

SOUTH AFRICAN SUGAR INDUSTRY  
'AGRONOMISTS' ASSOCIATION

"EFFECTS OF HOT WATER TREATMENT"

Catalogue No: 176  
This crop : Plant Cane  
Site : Langespruit Section, L8a(x)  
Altitude : 2,000 ft.  
Soil Series : Inanda  
Design : Latin Square (5 x 5)  
Variety : N.Co. 376  
Fertilizer : (lb. p.a.) N P K  
  123 80 125  
Water regime: Dryland

Soil Analysis:

<u>pH</u> 5.5	<u>OM%</u> 8.6	<u>Clay%</u> -
<u>p.p.m.</u>		
P 48	K 296	Ca 744
		Mg 416
<u>Age:</u> P - 23 months. 10.64 - 9.66		
<u>Rainfall:</u> 69.88 ins.		
<u>Irrigation:</u> - .		

Object:

To study the effects of hot water treatment of cane setts, using various temperatures on germination and cane yield, among themselves and when compared with 'untreated' control and planting of h.w.t. tops only.

Treatments:

1. Control - No H.W.T.
2. Normal H.W.T. - 124°F (51.1°C )
3. Overheating - 126°F (52.2°C ) for 2 hours
4. Underheating - 120°F (48.9°C )
5. Tops only - 124°F )

Treatments 1 - 4 included the tops (i.e. uppermost sett cut from each stalk), while in treatment 5, only the tops were planted. In all cases topping was slightly below the normal level for seed cane as it was accepted that the very young, soft eyes would be adversely affected by H.W.T.

Results:

Stalk Counts at 13 weeks after planting:

Treatment	Average No. of Stalk per plot	% of Control
1	578	100
2	374	65
3	59	10
4	629	109
5	64	11

Harvest Results/.....

"EFFECTS OF HOT WATER TREATMENT" (Continued)

Harvest Results:

Treatment	T.C.A.	Suc. %.	T.S.A.
1. Control - no H.W.T.	44.7	14.65	6.55
2. Normal H.W.T. - 124°F	37.5	14.36	5.38
3. Overheating - 126°F	17.1	14.33	2.44
4. Underheating - 120°F	55.5	14.51	8.05
5. Tops only - 124°F	13.1	14.03	1.83
S.E. of treatment mean	2.96		
L.S.D. (0.05)	9.1		
(0.01)	12.8		

Conclusions:

1. Apart from the obvious effects of "Overheating" and "Tops only", "Underheating" has resulted in a significantly higher yield than "Control".
2. "Normal H.W.T." has not lowered yield significantly compared with "Control".

Remarks:

1. Rigid temperature control is extremely important when subjecting cane to hot water treatment.
2. Temperature in the treatment tanks should be limited to a maximum of  $\pm 123^{\circ}\text{F}$ .
3. Germination of the youngest eyes at the tops of the stalks is adversely affected by H.W.T.
4. Heating the cane to just below the minimum temperature considered necessary to kill the R.S.D. virus appears to stimulate germination.