SOUTH AFRICAN SUGAR ASSOCIATION
EXPERIMENT STATION

Code No : HW 308/86/R1
Project No: 3372
Cat. No : 1591

Title: Post emergence ratoon phytotoxicity

1. **Particulars of the project:**

This crop : First ratoon

Site : Shakaskraal Field Station

Region : North Coast Coastal

Soil system : Umzinto/Coast Lowlands

Soil form/series: Longlands/Waldene

Variety : NCo376

Fertilizer td kg/ha :

N	P	K
165	0	165

Soil analysis

pH	OM%	Clay %
6,00	1,7	14

ppm

P	K	Ca	Mg
20	57	474	109

Age : 13,6 mths (27.5.86 - 15.7.87)
Rainfall : 966,7 mm
Irrigation: 50,4 mm Supplementary
Total 1 017,1 mm

2. **Objectives:**

To evaluate herbicides for their effects on ratoon cane at Shakaskraal.

3. **Method:**

3.1 **Treatments:**

Treatment		Rate (l or kg product/ha)
T1	Control (unsprayed)	-
T2	Velpar (24) + MSMA (72)	2,8 + 2
T3	Velpar/MSMA	2,8/2
T4	Velpar + Diuron (80)	2,8 + 2,5
T5	Velpar + Diuron/MSMA	2,8 + 2,5/2
T6	Diuron + Actril DS (70)	2,5 + 1,25
T7	Control (unsprayed)	-

Initial spraying treatments were carried out when the cane was + 45 cm high at the leaf bend. The follow-up spraying treatments with MSMA were carried out six weeks later.

3.2 **Chemical Formulations used:**

Chemical	Formulation	Active ingredient
Velpar 24	240 g/l ec	hexazinone
MSMA 72	720 g/l soln	MSMA
Diuron 80	800 g/l sc	diuron
Actril DS 70	600/100 g/l ec	2,4-D/ioxynil

3.3 **Design:**

Design : Randomised Blocks
Row spacing : 1,4 m
Whole plot size : 8m x 6 rows x 1,4m = 67,2m^2
Net plot size : 6m x 4 rows x 1,4m = 33,6m^2
Replications : 6

3.4 **Application details:**

	Spray dates		
	26.9.86	3.10.86	14.11.86
Height at leaf bend (cm)	40-50	40-50	
No. of leaves/shoots	5- 7	5- 7	
Applicator	CP3	CP3	CP3
Nozzle	APM Green	APM Green	APM Green
Output (ml/s)	35,9	37,5	32
Output (ml/m^2)	25	26,8	22,9
Method	Over Row	Over Row	Over Row
Soil surface	dry	wet	moist

3.5 **Weather conditions:**

	Spray dates		
	26.9.86	3.10.86*	14.11.86
General	Clear and warm	Cool and wet	Cloudy and mild
Sunshine (hr)	8,3	2,0	3,9
Temperature (°C) 8 am	15,8	14,5	22,0
2 pm	18,5	18,5	24,0
RH 8 am	49	94	79
2 pm	58	68	71
RF on day of spray (mm)	2,6	0	1,8
No. of days to 1st rain	5	1	1
No. mm at 1st rain	1,9	3,2	20,8
Total RF (mm) in 1st 14 days	11,7	18,8	35,2

* Spraying interrupted on 26.9.86 as a result of wind. On 3.10.86 sprayed T6 and T7.

4. **Results:**

Table 1: The effect of various post emergent herbicide treaments on leaf scorch and stunting of sugarcane at six weeks after spraying

Treatment		l or kg prod/ha	Leaf scorch %	Stunting**
T1	Control	-	7,7	1,2
T2	Velpar + MSMA	2,8 + 2	19,3	1,5
T3	Velpar/MSMA	2,8/2	7,0	1,2
T4	Velpar + Diuron	2,8 + 2,5	10,3	1,5
T5	Velpar + Diuron/MSMA	2,8 + 2,5/2	12,0	1,7
T6	Diuron + Actril	2,5 + 1,25	6,7	1,2
T7	Control	-	4,7	1,2
SE of treatment mean			0,88	0,12
CV %			24,1	23,4
LSD	(0,05)		2,7	0,4
	(0,01)		3,8	0,5

** *Rating on stunting: 1 = No visual stunting. 5 = severe stunting*

Table 2: Yield and crop characteristics of harvest

Treatment		l or kg prod/ha	Cane t ha^{-1}	Sucrose %	Stalk length cm
T1	Control	-	88	12,59	211
T2	Velpar + MSMA	2,8 + 2	85	12,70	210
T3	Velpar/MSMA	2,8/2	87	13,01	212
T4	Velpar + Diuron	2,8 + 2,5	87	13,02	207
T5	Velpar + Diuron/MSMA	2,8 + 2,5/2	88	12,92	211
T6	Diuron + Actril	2,5 + 1,25	94	12,66	221
T7	Control	-	92	12,93	210
SE of treatment means			2	0,18	3
CV %			6,6	3,7	3,7
LSD	(0,05)		6	0,52	9,0
	(0,01)		9	0,70	12,0

Discussion and conclusion:

1. Treatments which caused a higher percentage of leaf scorch were also more stunted.

2. Velpar + MSMA had a higher degree of stunting compared with Velpar followed by MSMA. It would appear that Velpar in combination with other herbicides at the initial spraying had a greater effect on plant scorching and stunting than Velpar alone.

3. Conditions on the 3 October 1986 (moist) were possibly the reason that the Diuron + Actril treatments had less scorching effect than the Velpar treatments as a whole.

4. Diuron + Actril had the highest yield (NS) and this was associated with a significantly higher stalk length.

5. Velpar treated plots tended to have slightly lower cane yields than other treatments but the differences were not marked.

6. Sucrose percentages were not significantly different between treatments.

MW/MG
3 September, 1987