WEED RESEARCH ORGANIZATION

TECHNICAL REPORT No.78

THE ACTIVITY AND POST-EMERGENCE SELECTIVITY OF SOME RECENTLY DEVELOPED HERBICIDES; MCPA-THIOETHYL, MT-124 ,TRIDIPHANE, ACLONIFEN AND RST 20024 H.

MT-124 is furyloxyfen, RST 20024 H is trimexachlor

W G Richardson and T M West

October 1984

Price - 5.40

ISSN 0511 4136
ISBN 0 7084 0315 8

Agricultural and Food Research Council Weed Research Organization,
Begbroke Hill, Yarnton, Oxford, OX5 1PF

CONTENTS

NOTE

RICHARDSON, W.G. and WEST, T.M. The activity and post-emergence selectivity of some recently developed herbicides: MCPA-thioethyl, MT-124, tridiphane, aclonifen and RST 20024 H. Technical Report Agricultural and Food Research Council Weed Research Organization, 1984, No. 78, pp 48.

THE ACTIVITY AND POST-EMERGENCE SELECTIVITY OF SOME RECENTLY DEVELOPED HERBICIDES; MCPA-THIOETHYL, MT-124, TRIDIPHANE, ACLONIFEN AND RST 20024H

W G Richardson* and T M West*

Agricultural and Food Research Council Weed Research Organization,
Begbroke Hill, Yarnton, Oxford OX5 1PF, UK.

SUMMARY

Five herbicides were examined for post-emergence selectivity on 38 crop and weed species. The route of action of these herbicides was determined on six selected species in a separate test. The safener 1,8 naphthalic anhydride (NA) was used as a seed dressing on wheat, barley and maize to see if herbicide effects could be reduced.

MCPA-thioethyl is very similar to its chemical analogue MCPA, with growth regulatory properties post-emergence, on most broad-leaved species, with potential for use in graminaceous crops.

MT-124 possesses both pre- and post-emergence activity. Several broad-leaved weeds were controlled post-emergence, including Galium aparine, Veronica persica and Viola arvensis while wheat and barley were tolerant.

Tridiphane controlled only a narrow spectrum of weeds post-emergence, but this included important species such as Alopecurus myosuroides, Galium aparine and Veronica persica. Barley and maize showed high tolerance. Efficacy pre-emergence may be of more importance, however.

Although aclonifen is more effective as a pre-emergence treatment, its post-emergence activity and selectivity are also considerable. Thus control of weeds as important as A. myosuroides, Galium aparine, Viola arvensis and Veronica persica was achieved post-emergence, while cereals such as wheat, barley and maize were tolerant.

RST 20024H is more effective as a pre-emergence treatment; activity and selectivity post-emergence is relatively low.

INTRODUCTION

The pre- and post-emergence selectivities and effects of new herbicides are investigated at WRO on a large number of pot-grown crop and weed species. The limitations of these investigations are that only one crop variety or source of weed species is used and growth is in one particular soil type, at only one depth of sowing without interspecific competition. Consequently, as plant responses in pot experiments can be very different to those in the field the results should only be used as a guide for further work.

This report gives indications of the post-emergence selectivity of five new herbicides. Results of activity experiments are also included to provide information on levels of phytotoxicity, type and route of action.

---

* Herbicide Group

METHODS AND MATERIALS

(a) Activity experiments (AE 1, 2 and 3)

These were carried out on six selected species as described previously (Richardson and Dean, 1974). Three annual species and perennial ryegrass were raised from seeds and two perennials from rhizome fragments. There were two replicates for each treatment. Herbicides were applied by four different methods:-

(i) post-emergence spray to the foliage only, avoiding contact with the soil,
(ii) post-emergence to the soil only, as a drench avoiding foliage contact,
(iii) pre-emergence spray to the soil surface,
(iv) pre-emergence with thorough incorporation, before planting.

Experimental details are summarised in Tables 1 and 2.

(b) Post-emergence selectivity experiment

The experimental details were as previously described (Richardson and Parker, 1977). Plants were raised in 9 cm diameter plastic pots in a sandy loam soil taken from a field near Begbroke Hill (Begbroke North). Planting dates were staggered so that the majority of species would reach a pre-determined stage (2-4 leaves) by the time of spraying. All species were raised in the open (except Solanum nigrum) on a paved area, protecting from predators and excess rainfall by means of a wire cage and movable covers.

Table 1. Plant data for activity experiments

Species	Cultivar/ source	No. per pot at spraying: pre-	No. per pot at spraying: post-	Depth of planting (cm)	Stage of growth at: Spraying post-em	Stage of growth at: Assessment pre-em	Stage of growth at: Assessment post-em
Dwarf bean (Phaseolus vulgaris)	Masterpiece	3-4	2	2.0	2 uni-foliate leaves	1.5-2.5 tri-foliate leaves	2-3 tri-foliate leaves
Kale (Brassica oleracea acephala)	Marrowstem	10	5	0.5	2-2.5 leaves	3.5-5 leaves	4-5 leaves
Polygonum amphibium	WRO Clone 1	6	4-5	1.0	4.5-5.5 leaves	6-9 leaves	9-10 leaves
Perennial ryegrass (Lolium perenne)	S23	15	8-10	0.5	2-3 leaves	4-5 leaves, 1-3 tillers	2-3 tillers
Avena fatua	WRO 1978 WRO 1979	10-12	3-5	1.0	2.5-3 leaves	3.5-4.5 leaves 0-2 tillers	2 tillers
Elymus repens	WRO Clone 31	6	4-5	1.0	2.5-3 leaves	3.5-5 leaves, 0-2 tillers	1-2 tillers

Table 2. Soil and environmental conditions

	AE 1	AE 2	AE 3	Post-emergence selectivity test
Experiment number type and herbicides included	Aclonifen	MT-124 Tridiphane MCPA-thioethyl	RST 20024H	MCPA-thioethyl Aclonifen MT 124 RST 20024H Tridiphane
Date of spraying	13.10.82	29.9.83	31.5.84 & 4.6.84	13.6.84
Main assessment completed	16.11.82	1.11.83	10.7.84	3.7.84
Organic carbon (%)	2.2	1.3	2.2	2.2
Clay content (%)	15.0	16.0	15.0	15.0
pH (in water; 1:2 soil:water ratio)	7.5	7.4	7.5	7.5
Ammonium sulphate (g/kg)	-	0.5	0.5	-
Superphosphate (g/kg)	2.0	1.0	1.0	1.0
Potassium sulphate (g/kg)	-	0.6	0.5	-
Vitax QS 3 fertilizer (g/kg)	2.5	-	-	2.5
Fritted trace elements (g/kg)	-	0.1	0.1	0.1
Hydrated Mg SO_4 $7H_2O$ (g/kg)	0.8	0.4	0.4	0.8
Temperature (^oC)		Glasshouse		Outdoors
Mean	19	12	22	17
Maximum	26	18	38	nitro 31
Minimum	12	8	12	6
Relative humidity (%)				
Mean	60	68	55	48
Maximum	85	90	90	80
Minimum	32	33	24	10

In some cases plant material was pre-treated to improve establishment:- seeds of Chenopodium album were soaked in 0.1 M potassium nitrate solution and kept in the light for two days prior to planting; Veronica persica was sown in a tray of sterilised soil and seedlings (1-2 leaves) transplanted into the potting medium. Solanium nigrum pots were kept in the glasshouse until spraying.

For protection of onion from soil-borne pathogens the seeds were dressed with 'Asmercote' (benomyl + thiram). Root fragments of Cirsium arvense were washed in a colloidal copper solution (2 ml litre^{-1}) prior to planting. As dwarf bean, is susceptible to "damping off" diseases, 6% gum arabic solution was included with a thiram fungicide seed dressing to improve adhesion.

A series of treatments was included to investigate possible uses for the safener NA (1,8-naphthalic anhydride). Maize, wheat and barley were treated with NA at 0.5% a.i. w/w of seeds. Before spraying, each species was thinned to constant number per pot.

Herbicides were applied using a laboratory sprayer operating at a pressure of 207 kPa (30 lb/in^2) with a Spraying Systems 8002 TeeJet spray nozzle moving at 0.5 m sec^{-1}, 45 cm above the stationary plants and delivering a volume of 370 l/ha. There were two replicates for each treatment. Stages of growth at spraying and assessment are summarised in Appendix I. After spraying, the plants were protected from rainfall for 24 hours and then watered overhead to wash any residues off the foliage, using a rose at the end of a trigger hose attached to the mains water supply. The pots were then returned to their original position in the open. Watering throughout the experiment was from overhead. Additional fertilizer in solution was applied to all species at one week intervals after spraying (5 ml litre^{-1} Vitafeed 301). Insecticide and fungicide solutions were applied to individual species as required.

(c) Assessments and processing of results

Results were assessed and processed as before (Richardson and Dean, 1974). Survivors were counted and scored for vigour on a 0-7 scale as previously, where 0 = dead and 7 = as untreated control. Histograms are presented for the results of each treatment, the upper of each pair represents mean plant survival and the lower, mean vigour score, both calculated as percentages of untreated controls. Actual percentage figures are displayed to the left of each row of x's (in selectivity test only). The same information is displayed in the histograms, each 'x' representing a 5% increment, but in the activity experiment each 'x' represents a 7% increment. A '+' indicates a value in excess of 100%. A value of 100 = as untreated control and 0 = a complete kill. 'R' indicates results based on one replicate only.

A table of observed selectivities, using the criteria specified, is presented below for each compound along with comments to highlight salient points. Radish (Raphanus raphanistrum) which was included because it is easy to propagate, may be regarded as a crop or a weed.

Several species, notably the perennials, were kept for extra periods to observe later effects, or the degree of recovery from injury. Results for pea were not included in the histograms because plant growth was variable, but some observations were possible and are referred to in the text where relevant.

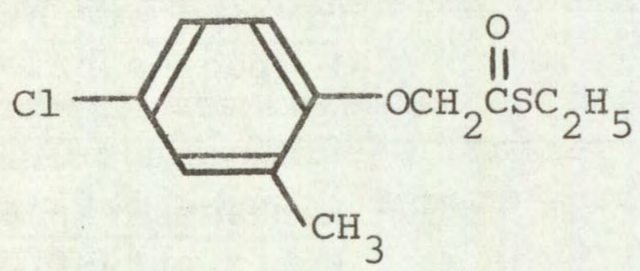
MCPA-thioethyl

Other common name Phenothiol (Japan)

Code number HOK 7501 Trade name/s Herbit

Chemical name S-ethyl-4-chloro-2-methylphenoxythioacetate

Structure



Source Hokko Chemical Industry Co Ltd
Mitsui Building, No. 2
4-2 Nikonbashi Hongoku-cho
Chuo-ku
Tokyo 103
Japan

Information available and suggested uses

Post-emergence control of annual and perennial broad-leaved weeds (including Polygonum aviculare and Convolvulus arvensis), in rice, wheat and orchards at 0.4 - 0.8 kg a.i./ha.

Formulation used Emulsifiable concentrate 20% a.i.

Spray volume 370 l/ha

RESULTS

Full results are given in the histograms on pages 9-13 and potential selectivites are summarised in the following table.

RATE (kg a.i./ha)	CROPS: vigour reduced by 15% or less	WEEDS: number or vigour reduced by 70% or more
3.00	wheat±safener (NA) barley±safener (NA) maize±safener (NA) perennial ryegrass	Beta vulgaris Chrysanthemum segetum Senecio vulgaris Polygonum lapathifolium Chenopodium album Viola arvensis Cirsium arvense + species below
1.00	species above + oat	Raphanus raphanistrum Rumex obtusifolius Solanum nigrum + species below
0.33	species above	Sinapis arvensis

Comments on results

Activity experiment

Greatest activity resulted from the foliar spray on broad-leaved species, grasses being completely tolerant to this means of application. The post-emergence soil drench caused only minor effects on dwarf bean, kale and perennial ryegrass, the other three species being unaffected. Activity was found pre-emergence on all species, kale being very sensitive, while lethal effects resulted on Elymus repens at the higher doses. The surface application was generally more effective than when incorporated.

Symptoms on susceptible species

Symptoms were identical to those caused by other phenoxyalkanoic herbicides, e.g. MCPA and 2,4-D. A powerful growth regulatory effect was seen within two days of spraying, epinasty of leaves, petioles and stems being prominent. Scorch and necrosis of tissues developed later, as did swelling and splitting of plant organs. New leaves developing after treatment were usually deformed, often strap-shaped with broad-leaved species, while 'onion leafing' of grasses was sometimes observed. Those plants which succeeded in emerging in pre-emergence treatments, usually exhibited similar symptoms to the post-emergence treatments, but yellowing/chlorosis was also often observed.

Post-emergence selectivity

A wide range of annual broad-leaved weeds were controlled. Sinapis arvensis, the most sensitive, was controlled at 0.33 kg/ha while the other crucifer, Raphanus raphanistrum was controlled at 1.0 kg/ha as well as Rumex obtusifolius and Solanum nigrum. A further six species were susceptible to the high dose, including Beta vulgaris, the two composites, Chrysanthemum segetum and Senecio vulgaris and also Polygonum lapathifolium, Chenopodium

album and Viola arvensis. Although the remaining broad-leaved weeds were not adequately controlled (Matricaria perforata, Galium aparine, Stellaria media, Spergula arvensis and Veronica persica) their vigour was reduced by around 50% at the higher doses. However, the perennial, Cirsium arvense, though not adequately controlled at the main assessment, was eventually killed or controlled at 3.0 kg/ha.

Tolerance was achieved only in graminaceous crops. Wheat, barley, maize and perennial ryegrass were resistant to the high dose while oat was only marginally reduced in vigour. Because tolerance of wheat, barley and maize were so high any safening effect by NA could not be observed. Onion and all broad-leaved crops were sensitive, especially brassicas and legumes.

No obvious advantages in selective annual broad-leaved weed control in gramineae are apparent with MCPA-thioethyl, as compared with existing phenoxyalkanoic herbicides. However, comparative testing on perennial broad-leaved weeds may be worthwhile, in view of the effects found with Cirsium arvense. A disadvantage is in the sulphurous odour that results soon after spraying.

ACTIVITY EXPERIMENT

MCPA-THIOETHYL

		0.125 kg/ha	0.5 kg/ha	2.0 kg/ha
DWARF BEAN	F	xxxxxxxxxxxxxx xxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxx	xxxxxxxxxxxxxx xxx
	S	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxx
	P	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxx
	I	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxx
KALE	F	xxxxxxxxxxxxx xxxxxxxx	xxxxxxxxxxxxx xxxxx	xxxxxxx xxxx
	S	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxx
	P	xxxxxxxxxx xxxxxxxx	xxxxxxxxxx xxxxx	xx xxxx
	I	xxxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxx xxxxxxxx	xxxxxxxxxxx xxxxxx
POLYGONUM AMPHIBIUM	F	xxxxxxxxxxxxx xxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxx	xxxxxxxxxxxxx xxxxxxx
	S	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx
	P	xxxxxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxxxx xxxxx
	I	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxx	xxxxxxxxxxxxx xxxxxx
PERENNIAL RYEGRASS	F	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx
	S	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxx
	P	xxxxxxxxxxxxx xxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxx	xxxxxxxxxx xxxxxx
	I	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxx xxxxxxxx
AVENA FATUA	F	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx
	S	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx
	P	xxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxx
	I	xxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx+ xxxxxxxxxxx
ELYMUS REPENS	F	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx
	S	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx
	P	xxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxxx xxxxxxxxxxxx	xxx xxx
	I	xxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxx xxxxxxxxx

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

TRIAL NUMBER 33

MCPA-TE

SPECIES	0.33 kg/ha.		1.00 kg/ha		3.00 kg/ha	
WHEAT	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(1)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
WHEAT+S	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(2)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
BARLEY	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(3)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx
BARLEY+S	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(4)	100	xxxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx
OAT	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(5)	86	xxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxx
PER RYGR	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(6)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
ONION	80	xxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxxx
(8)	71	xxxxxxxxxxxxxx	64	xxxxxxxxxxxxx	36	xxxxxxx
DWF BEAN	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	75	xxxxxxxxxxxxxx
(9)	64	xxxxxxxxxxxxx	43	xxxxxxxxx	29	xxxxxx
FLD BEAN	100	xxxxxxxxxxxxxxxxxxxx	33	xxxxxxx	0	
(10)	29	xxxxxx	14	xxx	0	
W CLOVER	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	69	xxxxxxxxxxxxx
(12)	71	xxxxxxxxxxxxxx	57	xxxxxxxxxxx	29	xxxxxx
RAPE	40	xxxxxxxx	0		0	
(14)	21	xxxx	0		0	
KALE	80	xxxxxxxxxxxxxxxx	20	xxxx	20	xxxx
(15)	29	xxxxxx	14	xxx	7	x
CABBAGE	100	xxxxxxxxxxxxxxxxxxxx	80	xxxxxxxxxxxxxxxx	80	xxxxxxxxxxxxxxxx
(16)	29	xxxxxx	29	xxxxxx	14	xxx

TRIAL NUMBER 33

MCPA-TE

SPECIES	0.33 kg/ha	1.00 kg/ha	3.00 kg/ha
CARROT (18)	100 xxxxxxxxxxxxxxxxxxxx 50 xxxxxxxxxx	80 xxxxxxxxxxxxxxxx 36 xxxxxxx	0 0
PARSNIP (19)	100 xxxxxxxxxxxxxxxxxxxx 64 xxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx 43 xxxxxxxxx	37 xxxxxxx 14 xxx
LETTUCE (20)	100 xxxxxxxxxxxxxxxxxxxx 43 xxxxxxxxx	80 xxxxxxxxxxxxxxxx 29 xxxxxx	0 0
SUG BEET (22)	100 xxxxxxxxxxxxxxxxxxxx 57 xxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx 36 xxxxxxx	100 xxxxxxxxxxxxxxxxxxxx 21 xxxx
BETA VUL (23)	100 xxxxxxxxxxxxxxxxxxxx 43 xxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx 36 xxxxxxx	40 xxxxxxxx 14 xxx
BROM STE (24)	100 xxxxxxxxxxxxxxxxxxxx 100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx 100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx 100 xxxxxxxxxxxxxxxxxxxx
AVE FATU (26)	100 xxxxxxxxxxxxxxxxxxxx 100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx 100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx 93 xxxxxxxxxxxxxxxxxx
ALO MYOS (27)	100 xxxxxxxxxxxxxxxxxxxx 100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx 79 xxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx 79 xxxxxxxxxxxxxxxx
POA ANN (28)	100 xxxxxxxxxxxxxxxxxxxx 100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx 100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx 100 xxxxxxxxxxxxxxxxxxxx
POA TRIV (29)	100 xxxxxxxxxxxxxxxxxxxx 100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx 79 xxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx 43 xxxxxxxxx
SIN ARV (30)	60 xxxxxxxxxxxx 29 xxxxxx	90 xxxxxxxxxxxxxxxxxx 21 xxxx	100 xxxxxxxxxxxxxxxxxxxx 14 xxx
RAPH RAP (31)	70 xxxxxxxxxxxxxx 36 xxxxxxx	70 xxxxxxxxxxxxxx 21 xxxx	0 0
CHRY SEG (32)	100 xxxxxxxxxxxxxxxxxxxx 71 xxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx 57 xxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx 29 xxxxxx

TRIAL NUMBER 33

SPECIES		0.33 kg/ha	MCPA-TE 1.00 kg/ha		3.00 kg/ha	
MAT PERF	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(33)	71	xxxxxxxxxxxxxx	64	xxxxxxxxxxxx	43	xxxxxxxxx
SEN VULG	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(34)	50	xxxxxxxxxx	36	xxxxxxx	29	xxxxxx
POL LAPA	87	xxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxx
(35)	64	xxxxxxxxxxxxx	57	xxxxxxxxxxx	29	xxxxxx
GAL APAR	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(38)	86	xxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxx	57	xxxxxxxxxx
CHEN ALB	100	xxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxx	0	
(39)	43	xxxxxxxxx	36	xxxxxxx	0	
STEL MED	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(40)	71	xxxxxxxxxxxxxx	64	xxxxxxxxxxxx	36	xxxxxxx
SPER ARV	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(41)	57	xxxxxxxxxxx	43	xxxxxxxxx	36	xxxxxxx
VER PERS	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(42)	79	xxxxxxxxxxxxxxx	64	xxxxxxxxxxxx	36	xxxxxxx
VI ARVE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	40	xxxxxxxx
(43)	64	xxxxxxxxxxxxx	50	xxxxxxxxxx	21	xxxx
RUM OBTU	87	xxxxxxxxxxxxxxxxx	50	xxxxxxxxxx	25	xxxxx
(44)	43	xxxxxxxxx	29	xxxxxx	7	x
EL REPEN	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(47)	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
CIRS ARV	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(50)	86	xxxxxxxxxxxxxxxxx	43	xxxxxxxxx	36	xxxxxxx
MAIZE+S	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(56)	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx

POST-EMERGENCE SELECTIVITY TEST

TRIAL NUMBER 33

MCPA-TE

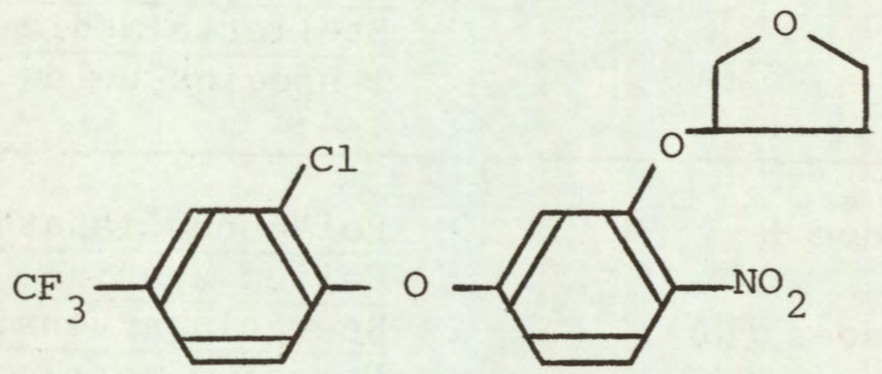
SPECIES	0.33 kg/ha		1.00 kg/ha		3.00 kg/ha	
MAIZE	100	XXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXX
(57)	100	XXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXXX
SOL NIG	100	XXXXXXXXXXXXXXXXXXXX	0		0	
(81)	50	XXXXXXXXXX	0		0	

MT-124

Code number MT-124 Trade name/s-

Chemical name 3-[2-nitro-5-(2-chloro-4-trifluoromethylphenoxy) phenoxy] tetrahydrofuran

Structure



Source Mitsui Toatsu Chemicals, Inc.
2-5, Kasumigaseki 3-chome
Chiyoda-ku
Tokyo 100
Japan

Information available and suggested uses

Pre- and post-emergence control of certain annual and perennial broad-leaved and grass weeds in rice, wheat, soyabean, maize (post-emergence only) and peanut (pre-emergence only) at 0.2 - 1.5 kg a.i./ha.

Formulation used Emulsifiable concentrate, 30% a.i.

Spray volume 370 l/ha.

RESULTS

Full results are given in the histograms on pages 17-21 and potential selectivities are summarised in the following table.

RATE (kg a.i./ha)	CROPS: vigour reduced by 15% or less	WEEDS: number or vigour reduced by 70% or more
0.80	wheat+safener (NA)	Sinapis arvensis Raphanus raphanistrum Chrysanthemum segetum Senecio vulgaris Chenopodium album Stellaria media + species below
0.20	species above + wheat barley+safener (NA)	Polygonum lapathifolium Galium aparine Spergula arvensis Veronica persica Viola arvensis Rumex obtusifolius Solanum nigrum
0.05	None listed as no weeds controlled	None

Comments on results

Activity experiment

The foliar spray was generally more active than the soil drench, post-emergence, particularly with the broad-leaved species. High activity also resulted from pre-emergence sprays particularly on the annual species, the surface spray being much more toxic than with incorporation. The two perennials tended to be more resistant than the four annual species. Thus the pattern of activity is typical of diphenyl ethers.

Symptoms on susceptible species

These were also typical of diphenyl ethers. Severe scorch/necrosis, usually as distinct, localized patches, developed within a few hours of spraying, particularly on broad-leaved species. New buds were not always affected however, such that with some species, notably perennials, plants recovered well, suggesting that as with other diphenyl-ethers, translocation is very low. Plants often failed to emerge from pre-emergence treatments at the higher doses. At lower doses they were often deformed, looping and trapping of leaves being a prominent feature with the grasses. Colour changes were seen with most of the soil treatments, such as a lighter green and a shinier appearance of leaves, these often developing distinct localized necrotic patches as in the foliar treatments.

Post-emergence selectivity

Seven annual broad-leaved weeds were controlled at 0.2 kg/ha, most interesting of which were Galium aparine, Veronica persica and Viola arvensis but also polygonaceous weeds (Polygonum lapathifolium and Rumex obtusifolius), Spergula arvensis and Solanum nigrum. At 0.8 kg/ha a further six were

controlled including both crucifers (Sinapis arvensis and Raphanus raphanistrum), two composites (Chrysanthemum segetum and Senecio vulgaris), Chenopodium album and Stellaria media. The only two annual broad-leaved weeds not adequately controlled (Beta vulgaris and Matricaria perforata) were reduced by around 50% in vigour at the two higher doses, however. The perennial, Cirsium arvense was quite resistant, as were all grass weeds.

Tolerance was limited to only two gramineae, wheat and barley, both, of which withstood 0.2 kg/ha, while vigour reductions of only 29 and 21% were recorded at 0.8 kg/ha. A mild safening effect (15%) of NA was found with wheat. All broad-leaved species and onion were damaged.

The potentially wide spectrum of annual broad-leaved weed control in wheat and barley is interesting particularly with regard to current problem weeds such as Galium aparine, Viola arvensis and Veronica persica. The lack of grass weed control is a disadvantage, necessitating mixture studies. However, a recent pre-emergence test has shown at least some grasses to be sensitive e.g. Poa species (Richardson and West, 1984, in preparation), while elsewhere Echinochloa crus-galli, Setaria viridis, Digitaria sanguinalis and Sorghum halepense are sensitive to pre-emergence treatments.

ACTIVITY EXPERIMENT

MT-124

		0.1 kg/ha	0.5 kg/ha	2.5 kg/ha
DWARF BEAN	F	xxxxxxxxxxxxxxx xxxxx	xxxxxxxxxxxxxxx xxx	xxxxxxxxxxxxxxx xxx
	S	xxxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxxxxx
	P	xxxxxxxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxxxx	xx xxx
	I	xxxxxxxxxxxxxxx xxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxxx	xxxxx xxxxxx
KALE	F	xxxxxxxxxxxxxxx xxxxxxxx	xxxxxxxxxxxxxxx xxxxxx	xxxxxxxxxx xx
	S	xxxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxxx
	P	xxxxxxxxxxxxxxx+ xxxxxxxxxxxxxx	xxxxxxxx xxxxxxxx	o o
	I	xxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxx xxxxxx
POLYGONUM AMPHIBIUM	F	xxxxxxxxxxxxxxx xxxxxxxx	xxxxxxxxxxxxxxx xxxxx	xxxxxxxxxxxxxxx xxxxx
	S	xxxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxx	xxxxxxxxxxxxxxx xxxx
	P	xxxxxxxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxx
	I	xxxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxxxx
PERENNIAL RYEGRASS	F	xxxxxxxxxxxxxxx xxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxx	xxxxxxxxxxxxxxx xxxxxx
	S	xxxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxx
	P	xxxxxxxxxxxxxxx xxxxxxxxxx	xxxxxxxx xxxxxx	o o
	I	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxxx+ xxxxxxxxxxxx	xxxxxxxxx xxxxxx
AVENA FATUA	F	xxxxxxxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxx
	S	xxxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxx
	P	xxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxx	xxxxx xxxxx
	I	xxxxxxxxxxxxxxx+ xxxxxxxxxxxxxx	xxxxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxxxxxxx+ xxxxxxxxxx
ELYMUS REPENS	F	xxxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxx
	S	xxxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxx
	P	xxxxxxxxxxxxxxx+ xxxxxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxxx xxxxxxxxxxxx
	I	xxxxxxxxxxxxxx xxxxxxxxxxxxxxx	xxxxxxxxxxxxxxx+ xxxxxxxxxxxxxx	xxxxxxxxxxxxxxx+ xxxxxxxxxx

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

TRIAL NUMBER 33

MT-124

SPECIES	0.05 kg/ha	0.20 kg/ha	0.80 kg/ha
WHEAT (1)	100 86	100 86	100 71
WHEAT+S (2)	100 93	100 79	100 86
BARLEY (3)	100 86	100 86	100 79
BARLEY+S (4)	100 93	100 86	100 71
OAT (5)	100 86	100 71	100 64
PER RYGR (6)	100 86	100 79	100 57
ONION (8)	100 79	100 71	60 50
DWF BEAN (9)	100 43	100 36	100 14
FLD BEAN (10)	100 64	100 57	100 43
W CLOVER (12)	100 71	100 57	56 36
RAPE (14)	90 71	100 71	100 50
KALE (15)	100 79	100 57	100 43
CABBAGE (16)	100 71	100 57	90 43

TRIAL NUMBER 33

MT-124

SPECIES		0.05 kg/ha		0.20 kg/ha		0.80 kg/ha
CARROT	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(18)	79	xxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxx	57	xxxxxxxxxx
PARSNIP	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(19)	71	xxxxxxxxxxxxxx	71	xxxxxxxxxxxxxx	50	xxxxxxxxxx
LETTUCE	100	xxxxxxxxxxxxxxxxxxxx	40	xxxxxxxx	0	
(20)	64	xxxxxxxxxxxxx	64	xxxxxxxxxxxxx	0	
SUG BEET	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(22)	57	xxxxxxxxxx	57	xxxxxxxxxx	57	xxxxxxxxxx
BETA VUL	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(23)	57	xxxxxxxxxx	57	xxxxxxxxxx	43	xxxxxxxxx
BROM STE	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(24)	71	xxxxxxxxxxxxxx	71	xxxxxxxxxxxxxx	71	xxxxxxxxxxxxxx
AVE FATU	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(26)	79	xxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxx	64	xxxxxxxxxxxx
ALO MYOS	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(27)	93	xxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxx
POA ANN	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(28)	93	xxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxx
POA TRIV	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(29)	93	xxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx	64	xxxxxxxxxxxx
SIN ARV	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	60	xxxxxxxxxxxx
(30)	86	xxxxxxxxxxxxxxxxx	64	xxxxxxxxxxxxx	21	xxxx
RAPH RAP	100	xxxxxxxxxxxxxxxxxxxx	80	xxxxxxxxxxxxxxxx	10	xx
(31)	64	xxxxxxxxxxxxx	50	xxxxxxxxxx	14	xxx
CHRY SEG	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(32)	86	xxxxxxxxxxxxxxxxx	57	xxxxxxxxxx	14	xxx

TRIAL NUMBER 33

MT-124

SPECIES		0.05 kg/ha		0.20 kg/ha		0.80 kg/ha
MAT PERF	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxx
(33)	79	xxxxxxxxxxxxxxxx	57	xxxxxxxxxx	43	xxxxxxxxx
SEN VULG	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	20	xxxx
(34)	64	xxxxxxxxxxxx	57	xxxxxxxxxx	14	xxx
POL LAPA	44	xxxxxxxxx	12	xx	0	
(35)	50	xxxxxxxxxx	43	xxxxxxxxx	0	
GAL APAR	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(38)	43	xxxxxxxxx	29	xxxxxx	14	xxx
CHEN ALB	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	70	xxxxxxxxxxxxxx
(39)	71	xxxxxxxxxxxxxx	57	xxxxxxxxxx	14	xxx
STEL MED	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	0	
(40)	79	xxxxxxxxxxxxxxxx	64	xxxxxxxxxxxx	0	
SPER ARV	100	xxxxxxxxxxxxxxxxxxxx	10	xx	0	
(41)	43	xxxxxxxxx	21	xxxx	0	
VER PERS	100	xxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxx	0	
(42)	64	xxxxxxxxxxxx	29	xxxxxx	0	
VI ARVE	70	xxxxxxxxxxxxxx	0		0	
(43)	36	xxxxxxx	0		0	
RUM OBTU	50	xxxxxxxxxx	0		0	
(44)	43	xxxxxxxxx	0		0	
EL REPEN	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(47)	86	xxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxx
CIRS ARV	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(50)	79	xxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxx	57	xxxxxxxxxx
MAIZE+S	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(56)	86	xxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxxx

TRIAL NUMBER 33

MT-124

SPECIES		0.05 kg/ha		0.20 kg/ha		0.80 kg/ha
MAIZE	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(57)	79	xxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxx	71	xxxxxxxxxxxxxx
SOL NIG	87	xxxxxxxxxxxxxxxxx	0		0	
(81)	50	xxxxxxxxxx	0		0	

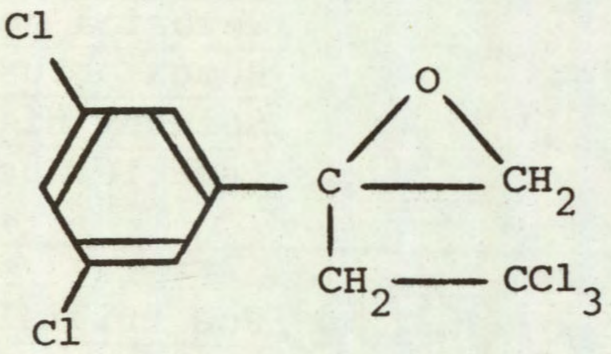
Tridiphane

Code number Dowco 356 (M 4212)
XRM-4640

Trade name/s Tandem (+ atrazine)

Chemical name (±)-2-(3,5-dichlorophenyl)-2-(2,2,2-trichloroethyl)oxirane

Structure



Source
Dow Chemical Co Ltd
Kings Lynn
Norfolk
England

Information available and suggested uses

Post-emergence control of annual grass weeds in maize.

Formulation used Emulsifiable concentrate 50% a.i.

Spray volume 370 l/ha.

RESULTS

Full results are given in the histograms on pages 25-29 and potential selectivities are summarised in the following table.

RATE (kg a.i./ha)	CROPS: vigour reduced by less than 15%	WEEDS: number or vigour reduced by 70% or more
4.00	barley maize+safener (NA)	Alopecurus myosuroides Poa annua Raphanus raphanistrum Galium aparine Veronica persica Rumex obtusifolis Solanum nigrum +species below
1.00	species above + barley+safener (NA) kale carrot parsnip radish	Poa trivialis
0.25	None listed as no weeds controlled	None

Comments on results

Activity experiment

The foliar spray was active on all species, broad-leaved species being generally more susceptible than grasses. The soil drench, post-emergence was virtually ineffective on broad-leaved species, only kale showing symptoms at the highest dose. However, soil drenches were much more active on grasses than were foliar sprays. Greatest activity resulted from pre-emergence treatments, perennial ryegrass being particularly sensitive. Surface sprays pre-emergence, were more active than incorporated on all species except Elymus repens.

Symptoms on susceptible species

A mild to severe scorch developed on dwarf bean and kale within 24 hours of applying the foliar spray, but these symptoms took longer to develop on Polygonum amphibium. Unifoliate leaves of bean later became darker green in colour while trifoliate buds were inhibited. New leaves of kale were often trapped or stuck together. Some extra tillering was seen on Avena fatua. The soil drenches caused severe to complete inhibition of growth of grasses, leaves becoming darker green in colour before necrosis developed. Die-back before, at or soon after emergence was common in grasses treated with the higher doses pre-emergence while broad-leaved species were severely retarded in growth, often showing leaf deformities. Chlorosis and yellowing of leaves of P. amphibium was observed with incorporated treatments.

Post-emergence selectivity

Poa trivialis was the most sensitive weed, being controlled at 1.0 kg/ha. Other grass weeds, Poa annua, and more interestingly, Alopecurus myosuroides, were controlled at 4.0 kg/ha. Five annual broad-leaved weeds were susceptible at 4.0 kg/ha, most impressively Galium aparine and Veronica persica. Solanum nigrum, Rumex obtusifolius and Raphanus raphanistrum were also controlled at this dose. Composite weeds were very resistant.

Barley and maize tolerated 4.0 kg/ha. Kale, radish, carrot and parsnip were the only other tolerant crops (at 1.0 kg/ha). The safener, NA caused only minor changes in activity (7 to 14%).

The results here are somewhat at variance with the manufacturers information that tridiphane is for post-emergence control of annual grass weeds. The activity test showed greater effects pre-emergence. However sufficient post-emergence activity justified investigation of a wide range of species, when control of broad-leaved species was greater than grass weed control. This apparent anomaly could simply be due to a somewhat different species range between Europe and North America. However, potential control of Alopecurus myosuroides, Galium aparine and Veronica persica in barley may warrant some further testing, provided that the dose at which this can be achieved is economical.

ACTIVITY EXPERIMENT

TRIDIPHANE

		0.375 kg/ha	1.5 kg/ha	6.0 kg/ha
DWARF BEAN	F	xxxxxxxxxxxxxx xxxxxxxxxx	xxxxxxxxxxxxxx xxxxxx	xxxxxxxxxxxxxx xxxx
	S	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxxx
	P	xxxxxxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxx
	I	xxxxxxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxx
KALE	F	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxx
	S	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxx
	P	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxx xxxxx
	I	xxxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxxxxxx+ xxxxxxxxxxxxx	xxxxxxxxxxxxxx+ xxxxxxxxxxxxx
POLYGONUM AMPHIBIUM	F	xxxxxxxxxxxxxx xxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxx	xxxxxxxxxxxxxx xxxxxxx
	S	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxx
	P	xxxxxxxxxxxxxx xxxxxxxxxxx	xxxxxxxxxxxxx xxxxxx	xxxxx xx
	I	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxx
PERENNIAL RYEGRASS	F	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxx
	S	xxxxxxxxxxxxxx xxxxx	xxxxxxxxxxxxxx xxxxx	xxxxxxxxxxxxxx xxxxx
	P	x xxx	o o	o o
	I	xxxxxxxxxx xxxxxxxxxx	o o	o o
AVENA FATUA	F	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxx
	S	xxxxxxxxxxxxxx xxxxxxxx	xxxxxxxxxxxxxx xxxxx	xxxxxxxxxxxxxx xxxx
	P	xxxxxxxxxxxxxx+ xxxxxxxxxx	xxxxxxxxxxxxxx xxx	xxxxxxx xx
	I	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxx	xx xxx
ELYMUS REPENS	F	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxx
	S	xxxxxxxxxxxxxx xxxxxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxxxxx	xxxxxxxxxxxxxx xxxxxxx
	P	xxxxxxxxxx xxxxxxxxxxxx	xxxxxxxxxxxxx xxxxxxxxx	xxxxxxxxxxxxx xxxxx
	I	xxxxxxxxxxxxx+ xxxxxxxxxxx	xxxxxxxxxxx xxxxxxxx	xx xxx

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

TRIAL NUMBER 33

TRIDIPHANE

SPECIES	0.25 kg/ha		1.00 kg/ha		4.00 kg/ha	
WHEAT	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(1)	86	xxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxx
WHEAT+S	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(2)	100	xxxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxx	57	xxxxxxxxxx
BARLEY	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(3)	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx
BARLEY+S	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(4)	100	xxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxx
OAT	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(5)	86	xxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxx	57	xxxxxxxxxx
PER RYGR	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(6)	57	xxxxxxxxxx	43	xxxxxxxx	29	xxxxxx
ONION	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxx
(8)	71	xxxxxxxxxxxxx	57	xxxxxxxxxx	57	xxxxxxxxxx
DWF BEAN	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(9)	71	xxxxxxxxxxxxx	71	xxxxxxxxxxxxx	29	xxxxxx
FLD BEAN	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(10)	86	xxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxx	57	xxxxxxxxxx
W CLOVER	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(12)	86	xxxxxxxxxxxxxxxxx	64	xxxxxxxxxxxx	43	xxxxxxxxx
RAPE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(14)	79	xxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxx
KALE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(15)	93	xxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxx
CABBAGE	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(16)	86	xxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxx	64	xxxxxxxxxxxx

TRIAL NUMBER 33

TRIDIPHANE

SPECIES		0.25 kg/ha	1.00 kg/ha	4.00 kg/ha
CARROT	100	xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx
(18)	100	xxxxxxxxxxxxxxxxxxxx	93 xxxxxxxxxxxxxxxxxx	64 xxxxxxxxxxxxx
PARSNIP	100	xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx
(19)	100	xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx	71 xxxxxxxxxxxxxx
LETTUCE	100	xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx
(20)	57	xxxxxxxxxxx	57 xxxxxxxxxxx	50 xxxxxxxxxx
SUG BEET	100	xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx
(22)	86	xxxxxxxxxxxxxxxxx	79 xxxxxxxxxxxxxxxxx	57 xxxxxxxxxxx
BETA VUL	100	xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx
(23)	79	xxxxxxxxxxxxxxxxx	79 xxxxxxxxxxxxxxxxx	50 xxxxxxxxxx
BROM STE	100	xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx
(24)	100	xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx	86 xxxxxxxxxxxxxxxxx
AVE FATU	100	xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx
(26)	86	xxxxxxxxxxxxxxxxx	57 xxxxxxxxxxx	50 xxxxxxxxxx
ALO MYOS	100	xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx
(27)	57	xxxxxxxxxxx	36 xxxxxxx	29 xxxxxx
POA ANN	100	xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx	94 xxxxxxxxxxxxxxxxxxx
(28)	71	xxxxxxxxxxxxxx	43 xxxxxxxxx	29 xxxxxx
POA TRIV	100	xxxxxxxxxxxxxxxxxxxx	60 xxxxxxxxxxxx	40 xxxxxxxx
(29)	50	xxxxxxxxxx	29 xxxxxx	14 xxx
SIN ARV	100	xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx
(30)	86	xxxxxxxxxxxxxxxxx	71 xxxxxxxxxxxxxx	57 xxxxxxxxxxx
RAPH RAP	100	xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx	20 xxxx
(31)	86	xxxxxxxxxxxxxxxxx	86 xxxxxxxxxxxxxxxxx	21 xxxx
CHRY SEG	100	xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx	100 xxxxxxxxxxxxxxxxxxxx
(32)	100	xxxxxxxxxxxxxxxxxxxx	86 xxxxxxxxxxxxxxxxx	86 xxxxxxxxxxxxxxxxx

Click here to continue