

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Cat No : 1593
 Project No: 3401
 Code No : HW311/86/R6

TITLE: Phytotoxicity using different nozzles

OBJECTIVES:

To assess the phytotoxic effects of one herbicide mixture (diuron + paraquat) when applied by a range of nozzles.

1. PARTICULARS OF THE PROJECT:

This crop	: 6th ratoon	Soil analysis	Date: 6/11/86		
Site	: Shakaskraal Field Station	pH (water)	Clay %	OM %	
Region	: North Coast Coastal	5,9	<29		
Soil system	: Umzinto	P ppm	K ppm	Ca ppm	Mg ppm
Soil form/series:	Longlands/Waldene	35	73	462	110
Variety	: NCo376	Fertilizer			
Age	: 10,6 months	t/d kg/ha	N	P	K
Dates	: 25/9/86 - 12/8/87	t/d kg/ha	-	30	-
Rainfall	: 909 mm		188	-	188
Irrigation	: -		188	30	188
Total	: 909 mm				

2. DESIGN:

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

3. TREATMENTS:

Treatments	Rates or kg product/ha	Time of application	Method
T1 Albuz APM Green + Diuron (80) + Gramoxone (20)	2,5 + 2	Post	Interrow
T2 Spraying systems TK5 + Diuron + Gramoxone	2,5 + 2	Post	Interrow
T3 Polijet ICI + Diuron + Gramoxone	2,5 + 2	Post	Interrow
T4 Delavan 5 + Diuron + Gramoxone	2,5 + 2	Post	Interrow

4. CHEMICAL FORMULATIONS USED:

Product	Formulation	Active ingredients
P1 Diuron (80)	800 g/l sc	diuron
P2 Gramoxone (20)	20 g/l soln	paraquat

5. APPLICATION DETAIL:

Treatment dates : 14/11/1986
 Time of application : 06h30
 Applicator : CP3
 Nozzle : Treatments
 Pressure : 0,6 - 1 bar
 Height of cane : 4 - 5 lea
 Method : Interrow
 Output : 32 m /s
 Output : 23 m /m²

6. WEATHER CONDITIONS AT TIME OF SPRAYING

Treatment dates : 14/11/1986
 General : Cloudy and mild
 Dew : Slight
 Soil surface : Moist
 Wind : Slight SW
 Sunshine hours : 3,9
 Temperature (°C)
 08h00 : 22,0
 14h00 : 24,0
 Relative humidity %
 08h00 : 79
 14h00 : 71
 Rainfall
 mm on day of spray : 1,8
 No days to 1st rain : 1
 mm at 1st rain : 20,8
 mm in 1st 14 days : 35,2

7. RESULTS:

Table 1: Heights and plant population measured at various intervals

Treatment	Plant population/ha (X10 ³)				Heights cm		
	11/11/87	13/1/87	2/3/87	12/8/87	13/1/87	2/3/87	12/8/87
Albuz APM green	186	233	143	161	59	127	216
Spraying systems TK5	168	220	142	158	59	125	212
Polijet ICI	175	219	144	162	57	124	206
Delavan 5	179	220	145	160	60	125	205

Table 2: Yield measurements at harvest

Treatment	Cane t/ha	Sucrose t/ha	POL % cane
Albuz APM Green	85	9,9	11,7
Spraying systems TK5	77	9,3	12,1
Polijet ICI	80	9,9	12,4
Delavan 5	77	9,4	12,3
SE of treatment means	+ 4	+ 0,7	+ 0,4
CV %	9,1	14,5	6,1
LSD (0,05)	12	2,2	1,2
(0,01)	17	3,2	1,7

8. DISCUSSION AND CONCLUSION

There were no phytotoxic effects noticeable in the heights and plant populations observed (Table 1) as a consequence of using different nozzle systems.

The use of different nozzle systems also did not affect the yield measurements at harvest. There were no significant differences observable for t cane/ha, t sucrose/ha and pol (% cane).