

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

EXPERIMENT RESULT

CODE: VAR 12/87/SW SIS 'Z'

CAT NO.: 1719

TITLE: VARIETIES ON A DUPLEX SOIL

1. PARTICULARS OF PROJECT

This crop	: 1st ratoon	Soil Analysis:	Date 1/12/1988			
Site	: SIS Field S 10/4					
Region	: Northern irrigated (Swaziland)	pH	OM%	Clay %	PDI	
		6,8	-	>30	-	
Design	: Randomised blocks (8 replications)	ppm				
		P	K	Ca	Mg	S Zn
		36	227	2528	874	- -
Soil Set/Series:	'Z'/Zwide	Dates	: 23/11/88 - 13/11/89			
Varieties	: NCo376; N14; N17 N19; M124/59	Age	: 11,75 months			
		Rainfall	: }			
		Irrigation:	: } Not available			
		Total	: }			
Fertilizer	: N P K					
Total (kg/ha)	160 - 150					

2. OBJECTIVES

- 2.1 To compare the performance of N19 and M124/59 with the more established varieties of the industry for a late cycle on a Duplex soil.
- 2.2 To assess the resistance of the variety to Pests and Diseases.
- 2.3 To establish the ripener response of each variety to a standard rate of Fusilade Super applied late season.

### 3. TREATMENTS

- 3.1 Varieties: NCo376; N14; N17; N19 and M124/59.
- 3.2 Nitrogen was applied as urea (46 % N). Half of the total amount of N was top-dressed in mid-December when the crop was 4 weeks old and the second half a month later in January.
- 3.3 Potassium as KCL (50% K) was top-dressed when the crop was 7 weeks of age in January.
- 3.4 A ripener was not applied due to excessive lodging in N19 and M124/59.

### 4. RESULTS

#### 4.1 Growth Data

Table 1: Crop Growth Measurements and Populations at 2.3; 3.3 and 10.5 Months of Age

VARIETY	STALK HEIGHTS (cm to TVD)		POPULATION COUNT (* 1000/ha)		
	3.3 m	10.5 m	2.3 m	3.3 m	10.5 m
NCo376	1600	2070	304	160	153
N14	1760	2430	230	119	110
N17	1780	2460	205	134	132
N19	1740	2270	237	128	132
M 124/59	1860	2340	228	102	113

## 4.2. Harvest Data

Table 2: Cane yield, Sucrose % Cane and Sucrose Yield

Variety	Tons Cane /ha	Sucrose % Cane	Tons Sucrose /ha
NCo376	103	15.5	16.0
N14	108	15.9	17.2
N17	104	16.4	17.0
N19	98	16.5	16.05
M 124/59	99	15.8	15.7
LSD Variety			
(0.05)*	15	0.5	2.0
(0.01)**	20	0.7	2.7
Significance	NS	**	NS
Trial Mean	102	16.0	16.4
SE	14	0.5	1.9
CV %	14	3.2	1.2

## 4.3 Foliar Analysis

Table 3: Foliar Analysis (% dm) at 3.5 Months of Age in March

Variety	N	P	K	Ca	Mg	S
NCo376	2.03	0.23	1.57	0.22	0.18	0.17
N14	1.92	0.20	1.06	0.27	0.20	0.16
N17	1.97	0.22	1.05	0.22	0.19	0.18
N19	1.89	0.22	1.22	0.23	0.16	0.16
M 124/59	2.07	0.19	1.62	0.22	0.16	0.18
LSD Variety						
(0.05)*	0.09	0.009	0.08	0.02	0.01	0.007
(0.01)**	0.12	0.01	0.11	0.03	0.02	0.01
Significance	**	**	*	**	**	**
MEAN	1.98	0.21	1.56	0.23	0.18	0.17
SE	0.09	0.008	0.08	0.02	0.01	0.007
CV %	4.6	4.0	5.3	9.8	7.9	4.4

#### 4.4 Eldana Survey

Table 4: Percentage of Internodes Damaged by Eldana

Variety	% Damaged Internodes
NCo376	2.00
N14	1.12
N17	1.29
N19	1.24
M 124/59	1.25

### 5. COMMENTS

#### 5.1 Growth Measurements

Population counts were highest in NCo376 and lowest in N14. Stalk length tended to follow a trend inverse to that of population count except for N17 for which both population and stalk length were amongst the highest.

#### 5.2 Cane Yield

Differences in cane yield between varieties were non-significant although N14 and N19 performed slightly above and below average respectively.

#### 5.3 Cane Quality

Sucrose content was generally high in this trial and significant differences existed between varieties. Quality decreased in the order N19 = N17 > N14 = M124/59 > NCo376 and the difference between N19 or N17 and NCo376 was significant.

#### 5.4 Sucrose Yield

Differences in sucrose yield between varieties were non-significant in this trial although the N14 and N17 tended to perform better than the other varieties. The sucrose yields of N19 and M124/59 were similar to NCo376.

### 5.5 Foliar Analysis

Nutrient content in NCo376 was above thresholds suggesting that in this trial no nutrients were deficient. There were significant differences between varieties in nutrient content. In relation to NCo376, N14 had a lower N, K and P content while Ca was higher. N19 was characterized by a lower N and Mg content than NCo376 whereas in M124/59 P and Mg were lower. The nutrient content was similar to that of NCo376.

### 5.6 Eldana Survey

Eldana levels were low in this trial and NCo376 appeared to have more damage than the other varieties.

## 6. CONCLUSION

- \* Results of this 1st ratoon crop have confirmed the performance of N14 at this site. N14 does not normally perform well and these soils and it is clear that irrigation management continues to be of a high standard.
- \* Foliar analysis confirmed varietal differences in nutrient content and the need for adjusting NCo376 thresholds to suit the requirement of individual varieties.
- \* This trial is being continued and is now in its second ratoon.

PCH/aw/ynm  
4 May 1990

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

EXPERIMENT RESULT

CODE: VAR 12/87/SW SIS 'Z'

CAT: 1719

TITLE: VARIETIES ON A DUPLEX SOIL

1. PARTICULARS OF PROJECT

This crop	: 2nd ratoon	Soil Analysis:	Date 27/11/1989				
Site	: SIS Field S 10/4	pH	OM%	Clay %	EDI		
Region	: Northern irrigated (Swaziland)	6.8	1.7	>40	-		
Design	: Randomised blocks (8 replications)	ppm					
Soil Set/Series:	'Z'/Zwide	P	K	Ca	Mg	S	Zn
Varieties	: NCo376; N14; N17 N19; M124/59	20	204	2412	834	28	2.3
Fertilizer	: N P K	Dates : 13/11/89 - 25/10/90					
Total (kg/ha)	160 40 -	Age : 11.4 months					
		Rainfall : 454.3 mm					
		Irrigation: 638 mm					
		Total : 1092.3 mm					

2. OBJECTIVES

- 2.1 To compare the performance of N19 and M124/59 with the more established varieties of the industry for a late cycle on a Duplex soil.
- 2.2 To assess the resistance of the varieties to pests and diseases.
- 2.3 To establish the response of each variety to a standard rate of Fusilade Super applied late season.
- 2.4 To compare third leaf nutrient content in each variety to NCo376.

### 3. TREATMENTS

#### 3.1 Varieties:

NCo376; N14; N17; N19 and M124/59.

#### 3.2 Fertilizer:

\* Nitrogen as Urea (46 % N) was top-dressed on the cane row at the rate of 100 kg N ha<sup>-1</sup> in the first week of December and followed in mid-January by an application of LAN (28 % N) at the rate of 60 kg N ha<sup>-1</sup>.

\* Phosphorus as single supers (10.5 % P) was broadcast on 7/12/89 at the rate of 40 kg P ha<sup>-1</sup>.

#### 4.4 Ripener:

Fusilade was not applied due to excessive lodging in M124/59.

### 4. RESULTS

#### 4.1 Growth Data

Table 1: Crop growth measurements and population at 5 months of age

VARIETY	STALK HEIGHTS (cm to TVD)	STALK POPULATIONS (* 1000 ha)
NCo376	1350	193
N14	1360	166
N17	1310	165
N19	1430	151
M 124/59	1590	153

## 4.2 Harvest Data

Table 2: Cane yield, Sucrose % Cane and Sucrose Yield

Variety	Tons Cane/ha	Sucrose % Cane	Tons Sucrose/ha
NCo376	64	16.35	10.4
N14	80	16.12	12.9
N17	75	15.92	12.0
N19	84	16.39	13.8
M 124/59	77	16.12	12.4
LSD (0.05)	12	0.75	2.2
Variety(0.01)	17	1.01	3.0
Significance	*	NS	*
Mean	76	16.18	12.3
SE One Plot	12	0.73	2.15
CV %	16.0	4.5	17.5

Table 3: Performance of Varieties compared to NCo376

Variety	Tons Cane/ha	Sucrose % Cane	Tons Sucrose/ha
N14	16*	-0.23	2.5*
N17	11	-0.43	1.6
N19	20**	0.04	3.4**
M124/59	13*	-0.23	2.1

\* Significant (P = 0.05)

\*\* Highly significant (P = 0.01)



## 4.3 Leaf Analysis

Table 4: Leaf Analysis (% dm) at 3.2 months of age in February

Variety	N	P	K	Ca	Mg	S
NCo376	1.95	0.22	1.35	0.24	0.18	0.17
N14	1.96	0.19	1.28	0.30	0.21	0.17
N17	1.83	0.20	1.35	0.22	0.19	0.17
N19	1.85	0.22	1.51	0.24	0.15	0.16
M 124/59	1.91	0.17	1.43	0.24	0.16	0.17
LSD (0.05)	0.11	0.007	0.091	0.031	0.018	0.007*
Variety(0.01)	0.15	0.008	0.12	0.042	0.025	0.009*
Significance	NS	**	**	**	**	NS
Trial Mean	1.90	0.20	1.38	0.25	0.18	0.17
SE	0.12	0.007	0.099	0.034	0.020	0.007*
CV %	6.3	3.5	7.2	13.8	11.2	4.4

## 4.4 Smut

Table 5: Percentage Smut whips in January at 1.8 months of age

Variety	% Smut Whips
NCo376	1.40
N14	0.05
N17	0.05
N19	0.02
M124/59	0.07

## 4.5 Eldana Damage

Table 6: Percent Internodes damaged at harvest

Variety	% Internodes damaged
NCo376	5.40
N14	3.30
N17	5.00
N19	3.00
M124/59	3.70

## 5. COMMENTS

### 5.1 General

Variability in this furrow irrigated trial on a duplex soil was characteristically high.

### 5.2 Crop Measurements

Stalk populations were highest in NCo376 and lowest in N19 and M124/59. Stalk length tended to follow a trend inverse to that of population counts.

### 5.3 Cane Yield

Cane yields in the second ratoon were low and reflected the poor growing conditions characteristic of the 'Z' set soils. NCo376 was outyielded by all varieties in this trial. The differences were generally significant and the highest yields were achieved by N19.

### 5.4 Cane Quality

In this unripened trial there were no statistically significant differences in sucrose content between varieties although N19 and NCo376 tended to be better than the other varieties.

### 5.5 Sucrose Yield

Sucrose yields reflected the varietal differences in cane yield with the performance of NCo376 being the poorest while that of N19 was the best. The sucrose yields of N19 and N14 were significantly higher than NCo376.

### 5.6 Leaf Analysis

Mean nutrient levels were all above the current threshold values in this trial with the exception of Zinc.

There were statistically significant differences in foliar content of P, K, Ca and Mg between varieties and differences with NCo376 can be summarized as follows:

	N	P	K	Ca	Mg
N14	0	-	0	+	+
N17	-	-	0	0	0
N19	0	0	+	0	-
M124/59	0	-	0	0	-

+ ie. higher than NCo376.

### 5.7 Smut

Low levels of Smut infection were recorded in NCo376 while in the other varieties only traces of the disease were observed.

### 5.8 Eldana

Eldana levels showed an increase in all varieties compared to last year. NCo376 and N17 appeared to have suffered more than the other varieties.

## 6. CONCLUSIONS

- \* Cane yields in this 2nd Ratoon were 25 % lower than last year on average and reflect the adverse effect of difficult soil conditions on ratooning ability.
- \* The performance of NCo376 was suprisingly poor in this trial while that of N19 was relatively good and clearly demonstrates its potential under difficult soil conditions and in the late season harvest period. The performance of M124/59 was superior to NCo376 but inferior to N19.
- \* Leaf analysis continues to show varietal differences in nutrient content and confirms the need for adjusting NCo376 threshold values for other varieties.
- \* This trial is being continued and is now in its 3rd Ratoon.

PCH/AGK/fjs  
7 May 1991

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

EXPERIMENT RESULT

CODE: VAR 12/87/SW SIS 'Z'

CAT.NO.: 1719

TITLE: VARIETIES ON A DUPLEX SOIL

1. PARTICULARS OF PROJECT

This crop	: 3rd ratoon	Soil Analysis:	Date 29/05/1991			
Site	: SIS Field S 10/4	pH	OM%	Clay %	PDI	
Region	: Northern irrigated (Swaziland)	7.2	1.7	>40	-	
Design	: Randomised blocks (4 replications)	ppm				
Soil Set/Series:	'Z'/Zwide	P	K	Ca	Mg	(Ca + Mg)/K
Varieties	: NCo376; N14; N17 N19; M124/59	25	181	2045	724	15
Fertilizer	: N P K	Dates : 25/10/90 - 08/11/91				
Total (kg/ha)	140 40 120	Age : 12.5 months				
		Rainfall : 623 mm				
		Irrigation: 878 mm				
		Total : 1501 mm				

2. OBJECTIVES

- 2.1 To compare the performance of N19 and M124/59 with the more established varieties of the industry for a late cycle on a Duplex soil.
- 2.2 To establish the response of each variety to a standard rate of Fusilade Super applied late season.
- 2.3 To compare third leaf nutrient in each variety to NCo376.
- 2.4 To assess the resistance of the varieties to pests and diseases.

### 3. TREATMENTS

#### 3.1 Varieties:

NCo376; N14; N17; N19 and M124/59.

#### 3.2 Fertilizer:

\* Nitrogen as Urea (46 % N) at the rate of 120 kg N/ha<sup>-1</sup> and MAP (11 % N) at the rate of 20 kg N/ha<sup>-1</sup> was top-dressed on the cane row in early November, 2 weeks after harvest.

\* Phosphorus as MAP (22 % P) at the rate of 40 kg P/ha<sup>-1</sup> and potassium as KCl (50 % K) at the rate of 120 kg/ha<sup>-1</sup> were surface broadcast in early November, 2 weeks after harvest.

#### 3.3 Ripener:

\* Fusilade at the rate of 0.45 l ha<sup>-1</sup> was applied on half the plots of each variety on 4/10/1991, 4.5 weeks before harvest. Cane age at the time of spraying Fusilade was 11.5 months and cane juice purity was as follows:

Variety	Purity (%)
NCo376	92
N14	91
N17	92
N19	93
M124/59	92

\* Fusilade was applied with a CO<sub>2</sub> constant pressure knapsack with hand held "T" boom delivery rate was 49 l ha<sup>-1</sup> through two TK 1.5 nozzles. Weather conditions at the time of spraying were fine.

### 4. RESULTS

#### 4.1 Growth Data

Table 1: Growth Measurements

Variety/ Treatment	Stalk Height cm to TVD		Stalk Population (x1000/Ha)	
	Age (mths)		Age (mths)	
	9	12.25	9	12.25
NCo376	1582	1738	240	-
NCo376 + Fe 0.45	1946	2102	242	241
N14	2137	2408	256	229
N14 + Fe 0.45	1901	2133	-	225
N17	1981	2368	190	184
N17 + Fe 0.45	2026	2330	190	209
N19	2003	2015	171	137
N19 + Fe 0.45	2146	2334	196	168
M124/59	2018	L	139	L
M124/59 + F 0.45	L	L	L	L

## 4.2 Harvest Data

Table 2: Cane Yield, Sucrose % and Sucrose Yield

Variety	Tons Cane/Ha			Sucrose % Cane			Tons Sucrose % Ha		
	Control	Ripened	Mean	Control	Ripened	Mean	Control	Ripened	Mean
NCo376	68	92	80	16.50	17.08	16.79	11.2	15.6	13.4
N14	105	78	92	16.48	16.79	16.64	17.4	13.1	15.2
N17	83	85	84	17.23	17.79	17.51	14.3	15.2	14.7
N19	77	102	89	16.95	17.72	17.34	13.0	17.9	15.4
M124/59	94	94	94	16.73	17.38	17.06	15.7	16.3	16.0
Mean	85	90	88	16.78	17.35	17.07	14.3	15.6	15.0
Interaction	*/NS			NS			NS		
LSD (0.05)	17			0.64			2.9		
Variety (0.01)	24			0.87			3.9		
Significance	NS			*			NS		
LSD (0.05)	11			0.41			1.8		
Ripener (0.01)	15			0.55			2.5		
Significance	NS			**			NS		
LSD (0.05)	25			0.91			4.1		
Treat. (0.01)	33			1.23			5.6		
SE one plot	17			0.63			2.8		
CV %	19.4			3.7			19.0		

Note: Allowance for the effect on cane yield of taking three sucrose samples was made by adding three times the weight of the last sucrose samples to the harvest weights.

## 4.3 Leaf Analysis

Table 3: Third Leaf Nutrient Content in February (3.5 mths)

Variety	% dm						ppm
	N	P	K	S	Ca	Mg	Zn
NCo376	1.69	0.22	1.19	0.26	0.17	0.17	22.9
N14	1.59	0.18	1.06	0.27	0.20	0.16	19.3
N17	1.55	0.19	1.08	0.28	0.19	0.18	17.5
N19	1.49	0.22	1.42	0.26	0.16	0.17	17.3
M124/59	1.63	0.18	1.23	0.30	0.21	0.17	18.9
LSD (0.05)	0.13	0.009	0.11	0.040	0.025	0.008	4.8
(0.01)	0.18	0.012	0.14	0.054	0.033	0.011	6.5
Significance	*	**	**	NS	**	**	NS
Mean	1.59	0.20	1.20	0.28	0.19	0.17	19.15
SE one plot	0.13	0.009	0.10	0.039	0.024	0.008	4.67
CV %	8.1	4.5	8.6	14.1	12.9	4.9	24.4

#### 4.4 Eldana Survey

Table 4: Eldana Damage at Harvest

Variety	% Internodes Damaged		
	Control	Ripened	Mean
NCo376	1.93	2.93	3.43
N14	1.66	3.55	2.60
N17	1.45	1.95	1.70
N19	2.71	2.21	2.46
M124/59	0.82	1.56	1.19
Mean	1.71	2.44	2.28

### 5. COMMENTS

#### 5.1 General

Variability in this furrow irrigated trial on a duplex soil was characteristically high. Lodging occurred in M124/59.

#### 5.2 Cane Yield

Cane yields were variable and ripening apparently resulted in differences in cane yield between varieties (Table 2). The interaction term in the ANOVA, tended therefore, to be significant. It is clear that these differences were due to natural variability rather than treatment effects as they were apparent in the growth measurements before spraying Fusilade (Table 1).

In view of the harvest variability in this trial, the cane yields of the specific treatments should be ignored and the mean cane yields of unripened and ripened treatments should be used to provide a more reliable guide to variety performance.

There were apparently no significant differences in cane yield between varieties although NCo376 tended to be poorest and M124/59 best.

#### 5.3 Cane Quality

There were differences in cane quality between varieties. The highest sucrose content in unripened treatments was recorded in N17 and N19 and the lowest in NCo376 and N14. It was of interest to note that the sucrose content of CP66/1043 was lower than either N17 and N19.

Ripening with Fusilade resulted in a significant increase in sucrose content in all varieties (Table 3). The response to ripening was greatest in N19. The highest sucrose content in ripened cane was recorded in N17 and N19 while the lowest was recorded in N14.

#### 5.4 Sucrose Yield

The relatively high cane yield and good response of N19 to chemical ripening resulted in a higher sucrose yield than the other varieties.

Ripening resulted in better sucrose yields in all varieties except N14. Differences were significant in NCo376, N19 and N14 but were obviously influenced by differences in cane yield.

In view of the high variability in cane yield and the effect it might have on the assessment of varietal performance, it is useful to recompute sucrose yield using the variety means for cane yield. The results are summarized as follows:

Variety	Sucrose Yield (T/ha)	
	Control	Ripened
NCo376	13.2	13.7
N14	15.2	15.4
N17	14.5	14.9
N19	15.1	15.8
M124/59	15.7	16.3

It now becomes apparent that the highest sucrose yielding variety is ripened M124/59.

#### 5.5 Leaf Analysis

Nitrogen content at 3.5 months of age (Feb) was below threshold in all varieties while the level of the other nutrients were satisfactory.

There were significant differences in nutrient content between NCo376 and the other varieties which are summarized as follows:

Variety	% NCo376 (dm %)						ppm
	N	P	K	S	Ca	Mg	Zn
N14	94	82**	89*	104	118*	94*	84
N17	92*	86**	91*	108	112	106*	76*
N19	88*	100	119**	100	94	100	75*
M124/59	96	82**	103	115*	123**	100	82

\* Significant (P = 0.05)

\*\* Significant (P = 0.01)

#### 5.6 Eldana

Damage was highest in NCo376 and lowest in M124/59. Ripening tended to increase the level of damage in all varieties and particularly in N14.



## 6. CONCLUSIONS

- \* Sucrose yields of M124/59 and N19 were superior to NCo376 in this late season trial on a poor duplex soil. Sucrose yield of N17 was higher than NCo376 but not as high as M124/59 and N19.
- \* Ripening increased the sucrose content of all varieties and although small the responses might be significant enough to justify the cost of spraying Fusilade.
- \* This trial is being continued and is now in its 4th ratoon.

PCH/AGK/fkd  
07/02/92

### Appendix 1

### Sample Data

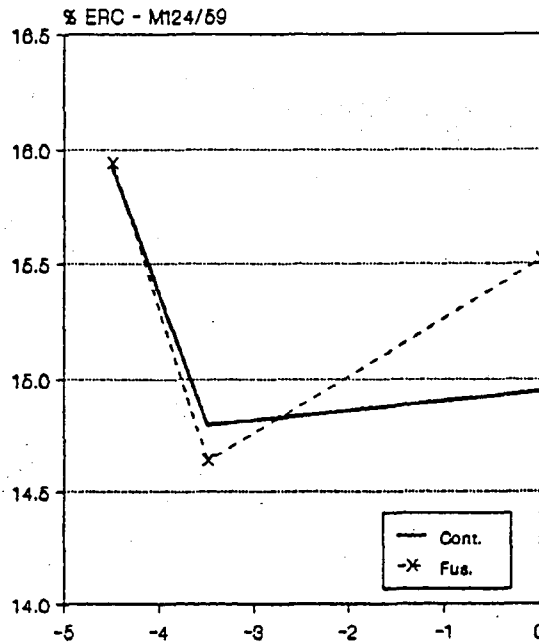
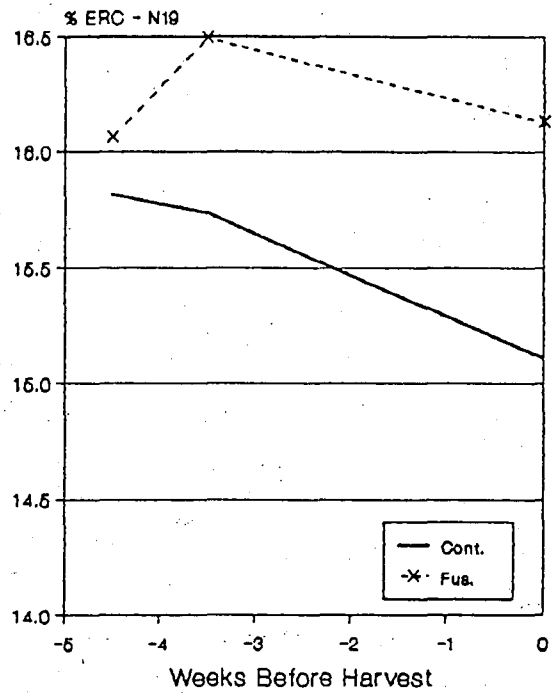
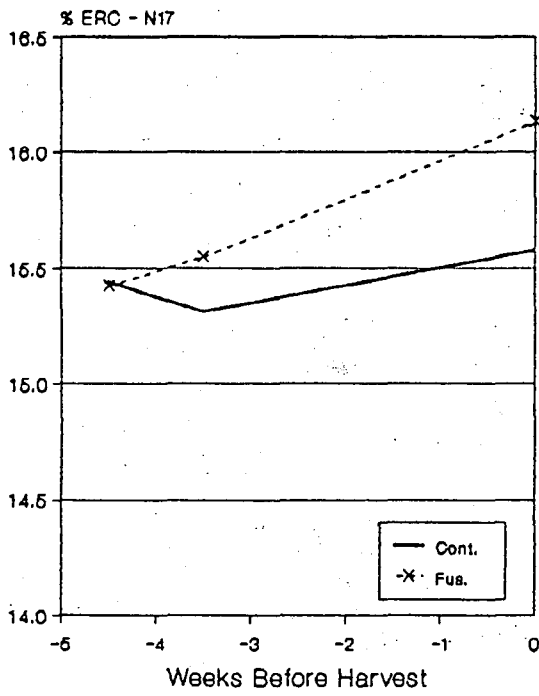
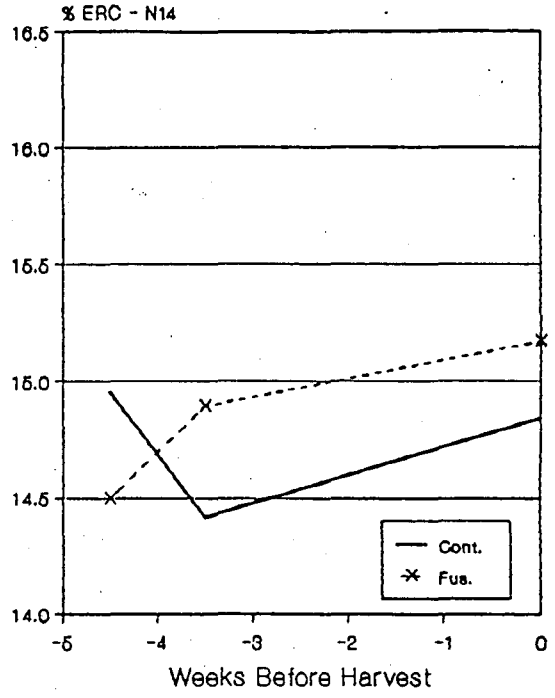
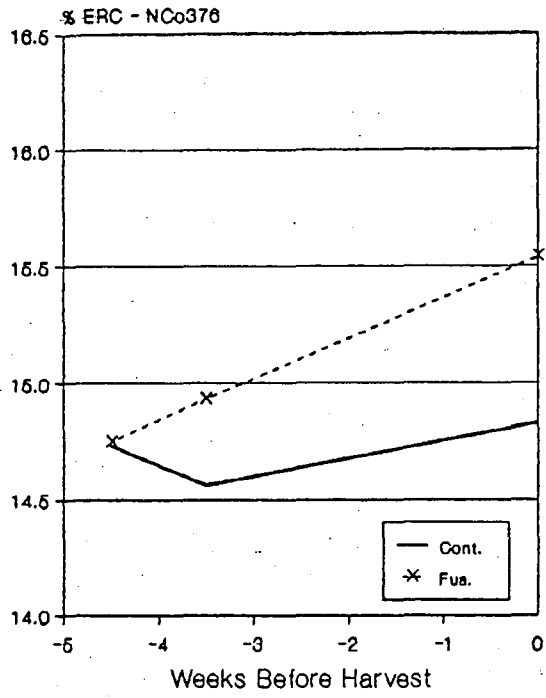
Variety/ Treatment	Weeks Before Harvested											
	4.5				1.0				0			
	PZC	g/st	ERC%	gERC/st	PZC	g/st	ERC%	gERC/st	PZC	g/st	ERC%	gERC/st
NCo376	91.8	483	14.73	71	91.1	545	14.56	79	89.2	538	14.83	80
NCo376 + F	92.5	647	14.75	95	91.4	632	14.93	94	90.9	765	15.54	112
N14	91.4	854	14.95	128	91.3	852	14.42	123	89.5	957	14.84	142
N14 + F	91.4	708	14.50	103	91.5	718	14.89	107	89.9	809	15.17	123
N17	92.3	690	15.44	106	91.4	664	15.31	102	90.4	807	15.58	126
N17 + F	92.0	658	15.42	101	91.3	755	15.55	117	90.6	840	16.13	135
N19	92.9	744	15.82	118	92.0	760	15.74	120	86.7	886	15.11	134
N19 + F	92.8	812	16.06	130	92.8	920	16.49	152	90.6	1056	16.13	170
M124/59	92.6	1107	15.92	176	90.2	1219	14.80	180	88.2	1319	14.95	197
M124/59 + F	92.0	1205	15.94	192	90.9	1284	14.64	188	87.9	1317	15.52	204

F - Fusilade

### SUCROSE SAMPLING METHOD

- † Each variety was sampled for sucrose three times. Samples were taken at Fusilade application, at harvest and once between Fusilade application and harvest.
- † Samples comprised 20 stalks taken from 4 localities in the net lines.

Figure 1: Effects of ripening on ERC % Cane



SOUTH AFRICAN SUGAR INDUSTRY  
AGRONOMISTS' ASSOCIATION

EXPERIMENT RESULT

CODE: VAR 12/87/SW SIS 'Z'

CAT No: 1719

TITLE: VARIETIES ON A DUPLEX SOIL

1. PARTICULARS OF PROJECT

This crop	: 4th ratoon	Soil Analysis:	Date 11.04.92			
Site	: SIS Field S 10/4					
Region	: Northern irrigated (Swaziland)	pH	OM%	Clay %	PDI	
		6.7	1.7	>40	-	
Design	: Randomised blocks (4 replications)	ppm				
		P	K	Ca	Mg	Ca+Mg)/K
		16	158	1873	935	18
Soil Set/Series:	'Z'/Zwide	Dates	: 08.11.91 - 06.10.92			
Varieties	: NCo376; N14; N17 N19; M124/59	Age	: 10.9 months			
		Rainfall	: 257 mm			
		<u>Irrigation:</u>	620 mm			
Fertilizer	: N P K	Total	: 877 mm			
Total (kg/ha)	160 - 75					

2. OBJECTIVES

- 2.1 To compare the performance of N19 and M124/59 with the more established varieties of the industry for a late cycle on a Duplex soil.
- 2.2 To establish the response of each variety to a standard rate of Fusilade Super applied late season.
- 2.3 To compare third leaf nutrient contents in each variety to those in NCo376.
- 2.4 To assess the resistance of the varieties to pests and diseases.

3. TREATMENTS

3.1 Varieties:

NCo376; N14; N17; N19 and M124/59

3.2 Fertilizer:

- \* Nitrogen as Urea (46%N) at the rate of 160 kg N/ha was topdressed on the cane row on 13.12.91, 1.2 months after harvest.
- \* Potassium as KCl (50%K) at the rate of 75 kg K/ha and phosphorous as single supers (10.5% P) at the rate of 40 kg P/ha were surface broadcast on 13.12.91 and 18.12.91 respectively.

### 3.3 Ripeners:

Fusilade was not applied to this trial because of drought related stress and lodging.

### 3.4 Soil sampling (subsoil)

20 cores were taken from 6 randomly selected plots over the whole trial covering the four blocks. Samples were taken at a ratio of 8 on row to 12 interrow (1:1.5).

## 4. RESULTS

### 4.1 Soil Analysis

Table 1 P, K, Ca and Mg status (ppm) of the soil profile - Apr. 1992

Depth (cm)	P	K	Ca	Mg	(Ca+Mg)/K
0-15	16	158	1873	935	18
20-30	15	144	1882	914	19
40-50	9	142	2012	1027	21

( ) Standard error

### 4.2 Leaf Analysis

Table 2: Third leaf Nutrient content (%dm) in February (3.7 months)

Variety	N	P	K	Ca	Mg	(Ca+Mg)/K
NCo376	1.51	0.21	1.05	0.33	0.20	0.50
N14	1.52	0.20	0.97	0.37	0.28	0.67
N17	1.48	0.21	1.19	0.28	0.23	0.43
N19	1.49	0.21	1.35	0.35	0.19	0.40
M 124/59	1.56	0.21	1.20	0.33	0.21	0.45
LSD (0.05)	0.10	0.01	0.12	0.10	0.05	-
Significance	NS	NS	**	NS	**	-
Mean	1.51	0.20	1.15	0.33	0.22	0.49
SED ±	0.05	0.01	0.06	0.05	0.02	
CV%	6.2	6.4	9.9	28.1	21.0	

Table 3: Third leaf nutrient content (%dm) of released varieties expressed as a percentage of NCo376 in Feb. (3.7 months)

Variety	N	P	K	Ca	Mg
N14	101	95	92	112	140**
N17	98	100	113**	85	115
N19	99	100	129**	106	95
M 124/59	103	100	114**	100	105

\*\* Significant (P=0.01)

4.3 Growth DataTable 4 Growth measurements at 10.7 months of age in September

Variety	Stalk height (cm to TVD)	Stalk population (* 1000/ha)
NCo376	156	141
N14	168	124
N17	175	136
N19	180	115
M124/59	197	128
LSD (0.05)	25	42
Significance	*	NS
Mean	175	129
SED $\pm$	12.0	20
CV%	13.7	31.6

4.4 Harvest DataTable 5: Cane Yield, Cane Quality and Sucrose Yield

Variety	Tons Cane/ha	Sucrose % cane	Tons Sucrose/ha
NCo376	59	14.06	8.3
N14	63	14.22	9.0
N17	55	15.02	8.3
N19	69	15.69	10.9
M124/59	72	15.48	11.2
LSD (0.05)	17	0.98	3.0
Significance	NS	**	NS
Mean	64	14.89	9.5
SED $\pm$	8.5	0.48	1.5
CV%	26.8	6.5	30.5

4.5 Smut SurveyTable 6: Percentage smut infection in Feb. and Mar. at 3.4 and 4.4 months

Variety	February	March
NCo376	1.2	0.9
N14	1.2	0.5
N17	0.1	0.7
N19	1.2	-
M 124/59	0.1	0.2
Mean	0.7	0.4

#### 4.6 Eldana Survey

Table 7: Eldana Damage at Harvest

Variety	% Internodes damaged
NCo376	1.4
N14	1.2
N17	0.8
N19	0.9
M 124/59	1.5
Mean	1.1

### 5. COMMENTS

#### 5.1 Soil Analysis

Soil analysis at 5.3 months after harvest in April, showed that levels of P were satisfactory and above threshold for ratoon cane. Levels of K were below the new FAS threshold of 225 ppm for these soils.

#### 5.2 Leaf Analysis

Third leaf nutrient analysis in February at 3.7 months of age, showed Nitrogen to be deficient whilst the other nutrients were satisfactory. Differences in leaf K and Mg content were highly significant between NCo376 and the other varieties (table 2 and 3).

#### 5.3 Growth Data

M124/59 had significantly longer cane stalks than NCo376, but differences between this variety and the others were not statistically significant. NCo376 had the highest population of stalks and N19 had the lowest population (table 4).

#### 5.4 Harvest Data

##### 5.4.1 Cane Yield

Cane yields were low in all varieties this season, probably owing to poor rainfall during the past season. M124/59 recorded the highest yield of cane under these conditions. However, differences between the varieties were not statistically significant. The variability in cane yield was very high.

##### 5.4.2 Cane Quality

N19 had the highest sucrose content, and this was significantly higher than that of NCo376, N14 and N17 but not of M124/59.

##### 5.4.3 Sucrose Yield

Sucrose yield was low, highly variable and there were no statistically significant differences between the varieties. The highest yield of sucrose was recorded in M124/59 followed by N19, both of which had the highest cane yields and sucrose contents.

### 5.5 Eldana Damage

Eldana damage at harvest was highest in M124/59 and lowest in N17 (table 7).

### 5.6 Smut

The incidence of smut infection was low and variable in this trial and no clear pattern of smut resistance could be determined.

## 6. CONCLUSION

- \* The highest sucrose yields under these difficult conditions were produced by M124/59 and N19 which confirm previous results at this site.
- \* There were significant differences in the nutrient content of each variety.

DMZ/AGK/vnm  
25.02.93