

SOUTH AFRICAN SUGAR INDUSTRY  
AGRONOMISTS' ASSOCIATION

EXPERIMENT RESULT

CODE: NCo 376 X RIPENER 18/87/Sw SIS 'T'

CAT: 1629

TITLE: RIPENER FOR EARLY SEASON RIPENING OF NCo 376 IN SWAZILAND

1. PARTICULARS OF PROJECT

This Crop	: 5th Ratoon	<u>Spray Dates</u>	
Site	: Swaziland Irrigation Scheme - Field S.E.4	Ethrel sprayed 2 April 1987	
Region	: Northern Irrigated [Swaziland]	Fusilade - all rates sprayed 27/4/87	
Soil Set	: 'T'	<u>Spray Method</u>	
Design	: Randomised blocks 5 replications	CO2 constant pressure knapsack with hand held 'T' boom. Delivery rate ± 52 l/ha through two T.K. 1,5 nozzles at 280 kpa pressure.	
Variety	: NCo 376	<u>Conditions at spray</u>	
Fertilizer	: <u>N</u> <u>P</u> <u>K</u> (kg/ha)	Calrm, early morning.	
	160    35    100	Age	: 12,3 months
		Dates	: 08/07/1986 - 30/06/87
		Irrigation	: 805 mm
		Rainfall	: 243 mm
		Total	: 1048 mm

2. OBJECTIVES

- 2.1 To determine the ripening effects of varying rates of Fusilade Super, a standard rate of Ethrel and a combination of the two on early cut NCo 376.
- 2.2 To observe any carry-over effects to the following ratoon.

3. TREATMENTS

- C - Control
- F1 - Fusilade Super @ 0,30 l/ha (PP005 125 e.c. - 37,50 gm a.i./ha)
- F2 - Fusilade Super @ 0,45 l/ha (PP005 125 e.c. - 56,25 gm a.i./ha)
- F3 - Fusilade Super @ 0,60 l/ha (PP005 125 e.c. - 75,00 gm a.i./ha)
- E - Ethrel @ 1,5 l/ha
- EF2 - Ethrel @ 1,5 l + Fusilade Super @ 0,45 l/ha

### Notes on Treatments

- \* All rates of Fusilade were sprayed at 9,6 months of age 9 weeks before harvest.
- \* Ethrel was sprayed at 8,9 months of age 12,7 weeks before harvest.
- \* Actual rates of chemical applied:
  - F1 - 0,31 l/ha (+ 4 %)
  - F2 - 0,47 l/ha (+5 %)
  - F3 - 0,64 l/ha (+ 7 %)
  - E - 1,52 l/ha (+ 1 %)
- \* Juice purity, cane quality and moisture were 67 %, 7,3 % and 77 % respectively at the time of Ethrel spraying.

### 4. SAMPLING METHODS

- 4.1 Plot samples consisted of 16 stalks per sample and were taken at 0; 3,7; 6; 8; 11 and 12,7 weeks after Ethrel was sprayed.
- 4.2 Sampling was carried out in the two nett rows and consisted of 4 stalks from 4 localities. Two stalks were cut from the centre and one from each side of the cane row at each position.

### 5. RESULTS

#### 5.1 Growth Data

Table 1 Crop growth measurements and populations at ± 9 months of age (just after spraying Ethrel).

TREATMENT	STALK HEIGHT (mm to TVD)	POPULATION (x 1000/ha)
Control	2310	141
Fusilade @ 0,30 l/ha	2480	149
Fusilade @ 0,45 l/ha	2500	147
Fusilade @ 0,60 l/ha	2540	151
Ethrel @ 1,50 l/ha	2410	149
Ethrel @ 1,50 l + Fusilade @ 0,45 l/ha	2400	145

5.2 Table 2 Harvest Data

TREATMENT	TONS CANE/HA	ERS % CANE	TONS ERS/HA	SUCROSE % CANE	TONS SUCROSE/HA
Control	112	12,0	13,3	13,5	15,1
Fusilade @ 0,30 l/ha	126	12,3	15,5	14,0	17,6
Fusilade @ 0,45 l/ha	111	13,3	14,7	14,9	16,4
Fusilade @ 0,60 l/ha	123	12,3	15,2	14,0	17,3
Ethrel @ 1,50 l/ha	118	14,2	16,6	15,4	18,1
Eth @ 1,50 l + Fus @ 0,45 l/ha	119	15,0	17,8	16,3	19,4
LSD Treatments					
(0,05)*	15	1,7	2,6	1,5	2,6
(0,01)**	20	2,3	3,6	2,0	3,6
Significance	*	**	**	**	**
Mean	118	13,2	15,5	14,7	17,3
CV%	9,6	9,6	12,9	7,7	11,5

5.3 Table 3 Treatment effect on sucrose % cane from time of spraying Ethrel to harvest.

TREATMENT	Weeks after Ethrel spraying	0	3,7	6	8	11	12,7
	Weeks after Fusilade spraying		0	2,3	6,6	7,3	9
Control		8,0	9,5	10,2	11,8	12,9	13,5
Fusilade @ 0,30 l/ha		7,5	9,5	11,3	12,8	14,2	14,0
Fusilade @ 0,45 l/ha		7,1	9,1	11,6	13,0	14,3	14,9
Fusilade @ 0,60 l/ha		7,5	9,3	11,1	13,2	14,6	14,0
Ethrel @ 1,50 l/ha		6,6	10,0	11,9	13,8	14,3	15,4
Fusilade @ 0,45 l + Ethrel @ 1,50 l/ha		7,2	10,3	11,9	14,6	15,0	16,3
LSD Treatments							
(0,05)*		1,2	1,0	1,0	1,0	0,8	1,5
(0,01)**		1,6	1,3	1,4	1,3	1,1	2,0
Significance		*	*	**	**	**	**
Mean		7,3	9,6	11,3	13,2	14,2	14,7
CV %		12,0	7,6	6,6	5,5	4,3	7,7

5.4 Table 4 Treatment effect on gms. Ers/stalk from time of spraying Ethrel to harvest.

TREATMENT	Weeks after Ethrel spraying	0	3,7	6	8	11	12,7
	Weeks after Fusilade spraying	0	2,3	6,6	7,3	9	
Control		46	70	74	87	107	126
Fusilade @ 0,30 l/ha		48	72	88	115	125	128
Fusilade @ 0,45 l/ha		38	61	91	107	120	134
Fusilade @ 0,60 l/ha		47	65	89	116	125	129
Ethrel @ 1,50 l/ha		36	70	99	123	119	156
Fusilade @ 0,45 l + Ethrel @ 1,50 l/ha		41	73	95	135	129	167
LSD Treatments							
(0,05)*		14	15	21	26	18	34
(0,01)**		19	21	29	35	25	46
Significance		N.S.	N.S.	*	**	*	*
Mean		43	69	89	114	121	140
CV %		24,3	16,9	18,0	16,9	11,5	18,4

5.5 Table 5 Treatment effects on eldana damage (% internodes damaged) at harvest

TREATMENTS	% INTERNODES DAMAGED
Control	4,5
Fusilade @ 0,30 l/ha	3,3
Fusilade @ 0,45 l/ha	7,6
Fusilade @ 0,60 l/ha	6,0
Ethrel @ 1,5 l/ha	5,8
Fusilade @ 0,45 l + Ethrel @ 1,5 l/ha	6,9

5.6 Table 6 Treatment effects on subsequent ratoon regrowth (Populations x 1000/ha) 10,7 weeks after harvesting.

TREATMENTS	POPULATION (x 1000/ha)
Control	289
Fusilade @ 0,30 l/ha	298
Fusilade @ 0,45 l/ha	386
Fusilade @ 0,60 l/ha	369
Ethrel @ 1,50 l/ha	347
Fusilade @ 0,45 l + Ethrel @ 1,5 l/ha	408

## 6. COMMENTS

- 6.1 Cane growth and stalk population variability within the trial were not considered to be excessive (Table 1).
- 6.2 Cane yields appeared not to be adversely effected by the treatments although significant differences existed between F1 and F2. The low yield from the F2 treatment is probably unrelated to treatment judging by the comparatively higher yield from F3 (Table 2).
- 6.3 Cane quality, juice purity and moisture content at the time of Ethrel spraying indicated the cane to be suitable for artificial ripening. Ethrel increased cane quality significantly from 6 weeks after application while significant improvements for Fusilade treated cane were recorded from about 2,3 weeks after spraying. Cane quality responses showed the F2 treatment to be better than the F1 but due to cane growth differences, yields in gms Ers/stalk failed to show these trends. Cane quality for the Ethrel alone treated cane bettered that of the Fusilade treatments but was itself out-performed by the combination treatment.
- 6.4 Yields of recoverable sugar both from stalk samples (Table 4) and plots (Table 2) proved that benefits were considerably greater from the combination treatment.
- 6.5 Although Ethrel spraying commenced well after the critical period of flower initiation, artificial ripening was maximised as flower and pith formation were arrested in all plots that received this chemical. This was not the case in the Fusilade alone treated cane (3,7 weeks after Ethrel) where only flower emergence was checked but pith was still present.

- 6.6 These results comply with commercial findings on combination treatment responses, but suggest that the timing of ripener application for early to mid-season NCo 376 is critical if responses are to be optimised, particularly during years of heavy flowering.
- 6.7 There was no clear evidence that eldana was more prevalent in ripened cane.
- 6.8 Table 6 shows that there was no detrimental effect on the populations of the subsequent ratoon by the rates of Fusilade tested. Slightly better tiller counts were again recorded from the combination treatment (see results Code: NCo 376 x Ripener 17/87/Sw MHL 'H'/'T').
- 6.9 This trial has now been terminated.

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