

SOUTH AFRICAN SUGAR INDUSTRY.

AGRONOMISTS' ASSOCIATION.

Code: A(DROUGHT)6/80/P

Cat. No : 1265

TITLE: Management of droughted Cane

1. Particulars of the project

This crop : Plant
Site : Egolomi Est. Tongaat
Region : North Coast Coastal
Soil system : Umzinto Coast Lowlands
Soil form/series : Glenrosa
Design : Randomised block With Split Plot
Variety : NCo 310
Fertilizer kg/ha : N P K
Ameliorants i.f.: 51 165 -
t.d.: 118 - 118

Filtercake in furrow at unknown rate

Note The soil profile was shallow with shale on the surface in some areas.

Soil analysis: Date: 15/8/80

<u>pH</u>	<u>O.M.%</u>	<u>Clay%</u>	<u>P.D.I</u>
5,8	-	23	-

ppm

<u>P</u>	<u>K</u>	<u>Ca</u>	<u>Mg</u>	<u>Zn</u>	<u>Al</u>
68	372	811	220	4,0	2

Age: T1.10,6 months Dates: 15/08/80-2/07/81

Age T2.26.6 months Dates: 15/4/79 - 2/07/81

Rainfall. T1 1 139 mm L.T.M. 1 015 mm

Rainfall: T2 1 897 mm L.T.M. 2 130 mm

2. Objectives

1. To determine whether severely droughted cane with too little stick to harvest should be cut back or left, and
2. To assess the need to reapply fertilizer to the cane once the drought breaks.

3. Treatments

T1 Cane cut back
T2 Cane left standing
F0 No Fertilizer applied
F1 Fertilizer applied

NOTES ON FERTILIZER. 180Kg N/ha as Urea were applied IN two equal dressings at the end of September and October. (198 Kg/ha Urea per application)

Condition of the crop- Very little green leaf present, meristem discoloured and stalk pithy.

4. Results

4.1 Yield

Treatments		Cane t/ha	Ers % cane	Fibre % cane	Suc % cane	Ers t/ha	Suc t/ha
T1 F0	Cane cut back - no fertilizer	93	9,7		11,3	9,1	10,5
T1 F1	Cane cu back - with fertilizer	92	10,6		12,1	9,8	11,2
T2 F0	Cane left standing - no fertilizer	71	8,6		10,2	6,1	7,3
T2 F1	Cane left standing - with fertilizer	74	9,2		10,8	6,7	8,0
Mean		82	9,5		11,1	7,9	9,2
Whole plots	Cane cut back	92	10,2	11,2		9,4	10,8
	Cane left standing	72	8,9	13,2		6,4	7,6
	C.V.%	7,0			5,4		
	L.S.D. (0,05)	13,0	1,5		2,5	2,4	2,4
Sub plots	No fertilizer	82	9,1		10,8	7,6	8,9
	With fertilizer	83	9,9		11,5	8,3	9,6
	C.V. %	12,4					

4.2 Harvested crop characteristics

Treatments		Stalk counts X10-3/ha	Stalk length (cm)	kg/stalk
T1 F0	Cane cut back - no fertilizer	133	202	0,70
T1 F1	Cane cut back - with fertilizer	128	214	0,72
T2 F0	Cane left standing - no fertilizer	90	198	0,79
T2 F1	Cane left standing - with fertilizer	93	205	0,80
Mean		111	205	0,75

4.3 3rd leaf values (sampled on 8.01.1981, 6.02.1981, 4.03.1981 and 7.04.1981)

Treatments	N % d.m.				P % d.m.				K % d.m.				
	5	6	7	8	5	6	7	8	5	6	7	8	
T1 F0 Cane cut back - fert	2,1	2,0	2,2	1,9	0,22	0,22	0,25	0,23	1,49	1,36	1,37	1,68	
T1 F1 Cane cut back + fert	2,1	2,0	2,1	1,9	0,21	0,21	0,22	0,21	1,43	1,40	1,43	1,59	
	Age (months)	21	22	23	24	21	22	23	24	21	22	23	24
T2 F0 Cane left standing -fert	1,9	2,0	2,2	2,0	0,18	0,21	0,24	0,22	1,06	1,29	1,30	1,58	
T2 F1 Cane left standing +fert	2,0	1,9	2,1	1,9	0,19	0,19	0,23	0,21	1,04	1,26	1,46	1,61	

4.4 Material cut back (and left on plots)

Material from four random plots were weighed, the proportion of tops, stalk and trash calculated from samples, dry matter determined and then analysed for nutrient content.

. Total mass (fresh) = 43 t/ha

. Proportion of fresh material	<u>Tops</u>	<u>Stalk</u>	<u>Trash</u>
%	18	72	10
. Mass of fresh material/ha (kg)	7 740	31 390	4 730
. Dry matter %	41	27	89
. Mass of d.m./ha (kg)	3 173	8 475	4 209

. Nutrient content % d.m.	<u>N</u>	<u>P</u>	<u>K</u>	<u>Ca</u>	<u>Mg</u>
Tops	0,93	0,16	2,53	0,20	0,21
Stalks	0,83	0,09	1,74	0,10	0,12
Trash	0,29	0,03	0,88	0,24	0,19

. Nutrients/ha (kg)	<u>N</u>	<u>P</u>	<u>K</u>
Tops	29,5	5,1	196
Stalks	70,3	7,6	147
Trash	12,2	1,3	37
	<u>112</u>	<u>14,0</u>	<u>380</u>

4.5 Eldana

Infestation was severe and worst in the older stalks in the plots where cane was left standing. This was first observed in February five months prior to harvest but no counts of damaged stalks were done.

4.6 Survival of stalks

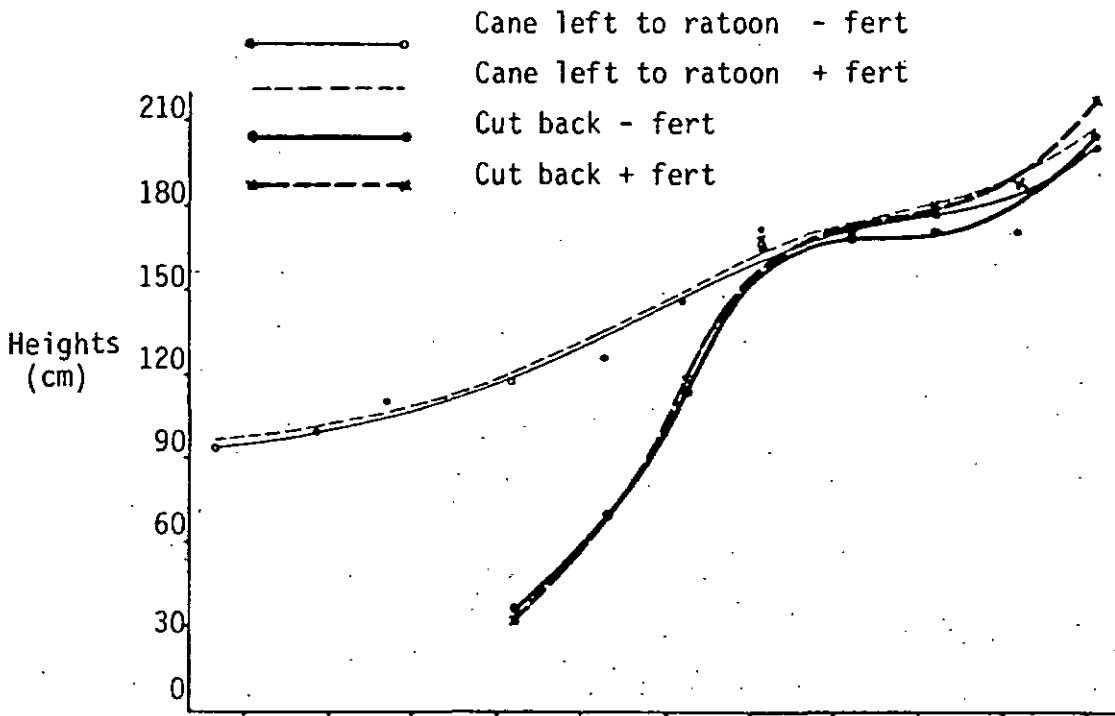
In the plots where cane was left standing only 25% of the harvested stalks were those that survived the drought, the balance comprised stalks which had developed from buds at ground level or eblow. The old stalks were those badly damaged by eldana.

5. Comments

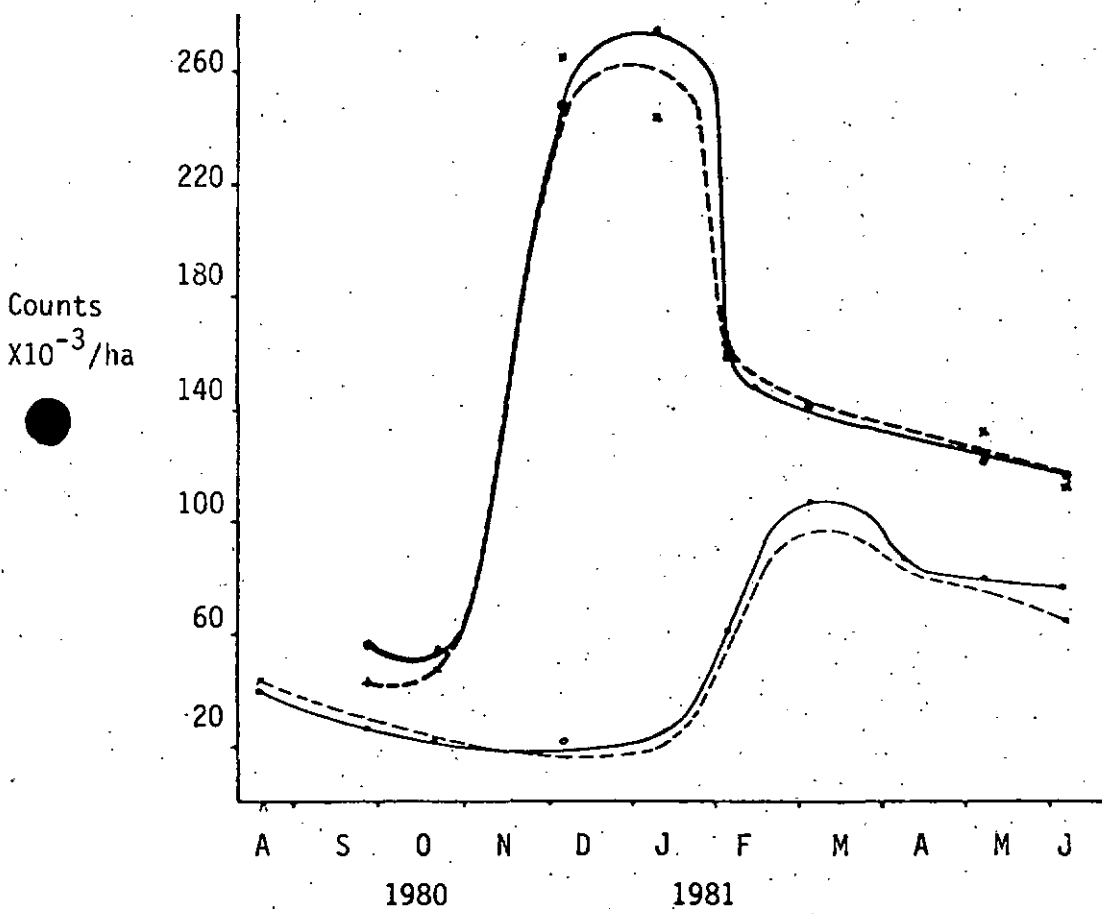
- 5.1 In this situation it was beneficial to slash back the severely droughted cane ($P=0,05$). The presence of eldana, particularly in the old stalks is thought to have contributed to the result.
- 5.2 The rate of stalk elongation and stalk population was far superior in the crop that was slashed back. This inability to recover from serious moisture stress may be characteristic of variety NCo 310.

- 5.3 The application of split nitrogen dressings each of 90 kg/ha did not materially influence yield or cane quality. The trend was in favour of top-dressing but the response did not approach a level of significance. Third leaf data showed adequacy of all nutrients at all times
- 5.4 Cane quality was superior in the younger cane primarily because the fibre % cane was markedly higher in the old stalks which survived the drought.

Stalk elongation



Stalk Counts



Rainfall distribution and long term mean.

