkyl, C_2 - C_8 alkenyl, halogen- C_2 - C_8 alkenyl, C_3 - C_8 alkinyl, C_3 - C_7 -cycloalkyl, halogen- C_3 - C_7 -cycloalkyl, C_1 - C_8 alkylcarbonyl, allylcarbonyl, C_3 - C_7 -cycloalkylcarbonyl, benzoyl which is unsubstituted or substituted on the phenyl ring up to three times identically or differently by halogen, C_1 - C_4 alkyl, halogen- C_1 - C_4 alkyl, halogen- C_1 - C_4 alkoxy or C_1 - C_4 alkoxy; or furoyl, thienyl; or C_1 - C_4 alkyl substituted by phenyl, halogenphenyl, C_1 - C_4 alkylphenyl, C_1 - C_4 alkoxyphenyl, halogen- C_1 - C_4 alkylphenyl, halogen- C_1 - C_4 alkoxyphenyl, C_1 - C_6 alkoxycarbonyl, C_1 - C_4 alkoxy- C_1 - C_8 alkoxycarbonyl, C_3 - C_8 alkenyloxycarbonyl, C_3 - C_8 alkinyloxycarbonyl, C_1 - C_8 alkylthiocarbonyl, C_3 - C_8 alkenylthiocarbonyl, C_3 - C_8 alkinylthiocarbonyl, carbamoyl, mono- C_1 - C_4 alkylaminocarbonyl, di- C_1 - C_4 alkylaminocarbonyl; or phenylaminocarbonyl, which is unsubstituted or substituted

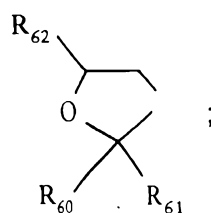
on the phenyl ring up to three times identically or differently by halogen, C₁-C₄alkyl, halogen-C₁-C₄alkyl, halogen-C₁-C₄alkoxy or C₁-C₄alkoxy, or once by cyano or nitro, or dioxolan-2-yl which is unsubstituted or substituted by one or two C₁-C₄alkyl radicals, or dioxan-2-yl, which is unsubstituted or substituted by one or two C₁-C₄alkyl radicals, or C₁-C₄alkyl which is substituted by cyano, nitro, carboxyl or C₁-C₈alkylthio-C₁-C₈alkoxycarbonyl; or a compound of formula II f



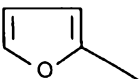
wherein R₅₆ and R₅₇ independently of one another are C₁-C₆alkyl or C₂-C₆alkenyl; or R₅₆ and

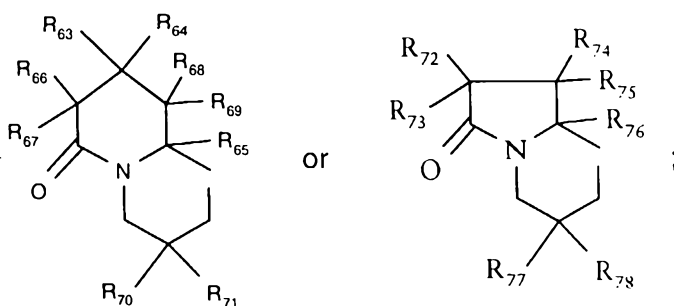


or C₁-C₆alkyl; or R₅₆ and R₅₇ together are

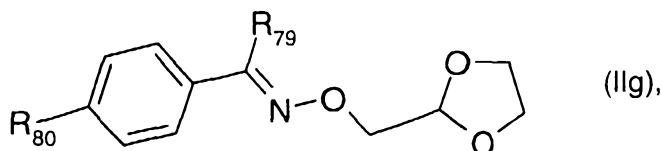


R₆₀ and R₆₁ independently of one another are C₁-C₄alkyl, or R₆₀ and R₆₁ together are -(CH₂)₅- ;

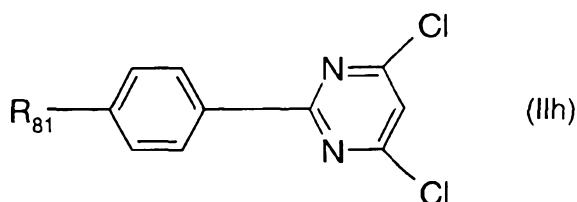
R₆₂ is hydrogen, C₁-C₄alkyl or  , or R₅₆ and R₅₇ together are



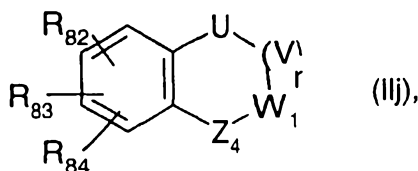
R_{63} , R_{64} , R_{65} , R_{66} , R_{67} , R_{68} , R_{69} , R_{70} , R_{71} , R_{72} , R_{73} , R_{74} , R_{75} , R_{76} , R_{77} and R_{78} independently of one another are hydrogen or C_1 - C_4 alkyl; or a compound of formula IIg



wherein R_{79} is cyano or trifluoromethyl and R_{80} is hydrogen or chlorine, or a compound of formula IIh



wherein R_{81} is hydrogen or methyl, or of formula IIj



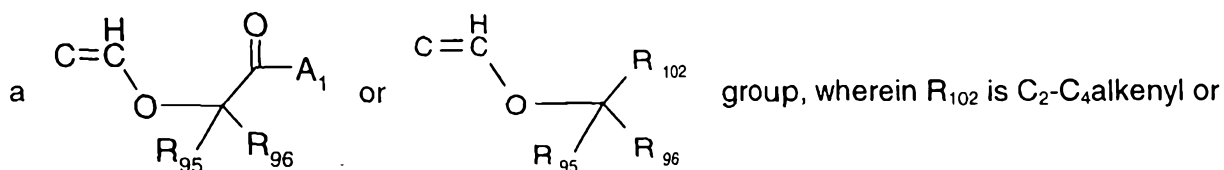
wherein

R_{82} is hydrogen, C_1 - C_4 alkyl, C_1 - C_4 alkyl substituted by C_1 - C_4 alkyl- X_2 - or C_1 - C_4 halogenalkyl- X_2 -, C_1 - C_4 halogenalkyl, nitro, cyano, $-COOR_{85}$, $-NR_{86}R_{87}$, $-SO_2NR_{88}R_{89}$ or $-CONR_{90}R_{91}$;

R_{83} is hydrogen, halogen, C_1 - C_4 alkyl, trifluoromethyl, C_1 - C_4 alkoxy or C_1 - C_4 halogenalkoxy;

R_{84} is hydrogen, halogen or C_1 - C_4 alkyl;

U, V, W_1 and Z_4 are independently of one another oxygen, sulfur, $C(R_{92})R_{93}$, carbonyl, NR_{94} ,

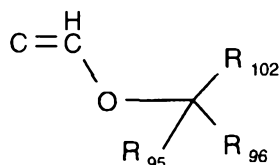
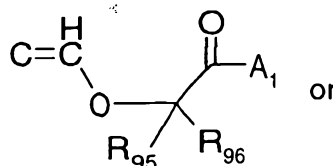


C_2 - C_4 alkynyl; subject to the proviso that



a) at least one of the ring members U, V, W₁ or Z₄ is carbonyl, and one ring member

adjacent to this or these ring members is the



group, this group only occurring once; and

b) two adjacent ring members U and V, V and W₁ and W₁ and Z₄ cannot simultaneously be oxygen;

R₉₅ and R₉₆ independently of one another are hydrogen or C₁-C₈alkyl bedeuten; or

R₉₅ and R₉₆ together form a C₂-C₆alkylene group;

A₁ is R₉₉-Y₁- or -NR₉₇R₉₈;

X₂ is oxygen or -S(O)_s;

Y₁ is oxygen or sulfur;

R₉₉ is hydrogen, C₁-C₈alkyl, C₁-C₈halogenalkyl, C₁-C₄alkoxy-C₁-C₈alkyl, C₃-C₆alkenyloxy-C₁-C₈alkyl or phenyl-C₁-C₈alkyl, wherein the phenyl ring may be substituted by halogen, C₁-C₄-a, trifluoromethyl, methoxy or methyl-S(O)_s-, C₃-C₆alkenyl, C₃-C₆halogenalkenyl, phenyl-C₃-C₆alkenyl, C₃-C₆alkinyl, p-C₃-C₆alkinyl, oxetanyl, furyl or tetrahydrofuryl;

R₈₅ is hydrogen or C₁-C₄alkyl;

R₈₆ is hydrogen, C₁-C₄alkyl or C₁-C₄alkylcarbonyl;

R₈₇ is hydrogen or C₁-C₄alkyl; or

R₈₆ and R₈₇ together form a C₄ or C₅alkylene group;

R₈₈, R₈₉, R₉₀ and R₉₁ independently of one another are hydrogen or C₁-C₄alkyl; or R₈₈ and

R₈₉ or R₉₀ and R₉₁ are independently of one another C₄ or C₅alkylene, in which a carbon atom may be substituted by oxygen or sulfur, or one or two carbon atoms by -NR₁₀₀-;

R₉₂ and R₁₀₀ independently of one another are hydrogen or C₁-C₈alkyl; or

R₉₂ and R₉₃ together are C₂-C₆alkylene;

R₉₄ is hydrogen or C₁-C₈alkyl;

R₉₇ is hydrogen, C₁-C₈alkyl, phenyl, phenyl-C₁-C₈alkyl, wherein the phenyl ring may be substituted by fluorine, chlorine, bromine, nitro, cyano, -OCH₃, C₁-C₄alkyl or CH₃SO₂-, C₁-C₄alkoxy-C₁-C₈alkyl, C₃-C₆alkenyl or C₃-C₆alkinyl;

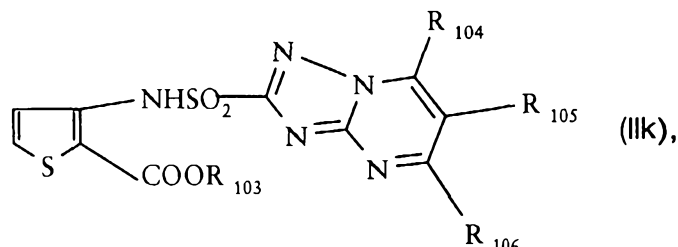
R₉₈ is hydrogen, C₁-C₈alkyl, C₃-C₆alkenyl or C₃-C₆alkinyl; or

R_{97} and R_{98} together are C_4 or C_5 alkylene, in which a carbon atom may be substituted by oxygen or sulfur, or one or two carbon atoms by $-NR_{101}-$;

R_{101} is hydrogen or C_1 - C_4 alkyl;

r is 0 or 1; and

s is 0, 1 or 2, or a compound of formula IIk



wherein R_{103} is hydrogen, C_1 - C_6 alkyl, C_3 - C_6 cycloalkyl, C_3 - C_6 alkenyl or C_3 - C_6 alkinyl; and R_{104} , R_{105} and R_{106} are independently of one another hydrogen, C_1 - C_6 alkyl, C_3 - C_6 cycloalkyl or C_1 - C_6 alkoxy, subject to the proviso that one of the substituents R_{104} , R_{105} or R_{106} is different from hydrogen.

2. A composition according to claim 1, comprising a compound of formula IIa, IIb, IIc, or IId as safener.

3. A method of selectively controlling weeds in crops of cultivated plants, which comprises treating said cultivated plants, the seeds or seedlings or the crop area thereof with a herbicidally effective amount of the compound of formula I and, to antagonise the herbicide, an antidotally effective amount of the safener of formula IIa, IIb, IIc, IId, IIe, IIg, IIh, IIj, or IIk.

4. A method according to claim 3, which comprises treating crops of cultivated plants, or areas intended for cropping with cultivated plants, with 0.001 to 2 kg/ha of a herbicide of formula I according to claim 1 and an amount of 0.001 to 0.5 kg/ha of a safener of formula II as claimed in claim 1.

5. A method according to claim 3 wherein the cultivated plants are cereals or rice.

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6. Herbicidal compositions, methods for their manufacture or methods for selectively controlling weeds in crops of cultivated plants involving them, substantially as hereinbefore described with reference to the Examples.

5 DATED this 16th day of March, 2000

Novartis AG

By DAVIES COLLISON CAVE

10 Patent Attorneys for the Applicant

