AGRICULTURAL RESEARCH COUNCIL

# WEED RESEARCH ORGANIZATION



TECHNICAL REPORT No. 28

## THE POST-EMERGENCE SELECTIVITY OF EIGHT HERBICIDES BETWEEN PASTURE GRASSES:

| | |
|---|---|
| RP 17623 | RU 12068 |
| HOE 701 | CYPRAZINE |
| BAS 3790 | MC 4379 |
| METOXURON | METRIBUZIN |

BAS 3790 is chlorprocarb (=BAS 379 H), MC 4379 is bifenox, RP 17623 is oxadiazon, RU 12068 is 3-(2-tetrahydropyranyl)-5,6-trimethyleneuracil (Procida)
HOE 701 is Confidential (Hoechst)

A.M. Blair

October 1973

Price

U.K. and overseas surface mail - £1.00

Overseas airmail - £1.25

BEGBROKE HILL, YARNTON, OXFORD

AnQ6.

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# THE POST-EMERGENCE SELECTIVITY OF EIGHT HERBICIDES BETWEEN PASTURE GRASSES: RP 17623, HOE 701, BAS 3790, METOXURON, RU 12068, CYPRAZINE, MC 4379, METRIBUZIN

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## SUMMARY

Eight herbicides were tested for their post-emergence selectivity on five pasture grasses, perennial ryegrass, Festuca rubra, Poa trivialis, Holcus lanatus and Agrostis tenuis.

RP 17623 reduced the growth of the other grass species more severely than perennial ryegrass.

HOE 701 caused a greater growth reduction of P. trivialis and H. lanatus than perennial ryegrass and F. rubra.

BAS 3790 showed no selectivity between the grasses at the doses used in this experiment.

Metoxuron was found to have less effect on perennial ryegrass and F. rubra than on P. trivialis and H. lanatus.

RU 12068 affected all species at the doses used in this experiment.

Cyprazine showed no useful selectivity between the grasses in this experiment although perennial ryegrass and F. rubra were less affected than the other species.

MC 4379 showed very little activity on any of the species at the doses used.

Metribuzin reduced growth of all species at the doses used but perennial ryegrass and F. rubra showed greater tolerance than the other species.

## INTRODUCTION

The Herbicide Evaluation Section of the Weed Research Organization investigates the selectivity of new herbicides which are in the process of development by industry. This involves both pre- and post-emergence applications to a wide range of crop and weed species. The potential of new herbicides to control weed grasses in newly sown grassland is investigated in separate glasshouse experiments on a limited number of grass species.

The post-emergence experiment reported here was only designed to give an indication of selectivity between grass species and was intended to be followed by further work under field conditions. Pot experiments such as this do not give a reliable indication of the activity of specific doses of herbicides under field conditions.

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* Herbicide Evaluation Section

## EXPERIMENTAL PROCEDURE

The techniques used were similar to those of the standard post-emergence experiments which have been previously published in earlier Technical Reports by this organization. The herbicides were tested in two separate experiments (Table 1).

### Plant culture and treatment

Plants were grown in 90 mm diameter plastic pots in sandy loam soil; 30 gm superphosphate per 36 litres soil was added. All species were grown from seed and the sowing dates were staggered so that all species were at the 2-3 leaf stage at the time of treatment. Each treatment was replicated twice.

The herbicides were used as formulated by the manufacturer for field experimentation. They were sprayed using a specially built laboratory sprayer embodying a 'Teejet' 8002E fan nozzle moving at constant speed along a track above a spray bench. The volume rate was 338 l/ha in Experiment 1 and 352 l/ha in Experiment 2 and the working pressure 207 kilonewtons/$m^2$. After spraying, the plants were watered from above but only onto the soil surface as overhead irrigation tends to damage the grasses at this stage.

### Assessment and processing of results

Before spraying, the number of plants per pot for each species was recorded. Between the second and third weeks after spraying a final assessment was made directly onto punched cards. The number of survivors of each treatment was noted and their vigour was expressed on a 0-7 subjective scoring scale. Scale points were defined as follows:

0 = completely dead
1 = moribund but not all tissue dead
2 = alive, with some green tissue, but unlikely to make much further growth
3 = very stunted, but apparently still making some growth
4 = considerable inhibition of growth
5 = readily distinguishable inhibition of growth
6 = some detectable adverse effect as compared with control - colour difference, morphological abnormality, epinasty or very slight reduction in growth
7 = indistinguishable from control

The punched cards were processed by the ORION computer at Rothamsted Experimental Station. The computer output was produced directly onto the duplicating stencils used in the preparation of this report. These give rise to the main diagrammatic presentation of the data. On each histogram there is an indication of herbicide, dose applied and species, abbreviations for which can be found in Table 2. For each species there is a pair of figures for each dose of herbicide. The upper figure of the pair gives mean plant survival as a percentage of untreated controls. The lower figure shows mean vigour score as a percentage of untreated controls. Directly to the right of each figure is the same information presented as a horizontal histogram. Each 'x' in the histogram represents a 5% increment.

The comments made on each herbicide are restricted to points of interest.

BAS 3790 is chlorprocarb (=BAS 379 H), MC 4379 is bifenox, RP 17623 is oxadiazon, RU 12068 is 3-(2-tetrahydropyranyl)-5,6-trimethyleneuracil (Procida)
HOE 701 is Confidential (Hoechst)



Table 1

Herbicide treatments

| Chemical | Date of treatment | Doses kg a.i./ha |
|---|---|---|
| Experiment 1 (G.71.1) | | |
| RP 17623 (2-t-butyl-4-(2,4-dichloro-5-isopropoxyphenyl)-5-oxo-1,3,4 oxadiazoline) | 20.1.71 | 0.2 , 0.4 , 0.6 |
| HOE 701 (Confidential) | " | 0.1 , 0.2 , 0.4 |
| BAS 3790 (3-carbomethoxy-amino-phenyl N-(1-chloro-methyl-propyl)-carbamate | " | 0.1 , 0.2 , 0.4 |
| Metoxuron (N'-(3 chloro-4-methoxyphenyl)-NN-dimethylurea) | " | 0.1 , 0.2 , 0.4 |
| Experiment 2 (G.71.64) | | |
| RU 12068 (3-(2-tetrahydropyranyl)-6,7-dihydro-1H-cyclopentapyrimidine-2,4-(3H, 5H)dione) | 13.7.72 | 0.25 , 0.5 , 1.0 |
| Cyprazine (2-chloro-4-cyclopropylamino-6-isopropylamino-1,3,5-triazine) | " | 0.031, 0.0625, 0.125 |
| MC 4379 (Confidential) | " | 0.25 , 0.50 , 1.0 |
| Metribuzin (4-amino-6-t-butyl-3-(methylthio)-1,2,4-triazin-5-(4H)-one | " | 0.025, 0.05 , 0.1 |

Table 2

Species abbreviations, varieties and stage of growth at assessment

| Species | Abbreviation | Cultivar | No. plants per pot | Expt. No. | Depth of planting (cm) | Stage of growth of controls when assessed |
|---|---|---|---|---|---|---|
| Perennial ryegrass (Lolium perenne) | PER RYGR | S23 | 6 | 1,2 | 1.5 | 4-5 leaves, tillering |
| Red fescue (Festuca rubra) | FEST RUB | | 4 | 1,2 | 1.5 | 4-5 leaves, tillering |
| Rough-stalked meadow grass (Poa trivialis) | POA TRIV | | 4 | 1,2 | 1.5 | 4-5 leaves, tillering |
| Yorkshire fog grass (Holcus lanatus) | HOLC LAN | | 4 | 1,2 | 1.5 | 4-5 leaves, tillering |
| Browntop (Agrostis tenuis) | AGR TEN | | 4 | 2 | 0.5 | 4-5 leaves, tillering |

BAS 3790 is chlorprocarb (=BAS 379 H), MC 4379 is bifenox, RP 17623 is oxadiazon, RU 12068 is 3-(2-tetrahydropyranyl)-5,6-trimethyleneuracil (Procida) HOE 701 is Confidential (Hoechst)

## RESULTS

### RP 17623

**Chemical name** 2-t-butyl-4-(2,4-dichloro-5-isopropoxyphenyl)-5-oxo-1,3,4-oxodiazoline

**Experiment number** 1. (G.71.1)

**Formulation used** emulsifiable concentrate 400 gm litre$^{-1}$ a.e. from Rhône-Poulenc via May & Baker Ltd.

**Doses** kg a.i./ha - 0.2, 0.4, 0.6

lb a.i./ac - 0.18, 0.36, 0.54

**Spray volume** 338 l/ha (30.1 gal/ac)

**Experiment treated** 20.1.71 **Assessment completed** 9.2.71

**Information available and suggested uses**

Burgaud *et al.* (1969) reported that as a rule forage grasses were more susceptible in field trials to pre-emergence than to post-emergence applications of RP 17623. They reported complete kill of perennial ryegrass by 0.5 kg a.i./ha.

**Results** see histograms following

**Comment**

At 0.6 kg a.i./ha all species were markedly reduced in vigour although *H. lanatus* was the only species which was completely killed. At 0.4 kg a.i./ha the vigour of perennial ryegrass was decreased by 30% whilst the other species were all reduced by more than 50% and *H. lanatus* was completely killed. At 0.2 kg a.i./ha the vigour of perennial ryegrass was again reduced less than the other species.

This result suggests that this herbicide has some potential for controlling *P. trivialis* and *H. lanatus* in seedling ryegrass at doses between 0.2 and 0.4 kg a.i./ha.

In another post-emergence experiment at WRO (Richardson, 1973) perennial ryegrass showed a similar response but *P. trivialis* was less severely damaged in the present experiment.

POST-EMERGENCE TEST
RP 17623

| SPECIES | | 0.2 kg a.i./ha | | 0.4 kg a.i./ha | | 0.6 kg a.i./ha |
|---|---|---|---|---|---|---|
| PER RYGR | 100 | xxxxxxxxxxxxxxxxxxxx | 92 | xxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx |
| ( 4 ) | 86 | xxxxxxxxxxxxxxxxx | 71 | xxxxxxxxxxxxx | 43 | xxxxxxxxx |
| FEST RUB | 100 | xxxxxxxxxxxxxxxxxxxx | 83 | xxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx |
| ( 25 ) | 36 | xxxxxxx | 43 | xxxxxxxxx | 21 | xxxx |
| POA TRIV | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx |
| ( 29 ) | 36 | xxxxxxx | 29 | xxxxxx | 21 | xxxx |
| HOLC LAN | 0 | | 0 | | 0 | |
| ( 45 ) | | | | | | |

BAS 3790 is chlorprocarb (=BAS 379 H), MC 4379 is bifenox, RP 17623 is oxadiazon, RU 12068 is 3-(2-tetrahydropyranyl)-5,6-trimethyleneuracil (Procida)
HOE 701 is Confidential (Hoechst)



# HOE 701

**Chemical name** Confidential

**Experiment number** 1. (G.71.1)

**Formulation used** Wettable powder 50% w/w from Hoechst

**Doses** kg a.i./ha - 0.1, 0.2, 0.4

lb a.i./ac - 0.09, 0.18, 0.36

**Spray volume** 338 l/ha (30.1 gal/ac)

**Experiment treated** 20.1.71 **Assessment completed** 9.2.71

**Information available and suggested use**

This herbicide was originally suggested by the manufacturers for the control of A. ludoviciana in winter wheat both pre- and post-emergence. It was reported to be active on most broad leaved species.

**Results** see histograms following

**Comment**

Perennial ryegrass and F. rubra were resistant to all doses in this experiment. P. trivialis and H.lanatus were both markedly reduced by 0.5 kg a.i./ha but there was less effect at the lower doses. Thus this herbicide shows a potential for controlling P. trivialis and H. lanatus in seedling ryegrass.

POST-EMERGENCE TEST

HOE 701

| SPECIES | | 0.1 kg a.i./ha | | 0.2 kg a.i./ha | | 0.4 kg a.i./ha |
|---|---|---|---|---|---|---|
| PER RYGR | 100 | xxxxxxxxxxxxxxxxxxxx | 92 | xxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx |
| ( 4 ) | 93 | xxxxxxxxxxxxxxxxxx | 93 | xxxxxxxxxxxxxxxxxx | 93 | xxxxxxxxxxxxxxxxxx |
| FEST RUB | 117 | xxxxxxxxxxxxxxxxxxx+ | 100 | xxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx |
| ( 25 ) | 93 | xxxxxxxxxxxxxxxxxx | 79 | xxxxxxxxxxxxxxx | 79 | xxxxxxxxxxxxxxx |
| POA TRIV | 100 | xxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx |
| ( 29 ) | 43 | xxxxxxxxx | 50 | xxxxxxxxxx | 29 | xxxxxx |
| HOLC LAN | 89 | xxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx |
| ( 45 ) | 43 | xxxxxxxxx | 36 | xxxxxxx | 21 | xxxx |

BAS 3790 is chlorprocarb (=BAS 379 H), MC 4379 is bifenox, RP 17623 is oxadiazon, RU 12068 is 3-(2-tetrahydropyranyl)-5,6-trimethyleneuracil (Procida) HOE 701 is Confidential (Hoechst)



# BAS 3790

**Chemical name** 3-carbomethoxy-amino-phenyl N-(1-chloromethyl-propyl)-carbamate

**Experiment number** 1. (G.71.1)

**Formulation used** Wettable powder 50% w/w from BASF

**Doses** kg a.i./ha - 0.1, 0.2, 0.4

lb a.i./ac - 0.09, 0.18, 0.36

**Spray volume** 338 l/ha (30.1 gal/ac)

**Experiment treated** 20.1.71 **Assessment completed** 9.2.71

**Information available and suggested uses**

Fischer (1969) discusses possible uses of BAS 3790 in mixtures with other compounds but makes no specific suggestions for its use alone as a post-emergence treatment.

**Results** see histograms following

**Comment**

There was no evidence of useful selectivity at the doses used in this experiment. Richardson (1973) in another experiment at WRO found similar effects with perennial ryegrass but showed complete kill of *P. trivialis* at 0.33 kg a.i./ha.

POST-EMERGENCE TEST

BAS 3790

| SPECIES | | 0.1 kg a.i./ha | | 0.2 kg a.i./ha | | 0.4 kg a.i./ha |
|---|---|---|---|---|---|---|
| PER RYGR | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx | 92 | xxxxxxxxxxxxxxxxxx |
| ( 4 ) | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx |
| FEST RUB | 117 | xxxxxxxxxxxxxxxxxxxx+ | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx |
| ( 25 ) | 93 | xxxxxxxxxxxxxxxxxx | 93 | xxxxxxxxxxxxxxxxxx | 86 | xxxxxxxxxxxxxxxx |
| POA TRIV | 100 | xxxxxxxxxxxxxxxxxxxx | 88 | xxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx |
| ( 28 ) | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx | 93 | xxxxxxxxxxxxxxxxxx |
| HOLC LAN | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxx |
| ( 45 ) | 79 | xxxxxxxxxxxxxxx | 71 | xxxxxxxxxxxxx | 71 | xxxxxxxxxxxxx |

## METOXURON

Chemical name — N'-(3 chloro-4-methoxyphenyl)-NN-dimethylurea

Experiment number — 1. (G.71.1)

Formulation used — Wettable powder 80% w/w from Sandoz via Farm Protection Ltd

Doses — kg a.i./ha - 0.1, 0.2, 0.4

lb a.i./ac - 0.09, 0.18, 0.36

Spray volume — 338 l/ha (30.1 gal/ac)

Experiment treated — 20.1.71 Assessment completed — 9.2.71

Information available and suggested uses

Metoxuron is approved for the control of blackgrass, mayweed and some other broad-leaved weeds post-emergence in winter barley, winter wheat and carrots (Ministry of Agriculture, Fisheries & Food, Great Britain, 1973).

Results — see histograms following

Comment

Perennial ryegrass and F. rubra were less affected by 0.1 kg a.i./ha than were P. trivialis and H. lanatus. 0.2 kg a.i./ha markedly reduced H. lanatus and P. trivialis whilst having little affect on perennial ryegrass and F. rubra. These latter species also showed a greater tolerance of 0.4 kg a.i./ha than did P. trivialis and H. lanatus.

A dose of between 0.2-0.4 kg a.i./ha should be further examined for controlling weed grasses in seedling ryegrass.

POST-EMERGENCE TEST

METOXURON

| SPECIES | | 0.1 kg a.i./ha | | 0.2 kg a.i./ha | | 0.4 kg a.i./ha |
|---|---|---|---|---|---|---|
| PER RYGR | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx |
| ( 4 ) | 100 | xxxxxxxxxxxxxxxxxxxx | 79 | xxxxxxxxxxxxxxxx | 64 | xxxxxxxxxxxxx |
| FEST RUB | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx |
| ( 25 ) | 79 | xxxxxxxxxxxxxxxx | 79 | xxxxxxxxxxxxxxxx | 71 | xxxxxxxxxxxxxx |
| POA TRIV | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx |
| ( 29 ) | 57 | xxxxxxxxxxx | 43 | xxxxxxxxx | 29 | xxxxxx |
| HOLC LAN | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx |
| ( 45 ) | 64 | xxxxxxxxxxxxx | 29 | xxxxxx | 21 | xxxx |

RU 12068

**Chemical name** 3-(2-tetrahydropyranyl)-6,7-dihydro-1H-cyclopento-pyrimidine-2,4-(3H,5H)dione

**Experiment number** 2. (G.71.64)

**Formulation used** Wettable powder 50% a.i. $^{w}/_{w}$ from Procida

**Doses** kg a.i./ha 0.25, 0.50, 1.00

lb a.i./ac 0.23, 0.44, 0.89

**Spray volume** 352 l/ha (31.3 gal/ac)

**Experiment treated** 13.1.72 **Assessment completed** 3.2.72

**Information available and suggested uses**

Bertin et al. (1972) reported that RU 12068 was a broad spectrum weed killer which was tolerated by oat, wheat, maize and sorghum at a dose of 0.5 kg a.i./ha post-emergence and by cotton at 1.0 kg a.i./ha. Their field trials also showed that A.tenuis and P. trivialis were much more susceptible than L. perenne to this herbicide.

**Results** see histograms following

**Comment**

Although RU 12068 markedly reduced the vigour of both perennial ryegrass and F. rubra the number of plants of both species was unaffected. P. trivialis, H. lanatus and A. tenuis were severely affected or killed by all doses of RU 12068 in this experiment.

The degree of vigour reduction of perennial ryegrass was too severe in this experiment to make this herbicide useful as a selective treatment between grasses at these doses. Lower doses may be worth further trial.

POST-EMERGENCE TEST

RU 12068

| SPECIES | 0.25 kg a.i./ha | | 0.50 kg a.i./ha | | 1.00 kg a.i./ha | |
|---|---|---|---|---|---|---|
| PER RYGR | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx |
| ( 4 ) | 57 | xxxxxxxxxxx | 21 | xxxx | 7 | x |
| FEST RUB | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx |
| ( 25 ) | 57 | xxxxxxxxxxx | 43 | xxxxxxxxx | 36 | xxxxxxx |
| POA TRIV | 33 | xxxxxxx | 0 | | 0 | |
| ( 29 ) | 7 | x | 0 | | 0 | |
| HOLC LAN | 0 | | 0 | | 0 | |
| ( 45 ) | 0 | | 0 | | 0 | |
| AGR TEN | 0 | | 0 | | 0 | |
| ( 56 ) | 0 | | 0 | | 0 | |

## CYPRAZINE

Chemical name — 2-chloro-4-cyclopropylamino-6-isopropylamino-1,3 5-triazine

Experiment number — 2. (G.71.64)

Formulation used — Emulsifiable concentrate 120 gm litre$^{-1}$ a.i. from Gulf

Doses — kg a.i./ha 0.0312, 0.0625, 0.125

1b a.i./ac 0.028, 0.057, 0.115

Spray volume — 352 l/ha (31.3 gal/ac)

Experiment treated — 13.1.72 Assessment completed — 3.2.72

Information available and suggested uses

Manufacturers data reports selective post-emergence control of seedling grasses and broad-leaved weeds in maize at 0.75 kg a.i./ha. Richardson & Dean (1973) confirmed the tolerance of maize and showed that sorghum was also tolerant: a wide range of broad-leaved, grass and perennial weeds were controlled.

Results — see histograms following

Comment

Perennial ryegrass and F. rubra plant numbers were unaffected by these herbicide treatments although plant vigour of both species was reduced by all doses. Plant numbers of P. trivialis were only reduced at the highest dose although vigour reductions were caused by all treatments. Both H. lanatus and A. tenuis were severely affected both in plant number and vigour: there is no apparent explantion for the survival of H. lanatus plants treated with 0.125 kg a.i./ha whereas those treated with 0.0625 kg a.i./ha were killed.

Cyprazine, at all doses in this experiment, was too damaging. Lower doses might be worth further examination for selectivity between perennial ryegrass and the other grasses. Richardson & Dean (1973) also showed marked damage to perennial ryegrass but at slightly higher doses than used in this experiment.

POST-EMERGENCE TEST

CYPRAZINE

| SPECIES | 0.0312 kg a.i./ha | | 0.0625 kg a.i./ha | | 0.1250 kg a.i./ha | |
|---|---|---|---|---|---|---|
| PER RYGR | 100 | xxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx |
| ( 4 ) | 79 | xxxxxxxxxxxxxxx | 64 | xxxxxxxxxxxx | 64 | xxxxxxxxxxxx |
| FEST RUB | 100 | xxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx |
| ( 25 ) | 86 | xxxxxxxxxxxxxxxx | 64 | xxxxxxxxxxxx | 43 | xxxxxxxxx |
| POA TRIV | 100 | xxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx | 33 | xxxxxxx |
| ( 29 ) | 50 | xxxxxxxxxx | 57 | xxxxxxxxxxx | 21 | xxxx |
| HOLC LAN | 33 | xxxxxxx | 0 | | 67 | xxxxxxxxxxxxx |
| ( 45 ) | 7 | x | 0 | | 50 | xxxxxxxxxx |
| AGR TEN | 40 | xxxxxxxx | 0 | | 0 | |
| ( 56 ) | 57 | xxxxxxxxxxx | 0 | | 0 | |

MC 4379

Chemical name — Confidential

Experiment number — 2. (G.71.64)

Formulation used — Emulsifiable concentrate 240 gm litre$^{-1}$ a.i. from Mobil

Doses — kg a.i./ha 0.25, 0.50, 1.00

lb a.i./ac 0.23, 0.45, 0.89

Spray volume — 352 l/ha (31.3 gal/ac)

Experiment treated — 13.1.72 Assessment completed — 3.2.72

Information available and suggested uses

Manufacturers data from 1973 reports control of some grasses and resistant broad-leaved weeds in soyabeans, maize, rice, sorghum, other small grains, safflower and sunflower. Richardson & Dean (1973) found MC 4379 was particularly active against broad-leaved species. Annual grass and perennial weeds were more resistant.

Results — see histograms following

Comments

Plant numbers of all species were not reduced by the herbicide treatments except H. lanatus treated with 0.5 kg a.i./ha. Marked vigour reductions only occurred at the highest level of herbicide used. MC 4379 showed no useful selectivity between species at the doses used in this experiment and this agrees with the results for perennial ryegrass reported by Richardson & Dean (1973).

POST-EMERGENCE TEST

MC 4379

| SPECIES | 0.25 kg a.i./ha | | 0.50 kg a.i./ha | | 1.00 kg a.i./ac | |
|---|---|---|---|---|---|---|
| PER RYGR | 110 | xxxxxxxxxxxxxxxxxxx+ | 100 | xxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx |
| ( 4 ) | 100 | xxxxxxxxxxxxxxxxxxx | 86 | xxxxxxxxxxxxxxxxx | 79 | xxxxxxxxxxxxxxx |
| FEST RUB | 88 | xxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx |
| ( 25 ) | 100 | xxxxxxxxxxxxxxxxxxx | 93 | xxxxxxxxxxxxxxxxxx | 71 | xxxxxxxxxxxx |
| POA TRIV | 100 | xxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx |
| ( 29 ) | 79 | xxxxxxxxxxxxxxx | 86 | xxxxxxxxxxxxxxxxx | 36 | xxxxxxx |
| HOLC LAN | 100 | xxxxxxxxxxxxxxxxxxx | 67 | xxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx |
| ( 45 ) | 79 | xxxxxxxxxxxxxxx | 86 | xxxxxxxxxxxxxxxxx | 36 | xxxxxxx |
| AGR TEN | 100 | xxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxx |
| ( 56 ) | 93 | xxxxxxxxxxxxxxxxxx | 86 | xxxxxxxxxxxxxxxxx | 57 | xxxxxxxxxx |

METRIBUZIN

Chemical name — 4-amino-6-t-butyl-3-(methylthio)-1,2,4-triazin-5-(4H)-one

Experiment number — 2. (G.71.64)

Formulation used — Wettable powder 70% $^{w}/_{w}$ a.i. from Bayer

Doses — kg a.i./ha 0.025, 0.05, 0.1

lb a.i./ac 0.023, 0.045, 0.089

Spray volume — 352 l/ha (31.3 gal/ac)

Experiment treated — 13.1.72 Assessment completed — 3.2.72

Information available and suggested uses

Metribuzin has been approved for pre- and post-emergence control of annual broad-leaved and grass weeds with selectivity in potatoes (Ministry of Agriculture, Fisheries & Food, Great Britain 1973). Manufacturers data from 1972 and 1973 also suggests selectivity in flax, tomatoes, maize, beans, peas, soyabeans, lupins and asparagus at 0.5-1.5 kg a.i./ha in pineapples at up to 2.0 kg a.i./ha and in carrots post-emergence at 0.5 kg a.i./ha. Richardson & Dean (1973) found that metribuzin achieved good control of the majority of weeds tested but Galium aparine, Cyperus spp. and Rottboellia exaltata were particularly resistant.

Results — see histograms following

Comment

Perennial ryegrass plant vigour was reduced at all doses although plant numbers were unaffected. Effects were slightly less marked than that shown by Richardson & Dean (1973). F. rubra plant vigour was also reduced at all doses although plant numbers were unaffected except for a slight decrease at the middle dose of 0.05 kg a.i./ha. P. trivialis was completely killed at the top dose of 0.1 kg a.i./ha; even at the lowest dose there was a 50% reduction but no effect on plant numbers. H. lanatus and A. tenuis were both very severely affected by metribuzin although there is no obvious explanation for the apparent survival of each species at one rate.

Lower doses might show up selectivities in view of the marked difference in reaction of ryegrass compared to H. lanatus and A. tenuis at the lowest dose of metribuzin.

POST-EMERGENCE TEST

METRIBUZIN

| SPECIES | | 0.025 kg a.i./ha | | 0.050 kg a.i./ha | | 0.100 kg a.i./ha |
|---|---|---|---|---|---|---|
| PER RYGR | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx |
| ( 4 ) | 64 | xxxxxxxxxxxxx | 36 | xxxxxxx | 21 | xxxx |
| FEST RUB | 100 | xxxxxxxxxxxxxxxxxxxx | 88 | xxxxxxxxxxxxxxxxxx | 100 | xxxxxxxxxxxxxxxxxxxx |
| ( 25 ) | 57 | xxxxxxxxxxx | 50 | xxxxxxxxxx | 36 | xxxxxxx |
| POA TRIV | 100 | xxxxxxxxxxxxxxxxxxxx | 67 | xxxxxxxxxxxxx | 0 | |
| ( 29 ) | 50 | xxxxxxxxxx | 21 | xxxx | 0 | |
| HOLC LAN | 0 | | 0 | | 67 | xxxxxxxxxxxxx |
| ( 45 ) | 0 | | 0 | | 50 | xxxxxxxxxx |
| AGR TEN | 0 | | 20 | xxxx | 0 | |
| ( 56 ) | 0 | | 14 | xxx | 0 | |

ACKNOWLEDGEMENTS

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BAS 3790 is chlorprocarb (=BAS 379 H), MC 4379 is bifenox, RP 17623 is oxadiazon, RU 12068 is 3-(2-tetrahydropyranyl)-5,6-trimethyleneuracil (Procida) HOE 701 is Confidential (Hoechst)

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