SOUTH AFRICAN SUGAR INDUSTRY AGRONOMISTS ASSOCIATION

CODE: NCo376 x Gallant 80/03/Sw/Sim 'R'

CAT: 2194

EARLY SEASON CHEMICAL RIPENING OF NCo376 WITH GALLANT SUPER

1. PARTICULARS OF PROJECT

This crop	:	2nd Ratoon	**Age**	:	11.8 months		
Site	:	Simunye Sugar Estate	**Dates**	:	15/7/2002 – 9/7/2003		
Field	:	604 Panel 26	**Irrigation**	:	Fully irrigated (surface drip)		
Region	:	Northern Irrigated (Swd)	**Ripener application detals:**				
Soil Set	:	'R'		Date	Age(m)	Weeks	Purity%
Design	:	Random. blocks, 5 reps	**Ethrel**	25/3/03	8.3	15.1	74.6
Variety	:	NCo376	**Gallant**	23/4/03	9.3	11.0	80.0
Plot size	:	4 rows x 17m x 1.5m (gross)	**Fusilade**	23/4/03	9.3	11.0	80.0
		2 rows x 13m x 1.5m (net)					

2. OBJECTIVE

- To determine the response of NCo376 to Ethrel, Gallant Super and Fusilade Super applied either alone or as a combination treatment.

3. TREATMENTS

- Control
- Ethrel 1.5 l/ha 15 weeks pre-harvest
- Gallant 0.165 l/ha 11 weeks pre harvest
- Gallant 0.225 l/ha 11 weeks pre harvest
- Fusilade 0.33 l/ha 11 weeks pre harvest
- Fusilade 0.45 l/ha 11 weeks pre harvest
- Ethrel 1.5 l/ha at 15 weeks + Gallant 0.165 l/ha 11 weeks pre-harvest
- Ethrel 1.5 l/ha at 15 weeks + Fusilade 0.33 l/ha 11 weeks pre harvest

Ethrel, Gallant 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 ± 52 l/ha over a swath width of 6m at 200kPa.

4. SAMPLING PROCEDURE

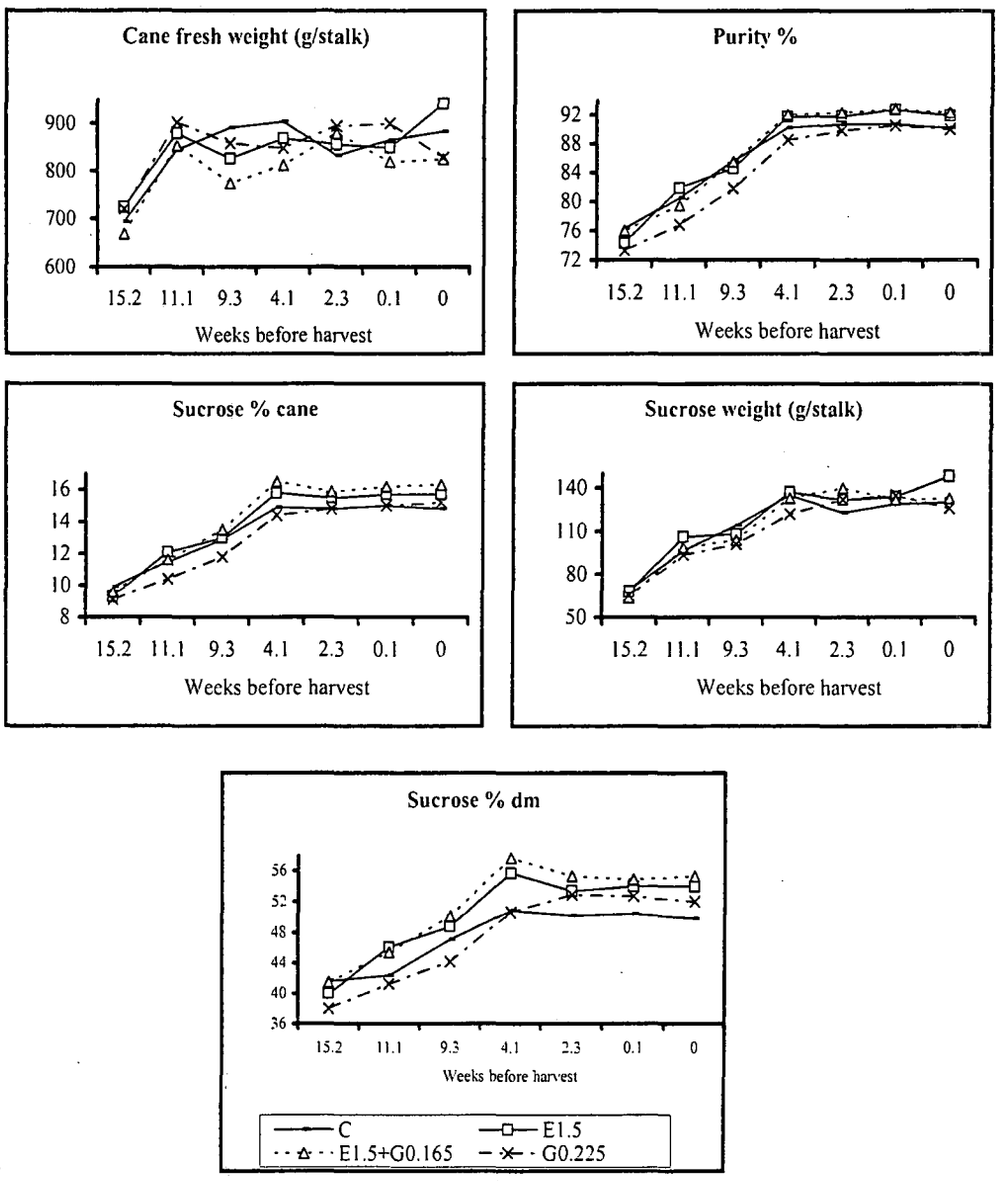
Groups of 4 stalks were taken from the net plot rows in a systematic manner on each sampling occasion to give a total of 16 stalks per plot. On subsequent occasions, sampling started one pace further into the plot and the same sequence of sampling was followed.

5. RESULTS AND DISCUSSION

Sample data

Juice purity averaged 75% when Ethrel was applied in March and 80% when Gallant and Fusillade were applied in April, which suggests that the cane was sufficiently immature to respond to all chemicals (Appendix 1, Figure 1).

Figure 1: Sample data



Following the application of Fusillade and Gallant, there were noticeable significant increases in juice purity, sucrose % cane and erc % cane (cane quality). As in previous observations, combination treatments were the most effective, with no statistical difference between Fusilade and Gallant.

Individual ripeners were not as consistently effective as the combination treatments. Both combinations of either Ethrel and Fusillade or Ethrel and Gallant increased sucrose % dry matter significantly. Individual treatments of Fusilade and Gallantat compared similarly at both lower and higher rates. When applied alone, Ethrel also significantly increased the sucrose % dry matter.

Harvest Results

Treatments had no significant effect on cane yield (Table 1). Improvements in sucrose and erc % cane were significant in the combination treatments of both Fusilade and Gallant and there was no statistical difference between the two. These were the most effective. Individual treatments of either Fusilade or Gallant compared similarly but statistically better than the control (Table 1)

Ripeners did not significantly increase yields of sucrose and erc.

Table 1: Yield and quality at harvest

Treatment	Tc/ha	Purity	Moist %	S%c*	Ts/ha*	Erc%c	Terc/ha
Control	140.9	90.2	70.3	14.8	20.7	13.4	18.8
Ethrel 1.5 l/ha @ 15w	145.6	91.9	70.9	15.7	22.9	14.5	21.1
Fusilade 0.3 l/ha @ 11w	132.1	90.9	70.0	15.7	20.6	14.3	18.8
Fusilade 0.45 l/ha @ 11w	149.8	90.7	70.2	15.5	23.2	14.2	21.1
Ethrel 1.5 l/ha @ 15w + Fusilade 0.3 l/ha @ 11w	132.9	92.4	70.7	16.2	21.5	15.0	19.9
Gallant 0.165 l/ha @ 11w	149.4	90.6	70.5	15.2	22.7	13.8	20.7
Ethrel 1.5 l/ha @ 15w + Gallant 0.165 l/ha @ 11w	131.9	92.3	70.6	16.3	21.4	15.0	19.8
Gallant 0.225 l/ha @ 11w	144.9	90.0	70.8	15.2	22.0	13.8	20.0
Mean	140.9	91.1	70.5	15.6	21.9	14.3	20.0
LSD (P=0.05)	NS	1.27	NS	0.53	NS	0.60	NS
LSD (P=0.01)	-	1.70	-	0.72	-	0.80	-
CV (%)	13.3	1.1	1.0	2.6	12.9	3.2	12.8

* = Sucrose measured as pol

6. CONCLUSIONS

- The results show that the quality of sufficiently immature NCo376 can be improved significantly by combination treatments of either, Ethrel plus Fusilade or Ethrel plus Gallant and by individual treatments, with no effect on cane yield.

- There were no statistical differences among yields of sucrose or erc.

BMS/DB

3/05/2004

6. APPENDICES

Appendix 1: Sample data

Cane fresh weight (g/ stalk)	Date of sample (weeks before harvest)							Incr.
Treatment	24 Mar. (15.2)	22 Apr (11.1)	5 May (9.3)	10 Jun. (4.1)	23 Jun. (2.3)	8 Jul. (0.1)	9 Jul (0)	15.2 - 0 wks
Control	693	845	891	903	832	865	883	190
Ethrel 1.5 l/ha @ 15w	724	879	826	868	856	849	941	217
Fusilade 0.3 l/ha @ 11w	690	862	859	859	910	883	858	168
Fusilade 0.45 l/ha @ 11w	644	900	859	870	911	846	984	340
Ethrel 1.5 l/ha @ 15w + Fusilade 0.3 l/ha @ 11w	728	758	812	836	806	828	765	37
Gallant 0.165 l/ha @ 11w	733	938	848	921	911	907	751	18
Ethrel 1.5 l/ha @ 15w + Gallant 0.165 l/ha @ 11w	668	953	774	812	879	819	824	156
Gallant 0.225 l/ha @ 11w	720	902	858	848	894	899	828	108
Mean	700	880	841	865	875	862	854	154
LSD (P=0.05)	NS	45.27	NS	NS	NS	NS	NS	
LSD (P=0.01)	-	NS	-	-	-	-	-	
CV (%)	15.2	8.9	13.4	12.4	11.3	12.6	15.6	
Moisture % cane								
Control	76.3	72.9	72.6	70.7	70.6	70.3	70.3	-6
Ethrel 1.5 l/ha @ 15w	76.6	73.7	73.4	71.6	71.1	70.9	70.9	-6
Fusilade 0.3 l/ha @ 11w	76.8	73.9	73.1	70.6	70.2	70.5	70.0	-7
Fusilade 0.45 l/ha @ 11w	76.3	74.4	74.5	71.3	71.1	70.2	70.2	-6
Ethrel 1.5 l/ha @ 15w + Fusilade 0.3 l/ha @ 11w	75.9	74.3	72.5	71.3	70.4	70.3	70.7	-5
Gallant 0.165 l/ha @ 11w	76.6	73.3	72.7	71.3	70.8	70.2	70.5	-6
Ethrel 1.5 l/ha @ 15w + Gallant 0.165 l/ha @ 11w	76.9	74.5	73.0	71.5	71.2	70.5	70.6	-6
Gallant 0.225 l/ha @ 11w	76.1	74.9	73.2	71.5	71.9	71.4	70.8	-5
Mean	76.4	74.0	73.1	71.2	70.9	70.5	70.5	-6
LSD (P=0.05)	NS	NS	NS	NS	0.99	NS	NS	
LSD (P=0.01)	-	-	-	-	NS	-	-	
CV (%)	1.5	1.6	1.9	1.1	1.1	1.3	1.0	
Cane dry weight (g/ stalk)								
Control	164	228	243	265	245	257	262	98
Ethrel 1.5 l/ha @ 15w	169	231	219	246	248	248	274	105
Fusilade 0.3 l/ha @ 11w	161	225	231	253	272	260	258	97
Fusilade 0.45 l/ha @ 11w	152	231	220	250	263	252	294	142
Ethrel 1.5 l/ha @ 15w + Fusilade 0.3 l/ha @ 11w	176	194	223	241	238	247	224	48
Gallant 0.165 l/ha @ 11w	172	251	231	265	265	270	222	50
Ethrel 1.5 l/ha @ 15w + Gallant 0.165 l/ha @ 11w	154	217	209	231	254	241	242	88
Gallant 0.225 l/ha @ 11w	172	226	230	241	252	256	242	70
Mean	165	225	226	249	255	254	252	87
LSD (P=0.05)	NS	29.22	NS	NS	NS	NS	NS	
LSD (P=0.01)	-	NS	-	-	-	-	-	
CV (%)	15.6	10.0	14.9	14.5	11.9	12.4	16.4	

Appendix 1: Sample data (cont.)

Purity % cane	Date of sample (weeks before harvest)							Incr.
Treatment	24 Mar. (15.2)	22 Apr (11.1)	5 May (9.3)	10 Jun. (4.1)	23 Jun. (2.3)	8 Jul. (0.1)	9 Jul (0)	15.2 - 0 wks
Control	76.3	80.5	85.6	90.2	90.7	90.7	90.2	13.9
Ethrel 1.5 l/ha @ 15w	74.3	81.9	84.6	91.7	91.8	92.7	91.9	17.6
Fusilade 0.3 l/ha @ 11w	74.2	80.0	84.6	90.4	91.4	91.8	90.9	16.7
Fusilade 0.45 l/ha @ 11w	72.9	78.9	81.5	89.9	90.6	91.3	90.7	17.8
Ethrel 1.5 l/ha @ 15w + Fusilade 0.3 l/ha @ 11w	74.9	80.6	86.6	92.1	92.7	92.6	92.4	17.5
Gallant 0.165 l/ha @ 11w	74.8	81.5	83.2	89.3	90.8	91.1	90.6	15.8
Ethrel 1.5 l/ha @ 15w + Gallant 0.165 l/ha @ 11w	75.7	79.5	85.5	92.1	92.3	92.8	92.3	16.6
Gallant 0.225 l/ha @ 11w	73.3	76.8	81.8	88.5	89.8	90.5	90.0	16.7
Mean	74.6	80.0	84.2	90.5	91.3	91.7	91.1	16.6
LSD (P=0.05)	NS	NS	2.67	1.43	1.25	1.24	1.27	
LSD (P=0.01)	-	-	3.60	1.92	1.69	1.67	1.70	
CV (%)	4.5	4.0	2.4	1.2	1.1	1.0	1.1	
Sucrose % cane*								
Control	9.9	11.5	12.9	14.9	14.8	15.0	14.8	5
Ethrel 1.5 l/ha @ 15w	9.3	12.1	13.0	15.8	15.5	15.7	15.7	6
Fusilade 0.3 l/ha @ 11w	9.5	11.5	13.0	15.4	15.8	15.7	15.7	6
Fusilade 0.45 l/ha @ 11w	8.9	11.0	12.0	15.3	15.5	15.8	15.5	7
Ethrel 1.5 l/ha @ 15w + Fusilade 0.3 l/ha @ 11w	9.7	11.9	13.9	16.2	16.3	16.5	16.2	7
Gallant 0.165 l/ha @ 11w	9.3	11.7	12.2	14.8	15.3	15.3	15.2	6
Ethrel 1.5 l/ha @ 15w + Gallant 0.165 l/ha @ 11w	9.6	11.6	13.5	16.5	15.9	16.2	16.3	7
Gallant 0.225 l/ha @ 11w	9.1	10.4	11.8	14.4	14.8	15.0	15.2	6
Mean	9.4	11.5	12.8	15.4	15.5	15.7	15.6	6
LSD (P=0.05)	NS	NS	0.95	0.73	0.69	0.58	0.53	
LSD (P=0.01)	-	-	1.28	0.98	0.93	0.78	0.72	
CV (%)	8.9	8.2	5.7	3.6	3.4	2.9	2.6	
Erc % cane								
Control	7.9	9.6	11.3	13.5	13.5	13.6	13.4	6
Ethrel 1.5 l/ha @ 15w	7.3	10.3	11.3	14.5	14.2	14.5	14.5	7
Fusilade 0.3 l/ha @ 11w	7.5	9.6	11.3	14.0	14.5	14.4	14.3	7
Fusilade 0.45 l/ha @ 11w	6.8	9	10.2	13.9	14.1	14.5	14.2	7
Ethrel 1.5 l/ha @ 15w + Fusilade 0.3 l/ha @ 11w	7.6	10	12.3	14.9	15.1	15.3	15.0	7
Gallant 0.165 l/ha @ 11w	7.3	9.9	10.5	13.4	13.9	14.0	13.8	7
Ethrel 1.5 l/ha @ 15w + Gallant 0.165 l/ha @ 11w	7.6	9.6	11.9	15.2	14.7	15.0	15.0	7
Gallant 0.225 l/ha @ 11w	7.0	8.4	10.0	12.9	13.4	13.7	13.8	7
Mean	7.4	9.6	11.1	14.0	14.2	14.4	14.3	7
LSD (P=0.05)	NS	NS	1.04	0.77	0.78	0.63	0.60	
LSD (P=0.01)	-	-	1.40	1.04	0.98	0.85	0.80	
CV (%)	12.7	11.2	7.2	4.2	3.9	3.4	3.2	

* = Sucrose measured as pol

Appendix 1: Sample data (cont.)

Sucrose weight (g/stalk)*	Date of sample (weeks before harvest)							Incr.
Treatment	24 Mar. (15.2)	22 Apr (11.1)	5 May (9.3)	10 Jun. (4.1)	23 Jun. (2.3)	8 Jul. (0.1)	9 Jul (0)	15.2 - 0 wks
Control	68.8	96.6	114.3	134.6	123.1	129.4	129.9	61.1
Ethrel 1.5 l/ha @ 15w	68.0	106.4	107.8	137.0	132.1	133.6	147.8	79.8
Fusilade 0.3 l/ha @ 11w	66.2	99	111.1	132.0	143.6	138.6	133.9	67.7
Fusilade 0.45 l/ha @ 11w	57.0	98.5	102.8	133.2	140.9	133.9	153.1	96.1
Ethrel 1.5 l/ha @ 15w + Fusilade 0.3 l/ha @ 11w	70.5	89.8	112.9	135.7	131.6	136.8	123.7	53.2
Gallant 0.165 l/ha @ 11w	68.0	109.1	104.0	136.8	138.9	138.4	114.1	46.1
Ethrel 1.5 l/ha @ 15w + Gallant 0.165 l/ha @ 11w	63.6	98.7	104.2	133.2	140.0	132.4	133.3	69.7
Gallant 0.225 l/ha @ 11w	65.2	93.7	101.1	122.0	132.1	134.8	125.8	60.6
Mean	65.9	99.0	107.3	133.1	135.3	134.7	132.7	66.8
LSD (P=0.05)	NS	NS	NS	NS	NS	NS	NS	
CV (%)	17.2	10.5	14.6	13.3	10.0	12.2	15.7	
Erc weight (g/stalk)								
Control	55.2	80.5	100.1	122.2	112.1	117.8	117.8	62.6
Ethrel 1.5 l/ha @ 15w	53.3	90.3	94.1	126.1	121.5	123.6	136.0	82.7
Fusilade 0.3 l/ha @ 11w	52.1	82.6	96.7	120.3	131.8	127.5	122.3	70.2
Fusilade 0.45 l/ha @ 11w	43.2	81.0	87.1	120.8	128.6	122.6	139.8	96.6
Ethrel 1.5 l/ha @ 15w + Fusilade 0.3 l/ha @ 11w	55.7	75.4	100.1	125.3	121.9	126.6	114.3	58.6
Gallant 0.165 l/ha @ 11w	53.3	92.0	89.2	123.7	126.8	126.6	103.9	50.6
Ethrel 1.5 l/ha @ 15w + Gallant 0.165 l/ha @ 11w	50.5	82.0	91.3	123.0	129.3	122.6	123.1	72.6
Gallant 0.225 l/ha @ 11w	50.3	75.5	85.6	109.5	119.7	122.8	114.1	63.8
Mean	51.7	82.4	93.0	121.4	124.0	123.8	121.4	69.7
LSD (P=0.05)	NS	NS	NS	NS	NS	NS	NS	
CV (%)	19.8	12.6	15.6	13.4	9.9	12.0	15.7	
Suc % dry weight*								
Control	41.7	42.4	47.1	50.8	50.2	50.4	49.8	8.1
Ethrel 1.5 l/ha @ 15w	40.0	46.1	48.8	55.7	53.4	54.0	54.0	14.0
Fusilade 0.3 l/ha @ 11w	40.8	43.9	48.3	52.3	53.0	53.3	52.1	11.3
Fusilade 0.45 l/ha @ 11w	37.5	42.9	47.2	53.3	53.6	53.1	52.0	14.5
Ethrel 1.5 l/ha @ 15w + Fusilade 0.3 l/ha @ 11w	40.1	46.2	50.6	56.3	55.1	55.6	55.4	15.3
Gallant 0.165 l/ha @ 11w	39.6	43.9	44.9	51.7	52.4	51.2	51.5	11.9
Ethrel 1.5 l/ha @ 15w + Gallant 0.165 l/ha @ 11w	41.5	45.4	50.1	57.7	55.3	54.9	55.3	13.8
Gallant 0.225 l/ha @ 11w	38.0	41.3	44.2	50.6	52.9	52.7	52.0	14.0
Mean	39.9	44.0	47.7	53.6	53.2	53.2	52.8	12.9
LSD (P=0.05)	NS	NS	3.68	2.01	2.79	2.13	2.23	
LSD (P=0.01)	-	-	NS	2.70	NS	2.87	3.00	
CV (%)	6.8	6.1	6.0	2.9	4.0	3.1	3.3	

* = Sucrose measured as pol

Appendix 2: Growth measurements at various ages

Treatment	Population (' 000/ha)		Height (cm to TVD)	
	Mar. (8.4m)	May (10.3m)	Mar. (8.4m)	May (10.3m)
Control	134	125	253	286
Ethrel 1.5 l/ha @ 15w	133	122	250	282
Fusilade 0.3 l/ha @ 11w	124	119	245	272
Fusilade 0.45 l/ha @ 11w	128	126	260	282
Ethrel 1.5 l/ha @ 15w + Fusilade 0.3 l/ha @ 11w	133	119	252	272
Gallant 0.165 l/ha @ 11w	129	120	257	281
Ethrel 1.5 l/ha @ 15w + Gallant 0.165 l/ha @ 11w	128	128	247	266
Gallant 0.165 l/ha @ 11w	127	124	260	286
Mean	130	123	253	278
LSD (P=0.05)	NS	NS	NS	NS
CV (%)	5.1	3.9	7.2	5.0