

SOUTH AFRICAN SUGAR INDUSTRY AGRONOMISTS' ASSOCIATION

CODE: N32 x Ripening 84/04/Sw/Sim 'R'

CAT : 2202

CHEMICAL RIPENING OF N32 WITH ETHREL AND FUSILADE SUPER

1. PARTICULARS OF PROJECT

This crop	: 3 rd Ratoon	Age	: 11.9 months
Site	: RSSC (Simunye)	Dates	: 27/6/2003 – 22/6/2004
Field	: 604 Panel 14	Irrigation	: Fully irrigated (surface drip)
Region	: Northern Irrigated (Swd)	Ripener application details:	
Soil Set	: 'R'		
Design	: Random. blocks, 5 reps		
Variety	: N32		
Plot size	: 4 rows x 17m x 1.5m (gross) 2 rows x 13m x 1.5m (net)		
		Date	Age(m) Weeks Purity%
		Ethrel	17/3/04 8.7 13.8 78
		Fusilade	21/4/04 9.8 8.8 81

2. OBJECTIVE

- To determine the response of variety N32 to Ethrel and Fusilade Super applied either alone or as a combination treatment.

3. TREATMENTS

1. Control
2. Ethrel 1.5 l/ha 14 weeks pre-harvest
3. Ethrel 1.5 l/ha at 14 weeks + Fusilade 0.2 l/ha at 9 weeks
4. Fusilade S. 0.2 l/ha 9 weeks pre-harvest
5. Ethrel 1.5 l/ha at 14 weeks + Fusilade 0.3 l/ha at 9 weeks
6. Fusilade S. 0.3 l/ha 9 weeks pre-harvest
7. Ethrel 1.5 l/ha at 14 weeks + Fusilade S. 0.45 l/ha 9 weeks pre-harvest
8. Fusilade S. 0.45 l/ha 9 weeks pre-harvest

Ethrel and Fusilade were applied with a CO2 constant pressure knapsack sprayer and a hand held 'T' boom fitted with two TK 1.5 flood nozzles, delivering \pm 52 l/ha over a swath width of 6m at 200kPa.

4. SAMPLING PROCEDURE

Groups of 4 stalks were taken from the net plot rows in a systematic manner on each sampling occasion to give a total of 16 stalks per plot. On subsequent occasions, sampling started one pace further into the plot and the same sequence of sampling was followed.

5. RESULTS AND DISCUSSION

Sample data

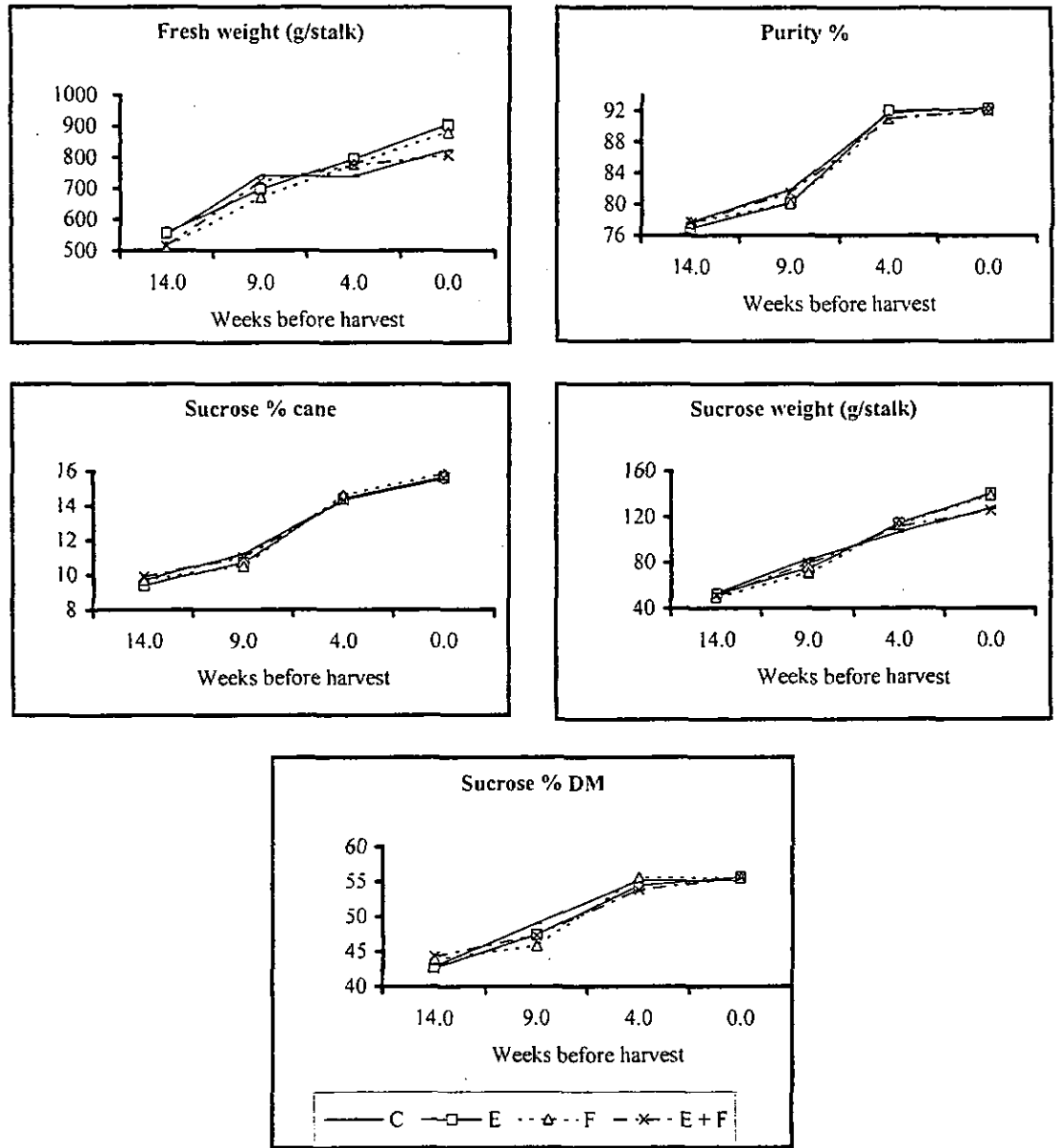
Juice purity averaged 77% when Ethrel was applied in March and 81% when fusillade was applied in April, which suggests that the cane was already mature to respond to Ethrel and sufficiently immature to respond to Fusilade (Appendix 1, Figure 1).

There were no significant differences in sucrose % cane and erc % cane (cane quality) at harvest, in response to ripener treatments. This suggests that ripener treatments were not effective at improving cane quality.

Although the combination of Ethrel and Fusilade gave the highest sucrose % dry matter at harvest, there were no significant differences when compared to the other treatments.

Trends in sucrose sample data up to harvest indicate that Ethrel may have had a growth stimulus effect by increasing stalk moisture content and stalk fresh weight at harvest (NS), with no associated increase in cane quality (Figure 1, Appendix 1).

Figure 1: Sample data (see notes)



Notes: F = mean of 0.2 l Fusilade/ha, 0.3 l Fusilade/ha and 0.45 l Fusilade/ha
 E+F = mean of Ethrel plus 0.2 l Fusilade/ha, Ethrel plus 0.3 l Fusilade/ha and Ethrel plus 0.45 l Fusilade/ha.

Harvest Results

Treatments had no statistically significant effect on cane yield. A reduction in yields was noticed with the application of both ripeners, without necessarily improving cane quality (sucrose and erc % cane) (Table 1).

When compared to the control, a combination of the reduction in yields, with no gain in quality led to a reduction in sucrose and erc yields at harvest, suggesting that the ripener treatment were not beneficial in this trial.

Table 1: Yield and quality at harvest

Treatment	Tc/ha	Purity	Moist %	S% ^{c*}	Ts/ha [*]	Erc% ^c	Terc/ha
Control	116	92.4	71.8	15.5	18.1	14.4	16.7
Ethrel 1.5 l/ha @ 14w	110	92.3	72.0	15.6	17.1	14.4	15.8
Fusilade 0.2 l/ha @ 9w	104	92.3	71.4	16.0	16.6	14.8	15.3
Fusilade 0.3 l/ha @ 9w	110	92.1	71.4	15.7	17.4	14.5	16.0
Fusilade 0.45 l/ha @ 9w	106	92.2	71.6	15.8	16.7	14.5	15.5
Ethrel 1.5 l/ha @ 14w + Fusilade 0.2 l/ha @ 9w	110	92.9	71.8	15.9	17.5	14.8	16.3
Ethrel 1.5 l/ha @ 14w + Fusilade 0.3 l/ha @ 9w	110	91.7	72.0	15.6	17.2	14.4	15.8
Ethrel 1.5 l/ha @ 14w + Fusilade 0.45 l/ha @ 9w	109	91.4	71.8	15.2	16.6	14.0	15.2
Mean	109	92.2	71.7	15.7	17.2	14.5	15.8
LSD (P=0.05)	NS	NS	NS	NS	NS	NS	NS
CV (%)	6.7	1.1	1.0	3.9	8.0	4.5	8.2

* = Sucrose measured as pol

6. CONCLUSIONS

- The results show that there is no reliability in the response of N32 to ripeners. Contrary to the previous observation, cane yields reduced with the application of ripeners with no gain in quality
- There were no statistical differences among yields of sucrose or erc, with all ripener treated plots yielding less than the control.
- With the continued unreliability of ripening results for N32, the trial has been terminated. Under the current conditions of production, it can only be safe and economic not to recommend ripeners on N32.

BMS

19/10/2005

6. APPENDICES

Appendix 1: Sample data

Cane fresh weight (g/ stalk)	Date of sample (weeks before harvest)				Incr. 14.0 - 0 wks	
	Treatment	16 Mar. (14.0)	20 Apr (9.0)	25 May (4.0)		22 Jun (0)
Control		550	740	739	822	272
Ethrel 1.5 l/ha @ 14w		556	697	794	903	347
Fusilade 0.2 l/ha @ 9w		464	691	786	888	424
Fusilade 0.3 l/ha @ 9w		517	707	778	945	428
Fusilade 0.45 l/ha @ 9w		556	616	766	806	250
Ethrel 1.5 l/ha @ 14w + Fusilade 0.2 l/ha @ 9w		544	743	778	755	211
Ethrel 1.5 l/ha @ 14w + Fusilade 0.3 l/ha @ 9w		499	728	776	874	375
Ethrel 1.5 l/ha @ 14w + Fusilade 0.45 l/ha @ 9w		499	694	765	787	288
Mean		523	702	773	848	324
LSD (P=0.05)		NS	NS	NS	116	
LSD (P=0.01)		-	-	-	NS	
CV (%)		12.2	11.9	11.5	10.6	
Moisture % cane						
Control		77.4	77.2	74.0	71.8	-6
Ethrel 1.5 l/ha @ 14w		78.1	77.4	73.6	72.0	-6
Fusilade 0.2 l/ha @ 9w		78.0	77.0	74.0	71.4	-7
Fusilade 0.3 l/ha @ 9w		77.6	77.4	73.6	71.4	-6
Fusilade 0.45 l/ha @ 9w		78.1	76.4	73.8	71.6	-7
Ethrel 1.5 l/ha @ 14w + Fusilade 0.2 l/ha @ 9w		77.3	76.4	73.8	71.8	-6
Ethrel 1.5 l/ha @ 14w + Fusilade 0.3 l/ha @ 9w		77.9	76.2	73.2	72.0	-6
Ethrel 1.5 l/ha @ 14w + Fusilade 0.45 l/ha @ 9w		78.0	77.8	73.0	71.8	-6
Mean		77.8	77.0	73.6	71.7	-6
LSD (P=0.05)		NS	NS	NS	NS	
CV (%)		1.5	1.4	1.2	1.0	
Cane dry weight (g/ stalk)						
Control		124	169	192	232	108
Ethrel 1.5 l/ha @ 14w		122	158	209	253	131
Fusilade 0.2 l/ha @ 9w		103	159	204	254	151
Fusilade 0.3 l/ha @ 9w		116	160	206	270	155
Fusilade 0.45 l/ha @ 9w		122	145	201	228	106
Ethrel 1.5 l/ha @ 14w + Fusilade 0.2 l/ha @ 9w		124	175	204	213	89
Ethrel 1.5 l/ha @ 14w + Fusilade 0.3 l/ha @ 9w		110	173	208	245	135
Ethrel 1.5 l/ha @ 14w + Fusilade 0.45 l/ha @ 9w		110	154	207	222	112
Mean		116	162	204	240	123
LSD (P=0.05)		NS	NS	NS	36	
LSD (P=0.01)		-	-	-	NS	
CV (%)		14.0	12.7	12.7	11.4	

Appendix 1: Sample data (cont.)

Purity % cane Treatment	Date of sample (weeks before harvest)				Incr. 15.2 - 0 wks
	16 Mar. (14.0)	20 Apr (9.0)	25 May (4.0)	22 Jun (0)	
Control	77.7	81.8	91.7	92.4	14.7
Ethrel 1.5 l/ha @ 14w	76.9	80.1	92.0	92.3	15.4
Fusilade 0.2 l/ha @ 9w	77.9	80.8	91.5	92.3	14.4
Fusilade 0.3 l/ha @ 9w	78.1	80.0	91.0	92.1	14.0
Fusilade 0.45 l/ha @ 9w	76.9	79.6	90.6	92.2	15.3
Ethrel 1.5 l/ha @ 14w + Fusilade 0.2 l/ha @ 9w	77.5	80.8	90.7	92.9	15.4
Ethrel 1.5 l/ha @ 14w + Fusilade 0.3 l/ha @ 9w	77.7	81.3	91.4	91.7	14.0
Ethrel 1.5 l/ha @ 14w + Fusilade 0.45 l/ha @ 9w	77.6	82.0	91.0	91.4	13.8
Mean	77.5	80.8	91.2	92.2	14.6
LSD (P=0.05)	NS	NS	NS	NS	
CV (%)	2.8	2.2	1.5	1.1	
Sucrose % cane*					
Control	9.7	11.2	14.3	15.5	6
Ethrel 1.5 l/ha @ 14w	9.4	10.7	14.4	15.7	6
Fusilade 0.2 l/ha @ 9w	9.7	10.6	14.9	16.0	6
Fusilade 0.3 l/ha @ 9w	10.0	10.6	14.6	15.7	6
Fusilade 0.45 l/ha @ 9w	9.4	10.4	14.2	15.8	6
Ethrel 1.5 l/ha @ 14w + Fusilade 0.2 l/ha @ 9w	9.8	10.9	14.3	15.9	6
Ethrel 1.5 l/ha @ 14w + Fusilade 0.3 l/ha @ 9w	9.8	10.9	14.6	15.6	6
Ethrel 1.5 l/ha @ 14w + Fusilade 0.45 l/ha @ 9w	10.0	11.1	14.1	15.2	5
Mean	9.7	10.8	14.4	15.7	6
LSD (P=0.05)	NS	NS	NS	NS	
CV (%)	7.5	5.2	4.7	3.9	
Erc % cane					
Control	7.9	9.5	13.2	14.4	7
Ethrel 1.5 l/ha @ 14w	7.6	9.0	13.3	14.4	7
Fusilade 0.2 l/ha @ 9w	7.9	8.9	13.7	14.8	7
Fusilade 0.3 l/ha @ 9w	8.2	8.8	13.3	14.5	6
Fusilade 0.45 l/ha @ 9w	7.6	8.7	13.0	14.5	7
Ethrel 1.5 l/ha @ 14w + Fusilade 0.2 l/ha @ 9w	7.9	9.1	13.1	14.8	7
Ethrel 1.5 l/ha @ 14w + Fusilade 0.3 l/ha @ 9w	8.0	9.2	13.4	14.4	6
Ethrel 1.5 l/ha @ 14w + Fusilade 0.45 l/ha @ 9w	8.2	9.5	12.9	14.0	6
Mean	7.9	9.1	13.2	14.5	7
LSD (P=0.05)	NS	NS	NS	NS	
CV (%)	9.8	6.7	5.6	4.5	

Appendix 1: Sample data (cont.)

Sucrose weight (g/stalk)*	Date of sample (weeks before harvest)				Incr. 15.2 - 0 wks	
	Treatment	16 Mar. (14.0)	20 Apr (9.0)	25 May (4.0)		22 Jun (0)
Control		53.1	82.6	106.4	127.5	74.4
Ethrel 1.5 l/ha @ 14w		52.2	75.0	114.2	140.5	88.3
Fusilade 0.2 l/ha @ 9w		45.1	73.5	117.3	141.6	96.5
Fusilade 0.3 l/ha @ 9w		51.4	75.0	113.0	148.8	97.4
Fusilade 0.45 l/ha @ 9w		52.6	64.4	108.7	126.7	74.1
Ethrel 1.5 l/ha @ 14w + Fusilade 0.2 l/ha @ 9w		53.5	80.8	111.8	120.2	66.7
Ethrel 1.5 l/ha @ 14w + Fusilade 0.3 l/ha @ 9w		48.7	79.2	112.9	136.4	87.7
Ethrel 1.5 l/ha @ 14w + Fusilade 0.45 l/ha @ 9w		50.2	77.2	108.6	119.9	69.7
Mean		50.9	76.0	111.6	132.7	81.9
LSD (P=0.05)		NS	NS	NS	19	
LSD (P=0.01)		-	-	-	NS	
CV (%)		14.7	14.7	14.3	10.9	
Eric weight (g/stalk)						
Control		43.2	70.2	97.9	117.8	74.6
Ethrel 1.5 l/ha @ 14w		42.0	62.8	105.2	129.8	87.8
Fusilade 0.2 l/ha @ 9w		36.8	61.8	107.9	130.8	94.0
Fusilade 0.3 l/ha @ 9w		42.0	62.6	103.4	137.3	95.3
Fusilade 0.45 l/ha @ 9w		42.4	53.4	99.2	116.9	74.5
Ethrel 1.5 l/ha @ 14w + Fusilade 0.2 l/ha @ 9w		43.5	68.0	102.3	111.6	68.1
Ethrel 1.5 l/ha @ 14w + Fusilade 0.3 l/ha @ 9w		39.7	66.8	103.6	125.6	85.9
Ethrel 1.5 l/ha @ 14w + Fusilade 0.45 l/ha @ 9w		41.1	65.8	99.3	110.1	69.0
Mean		41.3	63.9	102.4	122.5	81.2
LSD (P=0.05)		NS	NS	NS	17	
LSD (P=0.01)		-	-	-	NS	
CV (%)		16.2	15.4	14.9	11.0	
Suc % dry weight*						
Control		42.9	49.0	55.1	55.1	12.2
Ethrel 1.5 l/ha @ 14w		42.7	47.4	54.4	55.6	12.9
Fusilade 0.2 l/ha @ 9w		44.0	46.2	57.4	55.9	11.9
Fusilade 0.3 l/ha @ 9w		44.6	46.8	55.2	55.1	10.5
Fusilade 0.45 l/ha @ 9w		43.1	44.5	54.2	55.5	12.4
Ethrel 1.5 l/ha @ 14w + Fusilade 0.2 l/ha @ 9w		43.3	46.0	54.7	56.4	13.1
Ethrel 1.5 l/ha @ 14w + Fusilade 0.3 l/ha @ 9w		44.3	46.0	54.5	55.9	11.6
Ethrel 1.5 l/ha @ 14w + Fusilade 0.45 l/ha @ 9w		45.4	50.2	32.3	54.1	8.7
Mean		43.8	47.0	52.2	55.5	11.7
LSD (P=0.05)		NS	3.2	NS	NS	
LSD (P=0.01)		-	NS	-	-	
CV (%)		6.4	5.2	4.8	4.3	

* = Sucrose measured as pol

Appendix 2: Growth measurements at various ages

Treatment	Population ('000/ha)			Height (cm to TVD)		
	Mar. (8.7m)	Apr. (10.1m)	Jun. (11.7m)	Mar. (8.7m)	Apr. (10.1m)	Jun. (11.7m)
Control	111	99	94	193	246	250
Ethrel 1.5 l/ha @ 14w	112	114	100	189	249	254
Fusilade 0.2 l/ha @ 9w	113	102	88	193	243	252
Fusilade 0.3 l/ha @ 9w	110	114	104	193	247	251
Fusilade 0.45 l/ha @ 9w	114	103	90	193	243	252
Ethrel 1.5 l/ha @ 14w + Fusilade 0.2 l/ha @ 9w	113	105	93	191	241	252
Ethrel 1.5 l/ha @ 14w + Fusilade 0.3 l/ha @ 9w	117	96	84	189	241	246
Ethrel 1.5 l/ha @ 14w + Fusilade 0.45 l/ha @ 9w	114	103	88	186	245	259
Mean	113	105	93	191	244	252
LSD (P=0.05)	NS	NS	NS	NS	NS	NS
CV (%)	9.4	11.6	10.9	3.5	3.9	4.7