

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: HW290/85/R3

Cat.No.: 1543

Title: Ratoon cane phytotoxicity trial.

1. Particulars of the project

This crop: 3rd ratoon

Site: Pongola F. Stn.

Region: Northern area

Soil system: Komatipoort

Soil form/series: Hutton/  
Shorrocks

Design: Randomised blocks

Variety: NCo376

<u>Fertilizer/ Ameliorants</u>	<u>N</u>	<u>P</u>	<u>K</u>
	134	27	134

Soil analysis: Date: 20.11.85

<u>pH</u>	<u>Clay%</u>
6,8	> 30

<u>ppm</u>			
<u>P</u>	<u>K</u>	<u>Ca</u>	<u>Mg</u>
16	128	772	>220

Age: 11,3 mths    Dates: 13.11.85-21.10.86

Rainfall: 535 mm    L.T.M. 651 mm

Irrigation: 793 mm

Total 1328 mm

Weather conditions at spraying:

<u>Date</u>	12.12.85
<u>General</u>	Overcast
<u>Rainfall: On day of spray (mm)</u>	0,4 (Nil during spraying)
<u>No. days to 2nd rain</u>	1
<u>No. mm at 2nd rain</u>	2,1
<u>Sunshine hours</u>	1,5
<u>Dew</u>	Heavy
<u>Wind</u>	Nil
<u>Temperature (°C) 8 a.m.</u>	20,1
<u>2 p.m.</u>	26,8
<u>Relative humidity (%) 8 a.m.</u>	90
<u>2 p.m.</u>	59

2. Objectives

To assess the effects of herbicide treatments on ratoon cane.

3. Treatments

<u>Products</u>	<u>Rate (kg or ℓ prod. ha<sup>-1</sup>)</u>
1. Control (unsprayed)	-
2. Diuron (80) + Actril DS (70)	2,5 + 1,25
3. Bladex Plus (50) + S	9
4. Bladex Plus + Actril DS	8 + 1
5. Bladex Plus + S	18
6. Diuron + Sencor (70)	2 + 2
7. Diuron + Sencor + Actril DS	2 + 2 + 1

4. Experimental

Plots were 8 m x 6 rows x 1,4 m gross and 6 m x 4 rows x 1,4 m net in size.

Conditions and application details

Time of spray	09.15 - 11.30
Applicator	CP3
Nozzle	APM Green
Output	255 ℓ/ha
Pressure	1,3 bars
Method	Directly over the cane
No. leaves/shoot	6 - 7
Soil surface	Moist

Table 1 - Crop measurements taken 0,8; 4,2 and 8,3 months after treatments were sprayed.

TREATMENTS	Rate in (kg or ℓ prod. ha <sup>-1</sup> )	Stalk length (cm)			Stalk population (1000/ha)		
		T+0,8	T+4,2	T+8,3	T+0,8	T+4,2	T+8,3
1. Control (unsprayed)	-	83	215	272	356	237	169
2. Diuron + Actril DS	2,5 + 1,25	61	200	264	349	244	177
3. Bladex Plus + S	9	76	213	272	338	258	175
4. Bladex Plus + Actril DS	8 + 1	76	203	263	340	242	167
5. Bladex Plus + S	18	74	209	267	333	240	167
6. Diuron + Sencor	2 + 2	70	213	269	338	243	170
7. Diuron + Sencor + Actril DS	2 + 2 + 1	79	205	265	336	237	177

Stalk length

1. 8,3 months after spraying, all Actril DS treatments resulted in substantially lower stalk length.
2. The standard rate of Bladex Plus is the only treatment with stalk lengths equal to that of control plots and the double rate of the same treatment only marginally reduced stalk length.

Stalk population

There appears to be no treatment effect on stalk population 8,3 months after spraying.

Table 2 - Yield data at harvest

TREATMENTS	Rate in (kg or ℓ prod. ha <sup>-1</sup> )	Yield			Crop measurements	
		Cane t/ha	Sucrose % cane	Sucrose t/ha	Stalk length (cm)	Stalk popul. (1000/ha)
1. Control (unsprayed)	-	151	14,6	21,9	276	183
2. Diuron + Actril DS	2,5 + 1,25	141	14,0	19,8	275	182
3. Bladex Plus + S	9	153	14,3	21,8	276	192
4. Bladex Plus + Actril DS	8 + 1	141	14,2	20,0	275	180
5. Bladex Plus + S	18	153	14,3	21,8	283	191
6. Diuron + Sencor	2 + 2	145	14,3	20,6	279	193
7. Diuron + Sencor + Actril DS	2 + 2 + 1	139	14,4	20,0	274	188
C.V.%		3,9	3,6	4,9	2,4	7,1
SE D		3,33	0,29	0,58	3,79	7,61
LSD (0,05)		6,77	0,60	1,19	7,70	15,48
LSD (0,01)		9,09	0,80	1,61	10,35	20,79

Yield (a) Cane t/ha

1. There were significant reductions in cane t/ha from Diuron + Actril DS, Bladex Plus + Actril DS and from Diuron + Sencor + Actril DS treatments when applied over the cane row. The reduction in yield from the last treatment being significant at the 0,01 level.
2. A reduction in cane t/ha from the Sencor + Diuron treatment was also apparent although not statistically significant.
3. Bladex Plus treated plots at the standard and at the double rates yielded slightly more than the control plots.

(b) Sucrose t/ha

1. All 3 treatments with Actril DS (sprayed over the row) resulted in lower sucrose t/ha yields. This was significant at the 0,01 level.
2. Diuron + Sencor also reduced sucrose yields significantly but at the 0,05 level.
3. Both Bladex Plus + S rates yielded only 0,1 t/ha sucrose loss than the control.

Crop measurements

1. There were no statistically significant differences in stalk lengths from treatments at harvest.
2. Both Bladex Plus + S treatments appeared to increase stalk population. This was not statistically significant. This was similar with the Diuron + Sencor treatment.

Conclusions

1. All treatments containing Actril DS should be applied as directed sprays in the interrow, avoiding contact with cane foliage as far as possible. The same applies to the Diuron + Sencor treatment.
2. Bladex Plus + S, when not mixed with other chemicals, is a very safe treatment to use in sugarcane.
3. The earlier stunting effects registered at an early growth stage from Actril DS treatments had disappeared at harvest. However, depressed yields were still obtained from those treatments.

GW/SN  
11 December 1986