

SOUTH AFRICAN SUGAR INDUSTRY AGRONOMISTS' ASSOCIATION

CODE: VAR 48/03/Sw/Ubo 'S'

CAT : 2199

RELEASED VARIETIES ON AN 'S' SET SOIL HARVESTED LATE SEASON

1. PARTICULARS OF PROJECT

This crop : Plant	Soil Analysis: October, 2003
Trial crop : 1 st	pH OM % Clay % Silt % Sand %
Site : Ubombo Sugar Ltd	7.11 - - - -
Field : Speculation 4	P K Ca Mg (Ca+Mg)/K
Region : Northern Irrigated (Swd)	24 171 2672 921 21
Soil Set : 'S'	Age : 12.1 months
Design : Split plot, 5 replication	Date : 24/10/2003 – 25/10/2004
Variety : NCo376, N25, N36, N40	Rainfall : 492 mm
Fertilizer : N P K	Irrigation : 544 mm
kg/ha 120 60 150	Total : 1036 mm

2. OBJECTIVES

- To compare the performance of varieties N25, N36 and N40 with that of NCo376 for a late season cycle on an 'S' set soil.
- To determine the ripening response of each variety to Fusilade Super at two rates of application.
- To compare the resistance/susceptibility of varieties to smut and eldana.
- To compare the third leaf nutrient contents of N25, N36 and N40 with established NCo376 thresholds.

3. TREATMENTS

- Varieties and ripening treatments in this trial were as follows:

Ripeners (main plots)

Control
Fusilade @ 0.3 l/ha
Fusilade @ 0.45 l/ha

Varieties (sub plots)

NCo376
N25
N36
N40

- Fusilade was not applied in this crop because of generally high juice purities at the time of application.

4. FERTILIZERS

- 120kg N/ha (as Urea 46 % N), applied at planting (54kg/ha) and 14 weeks after planting (66kg/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 P among varieties.

Table 1: Third leaf nutrient content (% dm) at 3.1 months of age in January

Variety	% dm				
	N	P	K	Ca	Mg
NCo376	2.07	0.26	1.58	0.23	0.20
N25	2.07	0.24	1.59	0.23	0.20
N36	2.07	0.25	1.53	0.24	0.20
N40	2.05	0.25	1.53	0.22	0.20
Mean	2.07	0.25	1.56	0.23	0.20
LSD (0.05)	NS	0.010	NS	NS	NS
LSD (0.01)	-	NS	-	-	-
CV %	1.5	5.4	7.4	7.6	6.2

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

Variety					
N25	100	92*	101	100	100
N36	100	96	97	104	100
N40	99	96	97	96	100

* = Significant (P=0.05)

** = Significant (P=0.01)

Growth Measurements

- The stalk population of NCo376 was significantly higher than those of the other varieties throughout the sampling period (Table 3). N36 had significantly the lowest population, while N25 was intermediate and significantly higher than N40.

- Although N36 had the tallest stalks, there were no significant differences in stalk height amongst the varieties.

Table 3: Growth measurements at various ages

Variety	Stalk population ('000/ha)				Stalk height (cm to TVD)			
	Jan. (2.9m)	Feb. (3.9m)	Mar. (4.7m)	Jun (8.0m)	Jan. (2.9m)	Feb. (3.9m)	Mar. (4.7m)	Jun (8.0m)
NCo376	154	140	118	115	47	105	159	236
N25	123	116	105	97	54	111	157	239
N36	111	106	91	86	59	115	163	250
N40	129	117	103	89	52	108	152	240
Mean	129	120	104	97	53	110	158	241
LSD (0.05)	11	7	8	2	5	4	5	NS
LSD (0.01)	15	10	11	3	6	6	6	-
CV %	12.0	8.2	10.8	3.1	12.2	5.2	4.0	7.2

Pests and Diseases

- Eldana infestation levels were quite negligible in this trial and absent in N25 and N36 (Table 4).
- Likewise, there was generally no smut in this trial and infection was completely absent in N36, N40 and NCo376 (Table 4).

Table 4: Eldana damage at harvest and smut levels in February

Variety	Eldana	Smut (% smut whips)
	% internodes damaged	Feb. (3.9m)
NCo376	0.04	0.00
N25	0.00	0.03
N36	0.00	0.00
N40	0.04	0.00
Mean	0.02	0.01
LSD (P=0.05)	NS	NS
LSD (P=0.01)	-	-
CV %	551.6	774.6

Harvest Results

- N25 produced significantly higher cane yields than the other varieties (Table 5). All other varieties were statistically similar.
- Mean sucrose and erc% cane was significantly higher in N40 than in all the other varieties. N25 had significantly the lowest sucrose and erc % cane, while N36 was intermediate and significantly higher than NCo376.
- There were no significant differences in sucrose and erc yields among varieties.

Table 5: Harvest Data

Variety	tcane/ha	suc % cane	erc%c	tsus/ha	terc/ha
NCo376	103	17.00	15.72	17.4	16.1
N25	113	15.92	14.62	18.0	16.5
N36	101	17.58	16.41	17.8	16.6
N40	95	18.66	17.38	17.6	16.4
Mean	103	17.29	16.03	17.7	16.4
LSD (0.05)	8	0.40	0.4	NS	NS
LSD (0.01)	11	0.53	0.53	-	-
CV%	10.7	3.1	3.4	10.5	10.6

NB: Sucrose measured as pol

6. CONCLUSIONS

- The cane yield of N25 was significantly higher than that of the three other varieties. The cane quality of N40 was significantly higher than that of the other varieties.
- There was generally no eldana in this trial. Smut infection was also absent, except on N25, where the incidence was quite insignificant.
- 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

Variety	25 Oct. 2004 (at harvest)								
	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	739	70.1	221.0	92.3	17.0	15.7	125.6	116.1	56.9
N25	921	72.7	252.3	91.1	15.9	14.6	146.7	134.7	58.4
N36	1051	69.7	319.0	93.7	17.6	16.4	184.7	172.4	58.2
N40	923	67.9	295.9	93.3	18.7	17.4	172.1	160.3	58.2
Mean	909	70.1	272.1	92.6	17.3	16.0	157.3	145.9	57.9
LSD (0.05)	82	1.01	28.34	0.54	0.40	0.40	14.99	13.94	NS
LSD (0.01)	110	1.35	37.88	0.72	0.53	0.53	20.04	18.63	-
CV%	12.3	2.0	14.1	0.8	3.1	3.4	12.9	13.0	4.3