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SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

Code : HW 282/85
Cat. No.: 1512

Title: Problem weed control - perennial grasses

1. Particulars of the project

This crop : Weeds only

Site : Mount Edgecombe

Region : North Coast Coastal

Soil system : Berea

Soil form/series: Hutton/Shortlands

Design : No randomisation

Variety : -

Fertilizer/Ameliorants : $\frac{N}{-}$ $\frac{P}{-}$ $\frac{K}{-}$

Soil analysis: Date: 29.1.86

pH	O.M.%	Clay%	P.D.I.
7,8	0,50	35	

ppm

P	K	Ca	Mg	Zn	Al
51	80	>1800	>220	0,8	

Age: Date:

Irrigation: Drip irrigated daily

Application details:

Applicator : Gas operated
: Knapsack sprayer

Nozzle : 8004-E

Pressure : 2 Bars

Time of spraying: 11:00am - 12:30pm

Assessment dates:

9.4.86
23.4.86
15.5.86
28.5.86
13.6.86

Weather conditions at spraying (20.3.86)

General : Hot & Humid

Rainfall : On day of spray : 0
Days to 1st rain : 4
No. mm on 1st rain: 3,0

Sunshine hrs : 7,3

Dew : Nil

Wind : Slight

Temperature (°C) : 8am = 22,4
2pm = 25,4

Rel. Humidity (%): 8am = 89
2pm = 71

2. Objectives

To screen herbicide treatments for their effect on the creeping perennial grasses *Cynodon dactylon*, *Cynodon plectostachyus*, *Digitaria scalarum*, *Paspalum paspalodes* and *Leersia Lexandra* in pots.

3. Treatments

	<u>Chemicals</u>	<u>Rate (kg or l prod. ha⁻¹)</u>
1.	Control (unsprayed)	-
2.	Velpax (24%)+diuron (80%)	2 + 2,5
3.	MSMA (72%)+diuron	3 + 3
4.	Asulam (40%)+MSMA	9 + 3
5.	Asulam	9
6.	Fusilade (12,5%)	4
7.	Roundup (36%)	4

3.1 Chemical Formulation

<u>Product</u>	<u>Chemical name</u>	<u>Formulation</u>
Velpar	Hexazinone	240 g/kg sol p
Diuron	Diuron	800 g/kg wp
Dalconate 6	MSMA	720 g/l soln
Asulox	asulam	400 g/l soln
Fusilade	fluazifop-butyl	125 g/l ec
Roundup	glyphosate	359 g/l soln

4. Experimental

On 13 January, rhizomes of each weed species were planted into 16 pots of size 300 mm x 300 mm x 100 mm.

On 20 March, when foliage from all species was thick and growing actively, the trial was sprayed. Treatments were applied directly over the foliage using a gas-operated knapsack sprayer fitted with a Spraying Systems 8004-E fanjet.

Adequate moisture for active growth was maintained during the trial period by means of drip irrigation.

Ratings were taken subsequently of percent Kill of foliage, ie degree of necrosis.

Ground cover % at spray was 100% for all species.

Two replications of each treatment were used.

5. ResultsTable 1. Mean visual ratings of *Cynodon dactylon* control, 20,34,56,69 and 85 days after spraying

Treatment	Rate prod ha ⁻¹ (kg or l)	Percent Kill				
		20	34	56	69	85
Control (unsprayed)	-	0	25	20	20	20
Velpar + diuron	2 + 2,5	87	92	91	92	89
MSMA + diuron	3 + 3	40	27	30	15	35
Asulam + MSMA	9 + 3	37	15	15	15	25
Asulam	9	37	20	30	20	25
Fusilade	4	58	75	80	82	85
Roundup	4	85	92	89	87	91

Comments on Table 1

No treatments achieved a 100% Kill of *C. dactylon*. However, Velpar + diuron at 2 + 2,5, achieved an acceptable control at 69 days. Roundup at 4 l/ha was slightly less effective. Fusilade at 4,0 l/ha, although not as effective, appeared to limit the growth of *C. dactylon* foliage.

Subsequent regrowth was present in the Velpar + Diuron pots, after the 69th day. Trials will be conducted on a field basis to confirm the length of control of this treatment.

Table 2. Mean visual ratings of *Cynodon plectostachyus* control 20,34,56 and 69 days after spraying.

Treatment	Rate prod ha ⁻¹ (Kg or l)	Percent Kill			
		20	34	56	69
Control (unsprayed)	-	7	20	20	20
Velpar + diuron	2 + 2,5	85	80	85	77
MSMA + diuron	3 + 3	25	30	40	40
Asulam + MSMA	9 + 3	32	20	20	20
Asulam	9	30	37	20	15
Fusilade	4	48	52	67	67
Roundup	4	63	65	77	70

Comments on Table 2

No treatments achieved an acceptable control of *C. plectostachyus* (Giant star grass).

Velpar + diuron at 2 + 2,5 l/ha, provided the best control. Roundup (4 l/ha) was not as effective.

Table 3. Mean visual ratings of *Digitaria scalarum* control 20,34,56 and 69 days after spraying.

Treatments	Rate of prod (kg/l ha ⁻¹)	Percent Kill			
		20	34	56	69
Control (unsprayed)	-	2	0	5	5
Velpar + diuron	2 + 2,5	52	70	83	76
MSMA + diuron	3 + 3	35	35	65	55
Asulam + MSMA	9 + 3	72	85	77	65
Asulam	9	45	98	100	100
Fusilade	4	20	10	10	10
Roundup	4	75	95	97	99

Comments on Table 3

Asulam (9 l/ha) provided an excellent Kill. This contrasted with the Asulam + MSMA (9 l + 3l) mixture which gave poor control.

Roundup provided a good Kill but seemed to be slower acting compared to Asulam.

No other treatments provided acceptable control of *D scalarum*.

Table 4. Mean visual ratings of *Paspalum paspalodes* control 20,34,56 and 69 days after spraying.

Treatment	Rate prod. (kg or l ha ⁻¹)	Percent kill			
		20	34	56	69
Control (unsprayed)	-	0	5	5	5
Velpar + diuron	2 + 2,5	35	20	17	15
MSMA + diuron	3 + 3	50	15	12	10
Asulam + MSMA	9 + 3	80	84	65	25
Asulam	9	40	82	91	89
Fusilade	4	45	65	77	86
Roundup	4	72	82	90	86

Comments on Table 4

Asulam (9 l), Roundup (4 l) and to a lesser extent Fusilade (4 l) provided good temporary control.

Table 5. Mean visual ratings of *Leersia hexandra* control 20,34,56 and 69 days after spraying.

Treatment	Rate of prod. (kg or l ha ⁻¹)	Percent Kill			
		20	34	56	69
Control (unsprayed)	-	5	0	2	2
Velpar + diuron	2 + 2,5	99	99	97	97
MSMA + diuron	3 + 3	97	100	100	100
Asulam + MSMA	9 + 3	45	50	22	15
Asulam	9	35	35	10	10
Fusilade	4	30	32	20	20
Roundup	4	30	72	75	67

Comments on Table 5

1. Both Velpar + diuron and MSMA + diuron treatments have given excellent control of *Leersia hexandra*.
2. All other treatments are inadequate with the exception of Roundup which provided some control.

Table 6. Mean visual ratings of individual treatments on each species 56 days after spraying.

Treatment	<i>Cynodon dactylon</i>	<i>Cynodon plectostachyus</i>	<i>Paspalum paspalodes</i>	<i>Digitaria scalarum</i>	<i>Leersia hexandra</i>
Velpar + diuron	91	85	17	83	97
MSMA + diuron	30	40	12	65	100
Asulam + MSMA	20	20	65	77	22
Asulam	30	20	91	100	10
Fusilade	80	65	77	7	20
Roundup	89	77	90	97	72

Conclusions

1. Velpar + diuron at 2 + 2,5 l/ha gave acceptable control of *C. dactylon* and *L. hexandra* and reasonable control of *C. plectostachyus* and *D. scalarum*.
2. MSMA + diuron mixture provided a 100% kill of *L. hexandra* but was inadequate for the control of any other species present.
3. Asulam + MSMA is inadequate.
4. Asulam on its own, at 9 l/ha achieved a 100% kill of *D. scalarum* and gave

very good control of *P paspalodes*. Mixtures with MSMA however appeared to be antagonistic and in all cases provided worse control than that provided by Asulam on its own.

5. Fusilade at 4 l/ha, failed to give acceptable control of any weeds but provided only temporary control of both *Cynodon* species and of *Paspalum paspalodes*.
6. These encouraging effects from Velpar mixtures, MSMA and Asulam need to be confirmed in field trials.

LHGW/IS
1 July 1986