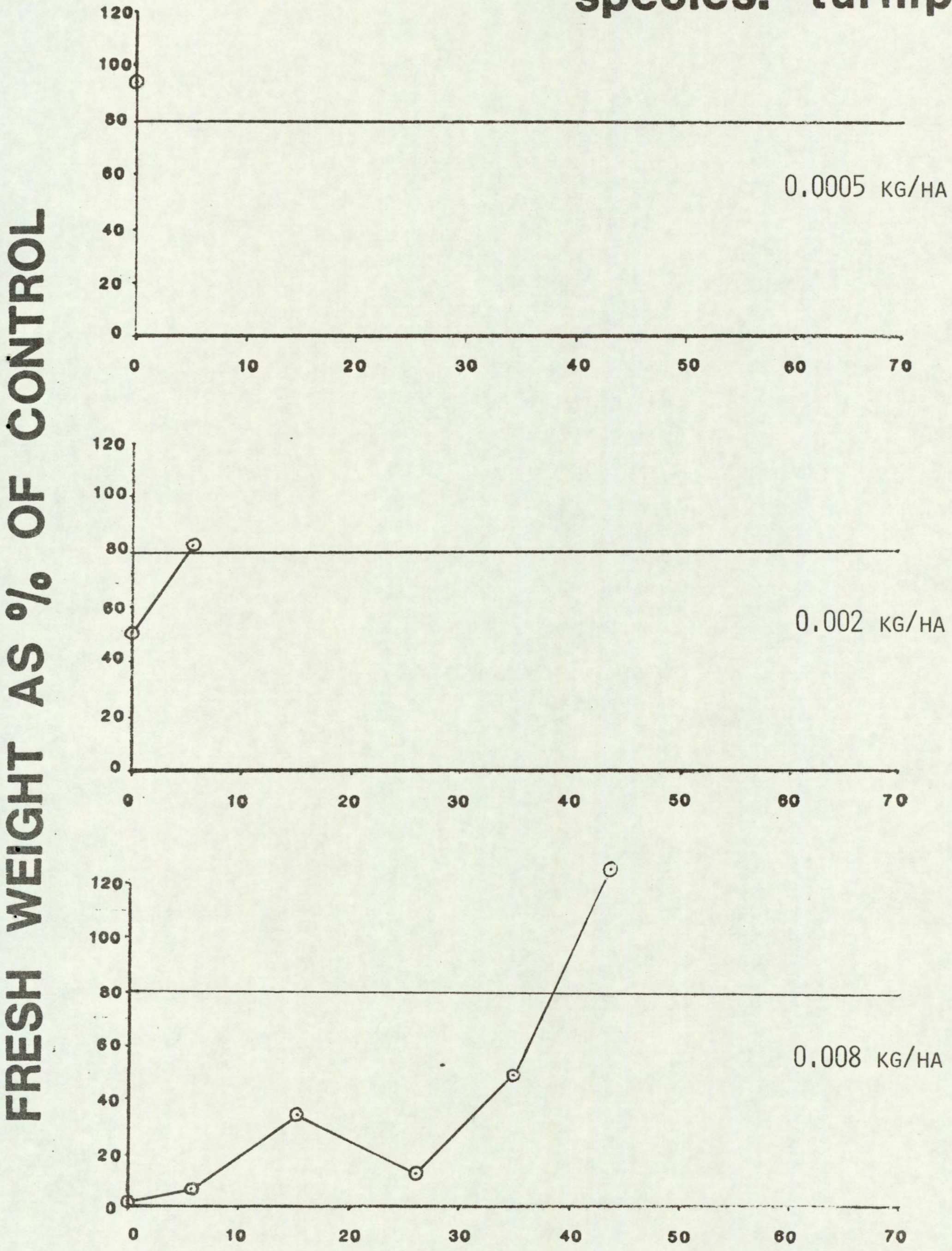
Click here for previous

METSULFURON-METHYL

SPECIES		0.0005 KG/HA		0.002 KG/HA	DPXT6376	0.008 KG/HA
TUS FARF	87	XXXXXXXXXXXXXXXXX	0		0	
(51)	71	XXXXXXXXXXXXXX	0		0	
CONV ARV	53	XXXXXXXXXXX	124	XXXXXXXXXXXXXXXXXXXX+	18	XXXX
(52)	100	XXXXXXXXXXXXXXXXXXXX	79	XXXXXXXXXXXXXXX	14	XXX
MAIZE+S	100	XXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXX	90	XXXXXXXXXXXXXXXXXX
(56)	100	XXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXX	93	XXXXXXXXXXXXXXXXXX
MAIZE	100	XXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXX
(57)	100	XXXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX
PHAL MIN	98	XXXXXXXXXXXXXXXXXXXX	108	XXXXXXXXXXXXXXXXXXXX+	94	XXXXXXXXXXXXXXXXXX
(84)	100	XXXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX	50	XXXXXXXXX

PERSISTENCE [33] OF METSULFURON-Me

species: turnip

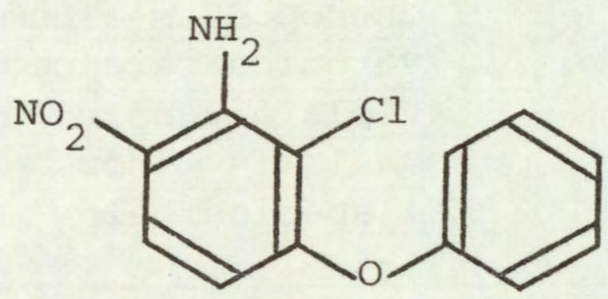


ACLONIFEN

Code number CME 127

Chemical name 2-chloro-6-nitro-3-phenoxy-aniline

Structure



Source Celamerck GmbH & Co. KG
Ingelheim
Federal Republic of Germany

Information available and suggested uses

Pre-emergence residual control of blackgrass and broad-leaved weeds in winter wheat; grass and broad-leaved weeds in potatoes, peas, field beans and carrots. Doses 2.4 - 2.7 kg a.i./ha.

Formulation used Suspension concentrate 60% w/w a.i.

Spray volume 373 l/ha

RESULTS

Full results are given in the histograms on pages 37-42 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	wheat±safener (NA) barley maize±safener (NA) dwarf bean field bean* pea carrot fenugreek	Festuca rubra Sinapis arvensis Polygonum lapathifolium+ + species below
1.0	as above + barley+safener (NA) oat lucerne	Alopecurus myosuroides Poa annua Matricaria perforata Chenopodium album Veronica persica Viola arvensis Phalaris minor + species below
0.25	as above + kale lettuce onion rape sugar beet radish	Poa trivialis Stellaria media Rumex obtusifolius Phalaris paradoxa+

* but note some stand reduction
\+ not in histograms

Comments on results

Activity experiment data and symptoms were described in a previous report (Richardson and West, 1984). These were very similar to other diphenyl ether herbicides. However, the most striking symptom, common to both pre- and post-emergence treatments, was a pronounced albinism of leaves.

Persistence in the soil

A short to moderate period of persistence in the soil was found with aclonifen. Using perennial ryegrass as the test species, the lower doses of 0.25 and 1.0 kg/ha were undetected after about 5 and 20 weeks respectively. After 44 weeks, shoot fresh weight was reduced by 43% with 4.0 kg/ha however.

Pre-emergence selectivity

Annual broad-leaved and grass weeds were controlled (eight of the former, six of the latter). Most interestingly, Viola arvensis, Veronica persica and Alopecurus myosuroides were susceptible to 1.0 kg/ha. However, Matricaria perforata was the only composite controlled. Perennial weeds were also very resistant. In contrast to many other diphenyl ethers, Stellaria media was very sensitive.

Good tolerance was found with the cereals (especially, wheat, barley and maize), leguminous crops (dwarf bean, field bean, pea, fenugreek) and carrot, all of which withstood the high dose of 4.0 kg/ha. At 1.0 kg/ha oat and lucerne were tolerant as were the brassicas (rape, kale, radish), onion, lettuce and sugar beet at 0.25 kg/ha. Perennial ryegrass and white clover were sensitive.

The potential pre-emergence control of A. myosuroides, V. persica and V. arvensis and several other annual weeds in cereals, especially wheat and barley is the most outstanding and unique feature of aclonifen. However, the high tolerance of several other important broad-leaved crops such as beans and peas is an additional advantage.

ACLONIFEN

SPECIES		0.25 KG/HA		1.00 KG/HA		4.00 KG/HA
WHEAT	102	XXXXXXXXXXXXXXXXXXX	102	XXXXXXXXXXXXXXXXXXX	96	XXXXXXXXXXXXXXXXXX
(1)	100	XXXXXXXXXXXXXXXXXXX	93	XXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX
WHEAT+S	100	XXXXXXXXXXXXXXXXXXX	94	XXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
(2)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	93	XXXXXXXXXXXXXXXXXX
BARLEY	102	XXXXXXXXXXXXXXXXXXX	102	XXXXXXXXXXXXXXXXXXX	102	XXXXXXXXXXXXXXXXXXX
(3)	100	XXXXXXXXXXXXXXXXXXX	93	XXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX
BARLEY+S	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
(4)	100	XXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXXX	79	XXXXXXXXXXXXXXX
OAT	104	XXXXXXXXXXXXXXXXXXX+	104	XXXXXXXXXXXXXXXXXXX+	104	XXXXXXXXXXXXXXXXXXX+
(5)	100	XXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXXX	50	XXXXXXXXXX
PER RYGR	69	XXXXXXXXXXXXXX	20	XXXX	0	
(6)	71	XXXXXXXXXXXXXX	14	XXX	0	
ONION	110	XXXXXXXXXXXXXXXXXXX+	79	XXXXXXXXXXXXXXXX	40	XXXXXXXX
(8)	100	XXXXXXXXXXXXXXXXXXX	79	XXXXXXXXXXXXXXXX	50	XXXXXXXXXX
DWF BEAN	100	XXXXXXXXXXXXXXXXXXX	87	XXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
(9)	100	XXXXXXXXXXXXXXXXXXX	93	XXXXXXXXXXXXXXXXXXX	93	XXXXXXXXXXXXXXXXXXX
FLD BEAN	63	XXXXXXXXXXXXX	79	XXXXXXXXXXXXXXXX	79	XXXXXXXXXXXXXXXX
(10)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
PEA	35	XXXXXXX	124	XXXXXXXXXXXXXXXXXXX+	88	XXXXXXXXXXXXXXXXXX
(11)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	93	XXXXXXXXXXXXXXXXXXX

PRE-EMERGENCE SELECTIVITY TEST

ACLONIFEN

SPECIES		0.25 KG/HA		1.00 KG/HA		4.00 KG/HA	
W CLOVER	14	XXX	0		0		
(12)	21	XXXX	0		0		
LUCERNE	89	XXXXXXXXXXXXXXXXXX	105	XXXXXXXXXXXXXXXXXXX+	68	XXXXXXXXXXXXXX	
(13)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	71	XXXXXXXXXXXXXX	
RAPE	97	XXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX	54	XXXXXXXXXX	
(14)	93	XXXXXXXXXXXXXXXXXX	79	XXXXXXXXXXXXXXX	43	XXXXXXXXX	
KALE	92	XXXXXXXXXXXXXXXXXX	95	XXXXXXXXXXXXXXXXXX	64	XXXXXXXXXXXX	
(15)	100	XXXXXXXXXXXXXXXXXXX	64	XXXXXXXXXXXX	29	XXXXX	
SWEDE	94	XXXXXXXXXXXXXXXXXX	51	XXXXXXXXX	0		
(17)	64	XXXXXXXXXXXX	36	XXXXXX	0		
CARROT	92	XXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	125	XXXXXXXXXXXXXXXXXXX+	
(18)	100	XXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX	
LETTUCE	114	XXXXXXXXXXXXXXXXXX+	85	XXXXXXXXXXXXXXXX	0		
(20)	86	XXXXXXXXXXXXXXXX	57	XXXXXXXXXX	0		
FENUGREK	87	XXXXXXXXXXXXXXXX	104	XXXXXXXXXXXXXXXXXXX+	98	XXXXXXXXXXXXXXXXXXX	
(21)	100	XXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXX	
SUG BEET	94	XXXXXXXXXXXXXXXXXX	73	XXXXXXXXXXXXXX	13	XXX	
(22)	100	XXXXXXXXXXXXXXXXXX	79	XXXXXXXXXXXXXXX	36	XXXXXXX	
BETA VUL	90	XXXXXXXXXXXXXXXXX	82	XXXXXXXXXXXXXXX	45	XXXXXXXXX	
(23)	100	XXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXX	71	XXXXXXXXXXXXX	

ACLONIFEN

SPECIES		0.25 KG/HA		1.00 KG/HA		4.00 KG/HA
BROM STE	109	XXXXXXXXXXXXXXXXXXX+	109	XXXXXXXXXXXXXXXXXXX+	109	XXXXXXXXXXXXXXXXXXX+
(24)	100	XXXXXXXXXXXXXXXXXX	93	XXXXXXXXXXXXXXXXXX	64	XXXXXXXXXXXX
FEST RUB	130	XXXXXXXXXXXXXXXXXXX+	49	XXXXXXXXXX	24	XXXXX
(25)	86	XXXXXXXXXXXXXXXX	50	XXXXXXXXXX	29	XXXXXX
AVE FATU	121	XXXXXXXXXXXXXXXXXXX+	86	XXXXXXXXXXXXXXXX	64	XXXXXXXXXXXX
(26)	100	XXXXXXXXXXXXXXXXXX	71	XXXXXXXXXXXXX	43	XXXXXXXXX
ALO MYOS	98	XXXXXXXXXXXXXXXXXX	17	XXX	6	X
(27)	86	XXXXXXXXXXXXXXXX	14	XXX	7	X
POA ANN	91	XXXXXXXXXXXXXXXXX	26	XXXXX	0	
(28)	79	XXXXXXXXXXXXXXX	21	XXXX	0	
POA TRIV	16	XXX	0		0	
(29)	7	X	0		0	
SIN ARV	127	XXXXXXXXXXXXXXXXXXX+	77	XXXXXXXXXXXXXXX	3	X
(30)	86	XXXXXXXXXXXXXXXX	64	XXXXXXXXXXXXX	14	XXX
RAPH RAP	102	XXXXXXXXXXXXXXXXXXX	97	XXXXXXXXXXXXXXXXXXX	76	XXXXXXXXXXXXXXX
(31)	93	XXXXXXXXXXXXXXXXXX	71	XXXXXXXXXXXXX	50	XXXXXXXXXX
CHRY SEG	110	XXXXXXXXXXXXXXXXXXX+	106	XXXXXXXXXXXXXXXXXXX+	46	XXXXXXXXX
(32)	100	XXXXXXXXXXXXXXXXXX	79	XXXXXXXXXXXXXXX	43	XXXXXXXXX
MAT PERF	97	XXXXXXXXXXXXXXXXXX	29	XXXXXX	21	XXXX
(33)	86	XXXXXXXXXXXXXXXX	43	XXXXXXXXX	36	XXXXXX

ACLONIFEN

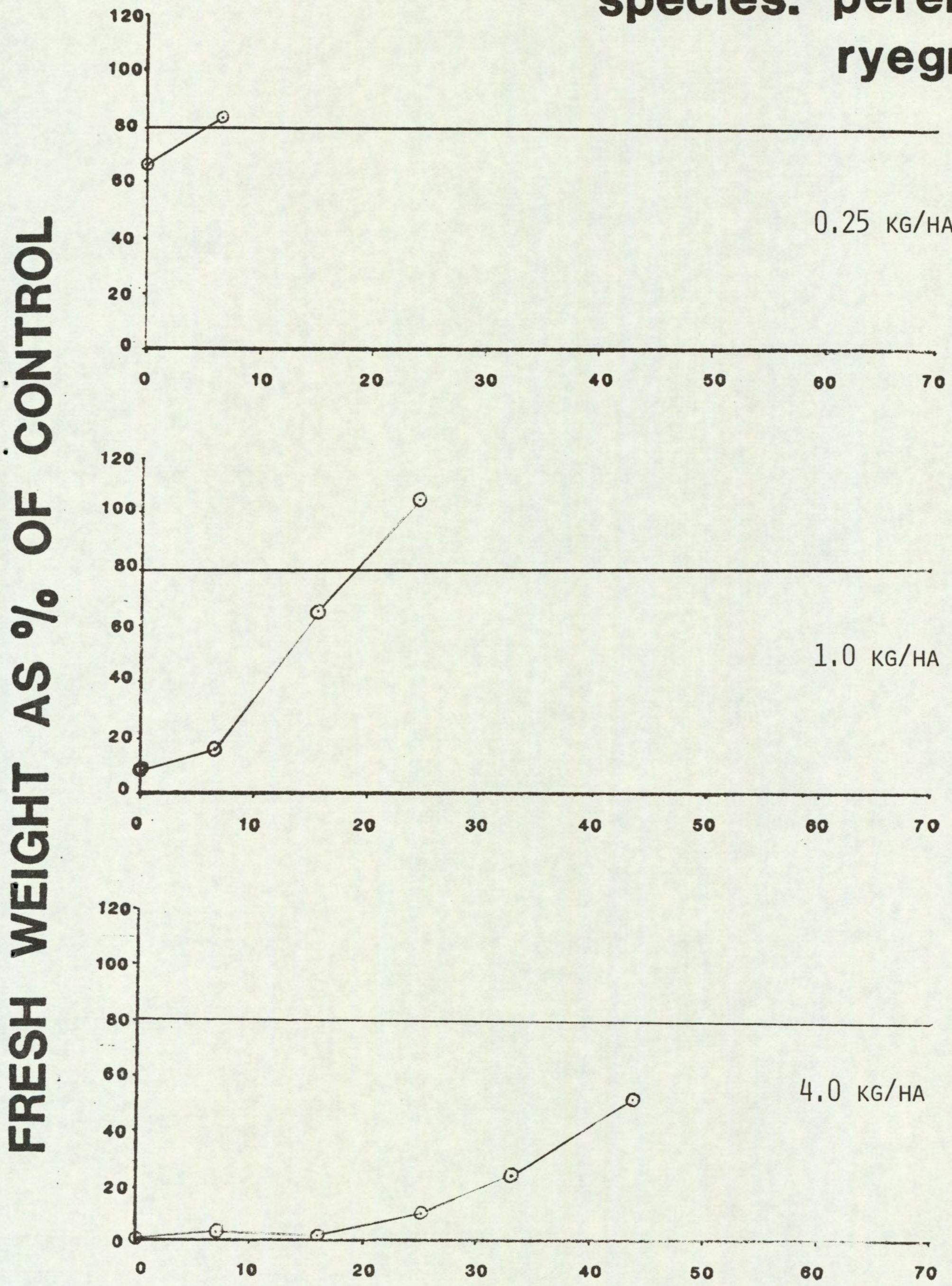
SPECIES		0.25 KG/HA		1.00 KG/HA		4.00 KG/HA
SEN VULG	99	XXXXXXXXXXXXXXXXXXX	85	XXXXXXXXXXXXXXXX	36	XXXXXXX
(34)	86	XXXXXXXXXXXXXXXX	64	XXXXXXXXXXXXX	50	XXXXXXXXXX
GAL APAR	110	XXXXXXXXXXXXXXXXXXX+	81	XXXXXXXXXXXXXXXX	110	XXXXXXXXXXXXXXXXXXX+
(38)	100	XXXXXXXXXXXXXXXXXXX	64	XXXXXXXXXXXXX	43	XXXXXXXXX
CHEN ALB	89	XXXXXXXXXXXXXXXXX	7	X	0	
(39)	64	XXXXXXXXXXXXX	21	XXXX	0	
STEL MED	27	XXXXX	0		0	
(40)	50	XXXXXXXXXX	0		0	
VER PERS	37	XXXXXXX	0		0	
(42)	50	XXXXXXXXXX	0		0	
VI ARVE	118	XXXXXXXXXXXXXXXXXXX+	24	XXXXX	0	
(43)	100	XXXXXXXXXXXXXXXXXXX	43	XXXXXXXXX	0	
RUM OBTU	11	XX	22	XXXX	0	
(44)	14	XXX	14	XXX	0	
EL REPEN	103	XXXXXXXXXXXXXXXXXXX+	103	XXXXXXXXXXXXXXXXXXX+	103	XXXXXXXXXXXXXXXXXXX+
(47)	100	XXXXXXXXXXXXXXXXXXX	93	XXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
ALL VIN	115	XXXXXXXXXXXXXXXXXXX+	77	XXXXXXXXXXXXXX	89	XXXXXXXXXXXXXXXXX
(49)	93	XXXXXXXXXXXXXXXXXX	71	XXXXXXXXXXXXX	50	XXXXXXXXX
CIRS ARV	117	XXXXXXXXXXXXXXXXXXX+	117	XXXXXXXXXXXXXXXXXXX+	117	XXXXXXXXXXXXXXXXXXX+
(50)	100	XXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX	71	XXXXXXXXXXXXX

ACLONIFEN

SPECIES		0.25 KG/HA		1.00 KG/HA		4.00 KG/HA	
TUS FARF	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
(51)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	93	XXXXXXXXXXXXXXXXX
CONV ARV	18	XXXX	106	XXXXXXXXXXXXXXXXXXX+	53	XXXXXXXXXX
(52)	50	XXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	64	XXXXXXXXXXX
MAIZE+S	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	90	XXXXXXXXXXXXXXXXX
(56)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
MAIZE	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
(57)	100	XXXXXXXXXXXXXXXXXXX	93	XXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX
PHAL MIN	94	XXXXXXXXXXXXXXXXXX	0		0	
(84)	50	XXXXXXXXXX	0		0	

PERSISTENCE ^{42}OF ACLONIFEN

species: perennial ryegrass



TIME OF SOWING

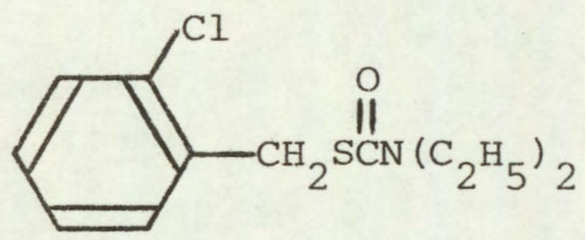
weeks after treatment

Orbencarb

Other common name Orthobencarb (Japan) **Trade name** Lanray

Chemical name S-o-chlorobenzyl diethylthiocarbamate

Structure



Source Kumiai Chemical Industry Co Ltd.
4-26 Ikenohata 1-chome
Taito-ku
Tokyo 110
Japan

Information available and suggested uses

Pre-emergence after sowing until just before emergence of maize, sorghum, wheat, barley, potato, soyabean, carrot, groundnut, cotton, sunflower, sugar beet, kidney beans at 4.0 to 6.0 kg a.i./ha depending on soil type.

Formulation used Emulsifiable concentrate 50% w/v a.i.

Spray volume 373 l/ha

RESULTS

Full results are given in the histograms on pages 46-52 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
6.0	wheat+safener (NA) barley+safener (NA) maize+safener field bean pea radish	Senecio vulgaris Galium aparine Chenopodium album Stellaria media + species below
2.0	species above + wheat barley oat dwarf bean lucerne rape swede carrot fenugreek	Festuca rubra Rumex obtusifolius + species below
0.67	species above + kale lettuce * sugar beet	Alopecurus myosuroides Poa annua Poa trivialis Veronica persica Phalaris paradoxa +

* but note some stand reduction
\+ not in histograms

Comments on results

Activity experiment

Greatest activity resulted from the pre-emergence treatments to perennial ryegrass, particularly the surface spray. Post-emergence, broad-leaved species recovered from the initial effects of the foliar spray but they were unaffected by the soil drenches. The reverse trend was found on grasses however. Dwarf bean and kale showed considerable tolerance to soil treatments. Activity is thus generally lower than with other thiocarbamates e.g. thiobencarb and tri-allate (Richardson and Dean, 1973) but otherwise there are many similarities.

Symptoms on susceptible species

Rapid, contact scorch symptoms appeared on broad-leaved species within 24 hours of spraying. New developing leaves, such as trifoliates of dwarf beans often showed abnormally crinkled, darker green and shiny leaf surfaces. These latter symptoms were prominent pre-emergence on grasses as well as broad-leaved species together with a general stunting of growth. Occasionally extra tillering was seen, for example with soil drenches on Avena fatua, but these were also similarly affected. Thus symptoms are reminiscent of those caused by the chemically related tri-allate.

Persistence in the soil

Using perennial ryegrass as the sensitive test species, a short to moderate period of persistence in the soil was found. Doses of 0.67, 2.0 and 6.0 kg/ha were undetectable 7, 16 and 34 weeks after treatment, respectively.

Pre-emergence selectivity

Four annual grasses, including Alopecurus myosuroides, both Poa species and Phalaris paradoxa were controlled at the lowest dose of 0.67 kg/ha, in addition to Veronica persica. At 2.0 kg/ha, Rumex obtusifolius and Festuca rubra were susceptible. At 6.0 kg/ha, four annual broad-leaved species were controlled; Senecio vulgaris, Chenopodium album, Stellaria media and more interestingly, Galium aparine. The latter species was reduced in number and vigour at 2.0 kg/ha by 37 and 43% respectively. Many weeds were resistant however, including all perennials and cruciferous weeds.

Tolerance was found in cereals, legumes, brassicas and carrots at higher doses, while sugar beet and lettuce withstood 0.67 kg/ha and were only marginally reduced in vigour at 2.0 kg/ha. The tolerance of wheat and barley was very slightly increased by the safener NA. Perennial ryegrass, onion and white clover were sensitive.

The potential control of A. myosuroides, V. persica and G. aparine in cereals (notably wheat and barley) is the most interesting feature of orbencarb, deserving further study. Unfortunately Avena fatua and Bromus sterilis are resistant, in contrast to their response to tri-allate. Thus consideration to mixtures will have to be given, to control these and other weeds. The lack of a need to incorporate would be an advantage.

ACTIVITY EXPERIMENT

ORBENCARB

		0.67 kg/ha	2.0 kg/ha	6.0 kg/ha
DWARF BEAN	F	XXXXXXXXXXXXXX XXXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXX	XXXXXXXXXXXXX XXXXXXXXX
	S	XXXXXXXXXXXXXX XXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXX
	P	XXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXX XXXXXXXXXXX
	I	XXXXXXXXXXXXXX XXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXX
KALE	F	XXXXXXXXXXXXXX XXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXX
	S	XXXXXXXXXXXXXX XXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXX
	P	XXXXXXXXXXXXXX+ XXXXXXXXXXXXX	XXXXXXXXXXXXXX+ XXXXXXXXXXXXX	XXXXXXXXXXXXX XXXXXXXXXXXXX
	I	XXXXXXXXXXXX XXXXXXXXXXXXXX	XXXXXXXXXXXXXX+ XXXXXXXXXXXXX	XXXXXXXXXXXXXX+ XXXXXXXXXXXX
POLYGONUM AMPHIBIUM	F	XXXXXXXXXXXXXX XXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXX
	S	XXXXXXXXXXXXXX XXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXX
	P	XXXXXXXXXXXXXX+ XXXXXXXXXXXXX	XXXXXXXXXXXXXX+ XXXXXXXXXXXX	XXXXXXXXXX XXXXXXXXXX
	I	XXXXXXXXXXXXX XXXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXXX	XXXXXXXXXXXXXX+ XXXXXXXXXXXXX
PERENNIAL RYEGRASS	F	XXXXXXXXXXXXXX XXXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXX
	S	XXXXXXXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXX	XXXXXXXXXXXXXX XXXX
	P	XXXXXXXXXXXX XXXXXXXXXXX	XXXXXXX XXX	XXXXXXX XX
	I	XXXXXXXXXXXXXX+ XXXXXXXXXXXXXX	XXXXXXXXXXXXXX+ XXXXXXXXXXXXXX	XXXXXXXXXXXXX XXXXXXX
AVENA FATUA	F	XXXXXXXXXXXXXX XXXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXXX
	S	XXXXXXXXXXXXXX XXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXX	XXXXXXXXXXXXXX XXXXXXX
	P	XXXXXXXXXXXX XXXXXXXXXXXXXX	XXXXXXXXX XXXXXXXXXXXX	XXXXXXXXXXXXX XXXXXXXXXX
	I	XXXXXXXXXX XXXXXXXXXXXXXX	XXXXXXXXXXXX XXXXXXXXXXXXX	XXXXXXXXXXXX XXXXXXXXXX
ELYMUS REPENS	F	XXXXXXXXXXXXXX XXXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXX
	S	XXXXXXXXXXXXXX XXXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXX	XXXXXXXXXXXXXX XXXXXX
	P	XXXXXXXXXXXXXX+ XXXXXXXXXXXXXX	XXXXXXXXXXXX XXXXXXXXXXX	XXXXXXXXXXXXX+ XXXXXXXXX
	I	XXXXXXXXXXXXXX+ XXXXXXXXXXXXXX	XXXXXXXXXXXXXX XXXXXXXXXXXXXX	XXXXXXXXXXXXX XXXXXXX

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

ORBENCARB

SPECIES		0.67 KG/HA		2.00 KG/HA		6.00 KG/HA
WHEAT	96	XXXXXXXXXXXXXXXXXX	102	XXXXXXXXXXXXXXXXXXX	102	XXXXXXXXXXXXXXXXXXX
(1)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	79	XXXXXXXXXXXXXXX
WHEAT+S	100	XXXXXXXXXXXXXXXXXXX	87	XXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
(2)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX
BARLEY	102	XXXXXXXXXXXXXXXXXXX	102	XXXXXXXXXXXXXXXXXXX	102	XXXXXXXXXXXXXXXXXXX
(3)	100	XXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX	79	XXXXXXXXXXXXXXX
BARLEY+S	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
(4)	100	XXXXXXXXXXXXXXXXXXX	93	XXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX
OAT	104	XXXXXXXXXXXXXXXXXXX+	104	XXXXXXXXXXXXXXXXXXX+	98	XXXXXXXXXXXXXXXXXXX
(5)	100	XXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX	43	XXXXXXXXX
PER RYGR	61	XXXXXXXXXXXX	69	XXXXXXXXXXXXX	0	
(6)	64	XXXXXXXXXXXX	14	XXX	0	
ONION	62	XXXXXXXXXXX	115	XXXXXXXXXXXXXXXXXX+	18	XXXX
(8)	71	XXXXXXXXXXXXX	57	XXXXXXXXXX	36	XXXXXX
DWF BEAN	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	87	XXXXXXXXXXXXXXXXX
(9)	100	XXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX	71	XXXXXXXXXXXXX
FLD BEAN	79	XXXXXXXXXXXXXXX	111	XXXXXXXXXXXXXXXXXXX+	95	XXXXXXXXXXXXXXXXXX
(10)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX
PEA	106	XXXXXXXXXXXXXXXXXXX+	106	XXXXXXXXXXXXXXXXXXX+	124	XXXXXXXXXXXXXXXXXXX+
(11)	100	XXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX

ORBENCARB

SPECIES		0.67 KG/HA		2.00 KG/HA		6.00 KG/HA
W CLOVER	123	XXXXXXXXXXXXXXXXXXX+	123	XXXXXXXXXXXXXXXXXXX+	95	XXXXXXXXXXXXXXXXXX
(12)	50	XXXXXXXXXX	43	XXXXXXXXX	29	XXXXXX
LUCERNE	95	XXXXXXXXXXXXXXXXXX	95	XXXXXXXXXXXXXXXXXX	105	XXXXXXXXXXXXXXXXXXX+
(13)	100	XXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX	64	XXXXXXXXXXXX
RAPE	95	XXXXXXXXXXXXXXXXXX	95	XXXXXXXXXXXXXXXXXX	92	XXXXXXXXXXXXXXXXX
(14)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	71	XXXXXXXXXXXXX
KALE	85	XXXXXXXXXXXXXXXX	95	XXXXXXXXXXXXXXXXXX	99	XXXXXXXXXXXXXXXXXXX
(15)	93	XXXXXXXXXXXXXXXXXX	79	XXXXXXXXXXXXXXX	64	XXXXXXXXXXXX
SWEDE	99	XXXXXXXXXXXXXXXXXXX	103	XXXXXXXXXXXXXXXXXXX+	90	XXXXXXXXXXXXXXXXX
(17)	86	XXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX	57	XXXXXXXXXX
CARROT	100	XXXXXXXXXXXXXXXXXXX	108	XXXXXXXXXXXXXXXXXXX+	58	XXXXXXXXXXX
(18)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	57	XXXXXXXXXX
LETTUCE	72	XXXXXXXXXXXXXX	80	XXXXXXXXXXXXXXX	13	XXX
(20)	93	XXXXXXXXXXXXXXXXXX	71	XXXXXXXXXXXXX	21	XXXX
FENUGREK	98	XXXXXXXXXXXXXXXXXXX	87	XXXXXXXXXXXXXXXXX	87	XXXXXXXXXXXXXXXXX
(21)	100	XXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXXX	64	XXXXXXXXXXXX
SUG BEET	103	XXXXXXXXXXXXXXXXXXX+	94	XXXXXXXXXXXXXXXXXXX	81	XXXXXXXXXXXXXXXX
(22)	100	XXXXXXXXXXXXXXXXXXX	79	XXXXXXXXXXXXXXX	57	XXXXXXXXXX
BETA VUL	89	XXXXXXXXXXXXXXXXX	74	XXXXXXXXXXXXXXX	71	XXXXXXXXXXXXXX
(23)	100	XXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXXX	64	XXXXXXXXXXXX

ORBENCARB

SPECIES		0.67 KG/HA		2.00 KG/HA		6.00 KG/HA
BROM STE	109	XXXXXXXXXXXXXXXXXXX+	86	XXXXXXXXXXXXXXXX	64	XXXXXXXXXXXX
(24)	86	XXXXXXXXXXXXXXXX	71	XXXXXXXXXXXXX	50	XXXXXXXXX
FEST RUB	65	XXXXXXXXXXXX	0		0	
(25)	57	XXXXXXXXXX	0		0	
AVE FATU	107	XXXXXXXXXXXXXXXXXXX+	114	XXXXXXXXXXXXXXXXXXX+	79	XXXXXXXXXXXXXXX
(26)	100	XXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX	36	XXXXXX
ALO MYOS	35	XXXXXXX	0		0	
(27)	14	XXX	0		0	
POA ANN	23	XXXXX	0		0	
(28)	57	XXXXXXXXXX	0		0	
POA TRIV	24	XXXXX	0		0	
(29)	21	XXXX	0		0	
SIN ARV	110	XXXXXXXXXXXXXXXXXXX+	117	XXXXXXXXXXXXXXXXXXX+	67	XXXXXXXXXXXX
(30)	100	XXXXXXXXXXXXXXXXXX	93	XXXXXXXXXXXXXXXXX	64	XXXXXXXXXXX
RAPH RAP	107	XXXXXXXXXXXXXXXXXXX+	102	XXXXXXXXXXXXXXXXXX	107	XXXXXXXXXXXXXXXXXX+
(31)	100	XXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXX
CHRY SEG	93	XXXXXXXXXXXXXXXXX	76	XXXXXXXXXXXXX	118	XXXXXXXXXXXXXXXXX+
(32)	86	XXXXXXXXXXXXXXX	79	XXXXXXXXXXXXX	57	XXXXXXXXX
MAT PERF	102	XXXXXXXXXXXXXXXXXX	97	XXXXXXXXXXXXXXXXX	78	XXXXXXXXXXXXX
(33)	100	XXXXXXXXXXXXXXXXXX	93	XXXXXXXXXXXXXXXXX	64	XXXXXXXXXXX

PRE-EMERGENCE SELECTIVITY TEST

ORBENCARB

SPECIES	0.67 KG/HA		2.00 KG/HA		6.00 KG/HA	
SEN VULG	99	XXXXXXXXXXXXXXXXXXX	94	XXXXXXXXXXXXXXXXXXX	13	XXX
(34)	100	XXXXXXXXXXXXXXXXXXX	64	XXXXXXXXXXXXX	14	XXX
GAL APAR	110	XXXXXXXXXXXXXXXXXXX+	63	XXXXXXXXXXXXX	23	XXXXX
(38)	100	XXXXXXXXXXXXXXXXXXX	57	XXXXXXXXXXX	29	XXXXXX
CHEN ALB	87	XXXXXXXXXXXXXXXX	57	XXXXXXXXXXX	0	
(39)	79	XXXXXXXXXXXXXXX	57	XXXXXXXXXXX	0	
STEL MED	64	XXXXXXXXXXXXX	109	XXXXXXXXXXXXXXXXXXX+	0	
(40)	86	XXXXXXXXXXXXXXXXX	64	XXXXXXXXXXXXX	0	
VER PERS	12	XX	0		0	
(42)	14	XXX	0		0	
VI ARVE	111	XXXXXXXXXXXXXXXXXXX+	95	XXXXXXXXXXXXXXXXXX	55	XXXXXXXXXX
(43)	93	XXXXXXXXXXXXXXXXXX	64	XXXXXXXXXXXXX	50	XXXXXXXXX
RUM OBTU	189	XXXXXXXXXXXXXXXXXXX+	33	XXXXXXX	22	XXXX
(44)	100	XXXXXXXXXXXXXXXXXXX	21	XXXX	14	XXX
EL REPEN	103	XXXXXXXXXXXXXXXXXXX+	84	XXXXXXXXXXXXXXXX	94	XXXXXXXXXXXXXXXXXX
(47)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXX	79	XXXXXXXXXXXXXXX
ALL VIN	89	XXXXXXXXXXXXXXXXX	121	XXXXXXXXXXXXXXXXXX+	45	XXXXXXXX
(49)	79	XXXXXXXXXXXXXXXX	64	XXXXXXXXXXXX	36	XXXXXX
CIRS ARV	117	XXXXXXXXXXXXXXXXXXX+	133	XXXXXXXXXXXXXXXXXXX+	100	XXXXXXXXXXXXXXXXXXX
(50)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	86	XXXXXXXXXXXXXXXX

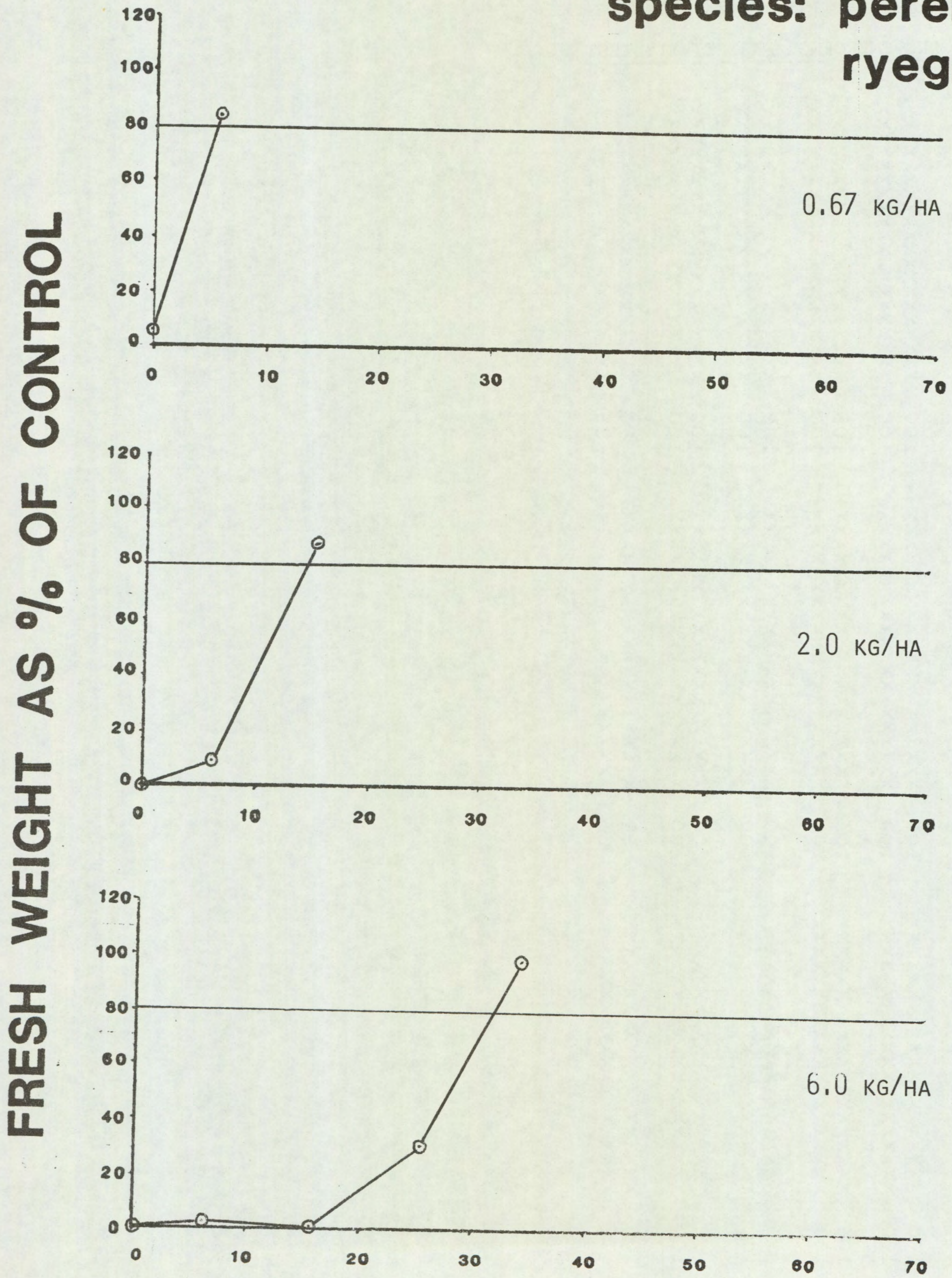
ORBENCARB

SPECIES		0.67 KG/HA		2.00 KG/HA		6.00 KG/HA
TUS FARF	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
(51)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
CONV ARV	106	XXXXXXXXXXXXXXXXXXX+	106	XXXXXXXXXXXXXXXXXXX+	106	XXXXXXXXXXXXXXXXXXX+
(52)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
MAIZE+S	90	XXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
(56)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
MAIZE	90	XXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
(57)	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX	100	XXXXXXXXXXXXXXXXXXX
PHAL MIN	105	XXXXXXXXXXXXXXXXXXX+	98	XXXXXXXXXXXXXXXXXXX	90	XXXXXXXXXXXXXXXXX
(84)	79	XXXXXXXXXXXXXXX	36	XXXXXXX	36	XXXXXXX

PRE-EMERGENCE SELECTIVITY TEST

PERSISTENCE [52] OF ORBENCARB

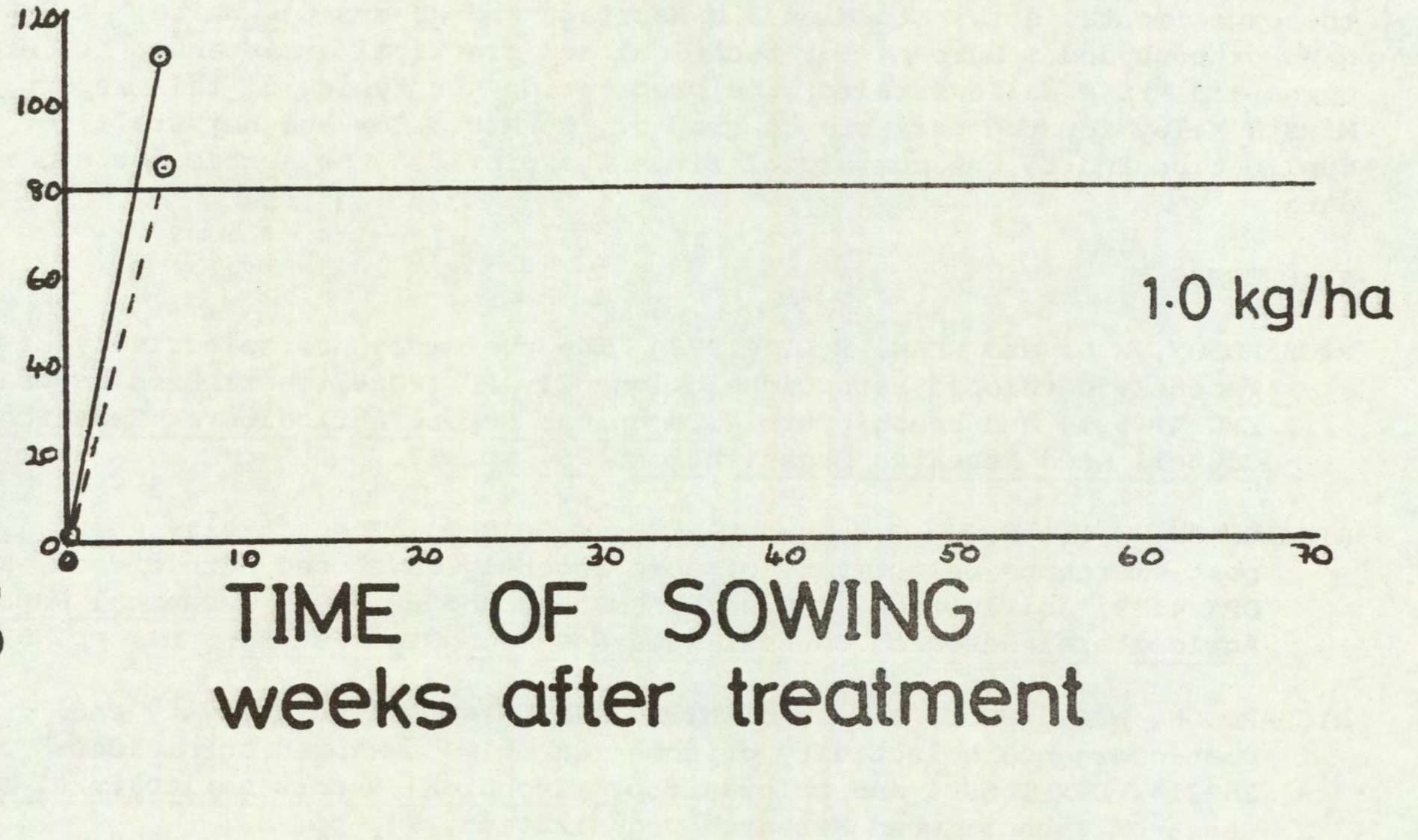
species: perennial ryegrass



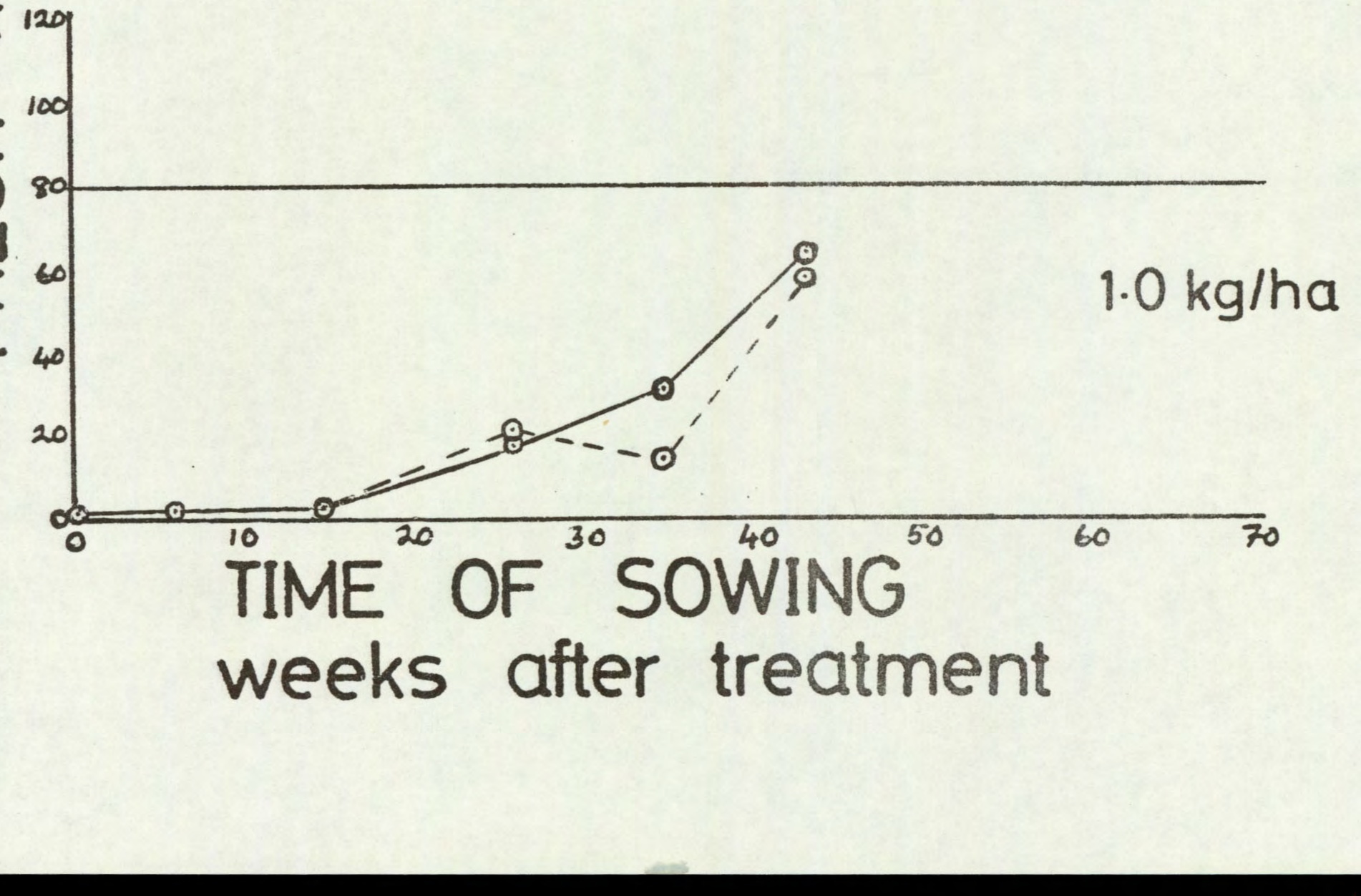
TIME OF SOWING

weeks after treatment

PERSISTENCE OF CYANAZINE
species: Perennial Ryegrass
turnip



PERSISTENCE OF SIMAZINE
species: Perennial Ryegrass
turnip



ACKNOWLEDGEMENTS

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RICHARDSON, W.G. and WEST, T.M. (1984) The activity and post-emergence selectivity of some recently developed herbicides; MCPA-thioethyl, MT-124, tridiphane, aclonifen and RST 20024H. Technical Report Agricultural and Food Research Council Weed Research Organization, 78, pp. 48.

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

	Designation and computer serial number	Cultivar or source	No per pot	Depth of planting (cm)	Stage of growth at assessment (untreated controls, leaf numbers exclusive of cotyledons)
Temperate species					
Wheat (Triticum aestivum)	WHEAT (1)	Armada	8	1.0	3.5–4 leaves, 0–1 tiller
Wheat+safener (Triticum aestivum)	WHEAT+S (2)	Armada	8	1.0	7 leaves, tillering
Barley (Hordeum vulgare)	BARLEY (3)	Sonja	8	1.0	4 leaves, 0–1 tiller
Barley+safener (Hordeum vulgare)	BARLEY+S (4)	Sonja	8	1.0	7.5–8.5 leaves, tillering
Oat (Avena sativa)	OAT (5)	Pennal	8	1.0	4–5 leaves
Perennial ryegrass (Lolium perenne)	PER RYGR (6)	S 23	15	0.5	5–6 leaves, 0–1 tiller
Onion (Allium cepa)	ONION (8)	Robusta	15	0.5	3–4 leaves
Dwarf bean (Phaseolus vulgaris)	DWF BEAN (9)	Masterpiece	4	1.5	1.5 trifoliate leaves
Field bean (Vicia faba)	FLD BEAN (10)	Maris Bead	4	2.0	5 leaves
Pea (Pisum sativum)	PEA (11)	Dark Skinned Perfection	4	1.5	7 leaves
White Clover (Trifolium repens)	W CLOVER (12)	Kent Wild White	20	0.5	3 trifoliate leaves
Lucerne (Medicago sativa)	LUCERNE (13)	Europe	12	0.5	3 trifoliate leaves
Rape (Brassica napus oleifera)	RAPE (14)	Jet Neuf	20	0.5	4 leaves
Kale (Brassica oleracea acephala)	KALE	Green Marrow Stem	15	0.5	2.5–3 leaves
Swede (Brassica napus)	SWEDE (17)	Acme	12	0.5	3.5 leaves
Carrot (Daucus carota)	CARROT (18)	Chantenay Red Core	12	0.5	3.5–4 leaves

	Designation and computer serial number	Cultivar or source	No per pot	Depth of planting (cm)	Stage of growth at assessment (untreated controls, leaf numbers exclusive of cotyledons)
Lettuce (Lactuca sativa)	LETTUCE (20)	Reskia	15	0.5	6 leaves
Fenugreek (Trigonella foenumgraecum)	FENUGREK (21)	Paul	10	0.5	2-3 trifoliate leaves
Sugar beet (Beta vulgaris)	SUG BEET (22)	Nomo monogerm	15	1.0	2-4 leaves
Beta vulgaris	BETA VUL (23)	Attleborough 1979	20	0.5	4.5 leaves
Bromus sterilis	BROM STE (24)	WRO 1982	12	0.5	6-8 leaves, 2 tillering
Festuca rubra	FEST RUB (25)	Boreal CDN 86-0192	25	0.25	1-3 tillers
Avena fatua	AVE FATU (26)	WRO 1980	10	1.0	4.5-5 leaves
Alopecurus myosuroides	ALO MYOS (27)	B and S Supplies 1982	25	0.25	2-3 tillers
Poa annua	POA ANN (28)	B and S Supplies 1980	25	0.5	4-5 leaves, 0-1 tiller
Poa trivialis	POA TRIV (29)	B and S Supplies 1981	25	0.25	Up to 10 cm
Sinapis arvensis	SIN ARV (30)	WRO 1981	20	0.5	4-5 leaves
Raphanus raphanistrum	RAPH RAP (31)	Long Black Spanish	12	0.5	4 leaves
Chrysanthemum segetum	CHRY SEG (32)	WRO 1982	20	surface	5-6 leaves
Matricaria perforata	MAT PERF	WRO 1981	25	surface	6-7 leaves
Senecio vulgaris	SEN VULG (34)	B and S Supplies 1981	40	surface	6-7 leaves
Polygonum lapathifolium	POL LAPA (35)	WRO 1981	20	0.5	1-4 leaves

	Designation and computer serial number	Cultivar or source	No per pot	Depth of planting (cm)	Stage of growth at assessment (untreated controls, leaf numbers exclusive of cotyledons)
Galium aparine	GAL APAR (38)	WRO 1981	12	1.0	8-15 whorls
Chenopodium album	CHEN ALB (39)	WRO 1979	40	0.5	4 leaves
Stellaria media	STEL MED (40)	B and S Supplies 1981	40	0.5	Numerous leaves
Veronica persica	VER PERS (42)	WRO 1981	15	0.5	Several leaves
Viola arvensis	VI ARVE (43)	B and S Supplies 1982	30	0.5	6 leaves
Rumex obtusifolius	RUM OBTU (44)	B and S Supplies 1981	25	0.25	2-3 leaves
Elymus repens	EL REPEN (47)	WRO Clone 31	6*	1.5	4-5 leaves
Allium vineale	ALL VIN (49)	WRO 1982	12***	1.0	2-3.5 leaves
Cirsium arvense	CIRS ARV (50)	WRO Clone 1	4**	1.5	4-7 leaves
Tussilago farfara	TUS FARF (51)	WRO Clone 1	4*	1.5	2-4 leaves
Convolvulus arvensis	CONV ARV (52)	B and S Supplies 1979	15	0.5	7-8 leaves
Phalaris paradoxa	PHAL PAR (54)	ADAS 1981	20	0.5	-
Maize+safener (Zea mays)	MAIZE+S (56)	LG11	5	1.5	4.5 leaves
Maize (Zea mays)	MAIZE (57)	LG11	5	1.5	4.5 leaves
Phalaris minor	PHAL MIN (84)	Delhi 1978	15	0.25	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*	^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

TECHNICAL REPORTS

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(* denotes Reports now out of print)

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16. Report on a joint survey of the presence of wild oat seeds in cereal seed drills in the United Kingdom during spring 1970. November 1970. J G Elliott and P J Attwood. Price - £0.25

17. The pre-emergence selectivity of some newly developed herbicides, Orga 3045 (in comparison with dalapon), haloxydine (PP 493), HZ 52.112, pronamide (RH 315) and R 12001. January 1971. W G Richardson, C Parker and K Holly. 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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68. The activity and pre-emergence selectivity of some recently developed herbicides: WL 49818, WL 82830, WL 83627, WL 83801 and DPX 5648. December 1982. W G Richardson, T M West and C Parker. Price - £4.00

69. The activity and late post-emergence selectivity of some recently developed herbicides: AC 252925, DOWCO 453, HOE 33171 and HOE 35609. March 1983. W G Richardson, T M West and G P White. Price - £3.25

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76. A laboratory rainfall simulator for pesticide studies. May 1984. R C Simmons. Price - £2.00

77. Experiments on the effects of the herbivorous fish, grass carp (Ctenopharyngodon idella Val.) on aquatic vascular plants, algae, zooplankton and phytoplankton and the importance of water temperature on the success of weed control. September 1984. M C Fowler. Price - £3.50.

78, The activity and post-emergence selectivity of some recently developed herbicides: MCPA-thioethyl, MT-124, tridiphane, aclonifen and RST 20024 H. October 1984. W G Richardson and T M West. Price - £5.40

79. A preliminary study on the effect of some agricultural herbicides on a range of field margin flora. November 1984. J E Birnie. Price - £2.50

80. The activity and pre-emergence selectivity of some recently developed herbicides: imazaquin, isoxaben, metsulfuron-methyl, aclonifen and orbencarb. December 1984. W G Richardson and T M West. Price - £6.50