

SOUTH AFRICAN SUGAR INDUSTRY  
AGRONOMISTS' ASSOCIATION

TERMINAL REPORT

Cat. No: 1471  
Object:

To observe the effect of dipping seedcane in Ethrel on germination and tillering of cane planted early in the season.

Planted:

3 May, 1984

Terminated:

21 May, 1985, after the plant crop (12.6 months).

Location:

ZSA Experiment Station, Field D 1 -3.

Soil type:

PE. 1 sandy clay loam derived from gneiss.

Design:

3 x 4 factorial, 3 replications.

Spacing:

1.5m between rows

Fertiliser:  
kg/ha

N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
80	100	60

(N.B. Nitrogen was reduced due to high residual N in the field after Dolichos beans.)

Irrigation:

1352 mm

Rainfall:

699mm

Treatments:

(a) Varieties

1. NCo 376 (high population)
2. N14 (medium population)
3. B 51129 (low population)

(b) Concentration of Ethrel Dip

1. Control - no Ethrel
2. 500 ppm a.i.
3. 1000 ppm a.i.
4. 2000 ppm a.i.

Conduct:

1. Setts were dipped in the Ethrel in the same manner as for standard fungicide treatment. No fungicide was included in the Ethrel dips to avoid the possibility of the two chemicals reacting.
2. Tillers in the two central rows of the net plot were counted regularly from 3 weeks after planting. Counting was stopped in early December (7 months after planting), due to lodging.

RESULTS

(a) Tiller data. Figures 1 and 2 show the tillering pattern with time as influenced by variety and Ethrel respectively. At peak tillering (5 months after planting) the mean number of tillers/ha for each variety was: NCo 376, 741 000; N14, 450 000; and B 51129, 356 000. When counts were stopped in December, this margin had narrowed considerably and the mean of the three varieties was 228 000 - 39 000 tillers/ha. Ethrel did increase tiller production in the early stages of growth, from early July to October (2-5 months after planting). NCo 376 showed the greatest increase, N14 a smaller increase, and B51129 a negligible effect. After peak tiller production, the effect of Ethrel diminished due to natural tiller die-back.

(b) Harvest data (see Table 1). Ethrel had no effect on cane and sugar yields, or on ERC % cane. However, Ethrel at 2000ppm a.i. did have significantly more millable stalk ha than other treatments.

2/ N14 had.....

NI4 had the highest sugar yield which was significantly greater than NCo 376 and B 51129. This can be attributed to NI4's exceptionally high cane yield of 185,24 t/ha. Although B 51129 had the highest ERC% cane, it had the lowest sugar yield due to a comparatively low cane yield. Lodging was a problem in all treatments, the mean lodging for the trial being 56%. Of the three varieties NCo 376 lodged the most (70 % lodged). The variety x Ethrel interaction was not significant for any of the yield parameters analysed.

#### DISCUSSION

The fact that Ethrel at 2 000 ppm a.i. produced more millable stalks than the other treatments shows that the enhanced tillering due to Ethrel did persist until harvest in that treatment. However, stalk length and cane diameter in the same treatment were reduced, and thus there was no corresponding increase in cane yield over the control. Therefore, the positive effects of Ethrel on tillering were cancelled either by excess tiller mortality (Ethrel at 500 and 1 00 ppm a.i.) or millable stalks size being reduced (2 000 ppm a.i. Ethrel). The choice of NCo 376, NI4 and B 51129 as varieties representing high, medium and low population varieties was a good one, as shown by tiller and stalk data. NI4's improved performance over NCo 376 is also worth noting.

#### CONCLUSIONS

Seedcane treatment with Ethrel did enhance germination and tillering especially in the high and medium population varieties. However, Ethrel did not affect yields at harvest.

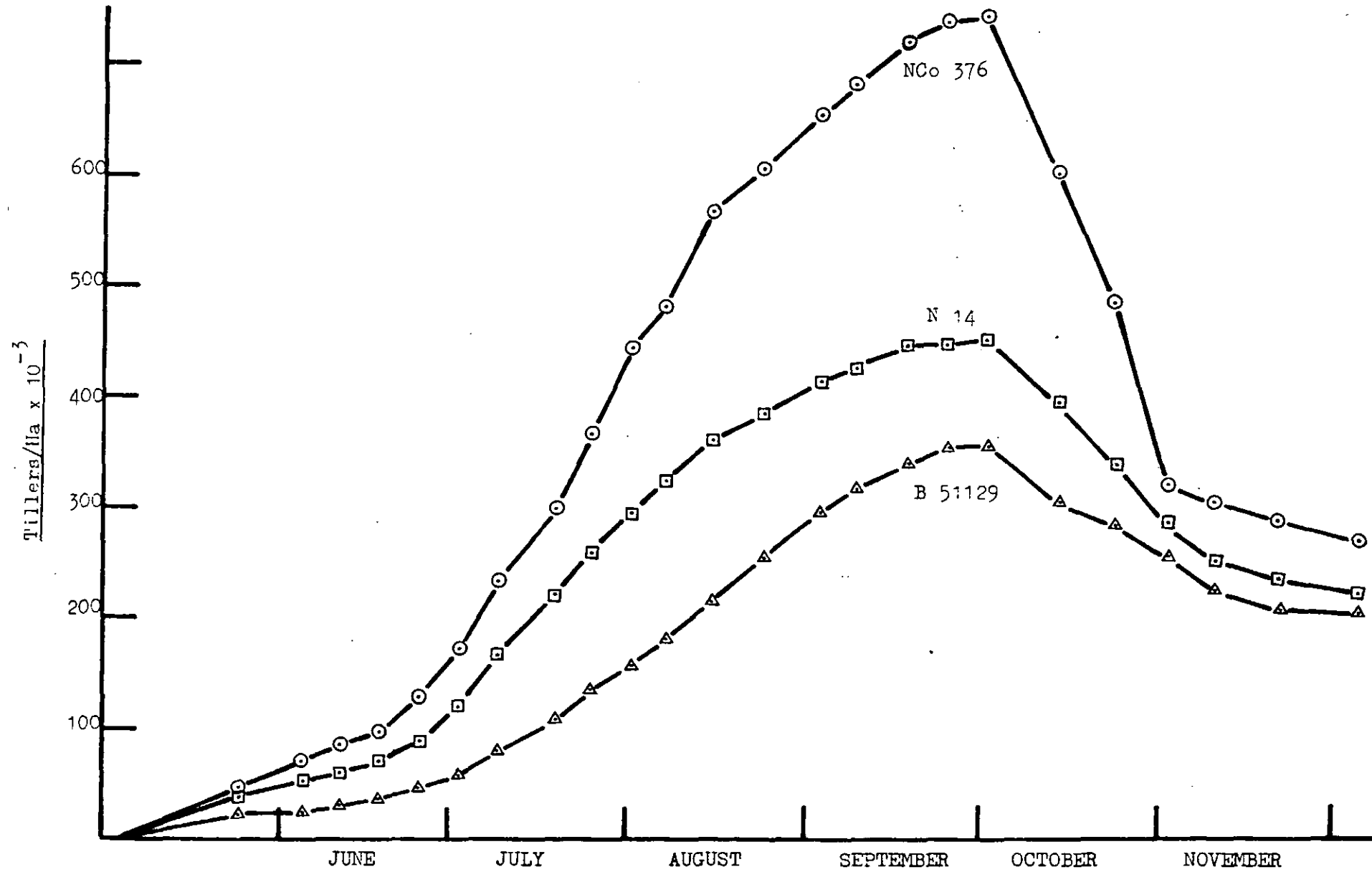


Figure 1 : Varietal Difference in Tillering

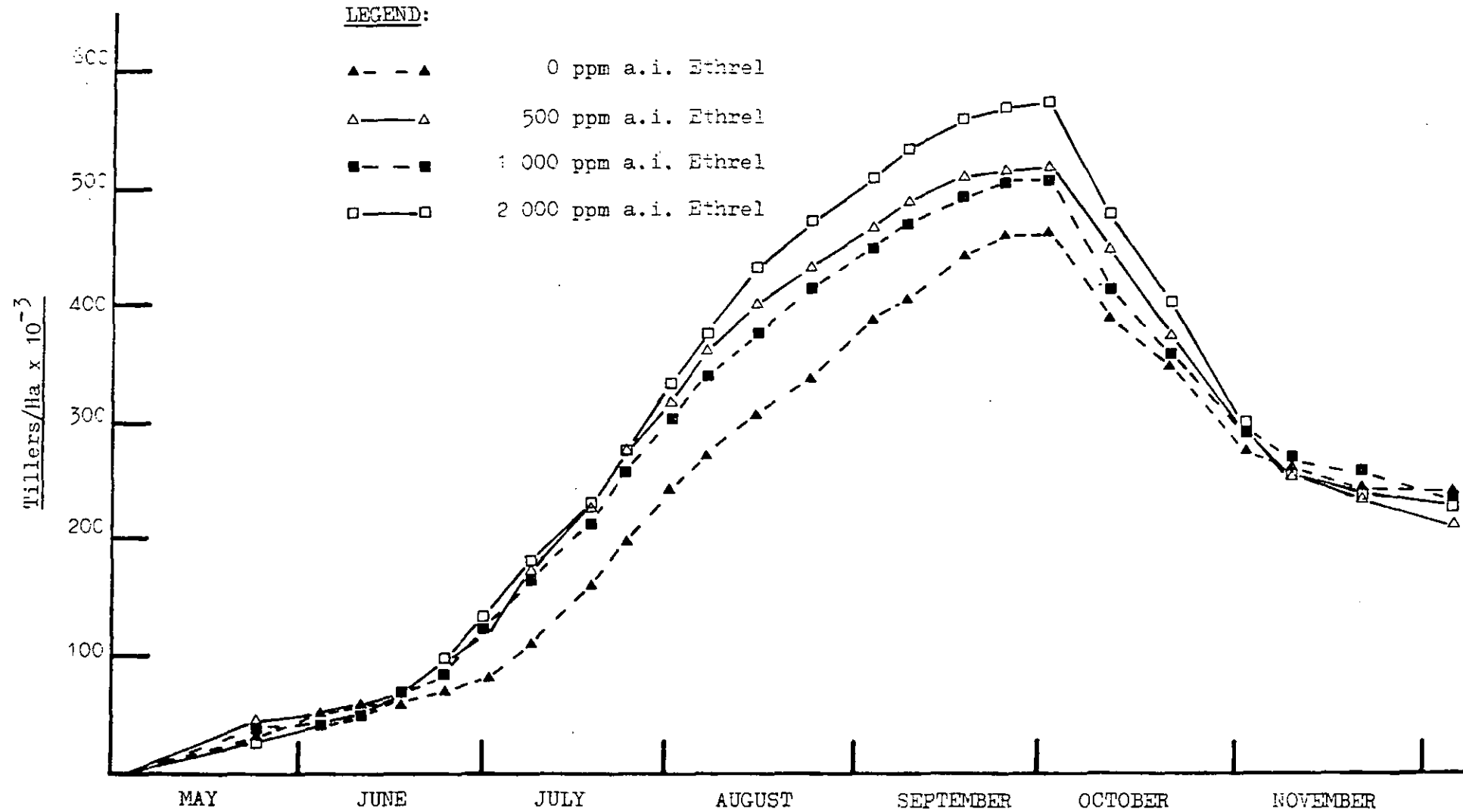


Figure 2 ; Effect of Ethrel Treatment on Tiller Numbers

TABLE I

## HARVEST DATA

TREATMENTS	CANE YIELD t/ha	ERC% CANE	ERC YIELD t/ha	STALKS/ Ha $\times 10^{-5}$	STALK LENGTH m	STALK DIAM cm	LODGING %
<u>Varieties (V)</u>							
1. NCo 376	164.76	11.91	19.65	166.0	3.06	2.1	70
2. N14	185.24	11.68	21.66	132.9	3.15	2.4	50
3. B 51129	141.30	12.66	17.90	91.9	2.97	2.6	48
<u>Significance</u>	***	**	**	***			
L.S.D. P = 0.05	11.14	0.56	1.99	9.0			
P = 0.01 <sub>1</sub>	15.14	0.76	2.71	12.2			
S.E. Variety Mean $\pm$	3.80	0.19	0.68	3.1			
<u>Ethrel Conc. (E)</u>							
1. 0 ppm	168.65	12.26	20.60	129.3	3.11	2.4	58
2. 500 ppm	159.89	11.66	18.56	125.5	3.08	2.4	61
3. 1 000 ppm	162.90	12.24	19.83	126.8	3.00	2.4	47
4. 2 000 ppm	163.61	12.18	19.95	139.5	3.05	2.3	59
<u>Significance</u>	N.S.	N.S.	N.S.	*			
L.S.D. P = 0.05	-	-	-	10.4			
P = 0.01 <sub>1</sub>	-	-	-	14.1			
S.E. Ethrel Mean -	4.39	0.22	0.79	3.5			
<u>V x E Interaction</u>	N.S.	N.S.	N.S.	N.S.			
<u>Trial Mean</u>	163.76	12.08	19.74	130.3	3.06	2.4	56
S.E. single plot $\pm$	13.16	0.66	2.36	10.6			
C.V.%	8.04	5.46	11.93	8.2			