

SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

Code : HW233/81
Cat. No. : 1284

Title: Pre-emergence screening trial

1. Particulars of the project

This crop : Weeds only
Site : La Mercy Field Stn
Region : N. Coast Coastal
Soil system : Umzinto Coast
 Lowlands
Soil form/series : Longlands/Waldene
Design : Random blocks
Variety : -
Fertilizer/Ameliorants : N P K
 - - -

Soil analysis: Date: 10.11.81

pH	O.M.%	CEC	Clay %	Silt %	Sand %		
					Fine	Med	Coar
5,16	0,79	4,18	10	4	63	23	1
ppm							
P	K	Ca	Mg	Zn	Al		
27	56	168	33	-	11		

2. Objectives:
1. To test two new chemicals, Gardomil and Triflurex EC for their pre-emergence weed control efficacy.
 2. To test the additive Reverseal 7 for increasing efficacy of certain treatments.
 3. To compare standard pre-emergence herbicide combinations

3. Treatments:

See results

4. Experiments:

The trial area was disced repeatedly to remove existing weeds.

Treatments were then applied to a weed-free soil.

Plots consisted of eight metres x two metres surrounded by a 1 m wide unsprayed control strip at the sides and 2 m at the ends of each plot

Weeds which germinated in the unsprayed control strips consisted of:

<u>Cyperus esculentus</u>	- dominant
<u>Digitaria sanguinalis</u>	- dominant
<u>Eleusine indica</u>	
<u>Panicum laevifolium</u>	
<u>Panicum maximum</u>	- a few plants
<u>Bidens pilosa</u>	-
<u>Commelina benghalensis</u>	
<u>Portulaca oleracea</u>	
<u>Hibiscus trionum</u>	

Spraying details:

Applicator	- Gas operated knapsack sprayer
Nozzle	- 2 x 8004 fanjets
Pressure	- 1,75 bars
Output	- 320 l/ha
Soil moisture	- 7,7% (top 50 mm)
surface	- 10 mm depth - dry
Spray date	- 16-11-81
Time	- 0600 - 1100
Temperature °C	- 8 am : 23,2 Sunshine hrs: 8,2
	2 pm : 28,8
Relative humidity	- 8 am : 86%
	- 2 pm : 66%
Rainfall (mm)	- On the day of spray : 7,2 mm
	Days to first rain : 0
	Amount of first rain : 7,2 mm
	Rain within 2 weeks : 135,1 mm

Chemicals requiring soil incorporation were applied to plots 40 m long and 2 m wide. Where herbicides were incorporated, this was done by a single pass with offset disc harrows which followed immediately after spraying. One week after incorporation, furrows were drawn with a single ridger body in each plot. The furrows were either covered immediately (one quarter of each plot) or covered six days later using hand hoes.

Visual ratings were made of weed control at intervals after spraying.

5. Results:

Mean visual ratings of weed control taken 22 and 51 days after spraying are presented in Table 1. Ratings are based on 1-9 scale where:

- 1 = complete control,
- 4 = just acceptable
- 5 = just unacceptable and
- 9 = no control

Table 1

Treatments	Rate in kg or ℓ		C. esculentus		Grasses		Broadleaf		
	prod/ha	ai or ae/ha	22	51	22	51	22	51	
Control (unsprayed)	-	-	9	9	9	9	9	9	
Lasso + atrazine	5+2	1,92+1,0	2,8	6,8	1	3,5	1	2	
Lasso + atrazine + Rev 7	5+2+3	1,92+1,0	2,8	7	1	3,5	2	2	
Dual + atrazine	2+2	1,44+1,0	2	4,8	1	2,3	1	1,7	
Dual + atrazine	2,75+2	1,98+1,0	2,5	4	1	2	1,3	2,7	
Dual + atrazine	2+3	1,44+1,5	2,5	4,8	1	1,8	1	2,5	
Dual + ametryne	2+3	1,44+1,5	2,3	4,3	1	1,8	1	2	
*Gardomil	8	1,0+3,0	3,3	5,5	1	2,8	1	1	
Dual + Gardomil	1,4+4	1,0+0,5+1,5	2	3,8	1	2	1	1,5	
Dual + Gardomil	2+4	1,44+0,5+1,5	2	3	1	1,3	1	1,7	
Diuron + Sencor	2+2	1,6+1,4	6,8	8,3	1	1,5	1,8	1	
			*2F	OF					
Eptam Super - I*3	3	2,16	3	4	6,4	1	7,9	1	4,8
Eptam Super - I	5	3,6	2	3	3	1	5	1	4
Eptam Super + Rev 7 - I	3+3	2,16+	2	3	5,3	1	6,7	1	3,7
Sutan Plus - I	4	2,88	2	5	4,4	1	4,8	2	4,3
Triflurex EC - I	3	1,44	4	6	9	1	4	1	3,9
Triflurex EC - I	6	2,88	4	5	9	1	2,9	1	3,3
Triflurex EC + Eptam Super - I	3+3	1,44+2,16	3	4	7,8	1	5,3	1	5

*I Gardomil consists of a mixture of Dual + terbuthylazine in a 1:3 ratio of active ingredient (50% formulation).

*2 F = in furrow OF = outside furrow left after simulated planting

*3 I = incorporated treatments

6. Comments:

C. esculentus:

All surface applied treatments except diuron + Sencor provided good initial control of C. esculentus under the favourable conditions which existed (ie recently disced field and adequate moisture).

Dual was superior to Lasso with 1,44 kg ai/ha of Dual showing better control than 1,92 ai/ha of Lasso in mixture with the same rates of atrazine.

Dual in mixture with Gardomil (which contains Dual + terbuthylazine) was the most effective on C. esculentus and provided acceptable control for at least 7 weeks.

Of the soil incorporated treatments, Triflurex EC as expected, showed very little effect on C. esculentus while Eptam Super (5 l/ha) and Sutan Plus did provide very good control for 7 weeks. The control provided was no better than that from surface applied treatments and this could be due to high rainfall conditions after application and consequent soil movement in the plots as well as the effect of simulated planting in these plots.

Grasses:

Excellent grass control was achieved by surface applied treatments. Again Dual was slightly superior to Lasso.

Soil incorporated treatments, although providing excellent initial control, were less persistent and only Triflurex EC at both rates provided acceptable control 7 weeks after application.

Broadleaf weeds:

Surface applied treatments provided excellent broadleaf control although Hibiscus trionum was less well controlled by atrazine and ametryne combinations.

Soil incorporated treatments were generally weaker on broadleaf weeds although most still provided acceptable control for seven weeks.

General comments:

No improvement in weed control was apparent after the addition of Reverseal 7 to Lasso + atrazine but a slight improvement occurred with Eptam Super.

Ametryne was similar to atrazine for spectrum and persistence of control.

The mixture of Triflurex EC and Eptam Super provided poor control of all weeds indicating that the rates used were too low or that antagonistic effects are apparent.

Weed control in soil incorporated plots was slightly better for all weed species in areas where furrows were covered immediately after ridging.

Conclusions:

1. The most suitable herbicide combination for control of C. esculentus grasses and broadleaf weeds on a sandy soil and under good moisture conditions, would be one containing Lasso or Dual in mixture with atrazine, ametryne or terbuthylazine.
2. Gardomil and Gardomil + Dual are as good as or better than standard pre-emergence treatments and hence warrant further evaluation.
3. Soil incorporated treatments are not warranted under the conditions of this experiment and with the weed spectrum encountered.

PETT/PMO
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