

Table 7. Crop tolerance and weed sensitivity to post-emergence treatments of triasulfuron

RATE (kg a.i./ha)	Tolerant crops ^a	Sensitive Weeds ^b
0.05	Wheat +/- safener Barley +/- safener Maize + safener	<u>Poa trivialis</u> <u>Raphanus raphanistrum</u> <u>Polygonum lapathifolium</u> <u>Senecio vulgaris</u> <u>Lamium purpureum</u> <u>Viola arvensis</u> <u>Rumex obtusifolius</u> <u>Convolvulus arvensis</u> plus species listed below
0.01	species listed above plus Maize Oat +/- safener	<u>Sinapis arvensis</u> <u>Matricaria perforata</u> <u>Chrysanthemum segetum</u> <u>Beta vulgaris</u> <u>Spergula arvensis</u> <u>Papaver rhoeas</u> <u>Cirsium arvense</u> plus species listed below
0.002	Species listed above plus Onion	<u>Stellaria media</u>

^a Vigour reduced by less than 15%

^b number or vigour reduced by 70% or more

Comments on results

Activity

This herbicide was active pre- and post-emergence on the broad-leaved species and perennial ryegrass. The foliar spray was slightly more active on dwarf bean and Polygonum amphibium than the soil drench, while kale was equally sensitive to all methods of application. Perennial ryegrass was affected more by the post-emergence soil drench and pre-emergence treatments than by the foliar spray only.

Elymus repens and Avena fatua were generally tolerant, although some suppression occurred at 0.08 kg/ha, with post-emergence soil drenches and pre-emergence treatments.

Symptoms on susceptible species

Symptoms were similar to those produced by other sulphonyl-urea herbicides.

On sensitive broad-leaved weed species, post-emergence treatments caused rapid inhibition of growth, followed by yellowing/reddening, interveinal chlorosis then necrosis. Pre-emergence treatments in the activity test did not affect germination of sensitive species but often growth was inhibited at the cotyledon stage.

Grasses were generally more tolerant, although some did suffer inhibition of main shoots initially, but most recovered.

Post-emergence selectivity

Fifteen broad-leaved weed species and one grass were controlled, notably Stellaria media at 0.002 kg/ha, Matricaria perforata and Cirsium arvense at 0.01 kg/ha and Viola arvensis, Lamium purpureum and Convolvulus arvensis at 0.05 kg/ha.

Species not controlled included Geranium dissectum, Veronica persica, Chenopodium album and most grass species. A few plants of Galium aparine were regrew from 0.05 kg/ha after severe initial damage.

Wheat, barley and maize + NA tolerated 0.05 kg/ha, while maize and oat + NA tolerated 0.01 kg/ha, onion being the only other tolerant crop at 0.002 kg/ha.

The most sensitive crops were field bean and lettuce, both severely affected by 0.002 kg/ha, while sugar beet, brassicas and perennial ryegrass were sensitive to 0.01 kg/ha.

This herbicide has similar post-emergence activity to chlorsulfuron (Richardson, West and Parker, 1980), with regard to its weed control spectrum and crop tolerance. For complete weed control in cereals, mixtures or sequences with other herbicides would be required to control problem broad-leaved weeds i.e. Veronica and Geranium spp. and grass weeds. There were decreased herbicidal effects on maize and oat when seed was dressed with NA, which may be worth following up.

The activity against some perennial weed species also warrants further investigation.

Table 8

ACTIVITY EXPERIMENT

Triasulfuron

		0.005 kg a.i./ha	0.02 kg a.i./ha	0.08 kg a.i./ha
DWARF BEAN	F	xxxxxxxxxxxxx xxxxx	xxxxxxxxxxxxx xxxxx	xxxxxxxxxxxxx xxxxx
	S	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx
	P	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx+ xxxxx
	I	xxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxx xxxxxxxxxx	xxxxxxxxxxxxx xxxxx
KALE	F	xxxxxxxxxxxxx xxxxx	xxxxxxxxxxxxx xxxxx	xxxxxxxxxxxxx xxx
	S	xxxxxxxxxxxxx xxxxx	xxxxxxxxxxxxx xxxxx	xxxxxxxxxx xx
	P	xxxxxxxxxxxxx+ xxxxx	xxxxxx xx	xxxxxxxxxx xx
	I	xxxxxxxxxxxxx xxxxxx	xxxxxxxxxxxxx xx	xxxxxxxxxxxxx xx
<u>POLYGONUM AMPHIBIUM</u>	F	xxxxxxxxxxxxx xxxxxx	xxxxxxxxxxxxx xxxxx	xxxxxxxxxxxxx xx
	S	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxx
	P	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxx	xxx xx
	I	xxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxx	x x
PERENNIAL RYEGRASS	F	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxx
	S	xxxxxxxxxxxxx xxxxxx	xxxxxxxxxxxxx xxx	xxxxx xx
	P	xxxxxxxxxxxxx xxxxxx	xxxxxx xxx	xxxxx xx
	I	xxxxxxxxxxxxx xxxxxx	xxxxxxxxxxxxx xxxxx	xxx xxx
<u>AVENA FATUA</u>	F	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx
	S	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx
	P	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx
	I	xxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxxxxx+ xxxxxxxxxxxxx
<u>ELYMUS REPENS</u>	F	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx
	S	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx
	P	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx
	I	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxx xxxxxx

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

xxxxxxxxxxxxx = 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

SPECIES	Triasulfuron					
	0.002 kg/ha		0.010 kg/ha		0.050 kg/ha	
WHEAT	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxxxxx
WHEAT+S	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxxxxxx
BARLEY	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
BARLEY+S	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxxxxx
OAT	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxxx
OAT+S	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxxxxxxx
PER RYGR	90	xxxxxxxxxxxxxxxxxxxxx	20	xxxx	20	xxxx
	71	xxxxxxxxxxxxxxx	14	xxx	14	xxx
ONION	100	xxxxxxxxxxxxxxxxxxxxx	60	xxxxxxxxxxxxx	0	
	93	xxxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxxxxx	0	
DWF BEAN	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	64	xxxxxxxxxxxxxxx	43	xxxxxxxxxxxxx	14	xxx
FLD BEAN	67	xxxxxxxxxxxxxxx	17	xxx	0	
	14	xxx	7	x	0	
PEA	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	64	xxxxxxxxxxxxxxx	43	xxxxxxxxxxxxx	36	xxxxxxx
W CLOVER	100	xxxxxxxxxxxxxxxxxxxxx	30	xxxxxx	0	
	64	xxxxxxxxxxxxxxx	29	xxxxxx	0	
RAPE	100	xxxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxxxxx	0	
	57	xxxxxxxxxxxxxxx	36	xxxxxxxxxxxxx	0	

Triasulfuron

SPECIES	0.002 kg/ha		0.010 kg/ha		0.050 kg/ha	
KALE	90	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxxxxx
	71	xxxxxxxxxxxxxxxx	57	xxxxxxxxxxxx	21	xxxx
CABBAGE	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	70	xxxxxxxxxxxxxxxx
	64	xxxxxxxxxxxxxxxx	57	xxxxxxxxxxxx	14	xxx
CARROT	100	xxxxxxxxxxxxxxxxxxxx	10	xx	0	
	71	xxxxxxxxxxxxxxxx	14	xxx	0	
PARSNIP	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	80	xxxxxxxxxxxxxxxx
	64	xxxxxxxxxxxxxxxx	43	xxxxxxxxxx	29	xxxxxx
LETTUCE	10	xx	10	xx	0	
	14	xxx	7	x	0	
SUG BEET	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	10	xx
	57	xxxxxxxxxxxx	29	xxxxxx	7	x
BETA VUL	100	xxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxx	30	xxxxxx
	57	xxxxxxxxxxxx	29	xxxxxx	7	x
BROM STE	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx
FEST RUB	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxx
	86	xxxxxxxxxxxxxxxx	64	xxxxxxxxxxxx	43	xxxxxx
AVE FATU	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxx
	93	xxxxxxxxxxxxxxxx	79	xxxxxxxxxxxx	64	xxxxxxxxxxxx
ALO MYOS	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxx
	71	xxxxxxxxxxxxxxxx	57	xxxxxxxxxxxx	43	xxxxxxxx
POA ANN	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	92	xxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxx	64	xxxxxxxxxxxx	43	xxxxxx
POA TRIV	100	xxxxxxxxxxxxxxxxxxxx	67	xxxxxxxxxxxx	0	
	86	xxxxxxxxxxxxxxxx	50	xxxxxxxxxx	0	

Triasulfuron

SPECIES	0.002 kg/ha		0.010 kg/ha		0.050 kg/ha	
SIN ARV	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxxxxxx
	43	xxxxxxx	21	xxxx	14	xxx
RAPH RAP	82	xxxxxxxxxxxxxxxxxxxxx	24	xxxxx	24	xxxxx
	64	xxxxxxxxxxxxxxxxxxxxx	43	xxxxxxxx	21	xxxx
CHRY SEG	100	xxxxxxxxxxxxxxxxxxxxx	37	xxxxxxx	50	xxxxxxxxxxx
	43	xxxxxxx	7	x	14	xxx
MAT PERF	100	xxxxxxxxxxxxxxxxxxxxx	30	xxxxxx	0	
	57	xxxxxxxxxxxxx	21	xxxx	0	
SEN VULG	100	xxxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxxx	0	
	57	xxxxxxxxxxxxx	36	xxxxxxx	0	
POL LAPA	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	64	xxxxxxxxxxxxxxxxxxxxx	43	xxxxxxxxxxx	29	xxxxxxx
LAM PUR	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxxxxxx
	64	xxxxxxxxxxxxxxxxxxxxx	43	xxxxxxxxxxx	29	xxxxxxx
GAL APAR	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	60	xxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxx	57	xxxxxxxxxxxxx	36	xxxxxxx
CHEN ALB	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxxxxxx	64	xxxxxxxxxxxxx
STEL MED	50	xxxxxxxxxxx	0		0	
	21	xxxx	0		0	
SPER ARV	90	xxxxxxxxxxxxxxxxxxxxx	60	xxxxxxxxxxxxx	0	
	43	xxxxxxxxxxx	21	xxxx	0	
VER PERS	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	86	xxxxxxxxxxxxxxxxxxxxx	64	xxxxxxxxxxxxx	50	xxxxxxxxxxx
VI ARVE	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	0	
	57	xxxxxxxxxxxxx	36	xxxxxxx	0	

Triasulfuron

SPECIES	0.002 kg/ha		0.010 kg/ha		0.050 kg/ha	
GER DISS	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx
	86	xxxxxxxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxxxxxxxxxx	57	xxxxxxxxxxxxxx
PAPA RHO	100	xxxxxxxxxxxxxxxxxxxxxx	20	xxxx	0	
	64	xxxxxxxxxxxxxxxxxxxxxx	14	xxx	0	
RUM OBTU	100	xxxxxxxxxxxxxxxxxxxxxx	87	xxxxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxxxxxx
	71	xxxxxxxxxxxxxxxxxxxxxx	43	xxxxxxxxxxxxxx	29	xxxxxxx
EL REPEN	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxxxxxxxx
AG STOLO	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx
	79	xxxxxxxxxxxxxxxxxxxxxx	64	xxxxxxxxxxxxxxxxxxxxxx	43	xxxxxxxxxxxxxx
CIRS ARV	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	40	xxxxxxx
	50	xxxxxxxxxxxxxx	29	xxxxxxx	29	xxxxxxx
CONV ARV	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxxxxxxxxxx	29	xxxxxxx
MAIZE+S	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxxxxxxx
MAIZE	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxxxxxxxx	64	xxxxxxxxxxxxxx
SOL NIG	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxxxxxxx

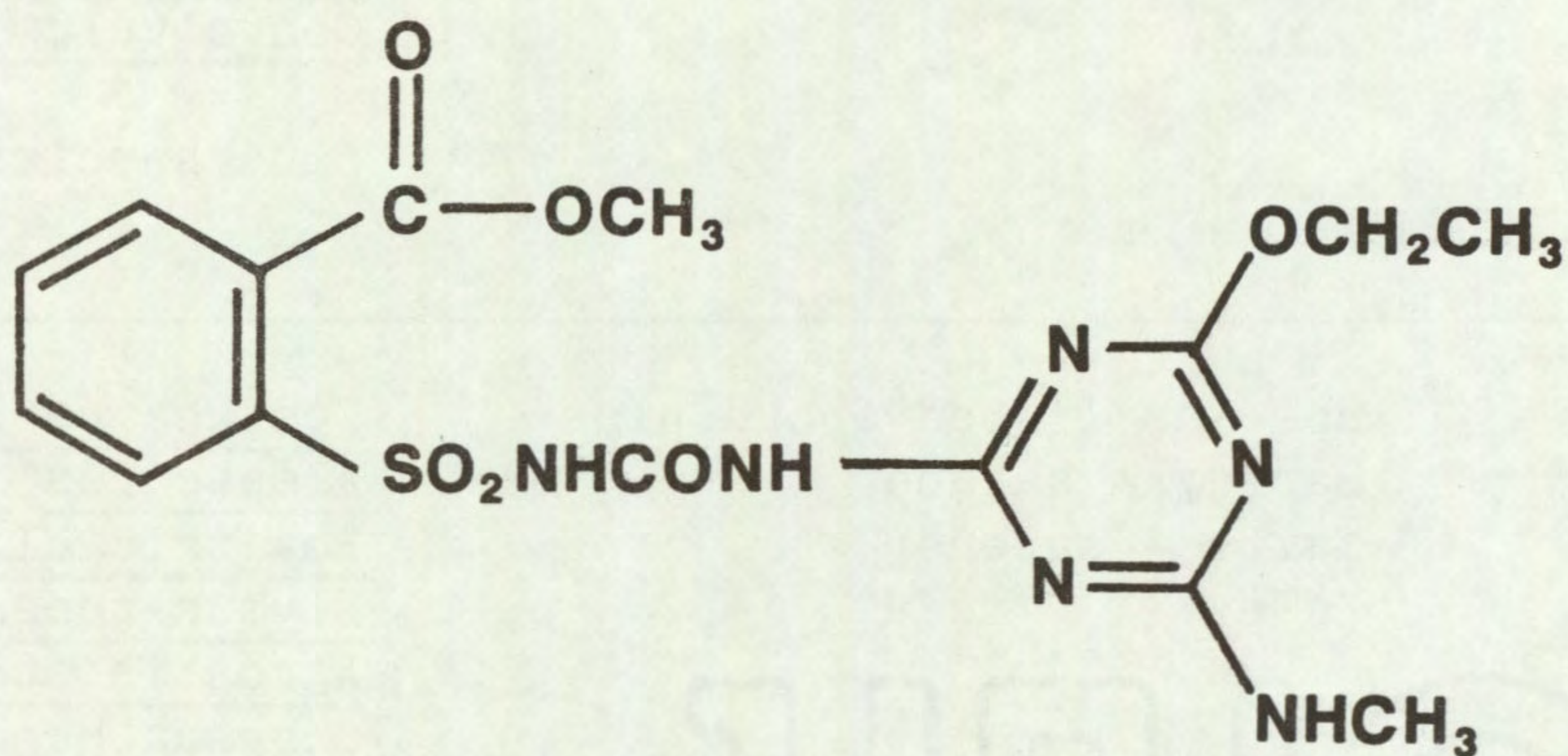
DPX-A7881

Code number DPX-A7881 Trade Name None at time of publication

Common name (None at time of publication)

Chemical name methyl 2-[3-(4-methoxy-6-methylamino-1,3,5-triazin-2-yl)carbamoylsulphamoyl]benzoate

Structure



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

Information available and suggested uses from originating company

Has shown potential for use in brassica crops, especially oilseed rape, predominantly for post-emergence use around 60 g a.i./ha against a range of broad-leaved and grass weeds. It also has residual activity.

Formulation used Dry flowable 75% a.i.

Results

Full results are given in the histograms on pages 39 - 43 and potential selectivities in Table 9.

Table 9. Crop tolerance and weed sensitivity to post-emergence treatments of DPX-A7881

RATE (kg a.i./ha)	Tolerant Crops ^a	Sensitive Weeds ^b
0.16	Oilseed rape Cabbage	<u>Bromus sterilis</u> <u>Avena fatua</u> <u>Poa annua</u> <u>Beta vulgaris</u> <u>Lamium purpureum</u> <u>Galium aparine</u> <u>Spergula arvensis</u> <u>Papaver rhoeas</u> <u>Rumex obtusifolius</u> <u>Cirsium arvense</u> <u>Convolvulus arvensis</u> plus species listed below
0.04	species listed above plus Barley + safener Maize + safener Kale	<u>Festuca rubra</u> <u>Alopecurus myosuroides</u> <u>Poa trivialis</u> <u>Elymus repens</u> <u>Agrostis stolonifera</u> <u>Chrysanthemum segetum</u> <u>Polygonum lapathifolium</u> <u>Geranium dissectum</u> plus species listed below
0.01	Species listed above plus Wheat +/- safener Barley Oat +/- safener Maize Dwarf bean Pea White clover Lettuce	<u>Stellaria media</u>

^a vigour reduced by less than 15%

^b number or vigour reduced by 70% or more.

Comments on results

Activity

DPX-A7881 exhibited activity both post-emergence and pre-emergence against sensitive species, e.g. perennial ryegrass. As a post-emergence treatment, soil drenches were more active than foliar sprays, on grass species.

Kale appeared tolerant to post-emergence and pre-emergence surface spray applications, but appreciable damage was found with pre-emergence soil incorporation. Dwarf bean and Polygonum amphibium were only moderately and equally affected by all methods of application.

Symptoms on susceptible species

On grasses there was inhibition of main shoots, chlorosis followed by necrosis; lower doses caused proliferation of small chlorotic tillers. Pre-emergence treatments generally did not affect germination but many perennial ryegrass plants died soon after emergence. Main shoots of Polygonum amphibium were inhibited but several new shoots arose from the base of the old stems.

In the post-emergence test, most grasses again showed considerable growth inhibition and necrosis, but also many broad-leaved weed species were susceptible. Symptoms were of severe growth inhibition, yellowing/reddening and interveinal chlorosis of leaves following by necrosis. Sub-lethal doses often causing proliferation of small chlorotic axillary shoots.

Post-emergence selectivity

Twelve broad-leaved and eight grass weed species were controlled by 0.16 kg/ha. At this dose Veronica persica, Matricaria perforata and Solanum nigrum were considerably suppressed while Senecio vulgaris, Raphanus raphanistrum and Chenopodium album were very tolerant.

Oilseed rape and cabbage tolerated 0.16 kg/ha and kale, maize + NA and barley + NA tolerated 0.04 kg/ha. At 0.01 kg/ha dwarf bean, pea, white clover, lettuce and the cereals were tolerant, but only Stellaria media was controlled.

The most sensitive crops were perennial ryegrass, field bean and onion.

This herbicide shows good potential for controlling many weed species post-emergence in brassica crops, particularly in oilseed rape. Some of the problem weeds controlled include Galium aparine, Lamium purpureum, Stellaria media and Alopecurus myosuroides.

The safening response with NA on maize and barley and the symptoms of this herbicide, especially on broad-leaved species, bear a close resemblance to that of the sulphonyl-urea cereal herbicides. This is interesting in that the weed control spectrum and crop tolerance of this herbicide are quite different to the other sulphonyl-urea herbicides tested; to which most brassicas are sensitive and most grasses reasonably tolerant.

Table 10

ACTIVITY EXPERIMENT

DPX-A7881

		0.01 kg a.i./ha	0.04 kg a.i./ha	0.160 kg a.i./ha
DWARF BEAN	F	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX
	S	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX
	P	XXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXX
	I	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXX
KALE	F	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX
	S	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX
	P	XXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXX XXXXXXXXXXXX
	I	XXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXX	XXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXX
<u>POLYGONUM AMPHIBIUM</u>	F	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXX
	S	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXX
	P	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXX XXXXXX
	I	XXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX+ XXXXXX
PERENNIAL RYEGRASS	F	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXX	XXXXXXXXXXXXXXXXXX XXXXXX
	S	XXXXXXXXXXXX XXXX	XXXXXXXXXXXX XX	XXXXXXXXXXXX XX
	P	XXXXXXXXXXXXXXXXXX+ XXX	XXXXXX XX	XXXX XX
	I	XXXXXXXXXXXXXXXXXX+ XXXXXX	XXXXXX XX	XXX XX
<u>AVENA FATUA</u>	F	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX
	S	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXX	XXXXXXXXXXXX XX
	P	XXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXX
	I	XXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX+ XXXXXX	XXXXXXXXXXXXXXXXXX+ XXXX
<u>ELYMUS REPENS</u>	F	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXX
	S	XXXXXXXXXXXXXXXXXX XXXXXX	XXXXXXXXXXXXXXXXXX XXXXXX	XXXXXXXXXXXXXXXXXX XXXX
	P	XXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXX XXXX	XXXXXX XX
	I	X XXX		

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

XXXXXXXXXXXXXXXXXX = number of plants
 XXXXXXXXXXXXXXXXXXXX = 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

DPX-A7881

SPECIES	0.010 kg/ha		0.040 kg/ha		0.160 kg/ha	
WHEAT	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxxxx
WHEAT+S	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxxxx
BARLEY	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxx	64	xxxxxxxxxxxxxxxxxxxxx	43	xxxxxxxxxxxx
BARLEY+S	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxxxxxx	57	xxxxxxxxxxxx
OAT	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	0	
	93	xxxxxxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxxxxxxxxx	0	
OAT+S	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxxxx
	93	xxxxxxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxxxxxxxxx	21	xxxx
PER RYGR	50	xxxxxxxxxxxx	0		0	
	50	xxxxxxxxxxxx	0		0	
ONION	70	xxxxxxxxxxxxxxxxxxxxx	10	xx	0	
	43	xxxxxxxxxxxx	14	xxx	0	
DWF BEAN	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	86	xxxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxxxx	29	xxxxxx
FLD BEAN	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	83	xxxxxxxxxxxxxxxxxxxxx
	43	xxxxxxxxxxxx	29	xxxxxx	14	xxx
PEA	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	86	xxxxxxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxxxxxxxxx	36	xxxxxx
W CLOVER	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	86	xxxxxxxxxxxxxxxxxxxxx	64	xxxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxxxx
RAPE	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxxxxxx

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

DPX-A7881

SPECIES	0.010 kg/ha		0.040 kg/ha		0.160 kg/ha	
KALE	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	93	xxxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxxxxxxxxx
CABBAGE	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxxxxxx
CARROT	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	80	xxxxxxxxxxxxxxxxxxxxx
	79	xxxxxxxxxxxxxxxxxxxxx	57	xxxxxxxxxxxxx	36	xxxxxxx
PARSNIP	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	57	xxxxxxxxxxxxx	43	xxxxxxxxxxxxx	29	xxxxxxx
LETTUCE	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	93	xxxxxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxxxxxxxxx
SUG BEET	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	30	xxxxxxx
	71	xxxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxxxxx	14	xxx
BETA VUL	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	40	xxxxxxx
	64	xxxxxxxxxxxxxxxxxxxxx	36	xxxxxxx	21	xxxx
BROM STE	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxx
	79	xxxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxxxxx	29	xxxxxxx
FEST RUB	80	xxxxxxxxxxxxxxxxxxxxx	20	xxxx	0	
	43	xxxxxxxxxxxxx	14	xxx	0	
AVE FATU	100	xxxxxxxxxxxxxxxxxxxxx	80	xxxxxxxxxxxxxxxxxxxxx	0	
	79	xxxxxxxxxxxxxxxxxxxxx	43	xxxxxxxxxxxxx	0	
ALO MYOS	80	xxxxxxxxxxxxxxxxxxxxx	40	xxxxxxx	0	
	57	xxxxxxxxxxxxx	29	xxxxxxx	0	
POA ANN	100	xxxxxxxxxxxxxxxxxxxxx	83	xxxxxxxxxxxxxxxxxxxxx	0	
	57	xxxxxxxxxxxxx	36	xxxxxxx	0	
POA TRIV	100	xxxxxxxxxxxxxxxxxxxxx	0		0	
	50	xxxxxxxxxxxxx	0		0	

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

DPX-A7881

SPECIES	0.010 kg/ha		0.040 kg/ha		0.160 kg/ha	
SIN ARV	100	XXXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXXX
	43	XXXXXXXXXX	43	XXXXXXXXXX	36	XXXXXXXXXX
RAPH RAP	100	XXXXXXXXXXXXXXXXXXXXX	94	XXXXXXXXXXXXXXXXXXXXX	82	XXXXXXXXXXXXXXXXXXXXX
	100	XXXXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXXXXXXX
CHRY SEG	100	XXXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXXX	25	XXXXXX
	57	XXXXXXXXXXXX	21	XXXX	7	X
MAT PERF	100	XXXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXXX
	64	XXXXXXXXXXXX	43	XXXXXXXXXX	36	XXXXXXXXXX
SEN VULG	100	XXXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXXX
	86	XXXXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXXXXXXX	64	XXXXXXXXXXXX
POL LAPA	100	XXXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXXX	90	XXXXXXXXXXXXXXXXXXXXX
	50	XXXXXXXXXXXX	21	XXXX	14	XXX
LAM PUR	100	XXXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXXX	70	XXXXXXXXXXXX
	57	XXXXXXXXXXXX	36	XXXXXXXXXX	14	XXX
GAL APAR	100	XXXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXXX	50	XXXXXXXXXXXX
	79	XXXXXXXXXXXXXXXXXXXXX	50	XXXXXXXXXXXX	21	XXXX
CHEN ALB	100	XXXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXXX
	86	XXXXXXXXXXXXXXXXXXXXX	57	XXXXXXXXXXXX	43	XXXXXXXXXX
STEL MED	60	XXXXXXXXXXXX	40	XXXXXXXXXX	0	
	21	XXXX	14	XXX	0	
SPER ARV	100	XXXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXXX	90	XXXXXXXXXXXXXXXXXXXXX
	71	XXXXXXXXXXXX	43	XXXXXXXXXX	14	XXX
VER PERS	100	XXXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXXX	78	XXXXXXXXXXXXXXXXXXXXX
	100	XXXXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXXXXXXX	43	XXXXXXXXXX
VI ARVE	100	XXXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXXX
	86	XXXXXXXXXXXXXXXXXXXXX	64	XXXXXXXXXXXX	43	XXXXXXXXXX

DPX-A7881

SPECIES	0.010 kg/ha		0.040 kg/ha		0.160 kg/ha	
GER DISS	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx
	57	xxxxxxxxxxxx	29	xxxxxx	14	xxx
PAPA RHO	90	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	70	xxxxxxxxxxxxxxxxxxxxxx
	71	xxxxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxxxx	29	xxxxxx
RUM OBTU	100	xxxxxxxxxxxxxxxxxxxxxx	87	xxxxxxxxxxxxxxxxxxxxxx	62	xxxxxxxxxxxxxxxxxxxxxx
	71	xxxxxxxxxxxxxxxxxxxxxx	43	xxxxxxxxxxxx	21	xxxx
EL REPEN	90	xxxxxxxxxxxxxxxxxxxxxx	40	xxxxxxx	0	
	64	xxxxxxxxxxxxxxxxxxxxxx	14	xxx	0	
AG STOLO	62	xxxxxxxxxxxx	25	xxxxx	0	
	36	xxxxxxx	14	xxx	0	
CIRS ARV	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxxx	57	xxxxxxxxxxxx	29	xxxxxx
CONV ARV	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	29	xxxxxx
	100	xxxxxxxxxxxxxxxxxxxxxx	64	xxxxxxxxxxxx	14	xxx
MAIZE+S	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx
	100	xxxxxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxxxx
MAIZE	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx
	86	xxxxxxxxxxxxxxxxxxxxxx	43	xxxxxxxxxxxx	21	xxxx
SOL NIG	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxxxx
	79	xxxxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxxxx	36	xxxxxx

ACKNOWLEDGEMENTS

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Appendix 1. Plant data for activity experiment

	Cultivar (Source)	No. of plants per pot at		Depth of planting (cm)	No. of leaves present at:		
		spraying pre- em.	post- em.		Spraying post-em.	Assessment pre-em.	post-em.
Dwarf bean (<u>Phaseolus</u> <u>vulgaris</u>)	The Prince (Finney Lock) 1986	3	2	2	2 unifoliate leaves	2.5 trifoliate	3 trifoliate
Kale (<u>Brassica</u> <u>oleraceae</u> <u>acephala</u>)	Marrowstem (Finney Lock) 1986	10	5	0.5	2-2.5 leaves	4 leaves	5 leaves
<u>Polygonum</u> <u>amphibium</u>	WRO Clone 1	6	5	1.5	3.5-4.5 leaves	7 leaves	9 leaves
Perennial ryegrass (<u>Lolium</u> <u>perenne</u>)	Melle (British Seedhouses)	12	8	0.5	2.5-3 leaves	5 leaves 3-5 tillers	6 leaves 1-3 tillers
<u>Avena</u> <u>fatua</u>	WRO 1980	12	5	1	2.5-3 leaves	5 leaves	6 leaves 2 tillers
<u>Elymus</u> <u>repens</u>	WRO Clone 31	6	4	1	2.5-3 leaves	6 leaves	6 leaves

Appendix 2. Species, abbreviations, varieties and stages of growth at spraying and assessment for post-emergence selectivity test.

Species	Abbreviation in histograms	Cultivar or source	Stage of growth at spraying	Stage of growth at assessment (untreated controls, leaf numbers exclusive of cotyledons)
WHEAT (<u>Triticum aestivum</u>)	WHEAT	AVALON	3 LEAVES	6 TILLERS
Wheat + Safener	WHEAT + S	Avalon	3 leaves	6 tillers
Barley (<u>Hordeum vulgare</u>)	BARLEY	Igri	3 leaves	7 tillers
Barley + safener	BARLEY + S	Igri	3 leaves	7 tillers
Oat (<u>Avena sativa</u>)	OAT	Peniarth	3 leaves	6 leaves, 2 tillers
Oat + safener	OAT + S	Peniarth	3 leaves	6 leaves, 2 tillers
Perennial ryegrass (<u>Lolium perenne</u>)	PER RYGR	Melle	2.5 to 3 leaves	16 tillers
Onion (<u>Alium cepa</u>)	ONION	White lisbon	2 leaves	4 to 5 leaves
Dwarf bean (<u>Phaseolus vulgaris</u>)	DWF BEAN	The Prince	2 unifoliate leaves	6 trifoliate flowering
Field bean (<u>Vicia faba</u>)	FLD BEAN	Maris bead	2.5 to 3 leaves	13 leaves, flowering
Pea (<u>Pisum sativum</u>)	PEA	Meteor	3 leaves	10 leaves
White clover (<u>Trifolium repens</u>)	W CLOVER	Huia	1.5 to 2 trifoliate leaves	16 trifoliates
Rape (<u>Brassica napus oleifera</u>)	RAPE	Bien venu	2 leaves	6 leaves
Kale (<u>Brassica oleracea acephala</u>)	KALE	Marrowstem	2 to 2.5	8 leaves

Cont'd/....

Species	Abbreviation in histograms	Cultivar or source	Stage of growth at spraying	Stage of growth at assessment (untreated controls, leaf numbers exclusive of cotyledons)
Cabbage (<u>Brassica oleracea capitata</u>)	CABBAGE	Golden acre primo	2 to 2.5 leaves	9 leaves
Carrot (<u>Daucus carota</u>)	CARROT	Chantenay Red Love	2 leaves	7 leaves
Parsnip (<u>Pastinaca sativa</u>)	PARSNIP	White Gem	1.5 to 2 leaves	4 to 5 leaves
Lettuce (<u>Lactuca sativa</u>)	LETTUCE	Webbs Wonderful	2.5 leaves	8 leaves
Sugar beet (<u>Beta vulgaris</u>)	SUG BEET	Samson	2 leaves	12 leaves
<u>Beta vulgaris</u>	BETA VUL	WRO 1981 ex Attleborough	2 leaves	12 leaves, some bolting
<u>Bromus sterilis</u>	BROM STE	WRO 1983	2 leaves	11 tillers
<u>Festuca rubra</u>	FEST RUB	B and S supplies, 1985	2.5 leaves	25 tillers
<u>Avena fatua</u>	AVE FATU	WRO 1983	2.5 to 3 leaves	4 tillers
<u>Alopecurus myosuroides</u>	ALO MYOS	WRO 1984	2.5 to 3.5 leaves	15 tillers
<u>Poa annua</u>	POA ANN	B and S supplies, 1985	2 to 3 1 tiller	18 tillers
<u>Poa trivialis</u>	POA TRIV	Emorsgate 1984	3 leaves 1 tiller	15 tillers
<u>Sinapis arvensis</u>	SIN ARV	B and S supplies, 1985	4 leaves	6 leaves, flowering
<u>Raphanus raphanistrum</u>	RAPH RAP	WRO 1984	2 leaves	8 leaves
<u>Chrysanthemum segetum</u>	CHRY SEG	WRO 1983	4 leaves	13 leaves, flowering

Cont'd/....

Species	Abbreviation in histograms	Cultivar or source	Stage of growth at spraying	Stage of growth at assessment (untreated controls, leaf numbers exclusive of cotyledons)
<u>Matricaria perforata</u>	MAT PERF	B and S supplies, 1985	4 to 5 leaves	12 leaves, axillaries, flowering
<u>Senecio vulgaris</u>	SEN VULG	B and S supplies, 1985	4 to 6 leaves	12 leaves, flowering
<u>Polygonum Lapathifolium</u>	POL LAPA	B and S supplies, 1985	3 to 4 leaves	8 leaves, flowering
<u>Lamium purpureum</u>	LAM PUR	B and S supplies, 1985	2 to 3 pairs of leaves	Numerous axillaries, flowering
<u>Galium aparine</u>	GAL APAR	N. Peters stock 1985	2 whorls	10 whorls, axillaries
<u>Chenopodium album</u>	CHEN ALB	B and S supplies, 1985	4 to 5 leaves	10 leaves flowering
<u>Stellaria media</u>	STEL MED	B and S supplies, 1985	4 to 6 leaves	20 leaves, flowering
<u>Spergula arvensis</u>	SPER ARV	B and S supplies, 1985	2 whorls	10 whorls, axillaries, flowering
<u>Veronica persica</u>	VER PERS	LARS 1986	2 to 3 pairs of leaves	7 pairs leaves, flowering
<u>Viola arvensis</u>	VI ARVE	B and S supplies, 1985	4 leaves + axillaries	Numerous axillaries, flowering
<u>Geranium dissectum</u>	GER DISS	B and S supplies, 1984	2.5 to 3 leaves	12 leaves
<u>Papaver rhoeas</u>	PAPA RHO	B and S supplies, 1985	4 leaves	8 leaves, flowering

Cont'd/.....

Species	Abbreviation in histograms	Cultivar or source	Stage of growth at spraying	Stage of growth at assessment (untreated controls, leaf numbers exclusive of cotyledons)
<u>Rumex obtusifolius</u>	RUM OBTU	B and S supplies, 1985	1.5 to 2 leaves	4 leaves
<u>Elymus repens</u>	EL REPEN	WRO Clone 31	2 to 2.5 leaves	8 leaves, 4 tillers
<u>Agrostis stolonifera</u>	AG STOLO	WRO Clone 1	2 leaves	7 tillers, stolons
<u>Cirsium arvense</u>	CIRS ARV	WRO Clone 1	2.5 to 3 leaves	8 leaves
<u>Convolvulus arvensis</u>	CONV ARV	B and S supplies, 1985	3 to 4 leaves	9 leaves
Maize + safener (<u>Zea mays</u>)	MAIZE + S	LG 11	2.5 to 3 leaves	5.5 leaves
Maize (<u>Zea mays</u>)	MAIZE	LG 11	2.5 to 3 leaves	5.5 leaves
<u>Solanum nigrum</u>	SOL NIG	B and S supplies, 1985	3 to 3.5 leaves	9 leaves

ABBREVIATIONS

ångström	Å	freezing point	f.p.
Abstract	Abs.	from summary	F.s.
acid equivalent*	a.e.	gallon	gal
acre	ac	gallons per hour	gal/h
active ingredient*	a.i.	gallons per acre	gal/ac
approximately equal to*	≈	gas liquid chromatography	GLC
aqueous concentrate	a.c.	gramme	g
bibliography	bibl.	hectare	ha
boiling point	b.p.	hectokilogram	hkg
bushel	bu	high volume	HV
centigrade	C	horse power	hp
centimetre*	cm	hour	h
concentrated	concd	hundredweight*	cwt
concentration	concn	hydrogen ion concentration*	pH
concentration x time product	ct	inch	in.
concentration required to kill 50% test animals	LC50	infra red	i.r.
cubic centimetre*	cm ³	kilogramme	kg
cubic foot*	ft ³	kilo (x10 ³)	k
cubic inch*	in ³	less than	<
cubic metre*	m ³	litre	l.
cubic yard*	yd ³	low volume	LV
cultivar(s)	cv.	maximum	max.
curie*	Ci	median lethal dose	LD50
degree Celsius*	°C	medium volume	MV
degree centigrade	°C	melting point	m.p.
degree Fahrenheit*	°F	metre	m
diameter	diam.	micro (x10 ⁻⁶)	μ
diameter at breast height	d.b.h.	microgramme*	μg
divided by*	÷ or /	micromicro (pico: x10 ⁻¹²)*	μμ
dry matter	d.m.	micrometre (micron)*	μm (or μ)
emulsifiable concentrate	e.c.	micron (micrometre)* †	μm (or μ)
equal to*	=	miles per hour*	mile/h
fluid	fl.	milli (x10 ⁻³)	m
foot	ft	milliequivalent*	m.equiv.
		milligramme	mg
		millilitre	ml

† The name micrometre is preferred to micron and μm is preferred to μ.

millimetre*	mm	pre-emergence	pre-em.
millimicro* (nano: $\times 10^{-9}$)	n or μ	quart	quart
minimum	min.	relative humidity	r.h.
minus	-	revolution per minute*	rev/min
minute	min	second	s
molar concentration*	M (small cap)	soluble concentrate	s.c.
molecule, molecular	mol.	soluble powder	s.p.
more than	>	solution	soln
multiplied by*	x	species (singular)	sp.
normal concentration*	N (small cap)	species (plural)	spp.
not dated	n.d.	specific gravity	sp. gr.
oil miscible concentrate	o.m.c. (tables only)	square foot*	ft ²
organic matter	o.m.	square inch	in ²
ounce	oz	square metre*	m ²
ounces per gallon	oz/gal	square root of*	$\sqrt{\quad}$
page	p.	sub-species*	ssp.
pages	pp.	summary	s.
parts per million	ppm	temperature	temp.
parts per million by volume	ppmv	ton	ton
parts per million by weight	ppmw	tonne	t
percent(age)	%	ultra-low volume	ULV
pico (micromicro: $\times 10^{-12}$)	p or μ	ultra violet	u.v.
pint	pint	vapour density	v.d.
pints per acre	pints/ac	vapour pressure	v.p.
plus or minus*	+	<u>varietas</u>	var.
post-emergence	post-em	volt	V
pound	lb	volume	vol.
pound per acre*	lb/ac	volume per volume	v/v
pounds per minute	lb/min	water soluble powder	w.s.p. (tables only)
pound per square inch*	lb/in ²	watt	W
powder for dry application	p. (tables only)	weight	wt
power take off	p.t.o.	weight per volume*	w/v
precipitate (noun)	ppt.	weight per weight*	w/w
		wettable powder	w.p.
		yard	yd
		yards per minute	yd/min

* Those marked * should normally be used in the text as well as in tables etc.

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