

SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

8800/1(b) : SEEDCANE TREATMENT WITH ETHREL

TERMINAL REPORT

Cat: 1494

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

Planted: 6 November, 1984.

Terminated: 13 November, 1985, after plant crop (12,2 months).

Location: ZSA Experiment Station, Field D4-6.

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

Design: 3 x 4 factorial, 3 replications. Two separate trials planted in May 1984 (8800/1a) and November 1984 (8800/1b).

Spacing: 1,5 m between rows.

<u>Fertiliser:</u> kg/ha	<u>N</u>	<u>P₂O₅</u>	<u>K₂O</u>
	120	100	60

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

Irrigation: 1 108 mm Rainfall: 719 mm

Treatments

a) Varieties: 1. NCo 376 (high population)
2. N 14 (medium population)
3. B 51129 (low population)

b) Ethrel concentrations: 1. Nil - (control)
2. 500 ppm a.i.
3. 1000 ppm a.i.
4. 2000 ppm a.i.

Conduct:

1. Setts were dipped in Ethrel in the same manner as for the standard fungicide dip. 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 4 weeks after planting. Counting was stopped in April, 1985 (5 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. The varietal and Ethrel responses represent the mean responses for all four Ethrel concentrations and all three varieties respectively. At peak tillering (3 months after planting), the mean number of tillers/ha for each variety was:
NCo 376 - 352 000; N 14 - 252 000; and B 51129 - 182 000.

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When counts were stopped in April, this margin had narrowed slightly and the mean of the three varieties was 128 000 tillers/ha.

Ethrel increased tiller production in the early stages of growth from December, 1984 to February, 1985 (1-3 months after planting). NCo 376 showed the greatest increase, N 14 a smaller increase and B 51129 a negligible effect. It is worth noting that at 2000 ppm a.i. Ethrel caused a decline in tiller production in variety B 51129. After peak tiller production, the effects of Ethrel decreased due to natural tiller die-back.

- b) Harvest data. (see Table 1) Ethrel had no significant effect on cane and ERC yields, ERC% cane, or millable stalks per hectare. However, there was a trend for cane and sugar yields to decline with increase in Ethrel concentration.

N 14 had the highest sugar yield of all three varieties, despite a low ERC% cane value. This was due to its good cane yield which was significantly greater than NCo 376. B 51129 had the lowest cane and sugar yield, compared to N 14 and NCo 376. None of the Variety x Ethrel interactions were significant.

Stalk characteristics were not affected much by Ethrel, but there were differences between varieties. Germination in the trial as a whole was poor due to heavy rains after planting, and as a result N 14 and B 51129 had very poor stands. The large stalk volumes of these two varieties compensated to a degree for their low populations.

At harvest, the trial was badly lodged, with variety NCo 376 lodging the most (83%). None of the three varieties flowered.

DISCUSSION

The significance of the differences between Ethrel treatments could have been affected by high C.V.s. The high C.V.s were probably due to plot to plot variability in stalk population as well as excessive lodging.

Ethrel did cause an increase in tillering in the early stages, but this effect disappeared as tillers died back. Therefore, Ethrel did not give any yield benefit at harvest. On the contrary, results suggest that Ethrel may have caused a small decline in cane yield. This decline was not significant, even when the Ethrel response was split into linear, quadratic and cubic components (results of analysis not shown).

Despite a rather poor ERC% cane value, N 14 still performed better than NCo 376. This is of interest to the industry as N 14 is now under pre-release.

CONCLUSIONS

Seedcane treatment with Ethrel did enhance germination and tillering in high and medium tillering varieties. This enhancement was not as great as in the early season trial (8800/1a), when tillering in general was more profuse. As in the early season trial, Ethrel effects on tillering were lost during tiller die-back, and there was no effect on yield.

D.E.L./Dec'85

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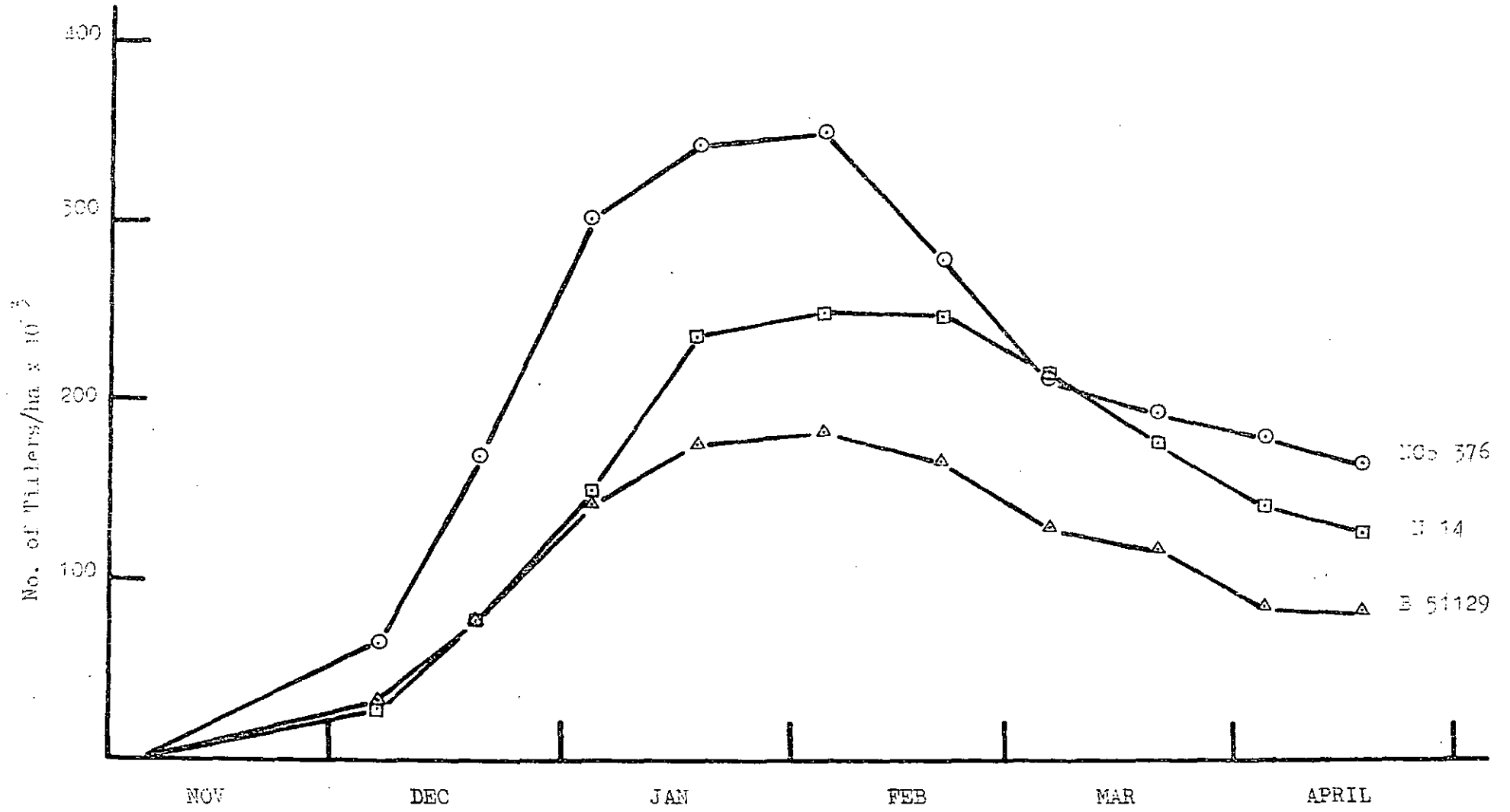


Figure 1 : Varietal Differences in Tillering

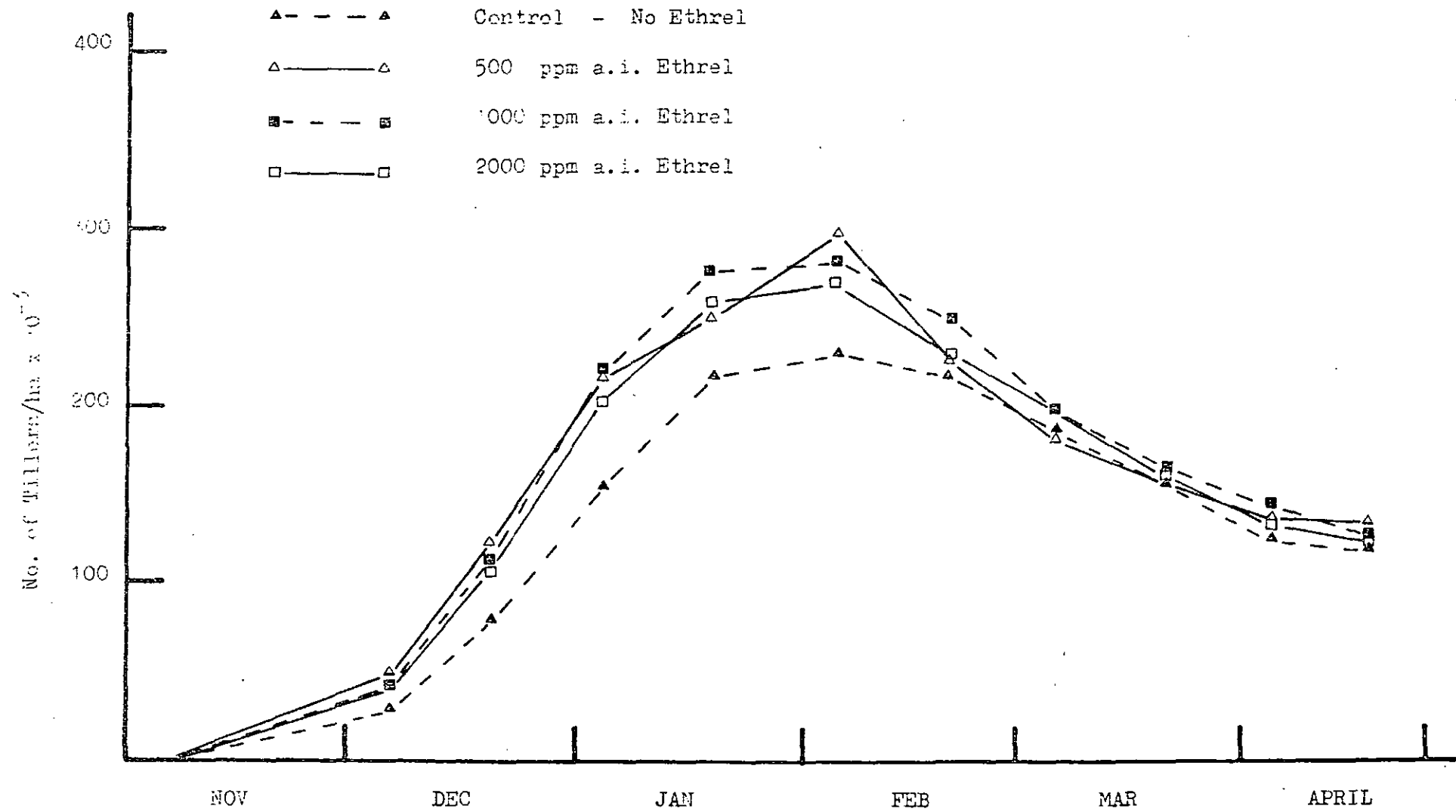


Figure 2 : Effect of Ethrel Treatment on Tiller Numbers

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TABLE 1 : HARVEST DATA

TREATMENTS	CANE YIELD t/ha	ERC% CANE	ERC YIELD t/ha	STALKS/ ha x 10 ⁻³	STALK LENGTH m	STALK DIAM. cm	LODGING %
<u>Varieties(V)</u>							
1. NCo 376	125,46	12,22	15,30	156,0	2,38	2,0	83
2. N 14	146,20	11,47	16,74	83,6	2,51	2,4	75
3. B 51129	101,38	12,77	12,91	66,9	2,63	2,8	74
Significance	***	**	***	***	-	-	-
L.S.D. P = 0,05	14,87	0,70	1,77	10,08	-	-	-
P = 0,01	20,21	0,95	2,41	13,70	-	-	-
S.E. Variety mean ±	5,07	0,24	0,60	3,44	-	-	-
<u>Ethrel Conc.(E)</u>							
1. 0 ppm	131,32	12,39	16,14	109,3	2,51	2,4	72
2. 500 ppm	125,18	12,07	14,95	113,1	2,54	2,4	87
3. 1000 ppm	122,77	11,98	14,59	115,6	2,54	2,4	69
4. 2000 ppm	118,11	12,16	14,25	111,7	2,44	2,4	81
Significance	N.S.	N.S.	N.S.	N.S.	-	-	-
S.E. Ethrel mean ±	5,85	0,27	0,70	3,97	-	-	-
V x E Interaction	N.S.	N.S.	N.S.	N.S.	-	-	-
Trial mean	124,35	12,15	14,98	112,5	2,51	2,4	77
S.E. single plot ±	17,56	0,82	2,10	11,91	-	-	-
C.V.%	14,12	6,77	13,99	10,58	-	-	-