

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Cat No : 1683
 Project No : 3677
 Code No : HW 361/88/R3

Title : Phytotoxicity of Pivot combinations applied pre-emergence on ratoon cane.

1. OBJECTIVES: To assess the phytotoxicity of Pivot combinations on ratoon cane.

2. PARTICULARS OF PROJECT

This crop : Third ratoon
 Site : Pongola Farm, Block 320
 Region : Northern area
 Soil system : Komatipoort
 Soil form/series: Hutton/Storrocks
 Variety : N14
 Age (mths) : 11,7
 Dates : 13.9.88 - 5.9.89
 Rainfall (mm) : 730
 Irrigation (mm) : 549
 Total (mm) : 1279
 LTM rainfall(mm): 644

Soil analysis				Date: 22.09.89
pH (water)	Clay (%)	OM (%)		
6,5	-	-		
ppm				
P	K	Ca	Mg	
48	260	987	>350	
Fertilizer				
		N	P	K
		123	24	123

3. DESIGN

Design : Randomised blocks
 Replication : 6
 Whole plot size : 6 rows x 8m x 1,4m = 67,2m²
 Net plot size : 4 rows x 6m x 1,4m = 33,6m²
 Row spacing : 1,4m

4. TREATMENTS

See results.

8. RESULTS

Table I Pre-emergence herbicide effects on percentage leaf scorch, stunting, stalk height measurements and populations

Treatment	Rate (kg or ℓ) product ha ⁻¹	Leaf scorch %	Stunting rating *	Stalk heights (cm)	Stalk counts (x10 ³ ha ⁻¹)
T1 Pivot + Harness	1,5 + 2,8	12	3,5	118	167
T2 Pivot + Harness	3 + 5,6	15	3	110	184
T3 Pivot + Diuron + Harness	1 + 1,7 + 1,9	5	4	124	174
T4 Pivot + Diuron + Harness	2 + 3,3 + 3,8	6	4	121	176
T5 Pivot + Harness + Atrazine	1 + 1,9 + 2	5	3,5	123	181
T6 Pivot + Harness + Atrazine	2 + 3,8 + 4	8	4,5	117	173
T7 Sencor + Diuron	6 + 5	0	5	123	178
T8 Control	Unsprayed	0	5	120	213

* Stunting rating 5 = no visual stunting
1 = severe stunting

Table II Pre-emergence herbicide effects on cane yield (tons/ha) sucrose % cane and sucrose yield (tons/ha)

Treatment	Rate (kg or ℓ) product ha ⁻¹	Cane (t/ha) %	Sucrose % cane	Sucrose (t/ha)
T1 Pivot + Harness	1,5 + 2,8	141	13,5	19,0
T2 Pivot + Harness	3 + 5,6	145	13,2	19,1
T3 Pivot + Diuron + Harness	1 + 1,7 + 1,9	146	13,5	19,7
T4 Pivot + Diuron + Harness	2 + 3,3 + 3,8	143	13,2	18,7
T5 Pivot + Harness + Atrazine	1 + 1,9 + 2	144	13,5	19,4
T6 Pivot + Harness + Atrazine	2 + 3,8 + 4	146	13,0	18,9
T7 Sencor + Diuron	6 + 5	143	13,5	19,3
T8 Control	Unsprayed	143	13,3	19,1
CV %		4,6	6,4	7,4
SE Treatment means	±	2,7	0,4	0,6
LSD (0,05)		8	1,0	1,7
(0,01)		10	1,4	2,2

9. COMMENTS

All mixtures other than Sencor + Diuron were tested at standard and double the standard rate.

Pivot + Harness

Both rates of this mixture resulted in stunting and scorch which caused slightly reduced stalk heights and populations. These effects were not significant enough to influence cane or sucrose yields.

Pivot + Diuron + Harness

Leaf scorch, stunting and growth measurements were not effected as much as the previous mixture where diuron was excluded. Cane and sucrose yields for both rates of Pivot + diuron + Harness were similar to one another as well as to the control.

Pivot + Harness + atrazine

Double the standard rate of this mixture increased the phytotoxic effect on cane (Table I) but the influence on yields by these treatments were non-significant.

Sencor + Diuron

The high application rate of this mixture caused no leaf scorch or stunting but appeared to reduce cane population compared to the unsprayed control. However, yields for this treatment were non-significantly different compared to control.