

**SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION**

Cat.No. : 1778
Project No. :
Code No. : HW 402/90/R1

Title: Post - emergence phytotoxicity on ratoon cane.

Objectives: Standard phytotoxicity programme.

1. Particulars of project:

This crop : 1st ratoon Site : Shakaskraal Field 37A Region : North coast - coastal Soil System : Umzinto coast Lowlands Soil form / series: Longlands/Westleigh Design : Randomised block Variety : NCo376 Fertilizer (kg/ha): N P K 164 - 164	Soil analysis Date : 12/7/90 <hr/> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">pH</td> <td style="text-align: center;">OM%</td> <td style="text-align: center;">Clay%</td> <td style="text-align: center;">PDI</td> </tr> <tr> <td style="text-align: center;">3.35</td> <td style="text-align: center;">-</td> <td style="text-align: center;">15</td> <td style="text-align: center;">-</td> </tr> </table> <p style="text-align: center;">ppm</p> <hr/> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">P</td> <td style="text-align: center;">K</td> <td style="text-align: center;">Ca</td> <td style="text-align: center;">Mg</td> <td style="text-align: center;">Zn</td> <td style="text-align: center;">Al</td> </tr> <tr> <td style="text-align: center;">50</td> <td style="text-align: center;">62</td> <td style="text-align: center;">420</td> <td style="text-align: center;">84</td> <td style="text-align: center;">1.5</td> <td style="text-align: center;">-</td> </tr> </table> Age : 12.1 months Dates : 12/7/90 - 16/7/91 Rainfall : 1042 mm Irrigation : Nil Total : 1042 mm	pH	OM%	Clay%	PDI	3.35	-	15	-	P	K	Ca	Mg	Zn	Al	50	62	420	84	1.5	-
pH	OM%	Clay%	PDI																		
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2. Objectives

Standard phytotoxicity programme.

3. Treatments

	Rates (1 product/ha)
T1 Control	Handweeded
T2 Sencor + diuron	3 + 2
T3 Hammer + Harness + atrazine	0.75 + 2 + 2
T4 Hammer + Harness + atrazine	1.5 + 4 + 4

4. Design

Design : Randomised block
 No replications : 4
 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
Harness	900 g/l (ec)	acetochlor
atrazine	500 g/l (sc)	atrazine
Hammer	100 g/l	imazathapyr

6. Application details

Treatment date	: 1/11/1990
Time	: 7.30 am
Applicator	: CP3
Nozzle	: APM (green)
Pressure	: 150 kPa
Output	: 35,05 ml/sec
Output	: 25,04 ml/m ²
Method	: Over the row

7. Weather conditions

Treatment date	: 1/11/1990
General	: Sunny
Dew	: Nil
Soil surface	: Dry
Wind	: Slight
Sunshine hours	: 7,4
Temperature (C)	
08h00	: 20
14h00	: 22,5
Rainfall (mm)	
On day of spray	: Nil
No. days to first rain	: 2
At first rain	: 13,6
In first 14 days	: 40,7
Total for duration of trial	: 1042

8. Results

Table 1: Visual ratings of percentage leaf scorch and stunting (where 1 = very poor and 5 = no stunting) recorded at 40 and 92 days after spraying

Treatment	Rate (l product/ha)	% leaf scorch		Stunting	
		40	92	40	92
T1 Control	-	0	0	5,0	5,0
T2 Sencor + diuron	3 + 2	4,5	0,5	4,2	4,5
T3 Hammer + Harness + atrazine	0,75 + 2 + 2	19,5	0,8	2,6	4,1
T4 Hammer + Harness + atrazine	1,5 + 4 + 4	13,3	1,8	2,1	3,9

Table 2: The effects of herbicide treatments on stalk heights and populations at 27 and 140 days after spraying

Treatment	Rate (l product/ha)	Stalk heights (cm to TVD)		Populations (* 1000/ha)	
		27	140	27	140
T1 Control	-	39	159	167	133
T2 Sencor + diuron	3 + 2	28	153	145	154
T3 Hammer + Harness + atrazine	0,75 +2 + 2	24	137	114	146
T4 Hammer + Harness + atrazine	1,5 + 4 + 4	25	138	132	183

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	-	82,2	12,7	10,4
T2 Sencor + diuron	3 + 2	95,2	12,0	11,4
T3 Hammer + Harness + atrazine	0,75 +2 + 2	68,5	11,3	7,7
T4 Hammer + Harness + atrazine	1,5 + 4 + 4	77,5	12,5	9,7
CV %		14,5	1,5	13,3
Standard error - Treatment means +/-		5,8	0,9	0,6
LSD (0,05)		20	0,3	2,2
LSD (0,01)		31	0,5	3,4

9. Comments

The new mixture was applied at the recommended and twice the recommended rate for these soil conditions. A section of the trial was burnt some time before harvest and may have had some influence on yield results.

Sencor + diuron

Although the standard treatment appeared to have suppressed stalk heights, there was no significant effect on yields.

Hammer + Harness + atrazine

Foliar scorch was extreme for both rates of the treatment for up to nine weeks after application, but thereafter symptoms disappeared. The stunting effect on stalk growth persisted for the duration of the trial and was still very obvious at harvest.

Although yield differences between these treatments and the control did not reach statistical significance, the very real growth suppression effects up to harvesting should be taken into consideration when assessing the mixture. It should be noted that significant yield differences were reached between the lower rate of this mixture and the Sencor + diuron standard.

General

There were no apparent differences in eldana damage in spite of the treatment induced stress in the Hammer mixtures.