

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: HW236/83

Cat. No.: 1334

Title: Pre-emergence weed control trial

1. Particulars of the project

This crop : Plant cane
Site : Umhlali
Region : N Coast Coastal
Soil system : Umzinto C Lowlands
Soil form/series : Fernwood/Fernwood
Design : Randomised block
Variety : N13
Fertilizer/Ameliorants :

	<u>N</u>	<u>P</u>	<u>K</u>
In furrow	15	49	175
Top-dressing	96	19	96
Total	111	68	271

Soil analysis: Date: 21.02.1983

pH	O.M.%	Clay%	Silt%	Sand %		
				Coarse	Med.	Fine
5,2	0,9	4	2	1	33	60

ppm					
P	K	Ca	Mg	Zn	Al
17	61	110	29	-	3

Irrigation: -

Date of spraying: 19 January 1983

Planted: 17 January 1983

2. Objectives

To test new herbicides and mixtures for their pre-emergence weed control efficacy.

3. Treatments

See results

4. Experimental

The whole area was disced repeatedly to prepare a tilth and to remove old weed growth. The area was planted with Temik nematicide (20 kg/ha) and fertilizer being applied in the furrow.

Two days after planting the treatments were applied to the soil surface by means of a gas-operated knapsack sprayer fitted with an APM green flood-jet nozzle. Output was 297 l/ha.

Conditions at spraying were:

Soil : Moisture (top 5 cm) : 3,83 %
 Tilth : Fine
 Surface : Uneven

Weeds : A few old stools of *Panicum maximum*, *Eleusine indica* and *Digitaria sanguinalis* were present.

Time and date : 19 January 1983 - 0650 am - 0840 am

Temperature (°C) : 8 am : 25,2
 2 pm : 28,8

Sunshine hours : 11,9

Relative humidity% : 8 am : 77
 2 pm : 63

Rainfall (mm) : On the day of spray : 0
 One week before spray: 44
 Days to first rain: 12
 Amount of first rain: 13
 Rain within two weeks: 13

Plot size : 4 rows x 1,2 m x 4 m = 19,2 m²

Control strip : 1,5 m between plots (unsprayed)

Weeds which germinated in the control strip were:

Dominant { *Cyperus esculentus*
 { *Digitaria sanguinalis*
 { *Panicum maximum*
 { *Eleusine indica*
 { *Commelina benghalensis*
Cleome monophylla
Euphorbia peplus
Panicum laevifolium

Visual ratings of weed control were made at regular intervals

Results: Weed control ratings taken 7 and 9 weeks after spraying are presented in Table 1

Table 1 Weed control ratings taken 7 and 9 weeks after spraying. Ratings are based on A) a 1-9 scale where 1 = complete control and 9 = no control (logarithmic scale) and B) a percentage scale where ratings are of ground cover as a percent of that in unsprayed control strips. Ratings of cane damage include percent chlorosis or necrosis and stunting on a 1-5 scale where 5 = no symptoms and 1 = poor

Treatments (% ai)	Rate in kg or l prod/ha	Weed ratings / weeds / weeks after spray										Cane damage							
		<i>C. esca.</i>			<i>P. max.</i>			<i>D. sang.</i>			<i>E. ind.</i>		<i>C. mon.</i>		<i>C. comm.</i>	Leaf scorch (%)	Stunting (1-5)		
		A	B		A	B		A*	B		A	B		A				B	
		7	7	9	7	7	9	7	7	9	7	7	9	7	7	9	9	7	7
1 Lasso 38,4+atrazine 50	5+2	5,8	47	85	5	40	75	4,3	24	63	-	7	66	6,3	79	85	90	2,8	4,8
2 Diuron 80 + Sencor 70	2+2	2,8	18	26	5,3	51	65	2,7	0	11	-	-	25	3,8	13	42	50	4,5	4,3
3 Dual + ametryne 50	2,75+3	3	12	46	3	20	33	3,7	26	10	-	-	20	4,5	31	67	-	4	4,3
4 Lasso + ametryne	5+3	5,3	34	73	-	42	67	3,7	-	8	-	-	40	6,3	113	68	-	5	4,8
5 Lasso + ametryne	5+4	5,8	43	72	4,5	35	45	3,5	16	32	-	25	18	5,3	49	55	0	3	5
6 Dual + Gardomil 50	1,75+6	4,5	39	61	-	10	40	4	28	27	-	7	19	6,3	50	73	25	5,3	4,3
7 Butisan 50	1,5	4,3	37	78	-	21	-	5,7	74	75	-	-	50	7,0	42	97	83	4,8	4,3
8 Butisan	2,5	2,7	18	13	-	-	33	3	12	12	-	22	0	5,3	66	67	-	4,5	4
9 Butisan + ametryne	1,5+3	4	32	43	-	-	50	2,8	30	6	-	-	-	4,8	43	60	-	4,8	4,5
10 Butisan + atrazine	1,5+3	4,8	41	58	4,5	32	85	4	-	9	-	58	35	6,3	75	91	87	7,3	3,5
11 Fortrol/ametryne 50	5	7,8	95	90	-	25	100	5,7	55	107	-	-	40	7,3	103	146	77	4	4,5
12 Bladex Plus 50	9	8,5	85	106	5,8	54	100	5,3	61	87	-	-	77	7,3	101	80	-	3,3	4,3

* Ratings here relate to both *D. sanguinalis* and *E. indica* combined.

5. Comments on results

General

Conditions prior to spraying were good (44 mm in the week prior to spraying) and the soil tilth fine. Subsequent moisture was just adequate for herbicides and temperatures were sufficient for good growth. Weeds developed slowly but a fair pressure of grasses was eventually produced.

Treatments

1. The standard Lasso + atrazine provided approximately six weeks acceptable control of annual grasses but *Cyperus esculentus* and *Commelina benghalensis* as well as *Panicum maximum* were not well controlled.
2. Diuron + Sencor provided very good control of *Cyperus esculentus*, annual grasses and broadleaf weeds but was weak on *Panicum maximum*.
3. Fortrol/ametryne and Bladex Plus were both very weak in their control of *C. esculentus*, all grasses and broadleaf weeds.
4. Dual + ametryne was better than Lasso + atrazine but weaker than diuron + Sencor for most weeds, except *Panicum maximum* which was controlled best by this treatment. Rates of Dual and Lasso were 1,98 and 1,92 l/ha of active ingredient respectively and a higher rate of Lasso would normally be recommended for such a weed spectrum (ie *Panicum maximum*).
5. The test chemical Butisan was effective on its own at the high rate against *C. esculentus*, annual grasses and *Panicum maximum* but was weak on *Commelina benghalensis*. The lower rate was unacceptable on its own although in mixtures with ametryne or atrazine it was better than the standard Lasso + atrazine for *C. esculentus* and annual grass control.
6. Dual + Gardomil showed no advantage over the registered treatment of Dual + ametryne and was effective for grass and *Cyperus esculentus* control.

TREATMENTS

1. Latho + atrazine
2. Nuron + Sencor
3. Nural + amethyane
4. Lasso + amethyane
5. Lasso + amethyane
6. Inel - Gerdoamil
7. Butitan
8. Butitan
9. Butitan + amethyane
10. Butisan + atrazine
11. Fovrol/amethyane
12. Blades Plus

NEED CONTROL AT 7 WEEKS AFTER SOW

EWRC 1-9

1 = complete control

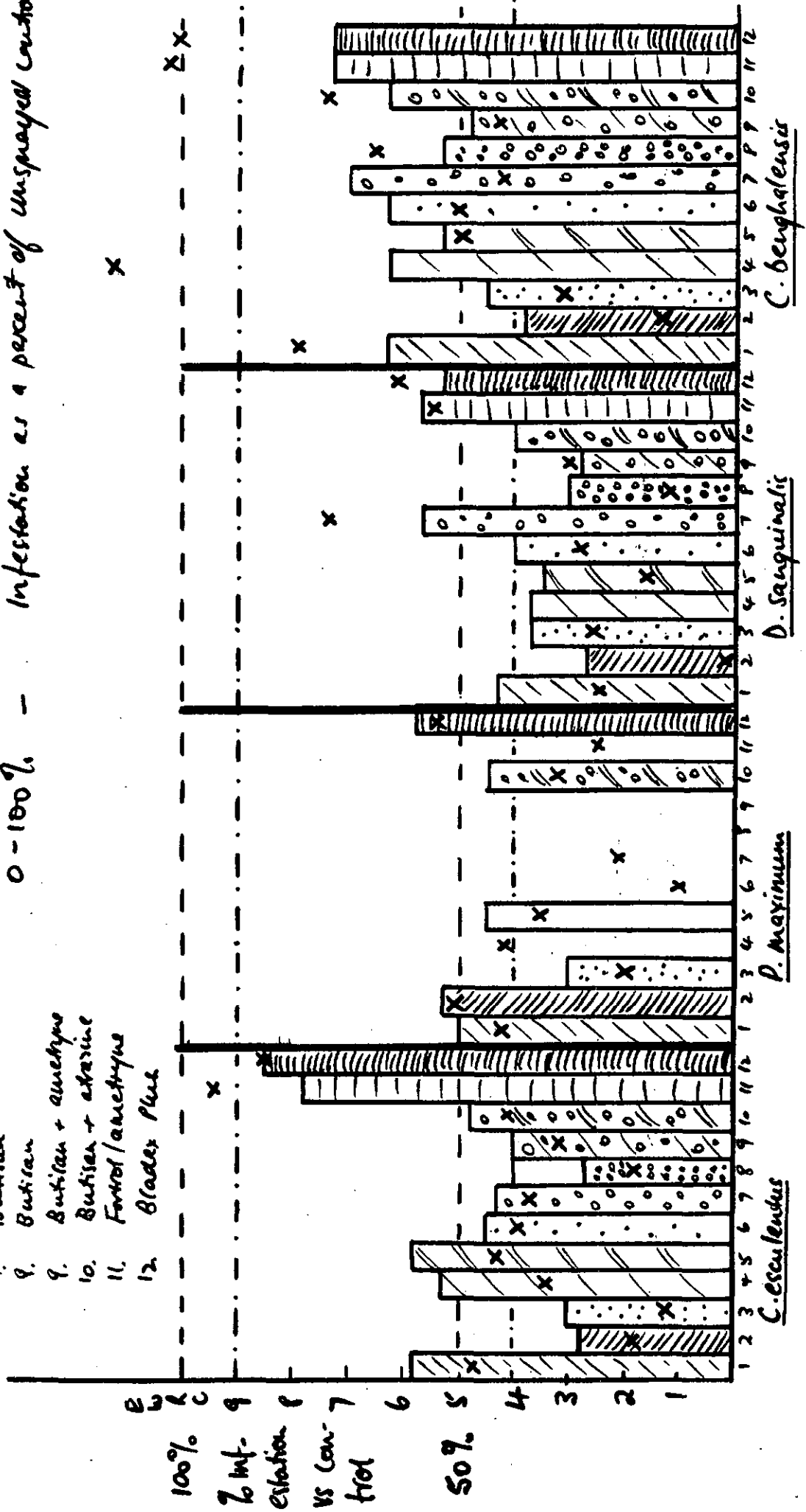
4 = just acceptable

5 = just unacceptable

9 = no control

BAR CHART

0-100% - infestation as a percent of unsprayed control - X



Yield date from HW 236

Treatments	Rates in kg or ℓ prod/ha	Weed control ¹	Yield			Crop growth	
			Weed control	Pol % cane	Sucrose t/ha	Stalk length (m)	Stalk popu ('000/ha)
Lasso+atrazine	5+2	5,5	99,7	8,79	8,8	1,94	130
Diuron+Sencor	2+2	3	92,2	9,00	8,3	1,90	134
Dual+ametryne	2,75+3	3,7	99,5	9,12	9,2	1,86	136
Lasso+ametryne	5+3	5	104,4	9,61	10,0	1,89	130
Lasso+ametryne	5+4	4,9	97,4	8,80	8,6	1,98	137
Dual+Gardomil	1,75+6	4,9	106,0	9,01	9,6	1,94	142
Butisan S	1,5	5,7	97,7	8,82	8,6	1,91	128
Butisan S	2,5	3,7	106,2	8,50	9,2	1,88	126
Butisan S+Ametryne	1,5+3	3,9	100,5	8,70	8,7	1,96	127
Butisan S+atrazine	1,5+3	5,0	87,5	8,64	7,6	1,82	137
Fortrol/ametryne	5	6,9	96,6	9,29	9,1	1,84	131
Bladex Plus	9	7,0	93,2	9,41	8,9	1,83	138
CV %			14,2	10,0	19,2		12,3
LSD (0,05)			20,03	1,285	2,456		23,56
LSD (0,01)			26,90	1,726	3,295		31,65

¹ = Ratings taken 7 weeks after spraying - mean of 3 weed species C. esc., D. sanguinalis, Cleome monophylla. Based on EWRC 1-9 scale where 1 = complete control and 9 = no control.

Comments

Variability was fairly high and no statistically significant differences in yield were recorded.

Yields may have been confounded by variable weed competition although this was not obvious at an early stage of crop growth.

Conclusion

Due to the variability and weed competition effects no indication of relative phytotoxic effects of treatments is given by yield results.

PETT/VJ
21 May 1984