

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Cat No : 1677
Project No : 3670
Code No : HW 354/88/R3

Title : Phytotoxicity from Addit applied early post emergence

OBJECTIVES : To determine whether the addition of Addit to a sulphonyl urea (Classic) increases the level of phytotoxicity

1. PARTICULARS OF PROJECT

This crop	: 3rd ratoon	Soil analysis			Date: 19/8/88
Site	: Pongola Block 302	pH	Clay	OM	
Region	: Northern area	(water)	(%)	(%)	
Soil system	: Komatipoort	6,6	>30	-	
Soil form/series	: Hutton/Shorrocks				
Variety	: NCo376				ppm
Age (mths)	: 11,9	P	K	Ca	Mg
Dates	: 21.7.88 - 18.7.89	44	158	1027	>350
Rainfall (mm)	: 755				Fertilizer (kg/ha)
Irrigation (mm)	: 671		N	P	K
Total (mm)	: 1416		139	27,8	139
LTM Rainfall (mm):	650				

2. DESIGN

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

3. TREATMENTS

See results.

4. CHEMICAL FORMULATIONS USED

	Product	Formulation	Active ingredient
P1	Diuron	800g/ℓ sc	Diuron
P2	Gesapax	500g/ℓ sc	Ametryne
P3	Actril DS	600g + 100 g/ℓec	2,4-D + Ioxynil
P4	Classic	250g/Kg Df	Chlorimuron-ethyl
P5	Addit	-	-

5. APPLICATION DETAILS

Treatment dates	: 19.9.1988
Time of application	: 15h30 - 17h17
Applicator	: CP3
Nozzle	: APM Green
Height of cane	: 20 - 30 cm (to leaf bend)
Method	: Over the row
Output	: 34,8 mL/sec
Output	: 24,8 mL/m ²

6. WEATHER CONDITIONS AT TIME OF SPRAYING

Treatment dates	: 19.9.1988
General	: Clear and hot
Dew	: Nil
Soil surface	: Moist
Wind	: Slight
Sunshine hours	: 10,2
Temperature (°C) 08h00	: 13,6
14h00	: 26,0
Relative humidity (%) 08h00	: 77
14h00	: 30
Rainfall: On day of spray (mm)	: Nil
No days to first rain:	8
At first rain (mm)	: 1,2
On first 14 days (mm):	1,4

7. RESULTS

Table 1 : Treatment effects on percentage leaf scorch, stunting and growth measurements

Treatment	Rate (ℓ or kg) Product/ha	Leaf scorch %		Stunting*		Populations (x1000/ha)		Heights (cm to TVD)	
		5.10.88	21.11.88	5.10.88	21.11.88	6.2.89	18.7.89	6.2.89	18.7.89
Classic + Diuron + Addit	0,12 + 2,5 + 0,5%	10,8	3,0	4,4	3,8	188	138	176	300
Classic + Diuron + Addit	0,24 + 5 + 0,5%	13,7	2,3	4,4	3,8	189	138	180	292
Classic + Gesapax + Addit	0,12 + 2,5 + 0,5%	9,0	0	4,2	4,0	180	143	182	292
Classic + Gesapax + Addit	0,24 + 5 + 0,5%	8,7	0,6	4,5	4,2	180	141	181	291
Classic + Diuron	0,24 + 5	8,7	1,6	4,3	4,0	183	143	182	295
Classic + Gesapax	0,24 + 5	7,8	0,6	4,4	4,5	181	141	182	289
Actril + Diuron	2,5 + 5	9,7	1,6	4,6	3,8	180	129	174	288
Control	-	0	0	5,0	5,2	188	135	190	294

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

Table 2 : Treatment effects on cane yield (tons/ha), sucrose % cane and sucrose yield (tons/ha)

Treatment	Rate (ℓ or Kg) Product/ha	Cane (t/ha)	Sucrose % cane	Sucrose (t/ha)
Classic + Diuron + Addit	0,12 + 2,5 + 0,5%	127	12,4	15,6*
Classic + Diuron + Addit	0,24 + 5 + 0,5%	122	12,8	15,6*
Classic + Gesapax + Addit	0,12 + 2,5 + 0,5%	128	12,5	16,0
Classic + Gesapax + Addit	0,24 + 5 + 0,5%	124	12,7	15,8
Classic + Diuron	0,24 + 5	129	12,5	16,1
Classic + Gesapax	0,24 + 5	135	12,6	17,0
Actril + Diuron	2,5 + 5	127	12,2	15,4
Control	-	134	12,7	17,1
CV %		6,5	3,8	7,2
SE Treatment means		± 3,4	0,2	0,5
LSD (0,05)		10	0,6	1,4
(0,01)		13	0,8	1,8

8. RESULTS

Actril + Diuron

High rates of the standard treatment caused scorch and stunting and appeared to suppress both stalk populations and growth. Sucrose yields were also significantly lowered.

Classic + Diuron and Classic + Diuron + Addit

The high rates of Classic + Diuron with Addit produced greater initial leaf scorch as well as a significant cane yield depression at harvest. Both the standard and twice the standard rates of Classic and Diuron with Addit reduced sucrose yields significantly (Table 2). In general phytotoxicity to cane was increased with the addition of Addit to the mixture.

Classic + Gesapax and Classic + Gesapax + Addit

Double the standard rates of Classic + Gesapax with Addit had little visual effect on the cane, but yields were reduced more than where standard rates were applied. The inclusion of Addit at 5% again increased phytotoxicity and lowered yields.