SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

Cat. No. : 1753
Project No. :
Code No. : HW 407/91

Title: Late post-emergence weed control trial

1. **PARTICULARS OF PROJECT :**

This crop	: Fallow	
Site	: Shakaskraal- Field 37B	
Region	: North Coast - Coastal	**Dates:** 09.01.91 - 21.02.91
		Rainfall: 160 mm
Soil System	: Umzinto Coast Lowlands	**Irrigation:** Nil
Soil form/ Series	: Longlands/Westleigh	
Design	: Randomised block	
Variety	: N/A	
Fertilizer/ Ameliorants	: N P K : - Nil -	

2. **OBJECTIVES**

To test new herbicides for late post-emergence weed control efficacy.

3. **TREATMENTS**

	Rate (l product/ha)
T1 Actril DS + diuron	1,25 + 2,5
T2 Actil DS	1,5
T3 Oxytril + diuron	1,25 + 2,5
T4 Spotaxe + diuron	3,13 + 2,5
T5 Spotaxe	3,75
T6 Duplosan DP + diuron	1,25 + 2,5
T7 Duplosan DP	1,5
T8 ICIA 0051/diuron	3,33
T9 ICIA 0051/ametryn	2,7
T10 ICIA 0051/Velpar + Velpar	2 + 0,96
T11 Velpar + diuron	2 + 2
T12 Velpar + Gramoxone	2 + 1
T13 Velpar + Tronic	2 + 0,6
T14 Amigan	4
T15 Terbo	2
T16 Diuron	2,5

4. CHEMICAL FORMULATIONS USED

Product	Formulation	Active ingredient
Actril DS	600 + 100 g/l (ec)	2,4-D + ioxynil
Diuron	800 g/l (sc)	diuron
Oxytril	200 + 200 g/l (ec)	ioxynil + bromoxynil
Spotaxe	80 + 240 g/l	dicamba + 2,4-D
Duplosan DP	600 g/l	dichlorprop - P
ICIA 0051/diuron	150 + 300 g/l	- + diuron
ICIA 0051/ametryn	90 + 360 g/l	- + ametryn
ICIA 0051/Velpar	125 + 125 g/l	- hexazinone
Velpar	240 g/l (ec)	hexazinone
Gramoxone	200 g/l (soln)	paraquat
Amigan	310 + 190 g/l	ametryn + terbutryn
Terbo	150 + 333 g/l	bromoxynil + terbuthylazine

5. APPLICATION DETAILS

Treatment date	: 09.01.1991
Time of application	: 5.50 a.m - 08.00 a.m.
Applicator	: CP3
Nozzle	: APM (green)
Method	: Full cover
Output	: 38 ml/sec
Output	: 30,4 ml/m^2

6. WEATHER CONDITIONS AT SPRAYING

Treatment date	: 09.01.1991
General	: Overcast
Dew	: Very slight
Soil surface	: Slightly damp
Wind	: Slight (SW)
Sunshine hours	: 0,7
Temperature °C	
08h00	: 18,5
14h00	: 21,0
Relative humidity %	
08h00	: 58
14h00	: 57

Rainfall (mm)

On day of spraying	: 0,4
No days to first rain	: ±8 hours
At first rain	: 0,4
In 1st 14 days	: 46,2
For duration of trial	: 160

7. RESULTS

Table 1: Treatment effects on a range of broadleaf weeds at 14 and 26 days after spraying

Treatment	Rate l/ha	Weed species (% kill)					
		Ageratum conyzoides		Portulaca oleracae		Gnaphalium spp	
		14	26	14	26	14	26
T1 Actril DS + diuron	1,25 + 2,5	100	100	93	88	100	100
T2 Actil DS	1,5	74	90	80	51	100	100
T3 Oxytril + diuron	1,25 + 2,5	100	100	84	74	100	100
T4 Spotaxe + diuron	3,13 + 2,5	100	100	86	91	100	100
T5 Spotaxe	3,75	25	10	58	71	50	50
T6 Duplosan DP diuron	1,25 + 2,5	100	100	84	86	100	100
T7 Duplosan DP	1,5	0	0	75	63	38	50
T8 ICIA 0051/diuron	3,33	100	100	84	41	100	100
T9 ICIA 0051/ametryn	2,7	100	100	80	25	100	100
T10 ICIA 0051/Velpar + Velpar	2 + 0,96	100	100	78	80	100	100
T11 Velpar + diuron	2 + 2	100	100	91	83	100	100
T12 Velpar + Gramoxone	2 + 1	100	100	90	43	100	100
T13 Velpar + Tronic	2 + 0,6	100	100	84	75	100	100
T14 Amigan	4	79	89	84	38	100	100
T15 Terbo	2	88	70	61	30	100	100
T16 Diuron	2,5	100	100	84	64	100	100

Table 2: Treatment effects on two grass species assessed at 14, 26 and 45 days after spraying

Treatment	Rate l/ha	Weed species (% kill)					
		Eleusine indica			Digitaria sanguinalis		
		14	26	45	14	26	45
T1 Actril DS + diuron	1,25 + 2,5	68	71	95	64	69	35
T2 Actil DS	1,5	0	0	0	0	0	0
T3 Oxytril + diuron	1,25 + 2,5	56	65	50	58	63	30
T4 Spotaxe + diuron	3,13 + 2,5	70	80	67	68	71	36
T5 Spotaxe	3,75	0	0	0	0	0	0
T6 Duplosan DP diuron	1,25 + 2,5	71	75	38	74	71	41
T7 Duplosan DP	1,5	0	0	10	0	0	0
T8 ICIA 0051/diuron	3,33	85	93	91	90	90	81
T9 ICIA 0051/ametryn	2,7	30	15	20	46	28	11
T10 ICIA 0051/Velpar + Velpar	2 + 0,96	16	10	25	33	15	18
T11 Velpar + diuron	2 + 2	83	90	97	81	88	58
T12 Velpar + Gramoxone	2 + 1	38	0	20	18	13	10
T13 Velpar + Tronic	2 + 0,6	14	20	4	11	20	21
T14 Amigan	4	66	43	40	60	45	28
T15 Terbo	2	0	0	1	0	0	0
T16 Diuron	2,5	61	65	70	56	65	25

9. COMMENTS

Due to the number of treatments in the trial, chemicals could only be assessed at their standard rates. Table 3 describes the weed growth stages of spraying.

Table 3 : Weed growth stages of spraying

Species	Growth stage
Eleusine indica	Post tillering, majority flowered
Digitaria sanguinalis	Post tillering, majority flowered
Ageratum conyzoides	30 - 150 mm with 50% flowered
Portulaca oleracae	100 mm just pre-flowering
Gnaphalium spp	100 mm, majority flowered
Euphorbia hirta	100 mm, pre-flowering
Commelina benghalensis	100 mm, pre-flowering
Amaranthus spp	100 mm, post flowering
Conyza spp	± 100 mm, pre-flowering
Sonchus oleraceus	± 100 mm, pre-flowering

Figure 1 illustrates percentage grass kill, and ranks the best eight treatments at approximately six weeks after spraying. Grass control for the remaining treatments was very poor.

Actril DS + diuron

The standard treatment produced good control of the broadleaf weed spectrum except on Euphorbia hirta where there was no control. Tillered Eleusine indica was well controlled but knockdown of Digitaria sanguinalis was poor. Actril DS alone resulted in unacceptable control of Portulaca oleracae and E. hirta with no effect on the two grasses present.

Oxytril + diuron

Efficacy of this mixture equalled that of the standard for some broadleaf species but was inferior on P. oleracae, E. hirta and E. indica.

Spotaxe + diuron and Spotaxe

Broadleaf weed control with Spotaxe + diuron was better than the control, particularly on the more resistant species such as E. hirta. The standard treatment was more effective on E. indica. 3,75 l/ha of Spotaxe alone was generally less successful on broadleaf weeds than 1,5 l/ha of Actril DS.

Duplosan DP + diuron and Duplosan DP

Duplosan DP + diuron generally resulted in similar broadleaf control to the standard. E. hirta appeared to have been completely eradicated by this treatment whereas grass control was unacceptable. Broadleaf control with Duplosan DP alone was inferior compared to that for Actril DS.

ICIA 0051/diuron, ICIA 0051/ametryn and ICIA 0051/Velpar + Velpar

3,33 l/ha of ICIA 0051/diuron gave the greatest grass control of the treatments tested (Fig 1), with the other two formulations being particularly weak on these two species. The formulations without Velpar gave selective broadleaf efficacy, being poor on P. oleracae and E. hirta but very effective on the remainder.

Velpar + diuron, Velpar + Gramoxone and Velpar + Tronic

Broadleaf and grass were well controlled by Velpar + diuron although the effect on D. sanguinalis was temporary and inferior to ICIA 0051/diuron (Fig 1) Velpar + Gramoxone and Velpar + Tronic were ineffective on the grasses and E. hirta. Control of P. oleracae was also poor.

Amigan

This product had little effect on the two grass species and control of P. oleracae was temporary. The remaining broadleaf species were controlled adequately (Table 1).

Terbo

Broadleaf weed control with this product was poor, being significantly lower than that of Actril DS or diuron alone. There was no effect on the two grass species by spraying 2 l/ha of Terbo.

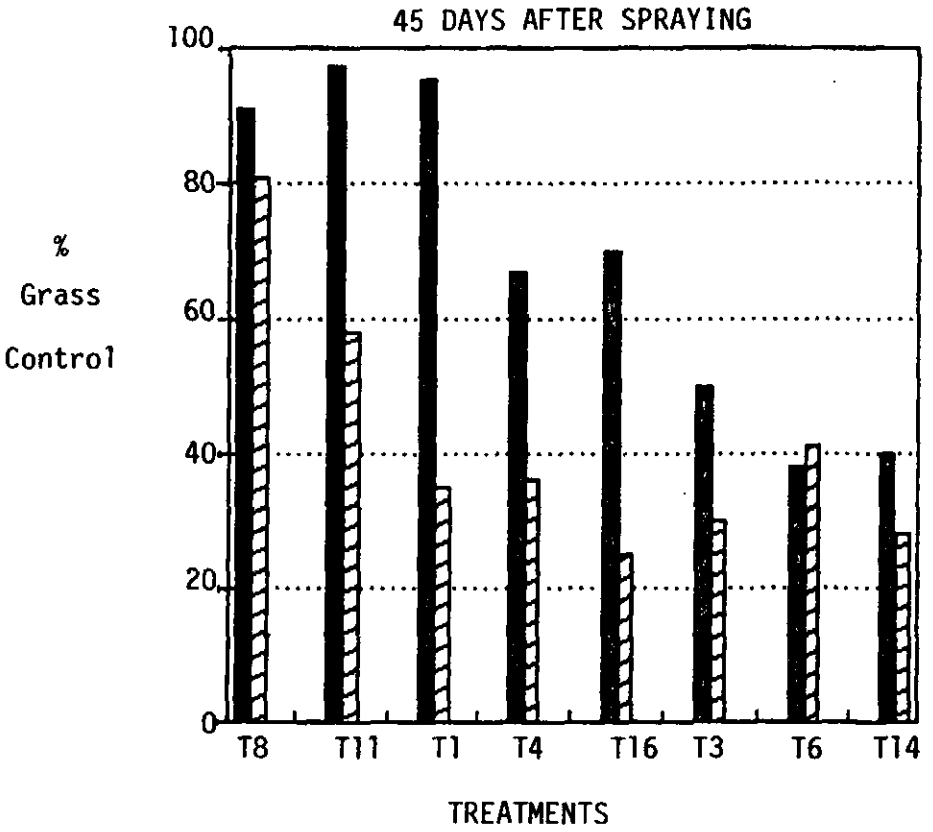
General

The new non-volatile 2,4-D formulations, Spotaxe and Duplosan DP both with diuron, provided favourable broadleaf control compared to the Actril DS + diuron standard. At the rates tested, Spotaxe + diuron appears the more promising of the two. ICIA 0051/diuron was exceptionally effective on tillered grasses but unfortunately has some short comings with regard to broadleaf weed control.

NBL/pw
March 5, 1991

Fig 1

% Grass control



Eleusine indica

Digitaria sanguinalis

T1 = Actril DS + diuron
T3 = Oxytril + diuron
T4 = Spotaxe + diuron
T6 = Duplosan DP + diuron
T8 = ICIA 0051/diuron
T11 = Velpar + diuron
T14 = Amigan
T16 = Diuron