

NBL/cvp
1 October 1991

SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

Cat.No. : 1780
Project No. :
Code No. : HW 403/90/R5

Title: Post-emergence phytotoxicity on ratoon cane

Objectives: Standard phytotoxicity programme.

1. Particulars of project:

This crop	: 5th ratoon	Soil analysis Date : 23/8/90					
Site	: Shakaskraal Field 37C	pH	OM%	Clay%	PDI		
Region	: North coast - coastal	5,2	1,8	15	-		
Soil System	: Umzinto coast Lowlands	ppm					
Soil form / series:	Longlands/ Westleigh	P	K	Ca	Mg	Zn	Al
Design	: Randomised block	28	66	341	88	2.3	5
Variety	: NCo376	Age : 11,5 months					
Fertiliser (kg/ha):	N P K 164 164	Dates : 28/8/90 - 14/8/91					
		Rainfall : 990 mm					
		Irrigation : Nil					
		Total : 990 mm					

2. Objectives

Standard phytotoxicity programme.

3. Treatments

	Rates (1 product/ha)
T1 Control	Handweeded
T2 Sencor + diuron	3 + 2
T3 Hammer	1
T4 Hammer	2
T5 ICIA 0179	1
T6 ICIA 0179	2
T7 Extrazine + Lasso	4 + 5
T8 Extrazine + Lasso	8 + 10

4. Design

Design : Randomised block
No replications : 6
Whole plot size : 6 rows x 8m x 1.4m = 67,2 m
Net plot size : 4 rows x 6m x 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
Hammer	100 g/l	imazathapyr
ICIA 0179	500 g/l	-
Extrazine	167 + 333 g/l (sc)	cyanazine + atrazine
Lasso	384 g/l (ec)	alachlor

6. Application details

Treatment date : 8/11/1990
Time : 7.20 am
Applicator : CP3
Nozzle : APM (green)
Pressure : 150 kpa
Output : 39,4 ml/sec
Output : 28,14 ml/m
Method : Over the row

7. Weather conditions

Treatment date : 8/11/1990
General : Sunny and hot
Dew : Nil
Soil surface : Slightly damp
Wind : Gusty (NE)
Sunshine hours : 11
Temperature (°C)
 08h00 : 19,1
 14h00 : 23,2
Relative humidity (%)
 08h00 : 60
 14h00 : 61
Rainfall (mm)
 On day of spray : Nil
 No. days to first rain : 3
 At first rain : 0,1
 In first 14 days : 20,3
 Total for duration of trial : 990

8. Results

Table 1 : Visual ratings of percentage leaf scorch and stunting (where 1 = very poor and 5 = no stunting) recorded at 32 and 88 days after spraying

Treatment	Rate (l product/ha)	% leaf scorch		Stunting	
		32	88	32	88
T1 Control	-	0	0	4,7	5,0
T2 Sencor + diuron	3 + 2	6,8	1,8	4,0	4,3
T3 Hammer	1	37,0	10,2	1,8	3,2
T4 Hammer	2	47,5	11,3	1,8	3,0
T5 ICIA 0179	1	2,8	0,3	4,6	4,6
T6 ICIA 0179	2	6,0	1,8	4,7	4,3
T7 Extrazine + Lasso	4 + 5	2,5	0,3	4,4	4,8
T8 Extrazine + Lasso	8 + 10	4,3	3,0	4,2	4,2

Table 2: Treatment effects on stalk heights (cm to TVD) and populations at 19, 132 and 223 days after spraying

Treatment	Rate (l product/ha)	Stalk heights (cm to TVD)			Populations (* 1000/ha)		
		19	132	223	19	132	223
T1 Control	-	28	137	162	208	156	151
T2 Sencor + diuron	3 + 2	22	134	161	226	167	140
T3 Hammer	1	21	97	129	190	192	154
T4 Hammer	2	19	94	126	182	213	196
T5 ICIA 0179	1	26	144	169	205	154	139
T6 ICIA 0179	2	24	140	167	227	162	144
T7 Extrazine + Lasso	4 + 5	28	144	171	221	148	132
T8 Extrazine + Lasso	8 + 10	22	127	155	217	160	145

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	-	60	14,6	8,8
T2 Sencor + diuron	3 + 2	59	14,9	8,8
T3 Hammer	1	48	14,5	7,0
T4 Hammer	2	47	14,3	6,8
T5 ICIA 0179	1	66	15,2	10,1
T6 ICIA 0179	2	61	14,2	8,7
T7 Extrazine + Lasso	4 + 5	66	15,1	10,0
T8 Extrazine + Lasso	8 + 10	60	14,2	8,4
CV %		11	5,1	12,9
Standard error - Treatment means +/-		2,6	0,3	0,5
LSD (0,05)		8	0,9	1,3
LSD (0,01)		10	1,1	1,7

9. Comments

All treatments other than the standard were applied at the recommended and twice the recommended rates.

Sencor + diuron

The standard treatment did not have any significant effect on cane growth and yields although there did appear to be minor leaf scorch and slight stunting early on.

Hammer

Both rates of this product resulted in very severe leaf scorch that was still very pronounced three months after spraying. The cane failed to recover from the initial setback as a 21% and 23% reduction in stalk heights was recorded for the lower and higher rate respectively at about 7,5 months after spraying (Table 2). There did appear to be some increase in tiller numbers particularly at the higher rate which may have compensated for the drastic effects on stalk heights. Reductions in cane and sucrose yields were similar for both rates applied with differences being highly significant compared to the unsprayed control as well as to the Sencor + diuron standard (Table 3).

ICIA 0179

Neither rate of this product appeared to cause adverse effects on cane when applied post - emergence. On the contrary, cane treated at the lower rate in particular seemed to be slightly better grown compared to the control or standard treatment (Table 2). Yield results at harvest for the lower rate confirm this as differences approached significance compared to the control and standard treatment.

Extrazine + Lasso

Phytotoxicity on cane from this mixture was low with growth being better than the control for the lower rate. Harvest data reflected these results as yields were better than control and the standard at the lower rates. Yields for cane treated at the higher rates were unaffected.

Conclusion

Hammer has proven to be extremely phytotoxic when applied post - emergence over the row. The remaining treatments appeared safe on cane even at the susceptible growth stage. The increases in yield for some of the treatments may have been influenced by weed competition and should be treated with caution.