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TECHNICAL REPORT No.104

The activity and post-emergence selectivity of some recently developed herbicides: Imazethapyr, BAS 51800H, DPX-L5300, Triasulfuron and DPX-A7881.

BAS 51800H is quinmerac, DPX-A7881 is ethametsulfuron-methyl, DPX-L5300 is tribenuron-methyl

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NOTE

BAS 51800H is quinmerac, DPX-A7881 is ethametsulfuron-methyl, DPX-L5300 is tribenuron-methyl

THE ACTIVITY AND POST-EMERGENCE SELECTIVITY OF SOME RECENTLY DEVELOPED HERBICIDES: IMAZETHAPYR, BAS 51800H, DPX-L5300, TRIASULFURON and DPX-A7881.

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SUMMARY

Five herbicides were tested for post-emergence selectivity on 45 crop and weed species. Wheat, barley, oat and maize were each treated with seed dressings of the safener 1,8-naphthalic anhydride (NA) to investigate possible protection from herbicide injury. The route of entry for BAS 51800H, DPX-L5300, triasulfuron and DPX-A7881 was examined in a separate test on six selected species.

Imazethapyr was active as both pre- and post-emergence applications. A wide range of grass and broad-leaved weed species were controlled, post-emergence, at rates to which pea and lettuce were tolerant. The safener, NA, increased the tolerance of maize.

BAS 51800H controlled only a few weed species, notably Galium aparine and Veronica persica. The cereals, maize, perennial ryegrass, brassicas, sugar beet, onion and dwarf bean were tolerant. When applied post-emergence most of the activity appeared to be via the soil.

DPX-L5300 was active pre-emergence and post-emergence, through the foliage and via the soil. Many important annual broad-leaved weeds were controlled but activity against grass weeds was poor. Wheat and barley were tolerant and the safener, NA, improved the tolerance of maize.

Triasulfuron showed a similar type of activity and spectrum of weed control to DPX-L5300 although it was more active against grass species. Wheat and barley were highly tolerant and the safener NA again improved the tolerance of maize.

DPX-A7881 was active pre-emergence and post-emergence, particularly via the soil. Applied post-emergence, many grass and broad-leaved weeds were controlled, while brassica crops were tolerant, especially oilseed rape. The tolerance of barley and maize was increased by the safener NA.

INTRODUCTION

The pre- and post-emergence activities and selectivities of new herbicides are investigated at L.A.R.S. Weed Research Department on a large number of crop and weed species grown in pots. Although only one crop variety or source of weed species is used, in one soil type, at one depth of sowing and without interspecific competition, the results provide a guide for more detailed investigations where warranted.

BAS 51800H is quinmerac, DPX-A7881 is ethametsulfuron-methyl, DPX-L5300 is tribenuron-methyl

This report gives information on the post-emergence selectivity of five new herbicides. Results of an experiment investigating activity of the herbicides applied separately to shoot, root and seed are also included for BAS 51800H, DPX-L5300, Triasulfuron and DPX-A7881 (Tables 4,6,8 and 10). This provides information on (1) route of entry and (2) type and degree of phytotoxicity. Similar data for imazethapyr (AC 263,499) was reported previously (Richardson and West, 1986a).

METHODS AND MATERIALS

Activity experiment

This was carried out in a glasshouse on six selected species, general techniques were as described by Richardson and Dean, 1974. The four annual species were raised from seeds and the two perennials from rhizome fragments. Plant information, spraying and assessment dates are summarised in Appendix 1. Herbicides were applied by four different methods.

(i) A post-emergence spray to the foliage only, avoiding contact with the soil.

(ii) Post-emergence to the soil only, as a drench avoiding foliar contact.

(iii) Pre-emergence to the soil surface.

(iv) Pre-emergence with thorough incorporation to 5 cm depth before planting.

Post-emergence selectivity experiment

General techniques were those described by Richardson and Parker (1977). Plants were raised in 9 cm diameter plastic pots containing a Mendip silt loam with added Vitax Q4 fertiliser (Table 1). Sowing dates were staggered so that the majority of species would achieve a pre-determined stage (2-4 leaves) by the time of spraying. All species were raised outdoors, although some, especially weed species, were germinated in trays of compost in the greenhouse, then pricked out into pots at a very early stage. Before spraying, each species was thinned to the same number per pot (Appendix 1).

An additional series of wheat, barley, oat and maize were treated with a safener, (NA, 1,8 napththalic anhydride formulated as a wettable powder), to investigate possible protection from herbicide injury. Seeds were dressed by shaking in a polythene bag with NA, at 0.5% of the seed weight.

Herbicides were applied using a laboratory track sprayer fitted with an 80015 Spraying Systems TeeJet operating at 312 l/ha and moving at 0.5 m/s, 45 cm above the stationary plants. There were two replicates for each treatment. Stages of growth at spraying and assessment are summarised in Appendix 2.

After spraying, the plants were protected from rainfall for 24 hours, then watered overhead using a rose connected to a water line to simulate rainfall and wash off excess herbicides residues. The pots were then put outdoors in two randomised blocks per species. Watering the experiment was by natural rainfall, plus additional overhead hand watering, as necessary. Additional slow release fertiliser tablets 'Growtabs' were given to all species two weeks after spraying.

Insecticide and fungicide solutions were applied to individual species as required. The brassicas and Veronica persica were given a soil drench with Cheshunt Compound (ammonium carbamate + copper suphate), at 3.05 g/l, to prevent damping-off disease, on 1 July 86. The cereals were sprayed with Milstem (ethirimol), at 0.9 g/l, to control mildew, on 14 July 86.

Assessments and processing of results

Results were assessed and processed as in previous work (Richardson and Dean, 1974). Survivors were counted and scored for vigour on a 0 - 7 scale, where 0 = dead and 7 = as untreated control. Pairs of histograms are presented for each treatment, the upper representing plant survival and the lower, vigour; both calculated as percentages of untreated controls. Each 'x' represents a 5% increment in the post-emergence experiment but 7% in the activity experiments. A '+' indicates a value in excess of 100%; 'R' indicates a result based on one replicate only and 'M' represents a missing treatment.

A table of observed selectivities, using the criteria specified, is presented for each herbicide, along with comments to highlight important results.

Table 1. Soil and environment conditions

	Experiment type	
	Activity	Post-emergence selectivity
Dates of spraying	14 Nov 86	11 Jul 86 and 22 Jul 86
Main assessment completed	5 Jan 86	18 Aug 86
Soil - Mendip silt loam	(+ 15% v/v sand)	
Particle size analysis	%	%
coarse sand (600µm-2mm)	2.1	1.8
medium sand (212µm-600µm)	41.4	3.3
fine sand (63µm-212µm)	13.8	6.5
silt (2µm-63µm)	26.6	58.0
clay (< 2µm)	16.1	30.4
Organic matter (%)	4.6	5.4
pH (in water: 1:2 soil: water ratio)	6.0	6.0
Fertiliser addition		
Vitax Q4	3.3g/litre	3.3g/litre
Temperature (°C)	Glasshouse	Outdoors
Mean	15	16
Maximum	20	30
Minimum	10	6
Relative humidity (%)		
Mean	60	77
Maximum	85	98
Minimum	35	50

Imazethapyr

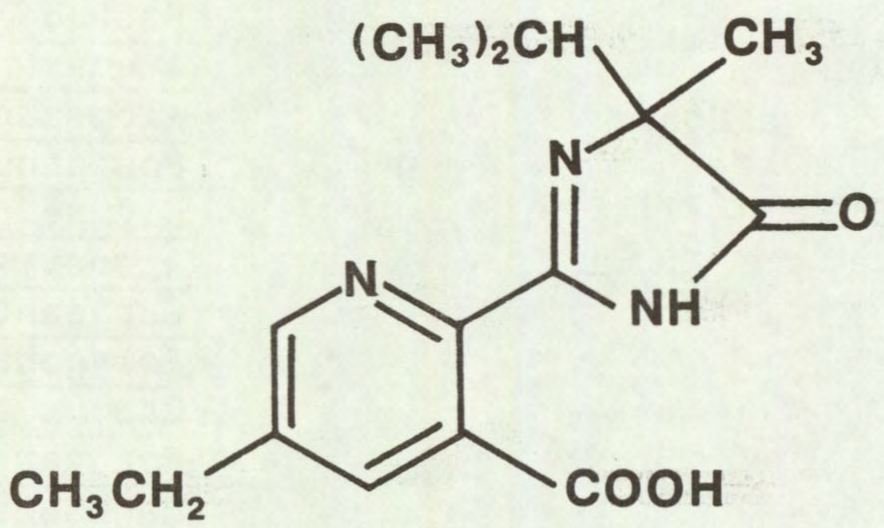
Code numbers AC 263499
CL 263,499

Trade name Pursuit
Pivot

Common name Imazethapyr (approved-BSI, ISO and ANSI)

Chemical name (RS)-5-ethyl-2-(4-isopropyl-4-methyl-5-oxo-2-imidazolin-2-yl)nicotinic acid.

Structure



Source Cyanamid International Limited
Fareham Road
Gosport
Hants, PO13 OAS, UK.

Information available and suggested uses from originating company

Annual grass and broad-leaved weed control in soyabeans, peas, beans, peanuts, alfalfa, clover, chickpeas and lentils, pre- and/or post-emergence at doses ranging from 0.05 to 0.15 kg a.i./ha.

Formulation used Aqueous concentrate 24% a.i.

Results

Full results are given in the histograms on pages 8 - 11 and potential selectivities in Table 2.

Table 2. Crop tolerance and weed sensitivity to imazethapyr sprayed post-emergence

RATE (kg a.i./ha)	Tolerant Crops[a]	Sensitive Weeds[b]
0.4	None	Bromus sterilis Matricaria perforata Senecio vulgaris Lamium purpureum Chenopodium album Rumex obtusifolius plus species listed below
0.1	pea lettuce Maize + safener	Festuca rubra Avena fatua Alopecurus myosuroides Poa annua Elymus repens Agrostis stolonifera Chrysanthemum segetum Polygonum lapathifolium Galium aparine Papaver rhoeas Raphanus ruphanistrum Cirsium arvense Convolvulus arvensis Solanum nigrum plus species listed below
0.025	species listed above plus dwarf bean white clover	Poa trivialis Beta vulgaris Sinapis arvensis Stellaria media Geranium dissectum

[a] Vigour reduced by less than 15%

[b] number or vigour reduced by 70% or more

Comments on results

Activity

The activity, persistence, pre-emergence selectivity and symptoms produced on susceptible species were described in a previous report (Richardson and West 1986a). The most common symptoms were severe growth inhibition of main shoots followed by yellowing and necrosis. Sub-lethal doses often stimulated axillary shoots or tillering.

Post-emergence selectivity

A wide spectrum of broad-leaved and grass weeds were controlled or severely suppressed. Five species, including Stellaria media and Sinapis arvensis were sensitive to 0.025 kg/ha. At 0.1 kg/ha a further eight broad-leaved and six grass species were controlled and several others, including Matricaria perforata and Bromus sterilis, were severely affected. Viola arvensis and Veronica persica were the most resistant weed species.

No crops tolerated 0.4 kg/ha, although peas were only slightly affected. Pea and lettuce tolerated 0.1 kg/ha, while dwarf bean and white clover tolerated 0.025 kg/ha. Maize, with the safener tolerated 0.1 kg/ha, whereas without the safener it was considerably damaged at 0.025 kg/ha.

The brassicas, sugar beet, carrot and onion were sensitive to the lowest dose.

As with the pre-emergence activity (Richardson and West, 1986a) the post-emergence weed control was impressive but the crop tolerance limited.

Pea was the most tolerant crop at doses which suppressed several weeds that may be a problem in this crop, i.e. Matricaria spp., Solanum nigrum, Cirsium arvense and Elymus repens. Surprisingly, lettuce tolerated doses which suppressed composite weeds including Chrysanthemum segetum, Senecio vulgaris, Matricaria perforata and Cirsium arvense. Both these selectivities warrant further investigation. The protection of maize by NA to post-emergence treatments of this herbicide (also found pre-emergence) deserves further studies.

xxxxx = number of plants
xxxxx = vigour
(20 x's = 100% of untreated controls)

Post-emergence selectivity experiment

Imazethapyr

SPECIES	0.025 kg/ha		0.100 kg/ha		0.400 kg/ha	
WHEAT	100	xxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxxx	0	
	64	xxxxxxxxxxxxx	29	xxxxxx	0	
WHEAT+S	100	xxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxxx	10	xx
	71	xxxxxxxxxxxxxx	43	xxxxxxxxx	7	x
BARLEY	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	0	
	71	xxxxxxxxxxxxxx	57	xxxxxxxxxx	0	
BARLEY+S	100	xxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxx	0	
	71	xxxxxxxxxxxxxx	29	xxxxxx	0	
OAT	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	0	
	64	xxxxxxxxxxxxx	50	xxxxxxxxxx	0	
OAT+S	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	20	xxxx
	71	xxxxxxxxxxxxxx	57	xxxxxxxxxx	14	xxx
PER RYGR	80	xxxxxxxxxxxxxxxx	0		0	
	64	xxxxxxxxxxxxx	0		0	
ONION	70	xxxxxxxxxxxxxx	20	xxxx	0	
	36	xxxxxxx	21	xxxx	0	
DWF BEAN	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	86	xxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxx	50	xxxxxxxxxx
FLD BEAN	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	79	xxxxxxxxxxxxxxx	57	xxxxxxxxxx	43	xxxxxxxxx
PEA	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxx
W CLOVER	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	86	xxxxxxxxxxxxxxxx	64	xxxxxxxxxxxx	50	xxxxxxxxxx
RAPE	70	xxxxxxxxxxxxxx	10	xx	0	
	29	xxxxxx	7	x	0	

Imazethapyr

SPECIES	0.025 kg/ha		0.100 kg/ha		0.400 kg/ha	
KALE	100	xxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxxx	70	xxxxxxxxxxxxxx
	29	xxxxxx	14	xxx	14	xxx
CABBAGE	100	xxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxxx
	14	xxx	14	xxx	14	xxx
CARROT	40	xxxxxxxx	10	xx	20	xxxx
	43	xxxxxxxxx	14	xxx	7	x
PARSNIP	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	57	xxxxxxxxxxx	36	xxxxxxx	14	xxx
LETTUCE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx	50	xxxxxxxxxx
SUG BEET	30	xxxxxx	0		0	
	14	xxx	0		0	
BETA VUL	10	xx	0		0	
	7	x	0		0	
BROM STE	100	xxxxxxxxxxxxxxxxxxx	89	xxxxxxxxxxxxxxxxx	44	xxxxxxxxx
	64	xxxxxxxxxxxxx	43	xxxxxxxxx	29	xxxxxx
FEST RUB	100	xxxxxxxxxxxxxxxxxxx	40	xxxxxxxx	0	
	57	xxxxxxxxxxx	29	xxxxxx	0	
AVE FATU	90	xxxxxxxxxxxxxxxxxx	20	xxxx	0	
	43	xxxxxxxxx	14	xxx	0	
ALO MYOS	100	xxxxxxxxxxxxxxxxxxx	20	xxxx	0	
	64	xxxxxxxxxxxxx	21	xxxx	0	
POA ANN	83	xxxxxxxxxxxxxxxx	25	xxxxx	0	
	64	xxxxxxxxxxxxx	14	xxx	0	
POA TRIV	8	xx	0		0	
	14	xxx	0		0	

Imazethapyr

SPECIES	0.025 kg/ha		0.100 kg/ha		0.400 kg/ha	
SIN ARV	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	29	xxxxxx	29	xxxxxx	14	xxx
RAPH RAP	100	xxxxxxxxxxxxxxxxxxx	0		0	
	57	xxxxxxxxxxx	0		0	
CHRY SEG	62	xxxxxxxxxxxx	0		0	
	36	xxxxxxx	0		0	
MAT PERF	100	xxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxx	50	xxxxxxxxxx
	64	xxxxxxxxxxxxx	36	xxxxxxx	7	x
SEN VULG	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	20	xxxx
	64	xxxxxxxxxxxxx	43	xxxxxxxxx	14	xxx
POL LAPA	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	70	xxxxxxxxxxxxxx
	43	xxxxxxxxx	29	xxxxxx	14	xxx
LAM PUR	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	64	xxxxxxxxxxxxx	43	xxxxxxxxx	14	xxx
GAL APAR	90	xxxxxxxxxxxxxxxxx	20	xxxx	0	
	43	xxxxxxxxx	7	x	0	
CHEN ALB	100	xxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	43	xxxxxxxxx	36	xxxxxxx	21	xxxx
STEL MED	0		0		0	
	0		0		0	
SPER ARV	100	xxxxxxxxxxxxxxxxxxx	80	xxxxxxxxxxxxxxx	0	
	50	xxxxxxxxxx	43	xxxxxxxxx	0	
VER PERS	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	86	xxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxx	50	xxxxxxxxxx
VI ARVE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx

Imazethapyr

SPECIES	0.025 kg/ha		0.100 kg/ha		0.400 kg/ha	
GER DISS	100	xxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxx	60	xxxxxxxxxxxx
	29	xxxxxx	14	xxx	14	xxx
PAPA RHO	80	xxxxxxxxxxxxxxx	10	xx	0	
	57	xxxxxxxxxxx	14	xxx	0	
RUM OBTU	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	12	xx
	79	xxxxxxxxxxxxxxx	36	xxxxxxx	14	xxx
EL REPEN	100	xxxxxxxxxxxxxxxxxxx	10	xx	20	xxxx
	57	xxxxxxxxxxx	21	xxxx	7	x
AG STOLO	75	xxxxxxxxxxxxxxx	12	xx	0	
	43	xxxxxxxxx	14	xxx	0	
CIRS ARV	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	20	xxxx
	64	xxxxxxxxxxxxx	29	xxxxxx	7	x
CONV ARV	100	xxxxxxxxxxxxxxxxxxx	29	xxxxxx	0	
	43	xxxxxxxxx	7	x	0	
MAIZE+S	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	62	xxxxxxxxxxx
	93	xxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx	64	xxxxxxxxxxxx
MAIZE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	57	xxxxxxxxxxx	29	xxxxxx	14	xxx
SOL NIG	80	xxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxx	40	xxxxxxxx
	36	xxxxxxx	21	xxxx	14	xxx

BAS 51800H is quinmerac, DPX-A7881 is ethametsulfuron-methyl, DPX-L5300 is tribenuron-methyl

BAS 51800H

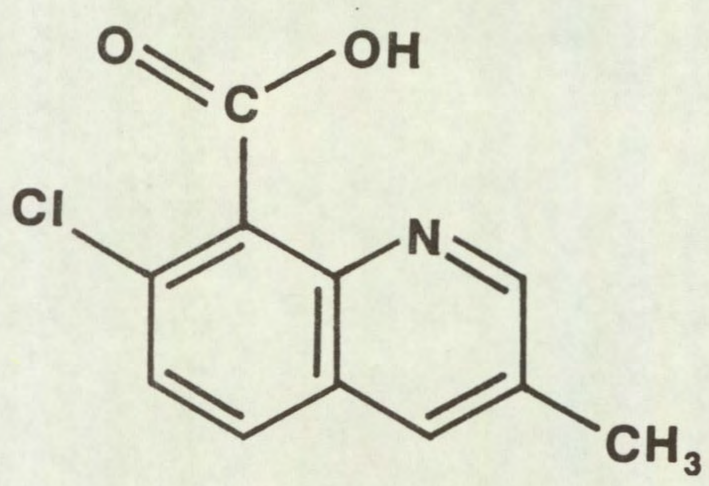
Code number BAS 51800H

Trade name None at time of publication

Common name Quinmerac (Proposed BSI, ISO)

Chemical name 7-chloro-3-methylquinoline-8-carboxylic acid

Structure



Source

BASF (UK) Ltd
Agricultural Division
Lady Lane
Hadleigh
Suffolk, IP7 6BQ, UK.

Information available and suggested uses from originating company

For control of Galium aparine, Veronica spp. and Lamium spp. pre- and post-emergence in cereals, oilseed rape and sugar beet at rates from 0.5 - 2.0 kg a.i./ha.

Formulation used Wettable powder 50% a.i.

Results

Full results are given in the histograms on pages 15 - 19 and potential selectivities in Table 3.

BAS 51800H is quinmerac, DPX-A7881 is ethametsulfuron-methyl, DPX-L5300 is tribenuron-methyl

Table 3. Crop tolerance and weed sensitivity to post-emergence treatments of BAS 51800H

RATE (kg a.i./ha)	Tolerant Crops[a]	Sensitive Weeds[b]
2.0	Wheat +/- safener Barley +/- safener Oat +/- safener Maize +/- safener Perennial ryegrass Oilseed rape Kale Sugar beet Onion Dwarf bean	*Lamium purpureum* *Papaver rhoeas* *Convolvulus arvensis* plus species listed below
0.5	species listed above plus Cabbage Lettuce White clover	*Galium aparine* *Veronica persica*
0.125	species listed above plus Field bean Pea Carrot	No weeds susceptible

[a] Vigour reduced by less than 15%

[b] number or vigour reduced by 70% or more

Comments on results

Activity

Generally, the foliar treatments were inactive on the broad-leaved species, apart from slight suppression of dwarf bean and kale at 4.0 kg/ha. However, the soil drench treatments caused considerable damage to dwarf bean at 1.0 kg/ha and slight suppression of kale and *Polygonum amphibium* at 4.0 kg/ha; pre-emergence treatments produced a similar response to the soil drenches. (Table 4)

There were no effects against the grass species tested post-emergence and only slight suppression of perennial ryegrass and *Avena fatua* from the pre-emergence treatment at 4.0 kg/ha.

Symptoms on susceptible species

The foliar treatment on dwarf bean caused epinasty of stems, while soil applications gave considerable stunting and inhibition of growing points. Symptoms on kale were an overall reduction in size and vigour of plants.

BAS 51800H is quinmerac, DPX-A7881 is ethametsulfuron-methyl, DPX-L5300 is tribenuron-methyl

Susceptible species in the post-emergence test e.g. Galium aparine and Veronica persica, showed epinasty of sprayed leaves followed by inhibition of growing points and plant necrosis. These symptoms are similar to those produced by (aryloxy) alkanoic acids, i.e. 2,4-D, exhibiting a characteristic growth regulatory/hormone type of activity. With Papaver rhoeas some leaves formed after spraying did not separate completely, being joined along one side of leaf margins.

Post-emergence selectivity

Galium aparine and Veronica persica were controlled at 0.5 kg/ha and Lamium purpureum, Papaver rhoeas and Convolvulus arvensis at 2.0 kg/ha. These were the only weed species sensitive to this herbicide.

The cereals, perennial ryegrass, brassicas, sugar beet, dwarf bean and onion all showed very good tolerance, whereas field bean, carrot and parsnip were sensitive to 0.5 kg/ha.

Although the weed control spectrum is narrow, crop tolerance is good. This herbicide should be useful in mixtures where weed problems include Galium or Veronica spp. Recent work (Nuyken et al., 1985) has shown BAS 51800H to be a useful partner to metazachlor, chlorotoluron, isoproturon or chloridazon in various weed/crop situations.

The activity shown against the perennial Convolvulus arvensis is worth further investigation.

BAS 51800H is quinmerac, DPX-A7881 is ethametsulfuron-methyl, DPX-L5300 is tribenuron-methyl

Table 4

ACTIVITY EXPERIMENT

BAS 51800H

		0.25 kg a.i./ha	1.0 kg a.i./ha	4.0 kg a.i./ha
DWARF BEAN	F	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxx
	S	xxxxxxxxxxxxxx xxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxx	xxxxxxxxxxxxxx xxxxxx
	P	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxx
	I	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxxxxx+ xxxxxx
KALE	F	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxx
	S	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxx
	P	xxxxxxxxxxxxxx+ xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx+ xxxxxxxxx
	I	xxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx+ xxxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxx
POLYGONUM AMPHIBIUM	F	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx
	S	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxx
	P	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxx
	I	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx+ xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxx
PERENNIAL RYEGRASS	F	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx
	S	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx
	P	xxxxxxxxxxxxxx+ xxxxxxxxxxxxxx	xxxxxxxxxxxxxx+ xxxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxx
	I	xxxxxxxxxxxxxx+ xxxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxx+ xxxxxxxxxx
AVENA FATUA	F	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx
	S	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx
	P	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx+ xxxxxxxxxxxxxx	xxxxxxxxxxxxxx+ xxxxxxxxxxxx
	I	xxxxxxxxxxxxxx+ xxxxxxxxxxxxxx	xxxxxxxxxxxxxx+ xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxx
ELYMUS REPENS	F	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx
	S	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx
	P	xxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx
	I	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx

Key F = post-emergence, foliar application
S = post-emergence, soil drench
P = pre-emergence, surface film
I = pre-planting, incorporated

xxxxxxxxxxxxxx = number of plants
xxxxxxxxxxxxxx = vigour
(14 x's = 100% of untreated control, + = >100%)

xxxxx = number of plants
xxxxx = vigour
(20 x's = 100% of untreated controls)

Post-emergence selectivity experiment

BAS 51800H

SPECIES	0.125 kg/ha		0.500 kg/ha		2.000 kg/ha	
WHEAT	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxx
WHEAT+S	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx
BARLEY	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
BARLEY+S	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
OAT	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
OAT+S	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
PER RYGR	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
ONION	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
DWF BEAN	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx
FLD BEAN	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxx
	93	xxxxxxxxxxxxxxxxxx	36	xxxxxxx	29	xxxxxx
PEA	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxx	57	xxxxxxxxxx
W CLOVER	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx	36	xxxxxxx
RAPE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx

BAS 51800H is quinmerac, DPX-A7881 is ethametsulfuron-methyl, DPX-L5300 is tribenuron-methyl

BAS 51800H

SPECIES	0.125 kg/ha		0.500 kg/ha		2.000 kg/ha	
KALE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
CABBAGE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxx
CARROT	100	xxxxxxxxxxxxxxxxxxx	80	xxxxxxxxxxxxxxx	70	xxxxxxxxxxxxx
	93	xxxxxxxxxxxxxxxxxx	36	xxxxxxx	21	xxxx
PARSNIP	100	xxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	71	xxxxxxxxxxxxxx	36	xxxxxxx	14	xxx
LETTUCE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxx	43	xxxxxxxxx
SUG BEET	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
BETA VUL	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
BROM STE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
FEST RUB	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
AVE FATU	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
ALO MYOS	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
POA ANN	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
POA TRIV	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx

BAS 51800H is quinmerac, DPX-A7881 is ethametsulfuron-methyl, DPX-L5300 is tribenuron-methyl

BAS 51800H

SPECIES	0.125 kg/ha		0.500 kg/ha		2.000 kg/ha	
SIN ARV	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
RAPH RAP	100	xxxxxxxxxxxxxxxxxxx	94	xxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx
CHRY SEG	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
MAT PERF	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxx
SEN VULG	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
POL LAPA	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
LAM PUR	100	xxxxxxxxxxxxxxxxxxx	80	xxxxxxxxxxxxxxx	40	xxxxxxxx
	79	xxxxxxxxxxxxxxx	50	xxxxxxxxx	14	xxx
GAL APAR	90	xxxxxxxxxxxxxxxxx	60	xxxxxxxxxxx	0	
	43	xxxxxxxxx	21	xxxx	0	
CHEN ALB	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
STEL MED	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
SPER ARV	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
VER PERS	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	67	xxxxxxxxxxxx
	71	xxxxxxxxxxxxx	21	xxxx	14	xxx
VI ARVE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxx

BAS 51800H is quinmerac, DPX-A7881 is ethametsulfuron-methyl, DPX-L5300 is tribenuron-methyl

BAS 51800H

SPECIES	0.125 kg/ha		0.500 kg/ha		2.000 kg/ha	
GER DISS	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxx
PAPA RHO	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	0	
	79	xxxxxxxxxxxxxxx	43	xxxxxxxxx	0	
RUM OBTU	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
EL REPEN	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
AG STOLO	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
CIRS ARV	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxx
CONV ARV	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx	14	xxx
	100	xxxxxxxxxxxxxxxxxxx	64	xxxxxxxxxxxx	21	xxxx
MAIZE+S	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
MAIZE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
SOL NIG	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxx	57	xxxxxxxxxx

BAS 51800H is quinmerac, DPX-A7881 is ethametsulfuron-methyl, DPX-L5300 is tribenuron-methyl

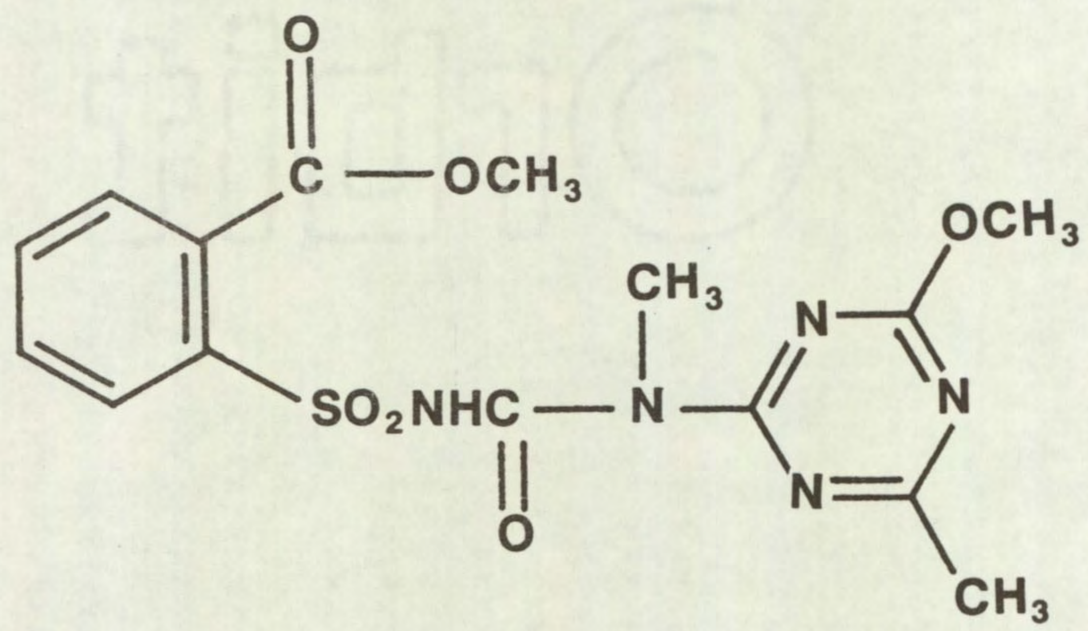
DPX-L5300

Code number DPX-L5300 Trade name/s Granstar Express

Common name (None at time of publication)

Chemical name Methyl 2-{[4-methoxy-6-methyl-1,3,5,-triazin-2-yl(methyl)cabamoyl]sulphamoyl}benzoate

Structure



Source DuPont (UK) Ltd
Wedgwood Way
Stevenage
Herts, SG1 4QN, UK.

Information available and suggested uses

For control of a wide spectrum of broad-leaved weeds, including the perennial Cirsium arvense, applied post-emergence in cereals at rates of 10 - 30 a.i./ha.

Formulation used Dry flowable 75% a.i.

Results

Full results are given in the histograms on pages 23 - 27 and potential selectivities in Table 5.

BAS 51800H is quinmerac, DPX-A7881 is ethametsulfuron-methyl, DPX-L5300 is tribenuron-methyl

Table 5. Crop tolerance and weed sensitivity to post-emergence treatments of DPX-L5300

RATE (kg a.i./ha)	Tolerant Crops[a]	Sensitive Weeds[b]
0.08	Wheat +/- safener Barley +/- safener Maize + safener	Poa trivialis Raphanus raphanistrum Geranium dissectum Lamium purpureum Viola arvensis Chrysanthemum segetum Rumex obtusifolius Solanum nigrum plus species listed below
0.02	species listed above plus Maize Oat +/- safener	Polygonum lapathifolium Veronica persica Cirsium arvense plus species listed below
0.005	species listed above plus Perennial ryegrass Pea	Sinapis arvensis Spergula arvensis Matricaria perforata Senecio vulgaris Beta vulgaris Papaver rhoeas Stellaria media

[a] Vigour reduced by less than 15%

[b] Number or vigour reduced by 70% or more

Comments on results

Activity

The foliar-only treatment was more active than the soil drench against the broad-leaved species; kale and Polygonum amphibium being more sensitive than dwarf bean. However, against perennial ryegrass the soil drenches were more damaging than the foliar only application. Elymus repens and Avena fatua were unaffected by the foliar treatment and only slighly affected by the post-emergence soil drench and pre-emergence applications at the highest dose.

Pre-emergence treatments caused appreciable damage to the small seeded annuals, kale and perennial ryegrass, at 0.02 kg/ha, but only moderately suppressed Polygonum amphibium; dwarf bean appeared somewhat tolerant.

BAS 51800H is quinmerac, DPX-A7881 is ethametsulfuron-methyl, DPX-L5300 is tribenuron-methyl

Symptoms on susceptible species

Symptoms were similar to those reported previously for other sulphonyl-urea herbicides i.e. chlorsulfuron, metsulfuron-methyl and thiameturon-methyl (Richardson, West and Parker, 1980; Richardson, West and White, 1984 and Richardson and West, 1986b). On broad-leaved species these were seen as a rapid inhibition of growth followed by general yellowing/chlorosis or in some instances i.e. Rumex obtusifolius prominent reddening of leaves. At low doses, new leaves were often deformed, 'strap-like' and with interveinal chlorosis and little stem elongation between leaves. In the activity experiment, pre-emergence treatments did not inhibit germination of sensitive species, i.e. kale, but often growth was inhibited at the cotyledon leaf stage.

Grasses were more tolerant than broad-leaved species, although in some small seeded annuals the growth of the main shoot was inhibited, leading usually to increased tillering. The tillers were often stunted and yellowed initially but most eventually recovered well.

Post-emergence selectivity

A wide range of broad-leaved weeds were controlled, seven of them at the lowest dose of 0.005 kg/ha. Species with notable susceptibility included Stellaria media and Matricaria perforata at 0.005 kg/ha and Veronica persica and the perennial Cirsium arvense at 0.02 kg/ha. At the highest dose of 0.08 kg/ha several other broad-leaved weeds and one grass, Poa trivialis, were controlled. Those weed species tolerating the high dose were Galium aparine, Convolvulus arvensis and all other grass species tested.

Wheat, barley and maize + NA were tolerant to 0.08 kg/ha while maize without safener and oat + NA tolerated 0.02 kg/ha. Pea and perennial ryegrass tolerated 0.005 kg/ha.

The most sensitive crops were sugar beet, field bean, lettuce and the brassicas, all of which were severely affected at 0.005 kg/ha.

Generally, DPX-L5300 is similar to other sulphonyl-urea herbicides with regard to post-emergence activity and selectivity. However, one important difference with this herbicide is its very short soil persistence (Ferguson et al., 1985, West, unpublished results), which should provide more flexibility when considering crop rotations. For complete weed control in cereals, mixtures or sequences with other herbicides would be required to control problem broad-leaved weeds, e.g. Galium spp. and grass weeds.

The tolerance of pea at a dose controlling some problem weeds, i.e. Matricaria spp. and volunteer oilseed rape, warrants further investigation.

The protection of maize and oat by NA against the effects of DPX L5300 corresponds to similar results with other sulphonyl-ureas e.g. chlorsulfuron (DPX 4189), (Richardson, West and Parker, 1980). Further studies of this effect maybe worthwhile.

Activity against the perennial species Rumex obtusifolius and Cirsium arvense and partial selectivity of perennial ryegrass and Festuca rubra is also of interest. Further work is needed against more established plants with this herbicide, either alone or perhaps in mixtures, with a view to possible uses in grassland.

BAS 51800H is quinmerac, DPX-A7881 is ethametsulfuron-methyl, DPX-L5300 is tribenuron-methyl

Table 6

ACTIVITY EXPERIMENT

DPX-L5300

		0.005 kg a.i./ha	0.02 kg a.i./ha	0.08 kg a.i./ha
DWARF BEAN	F	xxxxxxxxxxxxxx xxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxx	xxxxxxxxxxxxxx xxxxxx
	S	xxxxxxxxxxxxxx xxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxx	xxxxxxxxxxxxxx xxxxxxx
	P	xxxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxxxxxx+ xxxxxxxxxx	xxxxxxxxxxxxxx+ xxxxxxxxxx
	I	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxx xxxxxxxxxxxx	xxxxxxxxxx xxxxxxxxxx
KALE	F	xxxxxxxxxxxxxx xxxxx	xxxxxxxxxxxxxx xxxx	xxxxxxxxxxxxxx xxxx
	S	xxxxxxxxxxxxxx xxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxx	xxxxxxxxxxxxxx xxxx
	P	xxxxxxxxxxxxxx+ xxxxxxxxx	xxxxxxxxxxxxxx+ xxxxxxxx	xxxxxxxxxx xxxx
	I	xxxxxxxxxxxxx+ xxxxxxxxxx	xxxxxxxxxxxx xxxxxxxxx	xxxxxxxxxxxxx xxxxx
POLYGONUM AMPHIBIUM	F	xxxxxxxxxxxxxx xxxxx	xxxxxxxxxxxxx xxxx	xxxxxxxxxxxxx xxx
	S	xxxxxxxxxxxxxx xxxxxxxxxx	xxxxxxxxxxxxx xxxxxx	xxxxxxxxxxxxx xxxx
	P	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxx	xxxxxxxxxxxxx xxxxx
	I	xxxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxx	xxxxxxxxxxxxx+ xxxxxx
PERENNIAL RYEGRASS	F	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxx	xxxxxxxxxxxxx xxxxxxx
	S	xxxxxxxxxxxxx xxxxxxxxxx	xxxxxxxxxxxxx xxxxx	xxxxxxxxx xxx
	P	xxxxxxxxxx xxxxxxxxx	xxxxxxxxx xxxx	xxxxxxxx xxxx
	I	xxxxxxxxxxxxx xxxxxxxxxx	xxxxxxxxxxxxx+ xxxxxxxxx	xxxxxxxxxxx xxxxxx
AVENA FATUA	F	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx
	S	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxx xxxxxxxxxx
	P	xxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxxx xxxxxxxxxxxxx
	I	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx+ xxxxxxxxxxxx
ELYMUS REPENS	F	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxx
	S	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxx
	P	xxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxx
	I	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxx

Key F = post-emergence, foliar application
S = post-emergence, soil drench
P = pre-emergence, surface film
I = pre-planting, incorporated

xxxxxxxxxxxxxx = number of plants
xxxxxxxxxxxxxx = vigour
(14 x's = 100% of untreated control, + = >100%)

BAS 51800H is quinmerac, DPX-A7881 is ethametsulfuron-methyl, DPX-L5300 is tribenuron-methyl

xxxxx = number of plants
xxxxx = vigour
(20 x's = 100% of untreated controls)

Post-emergence selectivity experiment

DPX-L5300

SPECIES	0.005 kg/ha		0.020 kg/ha		0.080 kg/ha	
WHEAT	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx
WHEAT+S	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx
BARLEY	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
BARLEY+S	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx
OAT	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxx
OAT+S	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxx
PER RYGR	100	xxxxxxxxxxxxxxxxxxx	70	xxxxxxxxxxxxx	70	xxxxxxxxxxxxx
	86	xxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxx	50	xxxxxxxxx
ONION	100	xxxxxxxxxxxxxxxxxxx	70	xxxxxxxxxxxxx	10	xx
	71	xxxxxxxxxxxxx	43	xxxxxxxxx	14	xxx
DWF BEAN	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	64	xxxxxxxxxxxx	57	xxxxxxxxxx	43	xxxxxxxxx
FLD BEAN	100	xxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxx	0	
	29	xxxxxx	14	xxx	0	
PEA	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxx	50	xxxxxxxxxx
W CLOVER	100	xxxxxxxxxxxxxxxxxxx	80	xxxxxxxxxxxxxxx	0	
	64	xxxxxxxxxxxx	36	xxxxxxx	0	
RAPE	90	xxxxxxxxxxxxxxxxx	0		0	
	43	xxxxxxxxx	0		0	

BAS 51800H is quinmerac, DPX-A7881 is ethametsulfuron-methyl, DPX-L5300 is tribenuron-methyl

DPX-L5300

SPECIES	0.005 kg/ha		0.020 kg/ha		0.080 kg/ha	
KALE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	80	xxxxxxxxxxxxxxx
	57	xxxxxxxxxxx	43	xxxxxxxxx	21	xxxx
CABBAGE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	70	xxxxxxxxxxxxx
	50	xxxxxxxxxx	29	xxxxxx	14	xxx
CARROT	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	10	xx
	71	xxxxxxxxxxxxxx	50	xxxxxxxxxx	7	x
PARSNIP	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	71	xxxxxxxxxxxxxx	50	xxxxxxxxxx	36	xxxxxxx
LETTUCE	0		0		0	
	0		0		0	
SUG BEET	10	xx	0		0	
	14	xxx	0		0	
BETA VUL	30	xxxxxx	0		0	
	14	xxx	0		0	
BROM STE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
FEST RUB	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx	50	xxxxxxxxxx
AVE FATU	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxx
ALO MYOS	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxx	50	xxxxxxxxxx
POA ANN	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx
POA TRIV	100	xxxxxxxxxxxxxxxxxxx	42	xxxxxxxx	0	
	79	xxxxxxxxxxxxxxx	36	xxxxxxx	0	

DPX-L5300

SPECIES	0.005 kg/ha		0.020 kg/ha		0.080 kg/ha	
SIN ARV	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxx
	29	xxxxxx	14	xxx	14	xxx
RAPH RAP	100	xxxxxxxxxxxxxxxxxxx	82	xxxxxxxxxxxxxxx	0	
	71	xxxxxxxxxxxxxx	50	xxxxxxxxxx	0	
CHRY SEG	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxx
	50	xxxxxxxxxx	43	xxxxxxxxx	14	xxx
MAT PERF	70	xxxxxxxxxxxxx	10	xx	0	
	14	xxx	7	x	0	
SEN VULG	0		0		0	
	0		0		0	
POL LAPA	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxx
	43	xxxxxxxxx	21	xxxx	14	xxx
LAM PUR	100	xxxxxxxxxxxxxxxxxxx	80	xxxxxxxxxxxxxxx	40	xxxxxxxx
	57	xxxxxxxxxxx	43	xxxxxxxxx	7	x
GAL APAR	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	70	xxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	64	xxxxxxxxxxxx
CHEN ALB	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	71	xxxxxxxxxxxxx	36	xxxxxx	21	xxxx
STEL MED	30	xxxxxx	0		0	
	14	xxx	0		0	
SPER ARV	20	xxxx	0		0	
	7	x	0		0	
VER PERS	100	xxxxxxxxxxxxxxxxxxx	0		0	
	86	xxxxxxxxxxxxxxxx	0		0	
VI ARVE	100	xxxxxxxxxxxxxxxxxxx	80	xxxxxxxxxxxxxxx	0	
	64	xxxxxxxxxxxxx	43	xxxxxxxxx	0	

DPX-L5300

SPECIES	0.005 kg/ha		0.020 kg/ha		0.080 kg/ha	
GER DISS	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	71	xxxxxxxxxxxxx	43	xxxxxxxxx	21	xxxx
PAPA RHO	20	xxxx	0		0	
	21	xxxx	0		0	
RUM OBTU	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	25	xxxxx
	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx	7	x
EL REPEN	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxx
AG STOLO	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	64	xxxxxxxxxxxx
CIRS ARV	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	20	xxxx
	36	xxxxxxx	21	xxxx	7	x
CONV ARV	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx	43	xxxxxxxxx
MAIZE+S	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx
MAIZE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxx
SOL NIG	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
	57	xxxxxxxxxxx	36	xxxxxxx	21	xxxx

Triasulfuron

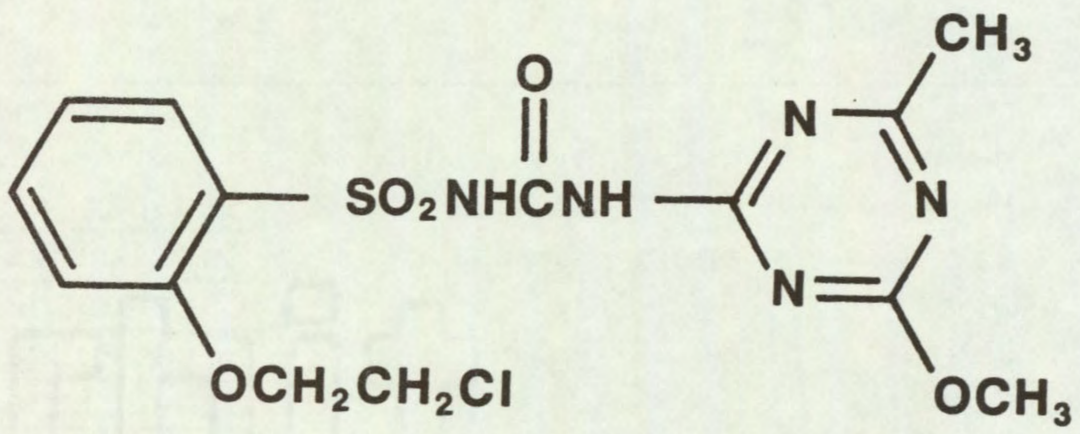
Code number CGA 131036

Trade Name None at time of publication

Common name Triasulfuron (approved - BSI, proposed ISO)

Chemical name 1-[2-(2-chloroethoxy)phenylsulphonyl]-3-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)urea

Structure



Source

Ciba-Geigy (UK) Ltd
Agrochemical Division
Whittlesford
Cambridge
CB2 4QT

Information available and suggested uses from originating company

For control of a wide spectrum of broad-leaved weeds including *Viola* spp. and *Galium aparine* pre- and post-emergence in small grain cereals at rates of 10-20 g a.i./ha.

Formulation used Water dispersable granules 20% a.i.

Results

Full results are given in the histograms on pages 31 - 35 and potential selectivities in Table 7.

Click here to continue