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Localized scorch spots resulted from the foliar spray within 24 hours of treatment in some species. Broad-leaved species tended to recover. However some species were stunted temporarily; with kale and rape the leaves appeared smaller and darker green while slight deformities were seen with cabbage. Some extra tillering was observed with certain grasses such as Agropyron repens and wheat. Pea and Avena fatua were poorly anchored in soil at the high dose, due to weakened root systems.

Post-emergence selectivities

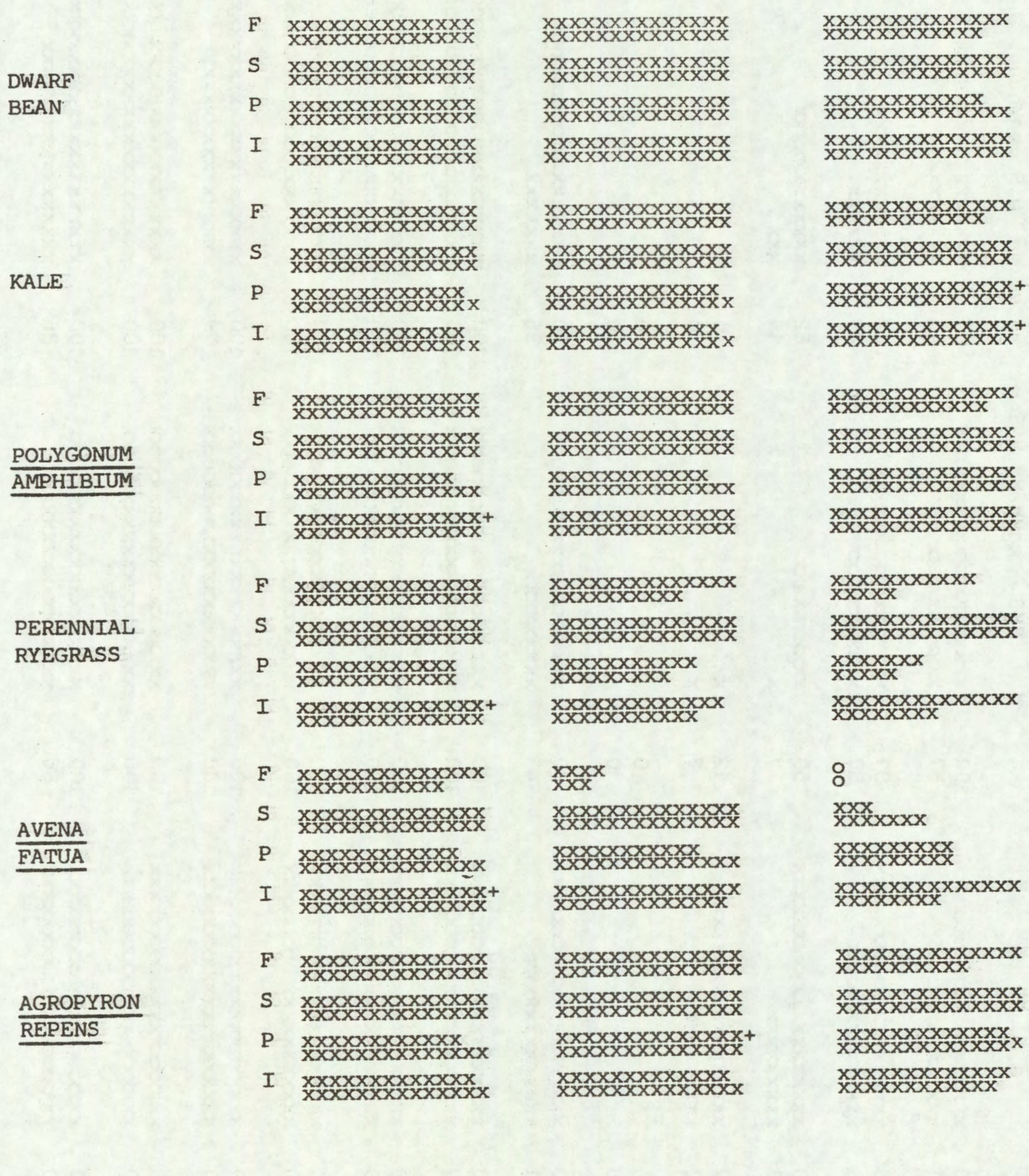
Six grass weeds were controlled; Avena fatua, Poa trivialis and Agrostis stolonifera at 0.1 kg/ha, Alopecurus myosuroides and Phalaris minor at 0.3 kg/ha and Phalaris paradoxa at 0.9 kg/ha. All other grasses (Bromus sterilis, Festuca rubra, Poa annua, A. repens) and all broad-leaved species were resistant.

Onion and broad-leaved crops were tolerant. Perennial ryegrass and the cereals, notably maize and oat, were very sensitive. The safener, NA did not alter herbicidal activity on wheat, barley or maize.

An interesting spectrum of grass weeds can be controlled with high selectivity in broad-leaved crops and onion. However the resistance of Poa annua and A. repens is a disadvantage.

ACTIVITY EXPERIMENT

HOE 33171



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

HOE 33171

Species		0.1 kg/ha		0.3 kg/ha		0.9 kg/ha
WHEAT	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	87	xxxxxxxxxxxxxxxxx
(1)	71	xxxxxxxxxxxxxx	57	xxxxxxxxxxx	43	xxxxxxxxx
WHEAT + S	100	xxxxxxxxxxxxxxxxxxxx	87	xxxxxxxxxxxxxxxxx	62	xxxxxxxxxxxx
(2)	71	xxxxxxxxxxxxxx	57	xxxxxxxxxxx	29	xxxxxx
BARLEY	100	xxxxxxxxxxxxxxxxxxxx	50	xxxxxxxxxx	62	xxxxxxxxxxxx
(3)	43	xxxxxxxxx	7	x	14	xxx
BARLEY + S	87	xxxxxxxxxxxxxxxx	12	xx	0	
(4)	43	xxxxxxxxx	7	x	0	
OAT	0		0		0	
(5)	0		0		0	
PER RYGR	100	xxxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxxx
(6)	71	xxxxxxxxxxxxxx	43	xxxxxxxxx	36	xxxxxxx
ONION	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(8)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
DWF BEAN	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(9)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
FLD BEAN	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(10)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
PEA	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(11)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxx
W CLOVER	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(12)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
RAPE	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(14)	100	xxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx

HOE 33171

Species		0.1 kg/ha		0.3 kg/ha		0.9 kg/ha
KALE	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(15)	100	xxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx
CABBAGE	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(16)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxxx
CARROT	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(18)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
PARSNIP	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(19)	93	xxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
LETTUCE	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(20)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
FENUGREK	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(21)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
SUG BEET	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(22)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
BETA VUL	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(23)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
BROM STE	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(24)	86	xxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
FEST RUB	94	xxxxxxxxxxxxxxxxxxx	94	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(25)	93	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
AVA FATU	50	xxxxxxxxxx	0		0	
(26)	21	xxxx	0		0	
ALO MYOS	50	xxxxxxxxxx	10	xx	0	
(27)	36	xxxxxxx	21	xxxx	0	

HOE 33171

Species		0.1 kg/ha		0.3 kg/ha		0.9 kg/ha
POA ANN	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(28)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx
POA TRIV	0		0		0	
(29)	0		0		0	
SIN ARV	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(30)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx
RAPH RAP	125	xxxxxxxxxxxxxxxxxxxx+	125	xxxxxxxxxxxxxxxxxxxx+	125	xxxxxxxxxxxxxxxxxxxx+
(31)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
CHR SEG	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(32)	100	xxxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx
TRIP MAR	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(33)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxx
SEN VULG	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(34)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
POL LAPA	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(35)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
GAL APAR	89	xxxxxxxxxxxxxxxxxx	67	xxxxxxxxxxxxx	89	xxxxxxxxxxxxxxxxxx
(38)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
CHEN ALB	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	92	xxxxxxxxxxxxxxxxxx
(39)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
STEL MED	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(40)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
SPER ARV	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(41)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx

HOE 33171

Species			0.1 kg/ha			0.3 kg/ha			0.9 kg/ha
VER PERS	71		xxxxxxxxxxxxxx	71		xxxxxxxxxxxxxx	71		xxxxxxxxxxxxxx
(42)	86		xxxxxxxxxxxxxxxxx	100		xxxxxxxxxxxxxxxxxxx	93		xxxxxxxxxxxxxxxxx
RUM OBTU	100	R	xxxxxxxxxxxxxxxxxxx	100	R	xxxxxxxxxxxxxxxxxxx	100	R	xxxxxxxxxxxxxxxxxxx
(44)	100	R	xxxxxxxxxxxxxxxxxxx	100	R	xxxxxxxxxxxxxxxxxxx	100	R	xxxxxxxxxxxxxxxxxxx
AG REPEN	100		xxxxxxxxxxxxxxxxxxx	100		xxxxxxxxxxxxxxxxxxx	100		xxxxxxxxxxxxxxxxxxx
(47)	93		xxxxxxxxxxxxxxxxxx	93		xxxxxxxxxxxxxxxxxx	57		xxxxxxxxxx
AG STOLO	50		xxxxxxxxxx	17		xxx	0		
(48)	14		xxx	7		x	0		
CIRS ARV	100	R	xxxxxxxxxxxxxxxxxxx	100	R	xxxxxxxxxxxxxxxxxxx	100	R	xxxxxxxxxxxxxxxxxxx
(50)	100	R	xxxxxxxxxxxxxxxxxxx	100	R	xxxxxxxxxxxxxxxxxxx	86	R	xxxxxxxxxxxxxxxxx
PHAL PAR	70		xxxxxxxxxxxxxx	50		xxxxxxxxxx	20		xxxx
(54)	36		xxxxxxx	43		xxxxxxxxx	7		x
MAIZE + S	0			0			0		
(56)	0			0			0		
MAIZE	0			0			0		
(57)	0			0			0		
SOL NIG	100		xxxxxxxxxxxxxxxxxxx	100		xxxxxxxxxxxxxxxxxxx	100		xxxxxxxxxxxxxxxxxxx
(81)	100		xxxxxxxxxxxxxxxxxxx	100		xxxxxxxxxxxxxxxxxxx	100		xxxxxxxxxxxxxxxxxxx
PHAL MIN	70		xxxxxxxxxxxxxx	20		xxxx	0		
(84)	43		xxxxxxxxx	14		xxx	0		
OXAL LAT	100		xxxxxxxxxxxxxxxxxxx	100		xxxxxxxxxxxxxxxxxxx	100		xxxxxxxxxxxxxxxxxxx
(87)	93		xxxxxxxxxxxxxxxxxx	100		xxxxxxxxxxxxxxxxxxx	86		xxxxxxxxxxxxxxxxx

NB: AC 25225 is imazapyr, DOWCO 453 is haloxyfop, HOE 33171 is fenoxaprop-ethyl, HOE 35609 is fenthiaprop-ethyl

HOE 35609

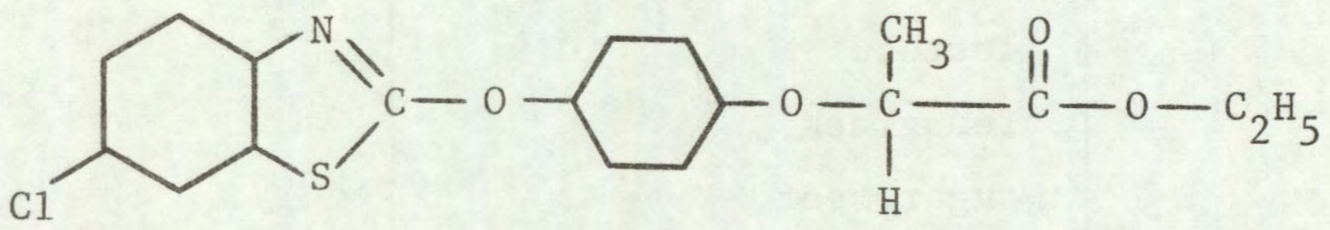
Code numbers HOE 35609

HOE 00583

Proposed common name Fenthiaprop-ethyl (BSI approved March 1983)

Chemical name Ethyl 2-[4(6-chloro-3a,4,5,6,7,7a-hexahydrobenzothiazol-2-yloxy)cyclohexyloxy]propionate.

Structure



Source

Hoechst UK Ltd
Agriculture Division
East Winch Hall
East Winch
Norfolk PE32 1HN

Information available and suggested uses

For control of grass weeds in dicotyledonous crops. Control of annual species at 0.18 to 0.24 kg a.i./ha; perennials at 0.48 to 0.72 kg a.i./ha.

Formulation used Emulsifiable concentrate 24% a.i. (including surfactant Genapol X-060 at 24% a.i.)

Spray volume For activity experiment 373 l/ha.
For post-emergence selectivity experiment 371 l/ha.

RESULTS

Full results are presented in the histograms on pages 31-35 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
0.8	onion dwarf bean field bean pea white clover rape cabbage carrot parsnip lettuce fenugreek sugar beet radish	Avena fatua Agrostis stolonifera Phalaris minor + species below
0.2	species above + kale	Bromus sterilis Poa trivialis + species below
0.05	species above + maize + safener (NA)	Alopecurus myosuroides Agropyron repens

Comments on results

Activity experiment

The pattern of activity was very similar to that of HOE 33171 with grasses susceptible and broad-leaved species tolerant. HOE 35609 was more active however, especially on perennial ryegrass and Agropyron repens. The foliar spray was the most effective means of application, being markedly superior to the soil drench, post-emergence. Activity was considerably higher pre-emergence when compared to HOE 33171, especially with the smaller seeded perennial ryegrass. Incorporated pre-emergence treatments tended to be more effective than surface sprays with A. fatua and A. repens.

NB: AC 25225 is imazapyr, DOWCO 453 is haloxyfop, HOE 33171 is fenoxaprop-ethyl, HOE 35609 is fenthiaprop-ethyl

Symptoms

These were almost identical to the previous herbicide, HOE 33171, pre- and post-emergence treatments causing severe stunting, necrosis and sometimes chlorosis of leaves of grasses. Some minor temporary necrosis occurred on broad-leaved species with foliar spraying, occasionally with some stunting of growth, but only at the higher dose(s). Fenugreek however exhibited a mild chlorosis or bleaching of trifoliate leaves. With kale, leaves became darker green in colour and showed some slight twisting and curling, but again this was only at the high dose.

Post-emergence selectivities

Several grass weeds were controlled. The perennial, Agropyron repens, was very sensitive, being controlled at only 0.05 kg/ha. Alopecurus myosuroides was also susceptible at this dose. Bromus sterilis, Poa trivialis at 0.2 kg/ha and Avena fatua and Agrostis stolonifera at 8 kg/ha, were the other susceptible grass weeds. Poa annua and Festuca rubra were very resistant, particularly the latter. All broad-leaved weeds were resistant.

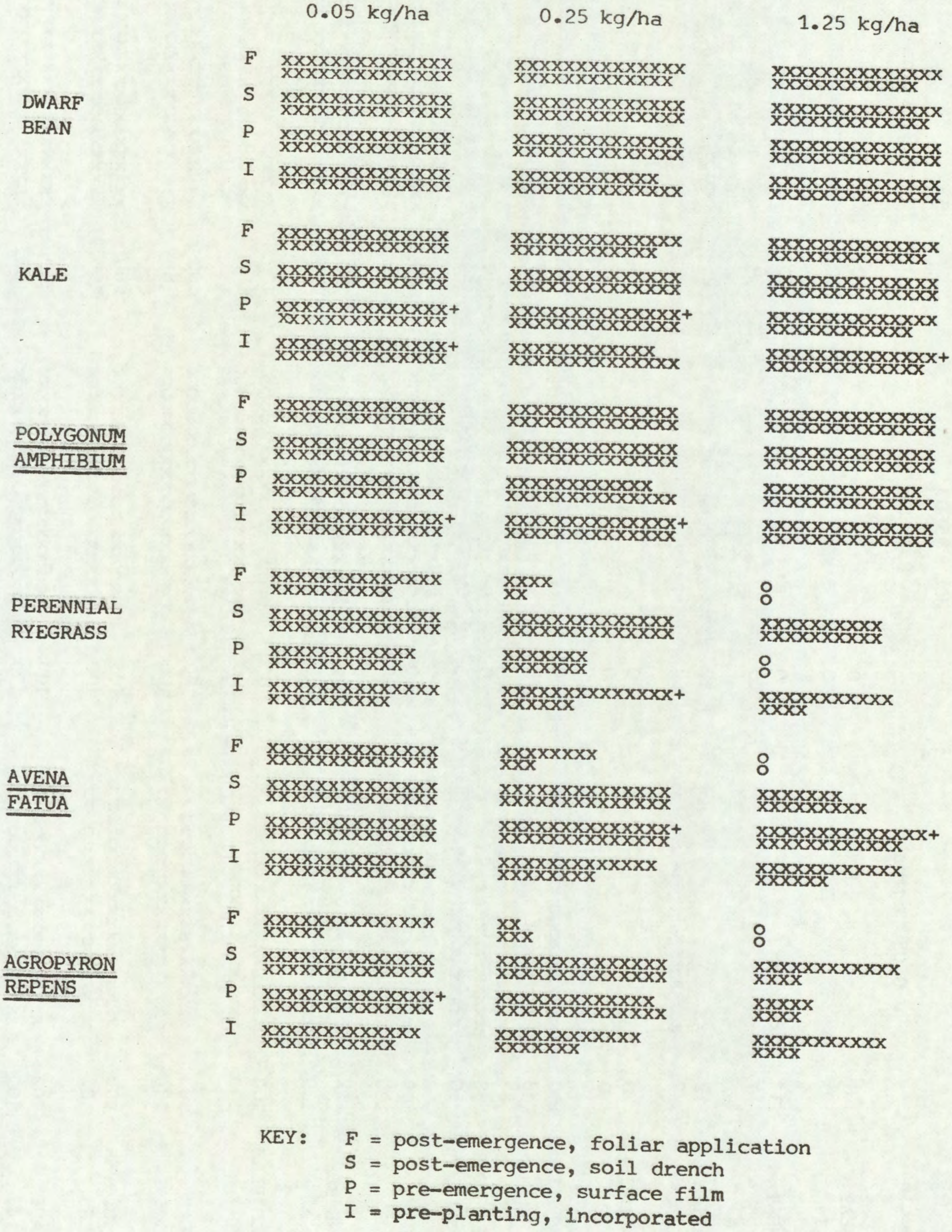
Onion and all broad-leaved crops were tolerant, kale being the only species which failed to reach tolerance at the highest dose. Its vigour was reduced by only 29% at this dose however. The safener NA improved the tolerance of maize marginally. Perennial ryegrass and the other cereals were sensitive, especially wheat and barley. The NA safener had no significant effects on the two latter species.

The control of A. repens and other grasses (including volunteer cereals) in onion and broad-leaved crops is potentially useful. The resistance of Poa annua is a disadvantage, necessitating studies of mixtures with other herbicides which can control this species in onion and broad-leaved crops.

NB: AC 25225 is imazapyr, DOWCO 453 is haloxyfop, HOE 33171 is fenoxaprop-ethyl, HOE 35609 is fenthiaprop-ethyl

ACTIVITY EXPERIMENT

HOE 35609



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

HOE 35609

Species		0.05 kg/ha		0.2 kg/ha		0.8 kg/ha	
WHEAT	0		0		0		
(1)	0		0		0		
WHEAT + S	37	xxxxxxx	0		0		
(2)	7	x	0		0		
BARLEY	12	xx	12	xx	25	xxxxx	
(3)	7	x	7	x	7	x	
BARLEY + S	0		0		0		
(4)	0		0		0		
OAT	100	xxxxxxxxxxxxxxxxxxxx	0		0		
(5)	43	xxxxxxxxx	0		0		
PER RYGR	60	xxxxxxxxxxx	0		0		
(6)	50	xxxxxxxxxx	0		0		
ONION	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	
(8)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	
DWF BEAN	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	
(9)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	
FLD BEAN	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	
(10)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	
PEA	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	
(11)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx	
W CLOVER	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	
(12)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	
RAPE	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	
(14)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxx	

Species		HOE 35609 0.05 kg/ha		0.2 kg/ha		0.8 kg/ha
KALE	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(15)	86	xxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxx
CABBAGE	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(16)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
CARROT	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(18)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
PARSNIP	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(19)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
LETTUCE	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(20)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
FENUGREK	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(21)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	86	xxxxxxxxxxxxxxxxx
SUG BEET	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(22)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
BETA VUL	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(23)	93	xxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
BROM STE	100	xxxxxxxxxxxxxxxxxxxx	10	xx	0	
(24)	43	xxxxxxxxx	7	x	0	
FEST RUB	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	94	xxxxxxxxxxxxxxxxxx
(25)	93	xxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
AVE FATU	100	xxxxxxxxxxxxxxxxxxxx	62	xxxxxxxxxxxx	0	
(26)	79	xxxxxxxxxxxxxxxx	36	xxxxxxx	0	
ALO MYOS	0		0		0	
(27)	0		0		0	

HOE 35609

Species		0.05 kg/ha		0.2 kg/ha		0.8 kg/ha
POA ANN	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(28)	86	xxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxx	64	xxxxxxxxxxxxx
POA TRIV	35	xxxxxxx	9	xx	0	
(29)	36	xxxxxxx	14	xxx	0	
SIN ARV	100	xxxxxxxxxxxxxxxxxxx	90	xxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(30)	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx
RAPH RAP	125	xxxxxxxxxxxxxxxxxxx+	112	xxxxxxxxxxxxxxxxxxx+	125	xxxxxxxxxxxxxxxxxxx+
(31)	100	xxxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
CHR SEG	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(32)	86	xxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
TRIP MAR	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(33)	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
SEN VULG	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(34)	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
POL LAPA	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(35)	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
GAL APAR	89	xxxxxxxxxxxxxxxxx	67	xxxxxxxxxxxx	111	xxxxxxxxxxxxxxxxxxx+
(38)	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
CHEN ALB	108	xxxxxxxxxxxxxxxxxxx+	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(39)	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
STEL MED	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(40)	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
SPER ARV	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx
(41)	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxx

HOE 35609

Species		0.05 kg/ha		0.2 kg/ha		0.8 kg/ha
VER PERS	71	xxxxxxxxxxxxxx	71	xxxxxxxxxxxxxx	71	xxxxxxxxxxxxxx
(42)	71	xxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	71	xxxxxxxxxxxxxx
RUM OBTU	100 R	xxxxxxxxxxxxxxxxxxxx	100 R	xxxxxxxxxxxxxxxxxxxx	100 R	xxxxxxxxxxxxxxxxxxxx
(44)	100 R	xxxxxxxxxxxxxxxxxxxx	100 R	xxxxxxxxxxxxxxxxxxxx	100 R	xxxxxxxxxxxxxxxxxxxx
AG REPEN	37	xxxxxxx	75	xxxxxxxxxxxxxx	62	xxxxxxxxxxx
(47)	7	x	14	xxx	14	xxx
AG STOLO	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	17	xxx
(48)	79	xxxxxxxxxxxxxxx	57	xxxxxxxxxx	7	x
CIRS ARV	100 R	xxxxxxxxxxxxxxxxxxxx	100 R	xxxxxxxxxxxxxxxxxxxx	100 R	xxxxxxxxxxxxxxxxxxxx
(50)	100 R	xxxxxxxxxxxxxxxxxxxx	100 R	xxxxxxxxxxxxxxxxxxxx	100 R	xxxxxxxxxxxxxxxxxxxx
PHAL PAR	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(54)	86	xxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxx	57	xxxxxxxxxx
MAIZE + S	100	xxxxxxxxxxxxxxxxxxxx	17	xxx	0	
(56)	86	xxxxxxxxxxxxxxxx	43	xxxxxxxxx	0	
MAIZE	83	xxxxxxxxxxxxxxxx	0		0	
(57)	79	xxxxxxxxxxxxxxx	0		0	
SOL NIG	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(81)	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
PHAL MIN	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	10	xx
(84)	79	xxxxxxxxxxxxxxxx	57	xxxxxxxxxx	7	x
OXAL LAT	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx	100	xxxxxxxxxxxxxxxxxxxx
(87)	86	xxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxx	79	xxxxxxxxxxxxxxx

ACKNOWLEDGEMENTS

We are most grateful to the joint Letcombe/WRO Statistics Section for processing the experimental data; Miss D Stringer and Messrs R H Webster, R M Porteous and S L Burbank for technical and practical assistance; to Mrs L Gawne and Mrs J Wallsworth for the preparation and typing of this report; to Mrs S Cox and her staff for its duplication and to the commercial firms who provided the herbicides and relevant data.

REFERENCES

RICHARDSON, W. G. and DEAN, M.L. (1974) The activity and post-emergence selectivity of some recently developed herbicides: oxadiazon, U-29,722, U-27,658, metflurazone, norflurazone, AC 50,191, AC 84,777 and iprymidam. Technical Report Agricultural Research Council Weed Research Organization 32, pp. 74.

RICHARDSON, W.G. and PARKER, C. (1977) The activity and post-emergence selectivity of some recently developed herbicides: KUE 2079A, HOE 29152, RH 2915, triclopyr and Dowco 290. Technical Report Agricultural Research Council Weed Research Organization, 42, pp. 53.

Appendix 1. Species, abbreviations, varieties and stages of growth at spraying and assessment for post-emergence selectivity test

	Designation and computer serial number	Cultivar or source	Stage of growth at spraying	Stage of growth at assessment (untreated controls, leaf numbers exclusive of cotyledons)
Temperate species				
Wheat (Triticum aestivum)	WHEAT (1)	Mardler	2 tillers	Numerous leaves, tillering
Wheat + safener	WHEAT + S (2)	Mardler	2 tillers	Numerous leaves, tillering
Barley (Hordeum vulgare)	BARLEY (3)	Sonja	1-2 tillers	Numerous leaves, 2-4 tillers
Barley + safener	BARLEY + S (4)	Sonja	1-2 tillers	Numerous leaves, 2-4 tillers
Oat (Avena sativa)	OAT (5)	Pennal	1 tiller	Numerous leaves, up to 6 tillers
Perennial ryegrass (Lolium perenne)	PER RYGR (6)	S 23	2 tillers	Up to 12 tillers
Onion (Allium cepa)	ONION (8)	Robusta	2-2½ leaves	3-3½ leaves; bulbs ≏ 1 cm diameter
Dwarf bean (Phaseolus vulgaris)	DWF BEAN (9)	Masterpiece	2 trifoliate leaves	3 trifoliate leaves, flowering
Field bean (Vicia faba)	FLD BEAN (10)	Maris Bead	5-5½ leaves	10 leaves, flowering
Pea (Pisum sativum)	PEA (11)	Dark Skinned Perfection	5 leaves	Up to 10 leaves
White Clover (Trifolium repens)	W CLOVER (12)	Kent Wild	4-7 trifoliate leaves	Up to 20 trifoliate leaves
Rape (Brassica napus oleifera)	RAPE (14)	Jet Neuf	2½-3½ leaves	6 leaves
Kale (Brassica oleracea acephala)	KALE (15)	Maris Kestrel	3 leaves	6 leaves
Cabbage (Brassica oleracea capitata)	CABBAGE (16)	Primata Derby Day	3½-4 leaves	Up to 8 leaves
Carrot (Daucus carota)	CARROT (18)	Chantenay Red Core	3-4 leaves	7 leaves

Appendix 1. Cont'd

	Designation and computer serial number	Cultivar or source	Stage of growth at spraying	Stage of growth at assessment (untreated controls, leaf numbers exclusive of cotyledons)
Parsnip (Pastinaca sativa)	PARSNIP (19)	Unicorn	1½-3 leaves	4-5 leaves
Lettuce (Lactuca sativa)	LETTUCE (20)	Reskia	6 leaves	10 leaves
Fenugreek (Trigonella foenumgraecum)	FENUGREEK (21)	Paul	3-4 trifoliate leaves	7 trifoliate leaves
Sugar beet (Beta vulgaris)	SUG BEET (22)	Monotri	4 leaves	6-10 leaves
Beta vulgaris	BETA VUL (23)	WRO 1981 ex Attleborough	4 leaves	6-10 leaves
Bromus sterilis	BROM STE (24)	WRO 1981	4 tillers	Up to 8 tillers
Festuca rubra	FEST RUB (25)	Boreal	0-1 tiller	Up to 15 tillers
Avena fatua	AVE FATU (26)	WRO 1978	2 tillers	12-14 leaves, 2 tillers
Alopecurus myosuroides	ALO MYOS (27)	WRO 1980	2-3 tillers	Up to 15 tillers
Poa annua	POA ANN (28)	B & S Supplies, 1980	2-3 tillers	Up to 15 tillers
Poa trivialis	POA TRIV (29)	B & S Supplies, 1981	0-1 tiller	Up to 15 tillers
Sinapis arvensis	SIN ARV (30)	WRO 1978	6 leaves	Numerous leaves, podded
Raphanus raphanistrum	RAPH RAP (31)	Long Black Spanish	3 leaves	Up to 7 leaves
Chrysanthemum segetum	CHRYS SEG (32)	WRO 1981	8-12 leaves	Up to 22 leaves
Tripleurospermum maritimum	TRIP MAR (33)	WRO 1978	6-8 leaves	Up to 10 leaves, flowers developing
Senecio vulgaris	SEN VULG (34)	B & S Supplies, 1979.	Up to 7 leaves	17 leaves, flowering
Polygonum lapathifolium	POL LAPA (35)	WRO 1981	3-6 leaves	8 leaves, flowering

Appendix 1, Cont'd

	Designation and computer serial number	Cultivar or source	Stage of growth at spraying	Stage of growth at assessment (untreated controls, leaf numbers exclusive of cotyledons)
Galium aparine	GAL APAR (38)	WRO 1980	2 whorls	Numerous whorls
Chenopodium album	CHEN ALB (39)	WRO 1979	6-10 leaves	10 leaves, flowering
Stellaria media	STEL MED (40)	B & S Supplies, 1979	Up to 14 leaves	Numerous leaves, flowering
Spergula arvensis	SPER ARV (41)	B & S Supplies, 1977	3-4 whorls	Numerous whorls, flowering
Veronica persica	VER PERS (42)	WRO 1975	4-10 leaves	Numerous leaves, flowering
Rumex obtusifolius	RUM OBTU (44)	WRO 1981	2-3 leaves	6 leaves
Agropyron repens	AG REPEN (47)	WRO Clone 31*	1 tiller	Up to 15 leaves, 2 tillers
Agrostis stolonifera	AG STOLO (48)	B & S Supplies, 1981	5 leaves	Up to 25 stolons
Cirsium arvense	CIRS ARV (50)	WRO Clone 1**	8 leaves	Up to 14 leaves
Phalaris paradoxa	PHAL PAR (54)	Ethiopia, 1979	2 tillers	Up to 9 tillers, flowering
Maize + safener (Zea mays)	MAIZE + S (56)	Caldera 535	4-5 leaves	7 leaves
Maize (Zea mays)	MAIZE (57)	Caldera 535	4-5 leaves	7 leaves
Solanum nigrum	SOL NIG (81)	WRO 1980	4 leaves	7 leaves, flowering
Phalaris minor	PHAL MIN (84)	Delhi 1977	5 leaves, some tillering	6 leaves, flowering
Oxalis latifolia	OXAL LAT (87)	WRO Clone 2⸗ (ex Cornwall)	3-4 trifoliate leaves	4-15 trifoliate leaves, flowering

* one node rhizome pieces ** root fragments ⸗ bulbs

ABBREVIATIONS

ångstrom	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*	^oC	medium volume	MV
degree centigrade	^oC	melting point	m.p.
degree Fahrenheit*	^oF	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
millimicro* (nano: $x10^{-9}$)	n or mμ
minimum	min.
minus	-
minute	min
molar concentration*	M (small cap)
molecule, molecular	mol.
more than	>
multiplied by*	x
normal concentration*	N (small cap)
not dated	n.d.
oil miscible concentrate	o.m.c. (tables only)
organic matter	o.m.
ounce	oz
ounces per gallon	oz/gal
page	p.
pages	pp.
parts per million	ppm
parts per million by volume	ppmv
parts per million by weight	ppmw
percent(age)	%
pico (micromicro: $x10^{-12}$)	p or μμ
pint	pint
pints per acre	pints/ac
plus or minus*	±
post-emergence	post-em
pound	lb
pound per acre*	lb/ac
pounds per minute	lb/min
pound per square inch*	lb/in^2
powder for dry application	p. (tables only)
power take off	p.t.o.
precipitate (noun)	ppt.
pre-emergence	pre-em.
quart	quart
relative humidity	r.h.
revolution per minute*	rev/min
second	s
soluble concentrate	s.c.
soluble powder	s.p.
solution	soln
species (singular)	sp.
species (plural)	spp.
specific gravity	sp. gr.
square foot*	ft^2
square inch	in^2
square metre*	m^2
square root of*	$\sqrt{}$
sub-species*	ssp.
summary	s.
temperature	temp.
ton	ton
tonne	t
ultra-low volume	ULV
ultra violet	u.v.
vapour density	v.d.
vapour pressure	v.p.
varietas	var.
volt	V
volume	vol.
volume per volume	v/v
water soluble powder	w.s.p. (tables only)
watt	W
weight	wt
weight per volume*	w/v
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.

WEED RESEARCH ORGANIZATION

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6. The botany, ecology, agronomy and control of Poa trivialis L. rough-stalked meadow-grass. November 1966. G P Allen. Price - £0.25

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26. The post-emergence selectivity of some recently developed herbicides: bentazon, EMD-IT 6412, cyprazine, metribuzin, chlornitrofen, glyphosate, MC 4379, chlorfenprop-methyl. October 1973. W G Richardson and M L Dean. Price - £3.31

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NB: AC 25225 is imazapyr, DOWCO 453 is haloxyfop, HOE 33171 is fenoxaprop-ethyl, HOE 35609 is fenthiaprop-ethyl

66. The activity and pre-emergence selectivity of some recently developed herbicides: AC 213087 and AC 222293. December 1982. W G Richardson, T M West and C Parker. Price - £2.00

67. The activity and post-emergence selectivity of some recently developed herbicides: trifopsime, glufosinate, RH 8817, MBR 18337 and NC 20484. December 1982. W G Richardson, T M West and C Parker. Price - £3.25

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