SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

Cat No: 1594
Project No: 3384
Code No: HW312/86/P

Title: Pre emergence phytotoxicity of NCo376 plant cane.

Objectives To assess new pre emergent and early post emergent herbicide treatments on NCo376 plant cane in the northern area.

Particulars of project

This crop	: Plant
Site	: Pongola Field Stn
Region	: Northern area
Soil system	: Komatipoort
Soil form/series	: Hutton/Shorrocks
Variety	: NCo376
Age (mths)	: 10,1 mth
Dates	: 15/10/86-19/8/87
Rainfall (mm)	: 521 mm
Irrigation (mm)	: 610 mm
Total (mm)	: 1131 mm

Soil analysis **Date:**

pH (water)	Clay (%)	OM (%)
6,67	>30	

ppm

P	K	Ca	Mg
19	159	883	> 220

Fertilizer

	N	P	K
Topdressed (kg/ha)	105	-	-
Topdressed (kg/ha)	115	-	125
	220	-	125

Design

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

Treatments

	Treatments	Rates (l or kg) product/ha	Time of application	Method
T1	Control (unsprayed)	-	-	
T2	Control (unsprayed)	-	-	
T3	Butisan (40) + diuron (80)	2 + 3	Pre	O/R*
T4	Butisan + diuron + Gramoxone (20)	2 + 3 + 1,5	1 - 2 leaf	O/R
T5	Lasso (38) + diuron	6 + 3	Pre	O/R
T6	Lasso + diuron + Gramoxone	6 + 2,5 + 1,25	1 - 2 leaf	O/R
T7	Harness (96) + diuron	3 + 3	Pre	O/R
T8	Harness + diuron + Gramoxone	3 + 2,5 + 1,5	1 - 7 leaf	O/R

* Over the row

Chemical formulations used

	Product	Formulation	Active ingredient
P1	Butisan (40)	400 g/l sc	metazachlor
P2	Diuron (80)	800 g/l sc	diuron
P3	Gramoxone (20)	200 g/l soln	paraquat
P4	Lasso (38)	384 g/l ec	alachlor
P5	Harness (96)	960 g/l ec	acetochlor

Application details

Treatment dates	22/10/1986	11/11/1986
Time of application	06h15 - 07h00	06h00 - 07h15
Applicator	CP3	CP3
Nozzle	APM Green	APM Green
Height of cane	pre emergence	Spike to 3 leaf
Method	Over the row	Over the row
Output	32 ml/s	32 ml/s
Output	23 ml/m^2	23 ml/m^2

Weather conditions at time of spraying

Treatment dates	22/10/1986	11/11/1986
General	Cloudy + cool	Cloudy + cool
Dew	Slight	Nil
Soil surface	Moist	Moist
Wind	Nil	Nil
Sunshine hours	9,2	8,4
Temperature (°C) 08h00	22,8	19,7
14h00	29,2	25,4
Relative humidity (%) 08h00	75	70
14h00	39	48
Rainfall: On day of spray (mm)	0	0
No days to 1st rain	6	4
At 1st rain (mm)	16,6	2,8
In 1st 14 days (mm)	21	6

Results

Table 1: Leaf scorching and stunting following pre and early post emergent herbicide applications.

Treatment	Rate (l or kg) product/ha	% leaf scorch		Stunting*	
		10/11/86	24/11/86	10/11/86	24/11/86
Control	-	2	3	5	5
Control	-	2	3	5	5
Butisan + diuron	2 + 3	2	3	5	5
Butisan + diuron + Gramoxone	2 + 3 + 1,5	2	10	5	5
Lasso + diuron	6 + 3	2	3	5	5
Lasso + diuron + Gramoxone	6 + 2,5 + 1,25	2	11	5	5
Harness + diuron	3 + 3	2	3	5	5
Harness + diuron + Gramoxone	3 + 2,5 + 1,5	2	12	5	5

* Note: Rating for stunting

5 = No visual stunting
1 = Severe stunting

Table 2: Yield measurements at harvest

Treatment	Rate (l or kg) product/ha	Cane (t/ha)	Sucrose (t/ha)	Popu-lation (1000/ha)	Length (cm)*
Control	-	131	13,7	139	268
Control	-	132	13,4	134	267
Butisan + diuron	2 + 3	134	13,2	137	276
Butisan + diuron + Gramoxone	2 + 3 + 1,5	132	13,9	138	266
Lasso + diuron	6 + 3	136	14,0	134	266
Lasso + diuron + Gramoxone	6 + 2,5 + 1,25	130	13,9	138	280
Harness + diuron	3 + 3	133	13,5	134	273
Harness + diuron + Gramoxone	3 + 2,5 + 1,5	132	12,9	138	271
CV %		5,1	6,9	14,3	4,1
SE of treatment means		3	0,4	8	4,6
LSD (0,05)		8	1,1	23	13
(0,01)		11	1,5	31	18

* Lodging occurred throughout the trial.

Discussion and conclusion

There was marked leaf scorching in the treatments containing Gramoxone compared with the treatment without Gramoxone after the early post-emergence spray. However, there appeared to be no effect on plant height in the early stages of cane growth.

Significant differences were observable between some treatments for the parameter plant height at harvest. However such differences could be accounted for because of the severity of lodging that was observed at harvest. There were no significant treatment difference for the other measured parameter t cane ha^{-1}, t sucrose ha^{-1} and plant population.

The Butisan and Harness treatments were therefore considered as good as the Lasso treatments and pre- and early post emergent spraying treatments did not appear to be significantly different from each other.

MW/MG
16 September, 1987