SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: RVT(CS)3/80

Cat. No.: 1271

TITLE: Released variety trial (3) - Umhloti

1. Particulars of project

This crop	:	Plant
Site	:	Umhloti
Altitude	:	100 m
Soil	:	Hutton form Joubertina series
Design	:	Randomised blocks with six replications
Fertilizer	:	N P K
kg/ha		120 11 207
Nematicide	:	Temik 15G @ 20 kg/ha
Water regime	:	Rainfed

Soil analysis: (September '80)

pH = 9,0 Clay % = 4

ppm				
P	K	Ca	Mg	Na
60	62	1 800	32	20

Age: 13,7 months
(23.10.80 to 14.12.81)

2. Object

To evaluate three new varieties for use in weak sands at the coast.

3. Treatment

Varieties: Standard: NCo 376, N55/805, N8

New: 69E991, 68D4, N14

Other: N13

4. Rainfall (mm) - Umhloti L.T.M. at Mount Edgecombe

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1980/81	35	127	127	180	131	25	12	121	18	17	135	106	
	61	125	39										1 259
L.T.M.	90	106	105	135	126	118	63	63	17	22	51	85	1 282

5. Results

Yield component		Variety: 69E 991	NCo 376	N13	68D4	N55/ 805	N14	N8	Mean	L.S.D. P=0,05	C.V. %
		Juice purity %									
09.09.81	10,5 months	91,4	90,2	90,5	90,2	91,1	88,2	87,4	89,9		
07.10.81	11,5 months	91,2	89,2	90,0	91,0	89,1	87,0	86,0	89,2		
04.11.81	12,4 months	91,6	89,9	90,1	92,8	86,8	88,1	85,5	89,3	3,4	3,3
14.12.81	13,7 months	92,8	92,1	92,6	92,9	90,3	89,4	90,2	91,5	1,8	1,7
		Estimated recoverable sugar % (ers%) cane									
	10,5 months	13,8	11,8	12,2	12,2	12,9	11,0	9,7	12,0	0,4	3,2
	11,5 months	14,2	12,5	13,3	13,4	12,8	11,4	10,1	12,5	0,5	3,7
	12,4 months	13,4	12,2	12,6	13,4	11,3	10,6	10,0	11,9	1,0	7,3
	13,7 months	12,5	11,7	12,7	12,6	11,7	10,5	9,8	11,6	0,9	6,7
		Stalk data at harvest									
Population ('000/ha)		84	110	81	99	94	81	85	90	8,0	8,2
Height (untopped) m		1,70	1,43	1,24	1,33	1,34	1,42	1,57	1,43	0,13	7,6
" (topped) m		1,61	1,32	1,15	1,24	1,24	1,31	1,39	1,32	0,13	8,4
		Yield data at harvest									
Cane yield (t/ha)		60	62	49	49	48	53	39	51	10,5	18,9
Sugar yield (t/ha)		7,5	7,3	6,2	6,2	5,7	5,4	3,9	6,0	1,50	23,0
Yield relative to NCo 376 (%)	Cane	97	100	79	79	77	85	63	82	17	
	Sugar	103	100	85	85	78	74	53	82	21	
Yield per month (t/ha)	Cane	4,4	4,5	3,6	3,6	3,5	3,9	2,8	3,7		
	Sugar	0,55	0,53	0,45	0,45	0,42	0,39	0,28	0,43		
Yield per 100 mm rain (t/ha)	Cane	4,8	4,9	3,9	3,9	3,8	4,2	3.1	4,0		
	Sugar	0,60	0,58	0,49	0,49	0,45	0,43	0,31	0,48		
		3rd leaf nutrient contents									
30.01.81	N% DM	2,19	2,50	2,34	2,38	2,48	2,42	2,47	2,40		
3,2 months	P% DM	0,25	0,28	0,25	0,26	0,27	0,25	0,30	0,26		
	K% DM	1,54	1,46	1,44	1,54	1,54	1,39	1,41	1,47		
19.03.81	N% DM	1,58	1,73	1,42	1,66	1,52	1,77	1,93	1,66		
4,9 months	P% DM	0,19	0,21	0,18	0,23	0,18	0,22	0,27	0,21		
	K% DM	1,37	1,10	1,16	1,28	1,09	1,19	1,17	1,19		

6. Comments

After a fairly dry start to the growing season, growth proceeded rapidly until March when conditions became dry. Wilting was observed and stalk elongation proceeded slowly thereafter. The low N% DM values in March were probably due to drought rather than a deficiency in this nutrient. The crop was slow to reach full canopy which for most varieties occurred only after six months, despite the narrow row spacing that was used. Stalk populations were low but this was not due to poor germination.

7. Comments - contd

Stalk elongation

N8 was atypical in this respect and was only slightly taller than NCo 376 for much of the crop. 69E991 elongated rapidly and was 300 m taller than NCo 376 at harvest. N55/805, 68D4 and N13 which are usually taller than NCo 376 were all shorter than the standard variety in this trial. N14 displayed a similar growth pattern to that observed in this variety on heavier soils, being slower than NCo 376 at first but reaching the same height as NCo 376 later on.

Sucrose content

The sucrose content of all varieties reached a peak at the end of September.

A pronounced peak in sucrose content usually occurs in N8 when flowering is prolific. The indefinite peak in the sucrose content of N8 in this trial may be due to the absence of flowering. N14 had a notably low sucrose content. The sucrose content of N55/805 was lower than would be expected in these conditions.

Yield of cane and sugar

Cane yields of N13, 68D4, N55/805 and N8 were all significantly lower than the yield of NCo 376. The cane yield of N14 was also low relative to that of NCo 376 and 69E991 but the differences were not statistically significant. Apart from N8 which gave very low sugar yield the varieties could be paired in terms of the amount of sugar they produced. 69E991 and NCo 376 outyielded N13 and 68D4 by about 20% and these in turn outyielded N55/805 and N14 by about 12%.

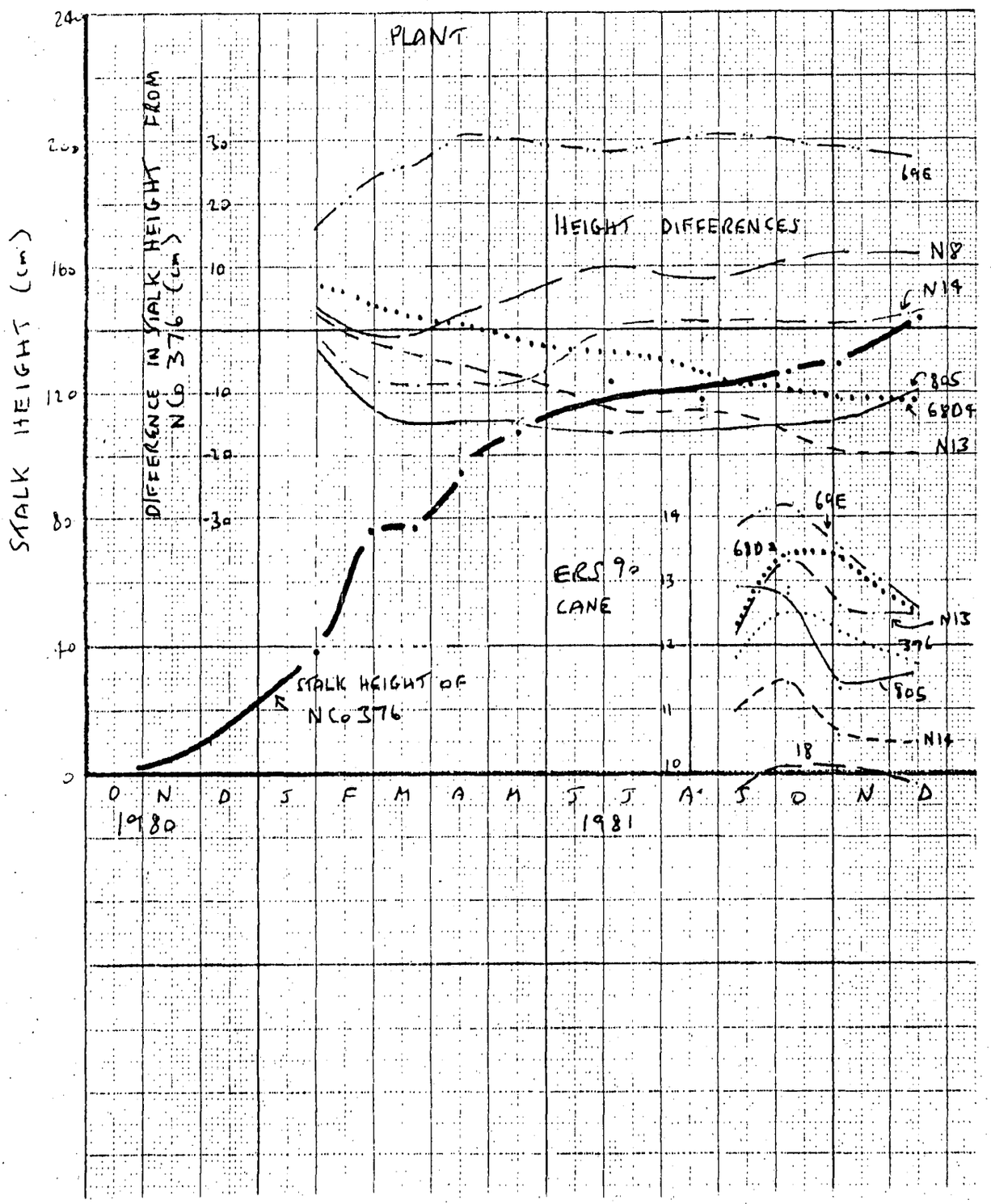
8. Conclusion

69E991 will be a valuable variety if it proves to be well adapted to weak sands, since it will fulfil the need for a smut resistant variety that can be grown on these sands.

The poor performance of N8 cannot be explained in terms of the data gained from this trial. Results of N8 in the plant crop of other trials have been disappointing to some extent.

NGI-B/VSJ
22 March 1982

RVT (CS) 3/80 UMHLOTI



SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Title: Regional Variety Trial (3) - Umdloti

Code	:	RVT(CS)3/80
Catalogue No.	:	1271
Site	:	Hillhead estate
This crop	:	1st ratoon
Soil	:	Joubertina
Altitude	:	100 m
Design	:	Random blocks with six replications
Fertilizer kg/ha	:	N P K 147 - 150 1% W/V $FeSO_4$ at 280 ℓ/ha applied twice
Nematicide	:	Temik 15G @ 20 kg/ha
Water regime	:	Rainfed

Soil analysis: (14/12/81)

pH = 8,8

ppm				
P	K	Ca	Mg	Na
58	50	1 800	32	18

Age: 11,3 months

(14/12/81 to 24/11/82)

Object: To evaluate new varieties for use on the high pH weak sands at the coast.

Varieties: Standard : NCo 376, N55/805, N8

New : 69E991, N16, N14

Other : N13

Rainfall (mm) Umdloti north bank

	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
1981/82	39	113	72	112	46	18	13	3	6	24	148	56

Total = 650 mm

Results:

Yield Component \ Variety		NCo 376	N55/ 805	N8	69E 991	N13	N14	N16	Mean	LSD 5%	CV %
Juice purity											
14/9/82	9,0 months	92,2	91,5	89,7	90,7	91,6	91,1	90,4	91,0	2,1	2,0
12/10/82	9,9 months	91,5	91,5	90,6	91,7	90,8	90,7	91,0	91,1	1,0	6,5
24/11/82	11,3 months	90,8	90,9	91,8	90,0	87,2	87,7	88,8	89,6	2,4	2,2
Sucrose content (ERS %)											
	9,0 months	13,2	13,6	11,7	13,6	13,2	12,8	12,3	12,9	0,9	6,4
	9,9 months	12,2	13,0	11,5	13,7	12,4	11,9	12,1	12,4	1,1	7,7
	11,3 months	10,4	11,1	10,5	11,1	9,3	9,0	9,4	10,1	1,1	9,3
Stalk data at harvest											
Population ('000/ha)		147	119	143	95	126	101	128	123	10,8	7,5
Height (m)	untopped	1,40	1,48	1,74	1,52	1,33	1,41	1,26	1,45	0,19	11.1
	topped	1,15	1,22	1,46	1,32	1,14	1,17	1,07	1,22	0,16	11,5
Yield data											
Cane yield (t/ha)		65	61	62	50	57	55	48	57	16,4	24,5
Sucrose yield (t/ha)		6,9	6,8	6,5	5,8	5,3	5,1	4,5	5,8	2,2	32,9
Yield as a % of NCo 376	Cane	100	94	95	77	88	85	74	88	25	
	Sucrose	100	98	94	84	77	74	65	84	32	
Yield per month (t/ha)	Cane	5,8	5,4	5,5	4,4	5,0	4,9	4,2	5,0		
	Sucrose	0,61	0,60	0,58	0,51	0,47	0,45	0,40	0,51		
Yield per 100 mm rain	Cane	10,0	9,4	6,2	5,0	5,7	5,5	4,8	5,7		
	Sucrose	1,06	1,05	1,00	0,89	0,81	0,78	0,69	0,89		
3rd leaf nutrient content at 4,2 months											
N% dm		2,14	1,93	2,20	1,88	2,00	2,20	2,12	2,07		
P% dm		0,25	0,22	0,28	0,24	0,24	0,25	0,27	0,25		
K% dm		1,08	1,04	1,07	1,30	1,08	1,10	1,23	1,13		

Comments:

Although rainfall received in the 1st ratoon was considerably lower than normal, stalk elongation proceeded fairly rapidly during the warmer months. Growth ceased in July when the crop became severely stressed. Good rains in October allowed growth to resume but at the expense of cane quality.

Stalk elongation:

N8 was more vigorous than in the plant crop and 69E991 less so. N14 displayed a typical sluggishness initially but appeared to elongate rapidly in the second season of growth. 69E991 and N55/805 also showed signs of rapid recovery just

before harvest. A delay in harvesting may have favoured these varieties.

Sucrose content:

The decrease in sucrose content was less marked in N8 than in the other varieties. N8 contained one of the highest sucrose levels at harvest which is not typical of this variety. Flowering which often appears to be associated with an increase in the sucrose content of N8 did not occur in this crop.

Cane and sucrose yield

A considerable amount of variation in the yield results could not be accounted for and although yield differences between varieties were large they were not statistically significant. However, from experience of this site it is clear that the superiority of NCo 376, N55/805 and N8 is real and the poorer performances of the newer varieties is disappointing. It was hoped that N14 would yield reasonably well in these sands and therefore be useful as a smut resistant variety. N14 appears to be highly susceptible to drought and it may therefore yield relatively well in more favourable conditions. N14 appears to be favoured by longer cycles in the south and the early harvest in this case could have disadvantaged this variety.

GIB/PMO
6.7.83

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