

SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

Code: HW 212/80

Cat. No.: 1283

TITLE: Post-emergence phytotoxicity trial on ratoon cane.

1. Particulars of the project

<u>This crop</u>	: Ratoon cane	<u>Soil analysis:</u> Date: June 1981				
<u>Site</u>	: Pongola field Stn	<u>pH</u>	<u>O.M.%</u>	<u>Clay%</u>	<u>Sand%</u>	<u>Silt%</u>
<u>Region</u>	: Northern Area	6,7	1,59	26	65	9
<u>Soil system</u>	: Komatipoort	ppm				
<u>Soil form/series:</u>	Hutton/ Shorrocks	P	K	Ca	Mg	Zn Al
<u>Design</u>	: Random blocks	22	120	833	7220	
<u>Variety</u>	: NCo 376	<u>Age:</u> 12,7 m <u>Dates:</u> 9.9.80 - 1.10.81				
<u>Fertilizer/Ameliorants</u>	: $\frac{N}{-}$ $\frac{P}{-}$ $\frac{K}{-}$	<u>Rainfall:</u> 763,0 (mm) <u>L.T.M.:</u> 657 mm				
<u>Spraying date</u>	: 4 Nov 1980	<u>Irrigation:</u> 854,0 (mm)				
		<u>Total</u> : 1617 (mm)				

2. Objectives

To assess the phytotoxicity of post emergence herbicide treatments to ratoon cane grown (on a clay loam soil) at Pongola.

3. Treatments.

See results

4. Experimental

. Spraying details.

Applicator	: CP ₃ knapsack
Nozzle	: TK5 (Spraying systems floodjet)
Pressure	: 2 Bars
Output	: 314 l/ha
Date	: 4 November 1980
Time	: 1100 - 1400 hrs
Weather	: Clear and warm
Wind	: Gusting
Temperature (°C)	: 8am : 19,8 2pm : 29,4
Rel. Humidity (%)	: 8am : 72 2pm : 43
Rainfall (mm)	: Day of spray : 1,0 Within two weeks: 67,1

Treatments were applied directly over the sugarcane rows when the cane had approximately 200 mm of stalk.

Plots consisted of six rows eight metres long from which one row on each side and one metre each end were discarded at harvest.

5. Results.

5.1 Visual symptoms of leaf scorch taken seven days after spray.

Treatments	Rate in kg or l prod/ha	Leaf scorch rating ^{*1}
Control (unsprayed)		1
Diuron + 2,4 -D + S	5 + 4	1
Bimate + paraquat	10 + 2	6,3
Diuron + sencor + TCA	4 + 4 + 5	3
Diuron+Actril DS + TCA	5 + 2,5 + 5 ^{*3}	3
Ametryne + Velpar	4,+ 1,5	3,3
Mesamate + Diuron	6 + 6 ^{*3}	3,8
Mesamate	12	5

*1 Rating scale : 1 = no effect

9 = dead

*2 Formulations used were : Diuron 80% Sencor 70%

Paraquat 20% TCA 95%

2,4-D 72% Actril DS 70%

Mesamate 72% Ametryne 50%

Velpar 90%

*3 Actual rates applied were slightly less than those indicated for Mesamate + diuron

5.2 Crop measurements taken 2,4 and 6 months after spraying.

Treatments	Rates in kg or ℓ prod/ha	Crop measurements					
		Stalk ht (m)			Stalk popu (1 000/ha)		
		2	4	6	2	4	6
Control (unsprayed)	-	1,38	2,59	2,89	187	169	166
Diuron + 2,4 - D + S	5 + 4	1,20	2,35	2,77	196	185	170
Bimate + paraquat	10 + 2	1,09	2,24	2,79	191	170	159
Diuron + Sencor + TCA	4 + 4 + 5	1,22	2,41	2,77	186	168	172
Diuron + Actril DS + TCA	5 + 2,5 + 5	1,12	2,28	2,71	194	174	165
Ametryne + Velpar	4 + 1,5	1,16	2,33	2,77	191	179	163
Mesamate + diuron	6 + 6	1,24	2,32	2,78	195	175	173
Mesamate	12	1,24	2,39	2,83	183	167	167

5.3 Mean yield and crop characteristics at harvest.

Treatments	Rate in kg or l prod/ha	Yield			
		Cane t/ha	Ers % cane	Ers t/ha	Sucrose t/ha
Control (unsprayed)	-	159	11,3	18,0	21,1
Diuron + 2,4 - D amine + S	5 + 4	159	11,3	17,9	21,0
Bimate + paraquat	10 + 2	153	10,9	16,7	19,7
Diuron + Sencor + TCA	4 + 4 + 5	159	11,0	17,4	20,7
Diuron + Actril DS + TCA	5 + 2,5 + 5	147	11,1	16,4	19,3
Ametryne + Velpar	4 + 1,5	151	10,9	16,5	19,5
Mesamate + diuron	6 + 6	157	10,8	16,9	20,0
Mesamate	12	147	10,6	15,6	18,5
CV%		7,8	7,2	10,9	9,6
L.S.D. (0,05)		14,16	0,935	2,163	2,261
L.S.D. (0,01)		19,00	1,255	2,904	3,035

6. Comments.

Leaf scorch. Very severe scorching of cane leaves occurred soon after spraying but this grew out in time. Contact chemicals such as paraquat and Mesamate were the most severe.

Crop growth measurements. All treatments retarded stalk elongation to some extent while stalk populations were not affected markedly by any treatment. At an early growth stage Bimate + paraquat, Diuron + Actril DS + TCA and ametryne + Velpar appeared to be more severe than diuron + 2,4 D amine + S. Only diuron + Actril DS + TCA remained worse than diuron + 2,4 - D + S.

Severe lodging occurred in all plots making height measurements at harvest unreliable.

Yield.

Double rates of the standard diuron + 2,4 - D amine + S treatment in spite of causing stalk height reductions did not result in a reduction in yield. Severe lodging and the age of the crop (12,7 months) may be responsible for the good recovery of treated plots.

Only Mesamate caused statistically significant yield reductions. (ers t/ha and sucrose t/ha). This was used at double the recommended rate of application. The preferred treatment would be the mixture with diuron and this did not cause yield reductions even at double the recommended rates.

Conclusions.

All treatments tested would be suitable for use in sugarcane although stunting may occur.

A mixture of diuron + Mesamate should be used in preference to Mesamate alone since some damage to cane could be expected from high rates of Mesamate.

PETT/IS
26th May, 1982