SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

7310/11 CHEMICAL RIPENER TRIAL

TERMINAL REPORT

Cat. No. 1499

Object: To compare the effect of spraying Roundup and Fusilade Super on late-season cane.

Planted: 16.10.84.

Terminated: 29.10.86, after the first ratoon harvest.

Harvest date and ages:

	Harvest	Age
P	15.11.85	13,0 months
1R	29.10.86	11,5 months

Location: ZSA Experiment Station, Field C1-3.

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

Design: 2 x 6 factorial with 3 replications.

Spacing: 1,5m between rows.

Fertiliser:

kg/ha	N	P_2O_5	K_2O
P	120	100	60
1R	180	60	60

N.B. Plant crop nitrogen application was reduced due to high residual N levels after Dolichos beans).

Irrigation and Rainfall:

	Irrigation (mm)	Rainfall (mm)
P	1 312	744
1R	1 445	500

Treatments:

a) Varieties
1. NCo376
2. N14

b) Ripeners
1. Control - no chemical ripener.

First Ripener Application
2. Roundup @ 0,41 kg/ha a.i. (1,0 l/ha product).
3. Fusilade Super @ 0,041 kg/ha a.i. (0,33 l/ha product).

Second Ripener Application
4. Roundup @ 0,41 kg/ha a.i. (1,0 l/ha product).
5. Fusilade Super @ 0,041 kg/ha a.i. (0,33 l/ha product).
6. Fusilade Super @ 0,056 kg/ha a.i. (0,45 l/ha product).

Conduct:

1. At planting, a skip-row was left between each plot to facilitate access to the plots. At the time it was envisaged that a hand-operated boom sprayer capable of spraying the whole 5-row plot would be used, but this method proved impractical and was abandoned. After the plant crop harvest, these skip-rows were planted with the appropriate variety to make a 6-row plot, in an

2/attempt.....

attempt to reduce lodging. These extra rows were discarded at harvest.

2. Details of spraying dates, weather conditions at time of spraying, and sampling dates when cane samples were taken from the plots for maturity testing, are given in the table below:-

	Plant crop	First ratoon
a) 1st application:		
Date:	9.9.85	19.9.86
Weeks before harvest:	10	6
Time of spraying:	7.00 - 9.00 am.	5.45 - 6.45 pm.
Weather conditions:	Sunny and calm	Calm and dry
b) 2nd application:		
Date:	11.10.86	3.10.86
Weeks before harvest:	6	4
Time of spraying:	6.30 - 9.00 am.	5.45 - 7.45 pm.
Weather conditions:	Cloudy with a slight wind(some dew on the leaves).	Dry with periodic gusts of wind, which delayed spraying.
c) Sampling:		
Weeks before harvest:	10, 6, 2, and 0	6, 4, 2, and 0

3. Spray applications in the first ratoon were brought closer to the harvest date than in the plant crop, because evidence from South Africa indicated that late-season applications produced best results when sprayed 4-6 weeks before harvest.
4. The trial was dried-off at 5 and 4 weeks before harvest in the plant and first ratoon crops respectively. This coincided with the approximate time of the second ripener application.

Spraying details:

1. A carbon dioxide pressurised knapsack sprayer was used, with a T-boom capable of spraying two cane rows at a time.
2. The T-boom used for spraying the plant crop was fitted with two TK 1,5 nozzles spaced 1,5m apart spraying backwards and downwards onto the canopy. At a constant pressure of 220 kPa and a walking speed of 1,25 m/s, this boom delivered 75,9 l/ha.
3. A different T-boom was used in the first ratoon because it was considered more efficient than the previous one. The T-boom had three TK 1,5 nozzles fitted 1,0m apart, spraying down onto the canopy. At a constant pressure of 220 kPa and a walking speed of 1,25 m/s, this boom delivered 102,1 l/ha.

3/4.....

4. The cross-piece of both T-booms was kept approximately 50cm above the canopy when spraying.

RESULTS

a) Harvest data: Relevant yield data are shown in Tables 1 and 2 respectively. Roundup and Fusilade applications caused a decline in cane ERC and ERF yields in both crop cycles, but this decline was only significant in the first ratoon. N14 outyielded NCo376 in terms of cane, crystal, and fermentables.

Variety N14 had a lower millable stalk population with longer and thicker stalks than NCo376. Both varieties were badly lodged in the plant crop, with ripener treatments lodging more than controls (see Discussion). Lodging in the first ratoon (4%) was much less than in the plant crop (69%).

Flowering data was not shown because there was very little flowering in the plant crop (4%) and none in the first ratoon.

b) Maturity tests (see Appendices I-III): All quality parameters showed a similar trend therefore Pol% cane and Purity% juice results were excluded from the appendices and only ERC% cane data was presented as graphs (see Figures 1 and 2). Purities were high at spraying in both seasons (90-93%) and there were no significant quality responses to ripeners.

Quality in the plant crop declined from 6 weeks to harvest in all except the Roundup (10 weeks) treatment, which only showed a decline in the last two weeks before harvest. Ripeners applied at 6 weeks in the first ratoon showed a steady quality increase from spraying to harvest, whereas all other treatments showed a decline in quality from 4 weeks to harvest. Figures 1 and 2 show that this decline in quality in both seasons occured in the first week of October.

Varieties did not differ much in quality except at 10 weeks in the plant crop and at the first ratoon harvest, when NCo376 showed a significant improvement in quality over N14. Throughout the ripening period, NCo376 had more fibre than N14 (differences not always significant) and mean harvest values for both varieties were 16,7 and 15,5 respectively.

c) Visual symptoms: were not marked at any stage during ripening in both crops. Both Roundup and Fusilade caused some spindle leaves to die but there were no signs of "ring-barking" characteristic of Fusilade-treated cane.

4/Discussion.....

DISCUSSION

Purities at spraying in both seasons were too high for ripeners to produce a positive response, as shown by quality data and the lack of visual symptoms. Although Roundup and Fusilade have been recommended for late-season ripening in Swaziland and South Africa, results have shown that good quality responses can not be expected on cane with purities of 85% and above at spraying. Not only was there no quality response in this trial but ripeners had a detremental effect on the crop because they depressed yields.

The best time for harvesting this trial would have been early-October when there was a peak in quality. The subsequent decline in quality was probably due to improved summer growing conditions causing some of the sugar resources to be used for growth purposes. The time between peak quality and harvest was not sufficient for quality to have declined to levels where ripener use might be justified.

Lodging was worse in ripener plots than control plots in the plant crop, due to the spraying procedure and not the ripeners as such. At spraying cane rows were parted by hand, with skip-rows offering no resistance to cane that had been parted, therefore lodging was made worse in ripener plots. Cane planted in the skip-rows at the start of the first ratoon served the purpose of reducing lodging.

Results of this trial support those of other trials showing N14's improved performance over NCo376 in terms of yield. N14 had less fibre than NCo376 at harvest, making it more favourable for milling.

CONCLUSION

Roundup and Fusilade did not improve quality and they reduced yields when applied to late-season cane in this trial. These results and those from a previous trial have shown that cane had already matured naturally at spraying in September and October, therefore chemical ripening attempts have been futile. This trial was terminated after the first ratoon harvest and it is unlikely that there will be any more late-season ripener trials in future.

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7310/11 CHEMICAL RIPENER TRIAL

TABLE 1 : YIELD DATA - Plant and first ratoon crops.

TREATMENTS	CANE YIELD t/ha			ERC YIELD t/ha			ERF YIELD t/ha		
	P	1R	Mean	P	1R	Mean	P	1R	Mean
Varieties (V)									
1. NCo376	125,22	120,46	122,84	14,47	15,55	15,01	16,12	16,51	16,32
2. N14	139,15	136,49	137,82	16,88	17,12	17,00	18,22	18,15	18,19
Significance	***	***	-	***	***	-	***	***	-
L.S.D. P = 0,05	5,70	5,82	-	1,13	0,67	-	1,05	0,72	-
P = 0,01	7,75	7,91	-	1,54	0,91	-	1,42	0,98	-
S.E. Variety (V) mean ±	1,94	1,98	-	0,39	0,23	-	0,36	0,25	-
Ripeners (R)									
1. Control - no chemical ripener	135,62	137,04	136,33	16,54	17,24	16,89	17,84	18,33	18,09
Chemical ripeners (as a whole)	131,50	126,76	129,13	15,50	16,16	15,83	17,04	17,13	17,09
Significance	N.S.	*	-	N.S.	*	-	N.S.	*	-
1st Ripener Application									
2. Roundup @ 0,41 kg/ha a.i.	130,71	124,74	127,73	16,11	16,34	16,23	17,49	17,27	17,38
3. Fusilade @ 0,041 kg/ha a.i.	130,69	124,41	127,55	15,64	16,00	15,82	17,01	16,87	16,94
2nd Ripener Application									
4. Roundup @ 0,41 kg/ha a.i.	134,69	125,83	130,26	15,42	15,93	15,68	17,26	16,95	17,11
5. Fusilade @ 0,041 kg/ha a.i.	128,79	131,90	130,35	15,25	16,34	15,80	16,74	17,48	17,11
6. Fusilade @ 0,056 kg/ha a.i.	133,26	126,93	130,10	15,09	16,18	15,64	16,69	17,10	16,90
Significance	N.S.	N.S	-	N.S.	N.S.	N.S.	N.S.	N.S.	-
S.E. Ripener (R) mean ±	3,37	3,44	-	0,67	0,39	-	0,62	0,43	
V x R Interaction	N.S.	N.S.	-	N.S.	N.S.	-	N.S.	N.S.	
Trial mean	132,19	128,48	130,34	15,67	16,34	16,01	17,17	17,33	17,25
S.E. single plot ±	8,25	8,42	-	1,64	0,97	-	1,51	1,05	-
C.V.%	6,24	6,55	-	10,43	5,91	-	8,82	6,05	-

7310/11 CHEMICAL RIPENER TRIAL

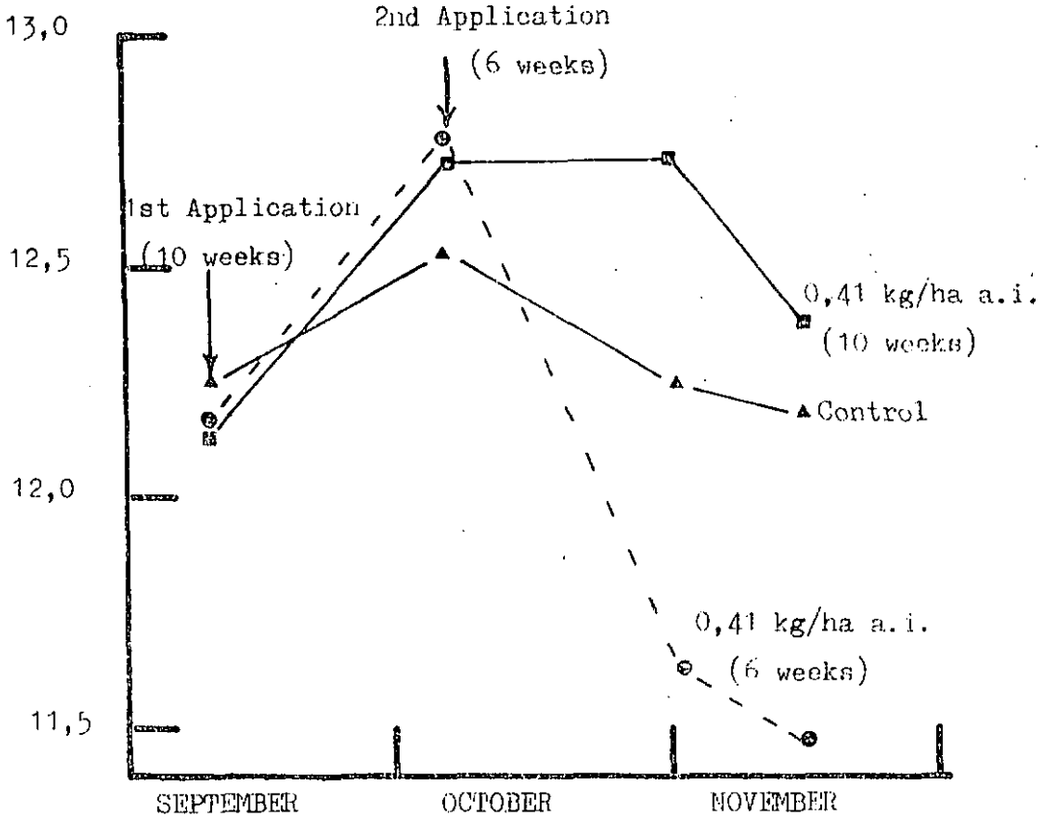
TABLE 2 : STALK DATA - Plant and first ratoon crops

TREATMENTS		STALKS/ha x 10^{-3}			STALK LENGTHS(m)		
		P	1R	Mean	P	1R	Mean
Varieties	1. NCo376	156,5	196,6	176,6	2,59	2,29	2,44
	2. N14	115,2	142,2	128,7	2,77	2,58	2,68
Ripeners	1. Control - no chemical ripener	138,6	163,8	151,2	2,67	2,46	2,57
	1st Ripener Application						
	2. Roundup @ 0,41 kg/ha a.i.	135,8	171,4	153,6	2,70	2,43	2,57
	3. Fusilade @ 0,041 kg/ha a.i.	134,5	169,7	152,1	2,67	2,43	2,55
	2nd Ripener Application						
	4. Roundup @ 0,41 kg/ha a.i.	137,5	170,6	154,1	2,68	2,41	2,55
	5. Fusilade @ 0,041 kg/ha a.i.	132,3	169,9	151,1	2,61	2,51	2,56
	6. Fusilade @ 0,056 kg/ha a.i.	136,5	170,9	153,7	2,75	2,40	2,58
TRIAL MEAN		135,9	169,4	152,7	2,68	2,44	2,56

TREATMENTS		CANE DIAMETERS (cm)			LODGING %		
		P	1R	Mean	P	1R	Mean
Varieties	1. NCo376	2,1	2,0	2,1	77	2	40
	2. N14	2,4	2,1	2,3	62	7	35
Ripeners	1. Control - no chemical ripener	2,2	2,0	2,1	55	0	28
	1st Ripener Application						
	2. Roundup @ 0,41 kg/ha a.i.	2,3	2,1	2,2	67	0	34
	3. Fusilade @ 0,041 kg/ha a.i.	2,1	2,0	2,1	80	2	41
	2nd Ripener Application						
	4. Roundup @ 0,41 kg/ha a.i.	2,2	2,1	2,2	57	0	29
	5. Fusilade @ 0,041 kg/ha a.i.	2,2	2,1	2,2	75	16	46
	6. Fusilade @ 0,056 kg/ha a.i.	2,2	2,0	2,1	82	8	45
TRIAL MEAN		2,2	2,1	2,2	69	4	37

7310/11 CHEMICAL RIPENER TRIAL

a) Plant crop



b) First ratoon

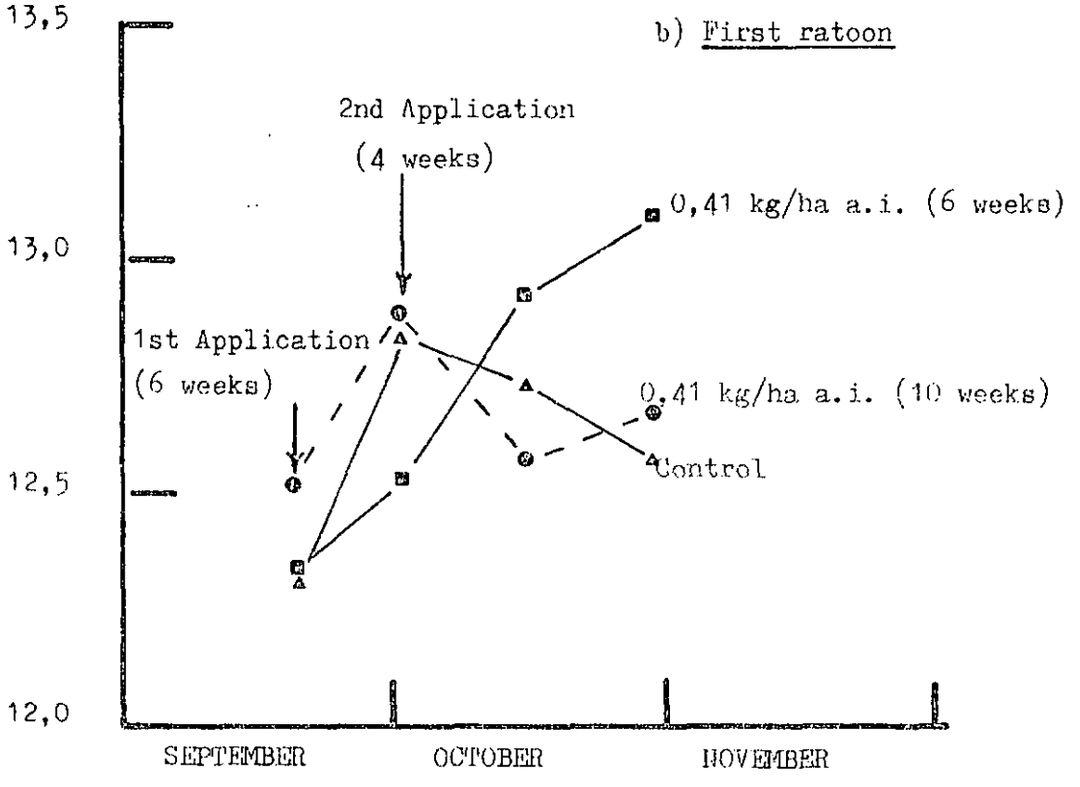
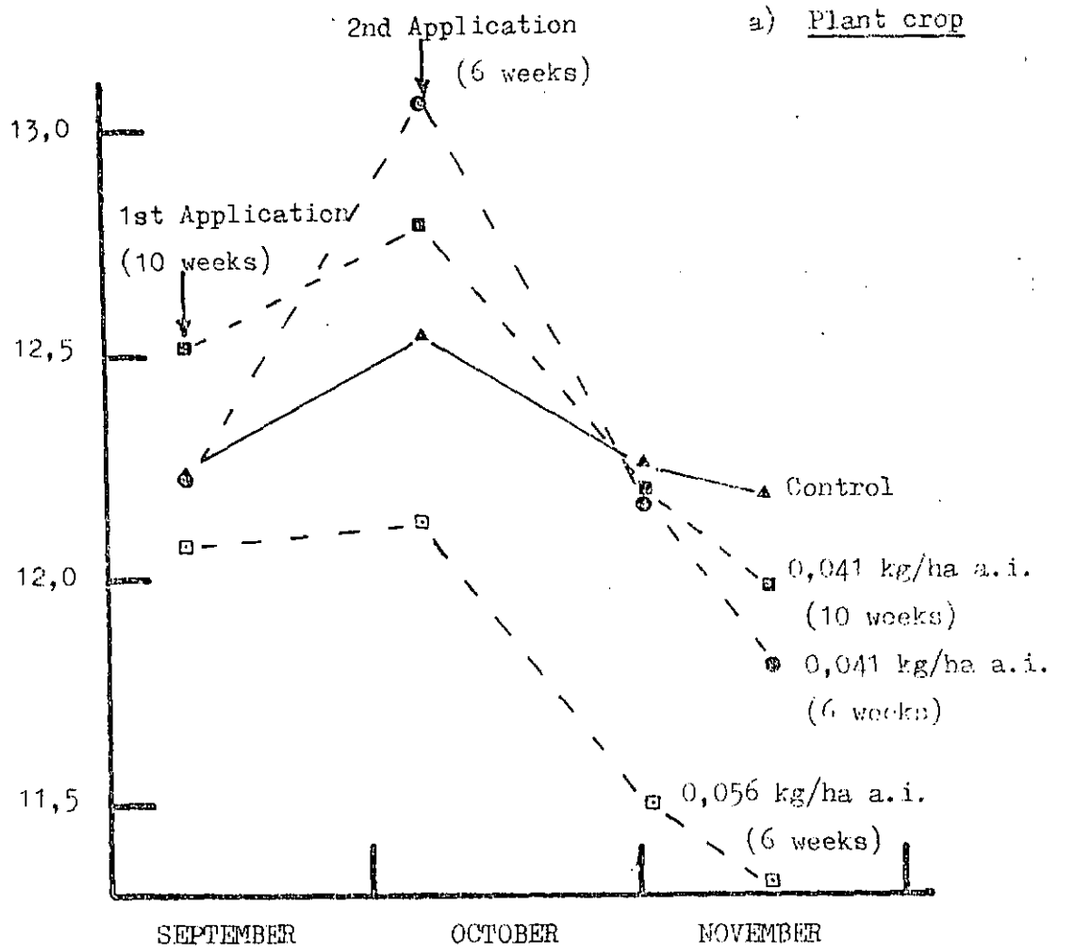


Figure 1 : Differences in ERC% cane between Roundup treatments over ripening period

7310/11 CHEMICAL RIPENER TRIAL

a) Plant crop



b) First ratoon

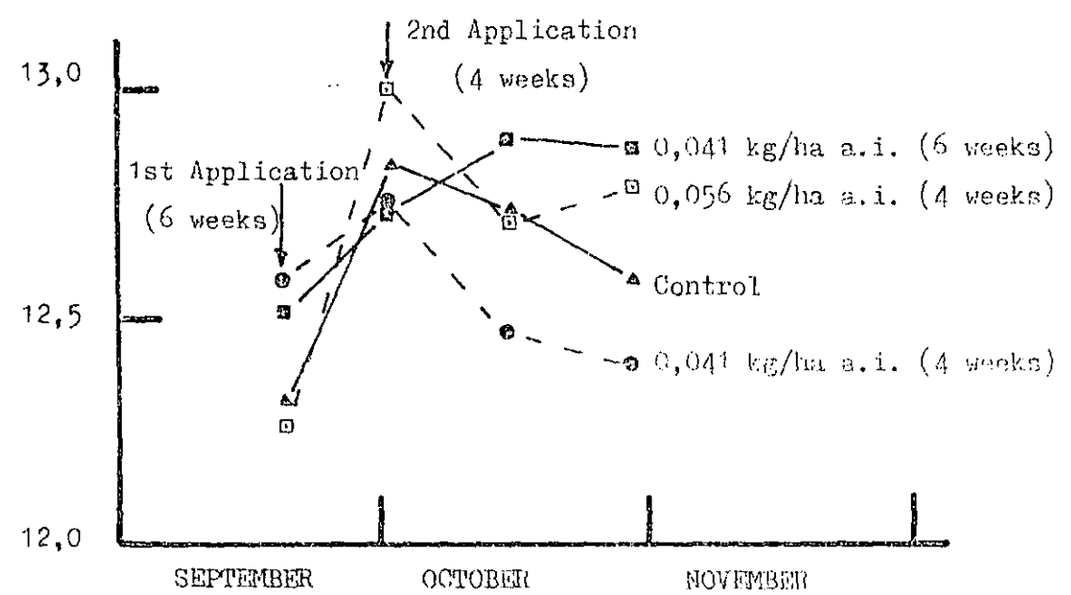


Figure 2 : Differences in ERC% cane between Fusilade treatments over ripeneing period.

7310/11 CHEMICAL RIPENER TRIAL (Plant and first ratoon crops)

APPENDIX I : ERC % CANE - From First ripener application to harvest

TREATMENTS	Date and weeks before harvest when samples were taken								MEAN OF P & 1R AT HARVEST
	PLANT CROP				FIRST RATOON				
	9.9.85 10	7.10.85 6	1.11.85 2	15.11.85 9	19.9.86 6	2.10.86 4	15.10.86 2	29.10.86 0	
Varieties (V)									
1. NCo376	12,44	12,71	12,01	11,52	12,55	12,73	12,80	12,93	12,23
2. N14	12,02	12,62	12,15	12,19	12,28	12,84	12,64	12,55	12,37
Significance	**	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	*	-
LSD P = 0,05	0,28	-	-	-	-	-	-	0,28	-
P = 0,01	0,38	-	-	-	-	-	-	-	-
S.E. Variety mean ±	0,10	0,18	0,14	0,24	0,28	0,09	0,11	0,09	-
Ripeners (R)									
1. Control - no chemical ripener	12,25	12,53	12,25	12,19	12,31	12,83	12,73	12,59	12,39
1st Ripener Application									
2. Roundup @ 0,41 kg/ha a.i.	12,14	12,72	12,73	12,37	12,34	12,53	12,93	13,10	12,74
3. Fusilade @ 0,041 kg/ha a.i.	12,51	12,78	12,20	11,97	12,51	12,73	12,89	12,87	12,42
2nd Ripener Application									
4. Roundup @ 0,41 kg/ha a.i.	12,17	12,78	11,62	11,48	12,51	12,89	12,58	12,68	12,08
5. Fusilade @ 0,041 kg/ha a.i.	12,24	13,06	12,17	11,80	12,58	12,74	12,47	12,40	12,10
6. Fusilade @ 0,056 kg/ha a.i.	12,07	12,12	11,50	11,33	12,26	13,00	12,71	12,78	12,06
Significance	N.S.	N.S.	*	N.S.	N.S.	N.S.	N.S.	N.S.	-
LSD P = 0,05	-	-	0,70	-	-	-	-	-	-
S.E. Ripener mean ±	0,17	0,22	0,24	0,41	0,16	0,15	0,20	0,16	-
V x R Interaction	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	-
Trial mean	12,23	12,66	12,08	11,86	12,42	12,79	12,72	12,74	12,30
S.E. single plot ±	0,41	0,54	0,59	1,01	0,40	0,38	0,49	0,40	-
C.V.%	3,34	4,23	4,87	8,55	3,22	2,97	3,82	3,14	-

7310/11 CHEMICAL RIPENER TRIAL (Plant and first ratoon crops)

APPENDIX II ERF % CANE - From first ripener application to harvest

TREATMENTS	Date and weeks before harvest when samples were taken								MEAN OF P & 1R AT HARVEST
		PLANT CROP			FIRST RATOON				
	9.9.85 10	7.10.85 6	11.11.85 2	15.11.85 0	19.9.86 6	2.10.86 4	15.10.86 2	29.10.86 0	
Varieties (V)									
1. NCo376	13,55	13,54	12,86	12,89	13,40	13,49	13,49	13,72	13,31
2. N14	13,15	13,44	13,07	13,09	13,08	13,59	13,46	13,31	13,20
Significance	***	N.S.	N.S.	N.S.	*	N.S.	N.S.	***	-
LSD P = 0,05	0,26	-	-	-	0,24	-	-	0,22	-
P = 0,01	0,35	-	-	-	-	-	-	0,29	-
S.E. Variety mean ±	0,09	0,13	0,14	0,19	0,08	0,09	0,11	0,07	-
Ripeners (R)									
1. Control - no chemical ripener	13,31	13,33	13,14	13,15	13,14	13,62	13,48	13,39	13,27
1st Ripener Application									
2. Roundup @ 0,41 kg/ha a.i.	13,31	13,53	13,53	13,41	13,14	13,30	13,65	13,87	13,64
3. Fusilade @ 0,041 kg/ha a.i.	13,54	13,59	13,06	13,01	13,31	13,43	13,65	13,57	13,29
2nd Ripener Application									
4. Roundup @ 0,41 kg/ha a.i.	13,31	13,69	12,53	12,86	13,29	13,64	13,34	13,48	13,17
5. Fusilade @ 0,041 kg/ha a.i.	13,26	13,88	13,07	12,98	13,42	13,51	13,24	13,26	13,12
6. Fusilade @ 0,056 kg/ha a.i.	13,47	12,91	12,45	12,54	13,14	13,76	13,50	13,51	13,03
Significance	N.S.	N.S.	*	N.S.	N.S.	N.S.	N.S.	N.S.	-
LSD P = 0,05	-	-	0,70	-	-	-	-	-	-
S.E. Ripener mean ±	0,15	0,23	0,24	0,33	0,14	0,15	0,19	0,13	-
V x R Interaction	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	-
Trial mean	13,30	13,49	12,96	12,99	13,24	13,54	13,48	13,51	13,25
S.E. single plot	0,38	0,56	0,59	0,82	0,35	0,38	0,46	0,31	-
C.V.%	2,83	4,13	4,54	6,29	2,66	2,78	3,39	2,30	-

7310/11 CHEMICAL RIPENER TRIAL (Plant and first ratoon crops)

APPENDIX III FIBRE % CANE - From first ripener application to harvest

TREATMENTS	Date and weeks before harvest when samples were taken								MEAN OF P & 1R AT HARVEST
	PLANT CROP				FIRST RATOON				
	9.9.85 10	7.10.85 6	1.11.85 2	15.11.85 0	19.9.86 6	2.10.86 4	15.10.86 2	29.10.86 0	
Varieties (V)									
1. NCo376	15,5	16,0	16,5	16,5	15,8	15,6	16,3	16,8	16,7
2. N14	15,2	14,8	15,3	15,2	14,3	15,3	15,8	15,7	15,5
Significance	N.S.	***	***	**	***	N.S.	N.S.	***	-
LSD P = 0,05	-	0,6	0,6	0,7	0,6	-	-	0,4	-
P = 0,01	-	0,8	0,8	1,0	0,9	-	-	0,5	-
S.E. Variety mean ±	0,1	0,2	0,2	0,2	0,2	0,3	0,2	0,1	-
Ripeners (R)									
1. Control - no chemical ripener	15,3	15,5	16,1	16,5	15,4	15,2	16,3	16,2	16,4
1st Ripener Application									
2. Roundup @ 0,41 kg/ha a.i.	15,4	15,2	16,4	16,8	15,0	16,2	16,2	16,4	16,6
3. Fusilade @ 0,041 kg/ha a.i.	14,8	15,3	15,5	14,9	15,0	15,8	15,6	16,3	15,6
2nd Ripener Application									
4. Roundup @ 0,41 kg/ha a.i.	15,1	15,3	15,9	15,5	14,9	15,0	16,1	16,2	15,9
5. Fusilade @ 0,041 kg/ha a.i.	15,8	15,5	15,6	15,7	14,9	15,4	16,2	15,9	15,8
6. Fusilade @ 0,056 kg/ha a.i.	15,5	15,5	15,9	15,9	15,2	15,2	16,0	16,5	16,2
Significance	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	-
S.E. Ripener mean ±	0,2	0,3	0,4	0,4	0,4	0,4	0,4	0,2	-
V x R Interaction	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	-
Trial mean	15,3	15,4	15,9	15,9	15,1	15,4	16,1	16,3	16,1
S.E. single plot ±	0,6	0,8	0,9	1,0	0,9	1,1	1,0	0,6	-
C.V.%	3,63	5,40	5,40	6,49	6,12	7,10	6,24	3,44	-

SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

7310/11 CHEMICAL RIPENER TRIAL

Cat: 1499

Object: To compare the effect of spraying Glyphosate and Fusilade Super on late-season cane.

This crop: Plant crop **Age:** 13,0 months (16.10.84 - 15.11.85).

Location: ZSA Experiment Station, Field C1-3.

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

Design: 2 x 6 factorial with 3 replications.

Spacing: 1,5 m between rows.

Fertiliser: kg/ha

N	P_2O_5	K_2O
120	100	60

(N.B. The nitrogen application was reduced due to high residual N levels after Dolichos beans.)

Irrigation: 1 312 mm **Rainfall:** 744 mm

Treatments

a) Varieties
1. NCo 376
2. N 14

b) Ripener Treatments
1. Control - No chemical ripener
2. Glyphosate @ 0,41 kg/ha a.i. (1,0 l/ha product) applied 10 weeks before harvest.
3. Fusilade Super @ 0,041 kg/ha a.i. (0,33 l/ha product) applied 10 weeks before harvest.
4. Glyphosate @ 0,41 kg/ha a.i. (1,0 l/ha product) applied 6 weeks before harvest.
5. Fusilade Super @ 0,041 kg/ha a.i. (o,33 l/ha product) applied 6 weeks before harvest.
6. Fusilade Super @ 0,056 kg/ha a.i. (o,45 l/ha product) applied 6 weeks before harvest.

Conduct:

1. At planting, a skip-row was left between each plot to facilitate access to the plots. At the time it was envisaged that a boom sprayer capable of spraying the whole 5-row plot would be used. This method proved impractical and was abandoned.
2. Glyphosate and Fusilade Super were first applied on 9 September, 1985 from 7.00 - 9.00 a.m., as planned. The weather was sunny and calm giving ideal spraying conditions.
3. The second application of Glyphosate and Fusilade Super was on 11 October, 1985 between 6.30 and 9.00 a.m. There was a little dew on the cane leaves and conditions were cloudy with a slight wind. Spraying was delayed four days from 7 October, 1985 due to thunder showers.
4. Samples for sucrose analysis were taken at 10, 6, and 2 weeks before harvest, in addition to the harvest sample.

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5. The trial was dried-off immediately after the second ripener application until harvest (5 weeks).

Spraying details

1. A carbon dioxide pressurised knapsack sprayer with a T-boom was used.
2. The T-boom was fitted with two TK 1,5 nozzles, 1,5 m apart, so as to spray two cane rows at a time. The cross-piece of the T-boom was kept 50 cm above the canopy with nozzles spraying backwards and downwards.
3. At a constant pressure of 220 kPa and a walking speed of 1,25 m/s the sprayer delivered 75,9 l/ha.

RESULTS

a) Harvest data. Relevant yield and stalk data are shown in Tables 1 and 2 respectively. Glyphosate and Fusilade Super did not improve yield or quality of the cane. On the contrary, ripener applications at 6 weeks before harvest may have caused a non-significant decline in quality.

Variety N 14 outyielded NCo 376 in terms of cane, ERC, and ERF yields. Though not significant, N 14 also had higher ERC% cane and ERF% cane values than NCo 376.

N 14 had a lower millable stalk population than NCo 376. However, N 14 stalks were longer and thicker, giving them a larger stalk volume than NCo 376 stalks. Both varieties were badly lodged at harvest, with NCo 376 lodging more than N 14. Incidence of flowering was low with no notable differences between varieties.

Ripeners did not affect stalk characteristics apart from supressing flowering. Ripener treatments lodged more than controls, but this was not a ripener effect (see Discussion).

b) Maturity Tests. (see Appendices I-IV). The ERC% cane data from these tests is presented in graph form in Figure 1. From 7 October, 1985 (6 weeks before spraying) to harvest there was a general decline in quality. Only Glyphosate at 0,41 kg/ha a.i. (applied 10 weeks before harvest) had a higher ERC% cane value than the control at harvest. All other treatments had lower ERC% cane values than the control, with ripeners applied at 6 weeks before harvest making up the lowest values.

Mean purity was very high (90,4%) when the trial was first sprayed on 9 September, 1985. Purities tended to follow the same trend as ERC% cane, as did ERF% cane and Pol% cane.

At 10 weeks before harvest, NCo 376 had significantly higher ERC% cane, ERF% cane and Pol% cane values than N 14. By harvest this had changed with N 14 having higher values than NCo 376. (Differences not significant).

From 7 October, 1985 up until harvest, NCo 376 had more fibre than N 14. NCo 376 showed no change in fibre% cane throughout the ripening period.

c) Visual symptoms were not marked at any stage during ripening. Both Glyphosate and Fusilade Super treatments had dead spindle

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leaves and varying degrees of leaf scorch. There were no signs of ring-barking in the Fusilade Super treatments.

DISCUSSION

Purities at both times of spraying were too high for there to have been a positive response. It should be noted than purities in general were 2-3 units higher than normal due to faulty equipment. This however did not change the fact that they were still above 85% (above which a response to ripeners would have been unlikely). Visual symptoms confirmed harvest data indicating no positive ripening response.

Lodging was worse in ripener plots than control plots due to spraying procedure and not due to the ripeners as such. At spraying, cane rows in the nett plot were parted by hand. Skip-rows at plot edges offered no resistance, therefore this exercise worsened lodging in ripener plots. Cane has been planted in each skip-row to prevent the re-occurrence of this problem.

Maturity test data indicated that the best time for the trial to have been harvested was 6 weeks before schedule. After this date there was a general decline in quality probably due to emergence of side-shoots. Side-shooting was in turn due to lodging and excess water (from rain and prolonged irrigation before drying-off). Reasons why ripeners applied at 6 weeks before harvest caused an even greater decline in quality are not clear.

Results supported those from other trials showing N 14's improved performance over NCo 376 in the plant crop. N 14 had less fibre than NCo 376 at harvest, making it more favourable for milling.

CONCLUSIONS

Neither Glyphosate nor Fusilade Super gave a positive ripening response when applied to late-season cane. These results and those from a previous trial (7310/10) have shown that late-season cane at time of spraying has already matured due to natural ripening. This trial will be continued for at least one more season.

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7310/11 : CHEMICAL RIPENER TRIAL

TABLE 1 : YIELD DATA (PLANT CROP)

TREATMENTS	CANE YIELD t/ha	ERC% CANE	ERC YIELD t/ha	ERF% CANE	ERF YIELD t/ha
VARIETIES (V)					
1. NCo 376	125,22	11,52	14,47	12,89	16,12
2. N 14	139,15	12,19	16,88	13,09	18,22
Significance	***	N.S.	***	N.S.	***
L.S.D. P = 0,05	5,70	-	1,13	-	1,05
P = 0,01	7,75	-	1,54	-	1,42
S.E. Variety mean ±	1,94	0,24	0,39	0,19	0,36
RIPENERS (R)					
1. Control - No chemical ripener	135,62	12,19	16,54	13,15	17,84
1st Ripener Application (10 weeks before harvest)					
2. Glyphosate @ 0,41 kg/ha a.i.	130,71	12,37	16,11	13,41	17,49
3. Fusilade Super @ 0,041 kg/ha a.i.	130,69	11,97	15,64	13,01	17,01
2nd Ripener Application (6 weeks before harvest)					
4. Glyphosate @ 0,41 kg/ha a.i.	134,06	11,48	15,42	12,86	17,26
5. Fusilade Super @ 0,041 kg/ha a.i.	128,79	11,80	15,25	12,98	16,74
6. Fusilade Super @ 0,056 kg/ha a.i.	133,26	11,33	15,09	12,54	16,69
Significance	N.S.	N.S.	N.S.	N.S.	N.S.
S.E. Ripener mean ±	3,37	0,41	0,67	0,33	0,62
V x R Interaction	N.S.	N.S.	N.S.	N.S.	N.S.
Trial mean	132,19	11,86	15,67	12,99	17,17
S.E. single plot ±	8,25	1,01	1,64	0,82	1,51
C.V.%	6,24	8,55	10,43	6,29	8,82

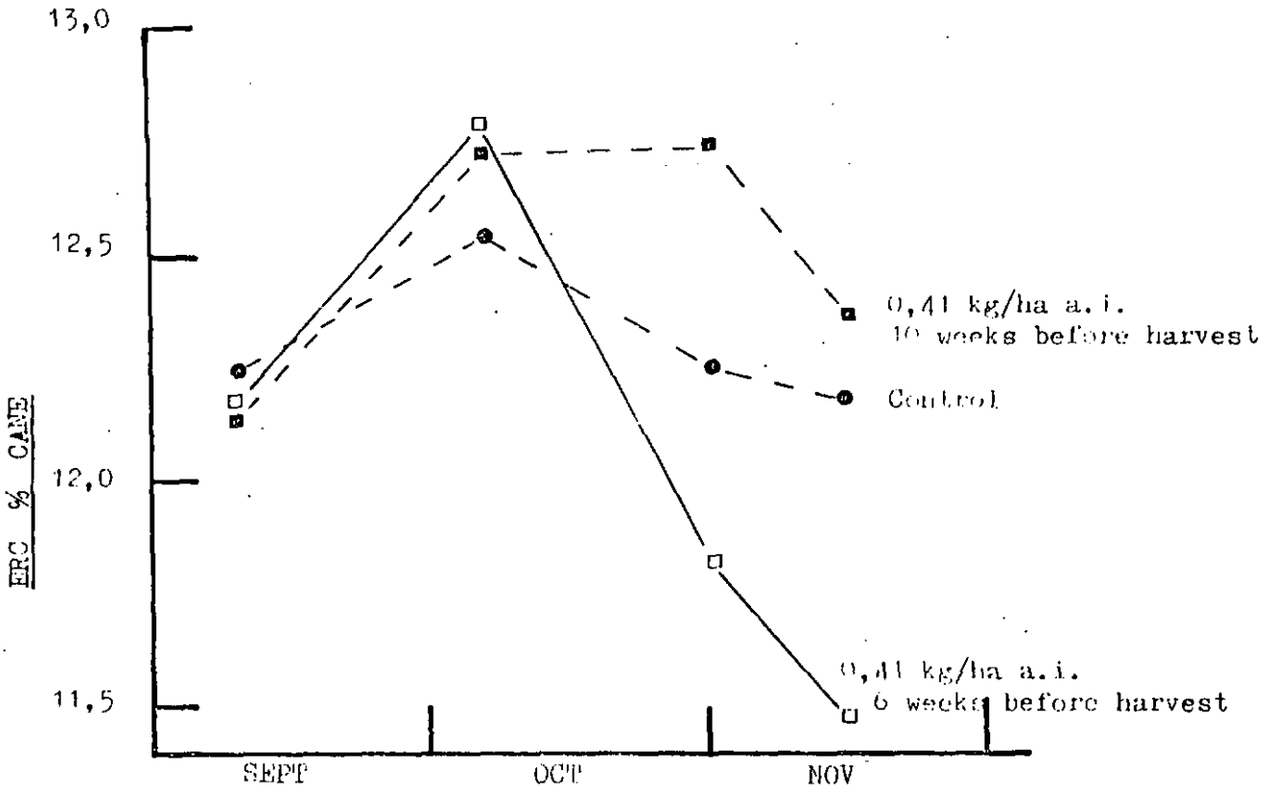
7310/11 : CHEMICAL RIPENER TRIAL

TABLE 2 : STALK DATA

TREATMENTS	STALKS/ ha x 10 -3	STALK LENGTHS m	CANE DIAMETERS cm	LODGING %	FLOWERING %
VARIETIES (V)					
1. NCo 376	156,5	2,59	2,1	77	5
2. N 14	115,2	2,77	2,4	62	3
RIPENERS (R)					
1. Control - No chemical ripener	138,6	2,67	2,2	55	17
1st Ripener Application (10 weeks before harvest)					
2. Glyphosate @ 0,41 kg/ha a.i.	135,8	2,70	2,3	67	2
3. Fusilade Super @ 0,041 kg/ha a.i.	134,5	2,67	2,1	80	0
2nd Ripener Application (6 weeks before harvest)					
4. Glyphosate @ 0,41 kg/ha a.i.	137,5	2,68	2,2	57	2
5. Fusilade Super @ 0,041 kg/ha a.i.	132,3	2,61	2,2	75	3
6. Fusilade Super @ 0,056 kg/ha a.i.	136,5	2,75	2,2	82	0
TRIAL MEAN	135,9	2,68	2,2	69	4

7310/11 : CHEMICAL RIPENER TRIAL

a) Glyphosate Treatments



b) Fusilade Super Treatments

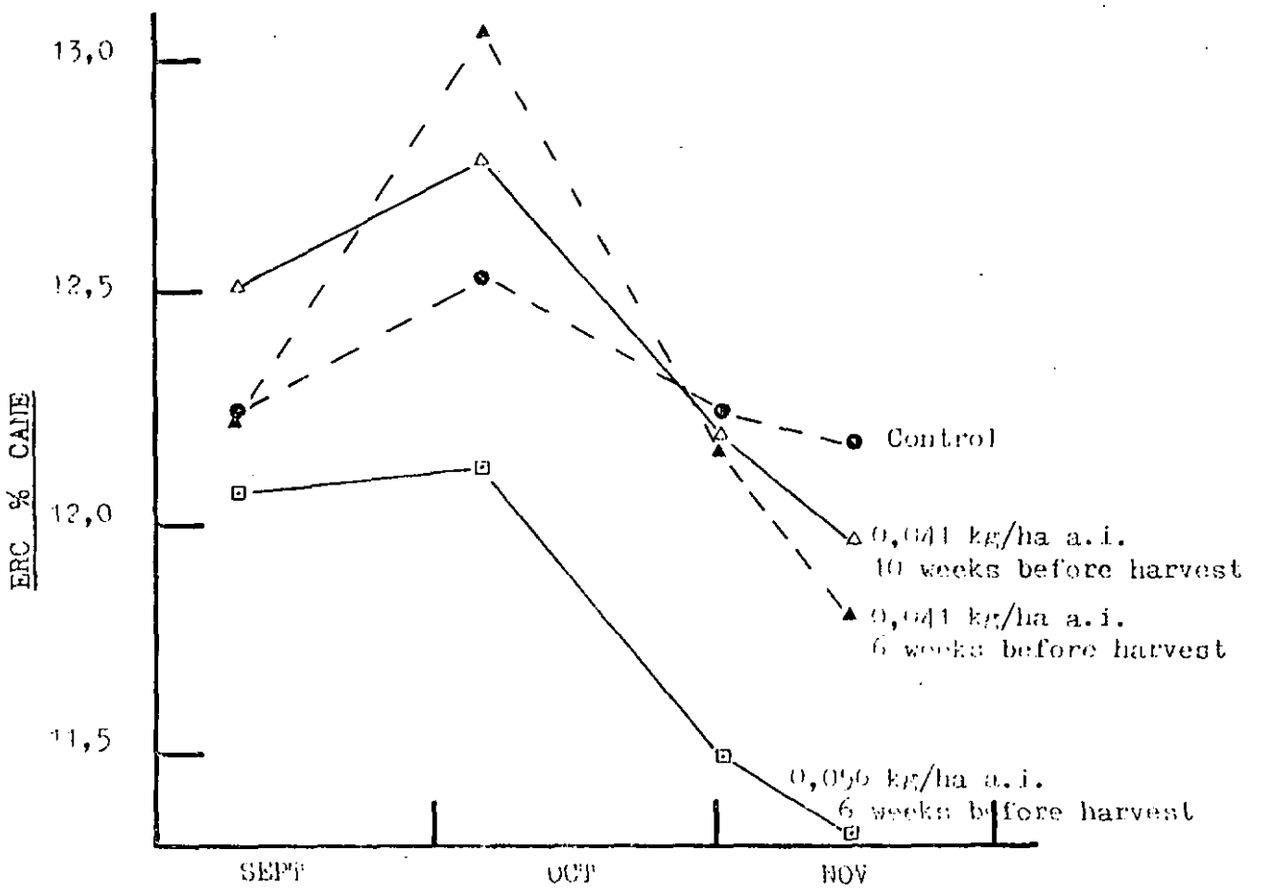


Figure 1 : Differences in ERC% cane between ripener treatments over ripening period.

7310/11 : CHEMICAL RIPENER TRIAL

APPENDIX I : MATURITY TEST (9/9/85 - 10 weeks before harvest, Day of 1st Ripener Application)

TREATMENTS	ERC% CANE	ERF% CANE	POL% CANE	PURITY% CANE	FIBRE% CANE
Varieties (V)					
1. NCo 376	12,44	13,55	13,88	90,7	15,5
2. N 14	12,02	13,15	13,40	90,0	15,2
Significance	**	***	***	N.S.	N.S.
L.S.D. P = 0,05	0,28	0,26	0,25	-	-
P = 0,01	0,38	0,35	0,35	-	-
S.E. Variety mean ±	0,10	0,09	0,08	0,30	0,13
Ripeners (R)					
1. Control - No chemical ripener	12,25	13,31	13,64	90,6	15,3
1st Ripener Application (10 weeks before harvest)					
2. Glyphosate @ 0,41 kg/ha a.i.	12,14	13,31	13,61	89,5	15,4
3. Fusilade Super @ 0,041 kg/ha a.i.	12,51	13,54	13,92	90,5	14,8
2nd Ripener Application (6 weeks before harvest)					
4. Glyphosate @ 0,41 kg/ha a.i.	12,17	13,31	13,57	90,4	15,1
5. Fusilade Super @ 0,041 kg/ha a.i.	12,24	13,26	13,62	91,0	15,8
6. Fusilade Super @ 0,056 kg/ha a.i.	12,07	13,47	13,49	90,1	15,5
Significance	N.S.	N.S.	N.S.	N.S.	N.S.
S.E. Ripener mean ±	0,17	0,15	0,15	0,52	0,23
V x R Interaction	N.S.	N.S.	N.S.	N.S.	N.S.
Trial mean	12,23	13,30	13,64	90,4	15,3
S.E. single plot ±	0,41	0,38	0,36	1,29	0,56
C.V.%	3,34	2,83	2,63	1,42	3,63

7310/11 : CHEMICAL RIPENER TRIAL

APPENDIX II : MATURITY TEST (7/10/85 - 6 weeks before harvest, 4 days before 2nd Ripener Application)

TREATMENTS	ERC% CANE	ERF% CANE	POL% CANE	PURITY% CANE	FIBRE% CANE
Varieties (V)					
1. NCo 376	12,71	13,54	13,99	93,0	16,0
2. N 14	12,62	13,44	13,88	92,8	14,8
Significance	N.S.	N.S.	N.S.	N.S.	***
L.S.D. P = 0,05	-	-	-	-	0,58
P = 0,01	-	-	-	-	0,78
S.E. Variety mean ±	0,13	0,13	0,14	0,23	0,20
Ripeners (R)					
1. Control - No chemical ripener	12,53	13,33	13,79	92,9	15,5
1st Ripener Application (10 weeks before harvest)					
2. Glyphosate @ 0,41 kg/ha a.i.	12,72	13,53	13,99	92,7	15,2
3. Fusilade Super @ 0,041 kg/ha a.i.	12,78	13,59	14,04	92,9	15,3
2nd Ripener Application (6 weeks before harvest)					
4. Glyphosate @ 0,41 kg/ha a.i.	12,78	13,69	14,12	92,9	15,3
5. Fusilade Super @ 0,041 kg/ha a.i.	13,06	13,88	14,30	93,5	15,5
6. Fusilade Super @ 0,056 kg/ha a.i.	12,12	12,91	13,36	92,9	15,5
Significance	N.S.	N.S.	N.S.	N.S.	N.S.
S.E. Ripener Mean	0,22	0,23	0,24	0,40	0,34
V x R Interaction	N.S.	N.S.	N.S.	N.S.	N.S.
Trial Mean	12,66	13,49	13,93	93,0	15,4
S.E. single plot ±	0,54	0,56	0,58	0,97	0,83
C.V.%	4,23	4,13	4,19	1,05	5,40

7310/11 : CHEMICAL RIPENER TRIAL

APPENDIX III : MATURITY TEST (1/11/85 - 2 weeks before harvest)

TREATMENTS	ERC% CANE	ERF% CANE	POL% CANE	PURITY% CANE	FIBRE% CANE
Varieties (V)					
1. NCo 376	12,01	12,86	13,32	90,9	16,5
2. N 14	12,15	13,07	13,57	91,4	15,3
Significance	N.S.	N.S.	N.S.	N.S.	***
L.S.D. P = 0,05	-	-	-	-	0,59
P = 0,01	-	-	-	-	0,81
S.E. Variety mean ±	0,14	0,14	0,15	0,37	0,20
Ripeners (R)					
1. Control - No chemical ripener	12,25	13,14	13,61	91,6	16,1
1st Ripener Application (10 weeks before harvest)					
2. Glyphosate @ 0,41 kg/ha a.i.	12,73	13,53	14,08	92,3	16,4
3. Fusilade Super @ 0,041 kg/ha a.i.	12,20	13,06	13,56	91,2	15,5
2nd Ripener Application (6 weeks before harvest)					
4. Glyphosate @ 0,41 kg/ha a.i.	11,62	12,53	13,03	90,0	15,9
5. Fusilade Super @ 0,041 kg/ha a.i.	12,17	13,07	13,50	91,5	15,6
6. Fusilade Super @ 0,056 kg/ha a.i.	11,50	12,45	12,87	90,5	15,9
Significance	*	*	*	N.S.	N.S.
L.S.D. P = 0,05	0,70	0,70	0,76	-	-
P = 0,01	0,96	0,96	1,03	-	-
S.E. Ripener mean ±	0,24	0,24	0,26	0,65	0,35
V x R Interaction	N.S.	N.S.	N.S.	N.S.	N.S.
Trial mean	12,08	12,96	13,44	91,2	15,9
S.E. single plot ±	0,59	0,59	0,64	1,59	0,86
C.V.%	4,87	4,54	4,73	1,74	5,40

7310/11 : CHEMICAL RIPENER TRIAL

APPENDIX IV : MATURITY TEST (At harvest - 15/11/85)

TREATMENTS	ERC% CANE	ERF% CANE	POL% CANE	PURITY% CANE	FIBRE% CANE
Varieties (V)					
1. NCo 376	11,52	12,89	13,21	87,8	16,5
2. N 14	12,19	13,09	13,66	88,4	15,2
Significance	N.S.	N.S.	N.S.	N.S.	**
L.S.D. P = 0,05	-	-	-	-	-
P = 0,01	-	-	-	-	-
S.E. Variety mean ±	0,24	0,19	0,23	0,58	0,24
Ripeners (R)					
1. Control - No chemical Ripener	12,19	13,15	13,72	89,4	16,5
1st Ripener Application (10 weeks before harvest)					
2. Glyphosate @ 0,41 kg/ha a.i.	12,37	13,41	13,93	89,2	16,8
3. Fusilade Super @ 0,041 kg/ha a.i.	11,97	13,01	13,48	88,5	14,9
2nd Ripener Application (6 weeks before harvest)					
4. Glyphosate @ 0,41 kg/ha a.i.	11,48	12,36	13,11	86,7	15,5
5. Fusilade Super @ 0,041 kg/ha a.i.	11,30	12,98	13,40	87,7	15,7
6. Fusilade Super @ 0,056 kg/ha a.i.	11,33	12,54	12,95	87,0	15,9
Significance	N.S.	N.S.	N.S.	N.S.	N.S.
S.E. Ripener mean ±	0,41	0,33	0,40	1,01	0,42
V x R Interaction	N.S.	N.S.	N.S.	N.S.	N.S.
Trial mean	11,86	12,99	13,43	88,1	15,9
S.E. single plot ±	1,01	0,82	0,98	2,47	1,03
C.V.%	8,55	6,29	7,28	2,80	6,49