

**SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION**

Code : HW227/P/81
Cat.No.: 1335

Title: POST-EMERGENCE PHYTOTOXICITY ON PLANT CANE

1. Particulars of the project:

This crop	: Plant cane			Soil analysis:	Date: Pre-plant	
Site	: Pongola Field Stn			pH	Clay %	
Region	: Northern area			6,4	>30	
Soil system	: Komatipoort			ppm		
Soil form/series:	Hutton/Shorrocks			P	K	Ca
Design	: Randomised block			Mg	Zn	Al
Variety	: NCo 376			17	38	240
Fertilizer/ Ameliorants	N	P	K	>220	0,84	-
In furrow	15	49	-	Age: 12,8 months		
Topdressing	92	39	220	Dates: 2.10.81- 27.10.82		
Total	107	88	220	LTM : 699 mm		
				Rainfall : 484 mm		
				Irrigation: 793 mm		
				Total 1277 mm		

2. Objectives:

Standard phytotoxicity programme.

3. Treatments:

See results.

Note on Treatments:

These were applied either over the cane rows or directed across the interrow.

4. Experiment details:

Planting date : 2.10.82
 Variety : NCo 376
 Plot size (gross) : 6 rows x 8 m x 1,4 m = 67,2 m²
 (net) : 4 rows x 6 m x 1,4 m = 33,6 m²
 Spraying date : 1.12.81
 Cane growth stage : 5-6 leaves unfurled per shoot
 ± 45 cm leaf canopy height
 Application : CP₃ Knapsack
 (0615 am-12.10 pm) APM Green floodjet nozzle
 Output 314 ℓ/ha
 Weather conditions: General : Overcast and cool
 Temperature 8 am: 19,5°C
 2 pm: 23,5°C
 Relative humidity 8 am: 73%
 2 pm: 57%
 Rainfall-day of spray : 0
 Days to first rain : 6
 Amount of first rain : 8,5 mm
 Sunshine hours : 3,7

5. Results:

TABLE 1:

Mean ratings of leaf scorch and stunting taken twenty-two days after spraying. Ratings are based on a 1-9 scale for scorch where 1 = no effect and 9 = dead, while stunting ratings are based on a 1-5 scale where 1 = very poor and 5 = very good

Treatments	Rate in kg or ℓ prod/ha	Ratings	
		Leaf scorch	Stunting
Control (unsprayed)	-	1	4,8
Diuron + Sencor	4 + 4	1,3	4,2
Fortrol/ametryne + S	5	1,2	4,3
Fortrol/ametryne + S (directed)	5	1	3,8
Fortrol/ametryne + S	10	1,5	3,8
Bimate + paraquat (directed)	5 + 1	4	3,9
Diuron + Sencor (directed)	4 + 4	1,4	4,5
Dopax + Actril DS (directed)	7 + 1,25	2,7	3,9

Comments: 1. Only Bimate + paraquat and Dopax + Actril DS caused any marked leaf effects but these disappeared in time.

TABLE 2

Mean stalk heights and population counts taken at spraying and 1,5, 4,5 and 9 months after spray application

Treatments	Measurements							
	Stalk height (m)				Population(1000/ha)			
	0	1,5	4,5	9	0	1,5	4,5	9
Control (unsprayed)	0,37	0,65	1,98	2,27	63	180	125	98
Diuron + Sencor	0,34	0,60	1,93	2,27	55	192	119	98
Fortrol/ametryne + S	0,35	0,59	1,91	2,30	61	186	135	108
Fortrol/ametryne + S (directed)	0,35	0,58	1,88	2,26	54	192	118	100
Fortrol/ametryne + S	0,35	0,56	1,85	2,26	48	194	114	99
Bimate + paraquat (directed)	0,35	0,56	1,89	2,27	68	215	130	101
Diuron + Sencor (directed)	0,34	0,60	1,89	2,31	73	194	129	100
Dopax + Actril DS (directed)	0,35	0,55	1,84	2,25	55	185	119	95

TABLE 3

Yield results and crop measurements at harvest

Treatments	Rate in kg or l ai or ae/ha	Yield			Crop measurements	
		Cane t/ha	Suc t/ha	Ers t/ha	Stalk height(m)	Population (1000/ha)
Control (unsprayed)	-	146	20,1	17,6	2,79	141
Diuron + Sencor	3,2 + 2,8	145	20,2	17,7	2,63	144
Fortrol/ametryne + S	2,5	145	20,2	17,7	2,69	150
Fortrol/ametryne + S (directed)	2,5	144	20,2	17,8	2,70	145
Fortrol/ametryne + S	5	143	20,1	17,7	2,68	142
Bimate + paraquat (directed)	3,75 + 0,2	142	19,4	16,7	2,71	139
Diuron + Sencor (directed)	3,5 + 2,8	144	19,8	17,3	2,66	137
Dopax + Actril DS (directed)	3,5 + 0,875	149	20,1	17,4	2,67	128
CV %		5,8	6,9	7,8	4,6	8,2
LSD (0,05)		9,91	1,628	1,6	0,1444	13,50
LSD (0,01)		13,30	2,186	2,148	0,1939	18,13

- Comment:** 1. Although slight stunting was apparent from all treatments at a very early stage of growth, the differences at harvest did not reach a level of statistical significance with the exception of plots treated with diuron + Sencor. However, the mean stalk heights of these plots were slightly lower than those of other plots at the time of spraying and the difference is thus not considered to be real.
2. Similarly differences in stalk population (see Dopax + Actril DS) are not considered to be real.

5. Conclusions:

- All treatments were acceptable and caused no yield reductions.
- There was no difference between directed and over the row sprays.

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