SOUTH AFRICAN SUGAR INDUSTRY AGRONOMISTS' ASSOCIATION

CODE: VAR 47/03/Sw/Mhl 'C'
CAT : 2198

RELEASED VARIETIES ON A 'C' SET SOIL HARVESTED LATE SEASON

1. PARTICULARS OF PROJECT

This crop	:	Plant
Trial crop	:	1st
Site	:	RSSC (Mhlume)
Field	:	Field 428, Panel 16
Region	:	Northern Irrigated (Swd)
Soil Set	:	'C'
Design	:	Randomized Complete Block, 10 replications
Variety	:	NCo376, N19, N25, N32, N36, N40
Fertilizer kg/ha	:	N 120 P 60 K 150

Soil Analysis: October, 2003

pH	OM %	Clay %	Silt %	Sand %
6.7	-	-	-	-

ppm

P	K	Ca	Mg	(Ca+Mg)/K
23	275	3071	1114	15

Age : 13.8 months
Date : 18/09/2003 –11/11/2004

Rainfall : 738 mm
Irrigation : 1000 mm
Total : 1738 mm

2. OBJECTIVES

- To compare the performance of varieties N19, N25, N32, N36 and N40 with that of NCo376 for a late season cycle on an 'C' set soil.
- To compare the resistance/susceptibility of varieties to smut and Eldana.
- To compare the third leaf nutrient contents of N19, N25, N32, N36 and N40 with established NCo376 thresholds.

3. TREATMENTS

- Variety treatments in this trial were as follows:

NCo376
N19
N25
N32
N36
N40

4. FERTILIZERS

- 120kg N/ha (as Urea 46 % N), applied at planting (54 kg/ha) and 12 weeks after planting (66 kg/ha).
- 60kg P/ha (as DAP 18%N and 20%P) was applied at planting.
- 150kg K/ha (as KCl, 50% K) was applied at planting.

5. RESULTS AND DISCUSSION

Leaf Analysis

- Levels of N, P, K, Ca and Mg were satisfactory and above their respective thresholds (Table 1).
- There were statistically significant differences in levels of K, Ca and Mg among varieties.

Table 1: Third leaf nutrient content (% dm) at 3.9 months of age in January

Variety	% dm				
	N	P	K	Ca	Mg
NCo376	2.02	0.25	1.41	0.21	0.20
N19	2.02	0.24	1.47	0.23	0.18
N25	2.01	0.24	1.55	0.22	0.19
N32	2.04	0.25	1.37	0.23	0.20
N36	2.02	0.24	1.36	0.24	0.21
N40	2.02	0.24	1.26	0.25	0.20
Mean	2.02	0.24	1.40	0.23	0.20
LSD(0.05)	NS	NS	0.07	0.02	0.01
LSD(0.01)	-	-	0.09	NS	0.02
CV%	1.4	5.2	5.6	9.3	7.7

Table 2: Variety differences in third leaf nutrient content (% NCo376)

Variety	N	P	K	Ca	Mg
N19	100	96	104	110*	90**
N25	100	96	110**	105	95*
N32	101	100	97	110*	100
N36	100	96	96	114*	105*
N40	100	96	89**	119*	100

* Statistically significant (P=0.05)

** Statistically significant (P=0.01)

Growth Measurements

- The stalk populations of NCo376 and N32 were significantly higher than those of the other varieties (Table 3). N36 had significantly the lowest population. N19, N25 and N40 were statistically similar.

- The stalk heights of N19, N25, N36 and N40 were statistically similar and significantly higher than N32 (Table 3). NCo376 was intermediate and statistically shorter than N36.

Table 3: Growth measurements at various ages

Variety	Stalk population ('000/ha)			Stalk height (cm to TVD)		
	Jan. (3.9m)	Mar. (5.7m)	Jul. (9.9m)	Jan. (3.9m)	Mar. (5.7m)	Jul. (9.9m)
NCo376	159	136	107	80	183	276
N19	141	107	100	88	194	284
N25	145	120	96	83	189	280
N32	159	135	111	72	174	253
N36	128	95	83	84	193	289
N40	136	109	94	83	179	283
Mean	145	117	99	82	185	278
LSD(0.05)	10	12	7	8	7	11
LSD(0.01)	14	16	9	10	10	15
CV%	7.9	11.7	7.6	10.5	4.5	4.4

Pests and Diseases

- All varieties were affected by Eldana at harvest. There were no significant differences in infection (Table 4).

- Smut infection was generally very low and none was observed on N36 and N40 (Table 4).

Table 4: Eldana damage at harvest and smut levels from December to January

Variety	Eldana (% damaged internodes)	% Smut whips	
		Dec. (2.7m)	Jan. (3.9m)
NCo376	0.35	0.16	0.08
N19	0.75	0.01	0.00
N25	0.34	0.03	0.05
N32	0.27	0.05	0.16
N36	0.88	0.00	0.00
N40	0.18	0.00	0.00
Mean	0.46	0.04	0.05
LSD (0.05)	NS	0.08	0.17
LSD (0.01)	-	0.11	0.23
CV %	197.7	210.5	409.3

Harvest Results

- N25 yielded significantly more cane than the other varieties (Table 5). All the other varieties yielded statistically similar.
- Cane quality (mean sucrose and erc% cane) was significantly higher in N40 and statistically similar to N32 than in the other varieties. N19, N25 and NCo376 were statistically similar and significantly lower than N36.
- Whilst sucrose and erc yields for N25 and N40 were statistically similar, N25 yielded significantly higher than all the other varieties. Yields for NCo376, N19, N32 and N36 were statistically similar.

Table 5: Harvest Data

Variety	Tcane /ha	Suc. % cane	Tsuc/ha	Erc. % cane	Terc/ha
NCo376	118	16.84	19.9	15.23	18.0
N19	120	17.29	20.8	15.61	18.8
N25	134	16.79	22.4	15.09	20.1
N32	113	18.60	21.0	17.10	19.3
N36	113	18.24	20.5	16.74	18.8
N40	115	18.85	21.7	17.31	20.0
Mean	119	17.77	21.1	16.18	19.2
LSD(0.05)	7	0.54	1.28	0.61	1.20
LSD(0.01)	9	0.72	1.70	0.81	1.60
CV%	6.5	3.4	6.7	4.1	6.9

NB: Sucrose measured as pol

6. CONCLUSIONS

- Cane yields were significantly higher in N25 than in the other varieties. The cane quality of N40 was significantly higher than that of the other varieties.
- All varieties were affected by Eldana at harvest. There were no statistical differences in infection among varieties. Smut infection was generally low in all varieties and absent in N36 and N40.
- Varietal differences in third leaf nutrient concentrations indicate that thresholds established for NCo376 may not be appropriate for the new N varieties.
- This trial has been continued and is now in its 1st ratoon.

BMS
27/9/2005

7. APPENDIX

Appendix 1: Sample data at harvest

Variety	Fresh wt. (g/stalk)	Moisture (% cane)	Dry wt. (g/stalk)	Purity (% cane)	Sucrose (% cane)	Erc (% cane)	Sucrose wt. (g/stalk)	Erc wt. (g/stalk)	Sucrose (% dm)
NCo376	940	68.2	299.1	89.3	16.84	15.23	158.3	143.1	53.0
N19	1143	68.1	364.5	89.0	17.29	15.61	197.6	178.5	54.2
N25	1141	70.6	335.0	88.0	16.79	15.09	191.6	172.3	57.2
N32	862	68.7	270.2	91.1	18.60	17.10	160.4	147.6	59.5
N36	1263	68.1	402.3	91.1	18.24	16.74	230.4	211.3	57.3
N40	1018	67.6	329.8	91.1	18.85	17.31	191.6	175.9	58.2
Mean	1061	68.6	333.5	89.9	17.77	16.18	188.3	171.5	56.6
LSD (0.05)	109	0.89	35.85	1.56	0.54	0.61	19.78	18.14	1.74
LSD (0.01)	145	1.18	47.74	2.08	0.72	0.81	26.35	24.16	2.32
CV%	11.4	1.4	11.9	1.9	3.4	4.1	11.6	11.7	3.4

NB: Sucrose measured as pol