

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: HW 206/80

Cat.No.: 1230

TITLE: POST-EMERGENCE SCREENING TRIAL

1. Particulars of the project:

This crop: Weeds only

Site: La Mercy

Region: N. Coast Coastal

Soil system: Umzinto/Coast lowlands

Soil form: Longlands

Design: Randomised block
with 4 replications

Plot size: 8 m x 2,5m = 20m²

Variety: No cane

Sprayed: 6.11.80

Assessments: 28.11.80
19.12.80

Moisture regime: Rainfed

Dominant weeds: C. esculentus

Digitaria sanguinalis

Eleusine indica

Soil analysis: Date: 15.6.81

pH	Silt%	Sand%	Clay%	O.M.%	CEC
6,15	7	83	10	1,29	7,7

Spray method: Gas operated knapsack
sprayer with spraying systems
TK5 floodjet.

Pressure: 150 kPa

Volume/ha: 334 litre

Weather conditions: Temp. 8 am Rainfall

Day of spraying 22,2°C 0 mm

1 week before spray 11,2 mm

1 week after spray 7,4 mm

2 weeks after spray 37,0 mm

Soil conditions: very moist in top
10 cm. Slight ridges due to
tractor wheels evident.

2. Objective:

To screen new combinations of herbicide for their post-emergence weed control efficacy.

3. Treatments:

Chemicals	Rate in kg or l ai or ae/ha	Rate in kg or l prod/ha
1. Diuron + Actril DS (ioxynil + 2,4-D)	2 + 0,875	2,5 + 1,25
2. Diuron + Actril DS + Reverseal 9	2 + 0,875 + 3 prod.	2,5 + 1,25 + 3
3. Bladex Plus	4,5	9
4. Bladex Plus + Reverseal 9 + S (Agrowett)	4,5 + 3 prod.	9 + 3
5. Bladex Plus + S (Agrowett)*	4,5	9
6. Bladex Plus + S (Tronic)	4,5	9
7. Diuron + Sencor	1,6 + 1,4	2 + 2
8. Bimate + S (Agrowett)	3	4
9. Bimate + Certrol DS	3 + 0,7	4 + 1
10. Bimate + 2,4-D + S (Agrowett)	3 + 1,44	4 + 2
11. Bimate + paraquat	3 + 0,2	4 + 1
12. PP009 + S (Agrowett)	0,5	2
13. PP009 + S "	1,0	4
14. PP009 + S "	1,5	6
15. MSMA (Mesamate) + diuron	2,16 + 2,4	3 + 3
16. MSMA (Mesamate) + ametryne	2,16 + 2,5	3 + 5
17. MSMA " + 2,4-D	2,16 + 1,44	3 + 2
18. MSMA " + diuron + 2,4-D	2,16 + 1,6 + 1,44	3 + 2 + 2
19. MSMA (Mesamate)	4,32	6
20. Diuron + Velpar	2,0 + 0,45	2,5 + 0,5

Note on treatments: Agrowett surfactant used at 0,2% v/v except * used at 0,1%
Tronic surfactant used at 0,25 l/ha

4. Experimental:

An unsprayed control strip 1 m wide was left around each plot for the purposes of comparison. The day of spraying was warm and clear. Weed growth stages and average infestations at the time of spraying are presented in Table 1.

Table 1. Percent ground cover and growth stage of weeds at spraying

	Weed species		
	<u>C. esculentus</u>	Grasses	Broadleaf
Growth stage	250 mm Early flowering	3 leaf to tillering	+ 100 mm
Percent ground cover	30	7	7,5

5. Results:

1. Mean visual ratings of weed control taken 47 days after spraying are presented in Table 2.
2. PP009 has been left out of the table since no control by any rate was achieved of Cyperus esculentus and accurate ratings were difficult to make in respect of other weeds.
3. In spite of this PP009 did appear to control all grasses very well although the lowest rate of 4 l/ha was slightly weaker than the others.
4. Cynodon dactylon and Paspalum distichum were present to a lesser or greater extent in most plots.

Table 2. Mean visual ratings of weed control taken 22 or 47 days after herbicide application. Rating scale 1 - 9 where 1 = complete control, 4 = just acceptable, 5 = just unacceptable and 9 = no control.

Treatments	Rate in kg or l prod/ha	C. esc.		P. laev.	E. ind.	D. sang.	B/1
		22	47				
Diuron + Actril DS	2,5 + 1,25	3	2,5	5,8	4,3	6	1
Diuron + Actril DS + Rev 9	2,5 + 1,25 + 3	2	3	5	4,3	6,7	1,3
Bladex Plus	9	4	2,3	6,8	3,5	6,3	1
Bladex Plus + Rev 9	9 + 3	2	2,3	5,8	2,3	4,8	1
Bladex Plus + S(Agrowett)	9	3	2,7	5,3	3,7	5,7	1
Bladex Plus + S(Tronic)	9	3	2,3	7,3	3,3	4,8	1
Diuron + Sencor	2 + 2	2	2	4,5	2,8	3,8	1
Bimate + S(Agrowett)	4	2	2,3	5,5	5,3	4,8	1
Bimate + Certrol DS	4 + 1,25	1,5	2	1,7	2,8	5,3	1
Bimate + 2,4-D + S	4 + 2	1	2	4,3	2,7	5,3	1
Bimate + paraquat	4 + 1	2	2,7	2	2	3	1
MSMA + diuron	3 + 3	1	2,5	5,7	3,3	3,3	2,3
MSMA + ametryne	3 + 5 l	1,5	4,5	2,3	1,5	2	2
MSMA + 2,4-D	3 + 2	2	3,3	5,7	6,8	5	1,8
MSMA + diuron + 2,4-D	3 + 2 + 2	1	3,7	4,3	5,7	5,7	1,3
MSMA	6	2	4,3	-	6,3	3,7	5
Diuron + Velpar	2,5 + 0,5	2	2,5	5,5	5,8	5,5	1

6. Comments:

1. No treatments appeared to have any marked effect on either Cynolon dactylon or Paspalum distichum.
2. The initial effect on Cyperus esculentus was very good from all treatments except PP009. Reverseal 9 did appear to enhance the effects of diuron + Actril DS and Bladex Plus to a slight extent.
3. Initial control of grasses was poor from all treatments except Bimate + paraquat and MSMA + ametryne.
4. Subsequent regrowth of Cyperus esculentus showed no advantage to the addition of Reverseal 9. Ratings 47 days after spray indicate that all treatments except MSMA + ametryne and MSMA alone were still providing acceptable control.

5. Poor control was achieved of Panicum laevifolium. The only acceptable treatments were Bimate + paraquat, Bimate + Certrol DS and MSMA + ametryne although diuron + Sencor, Bimate + 2,4-D + S and MSMA + diuron + 2,4-D approached acceptable control.
6. The standard short-term treatment diuron + Actril DS was ineffective on grasses at this late growth stage. Effects on E. indica were greater than on other grasses. Reverseal 9 did not improve the grass control. Broadleaf control was excellent.
7. Bladex Plus was similarly better on E. indica than on other grasses. Its effects on Digitaria sanguinalis were marginally better than those from the standard treatment. Reverseal 9 and Tronic improved the control compared with the product alone or with Agrowett surfactant. Reverseal 9 was the best additive to Bladex Plus but even this did not improve the standard of control enough to equal diuron + Sencor.
8. Bimate + S (Agrowett) was poor in its control of grasses. Its control was improved to nearly acceptable levels on Panicum laevifolium and Eleusine indica but not on Digitaria sanguinalis by 2,4-D or Certrol DS as additives. Paraquat as an additive improved the control of all species to an acceptable level.
9. MSMA combinations were generally weak on grasses except for the combination with ametryne. This was used at 5 l/ha and can be expected to account for the better knockdown achieved. The diuron mixture increased the control of Eleusine indica and Digitaria sanguinalis. Thus at equivalent rates of active ingredient, diuron and ametryne in combination with MSMA showed some differences. The diuron combination held back regrowth of Cyperus esculentus for a longer period, while the ametryne combination was more effective on grasses. Broadleaf control was equal.
10. MSMA does not appear to have played a large part in the effect of these combinations but would have been expected to be similar to paraquat in its knockdown. Weather conditions - overcast and low temperatures - are known to decrease the efficacy of this product. Sunshine hours on the day of spraying were 7,4 and temperatures were 22,2°C (8 am) and 33,6°C (2 pm). Thus these conditions were very suitable and no explanation is available for this lack of efficacy.
11. Diuron + Velpar was also very poor in its control of grasses and would be expected to have done better.

PETT/SN
22 June, 1981