

**SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION**

Cat.No. : 1790
Project No. :
Code No. : HW 405/90/R1

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

1. Particulars of project :

This crop : 1st ratoon Site : Pongola Block 322 Region : Northern area Soil System : Komatipoort Soil form / series: Hutton/ Shorrocks Design : Randomised block Variety : N14 Fertilizer (kg/ha): N P K 140 28 140	Soil analysis Date : 19\10\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;">6.50</td> <td style="text-align: center;">-</td> <td style="text-align: center;">>40</td> <td style="text-align: center;">-</td> </tr> </table> <hr/> <p style="text-align: center;">ppm</p> <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;">35</td> <td style="text-align: center;">236</td> <td style="text-align: center;">788</td> <td style="text-align: center;">>350</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> </table> Age : 11,5 months Dates : 2/10/90 - 17/9/91 Rainfall : 786 mm Irrigation : 610 mm Total : 1396 mm	pH	OM%	Clay%	PDI	6.50	-	>40	-	P	K	Ca	Mg	Zn	Al	35	236	788	>350	-	-
pH	OM%	Clay%	PDI																		
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35	236	788	>350	-	-																

2. Objectives

Standard phytotoxicity programme.

3. Treatments

Rates (1 product/ha)

T1 Control	Handweeded
T2 Sencor + diuron	3 + 2
T3 Amigan	6
T4 Amigan	12
T5 Mamba 1	8
T6 Mamba 1	16
T7 Mamba 2	8
T8 Mamba 2	16

4. Design

Design : Randomised block
No. replications : 6
Whole plot size : 6 rows * 8 m * 1.4m = 67,2 m
Net plot size : 4 rows * 6 m * 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
Amigan	310 + 190 g/l	ametryn + terbutryn
Mamba 1	183 + 367 g/l (SC)	ametryn + MSMA
Mamba 2	367 + 390 g/l (SC)	MSMA + diuron

6. Application details

Treatment date : 13/11/90
Time : 4.00 - 6.00 am
Applicator : CP3
Nozzle : APM (green)
Pressure : 150 kpa
Output : 40 ml/sec
Output : 28.57 ml/m
Method : Over the row

7. Weather conditions

Treatment date : 13/11/90
General : Very hot
Dew : Nil
Soil surface : Very dry
Wind : Strong (NE)
Sunshine hours : 11.7
Temperature (°C)
 08h00 : 23
 14h00 : 34.8
Relative humidity (%)
 08h00 : 88
 14h00 : 38
Rainfall (mm)
 On day of spray : Nil
 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 16 days after spraying

— Treatment —	Rate (l product/ha)	% leaf scorch	Stunting
T1 Control	-	0	5.0
T2 Sencor + diuron	3 + 2	6.7	4.5
T3 Amigan	6	5.3	4.3
T4 Amigan	12	8.0	4.2
T5 Mamba 1	8	14.2	4.2
T6 Mamba 1	16	19.2	3.9
T7 Mamba 2	8	16.3	4.1
T8 Mamba 2	16	31.2	3.6

Table 2 : Treatment effects on stalk heights (cm to TVD) and populations at 107 days after spraying and at harvest

— Treatment —	Rate (l product/ha)	Stalk heights (cm to TVD)		Populations (* 1000/ha)	
		107	Harv	107	Harv
T1 Control	-	147	310	162	131
T2 Sencor + diuron	3 + 2	145	307	176	136
T3 Amigan	6	147	297	181	140
T4 Amigan	12	144	317	175	136
T5 Mamba 1	8	144	315	175	140
T6 Mamba 1	16	142	320	179	121
T7 Mamba 2	8	142	317	180	134
T8 Mamba 2	16	143	323	181	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	-	166	12.5	20.8
T2 Sencor + diuron	3 + 2	161	12.1	19.5
T3 Amigan	6	158	12.2	19.4
T4 Amigan	12	161	12.3	19.8
T5 Mamba 1	8	160	12.3	19.6
T6 Mamba 1	16	153	12.5	19.1
T7 Mamba 2	8	156	12.3	19.1
T8 Mamba 2	16	159	12.3	19.5
CV %		4.5	3.2	5.5
Standard error - Treatment means +/-		2.9	0.2	0.4
LSD (0,05)		8	0.5	1.3
LSD (0,01)		11	0.6	1.7

9. Comments

All new products were tested at the standard and twice the standard rates.

Sencor + diuron

Although visual ratings and crop measurements did not show significant effects from the standard treatment, cane yields and quality at harvest were reduced sufficiently to result in a significant loss in sucrose yield (Table 3).

Amigan

The lower rate of this product appeared to have a greater stunting effect on stalk growth compared to the double rate (see harvest results Table 2). Both rates resulted in loss of yield but significant levels were only reached in cane treated with the lower rate.

Mamba 1

The initial scorch and stunting recorded two weeks after spraying was slightly more severe in cane treated at the double rate. Growth was still reduced at about 15 weeks after spraying but had recovered by the time the crop was harvested (Table 2). Stalk populations and yield losses were greater in cane treated with the double rate where reductions were statistically significant compared to the unsprayed control.

Mamba 2

Visual symptoms of leaf scorch were dramatic with this product particularly at the highest rate. Surprisingly, the effect on stalk heights and populations was not as impressive, but yields were nevertheless depressed particularly at the standard rate.

10. Conclusion

The new products tested were phytotoxic to sugarcane when applied post-emergence over the foliage. With the exception of Mamba 1, the standard rates proved to be as damaging to cane as the double rates.

NBL/d1z
19/11/91