SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

Code : HW 176/78
Cat. No.: 1147

Title : PHYTOTOXICITY TRIAL - PLANT CANE - PRE-EMERGENCE

1. Particulars of the project:

This crop	: Plant cane			
Site	: Pongola Field Station			
Region	: Northern area			
Soil system	: Komatipoort			
Soil form/series	: Hutton/Makatini			
Design	: Randomised blocks			
Variety	: NCo 376			
Fertilizer/ Ameliorants	:	N	P	K
	kg/ha	186	42	194

Age : 12,5 months Dates: 22.11.78-3.12.79

Rainfall : 870 mm L.T.M.: 682 mm

Irrigation : 915 mm

Total : 1 785 mm

2. Objective :

To evaluate herbicides for their phytotoxic effect on plant cane sprayed pre-emergence at Pongola.

3. Treatments :

See results.

Note : In the plots which received Eptam Super the product was incorporated into the soil by hand using rakes. This was done over the cane row only.

4. Experimental :

Plots consisted of six rows x eight metres of which the two outer rows were discarded at harvest. Six replications were used.

Treatments were applied by means of a lever-operated knapsack sprayer fitted with a TK5 floodjet delivering ± 286 ℓ/ha. The nozzle was held directly over each covered row of setts but gave a full cover spray.

Conditions on the day of spraying were :-

Temperature at 8 am	:	20,8 °C
Weather	:	Overcast and cool
Rainfall	:	11,2 mm

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Weed control ratings, based on the European Weed Research Society 1 - 9 scale where 1 = complete control and 9 = no effect, were taken 20 days after treatment application.

Crop growth measurements were recorded at intervals throughout the crop cycle.

5. Results :

1. Mean visual ratings of weed control and crop measurements during the cycle are presented in Table 1.

2. Yield data at harvest are presented in Table 2.

TABLE 1 : Mean weed control ratings and crop measurements

Treatment	Weed control Ratings T + 20 days		Crop measurements/months after spray					
			Stalk heights (cm)			Stalk populations (1000/ha)		
	Grass	B/leaf	2,5	6	9,5	2,5	6	9,5
Control	9	9	22	155	214	130	117	98
Alachlor + atrazine	1	1	21	152	214	107	112	91
Eptam Super + atrazine	3,2	2,3	21	157	219	132	114	81
Eptam Super + atrazine	1,2	1	21	155	215	123	119	93
Stomp + atrazine	1	1	20	154	211	119	115	94
Diuron + atrazine	1,3	1	22	152	213	114	117	97
Bimate	1,3	1,2	21	155	216	121	120	94
Bimate	1	1,3	21	155	214	119	118	94

TABLE 2 : Yield data at harvest

Treatment	Rate in kg or ℓ ai or ae/ha	Yield			Crop measurements	
		Cane t/ha	ers % cane	ers t/ha	Heights (cm)	Popln. (1000/ha)
Control	-	152	*9,8	*15,0	250	142
Alachlor + atrazine	3,84 + 3,0	146	9,5	14,4	255	134
Eptam Super + atrazine	2,88 + 1,0	157	10,3	16,0	253	138
Eptam Super + atrazine	5,76 + 2,0	148	10,1	14,5	253	130
Stomp + atrazine	4,0 + 3,0	150	10,7	16,1	256	133
Diuron + atrazine	3,2 + 3,0	150	10,5	16,1	250	136
Bimate	3,75	149	9,9	15,0	255	139
Bimate	7,5	146	10,9	16,2	256	141
CV%		5,3	5,0	5,5		8
L.S.D. (0,05)		9,25	1,32	2,16		12,87
L.S.D. (0,01)		12,42	2,07	3,4		17,26

* ers % cane and ers t/ha figures are the means of two replications only

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6. Comments :

1. There were no visual symptoms of leaf scorch or stunting due to any treatments at any stage in the crop growth period.

2. After weed control ratings were done the trial was maintained weed free by hand and mechanical cultivation. Past results have shown no reduction in yield due to alachlor + atrazine and this was again the case in this trial; thus any weed competition in control plots can be discounted.

3. No treatments reduced yields compared with control or alachlor + atrazine in terms of tons cane, and tons of estimated recoverable sugars per hectare or sucrose percent cane.

4. Weed control, although adequate, was inferior for the lower rates of Eptam Super + atrazine.

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