

**SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION**

Cat No : 1709
Project No :
Code No : HW 384/89/R1

Title : Cane eradication methods

- Objectives:**
- ° To determine whether minimum tillage using Roundup is as effective as rotavating.
 - ° To establish whether cutting back using a rotary slasher enhances the efficacy of Roundup compared to cutting back with cane knives.

1. Particulars of project

This crop : 1st ratoon Site : Pongola Farm Block 304 Region : Northern irrigated Soil system : Komatipoort Soil form/series: Hutton/Shorrocks Varieties : N19, CP66/1043, NCo376 Age (mths) : 6,8 Dates : 3/10/89 - 26/4/90 Rainfall (mm) : 828 Irrigation (mm) : 366 Total : 1194	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="4">Soil analysis</th> </tr> <tr> <td style="width: 25%;">pH (water)</td> <td style="width: 25%;">Clay (%)</td> <td colspan="2" style="width: 50%;">OM (%)</td> </tr> <tr> <td></td> <td>> 30</td> <td colspan="2"></td> </tr> <tr> <td colspan="4" style="text-align: center;">ppm</td> </tr> <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> </tr> <tr> <td colspan="4" style="text-align: center;">Fertilizer</td> </tr> <tr> <td colspan="2"></td> <td style="text-align: center;">N</td> <td style="text-align: center;">P</td> </tr> <tr> <td colspan="2"></td> <td colspan="2" style="text-align: center;">K</td> </tr> </table>	Soil analysis				pH (water)	Clay (%)	OM (%)			> 30			ppm				P	K	Ca	Mg	Fertilizer						N	P			K	
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2. Design

Design : Randomised block
 Replication : 6
 Whole plot size : 6 rows x 16 m x 1,4 m = 134,4 m²
 Net plot size : 4 rows x 14 m x 1,4 m = 78,4 m²
 Row spacing : 1,4 m

3. Experimental :

The trial was cut by hand in early October 1989 and the rotavating treatment was carried out two weeks after harvesting. The mechanical and hand slashing operations were done in November, 7 weeks after harvesting. A rotary mower was used to mechanically slash the cane. Cane that was neither slashed back or rotavated was sprayed with Roundup 9 weeks after harvesting but due to poor kill, had to be spot-sprayed with Roundup 11 weeks after harvesting. The slashed-back treatments were sprayed with Roundup in December, 11 weeks after harvesting. Rotavating had to be carried out 3 times due to excessive regrowth.

4. Treatments

	Rate ℓ (ha ⁻¹)	Weeks after harvest
T1 Control - (Rotavate only)		2 (October)
T2 Roundup	8	9 (December)
T3 Hand slash/Roundup	8	7/11 (Nov/Dec)
T4 Mechanical slash/Roundup	8	7/11 (Nov/Dec)

5. Chemical formulations used

Product	Formulation	Active ingredient
Roundup	359 g/ ℓ (sol)	Glyphosate

6. Application details

Treatment dates: Rotavate (T1) - 18/10/1989
 Roundup (T2) - 7/12/1989
 - 20/12/1989 (spot-sprayed)
 Slash-back (T3 and T4) : 22/11/1989
 Roundup (T3 and T4) : 20/12/1989

Applicator : CP3
 Nozzle : APM Green
 Pressure : 150 kpa
 Output (T2) : 36,7 m ℓ /sec
 (T3 and T4) : 36,5 m ℓ /sec
 Output (T2) : 26,2 m ℓ /m²
 (T3 and T4) : 26,1 m ℓ /m²
 Method : Over the row

7. Weather conditions at spraying

	T2	T3 and T4
Date	7/12/1989	20/12/1989
Time	5.00 am	9.15 am
General	Overcast	Very hot
Dew	Heavy	Nil
Soil surface	Damp	Dry
Wind	Nil	Nil
Sunshine hours	8,7	7,6
Temperature (°C)	08h00 19,8	27,4
	14h00 26,8	31,2
Relative humidity (%)	08h00 83	70
	14h00 61	59
Rainfall (mm)		
On day of spray	8,2	Nil
Number days to first rain	0	10
Amount of first rain (mm)	8,2	1,6
Total in first 14 days (mm)	59,2	10,4
Total for duration of trial	828	828

8. Results:

Table I : Stalk populations (x 1000/ha) and complete stools (x 1000/ha) counts carried out approximately 6,8 months after harvesting

Treatment	Stalk populations	Stool counts
T 1 Control	148,0	19,1
T 2 Roundup	12,3	1,4
T 3 Hand slash/Roundup	20,2	2,7
T 4 Mechanical slash/Roundup	14,4	2,6
CV%	73	53
SE Treatment means	4,7	0,48
LSD 0,05	14,7	1,5

Note: Statistics are for treatments 2, 3 and 4 only.

9. Comments

- ° CV% were unexpectedly high for the trial.
- ° Different growth patterns resulted from the two cut-back techniques. Regrowth of hand cut cane was more even compared to mechanically slashed cane which was still dominated by primary tillers (as described in HW 387/89/R9)
- ° T2 had to be heavily spot-sprayed with Roundup as it was obvious that the initial application would have resulted in unacceptable kill. This may have been attributed to the heavy dew and rainfall that was recorded on the day of application. However, differences between T2 and the slashed-back/Roundup treatments (T3 and T4) were small despite a total of $\pm 16 \text{ L/ha}$ Roundup applied to the former treatment.
- ° Cane mechanically slashed appeared to be slightly more susceptible to Roundup than hand-slashed cane (as reported for HW 387/89) but differences were non-significant.
- ° Regrowth in the rotavated plots (T1) was extremely vigorous and the operation had to be repeated three times. This confirms the unsuitability of this method for cane eradication for heavy soils during summer.