SOUTH AFRICAN SUGAR INDUSTRY AGRONOMISTS' ASSOCIATION

PROGRAMME FOR ANNUAL GENERAL MEETING 11 SEPTEMBER, 1979

10.00	Chairmans Report	
10.15	Agricultural data from Estates	Rodger Stewart and John Boyce
10.45	Minimum tillage	John McClead
11.15	TEA	
11.45	Cane testing	Trevor Loudon
12.30	LUNCH	
2.15	An assessment of the newer cane varieties	Geoff Inman-Bamber and Roger Bond
2.45	An S deficiency in cane at Dwangwa	Mike Johnston
3.00	Eldana as the Cane Growers see it.	Grant Buchanan

AGRONOMISTS ASSOCIATION: ESTATES FIELD RECORDS CODING FORM

RAINFALL STATION NAME(S) :

ESTATE NAME :

SECTION NAME :

"FIXED" DATA													CURRENT CROP DATA																
FIELD NAME/NUMBER IDENTIFICATION	AREA (ha)	SOIL		ASPECT	SLOPE	CONTOURED	DRAINED	IRRIGATED	PLANTING METHOD	FCAKE AT PLANTING	HWT SEED	VARIETY	AREA CUT (ha)	CROP STAGE	FINAL CROP	BURN OR TRASH		NEMATICIDE FORM	HERBICIDE USED	WEEDINESS	DATE OF HARVEST		FERTILIZER (kg/ha)			RAINFALL (mm)	IRRIGATION (mm)	TOTAL TONS HARVESTED	
		TYPE	DEPTH													PREV. CROP	THIS CROP				PREV. CROP	THIS CROP	N	P	K			CANE	SUCROSE
			MIX 30 60 90 90+	M Z N S E W	MIX 5 10 15 15+	U N C	U N D	N S O	M H	N F B	N H			P 1 2 ...	F	B T R L	B T R L	Z N F B	N P A B	0 ... 9									
	XX,X	XXX										XXXX	XX,X								XXXX	XX XX	XXX,	XXX,	XXX,	XXXX,	XXXX,	XXXX,	XXX,X
EXAMPLE FIELD	10,0	CLA	90+	N	10	N	U	N	H	N	H	805		2		R	R	Z	A	6	7406	7511	120	0	120	1289	-	815	106,0

S.A.SUGAR INDUSTRY AGRONOMISTS ASSOCIATION — ESTATE FIELD RECORDS

NEW GUELDERLAND SUGAR ESTATES (ANALYSED AUGUST 1979) — LIST OF MEANS(ON PER HA BASIS)

	CODE	NO.OF FIELDS	TOTAL HECTAR	AGE	CANE T/HA	CANE T/H/M.	T.CANE /100MM	T.CANE /KG.N	T.CANE /KG.P	T.CANE /KG.K	SUC. %	SUC. T/HA	SUC. T/H/M.	T.SUC /100MM
CROP/STAGE														
PLANT	1	5.	82.	14.7	120.	8.13	11.58	0.89	9775.00	0.89	12.4	14.8	1.01	1.43
1ST RATOON	2	6.	109.	13.5	113.	8.35	11.30	0.76	5.83	0.83	12.5	14.2	1.05	1.42
2ND RATOON	3	10.	114.	14.1	118.	8.35	11.02	0.83	4.15	0.99	13.0	15.3	1.08	1.43
3RD RATOON	4	9.	128.	15.1	110.	7.29	9.92	0.79	2.64	0.79	13.0	14.3	0.95	1.29
4TH RATOON	5	9.	106.	17.2	171.	9.92	11.86	1.15	8.35	1.07	7.5	12.8	0.74	0.89
5TH RATOON	6	4.	68.	17.7	108.	6.08	8.01	0.57	15.90	0.82	12.2	13.1	0.74	0.97
6TH RATOON	7	13.	245.	15.1	100.	6.64	8.86	0.61	2.94	0.72	12.6	12.7	0.84	1.12
7TH RATOON	8	4.	105.	14.6	100.	6.90	8.96	0.61	5.71	0.67	11.7	11.7	0.80	1.05
8TH RATOON	9	6.	102.	18.4	99.	5.35	7.06	0.73	6.60	1.01	12.7	12.5	0.68	0.89
9TH RATOON	10	10.	164.	16.3	112.	6.86	9.25	0.69	4.20	0.91	12.6	14.2	0.87	1.17
10TH RATOON	11	5.	57.	14.2	105.	7.42	10.80	0.59	3.61	1.02	11.4	12.0	0.85	1.23
11TH RATOON	12	7.	107.	15.7	129.	8.24	10.92	0.88	9.26	0.97	10.5	13.6	0.87	1.15
12TH RATOON	13	2.	41.	14.0	107.	7.63	10.10	0.64	4.93	0.68	11.6	12.4	0.89	1.18
13TH RATOON	14	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14TH RATOON	15	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRD.MEAN	15	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
VARIETIES														
NCO 376	1	84.	1313.	15.5	116.	7.47	9.93	0.75	4.88	0.89	11.7	13.5	0.88	1.16
N55/805	2	6.	114.	15.6	97.	6.21	8.17	0.58	4.69	0.55	12.5	12.2	0.78	1.02
NCO310	3	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
N8	4	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRD.MEAN	4	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
B/TPREV.CROP														
BURNT	1	8.	123.	13.9	109.	7.88	10.78	0.74	5.67	0.73	12.8	13.9	1.01	1.38
TRASHED	2	78.	1243.	15.6	114.	7.30	9.66	0.73	4.56	0.87	11.7	13.3	0.85	1.13
UNKNOWN	3	4.	62.	15.6	122.	7.79	10.75	0.86	7501.00	0.86	12.2	14.8	0.95	1.31
GRD.MEAN	3	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
B/TTHIS CROP														
BURNT	1	12.	203.	19.0	116.	6.13	7.60	0.73	6.19	0.72	12.0	13.9	0.73	0.91
TRASH	2	78.	1224.	14.9	114.	7.63	10.29	0.74	4.69	0.89	11.7	13.3	0.90	1.21
GRD.MEAN	2	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15

S.A.SUGAR [illegible]USTRY AGRONOMISTS ASSOCIATION — E[illegible]TE FIELD RECORDS

NEW GUELDERLAND SUGAR ESTATES (ANALYSED AUGUST 1979) — LIST OF MEANS(ON PER HA BASIS)

	CODE	NO.OF FIELDS	TOTAL HECTAR	AGE	CANE T/HA	CANE T/H/M.	T.CANE /100MM	T.CANE /KG.N	T.CANE /KG.P	T.CANE /KG.K	SUC. %	SUC. T/HA	SUC. T/H/M.	T.SUC /100MM
NEMATICIDE														
Z-NONE	1	74.	1173.	15.3	115.	7.56	10.10	0.74	4.52	0.91	11.6	13.4	0.87	1.17
N-APPLIED	2	16.	254.	16.4	107.	6.55	8.49	0.70	7.78	0.65	12.8	13.7	0.84	1.08
F-F.CAKE	3	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B-BOTH N+F	4	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRD.MEAN	4	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
HERBICIDE														
N-NOT USED	1	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P-PRE.EMERG	2	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A-POST.EMERG	3	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
B-BOTH P+A	4	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRD.MEAN	4	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
WEEDINESS														
0-NONE	1	26.	357.	14.4	118.	8.25	11.29	0.84	5.29	1.03	12.0	14.2	0.99	1.35
1	2	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	3	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	4	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-ACCEPTABLE	5	64.	1070.	15.9	113.	7.10	9.35	0.71	4.73	0.81	11.7	13.2	0.83	1.09
5	6	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	7	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	8	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	9	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9-EXTREME	10	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRD.MEAN	10	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15

S.A.SUGAR I[illegible]STRY AGRONOMISTS ASSOCIATION — ES[illegible] FIELD RECORDS

NEW GUELDERLAND SUGAR ESTATES (ANALYSED AUGUST 1979) — LIST OF MEANS(ON PER HA BASIS)

	CODE	NO.OF FIELDS	TOTAL HECTAR	AGE	CANE T/HA	CANE T/H/M.	T.CANE /100MM	T.CANE /KG.N	T.CANE /KG.P	T.CANE /KG.K	SUC. %	SUC. T/HA	SUC. T/H/M.	T.SUC /100MM
AGE														
10 MONTHS	1	1.	5.	10.0	109.	10.86	16.14	0.91	554.00	3.39	12.9	14.1	1.41	2.09
11 MONTHS	2	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 MONTHS	3	9.	163.	12.0	102.	8.47	12.01	0.63	3.54	0.67	12.8	13.0	1.09	1.54
13 MONTHS	4	15.	211.	13.0	105.	8.11	11.12	0.70	6.52	0.99	12.7	13.4	1.03	1.41
14 MONTHS	5	10.	130.	14.0	110.	7.82	10.35	0.72	6.72	0.76	12.8	14.1	1.00	1.33
15 MONTHS	6	12.	203.	15.0	104.	6.93	9.28	0.79	3.43	0.87	12.4	12.9	0.86	1.15
16 MONTHS	7	13.	221.	16.0	116.	7.27	9.38	0.74	3.38	0.86	12.1	14.0	0.88	1.13
17 MONTHS	8	12.	176.	17.0	106.	6.24	8.42	0.61	4.65	0.78	11.4	12.1	0.71	0.96
18 MONTHS	9	10.	169.	18.0	115.	6.40	8.43	0.73	8.05	0.88	12.2	14.1	0.78	1.03
19 MONTHS	10	1.	9.	19.0	974.	51.25	67.95	5.73	28.64	5.73	1.3	12.2	0.64	0.85
20 MONTHS	11	2.	54.	20.0	137.	6.86	9.25	0.77	7.05	0.77	12.7	17.4	0.87	1.17
21 MONTHS	12	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22 MONTHS	13	2.	32.	22.0	110.	5.02	5.09	0.78	3.11	0.52	13.4	14.7	0.67	0.68
23 MONTHS	14	1.	33.	23.0	88.	3.82	5.08	0.64	12.56	0.87	12.6	11.1	0.48	0.64
24 MONTHS	15	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 MONTHS	16	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26 MONTHS	17	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27 MONTHS	18	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 MONTHS	19	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29 MONTHS	20	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 MONTHS	21	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31 MONTHS	22	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32 MONTHS	23	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33 MONTHS	24	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34 MONTHS	25	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRD.MEAN	25	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
PREV.HARVEST														
MAY	1	5.	97.	16.9	184.	10.87	15.21	1.05	6.71	1.52	7.1	13.1	0.77	1.08
JUNE	2	8.	128.	16.2	101.	6.24	8.41	0.74	7.66	0.86	13.0	13.2	0.81	1.10
JULY	3	14.	210.	15.5	98.	6.29	8.42	0.66	2.36	0.91	13.1	12.8	0.82	1.10
AUGUST	4	10.	132.	14.6	106.	7.28	9.44	0.81	5.51	0.91	12.8	13.6	0.93	1.21
SEPTEMBER	5	12.	193.	14.5	106.	7.35	9.24	0.72	4.44	0.84	13.1	13.9	0.96	1.21
OCTOBER	6	10.	161.	14.3	108.	7.60	10.44	0.72	10.51	0.80	12.5	13.6	0.95	1.31
NOVEMBER	7	10.	137.	12.0	94.	7.78	10.89	0.56	3.43	0.64	12.3	11.5	0.95	1.34
DECEMBER	8	5.	103.	17.7	139.	7.87	10.49	0.82	6.16	0.82	12.2	16.9	0.96	1.28
JANUARY	9	11.	195.	17.7	119.	6.73	8.54	0.71	7.13	0.78	11.9	14.2	0.80	1.01
FEBRUARY	10	5.	71.	16.5	127.	7.71	10.88	0.79	4.00	0.79	8.6	11.0	0.66	0.94
GRD.MEAN	10	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15

S.A.SUGAR [illegible]USTRY AGRONOMISTS ASSOCIATION E[illegible]TE FIELD RECORDS

NEW GUELDERLAND SUGAR ESTATES (ANALYSED AUGUST 1979) LIST OF MEANS(ON PER HA BASIS)

THIS HARVEST

	CODE	NO.OF FIELDS	TOTAL HECTAR	AGE	CANE T/HA	CANE T/H/M.	T.CANE /100MM	T.CANE /KG.N	T.CANE /KG.P	T.CANE /KG.K	SUC. %	SUC. T/HA	SUC. T/H/M.	T.SUC /100MM
MAY	1	6.	115.	15.9	125.	7.84	9.88	0.75	5.38	0.83	10.7	13.3	0.84	1.06
JUNE	2	8.	120.	18.5	133.	7.23	9.32	0.80	9.72	0.78	12.0	16.0	0.86	1.12
JULY	3	7.	105.	18.3	122.	6.69	8.10	0.72	4.79	0.66	10.9	13.3	0.73	0.88
AUGUST	4	11.	155.	14.0	110.	7.86	11.07	0.76	5.64	0.94	13.0	14.3	1.02	1.44
SEPTEMBER	5	7.	133.	13.5	111.	8.19	11.75	0.70	5.19	0.89	13.3	14.8	1.09	1.57
OCTOBER	6	16.	183.	14.2	107.	7.55	10.47	0.74	3.49	0.85	13.0	14.0	0.98	1.37
NOVEMBER	7	11.	266.	14.6	96.	6.53	8.67	0.62	2.93	0.69	12.8	12.2	0.84	1.11
DECEMBER	8	16.	256.	16.6	130.	7.85	10.41	0.86	7.65	1.23	9.5	12.4	0.75	0.99
JANUARY	9	8.	92.	15.1	100.	6.62	8.74	0.67	4.77	0.84	12.1	12.0	0.80	1.06
FEBRUARY	10	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRD.MEAN	10	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15

SOIL TYPE

	CODE	NO.OF FIELDS	TOTAL HECTAR	AGE	CANE T/HA	CANE T/H/M.	T.CANE /100MM	T.CANE /KG.N	T.CANE /KG.P	T.CANE /KG.K	SUC. %	SUC. T/HA	SUC. T/H/M.	T.SUC /100MM
MIXED	1	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALLUVIUM	2	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AMPHIBOLITE	3	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVOCA	4	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CARTREF	5	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CLANSTHAL	6	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DOLERITE	7	2.	32.	13.0	121.	9.31	12.50	0.89	8.65	2.13	12.9	15.6	1.20	1.61
DWYKA	8	26.	391.	15.8	129.	8.18	10.89	0.84	5.46	0.89	10.5	13.6	0.86	1.14
FERNWOOD	9	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRANITE	10	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GREY SAND	11	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LOWER ECCA	12	10.	153.	16.3	92.	5.61	7.79	0.55	6.26	1.04	12.7	11.7	0.71	0.99
LYTTON	13	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MIDDLE ECCA	14	30.	489.	14.6	114.	7.82	10.49	0.72	4.76	0.88	11.9	13.6	0.93	1.25
MILKWOOD	15	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ROSEHILL	16	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED SAND	17	9.	102.	18.7	107.	5.72	6.76	0.69	4.72	0.57	12.6	13.5	0.72	0.85
RYDALVALE	18	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHORTLANDS	19	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TMS (ORD.)	20	13.	260.	15.2	106.	6.98	9.38	0.74	3.69	0.77	12.8	13.6	0.89	1.20
TMS (MIST)	21	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TUGELA SCHIS	22	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WALDENE	23	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WILLIAMSON	24	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WINDERMERE	25	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRD.MEAN	25	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15

S.A.SUGAR I[illegible]STRY AGRONOMISTS ASSOCIATION — ES[illegible]E FIELD RECORDS

NEW GUELDERLAND SUGAR ESTATES (ANALYSED AUGUST 1979) — LIST OF MEANS(ON PER HA BASIS)

	CODE	NO.OF FIELDS	TOTAL HECTAR	AGE	CANE T/HA	CANE T/H/M.	T.CANE /100MM	T.CANE /KG.N	T.CANE /KG.P	T.CANE /KG.K	SUC. %	SUC. T/HA	SUC. T/H/M.	T.SUC /100MM
SOIL DEPTH														
MIXED	1	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0-30 CM	2	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-60 CM	3	17.	244.	15.8	103.	6.55	8.72	0.65	3.33	0.91	12.8	13.2	0.84	1.11
60-90 CM	4	36.	583.	16.1	123.	7.67	10.23	0.79	5.52	0.94	10.5	13.0	0.81	1.08
>90 CM	5	13.	238.	14.5	116.	8.05	10.70	0.79	3.90	0.91	12.6	14.7	1.01	1.35
GRD.MEAN	5	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
ASPECT														
MIXED	1	42.	790.	15.5	106.	6.88	9.02	0.69	3.98	0.85	12.5	13.3	0.86	1.13
ZERO ASPECT	2	3.	43.	16.6	143.	8.59	11.52	0.98	23.20	0.98	12.1	17.4	1.04	1.40
NORTH	3	13.	183.	15.7	107.	6.82	9.31	0.73	4.52	0.79	11.2	12.0	0.77	1.05
SOUTH	4	4.	33.	14.5	99.	6.79	9.51	0.69	5.47	0.67	12.4	12.3	0.84	1.18
EAST	5	17.	211.	15.1	145.	9.64	12.86	0.94	6.17	1.00	9.4	13.6	0.90	1.20
WEST	6	11.	168.	15.8	115.	7.28	9.77	0.67	8.58	0.80	12.7	14.6	0.93	1.25
GRD.MEAN	6	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
SLOPE														
MIXED	1	27.	547.	15.3	103.	6.76	8.95	0.66	4.61	0.81	12.5	12.9	0.84	1.12
0-5%	2	49.	691.	15.6	124.	7.94	10.57	0.81	4.80	0.88	11.1	13.8	0.88	1.17
5-10%	3	9.	130.	15.5	111.	7.16	9.35	0.73	5.76	0.87	12.5	13.9	0.90	1.17
10-15%	4	4.	46.	14.6	92.	6.32	9.01	0.62	4.94	0.97	12.8	11.8	0.81	1.15
>15%	5	1.	13.	18.0	139.	7.72	9.84	0.83	1861.00	0.83	12.6	17.5	0.97	1.24
GRD.MEAN	5	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
CONSERVATION														
UNNECESSARY	1	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NEEDED	2	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INSTALLED	3	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
GRD.MEAN	3	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
DRAINAGE														
UNNECESSARY	1	4.	45.	20.5	104.	5.04	5.42	0.70	3.70	0.51	13.1	13.5	0.66	0.71
NEEDED	2	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INSTALLED	3	86.	1382.	15.3	114.	7.47	10.03	0.74	4.91	0.88	11.7	13.4	0.88	1.18
GRD.MEAN	3	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15

S.A.SUGAR INDUS… AGRONOMISTS ASSOCIATION ESTATE …LD RECORDS

NEW GUELDERLAND SUGAR ESTATES (ANALYSED AUGUST 1979)

LIST OF MEANS(ON PER HA BASIS)

	CODE	NO.OF FIELDS	TOTAL HECTAR	AGE	CANE T/HA	CANE T/H/M.	T.CANE /100MM	T.CANE /KG.N	T.CANE /KG.P	T.CANE /KG.K	SUC. %	SUC. T/HA	SUC. T/H/M.	T.SUC /100MM
IRRIGATION														
NONE	1	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
SURFACE	2	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVERHEAD	3	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRD.MEAN	3	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
PLANT.METHOD														
MACHINE	1	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAND	2	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
GRD.MEAN	2	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
FILTER CAKE														
NOT APPLIED	1	69.	1086.	15.5	117.	7.53	9.98	0.76	5.08	0.93	11.6	13.5	0.87	1.15
FURROW	2	21.	341.	15.3	104.	6.83	9.15	0.66	4.23	0.67	12.5	13.1	0.86	1.14
BROADCAST	3	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UNKNOWN	4	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRD.MEAN	4	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
FINAL CROP														
FINAL CROP	1	3.	60.	22.0	97.	4.40	5.04	0.64	4.48	0.61	13.3	12.8	0.58	0.67
NOT FINAL	2	87.	1368.	15.2	115.	7.56	10.14	0.74	4.88	0.87	11.7	13.5	0.89	1.19
GRD.MEAN	2	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
HWT-SEED														
HWT-SOURCE	1	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15
NON HWT	2	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UNKNOWN	3	0.	0.	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRD.MEAN	3	90.	1427.	15.5	114.	7.37	9.79	0.74	4.86	0.86	11.8	13.4	0.87	1.15

NEW GUELDERLAND SUGAR ESTATES [illegible]LYSED AUGUST 1979)

VARIETIES X PREV.HARVEST TABLE T.C/H /MTH. (WEIGHTED MEANS)

	NCO 376		N55/805		MEANS	
MAY	5	10.87	0	0.0	5	10.87
JUNE	7	6.51	1	5.35	8	6.24
JULY	13	6.24	1	6.93	14	6.29
AUGUST	10	7.28	0	0.0	10	7.28
SEPTEMBER	11	7.41	1	5.93	12	7.35
OCTOBER	9	7.98	1	6.13	10	7.60
NOVEMBER	9	7.92	1	7.32	10	7.78
DECEMBER	5	7.87	0	0.0	5	7.87
JANUARY	10	6.78	1	5.42	11	6.73
FEBRUARY	5	7.71	0	0.0	5	7.71
GRD.MEAN	84	7.47	6	6.21	90	7.37

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

A GROWER'S EXPERIENCES WITH ROUNDUP

by

John MacLeod

Some 25 ha has been treated with Roundup on my farm since 2nd October 1975. In all cases the application rate has been 10 litres/ha as an overall spray, with either 300 or 400 litres of clean water per hectare. All spraying of Roundup has been done between October and January, in good weather conditions. In all cases the apparent kill has been 100%, except for odd places that have been missed, but the "true kill" has varied from about 90% to 50%.

The problem is regrowth, in the form of pale stunted leaves and stalks which, if left alone, grow to a height of about 1 metre.

In the first application, on 1 hectare of CB36/14, a kill of about 90% was achieved. The regrowth was spot-sprayed, with a shielded spray and sheets of cardboard protecting the adjacent rows of plant cane. Despite the precautions, the plant cane suffered more than the regrowth! Roundup appears to be deadly to young cane! All regrowth from subsequent applications has been hoed out.

The second application, also in October 1975, was on 6 ha of old cane land which had been planted to gums a couple of years earlier. The rather poor stand of young gums was dug out, and the area burned. Roundup was applied at 6 litres/ha to the regrowth of mixed grasses, weeds and the odd cane stool. Cane stools were given a good wetting of the 6 litre/ha solution. A violet dye was used to mark the area sprayed, as the operator had no rows to guide him. This application was very successful, except for about 1 hectare which looked as though it had been sprayed with 2,4-D, for no apparent reason. A subsequent spray on this area was satisfactory.

The next two applications, on 376, were fairly successful, but again regrowth presented a problem.

In an attempt to treat all the young shoots in the next two applications the fields were trashed, and the trash was burnt when the first shoots were about 25-30 cms tall. The Roundup was then applied when the regrowth was about 45 cm tall. After spraying the fields both looked satisfactorily dead - but 6 weeks later there were signs of regrowth again.

It is worth mentioning that in one of the fields the operator applied Roundup to about ½ a hectare on a dull morning, (contrary to instructions!) and the application was followed immediately by an hour's drizzle. In this case the "apparent kill" was poor, and respraying the sick-looking cane a few weeks later did not give a satisfactory result.

Five hectares were treated with a tractor Boom Sprayer, carefully

stage of spraying
variety
season
water
soil
dew

calibrated and operated at carefully controlled speed by myself. The object was to ensure even application, hopefully to eliminate the irregular kill previously achieved. In this it was not successful. One or two sprayer tanks were applied on a number of mornings, finishing no later than 8 am. It was interesting to note a definite variation in the rate of "apparent kill" - the area sprayed on, say, Day 2 died off more quickly than that sprayed on Day 1, for example. The variations in the various day's spraying were distinctly noticeable after a week or ten days - possibly due to the amount of dew present when the cane was sprayed. There was no striking correlation between the "apparent kill" and the "final kill" - which was not significantly different from that obtained using a knapsack sprayer.

In the last two areas sprayed with Roundup the "apparent kill" has looked excellent. One of these was seen by Mr. Moberly and a party from the Experiment Station on 17th February 1977, about four weeks after spraying. His opinion was that the kill would be satisfactory, but I had to hoe out some 25% of rogue stools. The other area was even worse - after a very promising looking "apparent kill" I had to hoe out at the rate of 30 stools in each of a number of random samples of 25 metres of row!

It is perhaps significant that my cane grows in a deep heavy granite-derived soil. The kill obtained on sandier or stonier areas is clearly better than it has been in areas of better soil.

I have found a 1½% solution of Roundup effective on bullrushes. If applied with a rubbing glove to bullrushes emerging in plant cane, the plant cane can be affected if the wind blows the wet bullrushes against it.

Hopefully somebody will tell me what I have been doing wrong, because others using similar techniques have claimed better results!

Despite the price increase of R10/litre to the present almost R20/litre, I still intend to proceed with Roundup, for the following reasons:

1. It greatly reduces the risk of soil erosion on my steep farm.

2. It enables me to get rid of the old crop with certainty, if I ridge between the old rows - even if a hoe is necessary to finish the job.

3. From September or October on, it enables me to get my plant crop into the ground much more quickly than I could with conventional ploughing, while ensuring eradication of the old crop.

4. While I have no figures to prove it, I feel that it is cheaper to use Roundup even at the present price (and to hoe out regrowth as necessary) and to ridge with a span of oxen, than it would be to operate the crawler that would be necessary to plough my steep slopes. But above all, I consider the topsoil to be priceless.

Phil.
Eddie/Ben
Roger Stewart
Vince Rae

PKM/VSJ.
6th September, 1979.

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

CANE TESTING AT SOUTH AFRICAN SUGAR FACTORIES.

1. INTRODUCTION.

The cane grower is paid for the quantity of sucrose contained in the cane which he delivers to a mill. Cane testing procedures are formally prescribed in Schedule C of the Sugar Industry Agreement and in terms of Clause 48 of the Agreement, cane testing is conducted at all factories (Co-operative mills excepted) by the Central Board Cane Testing Service. The establishment of an independent, Industrial service ensures that officially prescribed equipment and procedures are uniformally applied throughout the Industry.

The S.A. system of cane testing is one of the most elaborate in existance. In the course of one season near to 800 000 individual consignments are tested i.e. approximately 95 % of the total number delivered. The Service attends to its own maintenance and repairs to equipment and buildings and for this purpose engineering, instrumentation and electronics workshops are established. The cost of operating the service amounts to approximately 14 cents per ton of cane, of which, near to 9 cents is borne by the grower. Miller-cum-planter deliveries are tested in the same manner as growers' deliveries.

2. DETERMINATION OF TOTAL SUCROSE ENTERING THE FACTORY.

The sucrose contents of mixed juice and final bagasse together constitute the master measurement of the total sucrose entering into the factory.

Samples of both the mixed juice and the final bagasse are analysed in the Cane Testing Service (C.T.S.) laboratory every hour throughout the week. The C.T.S. also attends to the determination of the mass of mixed juice (corrected for insoluble solids content) and final bagasse, and to the calculation of the total amounts of sucrose contained in these two products.

At the end of each week this total, master tonnage of of sucrose in cane is then distributed amoung the individual growers who have delivered to that mill, pro-rata to the sucrose % cane results obtained with their individual consignment tests i.e. their direct analysis of cane (DAC) results.

This measurement of the master sucrose tonnage was first undertaken by the C.T.S. in 1972 (prior to this the miller had "baked the cake"). It is of considerable importance to the miller : it is a cornerstone in his factory control data. The determination of total sucrose in cane via mixed juice and bagasse constitutes a backstop which lends flexibility in approach to the manner in which individual consignments may be sampled and tested e.g. it rendered the change from Java Ratio to DAC more amenable.

3. DISTRIBUTION OF TOTAL SUCROSE IN CANE.

3.1 Cane Sampling.

Samples of cane from individual cane consignments are captured at the top of the slat conveyor which elevates the cane to the first mill feed-chute. At this point the cane has already passed through the cane knives and mill shredder and is finely divided. An aperture, across the full width of the carrier, is covered with a sliding gate which is opened and closed (powered by a double acting pneumatic cylinder) at frequent intervals to provide a regular fall-out of the prepared cane. This primary sample is sub-divided via a series of flip-flap sub-samplers.

Sampling of prepared cane in this manner has considerable advantage in its randomness and ease of automation, but it involves the task of demarcating and identifying each individual parcel of cane along cane carrier systems which are often extensive and complex. Cane yard storage and increasing crushing rates are further aggravations. The advent of the electronic cane tracking device has played a vital role in the success of current cane sampling operations.

3.2 Cane Analysis.

By comparison this is the relatively easy part of the cane testing operation, and with the aid of advanced equipment including automatic saccharimeters, precision refractometers, electronic balances etc., a very high standard of analytical accuracy is attained.

A measured quantity of water (2 000 g) is blended with 1 000 g of the cane sample in a high speed homogeniser. Sucrose and brix inspections are made upon the extract. The moisture content of the cane is needed to complete the calculation of sucrose % cane and Brix % cane and for this purpose a second portion of the cane sample (300 g) is dried at 105°C for 60 minutes. (Brix-free-water is assumed to be 25 % on dry fibre.) Fibre % cane is calculated via : 100 - moisture % cane - Brix % cane. Non-pol % cane and purity of extract are also derived.

3.3 Calculation of Results.

Approximate data is calculated locally at each laboratory for the purpose of daily returns to growers but the raw analytical data is supplied to the S.A.S.A. Data Processing Division where the official calculations and data outputs are prepared by computer. The possible use of a mini-computer sited at the laboratory to provide automated data acquisition and direct communication with the central mainframe, is receiving consideration.

3.4 Results : General Comments.

3.4.1 Cane Testing Precision.

A 20 ton consignment sampled with a hatch fall-out frequency of one cut per 3 tons of cane is estimated to have the following test precision :

S.D. OF A CONSIGNMENT TEST : ± 0,33 UNITS OF SUCROSE % CANE

S.D. OF A CONSIGNMENT TEST : ± 0,60 UNITS OF FIBRE % CANE.

3.4.2 Variation of Results around Weekly Mean.

Fluctuating levels of sucrose % cane returns from one consignment to another, for the "same cane from the same field", is a constant source of

4/...

concern among growers. The standard deviation of the differences between a single consignment - sucrose % cane test result and a planters' weekly average sucrose % cane is of the order of ± 0,85 units of sucrose % cane. This figure is reasonably steady from mill to mill and week to week.

3.4.3 The summation of the tonnages of sucrose in the individual consignments, as determined by DAC, should compare closely with the total amount of sucrose measured in mixed juice plus bagasse. They are completely separate, parallel measurements of total sucrose in cane and the comparison affords an excellent basis of monitoring the correctness of cane testing and factory control data.

The ratio of sucrose in cane (mixed juice plus bagasse) to sucrose in cane (DAC) for all mills in the 1978/79 season was 0,996 and the S.D. of the individual mill ratios around this mean, was ± 0,003.

3.4.4 <u>DAC Fibre in Cane used to determine Bagasse Mass.</u>

With the advent of diffusion the use of the basic factory equation to determine bagasse mass, was rendered inoperative due to excessive unmeasured evaporation. Attempts to measure the mass of bagasse directly, using belt weighers, radiation weighers, dump weighers etc., all proved unsuccessful. The problem was satisfactorily overcome by using the tons fibre in cane, as determined via DAC, (and corrected for insoluble solids in mixed juice) in conjunction with the fibre % bagasse analysis, to calculate the mass of bagasse.

4. CANE PAYMENT.

4.1 Relative Cane Payment.

Cane payment is based upon the Relative Sucrose content of individual consignments. Relative sucrose % cane in cane crushed each week for each grower is calculated by adding the actual sucrose % cane for this cane to the mean sucrose % cane for that mill's quota growers for the entire season

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concerned, and decucting therefrom the mean sucrose percent cane for that mill's quota growers during the week in which the consignment was crushed.

4.2 Division of Proceeds.

The cane payment policy can be conveniently represented as follows :

$$\text{CANE PAYMENT} = \text{Tons Cane} \times \frac{\text{Sucrose \% Cane}}{100} \times \frac{\overline{OR}}{100} \times P \times \frac{G}{100}$$

where :

$\overline{OR}$ = Industrial overall recovery for the season in question.

P = Selling price of sugar (average).

G = Growers Proportionment (currently near to 63 percent.)

The "Grower Proportionment" is derived via an accounting exercise, conducted by an Industrial Cost And Division Of Proceeds Committee. Essentially, it is a two-tiered operation with the recovery of costs in both sectors having first to be realised from the Industrial proceeds and thereafter a reasonable return on capital invested (for both sectors) is allowed (in all, or part thereof, depending upon monies available ; any overflow goes to the Price Stabilisation Fund). The situation is reviewed annually by the Costs And Division Of Proceeds Committee.

TRL/pam

1979-09-04.

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

AN ASSESSMENT OF THE NEWER CANE VARIETIES: N7, N8, N52/219, N11, J59/3.

BY

GEOFF INMAN-BAMBER

N7

N7 was distributed in 1973 as a general purpose variety. It is a fairly short variety, like NCo376, with a high population of somewhat thin stalks and it tends to lodge quite easily. It has a slightly higher sucrose content than NCo376.

It has been compared with NCo376 in 33 crops taken from six trial sites representing all growing regions except the coastal sands and the Midlands Mistbelt.

Flowering : N7 was observed to flower in only 7 of the 33 crops, six of these were at Pongola. It is not likely that flowering has affected the yield assessment of N7 to any extent.

Lodging : N7 was moderately to severely lodged in 13 of the 33 crops harvested. The lowest yields relative to NCo376 were not confined to the crops of N7 that had lodged. Lodging may have affected the sucrose content of N7 in some cases.

Yield : Both yield and stalk elongation data show that N7 responds to growing conditions in a similar way to Nco376 but stalks are usually slightly shorter and yields slightly less than those of NCo376. In 25 of the 33 comparisons made, N7 yielded between 85 and 95% of the cane yield of NCo376. The yield of N7 relative to that of NCo376, averaged over 33 comparisons, is given below.

ENVIRONMENT	NO. CROPS	YIELD AS A % OF NCo376		ERS % DIFFERENCE
		CANE	ERS	
Irrigated	11	87	91	+0,5
Dryland	22	91	92	+0,4

N7 produced more sucrose per hectare than NCo376 on five occasions, for no obvious reason.

Growth period :

Start : N7 invariably appears to grow slowly at first when starting in winter. This slow start does seem to affect yields. In the 33 crops used to compare N7 and NCo376, N7 planted or ratooned in June to September produced less than 90% of the cane yield of NCo376. Most crops of N7 starting in October to December produced more than 90% of the cane yield of NCo376. Crops starting in March to May were intermediate.

End : The difference in the sucrose content of N7 and that of NCo376 tends to be greater in crops harvested in spring than at other times. Pre-harvest sampling shows that the sucrose content of N7 increases and decreases more rapidly than that of NCo376, before and after spring. A summer to spring cycle would, therefore, give N7 the best chance to outyield NCo376.

Ratoonability : N7 appears to persist well over several ratoons. There was no significant decline in its performance over five ratoons at Pongola. N7 does not, however, regrow vigorously at first.

Diseases : N7 is extremely susceptible to smut but it is resistant to most other diseases including mosaic. There is some evidence that N7 is more resistant to Eldana than other varieties but no more resistant than NCo376. It is certainly less susceptible to cracking but Eldana do not necessarily enter via rind cracks.

Conclusions : N7, like NCo376, has a wide adaptability and a high stability and as such grows well under a wide range of conditions. It can be expected to yield about 10% less sucrose per hectare than NCo376 and can therefore be regarded as a standby for NCo376 should mosaic or basal stem rot become serious in NCo376.

N8

N8 was distributed in 1973 with a view to its being used on coastal sands. It is a tall, thin-stemmed variety with a fairly high population. It is prone to lodge at an early age. Flowering is normally moderate but can be heavy in some years. It has been evaluated in 27 crops at five dryland sites.

Flowering : N8 flowered in 15 of the 27 crops harvested but in six of these flowering was slight. A marked increase in the sucrose content of stalks accompanied the prolific production of flowers at harvest in one crop.

Lodging : N8 was severly lodged in 15 of the 27 crops harvested and where several weeks lapsed before harvest, its yield relative to the yield of NCo376 was low.

Yield : N8 always elongates at a much greater rate than NCo376 during the first half of the growth period, even in heavy soils. Its growth rate usually declines in the latter half and then it lodges.

The cane yield of N8 relative to that of NCo376 depended largely on soil type as the following figures show.

(SOIL) ENVIRONMENT	NO. CROPS	YIELD AS A % OF NCo376		ERS % DIFFERENCE N8 - 376
		CANE	ERS	
Loams	9	87	83	-0,6
Sands	8	92	86	-1,0
Weak Sands	9	145	136	-0,9

N55/805 is the standard variety for sandy soil and should be used to assess N8.

(SOIL) ENVIRONMENT	NO. CROPS	YIELD AS % OF N55/805		ERS % DIFFERENCE N8 - N55/805
		CANE	ERS	
Loams	9	108	92	-1,5
Sands	8	100	86	-2,0
Weak Sands	9	128	114	-1,6

N8 is without doubt better than N55/805 and NCo376 on weak sands.

Growth cycle :

There is no obvious relationship between the time of the start of the growth cycle and the relative yield of N8. N8 does have a pronounced sucrose peak in sucrose content around spring. If harvested at this time it could have as good a quality as NCo376. The sucrose content could be more than two units below that of NCo376 in April.

Ratoonability : N8 does not appear to be any less persistent than NCo376.

Diseases : N8 is susceptible to smut but resistant to all other important diseases.

Conclusions : N8 is best used in weak sands. It is a hardy variety and its vigorous growth habit could perhaps be put to good use on heavier soils by harvesting in spring and before it lodges too severely. The good performance of N8 on weak sands could, in fact, be partly due to the lower incidence of lodging in these conditions resulting from the generally poorer growth. The smut susceptibility of N8 precludes its use in the Northern irrigated areas.

N52/219

N52/219 was released in 1975 mainly with the Northern irrigated areas, where smut is a serious problem, in mind. N52/219 has the distinction of being practically immune to smut. It is an erect and fairly thick-stemmed variety, it is usually taller than NCo376, but has a low stalk population. It has been assessed against NCo376 in 27 crops at 4 sites in the Northern irrigated areas and in 15 crops at 6 experimental sites in rainfed areas.

Flowering : N52/219 can flower profusely if conditions are suitable. N52/219 flowered heavily several months before harvest in a trial at Umhloti and in a trial at Melmoth. The cane yield and sucrose content of N52/219 was severely affected in these cases. Flowering in the other 40 crops, when it occurred, did not appear to be a serious problem. N52/219 tends to produce side shoots after it has flowered. These side shoots prolong the life of the subtending stalk and thus prevent the rapid deterioration that follows flowering in varieties that fail to produce side shoots (Long, 1976).

Lodging : N52/219 is usually only slightly more prone to lodging than NCo376. Lodging in N52/219 was severe in 6 out of the 42 crops harvested.

Performance relative to NCo376 :

N52/219 usually elongates more rapidly than NCo376 at first but then keeps pace with it until the latter part of the growth cycle when it often falls behind NCo376. N52/219 loses green leaf rapidly under moisture stress thus giving the impression of being intolerant of drought. This may be true for stresses occurring at the tillering stage. On an extremely droughted Windermere clay N52/219 gave the same sucrose yield as NCo376 and the following figures show that it performs equally well under dryland or irrigated conditions.

ENVIRONMENT	NO. CROPS	YIELD OF N52/219 AS % OF NCo376		DIFFERENCE IN ERS % 219 - 376
		CANE	ERS	
Irrigated N	27	86	92	+0,8
Dryland	15	91	95	+0,5

In seven of the 42 comparisons made, N52/219 yielded more than 105% of the sucrose yield of NCo376.

N52/219 performed particularly well on a heavy lower Ecca shale/dolerite derived soil at Mt. Edgecombe, yielding more sucrose per hectare than NCo376 in four out of five crops. However, in the fifth case, it yielded 15% less sucrose than NCo376 (which produced the highest cane yield of the trial).

The reasons for the rather wide fluctuations in the relative performance of NCo219 are not clear. A low population variety perhaps does not have the reserve of tillers that allow a high population variety to adjust rapidly to changing conditions. One might expect more stability from N52/219 under irrigated than under dryland conditions.

Growth cycle :

An autumn to autumn cutting cycle at Pongola resulted in a better performance in N52/219 relative to NCo376, than a spring to spring cycle (89% as opposed to 85% of the cane yield of NCo376). An autumn start also favoured N52/219 at Mhlumi and Melmoth in most cases. The same tendency was not observed at all sites.

The difference in the sucrose contents of N52/219 and NCo376 was greater in autumn harvests than in spring harvests at Pongola and Umhlumi but the variability in these results was high. Time of harvest did not appear to affect the sucrose difference between N52/219 and NCo376 at other sites.

Pre-harvest sampling showed that the difference in the sucrose content of N52/219 and of NCo376 was not consistently greater at one stage than another. Often the difference remained unchanged throughout the sampling period.

Ratoonability : N52/219 is resistant to all our major diseases the most important of which are smut and mosaic.

Conclusions : N52/219 is an obvious replacement for NCo310 and NCo376 in the irrigated north because of its smut resistance. It can also do well in dryland conditions but its profuse flowering habit must be borne in mind. Its erect growth habit and resistance to lodging and relatively high sucrose content make it attractive to growers.

A greater understanding of its reaction to the environment is required in order to explain why in some cases it yields so well and in others, not so well.

N11

N11 was released in 1978 mainly with the Northern irrigated regions in mind. N11 is usually taller than NCo376, has thicker stalks and a lower stalk population. It flowers readily when conditions are suitable. It has been evaluated in 10 crops at 8 sites thus far.

Flowering : Flowering several months before harvest in one trial seriously affected the yield and sucrose content of stalks.

Lodging : N11 lodges easily. It was severely lodged in half of the crops harvested. The poor cane and sucrose yields obtained at Paddock and Mtunzini were attributed to the severe lodging that occurred well before the crops were harvested. Lodging in N11 need not necessarily be a nuisance at harvest because stalks tend to be laid down neatly across the rows.

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Yield : N11 elongates more rapidly than NCo376 at first but it soon maintains a similar growth rate or falls behind if NCo376 is growing rapidly later in the growth period.

The results in the following table tend to confirm earlier observations that N11 is more suited to irrigated than dryland areas. This is probably because of the annual cycle followed in the irrigated areas rather than the intolerance of N11 to drought. Lodging is thought to be responsible for the low sucrose content of N11 in the dryland areas. N11 ranked 2nd in a variety trial on an extremely dry Windermere clay where it produced 6% more cane and 20% more sucrose per hectare than NCo376.

ENVIRONMENT	NO. CROPS	YIELD AS A % OF NCo376		DIFFERENCE IN ERS % N11 - 376
		CANE	ERS	
Irrigated	5	84	93	+0,9
Dryland	5	84	86	+0,2

Growth cycle :

There is yet not sufficient data to show whether or not a particular growth cycle favours N11 more than other varieties. The high sucrose content of N11 sometimes becomes less marked as harvest time is approached. This could be expected in a variety that is usually lodged at harvest.

Disease : N11 is resistant to all the major diseases notably smut and mosaic.

Conclusions :

N11 is an obvious choice for the irrigated north because of its resistance to smut. It may also do well in dryland areas as long as it is not allowed to remain lodged for too long. Its flowering habit must be borne in mind.

J59/3

J59/3, a variety from Cuba, was released in South Africa in 1976. It has an excellent sucrose content and a good disease resistance. It is a short, thick-stemmed variety with a fairly low population of stalks. It tends to lodge easily. It has been evaluated in 16 crops at nine sites thus far.

Flowering : J59/3 does not flower readily and was not observed to flower in any of the 16 crops harvested.

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Lodging : J59/3 was severely lodged in seven of the 16 crops. Lodging seems to have been responsible for sucrose % values being lower than normal in some cases.

Yield : J59/3 usually lags well behind NCo376 in stalk elongation at first but it often continues to elongate rapidly when NCo376 is slowing down. Yields are often higher than would be expected from the general appearance of this variety.

It is the only newly released variety that on average has out-yielded NCo376, as the following figures show.

ENVIRONMENT	NO. CROPS	YIELD AS A % OF NCo376		DIFFERENCE IN ERS % J59/3 - 376
		CANE	ERS	
Irrigated	8	88	101	+1,5
Dryland	8	91	113	+1,6

Except for one crop grown on a weak sand and another in the Mistbelt, J59/3 never yielded less than 92% of the sucrose yield of NCo376 and in three cases it outyielded NCo376 by more than 15%.

Growth cycle :

Our limited data suggest that crops of J59/3 that started in summer performed relatively better than those that started in winter.

J59/3 always has a much higher sucrose content than NCo376. There is a tendency for the difference in the sucrose content of the two varieties to be higher in the autumn than in the spring. Thus, J59/3 could be harvested in the low sucrose period to advantage.

Ratoonability :

The oldest experimental planting is now in its 4th ratoon. There is, therefore, little information on persistence.

Diseases : J59/3 has excellent resistance to most diseases including smut and mosaic.

Conclusions :

J59/3 is a good replacement for NCo376 in the Northern irrigated regions because of its high sucrose content and resistance to smut. It is well suited to dryland conditions as well, except perhaps the Mistbelt and coastal sands.

It is certainly capable of producing as much sucrose per hectare as NCo376. Stalk brittleness and lodging are drawbacks that may forestall the wide acceptance of this variety.

NGI-B/HDN
September, 1979.

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

AN EVALUATION OF TWO NEW VARIETIES IN THE BULKING UP STAGE, N12 AND 67E1507

by Roger Bond

EVALUATION OF N12

Parentage NCo 376 x Co 331

N12 is a slightly thin stalked variety with narrow erect leaves. During its early growth the variety is rather prostrate but eventually becomes erect with good standing qualities. It is a high population variety and like NCo 376 it's yield tends to be underestimated on visual appraisal.

Yielding ability

The variety appears relatively adaptable but appears best suited to the midland areas and least suited to the coastal sands.

The following table shows a summary of yields obtained for the various localities. It should be mentioned that the variety is still being evaluated under irrigated conditions and the figure shown for irrigated areas represent only plant cane results.

Zone	N12			NCo 376
	Yield as % NCo 376	Pol % cane	Mass Pol as % NCo 376	Pol % cane
Coastal Sands	90	15,2	98	13,9
Irrigated	94	11,8	100	11,1
Main coastal belt	103	13,2	109	12,4
High altitude	112	13,5	116	13,0

Ratooning

N12 has ratooned strongly in trials and has shown particularly good ratooning in the midlands.

The ratoon performance of the variety is summarized in the following table.

Crop	Cane yield as % NCo 376
Plant cane	99
1st ratoon	110
2nd ratoon	105

Cane quality

The sucrose content of N12 is slightly higher than NCo 376 and averaged over all trials is 0,6% of a unit sucrose higher than the NCo 376 standard. This is a fairly definite indication that the variety has acceptable early and mid-season sucrose but tends to fall off late.

N12 is slightly higher in fibre than NCo 376 (0,5%).

EVALUATION OF 67E1507

Parentage: N52/214 x NCo 293

67E1507 is a tall variety of good appearance which puts on height rapidly after germination. It has a thicker stalk than NCo 376, but the population per hectare is considerably lower. The variety is rather prone to lodging.

Yielding ability

The variety yielded well in selection trials and gave its best performance relative to NCo 376 on the recent sands at C.F.S. Its performance under irrigation is currently based on plant crop figures only. A summary of results are presented in the following table.

Zone	67E1507			NCo 376
	Yield as a % NCo 376	Pol % cane	Mass Pol as % NCo 376	Pol % cane
Coastal Sands	107	15,0	116	13,9
Irrigated	99	10,9	98	11,0
Main coastal belt	104	12,4	105	12,4
High altitude	99	13,7	105	13,0

Ratooning:

The variety appears to ratoon less strongly than 67G23.

Crop	Cane yield as % NCo 376
Plant cane	99
1st ratoon	105
2nd ratoon	94

Cane quality

The sucrose content of 67E1507 is marginally lower than NCo 376 when averaged over all seasons. However, there is an indication that it is a late season variety and at the end of the season the sucrose content has been higher than NCo 376. However, early season samples have shown poor sucrose content and low purity when compared to NCo 376. Fibre content is considerably less than NCo 376 (0,9%).

Disease Reaction.

Disease trials indicated an unsatisfactory degree of susceptibility to smut. The decision whether to release the variety is therefore being delayed until further information is available.

RSB/SN
6th September, 1979

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

SULPHUR DEFICIENCY PROBLEM AT DWANGWA, MALAWI

by

M.A. Johnston

A problem of severe stunting and chlorosis in young sugarcane in certain fields on this estate was investigated. The reason was found by analysis of soil and leaf to be a chronic sulphur deficiency.

Growth of sugarcane in the affected areas was found to be highly variable with better growth being associated with areas where the relatively fertile A horizon of the soil was reasonably deep. Extremely poor growth occurred where the A horizon had been removed during land smoothing operations, leaving bleached, infertile, subsurface soil material.

Table 1 shows leaf S in relation to leaf N values, and soil S levels for two sites that were sampled. The better growth area in

Table 1: Sulphur levels measured in soil and leaf

Field	Growth	Leaf S (%)	Leaf N (%)	N/S ratio	Soil S (ppm)
M4F4	Poor	0,03	2,25	75	9,6
	Better	0,07	1,53	22	8,6
M4F13	Poor	0,03	1,91	64	8,4
	Better (treated with S)	0,12	2,71	23	108
Thresholds	-	±0,13	+1,7	±17	± 10
Normal lowveld range		0,14-0,20	1,6-1,9	8-15	15-30

field M4F13 pertains to a row of cane which had been treated with a sulphur-rich fertilizer. In the poor growth areas, and even the area of better growth in field M4F4, it is clear that S levels are very low in both soil and leaf.

Deficiency symptoms differed somewhat for different varieties. With NCo 376 marked stunting and chlorosis were the obvious symptoms. However, in the broad-leafed variety CB 40/77, stunting and chlorosis were accompanied by marked purpling of the leaves due to anthocyanin pigmentation. This tended to be strongest along the margins and towards the tip of the leaf. In variety Pindar, symptoms were intermediate between the two in that purpling of the leaves was not as marked as in the case of CB 40/77.

MAJ/SN
10th September, 1979

effect, some disbelieve & some do
are the recommendations accepted - not really
cutting young cane has helped 22% → 16
a very high re-infestation (e.g. new varieties get it quickly)

ELDANA - AS THE CANE GROWER SEES IT

BY G. BUCHANAN - S.A.S.A. EXPERIMENT STATION

To appreciate grower reaction to the Eldana situation, it is necessary to note how attitudes changed as the infestation increased. To begin with, the few growers seriously affected were given sympathy by fellow growers but as the problem was some what removed from them and as they did not understand the seriousness of the situation, their plight was soon forgotten. Through the Mill Survey Teams, more growers were informed of Eldana occurences on their farms, but growers were still not actively motivated as in most cases the infestation levels were low and causing no measurable financial loss. By late 1976 word spread of fields collapsing with tonnages dropping to 40t/ha (in some cases the cane being consumed by the burn) and sucrose % cane levels of 7 to 9. The distribution of Mill damage figures per farm to grower Mill Groups, talks given and information distributed by the Experiment Station all increased the awareness of the problem and growers became particularly motivated and interested in the control of the pest. It also posed a direct threat to their livelihood.

CONTROL OF ELDANA

The limited knowledge that the Experiment Station had of the pest in the early years turned most growers into "budding entomologists" and much confused thinking resulted. But lets not play down grower intuition, for a number of their observations have been shown to be correct. Only a small percentage of growers followed our recommendations to the letter, the others varied from making an effort to no effort at all. In some cases, Eldana has disappeared while in others, the situation has only slightly improved on farms which have carried out our recommendations. However, most growers who have viewed the Eldana situation for some years now still remain to be convinced that the hygiene measures are worthwhile.

The average grower looking over the fence observes that there has not been a radical improvement to the situation (forgetting that if no measures were taken the situation would have been in a far worse position than it is today) in spite of "doing everything possible", he is reluctant to make a special effort. Because it has not been possible to place a monetary value on cane that is bored, growers have been inclined to under estimate the seriousness of the pest and hence standards of control have dropped. Some growers have over the past few years continued to trash inspite of having high counts of Eldana and their lot does not seem to be any worse-off than neighbours who have religiously followed a burning and cleaning operation. Hence with the very dry season this past summer and the chance of more to come, growers are chancing trashing to burning in drier areas. Seriously affected growers who have shortened their cutting cycle have had significant improvement in their Eldana so that cutting young cane is a recognised fact although it makes producers vunerable to effects of drought. In many cases, financial committments on the farm may prevent growers who have every good intention of limiting the spread of Eldana from harvesting certain areas inspite of knowing the potential hazard not only to himself but also to his neighbours.

Growers believe that the Industry was incorrect in not acting faster in curbing the early severe infestations of Eldana, by isolating and quarantining these farms, totally cutting and ploughing out infested areas, providing such growers with extra finance, etc. Growers also sincerely believe that the Industry must contribute actively to helping them in their plight and share in the responsibility of controling Eldana. This is demonstrated in the failure of growers to form their own field survey teams and reliance on the Experiment Station to supply them.

In the past, the cane grower has become impatient because the Experiment Station had not produced a quick cure. However, they are now appreciating the complexity of the situation. But growers would like to be given advice of a more positive nature on subjects which have only slim leads and become frustrated with vague replies. To illustrate this, if on poor soils (dwykas, middle eccas) where Eldana continues to be a serious problem, what can growers lose by trashing.

To put it in a nut shell then, growers see Eldana as a threat to their livelihood, they want to combat Eldana within the framework of their present cultural practices. They will only entertain going outside this situation if it has been demonstrated to them that an extra operation will be successful. The idea of an exotic control like biological control is of special interest as also is a one time spray of a very toxic insecticide.

The farm survey teams has made growers more aware of their problem, and with few exceptions, this team has shown that by identifying highly infested fields and then harvesting them has contributed to reducing individual farm infestations. Growers recognize that this is a vital tool in the fight against the pest.

The shift of Eldana into drier areas, the fact that Amatikulu Mill levels have not declined over the last two years has motivated growers into forming a combine Mill Group Eldana Committee. It is my opinion that growers are so concerned about Eldana now and also determined to get on top of the situation that they will follow the suggestions of the above committee; they realize that they have a moral obligation in preventing the spread of Eldana and they totally reject any form of legislation what so ever.