

SOUTH AFRICAN SUGAR INDUSTRY AGRONOMISTS ASSOCIATION

CODE: N23 x Flower suppression 6/03/Sw/Ubo 'S'

CAT: 2195

FLOWER SUPPRESSION IN N23 WITH ETHREL

1. PARTICULARS OF PROJECT

<p>This crop : 5th Ratoon</p> <p>Site : Ubombo Sugar</p> <p>Field : Liletsa 1</p> <p>Region : Northern Irrigated (Swd)</p> <p>Soil set : 'S' set</p> <p>Design : Randomised blocks with split plots, 8 reps</p> <p>Variety : N23</p> <p>Plot size : 6 rows x 12m x 1,5m (gross) : 4 rows x 10m x 1.5m (net)</p>	<p>Age : 13.3 months</p> <p>Dates : 10/10/2002 – 19/11/2003</p> <p>Rainfall: : 182mm</p> <p>Irrigation : 168.2mm (surface)</p> <p>Total : 350mm</p> <p>Chemical application details:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 15%;">Date</th> <th style="width: 15%;">Age(m)</th> <th style="width: 15%;">Weeks</th> </tr> </thead> <tbody> <tr> <td>Ethrel : 13/2/03</td> <td>4.1</td> <td>39.7</td> <td></td> </tr> <tr> <td>Ethrel : 21/2/03</td> <td>4.4</td> <td>38.6</td> <td></td> </tr> <tr> <td>Ethrel : 28/2/03</td> <td>4.6</td> <td>37.6</td> <td></td> </tr> </tbody> </table>		Date	Age(m)	Weeks	Ethrel : 13/2/03	4.1	39.7		Ethrel : 21/2/03	4.4	38.6		Ethrel : 28/2/03	4.6	37.6	
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2. OBJECTIVE

- To determine the effect of Ethrel on flower initiation in variety N23.
- To assess the effect of chemical flower suppression on the efficacy of Fusilade as a chemical ripener.
- To assess the impact of flower suppression on sucrose yield of variety N23 harvested in November.

3. TREATMENTS

- Treatments were as follows:

Ethrel (main plots)

Control
Ethrel @ 1.5 l/ha applied on 13th February
Ethrel @ 1.5 l/ha applied on 21st February
Ethrel @ 1.5 l/ha applied on 28nd February

Fusilade (sub plots)

Control (Not sprayed)
Fusilade @ 0.45 l/ha applied in October

- Ethrel was applied with a CO₂ constant pressure knapsack sprayer and a hand held 'T' boom fitted with two TK 1.5 nozzles, delivering ± 52 l/ha.

- Fusilade was not applied because the field had been excessively dried off at the intended application date.

4. SAMPLING PROCEDURE

- Percent flowering was assessed during the course of the crop's growth in a non-destructive manner. Numbers of flowered stalks were counted over the complete length of two net rows in each plot and expressed as a percentage of the stalk population of each plot.
- At harvest, destructive samples were taken to assess the percentage of stalks that initiated flowers that did not subsequently emerge. Groups of 4 stalks were removed from the net rows in a systematic manner to give a total of 16 stalks per plot. Results were expressed as a percentage of each of 16-stalk sample.

5. RESULTS AND DISCUSSION

Flowering

- The incidence of flowering was very low this season (see Table 1 and Appendix 1).

Table 1: Effect of Ethrel and timing on the incidence of flower initiation and emergence in N23

Treatment	Percentage flowering - sample of 16 stalks (Nov. at 13.3m)		
	No Flower initiation	Initiated but not emerged	Emerged flowers
	Mean	Mean	Mean
Control	97	1.17	1.95
E1.5 l/ha 13Feb	100	0.39	0.00
E1.5 l/ha 21Feb	99	0.39	0.78
E1.5 l/ha 28Feb	100	0.00	0.00
Mean	99	0.49	0.68
LSD (0.05)	NS	NS	NS
CV%	3.2	530.7	255.6

Growth

- There were no significant differences in stalk population among Ethrel treatments, or between Ethrel treated plots and the control (Table 2).
- Stalks in the control were significantly taller than those in the Ethrel treated plots on all sampling dates after Ethrel application. There were no significant differences in stalk height among Ethrel treatment dates, although there was a tendency towards shorter stalks the later Ethrel applied (NS).

Table 2: Growth measurements at various ages

Treatment	Stalk population ('000)				
	Feb (4.1m)	May (7.1m)	Jul (9.2m)	Sep (11.5m)	Nov (13.3m)
Control	134	116	115	111	115
E1.5 l/ha 13Feb	150	119	116	103	107
E1.5 l/ha 21Feb	125	113	114	111	110
E1.5 l/ha 28Feb	149	118	121	110	112
Mean	140	117	117	109	111
LSD (P=0.05)	NS	NS	NS	NS	NS
CV (%)	8.0	9.8	12.3	9.9	12.2
Treatment	Stalk height (cm to TVD)				
	Feb	May	Jul	Sep	Nov
Control	114	218	244	250	266
E1.5 l/ha 13Feb	110	201	222	232	244
E1.5 l/ha 21Feb	117	200	222	231	245
E1.5 l/ha 28Feb	106	190	213	218	235
Mean	112	202	225	233	248
LSD (0.05)	NS	14	16	16	16
(0.01)	-	18	21	21	22
CV (%)	6.4	6.0	4.5	4.9	4.7

Harvest Data

- Flower suppression with Ethrel significantly reduced cane yield. This reflects previous years' results, even though the trial was harvested in November (see previous reports).
- Cane quality was not affected by flower suppression.
- Differences in yields of erc and sucrose were determined by differences in cane yield. Sucrose and erc yields were significantly reduced by Ethrel application on all three dates. There were no significant differences in sucrose and erc yields among the three application dates.

Table 3: Harvest Data

Treatment	Tcane /ha	Suc. % cane*	Tsuc/ha*	Erc. % cane	Terc/ha
Control	114	17.7	20.1	16.23	18.4
E1.5 l/ha 13 Feb	97	17.9	17.3	16.43	15.9
E1.5 l/ha 21 Feb	93	17.8	16.6	16.35	15.2
E1.5 l/ha 28 Feb	89	17.4	15.6	15.84	14.2
Mean	98	17.7	17.4	16.21	15.9
LSD (0.05)	13	NS	2.3	NS	2.1
(0.01)	18	-	3.2	-	2.9
CV %	12.1	2.7	13.2	3.1	13.3

* Sucrose measured as pol

6. CONCLUSIONS

- Ethrel application significantly reduced flower initiation, although flowering was generally very low this season.
- As in previous experiments, flower suppression significantly reduced stalk growth and therefore cane yield. There were no benefits in cane quality, which directly led to a significant reduction in sucrose yield.
- The previous year's results indicated that flower suppression with Ethrel reduces sucrose and cane yields when N 23 is harvested in October. This year's results indicate that flower suppression with Ethrel reduces sucrose and cane yields even if harvested in November.
- This trial has been terminated.

BMS/DB
9/1/2004

Appendix 1: Effect of Ethrel application on flower emergence

Treatment	% emerged flowers		
	Jul (9.2m)	Sep (11.5m)	Nov (13.3m)
Control	0.08	0.15	0.90
E1.5 l/ha 13Feb	0.00	0.00	0.02
E1.5 l/ha 21Feb	0.00	0.00	0.16
E1.5 l/ha 28Feb	0.00	0.00	0.00
Mean	0.02	0.04	0.27
LSD (0.05)	NS	0.12	NS
(0.01)	-	NS	-
CV (%)	406.1	514.6	187.9

Appendix 2: Effect of Ethrel on cane quality and sucrose % dry matter

Treatment	18 Nov. 2003 (0.1 wks before harvest)								
	Fresh wt. (g/stalk)	Moisture (% cane)	Dry wt. (g/stalk)	Purity (% cane)	Sucrose* (% cane)	Erc (% cane)	Sucrose wt.* (g/stalk)	Erc wt. (g/stalk)	Sucrose* (% dm)
Control	787	67.9	253.5	91.0	17.7	16.2	139.4	127.6	55.2
E1.5 l/ha 13Feb	762	67.8	245.6	91.4	17.9	16.4	136.2	125.2	55.4
E1.5 l/ha 21Feb	745	67.7	240.4	91.7	17.8	16.4	132.3	121.7	55.1
E1.5 l/ha 28Feb	706	68.1	225.4	90.4	17.4	15.8	123.3	112.7	54.5
Mean	750	67.9	241.2	91.1	17.7	16.2	132.8	121.8	55.1
LSD (0.05)	NS	NS	NS	NS	NS	NS	NS	NS	NS
CV%	10.5	1.2	11.3	1.3	2.7	3.1	11.0	11.3	3.3

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