

**SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION**

Code No : R98/90/R2
Cat No : 1735

Title: Early season ripening of NCo376/screening.

Particulars of project

| | |
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| <p>This crop : 2nd ratoon Site : Pongola Field Station Block 302 Region : Northern area Soil system : Komatipoort Soil form/series: Hutton/Shorrocks Design : Randomised blocks Plot size : 16 m x 4 rows x 1,4 m Variety : NCo376 Date and age at spraying : 27.3.90 (8,5 months) Date and age at harvest : 21.6.90 (11,1 months) Sampling dates : 3/4; 20/4; 28/5; 19/6 Irrigation : 61 mm on 21 day cycle Rainfall (1988) : J A S O 0 12,8 7,3 83,3 N D J F 384,5 128,9 55,0 76,6 M A M J 54,7 55,1 3,0 0</p> | <p>Spray method: O₂ operated knapsack with 2 TK 1,0 floodjets Pressure: 150 kPa Volume/ha: 52 l Weather at spraying: Sunny, slight breeze Condition of cane at spraying: c 10 green leaves Immature looking, long upper internodes. Sampling technique: 4 stalks taken at 4 predetermined points in two net rows. Stalks broken at NBP except for post harvest sample drawn from bundles in each plot.</p> |
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Objectives:

1. To continue assessing the response of NCo376 to ripeners.
2. To determine the responses to Fusilade Super and Ethrel.
3. To determine the effects of Focus on quality and sucrose yields.

Treatments:

1. Control
2. Ethrel at 1,5 l/ha
3. Fusilade Super at 300 ml/ha (37,5 g a.i.)
4. Focus at 380 ml/ha (38 g a.i.)
5. Focus at 500 ml/ha (50 g a.i.)
6. Focus at 750 ml/ha (75 g a.i.)

Notes on sampling techniques

One day before burning a sample of 16 stalks per plot was taken. Stalks were cleaned of trash and leaves and in the process tops broke off at the natural breaking point (NBP). After harvesting 16 stalks were drawn randomly from the bundles in each plot. The data from these two samples have been compared. After harvesting 20 tops per plot were collected from control and Fusilade Super treated plots, weighed and analysed (material from 2 plots composited).

Results

Sample data

| Changes in stalk mass | | | | | Sucrose content (Pol %c) | | | | |
|-----------------------|--------------|---------|-----------|-----------|--------------------------|---------|-----------|-----------|-----------|
| Treatments | Date and DAT | 3/4 (6) | 20/4 (23) | 28/5 (62) | 19/6 (84) | 3/4 (6) | 20/4 (23) | 28/5 (62) | 19/6 (84) |
| Control | | 695 | 777 | 841 | 926 | 8,0 | 8,2 | 11,4 | 12,8 |
| Fusilade Super 300 ml | | 673 | 680* | 809 | 802* | 8,2 | 10,1 | 13,5** | 13,9 |
| Ethrel 1,5 l | | 699 | 807 | 879 | 869 | 7,8 | 9,5 | 13,0** | 13,9 |
| Focus 380 ml | | 727 | 784 | 891 | 922 | 8,2 | 9,1 | 11,9 | 13,1 |
| Focus 500 ml | | 741 | 750 | 839 | 951 | 8,0 | 9,5 | 12,5** | 13,1 |
| Focus 750 ml | | 722 | 744 | 837 | 893 | 8,0 | 9,2 | 12,3* | 13,6 |
| Mean | | 709 | 757 | 849 | 894 | 8,0 | 9,3 | 12,4 | 13,4 |
| C.V. % | | 11,0 | 10,6 | 10,6 | 10,1 | 8,7 | 10,4 | 5,0 | 7,8 |
| SED ± | | 45,2 | 46,2 | 52,0 | 51,9 | 0,40 | 0,55 | 0,36 | 0,60 |
| LSD (P=0,05)* | | 93,0 | 95,1 | 107,0 | 106,9 | 0,83 | 1,15 | 0,74 | 1,24 |
| LDS (P=0,01)** | | | | | | | | 1,0 | |

DAT = days after treating

Estimated recoverable sugar (g/stalk)

| Treatments | Date and DAT | 3/4 (6) | 20/4 (23) | 28/5 (62) | 19/6 (84) |
|-----------------------|--------------|---------|-----------|-----------|-----------|
| Control | | 45,5 | 52,9 | 81,2 | 117,8 |
| Fusilade Super 300 ml | | 44,7 | 59,2 | 95,8* | 110,8 |
| Ethrel 1,5 l | | 44,9 | 65,7 | 99,4* | 119,7 |
| Focus 380 ml | | 49,3 | 59,3 | 90,9 | 121,2 |
| Focus 500 ml | | 48,4 | 60,9 | 90,0 | 125,3 |
| Focus 750 ml | | 48,6 | 56,7 | 89,7 | 121,6 |
| Mean | | 46,9 | 59,1 | 91,2 | 119,4 |
| C.V. % | | 17,6 | 19,0 | 10,3 | 10,5 |
| SED ± | | 4,8 | 6,5 | 6,3 | 7,2 |
| LSD (P=0,05) | | 9,8 | 13,4 | 12,9 | 14,9 |

Comparison between pre and post harvest sample

| Treatments | Stalk mass(g) | | pol % cane | | ers g/stalk | |
|-----------------------|---------------|-------|------------|-------|-------------|-------|
| | pre | post | pre | post | pre | post |
| Control | 926 | 922 | 12,8 | 12,7 | 117,8 | 100,5 |
| Fusilade Super 300 ml | 802* | 849 | 13,9 | 14,4* | 110,8 | 107,1 |
| Ethrel 1,5 l | 869 | 914 | 13,9 | 13,4 | 119,7 | 108,1 |
| Focus 380 ml | 922 | 965 | 13,1 | 12,7 | 121,2 | 105,8 |
| Focus 500 ml | 951 | 992 | 13,1 | 13,3 | 125,3 | 114,3 |
| Focus 750 ml | 893 | 848 | 13,6 | 13,4 | 121,6 | 98,1 |
| Mean | 894 | 915 | 13,4 | 13,3 | 119,4 | 105,7 |
| C.V. % | 10,1 | 10,8 | 7,8 | 6,6 | 10,5 | 14,2 |
| SED ± | 51,9 | 57,0 | 0,60 | 0,51 | 7,2 | 6,1 |
| LSD (P=0,05) | 106,9 | 117,4 | 1,24 | 1,0 | 14,9 | 17,8 |

Harvest data (22/6)

| Treatments | t cane/ha | ers %c | t ers/ha | Stalk heights (cm) | Stalk Population x1000 ⁻¹ |
|-----------------------|-----------|--------|----------|--------------------|--------------------------------------|
| Control | 99,5 | 10,9 | 10,8 | 251 | 90 |
| Fusilade Super 300 ml | 93,3 | 12,7* | 11,8 | 251 | 81 |
| Ethrel 1,5 l | 104,0 | 11,8 | 12,2 | 244 | 79 |
| Focus 380 ml | 100,7 | 10,9 | 10,9 | 241 | 93 |
| Focus 500 ml | 102,0 | 11,5 | 11,7 | 255 | 83 |
| Focus 750 ml | 103,5 | 11,6 | 12,0 | 251 | 94 |
| Mean | 100,5 | 11,6 | 11,6 | 249 | 87 |
| C.V. % | 9,4 | 8,1 | 11,6 | 6,0 | 14,2 |
| SED ± | 5,4 | 0,53 | 0,78 | 8,6 | 7,1 |
| LSD (P=0,05)* | 11,2 | 1,1 | 1,6 | 17,8 | 14,7 |

Analysis of 'tops' left after harvest

| Treatment | Plot no. | g/stalk | pol %c | ers %c | suc g/stalk | ers g/stalk |
|----------------|----------|---------|--------|--------|-------------|-------------|
| Control | 27 + 36 | 82,5 | 2,1 | -0,8 | 1,7 | - |
| Control | 9 + 2 | 145,0 | 2,6 | -0,2 | 3,8 | - |
| Control | 18 + 20 | 140,0 | 4,2 | +1,5 | 5,9 | 2,1 |
| Fusilade Super | 30 + 4 | 87,5 | 5,1 | +2,5 | 4,4 | 2,2 |
| Fusilade Super | 8 + 34 | 125,0 | 5,7 | +3,2 | 7,1 | 4,0 |
| Fusilade Super | 13 + 24 | 70,0 | 4,2 | +1,5 | 2,9 | 1,1 |
| MEANS | | | | | | |
| Control | | 122,5 | 3,0 | 0,17 | 3,8 | 0,7 |
| Fusilade Super | | 94,1 | 5,0 | 2,4 | 4,8 | 2,4 |

Comments

Cane quality

- ° Responses to all chemicals in terms of cane quality were significant ($P=0,01$) 62 days after spraying. The response to Fusilade Super was significantly ($P=0,01$) greater than that from Focus.
- ° The response of 380 ml/ha of Focus was small while that from 500 ml/ha and 750 ml/ha were similar and statistically significant ($P=0,01$ and $P=0,05$ respectively).
- ° Cane quality of untreated cane rose by 1,4 units during the final 22 days before harvesting and by substantially less in chemically ripened cane so that responses were smaller 84 days after spraying.

Stalk mass

Focus and Ethrel had no effect on stalk mass. Fusilade Super lowered stalk mass substantially 23 days and 84 days after spraying. The effect of Fusilade Super (300 ml/ha) on stalk mass was not fully reflected in reduced cane yields 84 days after spraying.

Recoverable sucrose

Responses in terms of ers g/stalk were only significant ($P=0,05$) 62 days after spraying in cane treated with Fusilade Super and with Ethrel.

General

Figure 1 indicates that the best responses to Focus in terms of cane quality were from the 500 ml/ha rate between 23 and 62 days after spraying. Responses in terms of ers g/stalk indicate that the optimum rate may be between 300 ml/ha and 500 ml/ha.

Figure 1: RATES RESPONSE FROM FOCUS

