

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: HW 213/81

Cat. No. : 1276

TITLE: Phytotoxicity trial post-emergence
on ratoon cane.

1. Particulars of the project:

This crop: Ratoon cane
Site: Pongola Field Stn.
Region: Northern Area
Soil system: Komatipoort
Soil form/series: Hutton/Shorrocks
Design: Randomised block
Variety: NCo 376
Fertilizer/ N P K
Ameliorants 138 23 100
Spraying date: 23.12.80
Applicator: CP₃ Knapsack
Nozzle: TK5 floodjet
Pressure: 2 bars
Weather: Hot and clear
Temperature: 8 a.m. 28,3°C
 2 p.m. 35,8°C

Soil analysis: Date: 4.6.81

<u>pH</u>	<u>O.M.%</u>	<u>Clay%</u>	<u>Silt%</u>	<u>Sand%</u>	<u>CEC</u>
6,7	1,34	24	10	66	10,80

<u>ppm</u>					
<u>P</u>	<u>K</u>	<u>Ca</u>	<u>Mg</u>	<u>Zn</u>	<u>Al</u>
18	142	685	>220	-	-

Age: 12 mths Dates: 4.11.80-4.11.81

Rainfall: 687 mm L.T.M.:

Irrigation: 671 mm

Total: 1358 mm

Rel. Humidity: 8 a.m. 80%
 2 p.m. 41%

Soil: Moist

Wind: Fair

Time: 10.00 - 12.00

Rainfall:

Day of spray: 0mm

Within 2 weeks: 41,7 mm

2. Objectives:

To assess the phytotoxic effects of herbicide treatments when applied post-emergence to ratoon cane at Pongola.

3. Treatments: See results.

4. Experimental:

Treatments were applied directly over the sugarcane rows when the cane was approximately 650-750 mm in leaf height with 7-8 leaves unfurled per shoot.

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 and stunting taken 20 days after spraying.

Treatment	Rate in kg or l ai or ae/ha	Rate in kg or l prod/ha	Leaf scorch ¹	Stunting ²
Control	-	-	1	5
Diuron + 2,4-D + S	4,0 + 2,88	5 + 4	3,8	1,7
Tordon 101 + S	1,5	3,1	1,2	3,3
Tordon 101 + S	3,1	6,2	1,2	3,3
Tordon 101 + S	6,2	12,4	2	2,8
Dalapon + S	4,2	5	1,8	3
Dalapon + S	8,5	10	4,2	1,8
2,4,5-T + S	2,42	3,088	3	4

1 = 1 - 9 scale where 1 = no effect and 9 = dead

2 = 1 - 5 scale where 1 = very poor and 5 = same as control

Dalapon caused necrotic symptoms on the cane foliage while Tordon 101 and 2,4,5-T caused mild chlorosis.

5.2 Stalk height measurements and population counts taken 7 days and 2, 5 and 8 months after spraying.

Treatments	Stalk heights (m)				Stalk popln(1000/ha)			
	7 DAS	2	5	8	7 DAS	2	5	8
Control	0,46	1,41	2,25	2,45	442	218	157	120
Diuron + 2,4-D + S	0,41	0,90	1,61	1,82	416	206	167	129
Tordon 101 + S	0,46	1,21	1,95	2,11	411	198	167	115
Tordon 101 + S	0,46	1,17	2,03	2,12	399	224	160	112
Tordon 101 + S	0,41	1,03	1,79	2,02	437	193	154	117
Dalapon + S	0,42	0,47	0,87	1,21	421	273	152	89
Dalapon + S	0,40	0,38	0,67	0,92	441	313	148	98
2,4,5-T + S	0,42	1,25	2,06	2,27	421	206	158	125

5.3 Yield data and crop characteristics at harvest.

Treatments	Rate in kg or l ai or ae/ha	Stalk ht. (m)	Stalk popln (1000'/ha)	Yield			
				Cane t/ha	Sucrose t/ha	ers % cane	ers t/ha
Control	-	2,42	167	117	17,0	12,4	14,5
Diuron + 2,4-D + S	4,0 + 2,88	1,82	173	92**	13,1**	12,0	11,1**
Tordon 101 + S	1,5	2,15	169	104*	14,9*	12,1	12,6*
Tordon 101 + S	3,1	2,06	164	103*	14,8*	12,0	12,5*
Tordon 101 + S	6,2	1,99	154	96**	13,9**	12,2	11,8**
Dalapon + S	4,2	-	-	-	-	-	-
Dalapon + S	8,5	-	-	-	-	-	-
2,4,5-T + S	2,42	2,30	173	112	16,2	12,2	13,7
C.V.%				8,5	10,2	6,3	12,0
L.S.D. (0,05)				10,52	1,819	0,9083	1,803
L.S.D. (0,01)				14,23	2,459	1,228	2,438

6. Comments

6.1 Visual ratings

Leaf scorch from diuron + 2,4-D + S was more severe than normally expected and this was possibly due to the hot conditions at the time of spraying. Only Dalapon at the high rate produced more severe symptoms.

Stunting was marked from all treatments except 2,4,5-T.

6.2 Crop growth measurements

Stalk heights were markedly reduced by all treatments and these differences persisted until harvest. Dalapon treatments were particularly severe and most shoots had no further growth after spraying. Further stalk height measurements in the table were taken from survived stalks while the population counts included stunted and dying stalks.

Stalk populations were not markedly affected by treatments other than Dalapon although 2,4,5-T and diuron + 2,4-D + S tended to have higher stalk numbers while Tordon 101 + S tended to have lower stalk numbers.

6.3 Yield and harvested crop characteristics

Dalapon plots were not harvested due to the extremely poor growth.

2,4,5-T + S caused the least reduction (n.s.) in yield in terms of tons cane/ha, tons ers/ha and tons sucrose/ha. Tordon 101 treatments were similar to or safer than diuron + 2,4-D + S but reduced sugarcane yield to a statistically significant extent.