

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

7310/21 CHEMICAL RIPENER TRIAL

Cat.No. 1686

Object: To compare the effects of spraying Ethrel, Roundup, Fusilade, Ethrel + Roundup, and Ethrel + Fusilade on early-season NCo376 and N14.

This crop: Second ratoon.

Location: ZSA Experiment Station.

Soil type: PE.1 sandy clay loam derived from gneiss.

Design: 2 x 6 factorial with 4 replications.

Spacing: 1,5m between rows.

Planted: 26th March, 1986.

<u>Harvested:</u>	<u>Harvest</u>	<u>Age</u>
P	18.5.87	13,8 months
1R	19.5.88	12,0 months
2R	15.5.89	11,9 months

<u>Fertiliser:</u> (kg/ha)	<u>N</u>	<u>P₂O₅</u>	<u>K₂O</u>
P	100	100	60
1R	160	60	60
2R	140	60	60

<u>Irrigation and Rainfall(mm):</u>	<u>Irrigation</u>	<u>Rainfall</u>
P	1 690	487
1R	1 430	692
2R	1 364	398

Treatments:

a) Varieties

1. NCo376
2. N14

b) Ripeners

1. Control
2. Ethrel @ 0,72 kg/ha a.i. (1,5 l/ha product).
3. Ethrel @ 0,72 kg/ha a.i. (1,5 l/ha product) + Roundup @ 0,25 kg/ha a.i. (0,6 l/ha product).
4. Ethrel @ 0,72 kg/ha a.i. (1,5 l/ha product) + Fusilade @ 0,041 kg/ha a.i. (0,33 l/ha product).
5. Roundup @ 0,25 kg/ha a.i. (0,6 l/ha product).
6. Fusilade @ 0,041 kg/ha a.i. (0,33 l/ha product).

Conduct:

1. Samples of 24 randomly selected cane stalks were taken for juice quality analysis at 20, 19, 17, 15, 11, 9, 6, 3, and 0 weeks before harvest. Visual assessments of each sprayed treatment were made in field and on stalk samples on the dates of sampling.
2. Ethrel was applied on N14 on 19 December, 1988, and on NCo376 on 29 December, 1988. Roundup and Fusilade were applied on 17 January, 1989.

3. The times, dates, purities at spraying and weather conditions at spraying are shown below:

<u>Ethrel application</u>	<u>N14</u>	<u>NCo376</u>
Date applied	19.12.88	29.12.88
Weeks before harvest	21	20
Purity% juice	75,8	69,5
Time of spraying	5.30-6.15 pm	5.45-6.30 pm
Weather conditions	Slight wind initially and calm later	Calm with gusts of wind

Roundup and Fusilade application

Date applied	17.1.89	17.1.89
Weeks before harvest	17	17
Purity% juice	80,2	80,2
Time of spraying	5.20-6.20 pm	5.20-6.20 pm
Weather conditions	Calm with gusts of wind	

4. The trial received its last irrigation on 10 March, 1989. The drying-off schedule was offset by 83,3mm of rain which fell 12 days later.

RESULTS

Relevant yield data for the plant, first and second ratoon crops are presented in Table 1.

a) Quality effects: Table 2 shows that ripener treatments significantly increased ERC and ERF% cane in the second ratoon crop. Differences within ripeners were small and non-significant. Figure 1 shows that Fusilade treatments caused a rapid quality increase from spraying until about 3 weeks before harvest. Quality increases lasted until harvest but there were small gains from 3 weeks before harvest until harvest. This suggests that Fusilade treatments could have been harvested 3 weeks before schedule without affecting quality, and that cane yield losses could have been reduced.

Fusilade treatments applied to NCo376 gave high ERC% cane responses, with the Ethrel + Fusilade combination giving the highest values. Roundup and Ethrel applied alone had little effect on ERC% cane.

Figure 2 shows that N14 responses to ripener treatments, and the differences between ripeners, were small. Ethrel + Fusilade combination gave a marginal ERC% cane increase over the rest. Figure 3 shows the ERC% cane response of both N14 and NCo376 sprayed with Roundup. The best response to Roundup application was obtained from NCo376 sprayed with the combination Ethrel + Roundup treatment. Differences between other Roundup treatments were small regardless of the variety sprayed.

Figure 4 shows that ERC% cane responses to Fusilade application were greater on NCo376 than N14 and that the Ethrel + Fusilade combination gave the best responses.

- b) Yield effects: Yield data presented in Table 1 show that ripeners caused a cane yield decline. Fusilade treatments caused greater cane yield losses with the Ethrel + Fusilade combination giving the lowest values. Gains in ERCZ cane obtained from Fusilade treatments were offset by cane yield losses with the result that low ERC and ERF yields were obtained. Table 1 shows that Ethrel alone and the Ethrel + Roundup combination increased cane, ERC and ERF yields. There were no cane or ERC yield interactions between varieties and ripener treatments.
- c) Stalk data: Ripener treatments did not affect stalk numbers but they reduced stalk lengths particularly in the Fusilade treatments. There were small differences between stalk diameters, and ripeners tended to increase diameters (see Table 3).
- d) Visual symptoms: Characteristic Roundup and Fusilade symptoms were observed. Ethrel symptoms were not marked at any stage of ripening but when applied in combination with a desiccant, desiccants exhibited more marked symptoms.

CONCLUSIONS

Ripener treatments increased quality but the increase was offset by cane yield losses particularly in the Fusilade treatments.

Ethrel and Roundup applied alone gave small ERCZ cane increases without any cane yield losses.

The two varieties responded differently to ripener treatments with NCo376 giving higher responses, particularly to Fusilade treatments. The Ethrel + Fusilade combination gave the most favourable quality responses regardless of variety.

The trial continues into the third and last ratoon crop.

CH/Oct '89

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Table 1 : Yield data at harvest

Treatments	CANE YIELD t/ha				ERC YIELD t/ha				ERF YIELD t/ha			
	P	1R	2R	Mean	P	1R	2R	Mean	P	1R	2R	Mean
Varieties												
1. NCo376	156,47	124,35	109,84	130,22	20,89	17,83	15,97	18,23	24,29	19,03	16,91	20,08
2. N14	178,92	14,207	127,01	149,33	22,16	19,57	17,66	19,80	25,25	20,72	18,47	21,48
Significance	***	***	***	-	N.S.	**	***	-	N.S.	***	***	-
Ripener treatments												
1. Control	166,91	130,04	124,73	140,56	19,95	17,38	16,99	18,11	24,11	18,32	17,98	20,15
2. Ripeners	167,85	133,84	117,16	139,62	21,84	18,96	16,78	19,19	24,90	20,07	17,63	20,87
Significance	N.S.	N.S.	N.S.	-	N.S.	**	N.S.	-	N.S.	N.S.	N.S.	-
Ethrel	169,85	138,89	132,45	147,06	22,40	19,30	18,79	20,16	25,60	20,62	19,78	22,00
Ethrel + Roundup	172,95	134,84	128,16	145,32	23,09	19,19	17,93	20,07	25,73	20,22	18,89	21,61
Ethrel + Fusilade	165,93	134,23	101,26	133,81	21,65	19,25	15,12	18,67	25,02	20,34	15,74	20,37
Roundup	160,71	128,21	121,91	136,94	20,53	18,45	17,05	18,68	23,53	19,40	18,02	20,32
Fusilade	169,83	133,03	102,03	134,96	21,54	18,63	15,01	18,39	24,63	19,38	15,71	20,04
Significance	N.S.	N.S.	***	-	N.S.	N.S.	*	-	N.S.	N.S.	*	-
L.S.D. Ripener means												
5%	-	7,53	7,64	-	-	1,13	1,04	-	-	1,22	1,11	-
1%	-	10,12	10,27	-	-	1,52	1,39	-	-	1,63	1,49	-
Interactions	N.S.	**	N.S.	-		N.S.	N.S.	-	N.S.	*	N.S.	-
Trial mean	167,90	133,21	118,42		21,53	18,70	16,82		24,77	19,87	17,69	
S.E. single plot ±	17,15	12,81	12,99	-	3,25	1,93	1,76	-	3,02	3,02	1,88	-
S.E. ripener means ±	6,06	6,41	6,50	-	1,15	0,96	0,88	-	1,07	1,03	0,94	-
C.V.%	10,22	9,62	10,98	-	15,10	10,28	10,49	-	12,18	10,40	10,66	-

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Table 2 : Quality data at harvest

Treatments	ERC Z CANE				ERF Z CANE				PURITY Z JUICE			
	P	IR	2R	Mean	P	IR	2R	Mean	P	IR	2R	Mean
<u>Variety</u>												
1. NCo376	13,32	14,34	14,64	14,10	15,55	15,30	15,47	15,44	84,90	91,64	93,05	89,86
2. NI4	12,37	13,79	13,92	13,36	14,11	14,59	14,56	14,42	85,50	91,44	93,25	90,06
Significance	**	***	***	-	***	***	***	-	N.S.	N.S.	N.S.	-
<u>Ripener treatments</u>												
1. Control	11,99	13,42	13,63	13,01	14,58	14,55	14,44	14,52	82,30	89,30	92,90	88,36
2. Ripeners	13,02	14,20	14,41	13,88	14,88	15,03	15,13	15,01	87,78	91,87	93,19	90,95
Significance	*	***	***	-	N.S.	*	***	-	**	**	N.S.	-
Ethrel	13,09	13,91	14,18	13,73	15,06	14,85	14,95	14,95	85,30	91,63	93,14	90,02
Ethrel + Roundup	13,36	14,26	14,06	13,89	14,91	15,03	14,81	14,92	81,70	92,16	93,04	88,97
Ethrel + Fusilade	13,12	14,38	15,04	14,18	15,17	15,20	15,65	15,52	84,92	91,80	93,98	90,23
Roundup	12,79	14,39	14,00	13,73	14,66	15,14	14,80	14,87	85,60	92,36	92,56	90,17
Fusilade	12,73	14,05	14,79	13,86	14,60	14,93	15,46	15,00	85,40	91,42	93,24	90,02
Significance	N.S.	**	N.S.	-	N.S.	N.S.	N.S.	-	N.S.	N.S.	*	-
L.S.D. Ripener means 5%	-	0,39	0,20	-	-	0,38	0,18	-	3,10	1,21	0,51	-
1%	-	0,52	0,28	-	-	0,52	0,25	-	4,20	1,63	0,68	-
Interactions	N.S.	N.S.	***	-	*	**	***	-	N.S.	N.S.	*	-
Trial mean	12,85	14,07	14,29	-	14,83	14,95	15,02	-	85,20	91,54	93,15	-
S.E. single plot ±	1,03	0,65	0,35	-	0,78	0,65	0,31	-	3,00	2,06	0,87	-
S.E. ripener means ±	0,37	0,32	0,17	-	0,28	0,32	0,16	-	1,10	1,02	0,43	-
C.V.Z	8,05	4,68	2,44	-	5,25	4,37	2,08	-	3,57	2,25	0,93	-

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Table 3 : Stalk data at harvest

Treatments	Stalk numbers/ha x 10 ⁻³				Stalk lengths (m)				Stalk diameters (cm)			
	P	1R	2R	Mean	P	1R	2R	Mean	P	1R	2R	Mean
<u>Variety</u>												
1. NCo376	142,30	141,16	141,03	141,50	2,71	2,63	2,04	2,46	2,30	2,20	2,25	2,25
2. N14	118,20	123,16	119,43	120,26	2,85	2,71	2,20	2,59	2,60	2,40	2,43	2,48
<u>Ripening treatments</u>												
1. Control	129,20	136,48	128,9	131,54	2,75	2,73	2,26	2,58	2,40	2,19	2,30	2,30
<u>Ripeners</u>	130,50	132,98	130,49	131,32	2,78	2,66	2,09	2,51	2,50	2,30	2,35	2,38
2. Ethrel	132,90	136,48	131,40	133,59	2,87	2,80	2,38	2,68	2,50	2,33	2,30	2,38
3. Ethrel + Fusilade	131,10	133,91	133,35	132,79	2,92	2,75	2,36	2,68	2,40	2,31	2,35	2,35
4. Ethrel + Fusilade	129,50	134,95	133,90	132,78	2,65	2,52	1,68	2,28	2,40	2,29	2,35	2,35
5. Roundup	126,90	128,90	125,30	127,03	2,80	2,61	2,24	2,55	2,50	2,25	2,25	2,33
6. Fusilade	132,00	130,68	128,50	130,39	2,68	2,60	1,80	2,36	2,50	2,34	2,56	2,43
Trial mean	130,30	132,16	130,20	-	2,78	2,67	2,12	-	2,50	2,28	2,34	-

Fig 1: EFFECTS OF RIPENERS ON ERC % CANE OF NCo376.

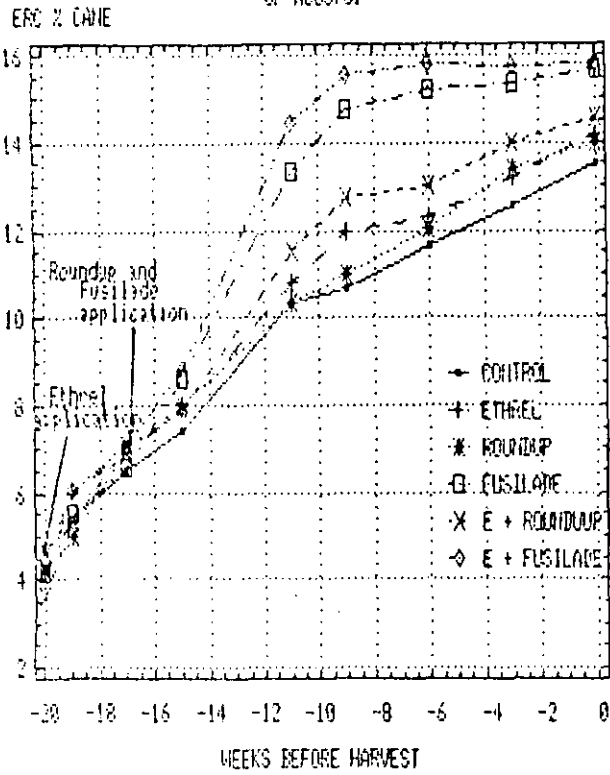


Fig 2: EFFECTS OF RIPENERS ON ERC % CANE OF N14.

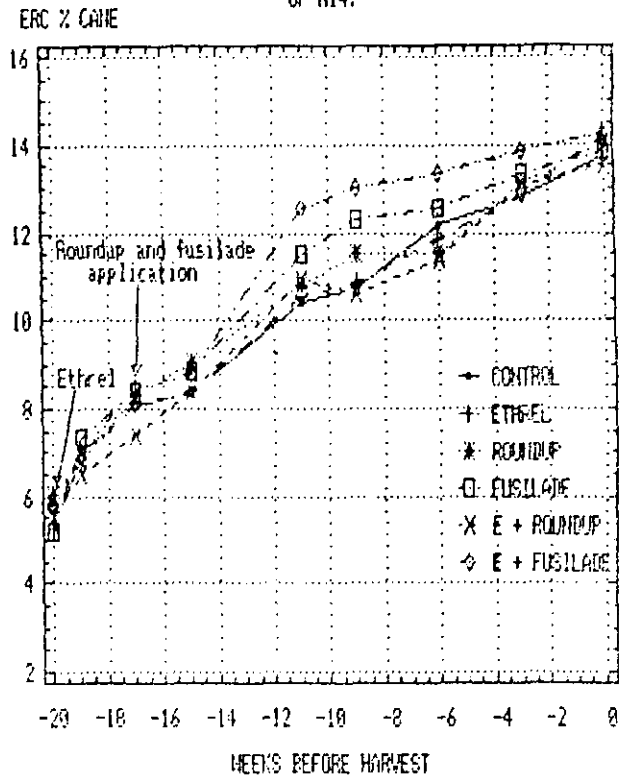


Fig 3: EFFECTS OF ROUNDUP TREATMENTS ON ERC % CANE OF NCo376 AND N14.

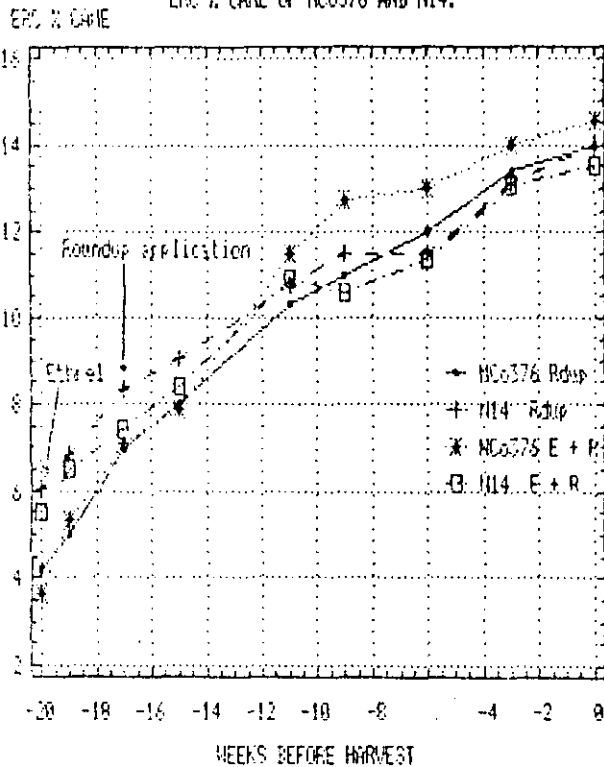
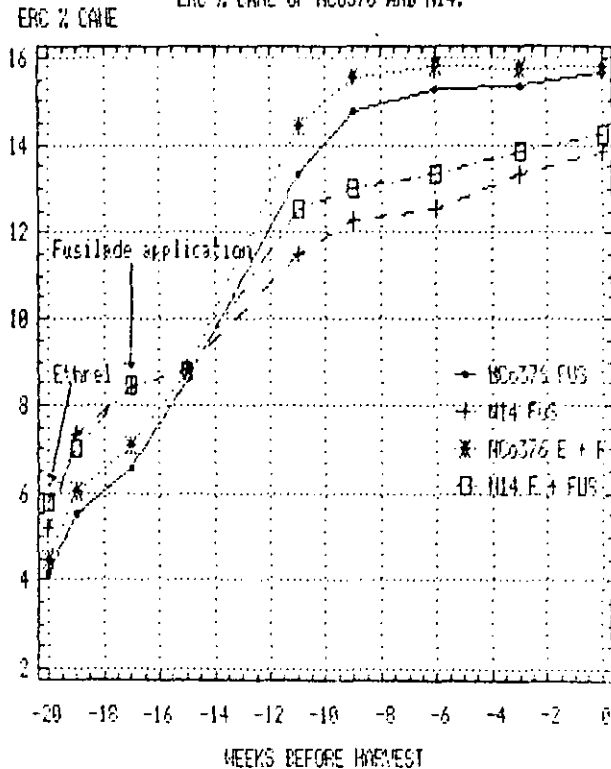


Fig 4: EFFECTS OF FUSILADE TREATMENTS ON ERC % CANE OF NCo376 AND N14.



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TERMINAL REPORT

Cat No: 1686

Object:

To compare the effects of spraying Ethrel, Roundup, Fusilade, Ethrel + Roundup and Ethrel + Fusilade on early-season NCo376 and N14.

This crop:

Third ratoon.

Location:

ZSA Experiment Station.

Soil type:

PE.1 sandy clay loam derived from gneiss.

Design:

2 x 6 factorial with 4 replications.

Spacing:

1,5m between rows.

Planted:

26th March, 1986.

Harvested:

<u>Crop</u>	<u>Harvest</u>	<u>Age</u>
P	18.5.87	13,8 months
1R	19.5.88	12,0 months
2R	15.5.89	11,9 months
3R	15.5.90	12,0 months

Fertilizer
(kg/ha)

	<u>N</u>	<u>P₂O₅</u>	<u>K₂O</u>
P	100	100	60
1R	160	60	60
2R	140	60	60
3R	160	60	60

Irrigation/
Rainfall(mm)

	<u>Irrigation</u>	<u>Rainfall</u>
P	1 690mm	487mm
1R	1 430mm	692mm
2R	1 364mm	398mm
3R	1 269mm	500mm

Treatments:

(a) Varieties

1. NCo376
2. N14

(b) Ripeners

1. Control.
2. Ethrel at 0,72 kg/ha a.i. (1,5 l/ha product).
3. Ethrel at 0,72 kg/ha a.i. (1,5 l/ha product) + Roundup at 0,25 kg/ha a.i. (0,6 l/ha product)
4. Ethrel at 0,72 kg/ha a.i. (1,5 l/ha product) + Fusilade Super at 0,041 kg/ha a.i. (0,33 l/ha product).
5. Roundup at 0,25 kg/ha a.i. (0,6 l/ha product).
6. Fusilade Super at 0,041 kg/ha a.i. (0,33 l/ha product).

N.B. From this point onward the term Fusilade Super will be referred to as Fusilade.

Conduct:

1. Samples of 24 randomly selected cane stalks were taken for juice quality analysis at 21, 20, 19, 18, 17, 14, 11, 9, 7, 3 and 0 weeks before harvest. Visual assessments of each sprayed treatment were made in the field and on sampled stalks.
2. Ethrel was applied on 28th December 1989 at 73,8% purity and both Roundup and Fusilade were applied on 19th January, 1990, when purity % juice had risen to 80%.
3. Spraying was done in the afternoon (from ±5:00 to about 6:30 p.m.) when the weather was calm.

RESULTS: (Third ratoon crop)

Relevant quality data are presented in Table 1.

a) Quality effects: Table 1 shows that all ripener treatments significantly increased ERC and ERF% cane in the third ratoon crop. Differences between ripener treatments were however small and non-significant.

Figure 1 shows that under natural ripening conditions N14 gave higher ERC% cane values than NCo376 at all stages of ripening until harvest. Figure 2 shows that Ethrel applied at 20 weeks before harvest enhanced ripening of NCo376. Roundup (Figure 3) also increased ERC% cane of NCo376 more than that of N14. There were more marked varietal differences in response to Fusilade application with NCo376 giving higher values (see Figure 4).

Changes in ERC% cane of NCo376 and N14 sprayed with Ethrel, Roundup and Fusilade are shown in Figures 5 and 6. Fusilade applied to NCo376 gave greater and more favourable responses to ripener treatments than N14. Similarly NCo376 responded well to combination treatments with the Ethrel + Fusilade combination giving the best response. N14 also responded better to the Ethrel + Fusilade treatment but the response was less marked than in NCo376 (see Figure 8).

b) Yield effects: Cane yield data for the third ratoon crop are presented in Table 2. Fusilade treatments caused significant cane yield decline with the Ethrel + Fusilade combination giving the lowest values. Ethrel alone increased cane yield but Roundup had little effect on cane yield.

Table 3 shows that all ripeners increased the ERC and ERF yields. ERC yield differences between ripeners were small and non-significant. There was no ERC yield benefit from the Ethrel + Fusilade combination with both ripeners giving better responses applied alone. The best ERC and ERF yield benefit in the third ratoon was obtained from Ethrel applied alone.

There were no significant interactions between ripener treatments and varieties in cane, ERC and ERF yields.

c) Stalk data: Relevant stalk data are presented in Table 4 and 5. Ripener treatments had no significant effect on stalk numbers but desiccants (Roundup and Fusilade) reduced stalk lengths with Fusilade giving the lowest values. Differences in stalk diameters were small but ripeners tended to increase diameters.

RESULTS (terminal)

a) Quality effects: Data presented in Table 3 show that ripener treatments consistently increased quality more than the control. Fusilade applied alone gave greater quality increases than Ethrel and Roundup in the first, second and third ratoon crops. The Ethrel + Fusilade combination gave the highest mean quality of 14,3 ERC% cane (mean of four crop cycles). This value was 9% more than the mean of control for the same period. The lowest mean value was 5% above the control and was recorded in the Roundup treatment.

b) Yield effects: Cane yield differences between all ripeners and controls were small and non significant in all the four crop cycles. Cane yield from Fusilade treatments was significantly reduced in the second and third ratoon crops (see Table 2). Ethrel applied alone consistently gave the highest mean cane yield values.

Table 3 shows that all ripeners gave higher mean ERC and ERF yield than the control. The Ethrel + Roundup combination gave the highest mean ERC yield benefit of 9% over the control. High quality increases from the Fusilade treatments were offset by cane yield losses with the result that ERC and ERF yields were lower than other treatments. This was however, attributed to delayed harvest which was done 17 weeks after spraying. Treatments that gave high ERC and ERF yields had little effect on cane yield and thus their ripening benefits were maintained until harvest.

c) Varietal responses: Varietal yield differences on control plots were as expected with N14 outyielding NCo376. However, NCo376 gave greater quality responses to ripeners than N14. Delaying harvest caused greater cane yield losses in NCo376 sprayed with desiccants, with the result that N14 gave significantly higher ERC and ERF yields particularly in the first and second ratoon crops (see Table 2).

d) Visual symptoms: Characteristic Roundup and Fusilade symptoms were observed, and these symptoms were more pronounced following Ethrel application.

CONCLUSIONS

Ripener treatments had small and non-significant effects on quality and yield in the plant crop. In the ratoon crops, all ripeners increased quality but the increases were offset by cane yield losses in the desiccant treatments. Quality increases were higher in Fusilade than in Roundup treatments but Fusilade caused greater cane yield losses. Low cane yield from Fusilade was attributed to delayed harvest. Similarly there were no ERC yield benefits from the Ethrel + desiccant combination due to cane yield losses. Ethrel applied alone gave small quality increases without any cane yield losses.

The two varieties responded differently to ripener treatments with NCo376 giving higher responses than N14. Good responses from N14 could probably be achieved with higher rates of ripener application than used in this trial.

The trial was terminated after the third ratoon crop.

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Table 1. Quality data at harvest

TREATMENTS	ERC% CANE					ERF% CANE				
	P	1R	2R	3R	MEAN	P	1R	2R	3R	MEAN
<u>Variety</u>										
1. NCo376	13,32	14,34	14,54	14,42	14,18	15,55	15,30	15,47	15,59	15,48
2. N14	12,37	13,79	13,92	13,29	13,34	14,11	14,59	14,56	14,36	14,41
Significance	**	***	***	***	-	***	***	***	***	-
<u>Ripening treatments</u>										
1. Control	11,99	13,42	13,63	13,24	13,07	14,58	14,55	14,44	14,54	14,53
2. Ripeners	13,02	14,20	14,41	13,97	13,90	14,88	15,03	15,13	15,06	15,03
Significance	*	***	***	***	-	N.S.	*	***	***	-
Ethrel	13,09	13,91	14,18	13,67	13,71	15,06	14,85	14,95	14,85	14,93
Ethrel + Roundup	13,36	14,26	14,06	13,80	13,87	14,91	15,03	14,81	14,92	14,92
Ethrel + Fusilade	13,12	14,38	15,04	14,53	14,27	15,17	15,20	15,65	15,46	15,37
Roundup	12,79	14,39	14,00	13,46	13,66	14,66	15,14	14,80	14,68	14,82
Fusilade	12,73	14,05	14,79	14,41	14,00	14,60	14,93	15,46	15,41	15,10
Significance	N.S.	**	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	-
L.S.D. Ripener means										
5%	-	0,39	-	-	-	-	-	-	-	-
1%	-	0,52	-	-	-	-	-	-	-	-
Interactions	N.S.	N.S.	***	N.S.	-	*	**	***	N.S.	-
Trial mean	12,85	14,07	14,29	13,65	13,77	14,83	14,95	15,02	14,97	14,94
S.E. Single plot ±	1,03	0,65	0,35	0,47	-	0,78	0,65	0,31	0,43	-
S.E. Ripener mean ±	0,37	0,32	0,17	0,24	-	0,28	0,32	0,16	0,21	-
C.V.%	8,05	4,68	2,44	3,40	-	5,25	4,37	2,08	2,84	-

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Table 2. Cane Yield t/ha

TREATMENTS	CANE YIELD t/ha				
	P	1R	2R	3R	MEAN
<u>Varieties</u>					
1. NCo376	156,47	124,35	109,84	105,64	124,08
2. N14	178,92	142,07	127,01	115,87	140,97
Significance	***	***	***	***	-
<u>Ripening treatments</u>					
1. Controls	166,91	130,04	124,73	112,38	133,52
2. Ripeners	167,85	133,84	117,16	110,43	132,32
Significance	N.S.	N.S.	N.S.	N.S.	-
Ethrel	169,85	138,89	132,45	118,23	139,86
Ethrel + Roundup	172,95	134,84	128,16	110,82	136,69
Ethrel + Fusilade	165,93	134,23	101,26	100,67	125,52
Roundup	160,71	128,21	121,91	112,97	130,95
Fusilade	169,83	133,03	102,03	109,45	128,59
Significance	N.S.	N.S.	***	**	-
L.S.D. Ripener means 5%	-	-	7,64	6,45	-
1%	-	-	10,27	8,67	-
Interactions	N.S.	**	N.S.	N.S.	-
Trial mean	167,90	133,21	118,42	110,75	132,57
S.E. single plot ±	17,15	12,81	12,99	10,97	-
S.E. ripener means ±	6,06	6,41	6,50	5,48	-
C.V. %	10,22	9,62	10,98	9,90	-

1
5
1

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Table 3.

TREATMENTS	ERC YIELD t/ha					ERF YIELD t/ha				
	P	1R	2R	3R	MEAN	P	1R	2R	3R	MEAN
<u>Varieties</u>										
1. NCo376	20,89	17,83	15,97	15,20	17,47	24,29	19,03	16,91	16,45	19,17
2. N14	22,16	19,57	17,66	15,39	18,70	25,25	20,72	18,47	16,63	20,27
Significance	N.S.	**	***	N.S.	-	N.S.	***	***	N.S.	-
<u>Ripening treatments</u>										
1. Controls	19,95	17,38	15,99	14,86	17,30	24,11	18,32	17,93	16,33	19,19
2. Ripeners	21,84	18,96	15,78	15,38	18,24	24,90	20,07	17,63	16,58	19,80
Significance	N.S.	**	N.S.	N.S.	-	N.S.	N.S.	N.S.	N.S.	-
Ethrel	20,40	19,30	18,79	16,13	18,66	25,50	20,52	19,78	17,52	20,88
Ethrel + Roundup	23,09	19,19	17,93	15,25	18,87	25,73	20,22	18,89	16,49	20,33
Ethrel + Fusilade	21,65	19,25	15,12	14,59	17,65	25,02	20,34	15,74	15,52	19,16
Roundup	20,53	18,45	17,05	15,17	17,80	23,53	19,40	18,02	16,55	19,38
Fusilade	21,54	18,63	15,01	15,76	17,74	24,63	19,38	15,71	16,84	19,14
Significance	N.S.	N.S.	*	N.S.	-	N.S.	N.S.	*	N.S.	-
L.S.D. Ripener means 5%	-	-	1,04	-	-	-	-	1,11	-	-
1%	-	-	1,39	-	-	-	-	1,49	-	-
Interactions	-	-	N.S.	N.S.	-	N.S.	*	N.S.	N.S.	-
Trial mean	21,53	18,70	16,82	15,30	18,09	24,77	19,87	17,69	16,54	19,72
S.E. single plot ±	3,25	1,93	1,76	1,61	-	3,02	3,02	1,88	1,72	-
S.E. ripener means ±	1,15	0,96	0,88	0,81	-	1,07	1,03	0,94	0,86	-
C.V.%	15,10	10,28	10,49	10,54	-	12,18	10,40	10,56	10,42	-

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Table 4. Stalk data at harvest

TREATMENTS	Stalk Numbers/ha x 10 ⁻²					Stalk lengths (M)				
	P	1R	2R	3R	MEAN	P	1R	2R	3R	MEAN
<u>Variety</u>										
1. NCo376	142,33	141,15	141,03	143,21	142,18	2,71	2,63	2,56	1,91	2,22
2. N14	118,29	123,16	119,43	125,04	121,46	2,65	2,71	2,28	2,21	2,42
<u>Ripening treatments</u>										
1. Control	129,20	136,48	128,95	133,35	132,00	2,75	2,73	2,26	2,05	2,45
Ripeners	130,50	132,98	130,49	137,30	132,82	2,78	2,66	2,09	1,94	2,37
2. Ethrel	132,90	136,48	131,40	132,24	133,26	2,87	2,80	2,38	2,15	2,55
3. Ethrel + Roundup	131,10	133,91	133,35	137,00	133,84	2,92	2,75	2,36	2,03	2,52
4. Ethrel + Fusilade	129,50	134,95	133,90	138,79	134,29	2,65	2,52	1,68	1,70	2,14
5. Roundup	126,90	128,90	125,30	135,93	129,26	2,80	2,61	2,24	2,08	2,43
6. Fusilade	132,00	130,68	128,50	142,54	133,43	2,68	2,60	1,80	1,75	2,21
Trial mean	130,30	132,16	130,20	136,64	132,33	2,78	2,67	2,12	1,96	2,38

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Table 5. Stalk diameters (CM) data at harvest

TREATMENTS	STALK DIAMETERS (CM)				
	P	1R	2R	3R	MEAN
<u>Variety</u>					
1. MCo376	2,30	2,20	2,25	2,22	2,24
2. N14	2,50	2,40	2,43	2,46	2,47
<u>Ripening treatments</u>					
1. Control	2,40	2,19	2,30	2,22	2,28
Ripeners	2,50	2,30	2,35	2,36	2,38
2. Ethrel	2,50	2,33	2,30	2,26	2,35
3. Ethrel + Roundup	2,40	2,31	2,35	2,43	2,37
4. Ethrel + Fusilade	2,40	2,29	2,35	2,38	2,36
5. Roundup	2,50	2,25	2,25	2,35	2,34
6. Fusilade	2,50	2,34	2,43	2,40	2,42
Trial mean	2,50	2,28	2,34	2,34	2,37

RESPONSES TO RIPENER TREATMENTS

Fig.1: UNSPRAYED CONTROL PLOTS.

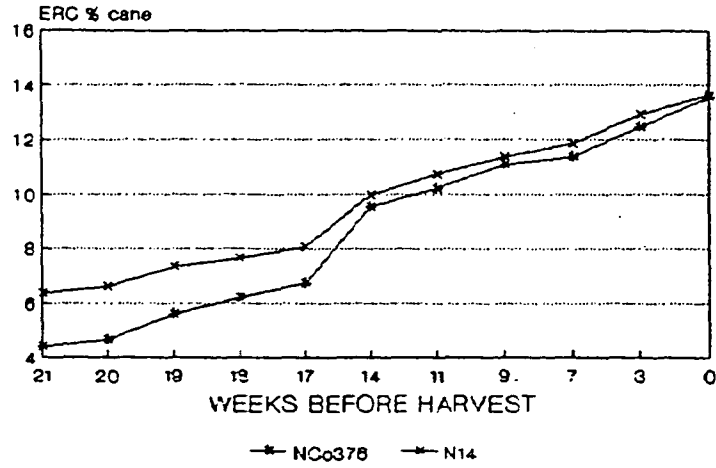


Fig.2: ETHREL.

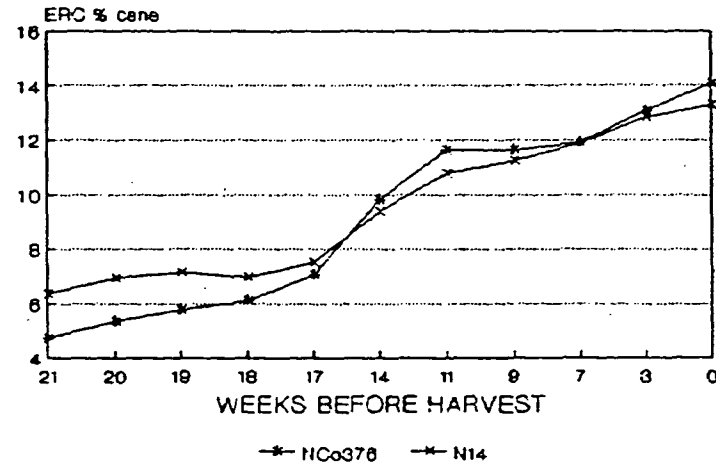


Fig.3: ROUNDUP.

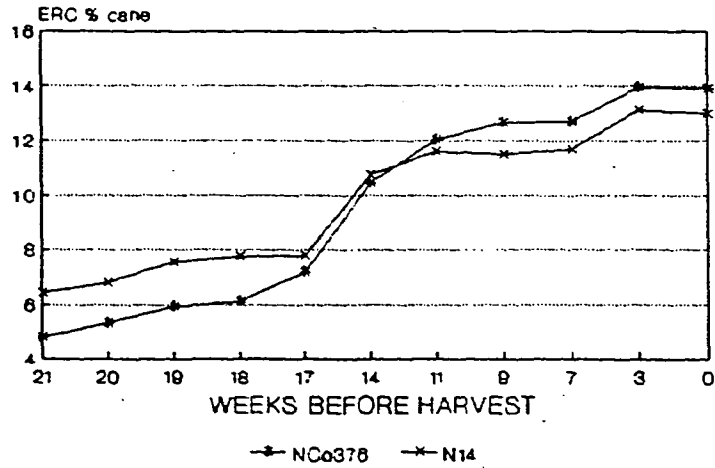
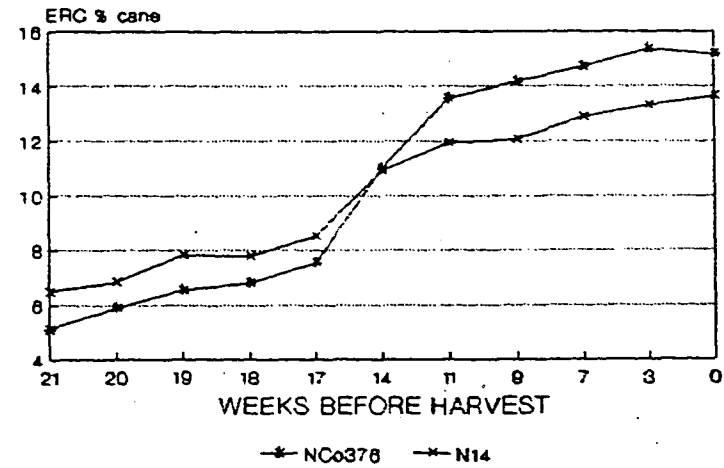


Fig.4: FUSILADE.



VARIETAL RESPONSES TO RIPENER TREATMENTS

Fig.5: NCo378

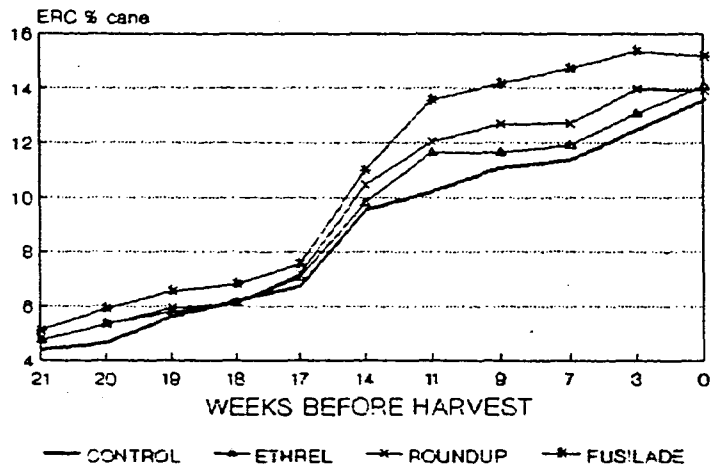


Fig.6: N14

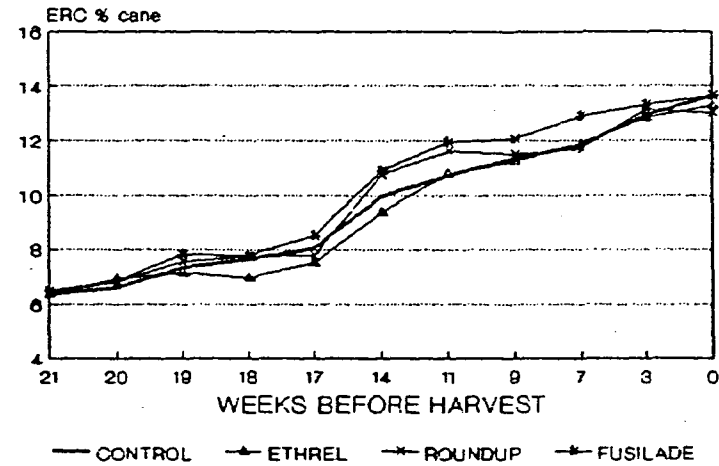


Fig.7: NCo378

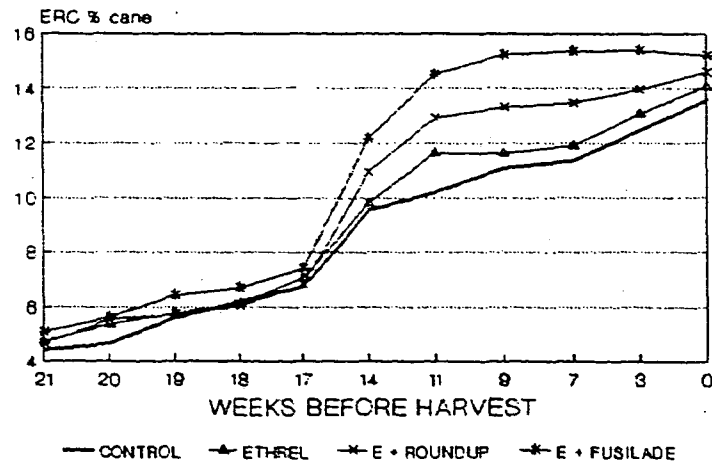


Fig.8: N14

