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SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: HW 281/84

Cat. No. : 1506

Title: Chemical Weed Control

1. Particulars of the project

Date: 14.3.86

This crop : Weeds only  
Site : La Mercy  
Region : N.Coast Coastal  
Soil system : Umzimto Coast lowlands  
Soil form/series : Swartland  
Design : Randomised blocks  
Variety : -  
Fertilizer/Ameliorants : N    P    K  
                                  -        -        -

Weather conditions (Tongaat Met Site)

Day of spray: Rainfall(mm) : 0  
                  Sunshine hours : 9,7  
                  Temp % 8 am : 19,6  
                                  2 pm : 22,2  
                  Rel humidity % 8 am: 76  
                                  2 pm: 77

After spray:

Rainfall: Days to first rain : 3 mm  
                  Amount of first rain : 5,1 mm  
                  Total in two weeks : 82,4mm

Application details:

Date : 12.10.84  
Applicator) Various see treatments  
Nozzle )  
Pressure )  
Output

Soil analysis:

pH	Clay%	Silt%	Sand%		
			Fine	Med.	Coars
6,2	50	16	21	7	6
ppm					
P	K	Ca	Mg		
9,4	138	>1800	>220		

Weed spectrum: Sorghum verticilliflorum

Bidens pilosa

Siegesbeckia orientalis

2. Objectives

1. To compare two low volume applicators with conventional high volume sprayers.
2. To compare two registered and three unregistered grass killers at equal active ingredient rates of application.

3. Treatments

Chemicals	Applicator and nozzle	Volume ℓ/ha	Chemical rate kg or ℓ ai/ha
1. Lasso + atrazine	Gas + TK3	150	2,3 + 1,0
2. Lasso + atrazine	Gas + TK5	300	2,3 + 1,0
3. Lasso + atrazine	Micron Herbi	48	2,3 + 1,0
4. Lasso + atrazine	Birky Sprayer	45	2,3 + 1,0
5. Lasso + atrazine	Gas + VLV 100	100	2,3 + 1,0
6. Lasso (alachlor)	Gas + APM Green	300	1,5 (3,9)*
7. Dual (metolachlor)	Gas + APM Green	300	1,5 (2,1)
8. Butisan S (metazachlor)	Gas + APM Green	300	1,5 (3)
9. Mon 097 (acetochlor)	Gas + APM Green	300	1,5 (1,57)
10. Trimexachlor (trimexachlor)	Gas + APM Green	300	1,5 (3,75)

\* Product rates per hectare in brackets.

4. Experiment procedure.

Treatments were applied on to a soil surface which was dry with a reasonable tilth. A few weeds which had not been killed in land preparation still remained but were not considered in assessments. A strong wind blew during spraying. Comments on each applicator were:-

1. Gas operated knapsack :

TK3 - pattern somewhat poor - streaky

TK5 - good pattern - little affected by wind

VLV 100 - pattern streaky - some movement of swath due to wind. However, small droplets appeared to give a good wide coverage.

APM Green - good pattern - little affected by wind.

2. Birky sprayer : severe drift visible  
extremely difficult to control output for small plots

3. Micron Herbi : similar to Birky - unsatisfactory for use in wind and on small plots.

5. Results: Visual ratings of weed control are shown in Table 1.

Table 1. Visual ratings of percent ground cover and percent weed control taken 41 and 69 days after treatment application.

Treatments	Applicator/ nozzle	Volume ℓ/ha	Rate(% of intended)	Weed control ratings											
				<u>S. verticilliflorum</u>		Grasses *3		<u>B. pilosa</u>		<u>S. orientalis</u>					
				T + 41		T + 69		T + 69		T + 41		T + 69		T + 69	
				a *1	b *2	a	b	a	b	a	b	a	b	a	b
1. Lasso + atrazine	TK3	206	108	1,7	83	5	68	6	67	6,7	67	8	65	2,7	47
2. Lasso + atrazine	TK5	308	116	2,8	80	5,7	67	4	68	2	91	4,7	78	3,7	62
3. Lasso + atrazine	Micron Herbi	35	124	2	70	5,8	56	8,5	51	5	68	8	46	3,3	60
4. Lasso + atrazine	Birky	42	217	2,3	67	8,5	54	5,3	64	2,3	73	9,5	57	2,7	50
5. Lasso + atrazine	VLV 100	81	90	2	72	6,3	58	4,3	80	3	85	8,8	72	1,3	83
6. Lasso + atrazine	APM Green	262	113	2,3	87	5,8	55	5	78	1	93	6	86	2	75
7. Lasso (alachlor)	APM Green	262	113	2	90	4,7	68	3,3	72	5,7	35	21,7	13	12	15
8. Dual (metolachlor)	APM Green	262	114	1	87	6,5	55	3,8	75	9,7	0	44	5	17	2,5
9. Butisan S (metazachlor)	APM Green	262	118	0,5	89	4,8	65	1,5	88	1	88	5	78	1,8	67
10. Mon 097 (acetochlor)	APM Green	262	115	2	88	6,8	66	4,5	77	3,8	74	19	53	6,5	57
11. Trimexachlor (Trimexachlor)	APM Green	262	114	3,7	73	6,3	60	3,5	79	13	12	32	10	7,3	5
12. Unsprayed	-	0		7,3		6		14	-	14		31		9	

\*1 a = percent ground cover

\*2 b = percent weed control

\*3 Grasses consisted mainly of Digitaria sanguinalis and Panicum maximum.

## 6. Comments

1. Sorghum verticilliflorum was controlled to some extent by all treatments but this was generally not acceptable. Butisan S and Mon 097 appeared to be superior to Lasso, Dual and Trimexachlor. Where atrazine was present with Lasso this product's control was extended.
2. Bidens pilosa was well controlled by Lasso + atrazine where adequate application occurred. ie. floodjet nozzles and particularly at high volumes with the TK5 and APM Green nozzles. Virtually no control of this weed was provided by Lasso, Dual or Trimexachlor but good control was achieved by Butisan S and to a lesser extent Mon 097.
3. Siegesbeckia orientalis control followed a very similar pattern to that of Bidens pilosa ie floodjet applications of Lasso + atrazine and Butisan S and Mon 097 provided the best control.
4. Other grasses which consisted of Digitaria sanguinalis, Panicum maximum and Paspalum scrobicularum were reasonably well controlled by all treatments.
5. Applicator differences indicate that despite higher application rates from the Micron Herbi and Birky sprayers, poorer control of weeds was achieved. Both these applications were obviously affected by the wind and neither applicator is suited to strict control of outputs on small plots. Floodjet nozzles with high volumes were least affected by wind and generally gave the best results.

## 7. Conclusions

1. Under the adverse conditions during application ie wind, site on a slope, the low volume applicators were not as effective as conventional high volume floodjets.
2. Further tests for the suitability of these applicators should be conducted using longer runs rather than small plots.
3. Differences in the spectra of broadleaf weeds controlled by the five pre-emergence grass killers Lasso, Dual, Butisan S, Mon 097 and trimexachlor do occur as do differences in their efficiency on the grass species. Butisan S and Mon 097 to a lesser extent were superior in both respects to the others.

PETT/SN  
24 April 1986