

**SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION**

Cat.No. : 1791
Project No. :
Code No. : HW 392/90/P

Title: Cane eradication with Roundup or Fusilade Super for early spring cut cane.

1. Particulars of project:

This crop : Half plant and half 1st ratoon Site : Mount Edgecombe Field 6 Region : North coast - coastal Soil System : Umzinto coast Lowlands Soil form / series: Longlands/Westleigh/Swartland Design : Randomised block Variety : NCo376 Fertiliser (kg/ha): N P K (planting) 13 20 26 (top - dress) 100 - 100 ----- 113 20 126	Soil analysis Date : No sample taken <hr/> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">pH</td> <td style="text-align: center;">OM%</td> <td style="text-align: center;">Clay%</td> <td style="text-align: center;">PDI</td> </tr> <tr> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> <tr> <td colspan="4" style="text-align: center;">ppm</td> </tr> <tr> <td colspan="4"><hr/></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> <td style="text-align: center;">Zn</td> <td style="text-align: center;">Al</td> </tr> <tr> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> </table> Age : 14.3 months Dates : 20/9/90 - 28/11/91 Rainfall : 1119 mm Irrigation : Nil Total : 1119 mm	pH	OM%	Clay%	PDI	-	-	-	-	ppm				<hr/>				P	K	Ca	Mg	Zn	Al	-	-	-	-	-	-
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2. Objectives

- * To determine to what extent slashing back improves the efficacy of Roundup or Fusilade Super compared to spraying normally ratooned cane.
- * To establish whether a new crop can be successfully planted in the interrows of an existing crop soon after harvesting by utilising herbicide spray shields.
- * To determine whether eradication treatments influence the growth and yield of the plant cane.

3. Treatments

	Rates (l product/ha)
T1 Roundup	8
T2 Hand slash/Roundup	8
T3 Mechanical slash/Roundup	8
T4 Fusilade Super	6
T5 Hand slash/Fusilade Super	6
T6 Mechanical slash/Fusilade Super	6

4. Design

Design : Randomised block
No replications : 6
Row spacing : 1.4m
Whole plot size : 5 rows x 10m x 1.4m = 70m²
Net plot size : 3 rows x 8m x 1.4m = 33,6m²
Breaks : 1m between ends of plots
Guard rows : One either side
End effects : 1m each end

5. Chemical formulations used

Product	Formulation	Active ingredient
Roundup	360g/l (SL)	glyphosate
Fusilade Super	125g/l (SC)	fluazifop-P

6. Application details

Treatment dates : Harvest - 7/9/90
Interrow planting - 20/9/90
Cut - back (ratoon)- 5/11/90
Sprayed (ratoon) - 30/11/90

Spray time : 9.00am - 11.00am
Applicator : CP3
Nozzle : 2 x APM (green) mounted in fully enclosed drag shield
Pressure : 150 kpa
Method : Over the row

7. Weather conditions at spraying

Treatment date : 30/11/1990
General : Sunny and hot
Dew : Nil
Soil surface : Dry
Wind : Gusty (NE)
Sunshine hours : 7.9
Temperature (°C)
 08h00 : 24.5
 14h00 : 26.4
Relative humidity (%)
 08h00 : 82
 14h00 : 69

Rainfall (mm)
 On day of spray : Nil
 No. days to first rain : One
 At first rain : 24
 In first 14 days : 99
 Total for duration of trial : 1119

8. Results

Table 1: Shoot heights (cm to TVD) and populations (* 1000/ha) for the ratoon crop just prior to spraying.

Treatment	Rate (l/ha)	Heights (cm to TVD)	Populations (*1000/ha)
T1 Roundup	8	22	226
T2 Hand slash/Roundup	8	8	198
T3 Mechanical slash/Roundup	8	13	221
T4 Fusilade Super	6	21	215
T5 Hand slash/Fusilade Super	6	9	204
T6 Mechanical slash/Fusilade Super	6	14	204

Table 2: Assessment of stool and tiller regrowth (* 1000/ha) of the ratoon crop approximately 4 months after spraying.

Treatment	Rate (l/ha)	Tillers	Stools
T1 Roundup	8	45.0	8.5
T2 Hand slash/Roundup	8	13.3	4.7
T3 Mechanical slash/Roundup	8	29.0	5.8
T4 Fusilade Super	6	25.0	4.3
T5 Hand slash/Fusilade Super	6	20.1	3.0
T6 Mechanical slash/Fusilade Super	6	22.8	3.7

Table 3: Treatment effects on stalk heights (cm to TVD) and populations (* 1000/ha) of the plant cane at 4 and 12 months after spraying.

Treatment	Rate (l/ha)	Heights		Populations	
		4	12	4	12
T1 Roundup	8	111	167	97	80
T2 Hand slash/Roundup	8	121	172	95	87
T3 Mechanical slash/Roundup	8	117	169	92	84
T4 Fusilade Super	6	101	149	80	69
T5 Hand slash/Fusilade Super	6	108	156	91	78
T6 Mechanical slash/Fusilade Super	6	106	160	87	78

Table 4: Treatment effects on plant cane yield (tons/ha) sucrose % cane, sucrose yield (tons/ha).

Treatment	Rate (l/ha)	Cane yield (tons/ha)	Sucrose% cane	Sucrose (tons/ha)
T1 Roundup	8	51	11.5	5.9
T2 Hand slash/Roundup	8	58	11.9	7.0
T3 Mechanical slash/Roundup	8	56	12.2	6.8
T4 Fusilade Super	6	39	11.8	4.6
T5 Hand slash/Fusilade Super	6	46	11.1	5.1
T6 Mechanical slash/Fusilade Super	6	48	11.5	5.5
CV %		13.7	5.2	15.5
Standard error - Treatment means +/-		2.8	0.2	0.4
LSD (0,05)		8	0.7	1.1
LSD (0,01)		11	1.0	1.4
Slashing				
No slash		45	11.6	5.2
Hand slash		52	11.5	6.0
Mechanical slash		52	11.8	6.1
Standard error - slashing means +/-		2	0.2	0.3
LSD (0,05)		6	0.5	0.8
LSD (0,01)		8	0.7	1.0
Herbicides				
Roundup		55	11.9	6.5
Fusilade Super		44	11.4	5.0
Standard error - herbicide means +/-		1.6	0.1	0.2
LSD (0,05)		5	0.4	0.3
LSD (0,01)		6	0.6	0.8

9. Comments

9.1 Ratoon crop

- * Cane that was previously slashed - back was far shorter at spraying than that which was not slashed (Table 1). This was due to the regrowth being very even and a lack of primary tiller development after slashing.
- * From the results in Table 2, it can be seen that tiller and stool recovery after spraying was greater in the non-slashed plots. In addition, hand slashed cane appeared to result in slightly better cane mortality than the mechanically slashed plots. Counts done on stool regrowth showed 6l/ha of Fusilade Super to be slightly more effective than 8l/ha of Roundup.

9.2 Plant crop

- * The average height of the plant crop at spraying was approximately 25cm. Despite all spraying being conducted with the use of a completely enclosed shield, adjacent crop damage from Fusilade Super was extreme as indicated from stalk heights and population counts in Table 3. Fusilade volatility damage was also present in larger cane growing in a field alongside the trial site. No such damage to plant cane was noticeable in or alongside the Roundup treated plots.
- * Damage caused by Fusilade volatility when eradicating the ratoon crop resulted in significant plant cane yield reductions at harvest (Table 4). Both chemicals reduced yield more in the non-slashed plots due possibly to the longer primary tillers and greater leaf contact and chemical translocation to the plant crop. There were no indications of the different ratoon crop slashing operations having any effect on the plant crop.

10. Conclusion

- * 6l/ha of Fusilade Super produced good cane eradication results that appeared to be slightly better than that achieved with 8l/ha per and Roundup by approximately 22% and 38% respectively (stools).
- * The cane killing potential of both chemicals appeared to be slightly better following hand slashing compared to mechanical slashing.
- * The concept of planting immediately after cutting the crop to be eradicated is feasible, but should only be considered with Roundup. From the results, spraying would best be carried out onto previously cut - back cane using a drag type fully enclosed shield to prevent excess leaf contact and chemical drift. The possible danger of RSD spread from the ratoon to the plant crop would also have to be considered.