

SOUTH AFRICAN SUGAR INDUSTRY
AGRONOMISTS' ASSOCIATION

A(4)

EXPERIMENT RESULT

CODE: SEED 2/87/SW SIM 'R'
CAT. NO.: 1658

TITLE: HIGHVELD SEEDCANE EVALUATION

1. PARTICULARS OF PROJECT

This crop	: Plant	Soil analysis	: 9/9/1987
Site	: Simunye Estate Field 606 Panel 15	pH	OM% Clay % PDI
		6,9	- 130 -
Region	: Northern irrigated (Swaziland)		ppm
Design	: Latin square 4 replications	P	K Ca Mg S
		17	225 2173 698 20
Soil Set	: 'R'	Dates	: 10/9/1987 - 2/9/1988
Variety	: HCo376	Age	: 11,7 months
Fertilizer	: N P K	Rainfall	: N/A
Furrow	20 40 150	Irrigation	: N/A
Top-dress	100 - -	Total water	: N/A
Total (kg/ha)	120 40 150		

2. OBJECTIVES

- 2.1 To determine whether seedcane stalk diameter has any influence on germination potential, vigour and eventual yields.
- 2.2 To establish whether the hot water treatment process has any effect on germination of normal and abnormally thin highveld seedcane, originating from similarly hot water treated material.

3 TREATMENTS

- 3.1 Thin stalks.
- 3.2 Stalks of average diameter.
- 3.3 Thin stalks that underwent hot water treatment.
- 3.4 Stalks of average diameter that underwent hot water treatment.

Notes on Treatments

- * All canes were selected from the same seedcane consignment.
- * After separation into thin and normal stalks, half of each bundle was hot water treated in the conventional manner.
- * All treatments were double stick planted.
- * A complete physical assessment of the seedcane material was made before planting.

4. RESULTS

4.1 GROWTH DATA

Table 1. Crop growth measurements and populations at 1,2; 2,0; 3,1; 4,6 and 5,6 months of age.

TREATMENTS	STALK HEIGHTS (MM TO TVD)		POPULATIONS X 1000/HA				
	4,6m	5,6m	1,2m	2,0m	3,1m	4,6m	5,6m
	Thin stalks	1280	1910	39	103	252	192
Normal stalks	1330	1950	41	99	255	192	154
Thin stalks + HWT	1230	1870	48	107	233	184	168
Normal stalks + HWT	1310	1930	55	112	248	179	163

4.2 PHYSICAL ASSESSMENT

Table 2. Particulars of seedcane material taken before planting.

TREATMENT	STALK DIAMETER MM OF CENTRE INTERNODE	INTERNODE LENGTH MM	STALK LENGTH MM	STALK WEIGHT KG	TONS SEED PER HA	BUDS PER HA (x1000)	% DAMAGED BUDS PER HA
Thin stalks	18	134	1740	0,48	4,08	111,2	24
Normal stalks	23	133	2130	0,91	6,14	110,7	21
Thin stalks + HWT	18	134	1740	0,50	4,33	111,2	38
Normal stalks + HWT	23	133	2130	0,94	6,66	110,7	20

4.3 HARVEST DATA

Table 3. Cane yield, cane quality and sucrose yield.

TREATMENT	CANE YIELD T/HA	SUCROSE % CANE	SUCROSE YIELD T/HA
Thin stalks	164	14,1	23,1
Normal stalks	165	13,7	22,6
Thin stalks + HWT	163	13,8	22,7
Normal stalks + HWT	175	13,9	24,2
LSD Treatments			
(0,05)*	13	1,1	1,8
(0,01)**	19	1,7	2,7
Significance	N.S	N.S	N.S
Mean	167	13,9	23,2
CV%	4,4	4,5	4,4

4.4 FOLIAR NUTRIENTS

Table 4. Third leaf (%dm) values for N, P and K at 3,3, 4,7 and 6,3 months of age.

TREATMENT	CROP AGE								
	3,3 MONTHS (DEC)			4,7 MONTHS (FEB)			6,3 MONTHS (FEB)		
	N	P	K	N	P	K	N	P	K
Thin stalks	2,60	0,26	1,42	1,98	0,25	1,36	1,85	0,21	1,31
Normal stalks	2,70	0,27	1,46	1,95	0,25	1,36	1,90	0,22	1,34
Thin stalks + HWT	2,63	0,27	1,39	1,95	0,25	1,30	1,85	0,21	1,31
Normal stalks + HWT	2,63	0,28	1,45	1,93	0,25	1,32	1,87	0,22	1,33

5. COMMENTS

- * Table 2 illustrates the physical differences between the thin and normal seedcane categories which resulted in +/- 34% less material being planted in the thin stalk treatments. Recordings of percentage buds damaged was higher where thin seedcane material had been hot water treated (HWT).
- * Crop growth measurements from Table 1 show little difference between any of the treatments although HWT cane may have germinated a little earlier. Lodging at +/- 7 months of age prevented further growth recordings.

- * Treatments did not affect cane yields significantly although HWT normal stalks produced slightly higher yields. This increase however is not considered to be genuine as it is not supported in the growth measurements.
- * Sucrose % cane was not significantly influenced by the treatments,
- * Sucrose yields appeared higher in the treatments planted with HWT normal diameter stalks but increases were non-significant.
- * Similar conclusions were drawn from field observations made at Mhlume Sugar Co., in 1987/88 and hopefully the question on the suitability of thin Malakans seedcane for plantings has been settled.
- * This trial has been terminated.

NOTE

Differences in the physical appearance of HWT and non-HWT was marked at 5 weeks of age. Previously HWT cane had very erect leaves which were narrow and dark green while non-HWT cane had less rigid leaves that were broader and paler in colour. At 6-7 weeks of age the HWT cane showed some MSMA phytotoxic effects on the leaves which was not present in the non-HWT cane.

NBL/cg
7/11/1988