

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: A(Drought) 7/80/R

Cat.No.: 1266

TITLE : MANAGEMENT OF DROUGHTED CANE

1. Particulars of the project

This crop : Ratoon  
Site : Ingelmere Estates  
Compensation  
Region : North Coast Coastal  
Soil system : Umzinto Coast  
Lowlands  
Soil form/series : Longlands/Waldene  
Design : Random block with  
split plots  
Variety : NCo 376  
Fertilizer/ N P K  
Ameliorants See treatments

Soil analysis: Date: 25/8/81

pH	O.M.%	Clay%	P.D.I.
5,24	-	18	-

p.p.m.

P	K	Ca	Mg	Zn	Al
13	88	355	117	0,6	11

Age: T1 11,0 mths Dates: 26/9/80-25/8/81

T2 23,3 " " 15/9/79-25/8/81

Rainfall: T1 928 mm L.T.M.: 906 mm

T2 1735 mm " : 2037 mm

Notes on soil: A typically shallow Dwyka derived soil with well developed plinthite layer and the usual drainage problems.

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 merits of reapplying fertilizer once the drought breaks.

3. Treatments:

T1 : Cane slashed back  
T2 : Cane left standing  
F1 : Fertilizer applied  
F0 : No fertilizer applied

Fertilizer A total of 120 kg/ha of N and K were applied in split dressings to the F1 plots in October and November 1980.

Condition of Cane

Severely droughted with about half the stalks completely desiccated; 900 - 1 000 mm tall with very little green leaf in evidence; incomplete canopy and a heavy, young weed population threatening.

4. RESULTS:

4.1 Yields

Treatments	t/ha cane	ERS % cane	Suc % cane	t/ha ERS	t/ha Suc
T1F0 : Cane cut back : no fertilizer	54	10,2	12,0	5,5	6,5
T1F1 : Cane cut back : with fertilizer	55	10,2	11,9	5,6	6,5
T2F0 : Cane left standing: no fert.	54	10,5	12,1	5,6	6,5
T2F1 : Cane left standing: with fert.	64	10,4	12,1	6,7	7,7
MEAN	57	10,3	12,0	5,8	6,8
Whole plots (cane cut back)	55	10,2	12,0	5,6	6,5
(cane left standing)	59	10,5	12,1	6,1	7,1
C.V.%	14,2	9,4	7,4	14,5	13,5
L.S.D.(0,05)	14,1	1,7	1,6	1,5	1,6
Split plots (Cane without fertilizer)	54	10,4	12,0	5,6	6,5
(Cane with fertilizer)	60	10,3	12,0	6,1	7,1
C.V.%	16,4				
L.S.D. (0,05)	10,2			0,9	1,1

4.2 Harvested Crop Characteristics and Yield/100 mm Rainfall

Treatments	Stalk counts x10 <sup>-3</sup> /ha	Stalk length (cm)	Yield rating	tc/ha/100 mm	t ers/ha/100 mm
T1F0 Cane cut back : no fertilizer	112	153	5	5,8	0,70
T1F1 Cane cut back : with fertilizer	117	153	5	5,9	0,70
T2F0 Cane left standing : no fertilizer	94	171	7	3,1	0,37
T2F2 Cane left standing : with fertilizer	106	179	8	3,7	0,44
MEAN	107	164	6	4,6	0,55

4.3 Third leaf values from sampling on 8/1/81, 6/2, 4/3 and 7/4

Treatments	AGE (M)	N % d.m.				P % d.m.				K % d.m.			
		4	5	6	7	4	5	6	7	4	5	6	7
Cut back	-F	2,5	2,3	2,3	1,8	0,21	0,22	0,23	0,20	1,1	1,2	1,1	1,2
Cut back	+F	2,7	2,3	2,5	1,9	0,22	0,22	0,24	0,21	1,1	1,4	1,2	1,3
	AGE (M)	16	17	18	19	16	17	18	19	16	17	18	19
Left standing	-F	2,1	2,0	2,3	1,9	0,17	0,18	0,20	0,21	0,8	1,0	1,0	1,2
Left standing	+F	2,2	2,1	2,4	1,9	0,18	0,19	0,22	0,21	0,9	1,1	1,2	1,3

#### 4.4 Material cut back (and left on plots)

Material from eight plots was weighed; tops, trash and stalks separated and sampled for dry matter determination and nutrient analysis. The proportion of tops, trash and stalks were assumed to be 20, 70 and 10% on a fresh material basis (taken from trial A (Drought) 6/80).

- Mass of fresh material (total) 15 000 kg/ha

• Mass of fresh material (kg/ha)	tops 3 000	stalks 10 500	trash 1 500
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- Dry matter %
- |  |    |    |    |
|--|----|----|----|
|  | 25 | 25 | 76 |
|--|----|----|----|

- Mass dry matter (kg/ha)
- |  |     |       |       |
|--|-----|-------|-------|
|  | 750 | 2 625 | 1 140 |
|--|-----|-------|-------|

• Nutrient content (% d.m.)	N	P	K
tops	1,06	0,13	1,26
stalks	0,99	0,09	0,97
trash	0,36	0,03	0,15

• Nutrient content (kg/ha)	N	P	K
tops	8,0	1,00	14,4
stalks	26,0	2,40	25,5
trash	4,1	0,34	1,7
Total	38,1	3,74	41,6

#### 4.5 Eldana

At harvest stalks were inspected to determine the percentage of stalks damaged (regardless of number of borings or number of eldana larvae).

	cut back	left standing	
fertilized	48	68	58
not fertilized	44	73	59
	46	71	

#### 4.6 Stalk survival

Within the plots where the cane was left standing only 31% of the harvested stalks comprised old stalks that had survived the drought, the balance had regenerated from buds at or below ground level.

### 5. Comments on results

- 5.1 Cane and sucrose yields were not appreciably affected by treatments. The crop left standing yielded slightly more cane and sucrose (n.s.) but was substantially more susceptible to eldana borer.

- 5.2 The extra fertilizer applied had no real effect on yield of cane or sucrose. Third leaf data indicated adequacy of N and P but only K was marginally deficient in the unfertilized cane that was left standing. Levels of P and K tended to increase with time.
- 5.3 Stalk populations were higher where the droughted cane was cut back but the reverse was true in respect of stalk lengths.

PKM/SN  
2 March, 1982



