SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: A/Min till 4/83

Cat. No.: 1402

Title: Pre-harvest minimum tillage

1. Particulars of the crop

| | | |
|---|---|---|
| This crop | : | Ratoon |
| Region | : | Inselele |
| Region | : | Coastal hinerland |
| Soil system | : | Umzinto Coastal Lowlands |
| Soil form | : | Mayo |
| Design | : | Incomplete Latin Square Six replications |
| Plot size | : | 6 rows x 10 m x 1,4 m |
| Variety | : | NCo 310 |
| Date and age at spraying | : | 17 October 1983 |
| | : | c 13 months |
| Date and age at harvest | : | 18 November 1983 |
| | : | c 14 months |
| Sampling dates | : | 17 October 1983 |
| | | 1 November 1983 |
| | | 18 November 1983 |
| Irrigation | : | Nil |
| Rainfall | : | 1 045 mm (67% of LTM) |

Spray method: $CO_2$ operated overhead boom with two TK 1,0 floodjets

Pressure: 200 kPa Volume/ha: 62 ℓ

Weather at spraying: Calm and warm

Condition of cane at spraying: Ten to 11 green leaves, well grown

Soil moisture content at spraying: 0-20 cm: 23%, 20-40 cm: 23%

Sampling technique: Four stalks selected from four predetermined points in net rows. Sampling points were advanced on each sampling occasion

2. Objectives

2.1 To determine whether Roundup and Fusilade applied at high rates as pre-harvest treatments will effectively kill the following crop.

2.2 To determine whether high rates of Roundup and Fusilade have any effects on cane quality within four weeks of application.

3. Treatments

3.1 Control
3.2 Roundup 8 ℓ/ha applied four weeks before harvesting
3.3 Roundup 12 ℓ/ha applied four weeks before harvesting
3.4 Fusilade 5 ℓ/ha applied four weeks before harvesting
3.5 Roundup 8 ℓ/ha + Frigate applied four weeks before harvesting

## 4. Results

### 4.1 Results from samples taken

| Dates and weeks after spraying / Treatments | ers % cane 17/10 0 | 1/11 2 | 18/11 4 | Purity % 17/10 0 | 1/11 2 | 18/11 4 |
|---|---|---|---|---|---|---|
| Control | 14,3 | 14,5 | 13,0 | 95 | 96 | 91 |
| Roundup 8 ℓ | 14,3 | 14,4 | 13,7* | 95 | 95* | 92* |
| Roundup 12 ℓ | 14,3 | 14,5 | 13,9** | 96* | 95* | 93** |
| Fusilade 5 ℓ | 14,2 | 14,7 | 14,0** | 95 | 96 | 95** |
| Roundup 8 ℓ + Frigate | 14,5 | 14,3 | 13,9** | 96* | 95* | 93** |
| Mean | 14,3 | 14,5 | 13,9 | 96 | 95 | 93 |
| CV % | 2,3 | 2,9 | 3,7 | 0,6 | 0,6 | 2,8 |
| LSD (P=0,05)* | 0,4 | 0,5 | 0,6 | 0,7 | 0,7 | 0,5 |
| LSD (P=0,01)** | 0,6 | 0,7 | 0,8 | 1,0 | 1,0 | 0,7 |
| | Mass ers (g/stalk) | | | Stalk mass | | |
| | | Changes from spraying date | | | Changes from spraying date | |
| Control | 98,4 | +11,1 | +13,1 | 689 | + 70 | +170 |
| Roundup 8 ℓ | 106,8 | + 4,3 | + 7,9 | 748 | + 26 | + 87 |
| Roundup 12 ℓ | 100,6 | +12,0 | + 2,6 | 700 | + 76 | + 43 |
| Fusilade 5 ℓ | 90,5 | +32,7** | + 22 | 635 | +107 | +168 |
| Roundup 8 ℓ + Frigate | 97,9 | +10,9 | +15,3 | 677 | + 83 | +136 |
| Mean | 98,8 | 14.2 | 12,2 | 690 | 724 | 121 |
| CV % | 13,5 | 8,8 | 14,3 | 13,2 | 9,9 | 13,2 |
| LSD (P=0,05)* | 16,3 | 12,1 | 19,5 | 111 | 95 | 131 |
| LSD (P=0,01)** | 22,5 | 16,7 | 26,8 | 153 | 131 | 180 |

4.2 Results at harvest (four weeks after spraying)

| Treatments | Cane t/ha | Sucrose % cane | Sucrose t/ha | Stalk population x 1 000/ha | Stalk heights (cm) |
|---|---|---|---|---|---|
| Control | 62 | 14,5 | 9,0 | 83 | 174 |
| Roundup 8 ℓ | 58 | 15,3** | 8,9 | 87 | 176 |
| Roundup 12 ℓ | 61 | 15,3** | 9,3 | 84 | 177 |
| Fusilade 5 ℓ | 60 | 15,4** | 9,2 | 83 | 175 |
| Roundup 8 ℓ + Frigate | 54* | 15,4** | 8,3 | 84 | 171 |
| Mean | 59 | 15,2 | 8,9 | 84 | 175 |
| CV % | 10,6 | 2,9 | 11,2 | 7,0 | 4,8 |
| LSD (P=0,05)* | 7,6 | 0,5 | 1,2 | 7,3 | 10,2 |
| LSD (P=0,01)** | 10,5 | 0,7 | 1,7 | 10,0 | 14,0 |

4.3 Effects on regrowth 4,5 weeks after harvesting the treated crop and stalk heights 8 weeks after harvesting

| Treatments | % surviving stools | Stalk heights (cm) | Stalk population x 1 000/ha | Stalk heights cm at 8 weeks |
|---|---|---|---|---|
| Control | 89 | 12 | 251 | 39 |
| Roundup 8 ℓ | 72 | 6 | 167 | 12 |
| Roundup 12 ℓ | 66 | 5 | 146 | 12 |
| Fusilade 5 ℓ | 86 | 9 | 253 | 28 |
| Roundup 8 ℓ + Frigate | 72 | 6 | 168 | 12 |

5. Comments

5.1 Pre-harvest effects

Cane quality was improved significantly (P=0,05 and P=0,01) by Roundup and Fusilade. The lower cane yields in treated plots negated the improvement in cane quality and no statistically significant increase in

sucrose yields were evident at harvesting.

5.2 Post-harvest effects

Stalk populations and surviving stools were respectively 33% and 17% lower in plots which had been treated with Roundup (8 $\ell^{-ha}$) than in untreated plots. There was little improvement on these effects from Roundup applied at 12 $\ell^{-ha}$.

The addition of Frigate to Roundup at 8 $\ell^{-ha}$ did not change the effects from Roundup applied alone.

Fusilade had no effect on the number of surviving stools or on stalk population. The effects of Fusilade on the heights of surviving stalks were less severe than from Roundup.

RAD/VSJ
6 March 1984