

**SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION**

Cat.No. : 1788
Project No. :
Code No. : HW 404/90/R1

Title : Post-emergence phytotoxicity of new products on N14 ratoon cane.

1. Particulars of project :

<p>This crop : 1st ratoon</p> <p>Site : Pongola Block 321</p> <p>Region : Northern area</p> <p>Soil System : Komatipoort</p> <p>Soil form / series: Hutton/ Shorrocks</p> <p>Design : Randomised block</p> <p>Variety : N14</p> <p>Fertilizer (kg/ha): N P K 140 28 140</p>	<p style="text-align: right;">Soil analysis Date : 20\9\90</p> <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;">6.48</td> <td style="text-align: center;">-</td> <td style="text-align: center;">>30</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;">42</td> <td style="text-align: center;">200</td> <td style="text-align: center;">819</td> <td style="text-align: center;">>326</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> </table> <p>Age : 11,5 months</p> <p>Dates : 2/10/90 - 17/9/91</p> <p>Rainfall : 786 mm</p> <p>Irrigation : 610 mm</p> <p>Total : 1396 mm</p>	pH	OM%	Clay%	PDI	6.48	-	>30	-	P	K	Ca	Mg	Zn	Al	42	200	819	>326	-	-
pH	OM%	Clay%	PDI																		
6.48	-	>30	-																		
P	K	Ca	Mg	Zn	Al																
42	200	819	>326	-	-																

2. Objectives

Standard phytotoxicity programme.

3. Treatments

Rates (1 product/ha)

T1 Control	Handweeded
T2 Sencor + diuron	3 + 2
T3 Premerlin	3.5
T4 Premerlin	7
T5 ICIA 0179	1
T6 ICIA 0179	2
T7 Falcon + diuron + Gramoxone	1.5 + 2 + 1.5
T8 Falcon + diuron + Gramoxone	3 + 4 + 3

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 : 1.4 m

5. Chemical formulations used

Product	Formulation	Active ingredient
Sencor	480 g/l (SC)	metribuzin
diuron	800 g/l (SC)	diuron
Premerlin	650 g/l	trifluralin
ICIA 0179	500 g/l	(coded product)
Falcon	960 g/l (EC)	metolachlor
Gramoxone	200 g/l (SOL)	paraquat

6. Application details

Treatment date : 14/11/90
Time : 4.50 - 6.48 am
Applicator : CP3
Nozzle : APM (green)
Pressure : 150 kpa
Output : 38.55 ml/sec
Output : 27.54 ml/m
Method : Over the row

7. Weather conditions

Treatment date : 14/11/90
General : Clear
Dew : Yes
Soil surface : Dry
Wind : Nil
Sunshine hours : 5
Temperature (°C)
 08h00 : 26
 14h00 : 29
Relative humidity (%)
 08h00 : 82
 14h00 : 60
Rainfall (mm)
On day of spray : 21
No. days to first rain : 1
At first rain : 21
In first 14 days : 46
Total for duration of trial : 786

8. Results

Table 1 : Visual ratings of percentage leaf scorch and stunting (where 1 = very poor and 5 = no stunting) recorded at 31 days after spraying

— Treatment —	Rate (l product/ha)	% leaf scorch	Stunting
T1 Control	-	0	5.0
T2 Sencor + diuron	3 + 2	6.2	4.0
T3 Premerlin	3.5	0	4.9
T4 Premerlin	7	0	5.0
T5 ICIA 0179	1	0.2	5.0
T6 ICIA 0179	2	1.0	4.8
T7 Falcon + diuron + Gramoxone	1.5 + 2 + 1.5	14.5	3.9
T8 Falcon + diuron + Gramoxone	3 + 4 + 3	14.2	3.5

Table 2 : Treatment effects on stalk heights (cm to TVD) and populations at 131 days after spraying and at harvest

— Treatment —	Rate (l product/ha)	Stalk heights (cm to TVD)		Populations (* 1000/ha)	
		131	Harv	131	Harv
T1 Control	-	249	336	173	136
T2 Sencor + diuron	3 + 2	232	334	185	123
T3 Premerlin	3.5	249	336	179	135
T4 Premerlin	7	249	339	179	136
T5 ICIA 0179	1	251	334	164	130
T6 ICIA 0179	2	243	340	163	129
T7 Falcon + diuron + Gramoxone	1.5 + 2 + 1.5	237	332	182	133
T8 Falcon + diuron + Gramoxone	3 + 4 + 3	225	332	171	138

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	-	164	12.6	20.8
T2 Sencor + diuron	3 + 2	156	12.0	18.8
T3 Premerlin	3.5	170	12.5	21.4
T4 Premerlin	7	166	12.6	20.8
T5 ICIA 0179	1	175	12.5	21.9
T6 ICIA 0179	2	166	12.0	20.0
T7 Falcon + diuron + Gramoxone	1.5 +2 + 1.5	156	12.1	18.9
T8 Falcon + diuron + Gramoxone	3 + 4 + 3	154	12.8	19.7
CV %		5.3	5.9	8.6
Standard error - Treatment means +/-		3.5	0.3	0.7
LSD (0,05)		10	0.9	2.0
LSD (0,01)		14	1.1	2.7

9. Comments

All new products or mixtures were tested at the standard and twice the standard rates. 21 mm of rain was recorded approximately 5 hours after the treatments were applied.

Sencor + diuron

The standard treatment resulted in minor scorch and some stunting of growth soon after spraying. Although growth appeared to recover, cane yields were reduced which, coupled with a suppression in cane quality was sufficient to lower sucrose yields significantly (Table 3).

Premerlin

Neither rate of this product had any significant effect on the yield of ratoon N14.

ICIA 0179

Although this product proved to be phytotoxic to sugarcane in the tray site trials, results from further investigations have proved the chemical to be safe under field conditions. This trial supports these findings as neither rate caused notable phytotoxicity to the crop.

Falcon + diuron + Gramoxone

Leaf scorch ratings were highest for these treatments with severe stunting of the crop recorded one month after spraying. Although growth had improved by maturity (Table 2) yields were nevertheless reduced particularly at the double rate.

10. Conclusion

The yield reduction for the Sencor + diuron treatment is unusual and the results are considered atypical for this mixture. Reductions in yield from the T7 and T8 treatments were expected due to paraquat being applied to the foliar parts of the plant at the post tillering stage. The attributes of ICIA 0179 are exceptional as apart from it's apparent safety on field grown cane, it is superior to many other treatments in pre-emergence weed control efficacy.

NBL/dlz
12/11/91