NBL/gb
6 September 1991

SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

Cat.No. : 1779
Project No. :
Code No. : HW 406/90/R3

Title: Post - emergence phytotoxicity on ratoon cane.

Objectives: Standard phytotoxicity programme.

1. Particulars of project:

This crop	: 3rd ratoon
Site	: Shakaskraal Field 37D
Region	: North coast - coastal
Soil System	: Umzinto coast Lowlands
Soil form / series:	Longlands/ Westleigh
Design	: Randomised block
Variety	: NCo376
Fertiliser (kg/ha):	N P K 164 - 164

Soil analysis Date : 19/10/90

pH	OM%	Clay%	PDI
5,5	-	18	-

ppm

P	K	Ca	Mg	ZN	Al
27	81	554	142	2,5	-

Age : 9,9 months
Dates : 16/10/90 - 14/8/91
Rainfall : 891 mm
Irrigation : Nil
Total : 891 mm

2. Objectives

Standard phytotoxicity programme.

3. Treatments

		Rates (1 product/ha)
T1	Control	Handweeded
T2	Actril DS	1,25
T3	Spotaxe	2
T4	Spotaxe	4
T5	Duplosan DP	3
T6	Duplosan DP	6
T7	Impi (ICIA 0051/diuron)	3,33
T8	Impi (ICIA 0051/diuron)	6,67

4. Design

Design	:	Randomised block
No replications	:	6
Whole plot size	:	5 rows x 8m x 1.4m = 56 m
Net plot size	:	3 rows x 6m x 1.4m = 25,2 m
Row spacing	:	1.4m

5. Chemical formulations used

Product	Formulation	Active ingredient
Actril DS	100 + 600 g/l	ioxynil + 2,4 - D
Spotaxe	80 + 240 g/l	dicamba + 2,4 - D
Duplosan DP	600 g/l	dichlorprop - P
Impi	150 + 300 g/l	sulcotrione + diuron

6. Application details

Treatment date	:	29/11/1990
Time	:	6.52 am
Applicator	:	CP3
Nozzle	:	APM (green)
Pressure	:	150 KPa
Output	:	38,81 ml/sec
Output	:	27,72 ml/m2
Method	:	Over the row

7. Weather conditions

Treatment date	:	29/11/1990
General	:	Clear and warm
Dew	:	Very slight
Soil surface	:	Dry
Wind	:	Calm
Sunshine hours	:	6,8
Temperature (°C)		
08h00	:	22,8
14h00	:	26,2
Rainfall (mm)		
On day of spray	:	9
No. days to first rain	:	1
At first rain	:	16,2
In first 14 days	:	97,7
Total for duration of trial	:	891

8. Results

Table 1: Visual ratings of percentage leaf scorch and stunting (where 1 = very poor and 5 = no stunting) recorded at 11 and 36 days after spraying.

Treatment	Rate (l product/ha)	% leaf scorch		Stunting	
		11	36	11	36
T1 Control	-	0	0,7	4,9	4,8
T2 Actril DS	1,25	3,2	1,8	4,8	4,7
T3 Spotaxe	2	1,7	1,3	4,9	4,8
T4 Spotaxe	4	3,0	1,5	4,9	4,8
T5 Duplosan DP	3	8,5	1,7	4,4	4,4
T6 Duplosan DP	6	10,3	1,5	4,1	4,0
T7 Impi	3,33	10,7	2,3	4,6	4,8
T8 Impi	6,67	15,7	2,0	4,1	4,6

Table 2: The effects of herbicide treatments on stalk heights and populations at 111 and 202 days after spraying.

Treatment	Rate (l product/ha)	Stalk heights (cm to TVD)		Populations (* 1000/ha)	
		111	202	111	202
T1 Control	-	133	183	164	144
T2 Actril DS	1,25	139	185	165	146
T3 Spotaxe	2	137	193	169	139
T4 Spotaxe	4	138	189	170	142
T5 Duplosan DP	3	129	175	170	154
T6 Duplosan DP	6	136	181	168	149
T7 Impi	3,33	138	186	160	145
T8 Impi	6,67	137	186	150	149

Table 3: Treatment effects on cane yield (tons/ha) sucrose % cane and sucrose yield (tons/ha).

Treatment	Rate (l product/ha)	Cane yield (tons/ha)	Sucrose % cane	Sucrose (tons/ha)
T1 Control	-	77	14,8	11,4
T2 Actril DS	1,25	79	14,4	11,4
T3 Spotaxe	2	83	14,5	12,0
T4 Spotaxe	4	79	14,2	11,3
T5 Duplosan DP	3	71	14,9	10,7
T6 Duplosan DP	6	71	14,5	10,3
T7 Impi	3,33	77	15,0	11,5
T8 Impi	6,67	81	14,7	11,9
CV %		10,6	2,6	11,0
Standard error - Treatment means +/-		3,3	0,2	0,5
LSD (0,05)		10	0,4	1,4
LSD (0,01)		13	0,6	1,9

9. Comments

The new products were applied at the rate requested as well as at double this rate. All herbicides were sprayed alone to assess their individual phytotoxic effects on cane. The trial was accidentally burnt and had to be cut early.

Actril DS

Other than some very minor scorching soon after spraying, the standard treatment did not appear to influence the other yield parameters.

Spotaxe

The double rate of this product caused similar minor foliar scorch as the standard, but neither rate resulted in further measurable effects on the crop.

Duplosan DP

This herbicide produced more scorch than the previous two treatments, but this did not reflect in the stalk height measurements which were similar to the control for the double rate at both stages recorded. Both rates of the product lowered cane yield slightly, and although reductions were non-significant, it is suspected that the effects were real.

Impi

The crop soon grew out of the initial leaf scorch that was recorded for both rates of this product, although symptoms were still evident five weeks after spraying (Table 1). Yield data indicates that the visual phytotoxic effects on the crop were only temporary as results for both rates vary only slightly (ns) compared to control (Table 3).

Conclusion

At the rates tested, all the products other than Duplosan DP appear safe on cane when used alone. Growth suppression was obvious in the Duplosan DP plots early on, but unfortunately measurements were not recorded at this stage.