

**SOUTH AFRICAN SUGAR ASSOCIATION
EXPERIMENT STATION**

Code No : HW 309/86/R2
Project No: 3373
Cat. No : 1592

Title: Ratoon cane phytotoxicity

1. Particulars of the project:

This crop : Second ratoon
Site : Shakaskraal Field Station
Region : North Coast Coastal
Soil system : Umzinto/Coast Lowlands
Soil form/series: Longlands/Waldene
Variety : NCo376
Age : 13,4 mths (10.6.86 - 23.7.87)

Soil analysis

pH	Clay %
5,50	14

Fertilizer td kg ha ⁻¹	:	N	P	K
		165	0	165

Rainfall : 967 mm

Irrigation: 50 mm Supplementary

2. Objectives:

To assess the effects of herbicide treatments on NCo376 ratoon cane at Shakaskraal.

3. Method:

3.1 Treatments:

Treatment	Rate (l or kg product ha ⁻¹)
T1 Control (unsprayed)	-
T2 TCA (95)	10,0
T3 Lasso (38) + Diuron (80)	6,0 + 2,5
T4 Diuron + MSMA (72)	2,5 + 2,0
T5 Garlon (48)	1,5
T6 Garlon	1,0
T7 Diuron + Actril DS (70)	2,5 + 1,25
T8 Control unsprayed	-

3.2 Chemical Formulations used:

Chemical	Formulation	Active ingredient
TCA	95% m/m	sodium trichloroacetate
Lasso	384 g/l ec	alachlor
Diuron	800 g/l sc	diuron
MSMA	720 g/l soln	MSMA
Garlon	480 g/l ec	triclopyr
Actril DS	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 = 67,2m²
 Net plot size : 6m x 4 rows x 1,4m = 33,6m²
 Replications : 6

3.4 Weather conditions:

		Spray date
		3.10.1986
General		Cool and wet
Sunshine hr		2,0
Temperature (°C)	8 am	14,5
	2 pm	18,5
RH (%)	8 am	94
	2 pm	68
RF on day of spray (mm)		0
No. of days to 1st rain		1
No. mm at 1st rain		3,2
No. mm in 1st 14 days		18,8

3.5 Application details:

		Spray date
Height at leaf bend (cm)		55 - 65
No. of leaves/shoots		6 - 7
Applicator		CP3
Nozzle		APM Green
Output (ml/s)		37,5
Output (ml/m ²)		26,78
Method		Over the row
Soil surface		wet

Spraying conditions:

Leaves very wet for T2 and T3, drier for T4 and T5 and dry for T6 and T7.

Slight wind when T7 sprayed.

4. Results:

Table 1: The effects of various post emergent herbicide treatments on leaf scorch and stunting of sugar-cane 21 days after spraying.

Treatment	l or kg prod/ha	Leaf scorch %	Stunting*
T1 Control (unsprayed)	-	5,5	1,4
T2 TCA	10,0	28,8	2,6
T3 Lasso + diuron	6,0 + 2,5	9,5	2,3
T4 Diuron + MSMA	2,5 + 2,0	21,3	2,1
T5 Garlon	1,5	5,0	1,5
T6 Garlon	1,0	5,8	1,1
T7 Diuron + Actril DS	2,5 + 1,25	8,3	2,0
T8 Control (unsprayed)	-	6,0	1,3
SE of treatment mean		1,13	0,19
CV %		28,5	30,8
LSD (0,05)		3,3	0,6
(0,01)		4,5	0,8

* Rating of stunting: 1 = No stunting. 5 = severe stunting.

Table 2: Yield and other crop characteristics at harvest.

Treatment	l or kg prod ha ⁻¹	Cane t ha ⁻¹	Sucrose %	Stalk length cm
T1 Control	-	74	11,93	193
T2 TCA	10,0	71	11,87	191
T3 Lasso + Diuron	6,0 + 2,5	76	12,58	196
T4 Diuron + MSMA	2,5 + 2,0	78	11,71	200
T5 Garlon	1,5	75	11,74	201
T6 Garlon	1,0	73	12,47	191
T7 Diuron + Actril DS	2,5 + 1,25	72	12,08	193
T8 Control	-	76	11,85	196
SE of treatment mean		3	0,26	3,3
CV %		9,5	5,3	4,2
LSD (0,05)		8	0,74	9,5
(0,01)		11	1,0	12,8

Discussion and conclusion:

1. Leaf scorch was observed for all treatments but was most severe for TCA and Diuron + MSMA. Garlon caused the least leaf scorch.
2. Stunting was severe for TCA and all Diuron treatments (Diuron + Lasso, Diuron + MSMA and Diuron + Actril) caused moderate stunting. Garlon treatments were similar to unsprayed treatments.
3. There were no significant differences in yield of cane and stalk length.
4. Lasso + Diuron had the highest value for percent sucrose.

In conclusion, the early phytotoxic effects observed at 3 weeks after spraying which were severe in the case of TCA, did not persist until the time of harvesting when treatments showed no clear differences.

MW/MG

3 September, 1987.