

Soil persistence

Using perennial ryegrass as the test species a moderate to long period of persistence was found. Although 0.25 kg/ha was undetectable after 28 weeks, and 1.0 kg/ha after 40 weeks the high dose was still causing severe effects at the latter date.

Pre-emergence selectivity

Three annual grasses (Alopecurus myosuroides and Poa species) and six broad-leaved species were controlled (Matricaria perforata, Galium aparine, Veronica persica, Viola arvensis, Rumex obtusifolius and Cirsium arvense) at 0.25 kg/ha. At 1.0 kg/ha Avena fatua and three more broad-leaved species, Chrysanthemum segetum, Chenopodium album and Stellaria media were controlled.

Crop tolerance was limited to the lowest dose where wheat, the brassicas (rape, radish and swede) and two legumes (dwarf bean and lucerne) were tolerant. Perennial ryegrass and white clover were very sensitive.

A moderate safening effect was found with wheat which was rendered tolerant to 1.0 kg/ha.

The potential control of the major problem broad-leaved weeds G. aparine, V. persica and V. arvensis in wheat is the most outstanding feature of this test. That the tolerance of wheat can be increased yet more by the safener, NA, deserves further investigation.

ACTIVITY EXPERIMENT

CINMETHYLIN

	0.25 kg ai/ha	1.0 kg ai/ha	4.0 kg ai/ha
DWARF BEAN	F XXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX
	S XXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX
	P XXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX
	I XXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX
KALE	F XXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX
	S XXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXX
	P XXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXX XXXXXXXXXXXX
	I XXXXXXXXXXXXXXXX+ XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX+ XXXXX
<u>POLYGONUM</u>	F XXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX
	S XXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXX
	P XXXXXXXXXXXXXXX XXXXXXXXXXXX	XXX XXXXX	XXX XX
	I XXXXXXXXXXXXXXX XXXXX	XXXXXXXXXXXX XXXXX	○ ○
PERENNIAL RYEGRASS	F XXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX
	S XXXXXXXXXXXXXXXX XXXXXXX	XXXXXXXXXXXX XXXXX	XXXXXXXXXX XXXXX
	P ○ ○	○ ○	○ ○
	I X X	○ ○	○ ○
<u>AVENA FATUA</u>	F XXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX
	S XXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXX	XXXXXXXXXXXXXXXXXX XX
	P XXXXXXXXXXXXXXXX+ XXXXXXXXXXXX	XXXXXXXXXXXX XXXXXXXXXXXX	X XX
	I XXXXXXXXXXXXXXXX+ XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXX	XXXX XX
<u>ELYMUS REPENS</u>	F XXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX
	S XXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXX	XXXXXXXXXXXXXXXXXX XXXXX
	P XXXXXXXXXXXXXXX XXXXXXXXXXXX	XX XXX	X X
	I XXXXXXX XXXXXX	XXXXXX XXXXX	○ ○

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

TRIAL NUMBER 534

SPECIES	0.250 kg/ha		CINMETHYLIN		4.000 kg/ha	
			1.000 kg/ha			
WHEAT (1)	104 86	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXXXXX	72 64	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	52 43	XXXXXXXXXXXXX XXXXXXXXXXXXX
WHEAT+S (2)	102 100	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	96 86	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	83 50	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX
BARLEY (3)	94 57	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX	37 36	XXXXXXX XXXXXXX	44 36	XXXXXXXXXXXXX XXXXXXXXXXXXX
BARLEY+S (4)	104 79	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXXXXX	65 64	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	59 43	XXXXXXXXXXXXX XXXXXXXXXXXXX
OAT (5)	102 71	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	19 21	XXXX XXXX	0 0	
PER RYGR (6)	0 0		0 0		0 0	
ONION (8)	73 57	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX	0 0		0 0	
DWF BEAN (9)	87 93	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	87 71	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	62 50	XXXXXXXXXXXXX XXXXXXXXXXXXX
FLD BEAN (10)	109 79	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXXXXX	95 57	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX	82 21	XXXXXXXXXXXXXXXXXXXXX XXXXX
PEA (11)	69 71	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	23 7	XXXXX X	0 0	
W CLOVER (12)	138 14	XXXXXXXXXXXXXXXXXXXXX+ XXX	23 14	XXXXX XXX	46 14	XXXXXXXXXXXXX XXX
LUCERNE (13)	125 100	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXXXXX	100 43	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX	94 79	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX

PRE-EMERGENCE SELECTIVITY TEST

TRIAL NUMBER 534

CINMETHYLIN

SPECIES	0.250 kg/ha		1.000 kg/ha		4.000 kg/ha	
RAPE (14)	98 86	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	93 64	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	91 29	XXXXXXXXXXXXXXXXXXXXX XXXXXX
KALE (15)	80 71	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	95 57	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	88 29	XXXXXXXXXXXXXXXXXXXXX XXXXXX
SWEDE (17)	93 93	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	85 50	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX	101 21	XXXXXXXXXXXXXXXXXXXXX XXXXX
CARROT (18)	40 93	XXXXXXX XXXXXXXXXXXXXXXXXXXXX	0 0		0 0	
SUG BEET (22)	79 71	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	142 57	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXX	111 36	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXX
BETA VUL (23)	91 71	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	88 43	XXXXXXXXXXXXX XXXXXXXXXXXXX	17 21	XXX XXXX
BROM STE (24)	70 64	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	61 43	XXXXXXXXXXXXX XXXXXXXXXXXXX	4 7	X X
AVE FATU (26)	93 57	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX	73 21	XXXXXXXXXXXXXXXXXXXXX XXXXX	0 0	
ALO MYOS (27)	0 0		0 0		0 0	
POA ANN (28)	0 0		0 0		0 0	
POA TRIV (29)	0 0		0 0		0 0	
SIN ARV (30)	103 71	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXX	117 57	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXX	93 57	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX

PRE-EMERGENCE SELECTIVITY TEST

TRIAL NUMBER 534

CINMETHYLIN

SPECIES		0.250 kg/ha		1.000 kg/ha		4.000 kg/ha
RAPH RAP (31)	97 86	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	97 64	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	89 36	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXX
CHRY SEG (32)	117 43	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXX	33 14	XXXXXXX XXX	0 0	
MAT PERF (33)	91 29	XXXXXXXXXXXXXXXXXXXXX XXXXXXX	39 29	XXXXXXX XXXXXXX	26 14	XXXXX XXX
POL LAPA (35)	87 57	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX	112 43	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXX-	100 29	XXXXXXXXXXXXXXXXXXXXX XXXXXXX
GAL APAR (38)	0 0		27 7	XXXXX X	0 0	
CHEN ALB (39)	125 36	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXX	67 29	XXXXXXXXXXXXXXX XXXXXXX	50 21	XXXXXXXXXXXXX XXXXX
STEL MED (40)	66 50	XXXXXXXXXXXXXXX XXXXXXXXXXXXX	93 29	XXXXXXXXXXXXXXXXXXXXX XXXXXXX	60 21	XXXXXXXXXXXXXXX XXXXX
VER PERS (42)	39 21	XXXXXXX XXXXX	13 14	XXX XXX	39 14	XXXXXXX XXX
VI ARVE (43)	47 29	XXXXXXX XXXXXXX	47 14	XXXXXXX XXX	32 7	XXXXXXX X
RUM OBTU (44)	68 29	XXXXXXXXXXXXXXX XXXXXXX	36 14	XXXXXXX XXX	18 7	XXXXX X
EL REPEN (47)	116 86	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXXXXX	97 50	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX	87 36	XXXXXXXXXXXXXXXXXXXXX XXXXXXX
CIRS ARV (50)	14 29	XXX XXXXXXX	0 0		0 0	

PRE-EMERGENCE SELECTIVITY TEST

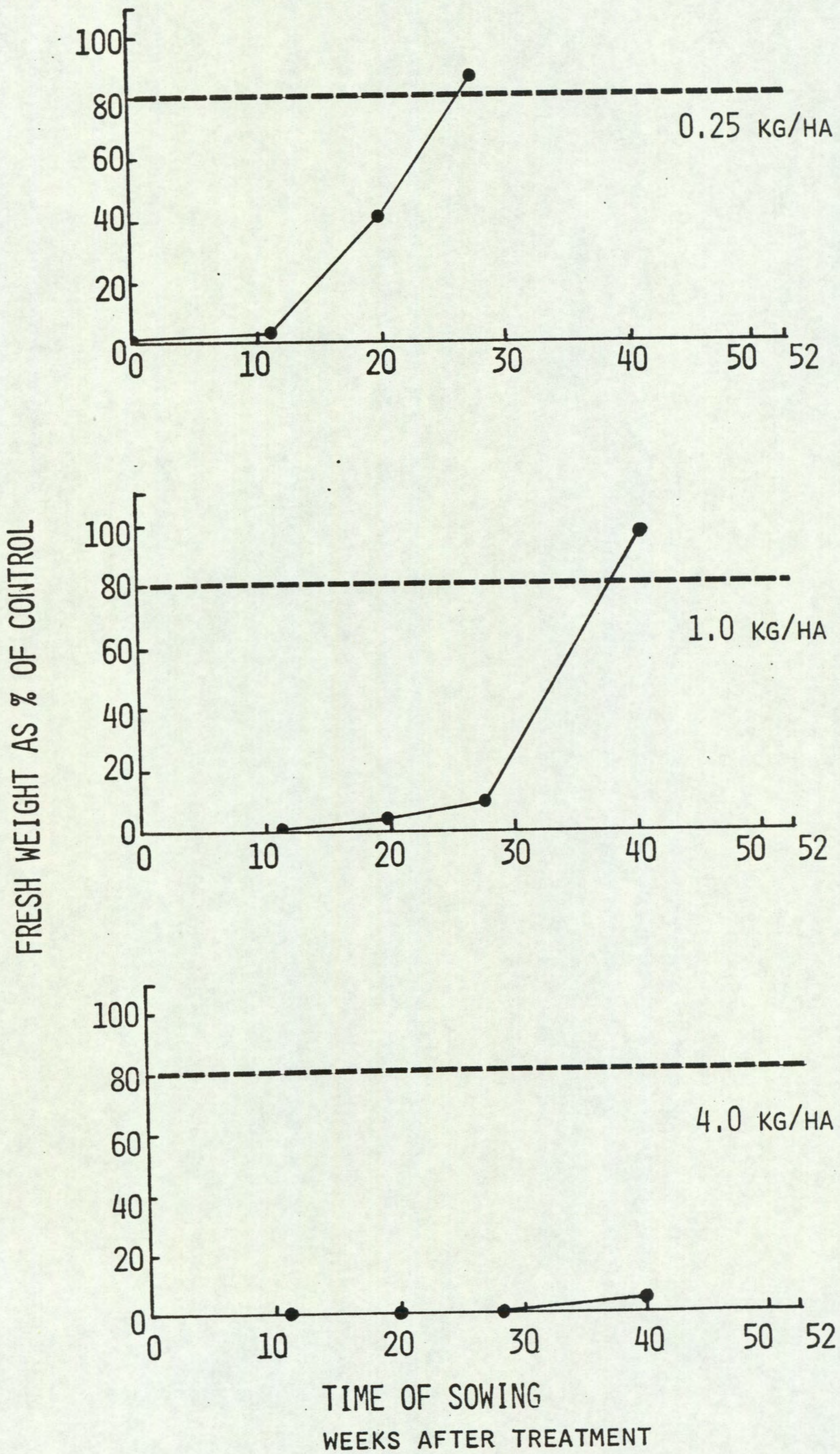
TRIAL NUMBER 534

SPECIES	0.250 kg/ha		CINMETHYLIN 1.000 kg/ha		4.000 kg/ha	
	CONV ARV (52)	57 86	XXXXXXXXXX XXXXXXXXXXXXXXXXXXXX	114 57	XXXXXXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXX	100 57
MAIZE+S (56)	87 71	XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXX	75 50	XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	37 21	XXXXXX XXXX
MAIZE (57)	91 57	XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	52 29	XXXXXXXXXX XXXXXX	0 0	
SOL NIG (81)	43 50	XXXXXXXXXX XXXXXXXXXXXX	71 43	XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	114 29	XXXXXXXXXXXXXXXXXXXXXXXXX+ XXXXXX

PRE-EMERGENCE SELECTIVITY TEST

PERSISTENCE OF CINMETHYLIN

SPECIES: PERENNIAL RYEGRASS



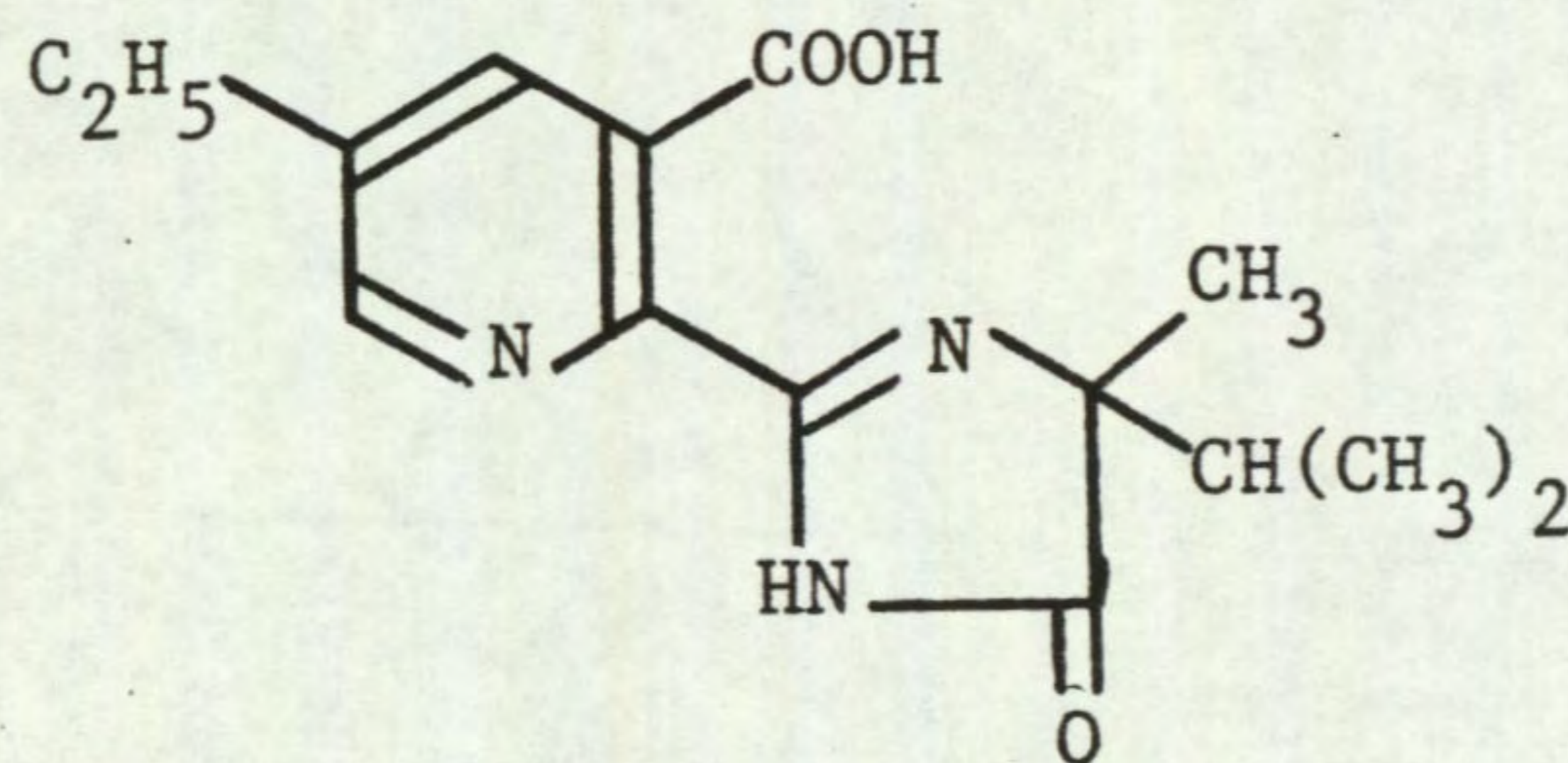
Code number AC 263, 499

Trade name

Common name -

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

Structure



Source

Cyanamid International Limited
Fareham Road
Gosport
Hants PO13 0AS, UK

Information available and suggested uses

Annual grass and broad-leaved control in soyabeans, several other leguminous crops, tobacco, coffee and established tree crops, pre-and/or post-emergence at doses ranging from 0.07 to 0.84 kg/ha.

Formulation used Aqueous concentrate 24.2% a.i.

Spray volume 373 l/ha

RESULTS

Full results are given in the histograms on pages 45-49 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
0.4	None	None listed as no crops tolerant
0.1	field bean	<u>Alopecurus myosuroides</u> <u>Raphanus raphanistrum</u> <u>Chrysanthemum segetum</u> <u>Galium aparine</u> <u>Viola arvensis</u> + species below
0.025	species above + wheat + safener (NA) barley + safener (NA) maize + safener (NA)	<u>Beta vulgaris</u> <u>Poa annua</u> <u>Poa trivialis</u> <u>Sinapis arvensis</u> <u>Matricaria perforata</u> <u>Polygonum lapathifolium</u> <u>Chenopodium album</u> <u>Stellaria media</u> <u>Veronica persica</u> <u>Rumex obtusifolius</u> <u>Elymus repens</u> <u>Cirsium arvense</u> <u>Convolvulus arvensis</u> <u>Solanum nigrum</u>

Comments on results

Activity experiment

Activity was generally greater with the soil treatments, especially pre-emergence. There was little difference between surface and incorporated pre-emergence treatments. Effects were found with the foliar spray on all species, dwarf bean being quite sensitive to this means of application.

Symptoms on susceptible species

Powerful growth inhibition followed by chlorosis or yellowing of old and new developing leaves were the most common symptoms, found with all four application methods, necrosis of tissue developing later. Tillers in grasses and buds in broad-leaved species proliferated, but they were also inhibited and chlorotic. At higher doses, pre-emergence, the shoots often failed to emerge.

Soil persistence

Persistence was moderate to long. Although the lowest rate of 0.025 kg/ha was undetectable 40 weeks after treatment, the higher doses were still causing severe effects at this time.

Pre-emergence selectivity

At the lowest dose of 0.025 kg/ha, 14 weeds were controlled, 11 of which were broad-leaved species. A further four broad-leaved weeds, including Galium aparine were controlled at 0.1 kg/ha, as well as Alopecurus myosuroides. Only two other weeds, Bromus sterilis and Avena fatua were not controlled at this dose, but both were severely reduced.

Field bean showed outstanding tolerance, being reduced in vigour by only 21% at the highest dose. Dwarf bean was reduced to the same degree at the two lower doses, but all other crops were sensitive. A moderate degree of safening by NA was found with all three cereals (wheat, barley, maize).

The weed control spectrum was impressive including annuals, perennials, broad-leaved and grass weeds, but crop tolerance was limited to field bean. The safening of cereals by NA deserves further investigation.

ACTIVITY EXPERIMENT

AC 263,499

	0.0625 kg/ha	0.25 kg/ha	1.0 kg/ha
DWARF BEAN	F XXXXXXXXXXXXXXXX XXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXX	XXXXXXXXXXXXXXXXXX XXXXXX
	S XXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXX
	P XXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXX
	I XXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXX
KALE	F XXXXXXXXXXXXXXXX XXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXX	XXXXXXXXXXXXXXXXXX XXXXX
	S XXXXXXXXXXXXXXXX XXXXX	XXXXXXXXXXXXXXXXXX XXXXX	XXXXXXXXXXXXXXXXXX XXXXX
	P XXXXXXXXXXXXXXXX+ XXXXX	XXXXXXXXXXXXX XXXXX	XXXXXXXXXXXXXXXXXX XX
	I XXXXXXXXXXXXXXXX XXXXX	XXXXXXXXXXXXXXXXXX XXXXX	XXXXXXXXXXXXXXXXXX+ XX
<u>POLYGONUM AMPHIBIUM</u>	F XXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXX	XXXXXXXXXXXXXXXXXX XXX
	S XXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXX	XXXXXXXXXXXXXXXXXX XX
	P X X	O O	O O
	I XXXXX XXXXX	O O	O O
PERENNIAL RYEGRASS	F XXXXXXXXXXXXXXXX XXXXXX	XXXXXXXXXXXXXXXXXX XXXXX	XXXXXXXXXXXXXXXXXX XXXXX
	S XXXXXXXXXXXXXXXX XXXXXX	XXXXXXXXXXXXXXXXXX XXXXX	XXXXXXXXXXXXXXXXXX XXX
	P XXXXXXXX XXX	XX XX	O O
	I XXXXXXXXXXXX XXX	XXXXXXXXXX XX	XXXXX XX
<u>AVENA FATUA</u>	F XXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXX
	S XXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXX	XXXXXXXXXXXXXXXXXX XXXXX
	P XXXXXXXXXXXXXXXX+ XXXXXXXXXXXX	XXXXXXXXXXXXX XXXXX	XXXXXXXXXXXXXXXXXX XXXXX
	I XXXXXXXXXXXXXXXX+ XXXXXXXXXXXX	XXXXXXXXXXXXX XXXXX	XXXXXXXXXXXXX XX
<u>ELYMUS REPENS</u>	F XXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXX
	S XXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX XXXXXX
	P XXXX XX	O O	O O
	I XXXXXXXX XXX	O O	O O

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

TRIAL NUMBER 534

AC263499

SPECIES		0.025 kg/ha	0.100 kg/ha	0.400 kg/ha
WHEAT (1)	98 79	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	98 36 XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXX	26 14 XXXXX XXX
WHEAT+S (2)	102 100	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	96 79 XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	51 29 XXXXXXXXXXXXX XXXXXXX
BARLEY (3)	100 64	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	94 36 XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXX	94 21 XXXXXXXXXXXXXXXXXXXXX XXXXX
BARLEY+S (4)	98 100	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	98 79 XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	98 36 XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXX
OAT (5)	102 71	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	102 50 XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX	96 29 XXXXXXXXXXXXXXXXXXXXX XXXXXXX
PER RYGR (6)	60 14	XXXXXXXXXXXXX XXX	26 14 XXXXX XXX	4 7 X X
ONION (8)	53 29	XXXXXXXXXXXXX XXXXXXX	47 21 XXXXXXXXXXXXX XXXXX	27 14 XXXXX XXX
DWF BEAN (9)	87 79	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	100 79 XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	87 64 XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX
FLD BEAN (10)	109 100	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXXXXX	95 86 XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	109 79 XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXXXXX
PEA (11)	115 71	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXXXXX	69 71 XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	92 64 XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX
W CLOVER (12)	115 36	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXX	162 36 XXXXXXXXXXXXXXXXXXXXX+ XXXXXXX	92 14 XXXXXXXXXXXXXXXXXXXXX XXX
LUCERNE (13)	119 57	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXX	131 36 XXXXXXXXXXXXXXXXXXXXX+ XXXXXXX	119 71 XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXXXXX

PRE-EMERGENCE SELECTIVITY TEST

NB: AC 263,499 is imazethapyr, BAS 517 00H is cycloxydim,
DOWCO 453 is haloxyfop, RST 20024H is trimexachlor

TRIAL NUMBER 534

SPECIES	AC263499		
	0.025 kg/ha	0.100 kg/ha	0.400 kg/ha
RAPE (14)	101 29 XXXXXXXXXXXXXXXXXXXXX XXXXXX	93 29 XXXXXXXXXXXXXXXXXXXXX XXXXXX	52 21 XXXXXXXXXXXXX XXXX
KALE (15)	84 29 XXXXXXXXXXXXXXXXXXXXX XXXXXX	106 29 XXXXXXXXXXXXXXXXXXXXX+ XXXXXX	80 29 XXXXXXXXXXXXXXXXXXXXX XXXXXX
SWEDE (17)	101 36 XXXXXXXXXXXXXXXXXXXXX XXXXXX	85 29 XXXXXXXXXXXXXXXXXXXXX XXXXXX	85 21 XXXXXXXXXXXXXXXXXXXXX XXXX
CARROT (18)	120 50 XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXX	50 29 XXXXXXXXXXXXX XXXXXX	50 29 XXXXXXXXXXXXX XXXXXX
SUG BEET (22)	58 21 XXXXXXXXXXXXX XXXX	37 14 XXXXXX XXX	21 14 XXXX XXX
BETA VUL (23)	10 14 XX XXX	7 7 X X	30 14 XXXXXX XXX
BROM STE (24)	91 64 XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX	57 36 XXXXXXXXXXXXX XXXXXXXXXX	22 29 XXXX XXXXXX
AVE FATU (26)	100 57 XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX	80 43 XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX	100 29 XXXXXXXXXXXXXXXXXXXXX XXXXXX
ALO MYOS (27)	67 43 XXXXXXXXXXXXX XXXXXXXXXX	41 29 XXXXXX XXXXXX	47 29 XXXXXX XXXXXX
POA ANN (28)	29 29 XXXXXX XXXXXX	0 0	0 0
POA TRIV (29)	19 7 XXXX X	0 0	0 0
SIN ARV (30)	100 29 XXXXXXXXXXXXXXXXXXXXX XXXXXX	77 14 XXXXXXXXXXXXXXXXXXXXX XXX	90 14 XXXXXXXXXXXXXXXXXXXXX XXX

PRE-EMERGENCE SELECTIVITY TEST

NB: AC 263,499 is imazethapyr, BAS 517 00H is cycloxydim,
DOWCO 453 is haloxyfop, RST 20024H is trimexachlor

TRIAL NUMBER 534

		AC263499					
SPECIES		0.025 kg/ha		0.100 kg/ha		0.400 kg/ha	
RAPH RAP	89	xxxxxxxxxxxxxxxxxxxxx	93	xxxxxxxxxxxxxxxxxxxxx	63	xxxxxxxxxxxxxxxxxxxxx	
(31)	43	xxxxxxxxxx	29	xxxxxxx	14	xxx	
CHRY SEG	133	xxxxxxxxxxxxxxxxxxxxx+	67	xxxxxxxxxxxxxxxxxxxxx	0		
(32)	43	xxxxxxxxxx	14	xxx	0		
MAT PERF	26	xxxxxx	0		0		
(33)	7	x	0		0		
POL LAPA	137	xxxxxxxxxxxxxxxxxxxxx+	87	xxxxxxxxxxxxxxxxxxxxx	12	xx	
(35)	29	xxxxxxx	14	xxx	7	x	
GAL APAR	82	xxxxxxxxxxxxxxxxxxxxx	82	xxxxxxxxxxxxxxxxxxxxx	0		
(38)	43	xxxxxxxxxx	21	xxxxx	0		
CHEN ALB	0		42	xxxxxxx	33	xxxxxxx	
(39)	0		14	xxx	14	xxx	
STEL MED	32	xxxxxxx	44	xxxxxxx	44	xxxxxxx	
(40)	14	xxx	14	xxx	14	xxx	
VER PERS	52	xxxxxxxxxxx	0		13	xxx	
(42)	29	xxxxxxx	0		7	x	
VI ARVE	47	xxxxxxx	16	xxx	16	xxx	
(43)	43	xxxxxxx	29	xxxxxxx	14	xxx	
RUM OBTU	59	xxxxxxxxxxxxx	23	xxxxx	14	xxx	
(44)	21	xxxxx	14	xxx	7	x	
EL REPEN	29	xxxxxx	10	xx	0		
(47)	43	xxxxxxxxxxx	14	xxx	0		
CIRS ARV	27	xxxxxx	0		0		
(50)	21	xxxxx	0		0		

PRE-EMERGENCE SELECTIVITY TEST

TRIAL NUMBER 534

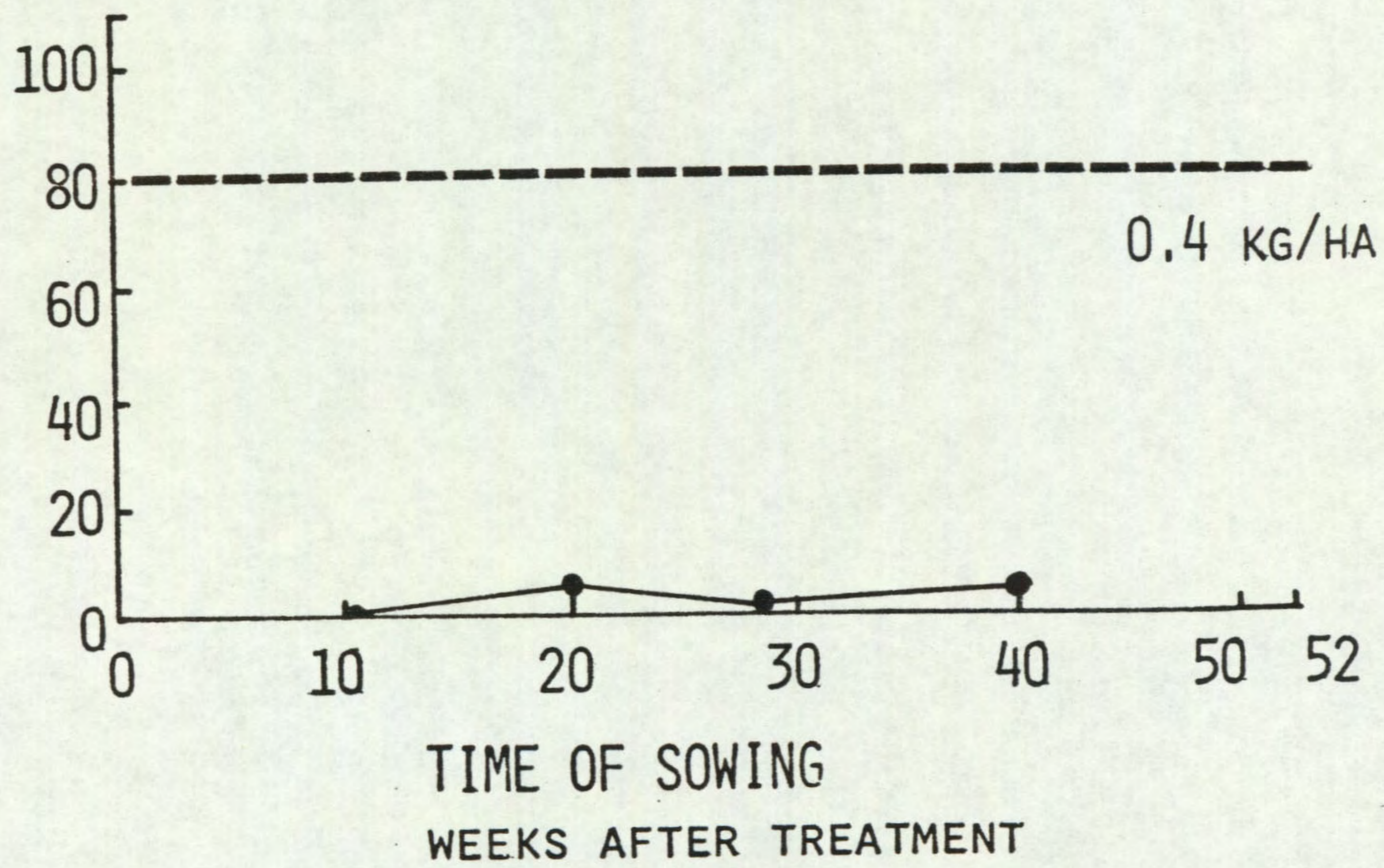
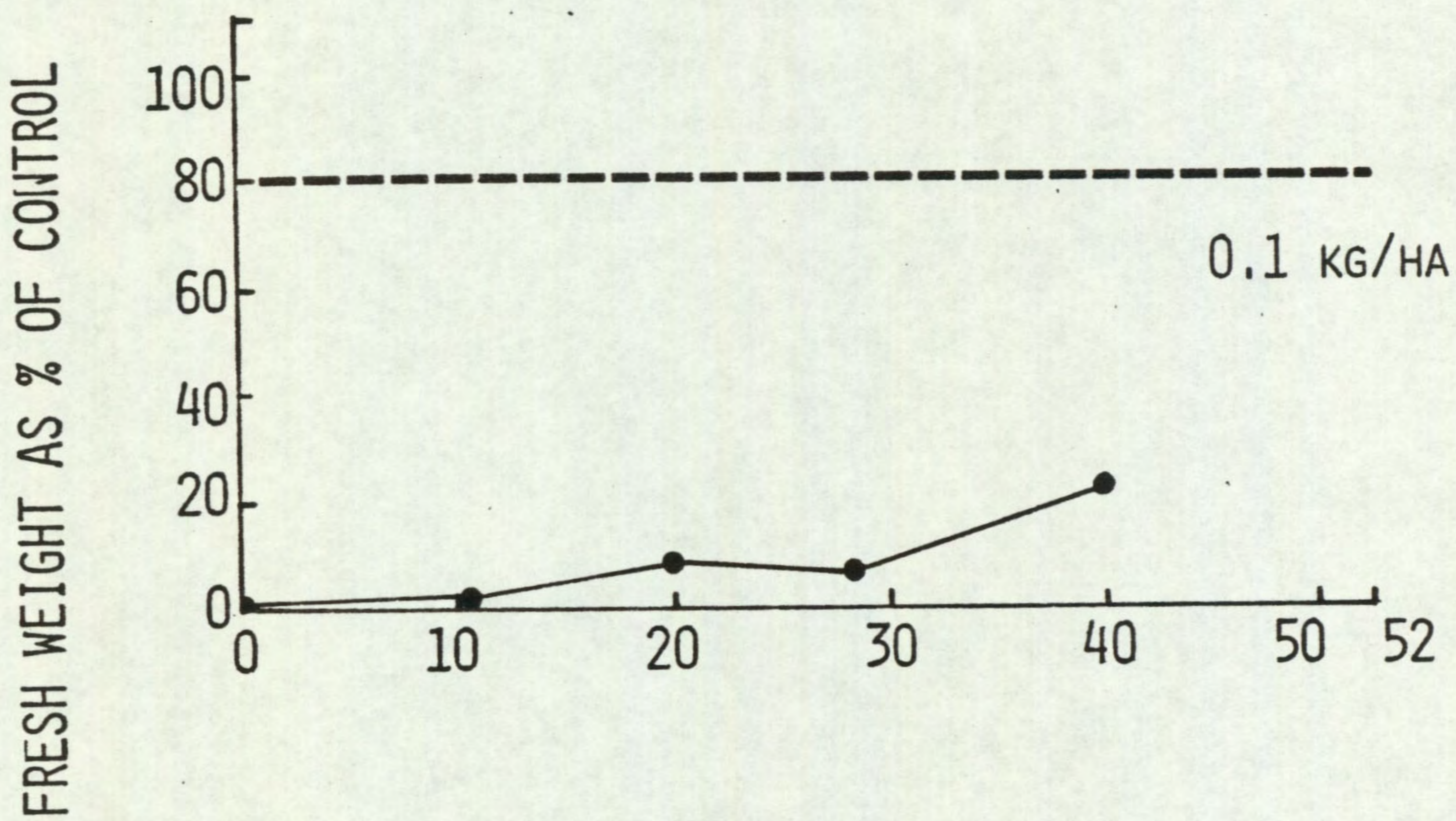
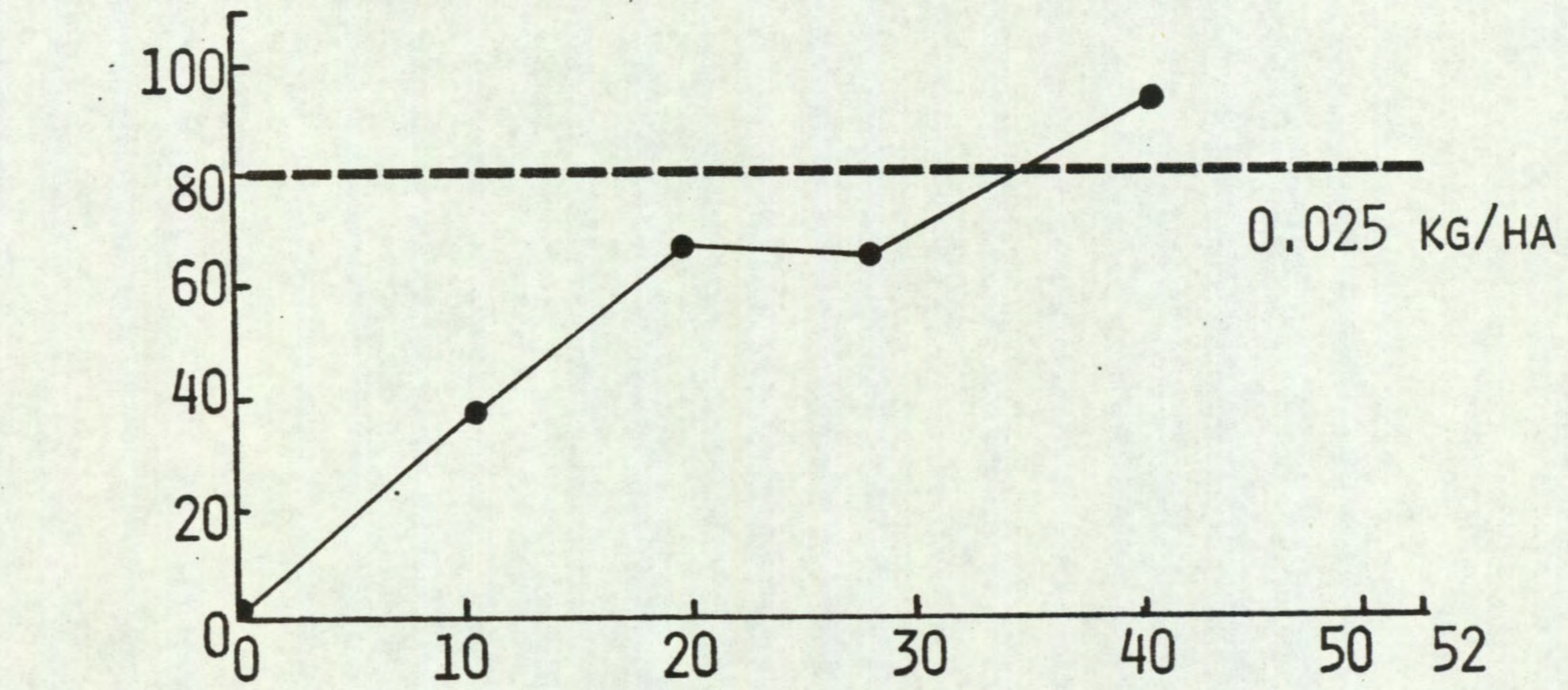
AC263499

SPECIES		0.025 kg/ha		0.100 kg/ha		0.400 kg/ha
CONV ARV (52)	57 29	xxxxxxxxxxxx xxxxxxx	86 29	xxxxxxxxxxxx xxxxxxx	71 14	xxxxxxxxxxxx xxx
MAIZE+S (56)	100 100	xxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxx	100 79	xxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxx	75 71	xxxxxxxxxxxx xxxxxxxxxxxx
MAIZE (57)	104 64	xxxxxxxxxxxxxxxxxxxxx+ xxxxxxxxxxxxxxx	78 36	xxxxxxxxxxxxxxxxxxxx xxxxxxx	91 36	xxxxxxxxxxxxxxxxxxxx xxxxxxx
SOL NIG (81)	29 7	xxxxxxx x	0 0		71 14	xxxxxxxxxxxx xxx

PRE-EMERGENCE SELECTIVITY TEST

PERSISTENCE OF AC 263,499

SPECIES: PERENNIAL RYEGRASS

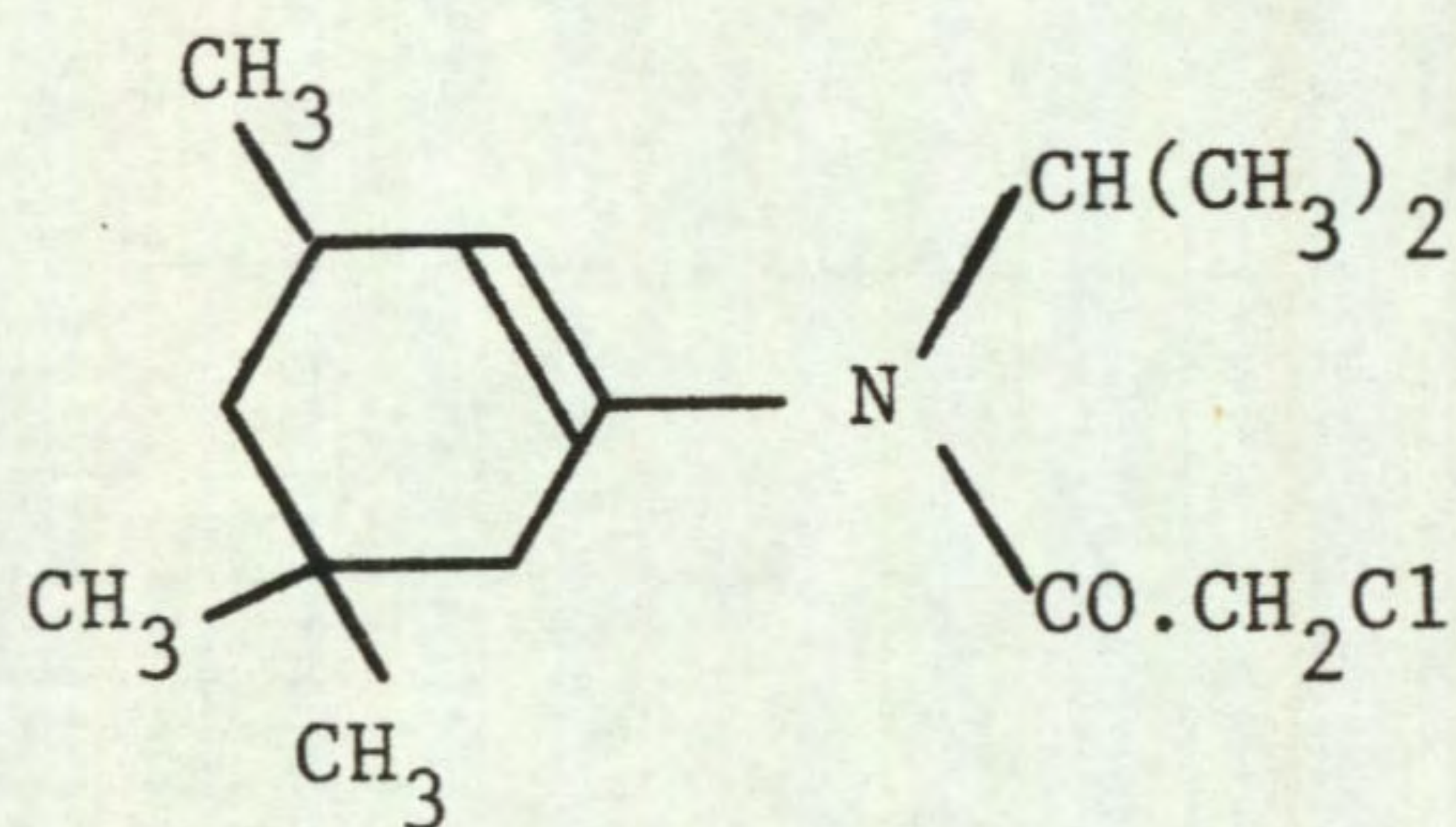


Code number RST 20024H Trade name/s
RST 20061H (+ atrazine) Atravit rustica (+ atrazine)

Common name Trimexachlor (proposed)

Chemical name α -chloroacetic-N-(3,5,5-trimethyl-cyclo-hexen-1-yl)-N-isopropylamide

Structure



Source Ruhr-Stickstoff AG
Landwirtschaftliche Forschung
Hanninghof 35
D4408 Dülmen
Federal Republic of Germany

Information available and suggested uses

Broad-spectrum weed control in maize, winter rape, soyabeans etc. pre- and post-emergence.

Formulation used Emulsifiable concentrate 40% a.i.

Spray volume 373 l/ha

RESULTS

Full results are given in the histograms on pages 54-57 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
4.0	lucerne rape kale radish	<u>Beta vulgaris</u> <u>Bromus sterilis</u> <u>Cirsium arvense</u> <u>Convolvulus arvensis</u> + species below
1.0	species above + wheat + safener (NA) barley + safener (NA) maize + safener (NA) dwarf bean swede	<u>Avena fatua</u> <u>Chrysanthemum segetum</u> <u>Matricaria perforata</u> <u>Chenopodium album</u> <u>Rumex obtusifolius</u> + species below
0.25	species above + wheat barley maize onion field bean pea	<u>Alopecurus myosuroides</u> <u>Poa annua</u> <u>Poa trivialis</u> <u>Stellaria media</u> <u>Veronica persica</u> <u>Viola arvensis</u> <u>Solanum nigrum</u>

Comments on results

Activity test data, post-emergence selectivity and symptoms found on susceptible species were described previously (Richardson and West, 1984). Activity was greatest pre-emergence especially as a surface spray. Symptoms were reminiscent of other amide and carbamate type herbicides.

Soil persistence

Persistence in the soil was relatively short. Doses of 0.25, 1.0 and 4.0 kg/ha were undetectable 11, 20 and 28 weeks respectively after treatment.

Pre-emergence selectivity

Seven annual weeds were controlled at the lowest dose of 0.25 kg/ha, most impressive of which were Alopecurus myosuroides, Viola arvensis, Veronica persica and Solanum nigrum. At 1.0 kg/ha, Avena fatua and a further four annual broad-leaved weeds were controlled including two composites, Matricaria perforata and Chrysanthemum segetum. At 4.0 kg/ha Bromus sterilis, Cirsium arvense, Convolvulus arvensis and Beta vulgaris were controlled. The cruciferous weeds (Sinapis arvensis and Raphanus raphanistrum) were resistant.

Brassica crops were highly tolerant, rape, kale and radish tolerating the highest dose of 4.0 kg/ha while swede was reduced in vigour by only 29% at this dose. Lucerne and other legumes, dwarf bean at 1.0 kg/ha and pea and field bean at 0.25 kg/ha, were also tolerant. Onion, wheat, barley and maize were tolerant

to 0.25 kg/ha. A moderate safening effect was found on the cereals with NA which rendered all three tolerant to 1.0 kg/ha. Perennial ryegrass and white clover were highly sensitive.

Although controlling an interesting spectrum of weeds with potential selectivity in brassicas, in common with other herbicides selective in these crops, cruciferous weeds are tolerant. Other interesting features worthy of further study are the control of Solanum nigrum in peas, Alopecurus myosuroides, Viola arvensis and Veronica persica control in cereals and the potential to extend selectivity still further in the latter crops with the safener NA.

ACKNOWLEDGEMENTS

We are grateful to the Statistics Section for processing the experimental data; to Messrs P D Smith, R M Porteous and S Burbank, J K Smith and Miss J M Heritage for technical and practical assistance; to Mrs J Wallsworth for the preparation and typing of this report; to Mrs S Cox and her staff for its reproduction and to the commercial firms who provided the herbicides and relevant data.

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TRIAL NUMBER 534

RST20024

SPECIES		0.250 kg/ha		1.000 kg/ha		4.000 kg/ha
WHEAT (1)	104 100	XXXXXXXXXXXXXXXXXXXXX+	98 64	XXXXXXXXXXXXXXXXXXXXX	65 29	XXXXXXXXXXXXXXXXX
WHEAT+S (2)	102 100	XXXXXXXXXXXXXXXXXXXXX	102 86	XXXXXXXXXXXXXXXXXXXXX	89 57	XXXXXXXXXXXXXXXXXXXXX
BARLEY (3)	100 93	XXXXXXXXXXXXXXXXXXXXX	100 71	XXXXXXXXXXXXXXXXXXXXX	100 14	XXXXXXXXXXXXXXXXXXXXX
BARLEY+S (4)	104 100	XXXXXXXXXXXXXXXXXXXXX+	104 86	XXXXXXXXXXXXXXXXXXXXX+	98 36	XXXXXXXXXXXXXXXXXXXXX
OAT (5)	109 71	XXXXXXXXXXXXXXXXXXXXX+	57 43	XXXXXXXXXXXXX	19 14	XXXXX
PER RYGR (6)	19 7	XXXXX X	0 0		0 0	
ONION (8)	87 86	XXXXXXXXXXXXXXXXXXXXX	13 43	XXX XXXXXXXXXX	0 0	
DWF BEAN (9)	100 93	XXXXXXXXXXXXXXXXXXXXX	100 86	XXXXXXXXXXXXXXXXXXXXX	87 57	XXXXXXXXXXXXXXXXXXXXX
FLD BEAN (10)	95 100	XXXXXXXXXXXXXXXXXXXXX	109 79	XXXXXXXXXXXXXXXXXXXXX+	68 43	XXXXXXXXXXXXXXXXXXXXX
PEA (11)	92 100	XXXXXXXXXXXXXXXXXXXXX	115 64	XXXXXXXXXXXXXXXXXXXXX+	0 0	
W CLOVER (12)	0 0		0 0		0 0	
LUCERNE (13)	137 57	XXXXXXXXXXXXXXXXXXXXX+	31 36	XXXXXX XXXXXX	81 100	XXXXXXXXXXXXXXXXXXXXX

PRE-EMERGENCE SELECTIVITY TEST

TRIAL NUMBER 534

RST20024

SPECIES	0.250 kg/ha		1.000 kg/ha		4.000 kg/ha	
RAPE (14)	96 100	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	101 100	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	96 100	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX
KALE (15)	95 100	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	102 100	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	99 100	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX
SWEDE (17)	101 100	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	101 100	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	97 71	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX
CARROT (18)	30 100	XXXXXX XXXXXXXXXXXXXXXXXXXXX	40 71	XXXXXXX XXXXXXXXXXXXXXXXXXXXX	0 0	
SUG BEET (22)	95 100	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	100 71	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	89 50	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX
BETA VUL (23)	40 93	XXXXXXX XXXXXXXXXXXXXXXXXXXXX	51 71	XXXXXXX XXXXXXXXXXXXXXXXXXXXX	13 29	XXX XXXXXX
BROM STE (24)	100 71	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	61 36	XXXXXXXXXXXXX XXXXXXX	0 0	
AVE FATU (26)	67 64	XXXXXXXXXXXXX XXXXXXXXXXXXX	93 21	XXXXXXXXXXXXXXXXXXXXX XXXXX	100 14	XXXXXXXXXXXXXXXXXXXXX XXX
ALO MYOS (27)	83 21	XXXXXXXXXXXXXXXXXXXXX XXXXX	26 7	XXXXX X	0 0	
POA ANN (28)	0 0		0 0		0 0	
POA TRIV (29)	0 0		0 0		0 0	
SIN ARV (30)	77 100	XXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	97 93	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	100 71	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXX

PRE-EMERGENCE SELECTIVITY TEST

TRIAL NUMBER 534

RST20024

SPECIES	0.250 kg/ha		1.000 kg/ha		4.000 kg/ha	
RAPH RAP (31)	101 100	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	106 100	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXXXXX	101 100	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX
CHRY SEG (32)	33 71	XXXXXX XXXXXXXXXXXXX	17 36	XXX XXXXXX	17 21	XXX XXXX
MAT PERF (33)	130 79	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXXXXX	39 29	XXXXXX XXXXXX	13 7	XXX X
POL LAPA (35)	100 86	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	87 71	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	37 64	XXXXXX XXXXXXXXXXXXX
GAL APAR (38)	109 100	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXXXXX	191 71	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXXXXX	55 43	XXXXXXXXXXXXX XXXXXXXXXXXXX
CHEN ALB (39)	67 57	XXXXXXXXXXXXX XXXXXXXXXXXXX	0 0		17 21	XXX XXXX
STEL MED (40)	26 50	XXXXX XXXXXXXXXXXXX	0 0		0 0	
VER PERS (42)	13 7	XXX X	0 0		0 0	
VI ARVE (43)	0 0		0 0		0 0	
RUM OBTU (44)	73 71	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	18 21	XXXX XXXX	0 0	
EL REPEN (47)	116 100	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXXXXX	116 64	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXXXXXXXXXX	106 43	XXXXXXXXXXXXXXXXXXXXX+ XXXXXXXXXXXXX
CIRS ARV (50)	55 100	XXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	68 100	XXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	0 0	

PRE-EMERGENCE SELECTIVITY TEST

TRIAL NUMBER 534

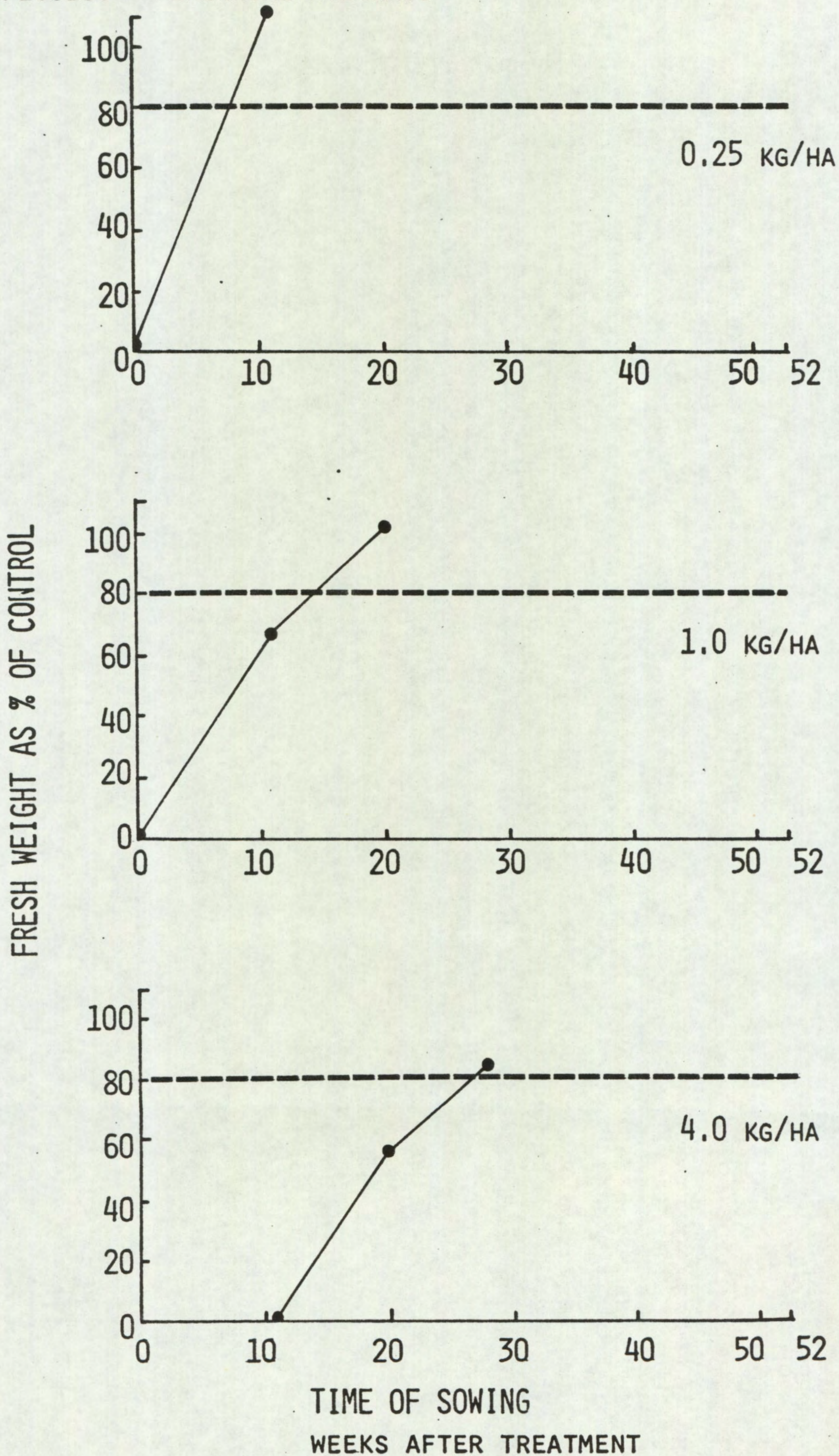
RST20024

SPECIES		0.250 kg/ha		1.000 kg/ha		4.000 kg/ha
CONV ARV (52)	86 100	xxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxx	129 100	xxxxxxxxxxxxxxxxxxxxx+ xxxxxxxxxxxxxxxxxxxxx	14 36	xxx xxxxxxx
MAIZE+S (56)	100 100	xxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxx	100 100	xxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxx	100 71	xxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxx
MAIZE (57)	104 86	xxxxxxxxxxxxxxxxxxxxx+ xxxxxxxxxxxxxxxxxxxxx	104 71	xxxxxxxxxxxxxxxxxxxxx+ xxxxxxxxxxxxxxxxxxxxx	104 57	xxxxxxxxxxxxxxxxxxxxx+ xxxxxxxxxxxxxxxxxxxxx
SOL NIG (81)	0 0		0 0		0 0	

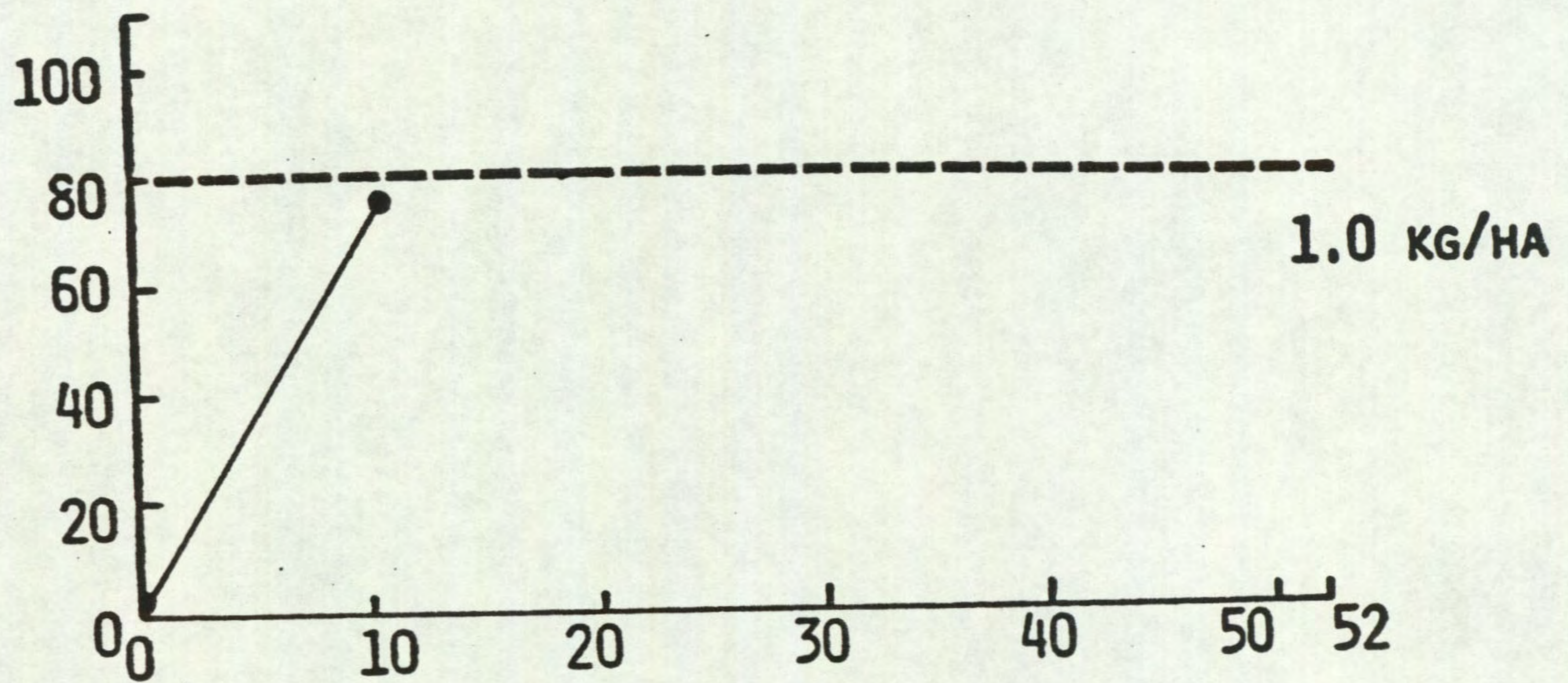
PRE-EMERGENCE SELECTIVITY TEST

PERSISTENCE OF RST 20024H

SPECIES: PERENNIAL RYEGRASS

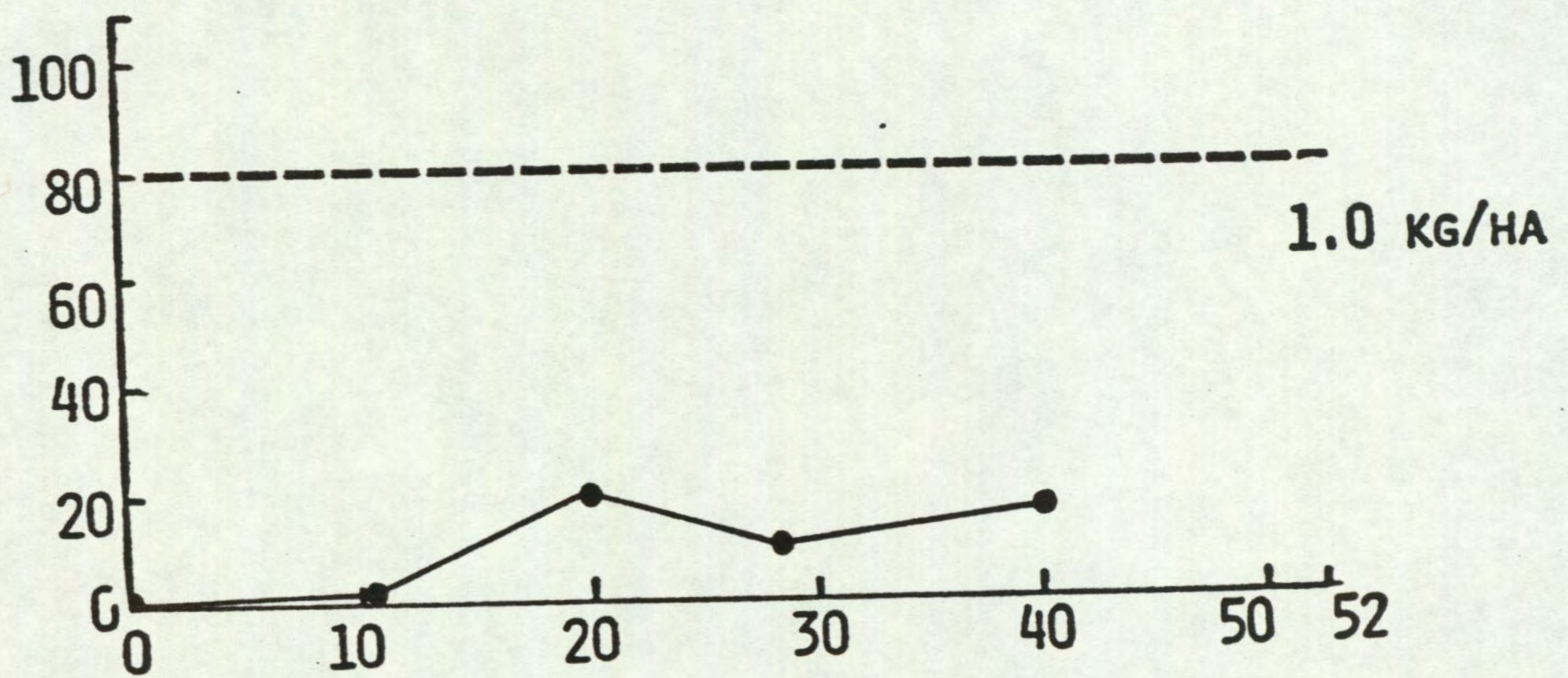


PERSISTENCE OF CYANAZINE
SPECIES: PERENNIAL RYEGRASS



FRESH WEIGHT AS % OF CONTROL

PERSISTENCE OF SIMAZINE
SPECIES: PERENNIAL RYEGRASS



TIME OF SOWING
WEEKS AFTER TREATMENT

Appendix 1. Species, abbreviations, cultivars and stages of growth at assessment

	Designation and computer serial	Cultivar or source	No. per pot	Depth of planting (cm)	Stage of growth at assessment (untreated controls, leaf numbers exclusive of cotyledons)
<u>Temperate species</u>					
Wheat (<u>Triticum aestivum</u>)	WHEAT (1)	Armada	8	1.0	4 leaves, 0-1 tiller
Wheat + safener	WHEAT + S (2)	Armada	8	1.0	4 leaves, 0-1 tiller
Barley (<u>Hordeum vulgare</u>)	BARLEY (3)	Sonja	8	1.0	4 leaves, 0-1 tiller
Barley + safener	BARLEY + S (4)	Sonja	8	1.0	4 leaves, 0-1 tiller
Oat (<u>Avena sativa</u>)	OAT (5)	Pennal	8	1.0	5-7 leaves, 0-1 tiller
Perennial ryegrass (<u>Lolium perenne</u>)	PER RYGR (6)	S 23	15	0.5	2 tillers
Onion (<u>Allium cepa</u>)	ONION (8)	Robusta	15	0.5	2-3 leaves
Dwarf bean (<u>Phaseolus vulgaris</u>)	DWF BEAN (9)	Masterpiece	4	2.0	Not recorded
Field bean (<u>Vicia faba</u>)	FLD BEAN (10)	Maris Bead	4	2.0	Not recorded
Pea (<u>Pisum sativum</u>)	PEA (11)	Dark Skinned Perfection	4	1.5	6-7 leaves
White Clover (<u>Trifolium repens</u>)	W CLOVER (12)	Kent Wild White	20	0.5	1-7 trifoliate leaves
Lucerne (<u>Medicago sativa</u>)	LUCERNE (13)	Europe	12	0.5	6 trifoliate leaves
Rape (<u>Brassica napus</u> <u>oleifera</u>)	RAPE (14)	Jet Neuf	10	0.5	3.5 leaves
Kale (<u>Brassica oleracea</u> <u>acephala</u>)	KALE (15)	Marrowstem	15	0.5	3.5 leaves
Swede (<u>Brassica napus</u>)	SWEDE (17)	Acme	12	0.5	3.5 leaves

Species	Designation and computer serial	Cultivar or source	No. per pot	Depth of planting (cm)	Stage of growth at assessment (untreated controls, leaf numbers exclusive of cotyledons)
<u>Carrot</u> (<u>Daucus carota</u>)	CARROT (18)	Chantenay Red Core	10	0.5	3.5 leaves
<u>Sugar beet</u> (<u>Beta vulgaris</u>)	SUG BEET (22)	Nomo	15	1.0	3.5-4 leaves
<u>Beta vulgaris</u>	BETA VUL (23)	Attleborough 1981	20	0.5	3.5-4 leaves
<u>Bromus sterilis</u>	BROM STE (24)	WRO 1982	12	0.5	2 tillers
<u>Avena fatua</u>	AVE FATU (26)	WRO 1980	10	1.0	4.5 leaves, 0-1 tiller
<u>Alopecurus</u> <u>myosuroides</u>	ALO MYOS (27)	WRO 1983	25	0.25	1 tiller
<u>Poa annua</u>	POA ANN (28)	B & S Supplies 1978	25	0.5	1-2 tillers
<u>Poa trivialis</u>	POA TRIV (29)	B & S Supplies 1981	25	0.25	1-2 tillers
<u>Sinapis arvensis</u>	SIN ARV (30)	WRO 1981	20	0.5	5-6 leaves
<u>Raphanus</u> <u>raphanistrum</u>	RAPH RAP (31)	Long Black Spanish	12	0.5	3.5 leaves
<u>Chrysanthemum</u> <u>segetum</u>	CHRY SEG (32)	WRO 1983	20	surface	4-6 leaves
<u>Matricaria</u> <u>perforata</u>	MAT PERF (33)	WRO 1981	25	surface	5-6 leaves
<u>Senecio vulgaris</u>	SEN VULG (34)	B & S Supplies 1981	40	0.25	6 leaves

Species	Designation and computer serial	Cultivar or source	No. per pot	Depth of planting (cm)	Stage of growth at assessment (untreated controls, leaf numbers exclusive of cotyledons)
<u>Polygonum lapathifolium</u>	POL LAPA (35)	WRO 1982	20	0.5	3.5-4 leaves
<u>Galium aparine</u>	GAL APAR (38)	Hatherop 1981	12	1.0	5-8 whorls
<u>Chenopodium album</u>	CHEN ALB (39)	B & S Supplies 1982	40	0.5	3-8 leaves
<u>Stellaria media</u>	STEL MED (40)	B & S Supplies 1984	40	0.5	Numerous leaves
<u>Veronica persica</u>	VER PERS (42)	WRO 1983	15	0.5	Numerous leaves
<u>Viola arvensis</u>	VI ARVE (43)	B & S Supplies 1982	25	0.25	3-4 leaves
<u>Rumex obtusifolius</u>	RUM OBTU (44)	B & S Supplies 1981	20	0.25	5-6 leaves
<u>Elymus repens</u>	EL REPEN (47)	WRO Clone 31	6*	1.5	6 leaves, 0-1 tiller
<u>Allium vineale</u>	ALL VIN (49)	WRO 1982	12+	1.0	2.5-3 leaves
<u>Cirsium arvense</u>	CIRS ARV (50)	WRO Clone 1	4**	1.5	2-7 leaves
<u>Convolvulus arvensis</u>	CONV ARV (52)	B & S Supplies 1982	15	0.5	6 leaves
<u>Maize + safener (Zea mays)</u>	MAIZE + S (56)	LG 11	4	1.5	4.5 leaves
<u>Maize (Zea mays)</u>	MAIZE (57)	LG 11	4	1.5	4.5 leaves
<u>Solanum nigrum</u>	SOL NIG (81)	B & S Supplies 1984	15	Surface	4-5 leaves

* One node rhizome fragments
 ** 4 cm root fragments

+ Aerial bulbils

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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NB: AC 263,499 is imazethapyr, BAS 517 00H is cycloxydim, DOWCO 453 is haloxyfop, RST 20024H is trimexachlor