SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

A IV

Cat.No. : 1862
Project No. : 4045
Code No. : HW 419/91/R4

Title : Post - emergence phytotoxicity on ratoon cane.

1. Particulars of project :

This crop	: 4th ratoon
Site	: Pongola Block 306
Region	: Northern area
Soil System	: Komatipoort
Soil form / series:	Hutton/ Shorrocks
Design	: Randomised block
Variety	: NCo376
Fertilizer (kg/ha):	N 139, P 28, K 139

Soil analysis Date : 4/11/1991

pH	OM%	Clay%	PDI
6,38	-	>40	-

ppm

P	K	Ca	Mg	Zn	Al
32	174	676	>235	-	-

Age : 11,8 months

Dates :16/9/91-9/9/92

Rainfall : 434 mm

Irrigation: 915 mm

Total : 1349 mm

2. Objectives
Standard phytotoxicity programme.

3. Treatments

		Rates (l product/ha) Handweeded
T1	Control	
T2	Sencor + diuron	3 + 2
T3	Diuchlor	6
T4	Diuchlor	12
T5	ICIA 0051/ametryn + Agrowett	3 + 0,6
T6	ICIA 0051/ametryn + Agrowett	6 + 0,6
T7	(bromoxynil + ametryn) + Agrowett	7 + 0,6
T8	(bromoxynil + ametryn) + Agrowett	14 + 0,6

4. Design

Design	: Randomised block
No replications	: 6
Whole plot size	: 6 rows * 8m * 1.4m = 67,2 m
Net plot size	: 4 rows * 6m * 1.4m = 33,6 m
Row spacing	: 1.4m

5. Chemical formulations used

Product	Formulation	Active ingredient
Sencor	480 g/l (SC)	metribuzin
diuron	800 g/l (SC)	diuron
Diuchlor	620 g/l (SC)	-
ICIA 0051/ametryn	90 + 360 g/l	sulcotrione + ametryn
Agrowett	350 g/l	alkylaryl polyglycol ether
[bromoxynil + ametryn]	100 + 300 g/l(SC)	bromoxynil + ametryn

6. Application details

Treatment date	:	6/11/1991
Time	:	9.45 - 12.00pm
Applicator	:	Battery operated knapsack
Nozzle	:	APM (green)
Pressure	:	150 kpa
Output	:	40,3 ml/sec
Output	:	28,8 ml/m
Method	:	Over the row

7. Weather conditions

Treatment date	:	6/11/1991
General	:	Hot and dry
Dew	:	Nil
Soil surface	:	Dry
Wind	:	Steady (NE)
Sunshine hours	:	11,6
Temperature (°C)		
08h00	:	21,8
14h00	:	34,8
Relative humidity (%)		
08h00	:	59
14h00	:	33
Rainfall (mm)		
On day of spray	:	Nil
No. days to first rain	:	4
At first rain	:	37
In first 14 days	:	96
Total for duration of trial	:	434

8. Results

Table 1 : Visual ratings of percentage leaf scorch and stunting (where 1 = very poor and 5 = no stunting) recorded at 27 days after spraying.

—— Treatment ——	Rate (l product/ha)	% leaf scorch	Stunting
T1 Control	Handweeded	2	4,5
T2 Sencor + diuron	3 + 2	8	3,5
T3 Diuchlor	6	2	4,5
T4 Diuchlor	12	3	3,8
T5 ICIA 0051/ametryn + Agrowett	3 + 0,6	8	3,6
T6 ICIA 0051/ametryn + Agrowett	6 + 0,6	11	3,3
T7 (bromoxynil + ametryn) + Agrowett	7 + 0,6	9	3,3
T8 (bromoxynil + ametryn) + Agrowett	14 + 0,6	8	2,9

Table 2 : Treatment effects on stalk heights (cm to TVD) and populations at 139 and 193 days after spraying.

—— Treatment ——	Rate l product /ha	Stalk height (cm to TVD)		Populations (* 1000/ha)	
		139	193	139	193
T1 Control	Handweed	254	281	374	312
T2 Sencor + diuron	3 + 2	248	278	343	300
T3 Diuchlor	6	245	276	327	288
T4 Diuchlor	12	241	272	324	289
T5 ICIA 0051/ametryn + Agrowett	3 + 0,6	248	282	336	296
T6 ICIA 0051/ametryn + Agrowett	6 + 0,6	249	251	354	296
T7 (bromoxynil+ametryn)+Agrowett	7 + 0,6	246	276	352	298
T8 (bromoxynil+ametryn)+Agrowett	14 + 0,6	242	230	327	287

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

—— Treatment ——	Rate l prod/ha	Cane yield (tons/ha)	Sucrose % cane	Sucrose (tons/ ha)
T1 Control	-	141	13,3	18,7
T2 Sencor + diuron	3 + 2	134	13,4	18,0
T3 Diuchlor	6	134	12,9	17,3
T4 Diuchlor	12	135	13,1	17,7
T5 ICIA 0051/ametryn + Agrowett	3 + 0,6	134	13,1	17,5
T6 ICIA 0051/ametryn + Agrowett	6 + 0,6	134	13,2	17,7
T7 (bromoxynil+ametryn)+Agrowett	7 + 0,6	137	12,8	17,7
T8 (bromoxynil+ametryn)+Agrowett	14 + 0,6	133	12,7	16,8
CV %		4,3	5,1	5,5
Standard error - Treatment means +/-		2,4	0,3	0,4
LSD (0,05)		7	0,8	1,1
LSD (0,01)		9	1,0	1,5

9. Comments

All new products were tested at the recommended and twice the recommended rates. The cane at the time of spraying was approximately 60 - 70cm high and had 6 - 7 green leaves per stalk.

Sencor + diuron

The standard treatment caused leaf scorch and stunting (Tables 1 & 2) which resulted in a significant loss in cane yield. This was unusual as the standard treatment is normally only slightly phytotoxic to sugarcane. It is possible that cane growth was too advanced at the time of spraying which would have increased chemical damage.

Diuchlor

Both rates of this product suppressed stalk heights, stalk populations and yields similarly.

ICIA 0051/ametryn

Leaf scorch and stunting was severe at the highest rate of this treatment. Both rates resulted in significant losses in cane yield (Table 3).

(bromoxynil + ametryn)

These products scorched the cane leaves and stunted growth particularly at the higher rate. Both rates resulted in cane yield losses but reductions were only significant at the highest rate. The highly significant loss in sucrose yield at the higher rate was caused by a corresponding suppression in cane quality.

10. Conclusion

It appears that the cane in this trial was unusually sensitive to herbicide damage as significant yield losses occurred for all treatments including the standard. This may be attributed to aspects such as drought and stage of cane development at the time of spraying.

2/12/1992