

S.A. SUGAR INDUSTRY AGRONOMISTS' ASSOCIATION

COMPARISONS OF RELEASED VARIETIES, 1965.

Variety	Stage	No. of Crops	T.C.A.			Suc. % Cane			T.S.A.		
			N:Co. 376	Test Var.	Test/376	N:Co. 376	Test Var.	Test/376	N:Co. 376	Test Var.	Test/376
N:Co.292	P	8	66.2	49.2		14.39	14.17		9.48	7.04	
	1R	5	51.5	33.8		14.25	13.98		7.38	4.85	
	2R	5	45.4	29.2		14.03	13.74		6.40	4.05	
	3R	1	55.3	23.4		14.99	14.61		8.29	3.42	
	Total	19	56.3	38.5	68.4	14.29	14.03	98.2	8.05	5.49	68.2
N:Co.293	P	30	65.4	64.5		14.54	14.66		9.49	9.45	
	1R	12	50.2	47.2		14.20	13.89		7.17	6.56	
	2R	8	49.1	43.0		14.38	13.92		7.12	6.06	
	3R	2	46.4	33.8		15.87	15.46		7.29	5.24	
	Total	52	58.7	56.0	95.4	14.49	14.40	99.4	8.51	8.10	95.2
N:Co.310	P	18	66.1	54.0		14.45	15.61		9.56	8.37	
	1R	11	56.0	43.1		14.29	15.56		8.00	6.68	
	2R	8	51.9	36.6		14.44	15.29		7.51	5.64	
	3R	2	46.5	31.3		15.87	17.00		7.29	5.32	
	Total	39	59.3	46.2	77.9	14.48	15.60	107.7	8.58	7.18	83.7
N:Co.334	P	13	67.7	55.5		14.12	14.31		9.51	7.85	
	1R	8	52.4	48.0		13.88	13.82		7.29	6.65	
	2R	7	45.9	42.8		13.95	14.31		6.42	6.11	
	3R	1	55.3	37.9		14.99	14.80		8.29	5.61	
	Total	29	57.8	49.8	86.2	14.04	14.19	101.1	8.11	7.02	86.6
N:Co.339	P	11	65.4	57.5		14.06	14.24		9.15	8.22	
	1R	8	48.4	40.6		13.83	14.00		6.75	5.75	
	2R	7	40.8	33.4		13.93	13.93		5.72	4.71	
	3R	1	55.3	33.8		14.99	14.86		8.29	5.02	
	Total	27	53.6	45.4	84.7	13.99	14.11	100.9	7.52	6.46	85.9
N:Co.382	P	32	58.7	56.8		13.97	13.73		8.21	78.6	
	1R	16	48.3	44.2		13.93	14.14		6.75	62.5	
	2R	7	45.2	38.8		14.25	14.12		6.45	5.49	
	3R	2	46.5	32.6		15.87	14.71		7.29	4.78	
	Total	57	53.7	50.2	93.5	14.06	13.93	99.1	7.55	7.01	92.8

Variety	Stage	No. of Crops.	T.C.A.			Suc. % Cane			T.S.A.		
			N:Co. 376	Test Var.	Test/ 376	N:Co. 376	Test Var.	Test/ 376	N:Co. 376	Test Var.	Test/ 376
Co. 331	P	9	58.5	49.4		14.26	12.98		8.42	6.49	
	1R	5	59.0	45.1		14.78	13.49		8.77	6.10	
	2R	5	53.1	40.7		14.54	13.49		7.73	5.46	
	3R	1	55.3	23.9		14.99	13.46		8.29	3.22	
	Total	20	57.1	44.9	78.6	14.50	13.26	91.4	8.33	5.97	71.7
Co. 301	P	1	60.3	44.5		12.81	13.08		7.67	5.82	
	1R	1	35.6	17.0		13.54	12.84		4.83	2.19	
	2R	1	25.1	17.3		13.06	12.78		3.29	2.22	
	3R	-	-	-		-	-		-	-	
	Total	3	40.3	26.3	65.3	13.14	12.90	98.2	52.6	3.41	64.8
N50/211	P	41	52.8	51.7		13.86	13.36		7.31	6.90	
	1R	18	50.2	48.3		13.42	13.32		6.77	6.47	
	2R	5	42.8	40.5		13.85	13.89		5.91	5.63	
	3R	-	-	-		-	-		-	-	
	Total	64	50.8	49.9	98.2	13.74	13.39	97.5	7.05	6.68	94.8
N51/168	P	16	47.0	41.3		13.97	14.33		6.59	5.97	
	1R	9	56.8	42.9		13.43	12.34		7.71	5.41	
	2R	2	54.0	41.6		14.14	12.97		7.56	5.43	
	3R	-	-	-		-	-		-	-	
	Total	27	50.8	41.9	82.5	13.80	13.57	98.3	7.04	5.74	81.5
N51/539	P	16	47.0	41.9		13.97	14.41		6.59	6.04	
	1R	9	56.8	41.8		13.43	12.49		7.71	5.38	
	2R	2	54.0	46.3		14.14	13.85		7.56	6.43	
	3R	-	-	-		-	-		-	-	
	Total	27	50.8	42.2	83.1	13.80	13.73	99.5	7.04	5.85	83.1

September, 1965.

SUMMARY OF RELEASED VARIETY COMPARISONS

Test Variety	No. of Crops	Test variety % N:Co.376		
		T.C.A.	Suc. %	T.S.A.
N:Co.292	19	68.4	98.2	68.2
N:Co.293	52	95.4	99.4	95.2
N:Co.310	39	77.9	107.7	83.7
N:Co.334	29	86.2	101.1	86.6
N:Co.339	27	84.7	100.9	85.9
N:Co.382	57	93.5	99.1	92.8
Co.331	20	78.6	91.4	71.7
Co.301	3	65.3	98.2	64.8
N50/211	64	98.2	97.5	94.8
N51/168	27	82.5	98.3	81.5
N51/539	27	83.1	99.5	83.1

n53/216 ?

COMPARISONS OF VARIETIES - SUCROSE % CANE

No. of Crops	Variety	Suc. % Cane	Mean diff. from N:Co.376	S.E. of mean diff.	"t" value
52	N:Co.376	14.49			
	N:Co.293	14.40	0.09	± 0.102	N.S.
39	N:Co.376	14.50			
	N:Co.310	15.60	-1.10	± 0.115	9.53**
57	N:Co.376	14.06			
	N:Co.382	13.92	0.14	± 0.101	1.36N.S.
20	N:Co.376	14.50			
	Co.331	13.26	1.24	± 0.177	6.98**
66	N:Co.376	13.74			
	N50/211	13.45	0.29	± 0.111	2.59**

September, 1965.

S.A. SUGAR INDUSTRY AGRONOMISTS' ASSOCIATION

COMPARISON OF VARIETIES

HARVESTED CROP CHARACTERISTICS

Planted: 12/9/63

Harvested: 12/11/64

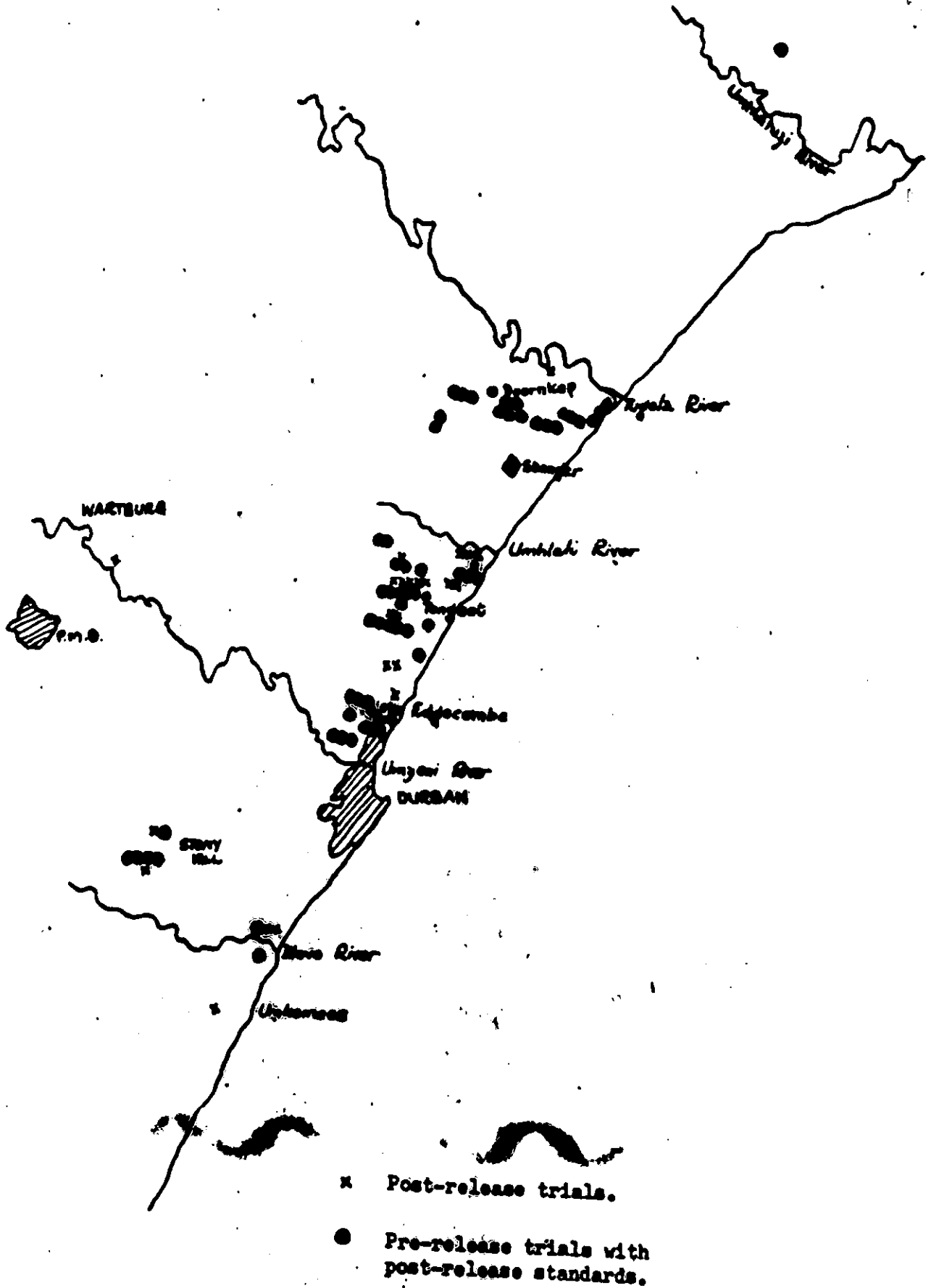
Mean of 4 reps.

4'6" rows.

	N:Co.376	N:Co.382	N.50/211	N.51/168	N.51/539
Tons Cane / Acre	44.0	43.3	45.2	41.7	40.1
No. of stalks / acre x 10 ⁻³	68.5	60.4	50.3	42.2	44.2
Weight per stalk lb.	1.32	1.45	1.81	1.99	1.64
Sucrose % Cane	14.84	13.81	14.38	14.91	15.08
Tons sucrose / acre	6.53	5.98	6.53	6.21	6.05
Length of harvested stalk cm.	135.9	161.5	185.3	170.1	159.7
Mean stalk diam. mm.	24.0	22.4	24.4	25.7	21.9
Mean stalk diam. bottom mm.	25.3	23.4	26.8	27.8	23.0
" " " centre "	23.7	22.1	23.6	24.9	21.2
" " " top "	23.1	21.7	23.8	24.5	21.5
Stalks/acre at peak population x 10 ⁻³	117.0	97.1	85.4	82.0	90.8

September, 1965.

GEOGRAPHIC
DISTRIBUTION OF VARIETY TRIALS.



RESULTS TO DATE WITH C.B.36/14, C.B.38/22 AND N.55/805

EXPERIMENT STATION RESULTS

(NOTE: Column 1 is sucrose per cent cane, column 2 is tons cane per acre, and column 3 is yield in tons sucrose per acre as a percentage of that of N:Co.376)

revised 20.2.65

Site	Crop	C.B.36/14			C.B.38/22			N:Co.376			N.55/805			
		1	2	3	1	2	3	1	2	3	1	2	3	
Mtunzini - Trial A	P	15.8	70.4	83.4	16.6	66.3	82.7	16.4	81.3	100.0				
	1R	14.47	62.6	95.7	16.91	72.6	123.6	14.32	69.3	100.0				
	Trial B	P	12.4	48.0	71.0				15.4	54.3	100.0			
	Trial C	P							14.58	56.07	100.0	15.32	54.75	101.1
		1R							16.43	54.25	100.0	17.58	45.76	89.0
		2R							15.26	57.12	100.0	16.93	45.59	88.6
U.V.S., Alluvium - Trial A	P	10.08	85.03	87.4	9.73	66.59	66.1	10.22	95.90	100.0	10.75	79.85	87.6	
	1R	12.26	48.33	82.7	12.43	43.33	75.0	12.16	58.88	100.0	12.43	52.98	92.0	
	Trial B	P	12.98	57.61	100.8	12.92	47.90	83.4	11.69	63.45	100.0			
Chaka's Kraal - Trial A	P	15.37	70.77	112.2	15.19	68.31	107.5	14.79	62.25	100.0*				
	1R	16.22	62.04	102.6	15.48	66.80	105.5	16.30	60.19	100.0				
	Trial B	P	14.30	67.30	95.2				14.24	70.85	100.0			
		1R	14.37	72.23	131.8				11.91	66.18	100.0			
	Trial C	P							13.00	60.19	100.0	15.17	55.78	110.6
Tongaas, Coastal Sands	P	16.34	73.29	104.7	17.52	60.80	93.0	15.98	71.55	100.0	18.86	80.02	132.0	
	1R	15.65	44.30	73.0	16.59	41.30	72.9	15.90	59.06	100.0	16.99	71.63	129.6	
Illovo, South Coast Granites	P	15.9	57.9	77.3	16.8	57.5	81.2	15.7	75.9	100.0	15.9	71.2	95.0	
	1R	14.86	81.43	96.6	15.81	62.83	79.2	14.72	85.13	100.0	15.97	76.06	97.0	
Powerscourt, Mistbelt	P	17.10	73.4	82.6	17.59	33.5	38.8	16.51	92.1	100.0	18.10	80.3	95.6	
	1R	15.41	88.41	83.9	16.28	57.88	58.0	16.13	100.61	100.0	16.23	89.45	92.2	

* In this trial the standard variety was N:Co.310 instead of N:Co.376.

RESULTS TO DATE WITH C.B.36/14, C.B.38/22 AND N.55/805

EXPERIMENT STATION RESULTS

(NOTE: Column 1 is sucrose per cent cane, column 2 is tons cane per acre, and column 3 is yield in tons sucrose per acre as a percentage of that of N:Co.376)

planted 30-2-65

Site	Crop	<u>C.B.36/14</u>			<u>C.B.38/22</u>			<u>N:Co.376</u>			<u>N.55/805</u>		
		1	2	3	1	2	3	1	2	3	1	2	3
Mtunzini - Trial A	P	15.8	70.4	83.4	16.6	66.3	82.7	16.4	81.3	100.0			
	1R	14.47	62.6	95.7	16.91	72.6	123.6	14.32	69.3	100.0			
Trial B	P	12.4	48.0	71.0				15.4	54.3	100.0			
Trial C	P							14.58	56.07	100.0	15.32	54.75	101.1
	1R							16.43	54.25	100.0	17.58	45.76	89.0
	2R							15.26	57.12	100.0	16.93	45.59	88.6
U.V.S., Alluvium - Trial A	P	10.08	85.03	87.4	9.73	66.59	66.1	10.22	95.90	100.0	10.75	79.85	87.6
	1R	12.26	48.33	82.7	12.43	43.33	75.0	12.16	58.88	100.0	12.43	52.98	92.0
	Trial B	P	12.98	57.61	100.8	12.92	47.90	83.4	11.69	63.45	100.0		

Chaka's Kraal - Trial A	P	15.37	70.77	112.2	15.19	68.31	107.5	14.79	62.25	100.0*			
	1R	16.22	62.04	102.6	15.48	66.80	105.5	16.30	60.19	100.0			
Trial B	P	14.30	67.30	95.2				14.24	70.85	100.0			
	1R	14.37	72.23	131.8				11.91	66.18	100.0			
Trial C	P							13.00	60.19	100.0	15.17	55.78	110.6
Tongaat, Coastal Sands	P	16.34	73.29	104.7	17.52	60.80	93.0	15.98	71.55	100.0	18.86	80.02	132.0
	1R	15.65	44.30	73.0	16.59	41.30	72.9	15.90	59.06	100.0	16.99	71.63	129.6
Illovo, South Coast Granites	P	15.9	57.9	77.3	16.8	57.6	81.2	15.7	75.9	100.0	15.9	71.2	95.0
	1R	14.86	81.43	96.6	15.81	62.83	79.2	14.72	85.13	100.0	15.97	76.06	97.0
Powerscourt, Mistbelt	P	17.10	73.4	82.6	17.59	33.5	38.8	16.51	92.1	100.0	18.10	80.3	95.6
	1R	15.41	88.41	83.9	16.28	57.88	58.0	16.13	100.61	100.0	16.23	89.45	92.2

* In this trial the standard variety was N:Co.310 instead of N:Co.376.

RESULTS OF COMPANY TRIALS

Site		<u>C.B.36/14</u>			<u>C.P.38/22</u>			<u>N:Co.376</u>		
		1	2	3	1	2	3	1	2	3
<u>Tonga Sugar Company</u>										
Muckleneuk	P	13.20	58.0	97.6	13.72	47.2	82.5	13.63	57.6	100.0
	LR	11.34	71.9	98.4	11.37	44.8	61.5	11.55	71.7	100.0
Tonga	P	12.74	47.3	121.3	12.33	39.5	98.0	13.05	38.1	100.0
Mwawine	P	12.66	37.0	73.5	14.17	35.3	78.5	13.49	47.2	100.0
Inyaninga	P	13.41	41.6	83.2	13.50	33.7	67.8	14.31	46.9	100.0
Sinembe	P	13.53	55.9	92.1	14.13	45.1	77.6	14.03	58.5	100.0
Sputu	P	13.84	39.0	84.4	14.41	29.8	67.0	14.51	44.1	100.0
<u>Hulett's Sugar Mills, Mt. Edgecombe</u>										
Cornubia	P	12.34	47.48	72.6	14.60	37.87	68.5	14.38	56.11	100.0
Westbrook	P	13.15	55.21	83.2	14.35	45.30	74.5	13.90	62.78	100.0
Mount Edgecombe	P	13.13	47.13	95.4	15.19	42.75	100.1	13.50	48.04	100.0
Phoenix	P	14.2	49	99.9	14.8	51.23	82.7	14.5	63.27	100.0
<u>Illovo Sugar Estates</u>										
Alluvium, Irrigated		13.62	23.02	59.3	15.69	25.66	75.9	14.01	37.49	100.0
Recent Sand (Red)		16.30	49.50	118.3	14.94	35.81	78.2	15.64	43.56	100.0
Mist Belt		14.30	63.53	72.7	14.57	49.03	57.8	14.79	83.95	100.0
T.M.S. (Ord.)		15.01	34.92	76.2	15.86	30.38	78.4	15.50	48.89	100.0
<u>Sir J.L. Hulett & Sons</u>										
Prospect Estate - Dwyka		13.83	50.90	108.8	15.99	38.26	94.6	13.53	47.80	100.0
Holwood Estate - T.M.S.		16.29	59.64	99.0	17.34	49.38	87.3	15.96	61.45	100.0
Tugela Estate - Recent Red Sand		15.59	52.49	90.1	16.51	41.35	75.2	15.74	57.71	100.0
Sprowston Estate - Red Dolerite		17.24	68.7	91.4	17.48	57.6	77.7	17.47	74.2	100.0
<u>Doornkop Sugar Company (Pty). Ltd.</u>										
Trial 1		15.21	60.84	100.4	15.91	16.99	29.5	15.12	60.96	100.0
Trial 2		15.68	74.59	95.2	17.18	34.69	48.2	15.52	79.59	100.0
Trial 3		16.40	48.82	106.6	18.62	30.36	75.3	16.52	45.47	100.0
Trial 4		14.46	71.61	110.0	15.61	55.61	91.9	14.18	66.89	100.0

RESULTS OF COMPANY TRIALS

Site	<u>C.B.36/14</u>			<u>C.B.38/22</u>			<u>N:Co.376</u>			
	1	2	3	1	2	3	1	2	3	
<u>Tonga Sugar Company</u>										
Muckleneuk	P	13.20	58.0	97.6	13.72	47.2	82.5	13.63	57.6	100.0
	1R	11.34	71.9	98.4	11.37	44.8	61.5	11.55	71.7	100.0
Tonga	P	12.74	47.3	121.3	12.33	39.5	98.0	13.05	38.1	100.0
Mwawine	P	12.66	37.0	73.5	14.17	35.3	78.5	13.49	47.2	100.0
Inyaninga	P	13.41	41.6	83.2	13.50	33.7	67.8	14.31	46.9	100.0
Sinembe	P	13.53	55.9	92.1	14.13	45.1	77.6	14.03	58.5	100.0
Sputu	P	13.84	39.0	84.4	14.41	29.8	67.0	14.51	44.1	100.0
<u>Hulett's Sugar Mills, Mt. Edgecombe</u>										
Cornubia	P	12.34	47.48	72.6	14.60	37.87	68.5	14.38	56.11	100.0
Westbrook	P	13.15	55.21	83.2	14.35	45.30	74.5	13.90	62.78	100.0
Mount Edgecombe	P	13.13	47.13	95.4	15.19	42.75	100.1	13.50	48.04	100.0
Phoenix	P	14.2	49	99.9	14.8	51.23	82.7	14.5	63.27	100.0

Alluvium, Irrigated	13.62	23.02	59.3	15.69	25.66	75.9	14.01	37.49	100.0
Recent Sand (Red)	16.30	49.50	118.3	14.94	35.81	78.2	15.64	43.56	100.0
Mist Belt	14.30	63.53	72.7	14.57	49.03	57.8	14.79	83.95	100.0
T.M.S. (Ord.)	15.01	34.92	76.2	15.86	30.38	78.4	15.50	48.89	100.0
<u>Sir J.L. Hulett & Sons</u>									
Prospect Estate - Dwyka	13.83	50.90	108.8	15.99	38.26	94.6	13.53	47.80	100.0
Holwood Estate - T.M.S.	16.29	59.64	99.0	17.34	49.38	87.3	15.96	61.45	100.0
Tugela Estate - Recent Red Sand	15.59	52.49	90.1	16.51	41.35	75.2	15.74	57.71	100.0
Sprowston Estate - Red Dolerite	17.24	68.7	91.4	17.48	57.6	77.7	17.47	74.2	100.0
<u>Doornkop Sugar Company (Pty). Ltd.</u>									
Trial 1	15.21	60.84	100.4	15.91	16.99	29.5	15.12	60.96	100.0
Trial 2	15.68	74.59	95.2	17.18	34.69	48.2	15.52	79.59	100.0
Trial 3	16.40	48.82	106.6	18.62	30.36	75.3	16.52	45.47	100.0
Trial 4	14.46	71.61	110.0	15.61	55.61	91.9	14.18	66.89	100.0

August 1965.

PLANT BREEDING & PATHOLOGY SECTION

SOME DISTINGUISHING CHARACTERISTICS OF THE RELEASED "N" VARIETIES

Variety	N.50/211 (Salvo)	N.51/168 (Saraband)	N.51/539 (Sabre)	N.53/216 (Samson)
Chlorotic blotches on leaves	Absent	Usually absent	Often well-marked	Absent
Auricle	Usually a small auricle on one side, indicated on the other.	Distinct on one side, small or indicated on the other.	Small, on one side only.	Distinct on one side, small or indicated on the other.
Leaf sheath				
Colour	Green	With a distinct purplish tinge.	Green, or with a slight purplish tinge.	Green, or with a slight purplish tinge
Hairs	Present	Absent or scanty	Absent or scanty	Profuse
Internode. (All light yellow in colour, but developing flushes as shown when trash falls away).	Green	Pinkish	Green or pinkish	Green
Shape	More or less cylindrical	Widest below centre	More or less cylindrical	Tending towards being barrel-shaped.
Cross-section	Elliptic	Elliptic, usually distinctly so.	Circular	Elliptic.
Bud furrow	Very clearly defined	Sometimes present	Sometimes present	Almost invariably present, usually very distinct.
Root band	Bulging below growth ring, then tapering downwards	Usually widening downwards till just above leaf scar	Tapering downwards	Tapering downwards
Bud	Medium to large Distinctly longer than broad. Set close to leaf scar and reaching distinctly beyond growth ring.	Small Almost as broad as long. Set close to leaf scar and reaching to or just below growth ring.	Small About as broad as long. Set above leaf scar, and reaching above base of growth ring.	Medium to large Longer than broad. Set close to or slightly above leaf scar and reaching to growth ring or beyond.

PLANT BREEDING & PATHOLOGY SECTION.

13th August, 1965.

EXPERIMENT STATION RESULTS

(NOTE: Column 1 is sucrose per cent cane, column 2 is tons cane per acre, and column 3 is yield in tons sucrose per acre as a percentage of that of N:Co.376)

revised 20.4.65

Site	Crop	C.B.36/14			C.B.38/22			N:Co.376			N.55/805			
		1	2	3	1	2	3	1	2	3	1	2	3	
Mtunzini - Trial A	P	15.8	70.4	83.4	16.6	66.3	82.7	16.4	81.3	100.0				
	1R	14.47	62.6	95.7	16.91	72.6	123.6	14.32	69.3	100.0				
	Trial B	P	12.4	48.0	71.0				15.4	54.3	100.0			
	Trial C	P							14.58	56.07	100.0	15.32	54.75	101.1
		1R							16.43	54.25	100.0	17.58	45.76	89.0
		2R							15.26	57.12	100.0	16.93	45.59	88.6
U.V.S., Alluvium - Trial A	P	10.08	85.03	87.4	9.73	66.59	66.1	10.22	95.90	100.0	10.75	79.85	87.6	
	1R	12.26	48.33	82.7	12.43	43.33	75.0	12.16	58.88	100.0	12.43	52.98	92.0	
	Trial B	P	12.98	57.61	100.8	12.92	47.90	83.4	11.69	63.45	100.0			
Chaka's Kraal - Trial A	P	15.37	70.77	112.2	15.19	68.31	107.5	14.79	62.25	100.0*				
	1R	16.22	62.04	102.6	15.48	66.80	105.5	16.30	60.19	100.0				
	Trial B	P	14.30	67.30	95.2				14.24	70.85	100.0			
		1R	14.37	72.23	131.8				11.91	66.18	100.0			
	Trial C	P							13.00	60.19	100.0	15.17	55.78	110.6
Tongaat, Coastal Sands	P	16.34	73.29	104.7	17.52	60.80	93.0	15.98	71.55	100.0	18.86	80.02	132.0	
	1R	15.65	44.30	73.0	16.59	41.30	72.9	15.90	59.06	100.0	16.99	71.63	129.6	
Illovo, South Coast Granites	P	15.9	57.9	77.3	16.8	57.5	81.2	15.7	75.9	100.0	15.9	71.2	95.0	
	1R	14.86	81.43	96.6	15.81	62.83	79.2	14.72	85.13	100.0	15.97	76.06	97.0	
Powerscourt, Mistbelt	P	17.10	73.4	82.6	17.59	33.5	38.8	16.51	92.1	100.0	18.10	80.3	95.6	
	1R	15.41	88.41	83.9	16.28	57.88	58.0	16.13	100.61	100.0	16.23	89.45	92.2	

* In this trial the standard variety was N:Co.310 instead of N:Co.376.

S.A. SUGAR INDUSTRY AGRONOMISTS' ASSOCIATION

334 high yield very high

A COMPARISON BETWEEN THE EFFECTS OF UREA AND AMMONIUM SULPHATE APPLIED TO SUGARCANE

During the last five years, 1960-1965, a considerable number of experiments to compare the efficacy of different N carriers, in particular Urea and Ammonium Sulphate (A/S), have been conducted by the S.A.S.A. Experiment Station, Tongaat, Illovo and Doornkop Sugar Companies. The results presented here are those obtained from fifteen different experiments from which twenty-four crops were harvested and analysed. The distribution of the experiment sites within the cane-belt is illustrated on the attached sketch map. Soil groups covered by the experiments are:- Recent Sands, Dolerite, Middle Ecca Shales, T.M.S.³ (Mist) and T.M.S. (Ordinary).

also after uplands?

Of the total twenty-four crops harvested seven were plant and seventeen ratoon crops. The age at harvest averaged nineteen months and ranged from sixteen to twenty-four months.

Response to N in a 1st or 2nd crop on plant or ratoon. Levelled together

In all but two of the twenty-four crops harvested the applied levels of N were:- Nil, 100 and 200 lb. per acre. In one case the levels used were Nil and 100 lb./acre only; and in the other case the levels of N were Nil and 120 lb./acre. In the latter case 20 lb. N/acre were applied in the furrow and the balance was top-dressed. In order to average the results of all experiments the 120 lb. level was considered as 100 lb. N per acre.

Yields obtained with Urea and A/S where the levels of 100 and 200 lb. N per acre are meant, are presented in Table 1.

Table 1: Mean yields of 24 crops.

	T.C.A.	% Sucrose	T.S.A.
20% Nil	43.2	15.5	6.8
25% A/S	54.2	15.4	8.3
24% Urea	53.6	15.6	8.4

only 2 crops where sig. diff. between Urea & A/S.
addn. 1. Dolerite area best
Illavo 2. T.M.S. (M) S/A better
22% increase
24% increase

It is seen that both N carriers are equally effective in increasing the yield over control. There is a trend, albeit very slight, for A/S to be superior to Urea with regard to T.C.A., but A/S tends to lower the % sucrose more than does Urea, resulting in a T.S.A. figure virtually the same for both Urea and A/S.

The mean yields of the crops at the two N levels are shown in Table II.

Although the high level of nitrogen increased the T.C.A. slightly, it also slightly reduced the % sucrose and thus yielded the same T.S.A. as did the low level of nitrogen. Both N carriers had very much the same effect on yields at both the high and low N levels.

Table II: Mean yields of 24 crops.

	T.C.A.	% Sucrose	T.S.A.
Control	43.2	15.5	6.8
A/S 100 N	52.7	15.4	8.1
A/S 200 N	54.4	14.9	8.1
Urea 100 N	51.8	15.5	8.1
Urea 200 N	53.8	15.2	8.2

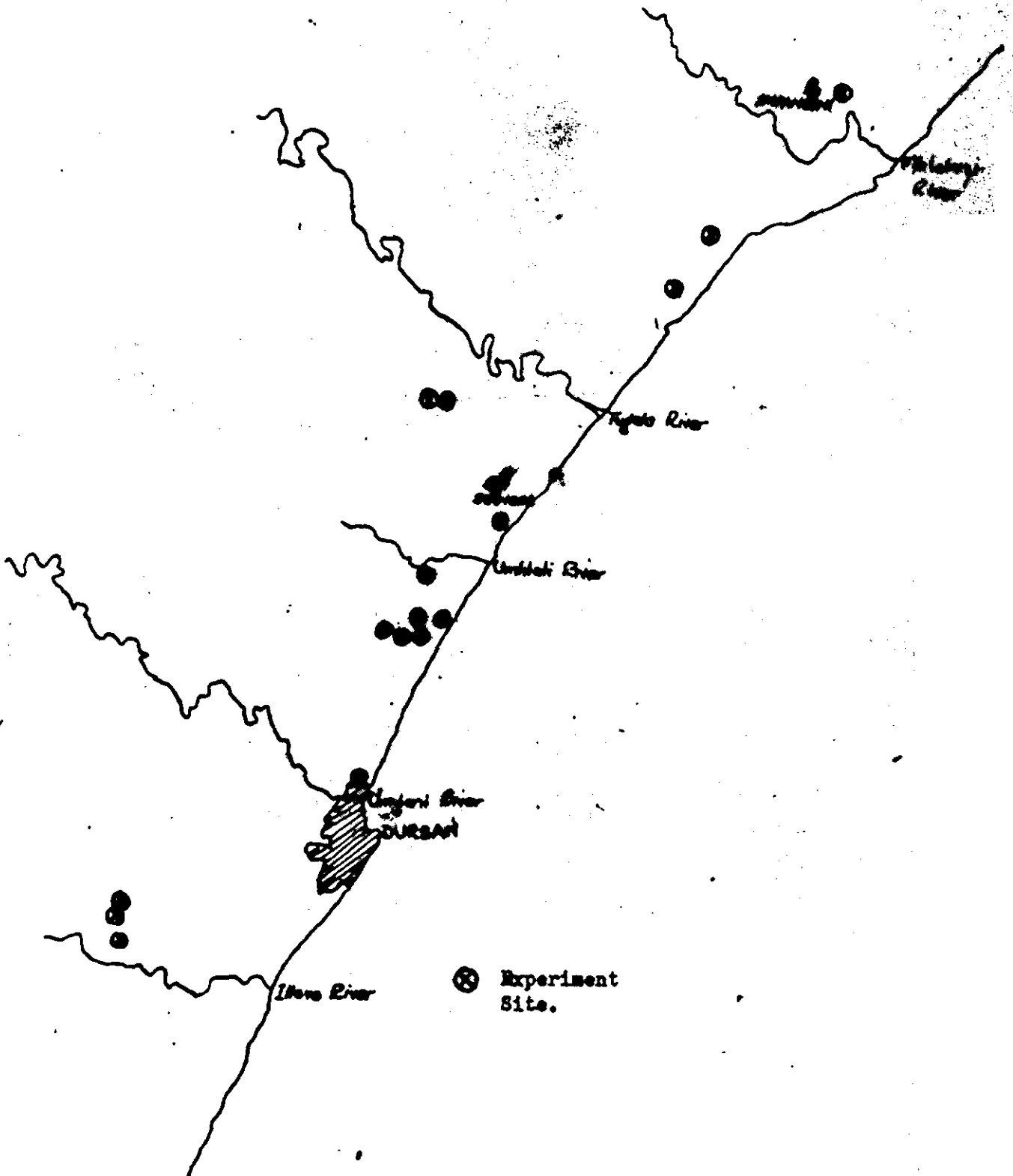
little reduction
in sucrose % as
a result of N at
100, in fact
urea (100 N) has
increased sucrose
and control.

These results are obtained over a period with widely differing climatic conditions and from a reasonable range of soil groups. There is good reason, therefore, under the current fertilizer price structure to favour Urea rather than A/S or any other N carrier in most circumstances. For 100 lb. N an initial saving of R1-40 is made per acre by using Urea compared with A/S. In addition there is considerable saving on freight and handling costs by using Urea, the most concentrated N carrier in commercial use. On alkaline, sandy soils, however, there may still be a place for A/S and this possibly warrants further investigation.

great volatilization of NH_3 on sands.
hydrolysis occurs quickly.
high conc. of urea suggests in sands.

27th September, 1965.

GEOGRAPHIC
DISTRIBUTION OF UREA VS.
AMMONIUM SULPHATE EXPERIMENTS.



CORNUBIA IRRIGATION EXPERIMENT1. Treatments and Layout

The experiment was planted on 28/2/64 on a Clansthal sand. Five treatments were applied as follows (soil moisture determined by means of neutron probe) :-

Period up to 1/3/65 (Field Capacity 3.8" in 2 ft.)

A.	Irrigate at 1.8" deficit in 2 ft. i.e. at Total Moisture of 2.0"
B.	" " 2.3" " " " " " " " 1.5"
C.	" " 2.8" " " " " " " " 1.0"
D.	" " 3.3" " " " " " " " 0.5"
E.	No irrigation

By this date, the following amounts of water had been applied: A 11", B 7", C 2", D 0", and it was apparent that treatment D was unlikely ever to be irrigated and treatment C only rarely, due to moisture extraction from depths greater than 2 ft. The treatments were then changed as follows :

From 1/3/65 to 31/8/65 (Field Capacity 11.5" in 7 ft.)

A.	Irrigate at 2" deficit in 7 ft. i.e. at Total Moisture of 9.5"
B.	" " 3" " " " " " " " 8.5"
C.	" " 4" " " " " " " " 7.5"
D.	" " 5" " " " " " " " 6.5"
E.	No irrigation.

Over this period the following amounts of water were applied: A 14", B 12", C 11", D 8", to give the total amount for the 18 month crop: A 25", B 19", C 13" and D 8".

Plot size is 9 rows of 4'6" x 40'. Variety is N:Co.376.

Growth of the crop was affected by infestations of eelworm and Eriophyid mite which were severe in patches. In addition, there was visible damage caused to the cane by operators carrying out various measurements in the plots.

2. Methods and Measurements

Soil moisture was measured at weekly intervals using the neutron probe. Access tubes 6'4" or 10' long were emplaced in each plot, and measurements taken to 7 ft. at 6" intervals. Surface soil moisture (0 - 6") was determined gravimetrically.

Height measurements were carried out at weekly intervals on ten stalks in each plot, measuring from a peg to the uppermost visible collar.

Ground cover measurements were carried out using a ground cover quadrat until the ground cover averaged 85%, which represents effectively full canopy.

Irrigation was applied by means of perforated pipes between the cane rows. These were adjusted individually by means of diaphragm valves. The quantity of water applied was measured with a flow meter.

A net plot of 5 rows x 30' was harvested, and all stalks were cut at the base of the 6th sheath to provide standard stalk lengths for all treatments. In addition to the usual weight and sucrose content determinations the following crop characteristics were measured in a 10% sample: stalk length, stalk number, stalk diameter at three points and the length of the 6th sheath.

3. Harvest Results.

The harvest data, together with quantities of irrigation applied, are given below.

Treatment	Irrigation applied (in.)	Yield tons cane/acre	Sucrose % cane	Yield tons sucrose/acre	Harvested stalks /acre x 10 ⁻³	Mean stalk length (in.)	Mean stalk weight (Lb.)	Mean stalk diameter (mm.)	Mean centre stalk diameter (mm.)	Tons cane/ inch water applied	Tons sucrose / inch water applied	Tons cane/ inch total water	Tons Sucrose/ inch total water	Tons cane/ foot stalk	Tons cane/ acre/ month
A	25	59.7	14.9	8.86	53.4	64.3	2.22	26.8	26.1	1.10	0.169	0.90	0.133	11.1	3.32
B	19	49.4	15.2	7.48	52.5	56.2	1.88	26.8	26.0	0.91	0.150	0.82	0.124	10.6	2.74
C	13	45.1	15.1	6.79	51.6	50.4	1.74	27.4	26.6	0.99	0.166	0.83	0.125	10.7	2.51
D	8	42.4	15.0	6.37	53.4	47.3	1.58	26.7	26.0	1.27	0.217	0.86	0.129	10.8	2.36
E	0	32.2	14.4	4.63	48.7	37.2	1.32	27.2	27.3	-	-	0.78	0.112	10.4	1.79
C.V. %	-	11.4	2.7	9.7	4.1	8.5	7.3	1.9	1.9	-	-	-	-	-	-
L.s.d. 5%	-	8.1	0.6	1.02	3.3	6.7	0.20	0.8	0.8	-	-	-	-	-	-
1%	-	11.3	0.9	1.43	4.6	9.4	0.28	1.1	1.1	-	-	-	-	-	-

~~Sum of 1.02~~

There was a linear increase in yield with quantity of water applied, each inch of water producing an average 1.02 ± 0.13 tons cane and 0.158 ± 0.017 tons sucrose per acre. Similarly, linear increases in both stalk length and stalk weight were obtained with increasing amounts of irrigation. No significant differences amongst irrigation treatments were found in sucrose % cane or in stalk counts, but in both cases the controls were significantly lower than the irrigated treatments.

Stalk diameters, measured at three points along the length, showed no significant differences for the low and high measurements and for the means. However the control treatment had a significantly greater diameter in the centre of the stalk than did the irrigated treatments. This was probably caused by the reduced population in the controls.

In calculating the yields of cane and sucrose per inch total water (rainfall + irrigation), 3.09" rain which fell during the last four days before harvest has been omitted, giving a total of 41.41" rain on the crop.

4. Crop Measurements

It is interesting to compare the height measurements taken the day before harvest (on 10 stalks per plot) with the stalk lengths at harvest (on 80 stalks) and the length of the 6th sheath (on 20 stalks).

Treatment	Before Harvest	At Harvest		Cane height - 6th sheath length
	Cane height	Stalk length	6th Sheath length	
A	78.3	64.3	12.3	66.0
B	70.3	56.2	11.7	58.6
C	60.9	50.4	11.3	49.6
D	57.5	47.3	10.8	46.7
E	47.3	37.2	8.7	38.6

It can be seen that the variation in sheath length of nearly 4" between extreme treatments accounts for much of the variability in the comparison of cane height before harvest with stalk length at harvest.

The development of ground cover during the life of the crop is shown below.

Treatment	A	B	C	D	E
May 1965	33	30	33	31	32
June	47	40	41	39	43
July	53	46	47	45	45
August	62	58	55	55	55
September	73	66	62	60	60
October	80	73	69	66	68
November	88	81	78	77	77
December	98	95	90	90	88

85% is full canopy

Effectively full canopy was thus only reached after eight months (treatment A) to ten months (treatment E).

5. Interpretation of Results.

In order to be useful in irrigation scheme design, it is necessary to estimate the water duty appropriate to each of the treatments. There can be no absolute conversion since irrigation carried out on a fixed cycle will be carried out at varying soil moisture deficits, whereas in this trial irrigation was applied at fixed soil moisture deficits.

However the system described below probably gives the best interpretation of results: A particular deficit (say 2") may be defined as the mid point of a cycle of irrigation which will start at a deficit of 1" after a saturating rain and thus continue to a maximum deficit of 3", i.e. a range of 2" water. Assuming potential E_T of 0.25" per day for January, this represents an 8 day cycle. Working on an estimated irrigation efficiency of 75%, one cusec of water will irrigate 18 acres in one 24 hour day. Thus the water duty may be estimated as $8 \times 18 = 144$ acres. For each treatment the calculation is :

Treatment	Deficit (in.)	Range (in.)	Cycle (days)	Water duty (acres)	<i>calc'd on assumed 2" existing deficit.</i>
A	2	1 to 3 = 2	8	144	116
B	3	1 to 5 = 4	16	288	187
C	4	1 to 7 = 6	24	432	254
D	5	1 to 9 = 8	32	576	332

However, with increasing soil moisture deficit, actual E_T will fall below potential E_T (see Cowan I.R., J. App. Ecol 2, 1 : 221 1965). This reduces the range and therefore the cycle and water duty.

On the basis of the water duties calculated above, total yield from 576 acres would have been :

A: $(144 \times 59.7) + (432 \times 32.2) = 22,507$
 B: $(288 \times 49.4) + (288 \times 32.2) = 23,501$
 C: $(432 \times 45.1) + (144 \times 32.2) = 24,120$
 D: $(576 \times 42.4) = 24,422$
 E: $(576 \times 32.2) = 18,547$

and the total amount of water applied, in acre inches:

A = $144 \times 25 = 3600$
 B = $288 \times 19 = 5472$
 C = $432 \times 13 = 5616$
 D = $576 \times 8 = 4608$

On the basis of estimated, but probably more realistic, water duties the total yields from 432 acres would have been :

Treatment	Water duty (acres)	Yield (tons)	Total Water (acre in.)
A	144	17,870	3600
B	264	18,451	5016
C	360	18,554	4680
D	432	18,317	3456
E	-	13,910	-

There is little difference between treatments B, C and D in total yield, whichever water duty has been used. The total water applied is lowest with treatment D which would therefore have been the most economical.

6. Conclusions.

In the past, the reasons advanced for irrigating heavy soils in preference to sands have been the low available moisture in the effective rooting depth and/or low response to water applied. Whereas figures of 1" available water per ft. and 2 ft. rooting depth were previously supposed, giving a T.A.M. of 2", neutron probe measurements have shown significant quantities of water to be extracted down to 7 ft. The field capacity in this depth is estimated at 11.5" and the wilting point at 2" giving a T.A.M. of 9.5". However this amount of water was never used, and it must be presumed that much of it is relatively unavailable to the plant. The lowest recorded moisture in 7 ft. was 5.5" in Treatment E, and growth was still taking place at the time, so the available water must be in the region of 6".

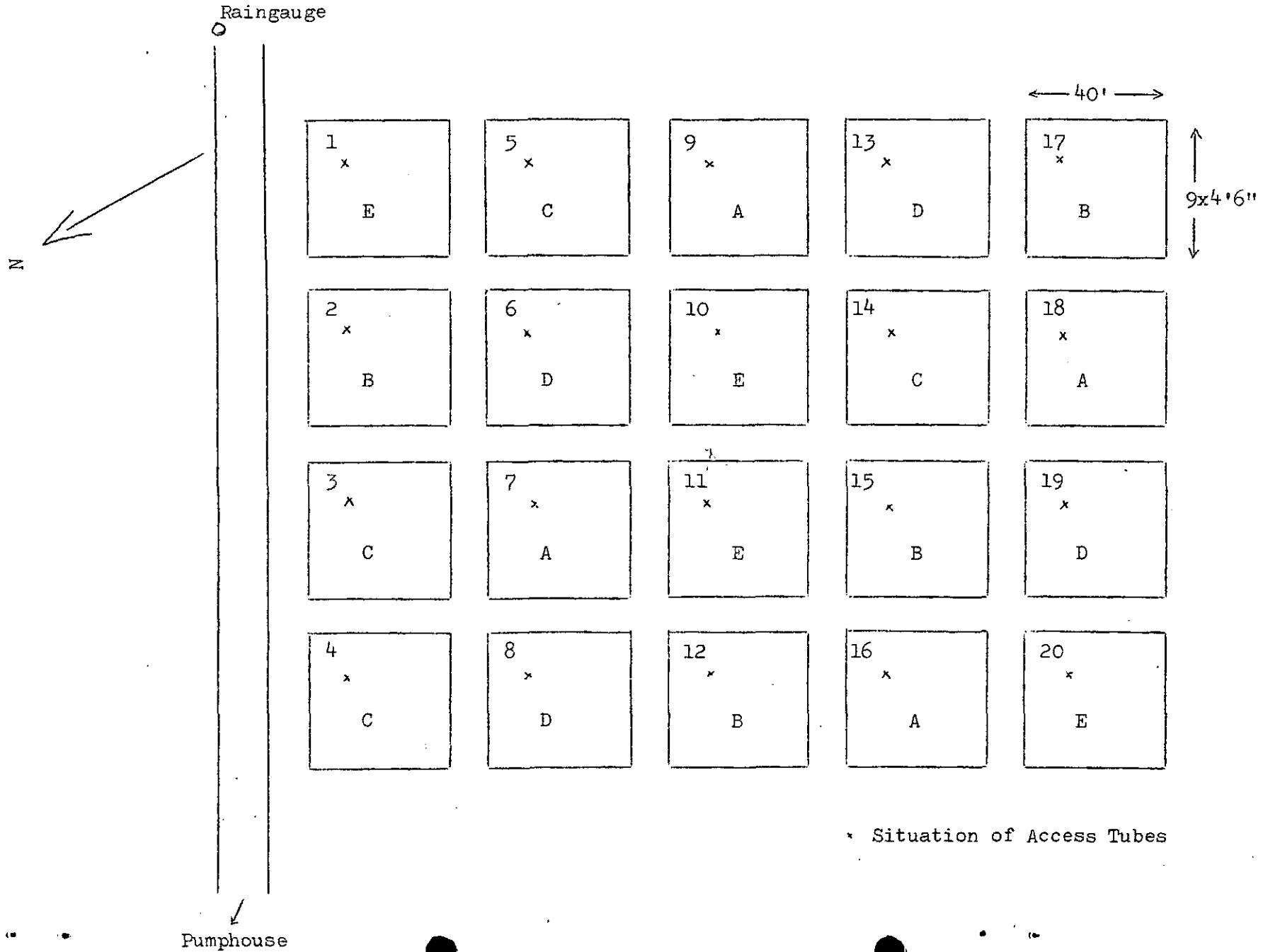
On the basis of these results, we would still recommend irrigating heavy soils in preference to sands but for different reasons, viz. because the total available moisture is so high that drought resistance is much greater on sands than on heavier soils. The mean response of 1.02 tons cane per inch of water applied compares with a mean figure of 0.86 tons/inch of water in 19 crops on heavier soils.

It would also appear that quite large water duties, possibly in the region of 400 acres per cusec would be most economical on the sands in view of their high available moisture.

29th September, 1965.

I. 5/64

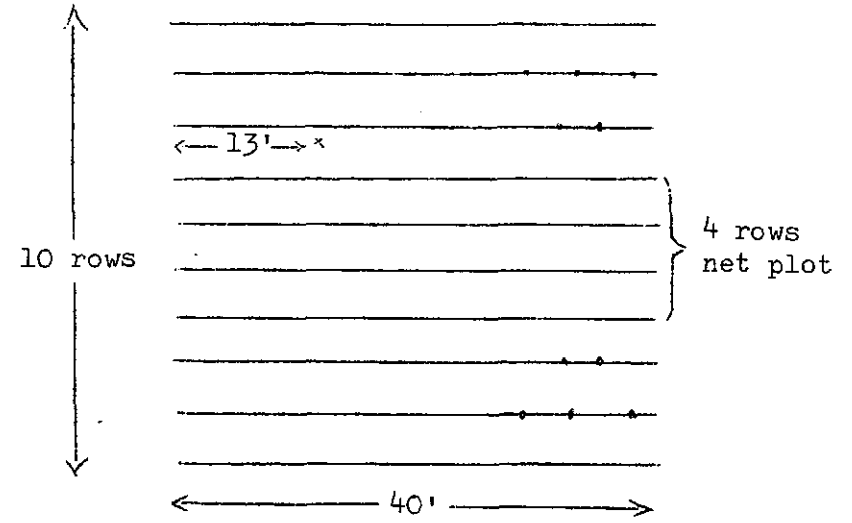
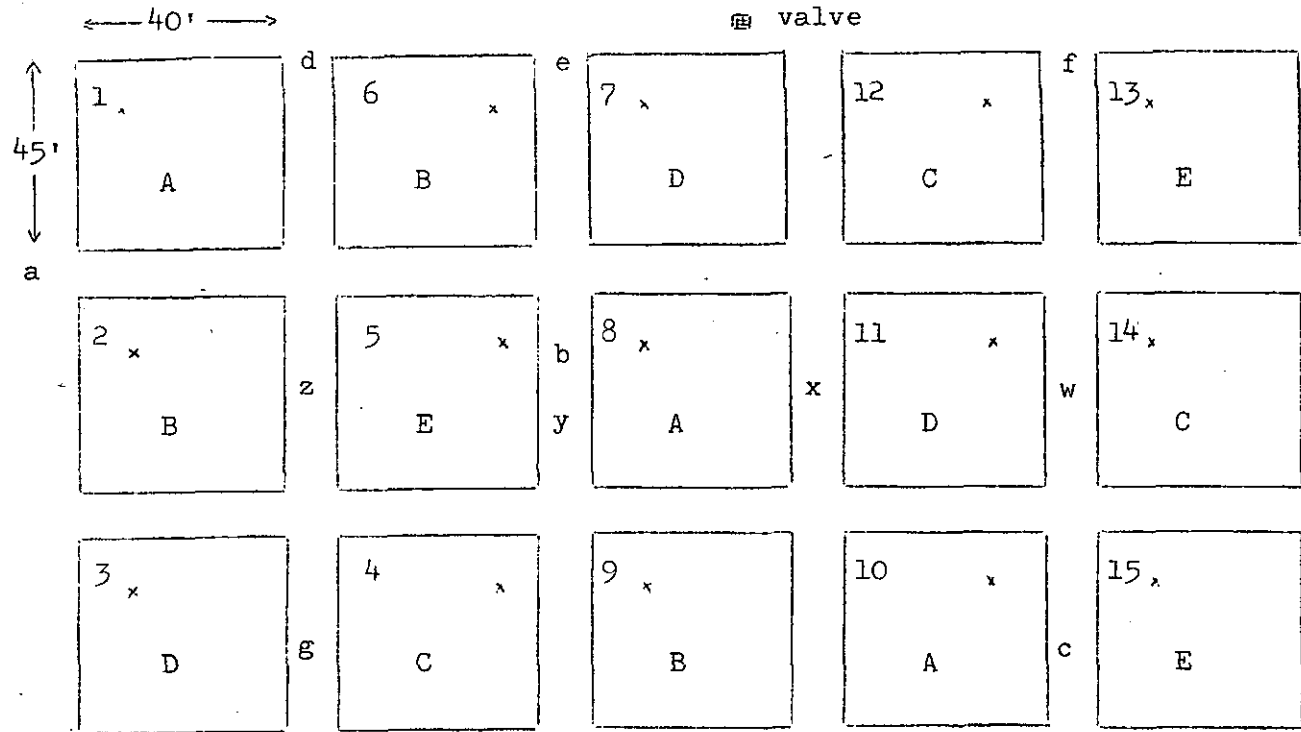
IRRIGATION EXPERIMENT - CORNUBIA



* Situation of Access Tubes

I. 8/64

IRRIGATION EXPERIMENT - OTTAWA



• Height measurement pegs

x Situation of neutron probe access tubes

a,b,c ...z Location of test pits for sampling for moisture tension determination

HULETT'S S. A. SUGAR MILLS & ESTATES

FIELD TRIAL RESULTS

1965/1966

MOUNT EDGECOMBE

DARNALL

SEPTEMBER, 1965

HULETT'S MOUNT EDGECOMBE.

FIELD TRIALS

EXPERIMENT :- SPACING AND DEPTH OF PLANTING.

OBJECTIVE :- TO EVALUATE METHODS OF ROW SPACING & DEPTH OF PLANTING.

LOCATION :- BURNSIDE - BARRACKS FIELD. MOUNT EDGECOMBE

TREATMENT DATA	FIELD DATA
<u>TREATMENTS:</u>	DESIGN: RANDOM BLOCK
1. 3' SHALLOW	NO. OF REPS: 4
2. 4'6" "	NO. OF PLOTS: 16
3. 4'6" DEEP.	PLOT AREA GROSS: 1/30
4. 6' SHALLOW AND DOUBLE ROW 18"	PLOT AREA NETT: DEP. ON NO. ROWS
	NO. OF ROWS GROSS: DEP. ON NO. ROWS
	NO. OF ROWS NETT: DEP. ON NO. ROWS
	LENGTH OF ROWS: 40'
	SPACING OF ROWS:
	WIDTH OF GUARD ROW: 5'
<u>BASIC TREATMENTS:</u>	DATE OF PLANTING: 23.3.63.
400lbs SUPER AT PLANTING.	SOIL SERIES: RED CLANSTHAL
VARIETY: N 50/211	DATE OF RIDGING: 22.3.63.
	<u>SOIL ANALYSIS</u>
	P.P.M.
	pH. O.N% P. K. CLAY%
	8.5 0.96 80 81 8.5

HARVESTED RESULTS

DATE HARVESTED: 1.6.64.

1st RATOON

AGE: 15 MONTHS

TREAT.	T.P.A.	% SUC.	T.S.A.	1 T.P.A.M.	LBS. 2 S.A.M.	RANK	
						1	2
1.	33.4	11.00	3.674	2.227	490	3	3
2.	31.9	10.69	3.410	2.127	454	4	4
3.	34.7	10.91	3.786	2.313	504	2	2
4.	35.1	10.88	3.819	2.340	510	1	1

S.E. = 3.812

C.V. = 11.278%

NOT SIGNIFICANT

ex triangle

N in Bureau

Altitude

0	46	26,000	26/1000
30	50	37,000	"
60	51.7	40,000	"

HULETT'S MOUNT EDGEcombeFIELD TRIALSEXPERIMENT :- FILTER PRESSOBJECTIVE :- TO EVALUATE RESPONSE FROM FILTER PRESS ON FERNWOOD/CLANSTHAL SANDS.LOCATION :- HILLHEAD - BEACH RIDGES. MOUNT EDGEcombe.

TREATMENT DATA	FIELD DATA
<u>TREATMENTS:</u>	DESIGN: RAND BLOCK
1. NIL + 400 LBS/A SUPER	NO. OF REPS: 4
2. 40 T.P.A. FILTER PRESS	NO. OF PLOTS: 16
3. 80 T.P.A. " "	PLOT AREA GROSS: 1/40
4. 120 T.P.A. " "	PLOT AREA NETT: 1/60
	NO. OF ROWS GROSS: 6
	NO. OF ROWS NETT: 4
<u>BASIC TREATMENTS:</u>	LENGTH OF ROWS: 40'
VARIETY 382	SPACING OF ROWS: 4'6"
	WIDTH OF GUARD ROW 5'
	DATE OF PLANTING: 2.10.63.
	SOIL SERIES: RED SANDS CLANSTHAL.
	<u>SOIL ANALYSIS</u>
	P.P.M.
	p.H O.M.% P. K. CLAY%
	8.45 0.98 102 68 6.8

HARVESTED RESULTSDATE HARVESTED:PLANT CANEAGE. 20.5 MONTHS

TREATMENTS	T.P.A.	% SUC.	T.S.A.	1 T.P.A.M.	LBS. 2 S.A.M.	RANK	
						1	2
1.	28.39	16.02	4.548	1.385	444	4	4
2.	32.37	15.44	4.998	1.579	488	3	3
3.	36.69	15.19	5.573	1.790	544	1	1
4.	35.16	14.30	5.028	1.715	490	2	2

S.E = 3.610

L.S.D. 5.76 T.P.A. @ 5%

SIGNIFICANT

C.V. = 10.88%

8.30 " @ 1%

HULETTS MOUNT EDGECOMBE

FIELD TRIALS

EXPERIMENT :- FILTER PRESS TRIAL

OBJECTIVE :- TO EVALUATE RESPONSE FROM FILTER PRESS ON CLANSTHAL SANDS.

LOCATION :- BURNSIDE - BARRACKS FIELD, MOUNT EDGECOMBE

TREATMENT DATA	FIELD DATA
<u>TREATMENTS</u>	DESIGN: RAND BLOCK
1. NIL	NO. OF REPS: 4
2. 20 TONS 1 ACRE	NO. OF PLOTS: 16
3. 40 " "	PLOT AREA GROSS: 1/40
4. 60 " "	PLOT AREA NETT: 1/60
	NO. OF ROWS GROSS: 6 (2 lines harv.)
	NO. OF ROWS NETT: 4
	LENGTH OF ROWS: 40'
	SPACING OF ROWS: 4'6"
<u>BASIC TREATMENT</u>	WIDTH OF GUARD ROW 5'
ALL PLOTS	DATE OF PLANTING: 19.3.63.
4 : 1 : 6 : 1200 LBS/A.	SOIL SERIES: RED SANDS/CLANSTHAL
VARIETY: N50/211.	<u>SOIL ANALYSIS</u>
	P.P.M.
	pH O.M.% P. K. CLAY%
	8.5 0.96 80 81 8.5

HARVESTED RESULTS

DATE HARVESTED: AUGUST 1965

1st RATOON

AGE: 15 MONTHS

TREATMENT.	T.P.A.	% SUC.	T.S.A.	1		RANK	
				T.P.A.M.	LBS. S.A.M.	1	2
1.	33.68	10.44	3.516	2.245	468	3	3
2.	32.61	10.63	3.466	2.174	462	4	4
3.	38.12	9.90	3.774	2.541	504	1	2
4.	37.41	10.23	3.827	2.494	510	2	1

S.E. = 4.333

C.V. = 12.219%

NOT SIGNIFICANT

4.

HULETT'S MOUNT EDGECOMBE

FIELD TRIALS

EXPERIMENT :- FILTER PRESS

OBJECTIVE :- EVALUATE RESPONSE FROM FILTER PRESS ON FERNWOOD/CLANSTHAL SANDS.

LOCATION :- SYKES FIELD - CORNUBIA

TREATMENT DATA	FIELD DATA															
<u>TREATMENTS:</u>	DESIGN: RANDOM BLOCK															
1. FILTER PRESS. NIL	NO. OF REPS: 4															
2. FILTER PRESS 40 T.P.A.	NO. OF PLOTS: 12															
3. FILTER PRESS 60 T.P.A.	PLOT AREA GROSS: 1/40															
FILTER PRESS BROADCAST AND DISCED IN.	PLOT AREA NETT: 1/120															
	NO. OF ROWS GROSS: 6															
	NO. OF ROWS NETT: 2															
	LENGTH OF ROWS: 40'															
	SPACING OF ROWS: 4'6"															
<u>BASIC TREATMENTS:</u>	WIDTH OF GUARD ROW: 5'															
VARIETY: N Co 382	DATE OF PLANTING: 5.4.63															
	SOIL SERIES: FERNWOOD/CLANSTHAL.															
	<u>SOIL ANALYSIS</u>															
	<table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td></td> <td colspan="2" style="text-align: center;"><u>P.P.M.</u></td> <td></td> </tr> <tr> <td style="text-align: center;"><u>pH</u></td> <td style="text-align: center;"><u>O.M.%</u></td> <td style="text-align: center;"><u>P.</u></td> <td style="text-align: center;"><u>K.</u></td> <td style="text-align: center;"><u>CLAY%</u></td> </tr> <tr> <td style="text-align: center;">8.42</td> <td style="text-align: center;">0.98</td> <td style="text-align: center;">65</td> <td style="text-align: center;">76</td> <td style="text-align: center;">7.0</td> </tr> </table>			<u>P.P.M.</u>			<u>pH</u>	<u>O.M.%</u>	<u>P.</u>	<u>K.</u>	<u>CLAY%</u>	8.42	0.98	65	76	7.0
		<u>P.P.M.</u>														
<u>pH</u>	<u>O.M.%</u>	<u>P.</u>	<u>K.</u>	<u>CLAY%</u>												
8.42	0.98	65	76	7.0												

HARVEST RESULTS.

DATE OF HARVESTING - DECEMBER 1964

PLANT CANE

AGE: 20 months

TREATMENT.	T.P.A.	% SUC.	T.S.A.	A T.P.A.M.	LBS S.A.M.	B.	
						RANK	
						A	B
1.	53.5	14.83	7.93	2.675	792	2	3
2.	56.7	14.75	8.36	2.835	836	1	1
3.	56.7	14.53	8.24	2.835	824	1	2

HULETT'S MOUNT EDGECOMBE

FIELD TRIALS

EXPERIMENT :- FILTER PRESS

OBJECTIVE :- TO COMPARE THE RESPONSE TO APPROXIMATELY EQUAL QUANTITIES OF PHOSPHATES IN FILTER PRESS AND SUPERS.

LOCATION :- HILLHEAD - BEACH RIDGES. MOUNT EDGECOMBE

TREATMENT DATA	FIELD DATA
<u>TREATMENTS:</u>	DESIGN: RAND BLOCK
1. NIL	NO. OF REPS: 3
2. SUPER 400 LBS	NO. OF PLOTS: 5
3. SUPER 800 LBS	PLOT AREA GROSS: 1/40
4. F.PRESS 4000 LBS	PLOT AREA NETT: 1/60
5. F.PRESS 8000 LBS	NO. OF ROWS GROSS: 6
	NO. OF ROWS NETT: 4
	LENGTH OF ROWS: 40'
<u>BASIC TREATMENT:</u>	SPACING OF ROWS: 4'6"
VARIETY : 382	WIDTH OF GUARD ROW 5'
	DATE OF PLANTING: 30.9.63
	SOIL SERIES: RED SANDS/CLANSTHAL
	<u>SOIL ANALYSIS:</u>
	P. P. M.
	P. K. CLAY%
	pH. O.M.% P. K. CLAY%
	8.45 0.98 102 68 6.8

HARVESTED RESULTS

DATE HARVESTED: 16.6.65

PLANT CANE

AGE: 20 MONTHS

TREATMENT.	T. P. A.	% SUC.	T. S. A.	1 T. P. A. M.	LBS. 2 S. A. M.	RANK	
						1	2
1.	31.86	14.65	4.667	1.593	466	4	4
2.	33.32	15.35	5.115	1.667	512	1	1
3.	30.48	14.90	4.542	1.524	454	5	5
4.	33.28	15.16	5.045	1.664	504	2	2
5.	32.14	15.38	4.943	1.607	494	3	3

S.E. = 4.782

NOT SIGNIFICANT

C.V. = 14.841%

HULETT'S MOUNT EDGECOMBE

FIELD TRIALS

EXPERIMENT :- NITROGEN

OBJECTIVE :- TO TEST RESPONSE FROM NITROGEN IN PLANT CANE.

LOCATION :- TORVALE - RYDALVALE FIELD. MOUNT EDGECOMBE

TREATMENT DATA		FIELD DATA	
<u>TREATMENTS:</u>		DESIGN: RANDOM BLOCK	
1. AMM. NITRATE ^{31.5} 33 NIL LBS/A		NO. OF REPS: 4	
2. " " 200 "		NO. OF PLOTS: 16	
3. " " 400 "		PLOT AREA GROSS: 1/533	
4. " " 600 "		PLOT AREA NETT: 1/161.5	
<u>BASIC TREATMENTS:</u>		NO. OF ROWS GROSS: 6	
ALL PLOTS.		NO. OF ROWS NETT: 2	
M. POTASH 200 "		LENGTH OF ROWS: 30'	
SUPERPHOSPHATE.		SPACING OF ROWS: 4'6"	
		WIDTH OF GUARD ROW 5'	
		DATE OF PLANTING: OCTOBER, 1963.	
		SOIL SERIES: LOWER ECCA. MILKWOOD KRAAL SERIES	
<u>SOIL ANALYSIS</u>			
pH	O.M.%	P.P.M.	
		P	K
6.10	6.73	14	168
			CLAY%
			37.0

HARVESTED RESULTS.

DATE HARVESTED: JULY, 1965

PLANT CANE

AGE: 21 MONTHS

TREATMENT	T.P.A.	% SUC.	T.S.A.	1 T.P.A.M.	LBS 2 S.A.M.	RANK	
						1	2
1.	38.94	13.34	5.195	1.854	494	4	4
2.	46.66	13.35	6.229	2.222	594	1	1
3.	42.56	13.35	5.682	2.027	542	3	3
4.	43.02	13.91	5.984	2.049	570	2	2

NOT SIGNIFICANT.

S.E. = 4.124

C.V. = 12.968

FIELD TRIALS

EXPERIMENT :- POTASH

OBJECTIVE :- TO TEST RESPONSE FROM POTASH ON MILKWOOD KRAAL SERIES

LOCATION :- TORVALE - RYDALVALE FIELD. MOUNT EDGECOMBE

TREATMENT DATA		FIELD DATA													
<u>TREATMENTS:</u>		DESIGN: RANDOM BLOCK													
1. M OF POTASH NIL	LBS/A	NO. OF REPS: 4													
2. " " " 150	"	NO. OF PLOTS: 16													
3. " " " 300	"	PLOT AREA GROSS: 1/40													
4. " " " 450	"	PLOT AREA NETT: 1/120													
		NO. OF ROWS GROSS: 6													
		NO. OF ROWS NETT: 2													
		LENGTH OF ROWS: 40'													
		SPACING OF ROWS: 4'6"													
		WIDTH OF GUARD ROW 5'													
		DATE OF PLANTING: OCTOBER 1963													
<u>BASIC TREATMENTS:</u>		SOIL SERIES: LOWER ECCA													
<u>ALL PLOTS</u>		MILKWOOD KRAAL SERIES													
ANM. NITRATE 33% 300 LBS/A															
SUPERPHOSPHATE.															
		<table border="1"> <thead> <tr> <th rowspan="2">pH</th> <th rowspan="2">O.M.%</th> <th colspan="2">P.P.M.</th> <th rowspan="2">CLAY%</th> </tr> <tr> <th>P.</th> <th>K.</th> </tr> </thead> <tbody> <tr> <td>6.10</td> <td>6.73</td> <td>14</td> <td>168</td> <td>37.0</td> </tr> </tbody> </table>		pH	O.M.%	P.P.M.		CLAY%	P.	K.	6.10	6.73	14	168	37.0
pH	O.M.%	P.P.M.				CLAY%									
		P.	K.												
6.10	6.73	14	168	37.0											

HARVESTED RESULTS.

DATE HARVESTED: JULY, 1965

PLANT CANE

AGE: 21 MONTHS

TREATMENT.	T.P.A.	% SUC.	T.S.A.	1	LBS. 2	RANK	
				T.P.A.M.	S.A.M.	1	2
1.	39.69	13.53	5.370	1.890	512	4	4
2.	43.95	13.93	6.122	2.093	584	1	1
3.	41.78	13.72	5.732	1.990	546	2	2
4.	40.38	13.80	5.572	1.923	530	3	3

S.E. = 5.079

NOT SIGNIFICANT

C.V. = 12.253%

HULETT'S DARNALLFIELD TRIALSEXPERIMENT :- FERTILIZER TRIAL.OBJECTIVE :- TO EVALUATE SUBSOILING AND SURFACE OR DEEP FERTILIZER APPLICATION.LOCATION :- MELROSE FIELD - ISLAND FARM.

TREATMENT DATA	FIELD DATA
<u>TREATMENTS:</u>	DESIGN: RANDOM BLOCKS
1. CONTROL. NO FERT. OR S. SOIL	NO. OF REPS: 6
2. SUBSOILING. NO FERT.	NO. OF PLOTS: 30
3. TOP DRESS. NO S.SOIL	PLOT AREA GROSS: 1/15
4. SUB SOIL. AND TOP DRESS	PLOT AREA NETT: 3/105
5. SUB SOIL AND DEEP APPLIC.	NO. OF ROWS GROSS: 7
	NO. OF ROWS NETT: 3
	LENGTH OF ROWS: 92'6"
	SPACING OF ROWS: 4'6"
<u>BASIC TREATMENTS:</u>	WIDTH OF GUARD ROW -
VARIETY : C Co 293	DATE OF RATOON: FERT. APRIL 1963
1000 LBS/A. 12 - 8 - 16	SOIL SERIES: T.M.S. CARTREF/TREVIANIAN
	SOIL ANALYSIS.
	P.P.M.
	P. K.
	pH. O.M.% P. K.
	5.24 2.66 15 85

HARVEST RESULTS.DATE OF HARVEST: NOV. 64.

RATOON.

AGE: 19 MONTHS

TREATMENT.	T.P.A.	% SUC.	T.S.A.	A T.P.A.M.	B LBS S.A.M.	RANK	
						A.	B
1.	19.38	15.83	3.06	1.019	322	4	4
2.	15.24	15.53	2.37	0.816	250	5	5
3.	32.21	15.69	5.06	1.694	532	1	1
4.	29.52	15.66	4.62	1.553	486	2	3
5.	29.49	15.82	4.67	1.551	497	3	2

HIGHLY SIGNIFICANT @ 1% and 5% LEVEL. FOR FERT. RESPONSE ONLY

S.E. = 3.719

L.S.D. = 4.48 T.P.A. @ 5%

C.V. = 14.78%

6.11 T.P.A. @ 1%

HULETT'S DARNALL

FIELD TRIALS

EXPERIMENT :- FERTILIZER TRIAL

OBJECTIVE :- TO EVALUATE THE DEEP APPLICATION OF FERTILIZER.

LOCATION :- MELROSE FIELD - ISLAND FARM.

TREATMENT DATA	FIELD DATA										
<u>TREATMENTS:</u>	DESIGN: 4 x 4 LATIN SQUARE										
1. TOP DRESS ON TRASH	NO. OF REPS: 4										
2. TOP DRESS AFTER BURNING	NO. OF PLOTS: 16										
3. DEEP FERT. APPLICATION UNDER TRASH.	PLOT AREA GROSS: 1/15										
4. DEEP FERT. APPLICATION AFTER BURNING.	PLOT AREA NETT: 3/105										
	NO. OF ROWS GROSS: 7										
	NO. OF ROWS NETT: 3										
	LENGTH OF ROWS: 92'6"										
	SPACING OF ROWS: 4'6"										
	WIDTH OF GUARD ROW										
	DATE OF RATOON										
	SOIL SERIES: T.M.S.										
	<u>SOIL ANALYSIS</u>										
	<table border="1"> <thead> <tr> <th rowspan="2">pH.</th> <th rowspan="2">O.M.%</th> <th colspan="2">P.P.M.</th> </tr> <tr> <th>P.</th> <th>K.</th> </tr> </thead> <tbody> <tr> <td>5.24</td> <td>2.66</td> <td>15</td> <td>85</td> </tr> </tbody> </table>	pH.	O.M.%	P.P.M.		P.	K.	5.24	2.66	15	85
pH.	O.M.%			P.P.M.							
		P.	K.								
5.24	2.66	15	85								
<u>BASIC TREATMENT:</u>											
VARIETY: 310											
1,000 LBS/A 12 - 8 - 16											

HARVEST RESULTS.

DATE OF HARVESTING - DECEMBER 1964

RATOON

AGE: 20 MONTHS

TREATMENT.	T.P.A.	% SUC.	T.S.A.	A T.P.A.M.	LBS. B S.A.M.	RANK	
						A	B
1.	37.10	15.71	5.828	1.855	582	2	2
2.	30.70	16.07	4.933	1.535	493	4	4
3.	39.57	15.28	6.046	1.978	604	1	1
4.	31.29	16.29	5.097	1.564	509	3	3

S.E. = 4.713
C.V. = 13.594%

NOT SIGNIFICANT

HULETT'S DARNALLFIELD TRIALSEXPERIMENT :- FERTILIZER TRIALOBJECTIVE :- TO EVALUATE BENEFIT OF P.SOLUBILITY IN PHOSPHATE CARRIER.LOCATION :- SCHOOL FIELD - HOLWOOD.

TREATMENT DATA	FIELD DATA
<u>TREATMENTS:</u>	DESIGN: RANDOM BLOCKS
1. 15 : 0 : 15	NO. OF REPS: 6
2. 10 : 10 : 10	NO. OF PLOTS: 30
3. 14 : 14 : 14	PLOT AREA GROSS: 1/40
4. 8 : 16 : 16	PLOT AREA NETT: 1/20
5. L.A.N. B.S. M.P.	NO. OF ROWS GROSS: 6
<u>BASIC TREATMENTS:</u>	NO. OF ROWS NETT: 2
ALL TREATMENTS SUPPLEMENT TO:-	LENGTH OF ROWS: 40'
N. P. K. 200 88 166 LBS/A	SPACING OF ROWS: 4'6"
VARIETY: NCO 376	WIDTH OF GUARD ROW
	DATE OF PLANTING: DEC. 1962
	SOIL SERIES: T.M.S. CARTREF/TREVANIAN
	<u>SOIL ANALYSIS</u>
	pH O.M.% P. K. Co. My
	4.6 - 8 78 350 75

HARVEST RESULTS.DATE OF HARVESTING - NOV. 1964

PLANT CANE

AGE: 23 months

TREATMENT.	T.P.A.	% SUC.	T.S.A.	A T.P.A.M.	LBS. B S.A.M.	RANK	
						A	B
1.	66.56	14.96	9.957	2.894	866	4	4
2.	75.67	14.62	11.063	3.290	962	1	1
3.	71.14	15.41	10.963	3.093	954	2	2
4.	64.82	15.81	10.248	2.818	892	5	3
5.	66.76	14.93	9.967	2.903	866	3	4

S.E. = 8.551

NOT SIGNIFICANT

C.V. = 12.39%

FIELD TRIALS

EXPERIMENT :- FERTILIZER TRIAL

OBJECTIVE :- TO EVALUATE TIME OF N & K APPLICATION IN PLANT CANE

LOCATION :- MAQULO FIELD - HOLWOOD

TREATMENT DATA	FIELD DATA
<u>TREATMENTS:</u>	DESIGN: 4 x 4 LATIN SQUARE
1. P. IN FURROW	NO. OF REPS: 4
2. P. + N. IN FURROW	NO. OF PLOTS: 16
3. P. + K. IN "	PLOT AREA GROSS: 1/40
4. P + N + K IN FURROW	PLOT AREA NETT: 1/120
	NO. OF ROWS GROSS: 7
	NO. OF ROWS NETT: 3
	LENGTH OF ROWS: 34'6"
	SPACING OF ROWS: 4'6"
<u>BASIC TREATMENTS:</u>	WIDTH OF GUARD ROW
VARIETY: N co 376	DATE OF PLANTING: APRIL 1963
	SOIL SERIES: T.M.S. CARTREF/TREVANIAN
	<u>SOIL ANALYSIS</u>
	P.P.M.
	pH. O.M.% P. K. Co My
	4.8 10 42 510 180

HARVEST RESULTS.

DATE OF HARVESTING - NOVEMBER 1964

PLANT CANE

TREATMENT.	T.P.A.	% SUC.	T.S.A.	T.P.A.M.	LBS. S.A.M.	RANK	
						A	B
1.	63.15	13.72	8.664	3.323	912	3	2
2.	65.29	14.15	9.238	3.436	972	1	1
3.	64.56	12.85	8.295	3.397	873	2	3
4.	56.98	14.21	8.096	2.998	852	4	4

S.E. = 4.274

C.V. = 6.839

NOT SIGNIFICANT

HULETT'S S.A. SUGAR MILLS AND ESTATES LIMITED.

MOUNT EDGECOMBE ESTATES

OTTAWA IRRIGATION TRIALS.

OCT/NOV. 1964

- 1) The following trials have not been statistically analysed yet and any conclusions are therefore subject to verification.
- 2) All experiments were planted within the same field at the same time and on the same soil type.

Plant cane - 14 months - Planted 29-8-63 - Harvested 3/7-11-64

Soil - Lower Ecca and Milkwood Kraal series.

VARIETY TRIALS

IRRIGATED VARIETY TRIAL:

Variety	Suc. %	T.C.A.	T.C.A. Month	T.S.A.	Lbs S.A. Month.	Purity	RANK	
							Cane	Suc.
NCo:376	15.32	39.67	2.833	6.077	872	92.0	1	1
N51:168	14.66	39.37	2.812	5.771	824	90.7	2	2
N50:211	15.00	35.26	2.518	5.289	756	90.2	3	3
N51:539	14.95	30.35	2.182	4.567	652	90.3	4	4
NCo:382	14.90	29.71	2.122	4.427	632	91.1	5	5
NCo:310	16.28	27.02	1.930	4.399	628	92.4	6	6

Average 33.60 T.C.A. : Water applied plus Rainfall = 52.57"

DRY LAND VARIETY TRIAL:

Variety	Suc. %	T.C.A.	T.C.A. Month	T.S.A.	lbs S.A. Month	Purity	RANK	
							Cane	Suc.
N50:211	13.62	26.47	1.891	3.605	516	86.9	1	1
NCo:376	13.61	23.88	1.71	3.250	464	88.7	3	4
N51:168	14.03	25.24	1.80	3.541	506	91.0	2	2
N51:539	14.30	23.74	1.69	3.395	486	89.7	4	3
NCo:310	14.33	22.02	1.57	3.155	450	89.4	5	5
NCo:382	13.14	19.74	1.41	2.988	426	91.2	6	6

Average 23.52 T.C.A. : Rainfall = 35.76"

COMMENTS:

- 1) Poor subsoil drainage; results not as good as could be expected.
- 2) NCo:376, N50/211, and N51/168 showed best results in both Irrigated and Dry land trials. NCo:310 and NCo:382 were disappointing.
- 3) An average increase of 42.8% in production obtained from irrigation over dry land.

FERTILIZER TRIALS

IRRIGATED NITROGEN POTASH TRIAL:

Fertilizer:		Suc. %	T.C.A.	T.C.A. Month	T.S.A.	Lbs S.A. Month	Purity	RANK	
Amm. Nit.	M. Pot.							cane	Suc.
0	0	15.03	41.4	2.957	6.222	888	92.2	8	8
0	200	15.31	41.8	2.986	6.399	914	93.0	7	7
0	400	14.69	46.2	3.300	6.787	970	92.6	6	6
250	0	15.46	35.6	2.542	5.504	786	93.4	9	9
250	200	14.78	54.9	3.921	8.114	1160	92.3	1	1
250	400	14.90	48.6	3.471	7.241	1054	91.5	4	3
500	0	14.67	46.6	3.328	6.836	976	92.3	5	5
500	200	14.57	48.8	3.486	7.110	1016	92.6	3	4
500	400	15.21	51.2	3.657	7.787	1112	93.2	2	2

Average 46.51 T.C.A. : Water applied plus Rainfall = 59.04"

DRY LAND NITROGEN POTASH TRIAL:

Fertilizer		Suc. %	T.C.A.	T.C.A. Month	T.S.A.	Lbs S.A. Month	Purity	RANK	
Amm. Nit.	M. Pot.							Cane	Suc
0	0	13.83	25.9	1.850	3.582	512	89.8	3	3
0	300	14.10	28.8	2.057	4.060	580	90.2	1	1
400	0	13.94	25.1	1.793	3.499	500	89.7	4	4
400	300	13.99	27.0	1.928	3.777	540	96.4	2	2

Average 26.70 T.C.A. Rainfall 35.76"

COMMENTS:

- 1) Response to Nitrogen and Potash in combination should be noted.
- 2) Medium level of N.adequate.
- 3) Indication of Potash response in spite of high soil analyses.
- 4) Note ill effect of high Nitrogen level in absence of Potash.
- 5) Response to irrigation dominates fertilizer response, there being an average increase of 74.2% from irrigation over dry land.

IRRIGATED PHOSPHATE TRIAL:

Fertilizer		Suc. %	T.C.A.	T.C.A. Month	T.S.A.	Lbs S.A. Month	Purity	RANK.	
Amm. Nit.	M. Pot.							Cane	Suc.
0	infer	14.98	38.9	2.778	5.827	832	91.7	3	3
400		15.13	44.6	3.186	6.748	964	91.9	1	1
800		14.77	42.1	3.007	6.218	888	91.6	2	2

Average 41.86 T.C.A. : Water applied plus rainfall = 59.04"

COMMENTS:

- 1) Soil analysis indicated adequate Phosphate availability.
- 2) Note best response to medium Phosphate level.

IRRIGATION TRIAL:

Overhead Treatments.	Suc. %	T.C.A.	T.C.A. Month	T.S.A.	Lbs S.A. Month	Purity	RANK	
							Cane	Suc.
1 Cusec per) 125 acres.)	14.34	48.6	3.472	6.969	996	90.4	1	1
1 Cusec per) 250 acres.)	14.41	47.3	3.379	6.816	974	90.4	2	2
Control	14.06	26.2	1.871	3.683	526	90.2	3	3

COMMENTS:

- 1) A substantial increase from irrigation is recorded averaging 82.8% over dry land.
- 2) Difference between water duties less than expected.
- 3) Water Utilization :

Total accumulative E.T. over 14 months = 55.18"

A. Rainfall and water applied to O.A. 1 Cusec /125 acres = 61.76"
Yield = 48.6 T.C.A.

T.C./1" = 0.79

1"/T.C. = 1.27

B. Rainfall and water applied to, O.B. 1 Cusec/250 acres = 52.76"
Yield = 47.3 T.C.A.

T.C./1" = 0.90

1"/T.C. = 1.11

C. Rainfall to Control = 35.76
Yield = 26.2 T.C.A.

T.C/1" = 0.74

1"/T.C. = 1.35

- 4) Results of Furrow treatments have not been recorded due to error in calculation of water applications.

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HULETT'S S.A. SUGAR MILLS & ESTATES LIMITED.

SUMMARY
OF
PRE - RELEASE
TRIALS

HULETT'S S.A. SUGAR MILLS & ESTATES LIMITED

SUMMARY OF PRE-RELEASE VARIETY TRIALS

N51/539 & N51/168

(Sabre) (Saraband)

ESTATE	AGE	VARIETY	T.C.A.	SUC.%	T.S.A.	1		2	
						T.C.A.M.	Lbs S.A.M.	Rank	Rank
								1	2
TUCELA	Plant 23 Months	539	57.3	13.58	7.78	2.491	676	4	4
		168	58.2	14.32	8.33	2.530	724	3	3
		376	66.3	12.85	8.52	2.882	740	1	1
		293	63.4	13.20	8.37	2.756	727	2	2
SPROWSTON	Plant 23 Months	539	35.8	14.67	5.25	1.556	456	3	3
		168	35.2	15.02	5.29	1.530	460	4	2
		376	43.9	13.32	5.85	1.908	508	1	1
		293	36.9	-	-	1.604	-	2	4
HOLWOOD	Plant 23 Months	539	45.2	14.18	6.41	1.965	557	2	2
		168	42.9	14.09	6.39	1.865	555	4	3
		376	47.5	14.28	6.78	2.065	589	1	1
		293	45.1	14.07	6.35	1.960	552.	3	4
PROSPECT	Plant 23 Months	539	37.4	12.60	4.71	1.626	409	2	3
		168	32.6	14.50	4.73	1.417	411	4	2
		376	37.2	12.20	4.54	1.617	394	3	4
		293	47.3	12.20	5.77	2.056	501	1	1

HULETT'S S.A. SUGAR MILLS & ESTATES LIMITED.

SUMMARY OF PRE-RELEASE VARIETY TRIALS

N51/539 & N51/168

+ 1st Ratoon
++ 2nd Ratoon

(Sabre) (Saraband)

ESTATE	AGE	VARIETY	T.C.A.	SUC.%	T.S.A.	1		2		Rank		
						T.C.A.M.	Lbs S.A.M.	1	2			
Plant												
Destroyed by fire												
CORNUBIA	+1st 13mths	539	51.42	13.6	6.9	3.955	1062	4	4			
		168	57.19	13.3	7.6	4.399	1169	3	3			
		376	65.02	14.5	9.4	5.001	1446	1	1			
		211	59.44	15.4	9.1	4.572	1400	2	2			
	++2nd 10mths	539	35.76	13.63	4.87	3.576	974	4	3			
		168	36.83	12.10	4.45	3.683	890	3	4			
		376	40.97	14.66	6.00	4.097	1200	1	1			
		211	37.10	14.22	5.27	3.710	1054	2	2			
	WESTBROOK	Plant 21mths	539	44.7	16.2	7.2	2.128	686	3	4		
			168	49.4	17.0	8.3	2.352	790	2	2		
			376	44.7	16.3	7.3	2.128	696	3	3		
			211	60.5	15.8	9.5	2.881	904	1	1		
		+1st 10mths	539	43.9	13.3	6.8	4.390	1160	4	4		
			168	50.66	13.7	6.9	5.060	1380	3	3		
			376	60.35	13.6	8.2	6.035	1640	2	1		
			211	60.40	13.3	8.0	6.040	1600	1	2		
++2nd 12mths		539	56.92	14.07	8.00	4.743	1333	3	3			
		168	46.33	13.85	6.41	3.861	1068	4	4			
		376	66.91	13.63	9.11	5.576	1518	1	1			
		211	63.93	13.84	8.84	5.327	1474	2	2			
Mt. EDGECOMBE		Plant 18mths	539	59.5	15.7	9.3	3.305	1033	3	2		
			168	58.0	15.0	8.7	3.222	966	4	4		
			376	63.2	15.7	9.9	3.511	1100	1	1		
			211	61.8	14.5	9.0	3.433	1000	2	3		
	+1st 14mths	539	36.95	14.82	5.5	2.639	786	3	3			
		168	35.12	15.02	5.3	2.508	757	4	4			
		376	51.10	15.05	7.7	3.650	1100	1	1			
		211	43.57	14.60	6.4	3.112	914	2	2			

COMMENTS.

- 1) Both 539 and 168 have a common parentage of Co 331 and Co 421.
- 2) In growth, 539 has a better stooling but thinner and shorter sticks when compared with 168 which is in turn characterised by fewer but an adequate number of thicker and taller sticks.
- 3) There has been no indication of mosaic or Smut disease in either variety.
- 4) Both 539 and 168 gave comparable yields and very little difference in performance.

The average of all experiments and stages of growth:-

	<u>T.C.A.M.</u>	<u>Lbs S.A.M.</u>
N51/539	3.533	1034
N51/168	3.583	973

- 5) Neither variety shows any improvement over 376 or 211. There are indications that N51/539 may find a place on the dryer or shallow marginal soils.

M.J. Stewart
Agronomist.

HULETT'S S.A. SUGAR MILLS & ESTATES LIMITED

SUMMARY OF PRE-RELEASE VARIETY TRIALS

C.B.38/22 C.B. 36/14

ESTATE	AGE	VARIETY	T.C.A.	SUC.%	T.S.A.	1 T.C.A.M.	2 LBS S.A.M.	Rank	
								1	2
CORNUBIA	Plant 16 Mths	376	56.11	14.38	8.07	3.507	1008	1	1
		211	50.84	13.72	6.98	3.177	872	2	2
		36/14	47.48	12.34	5.86	2.967	732	3	3
		38/22	37.87	14.60	5.53	2.367	692	4	4
WESTBROOK	Plant 14 Mths	376	62.78	13.90	8.73	4.484	1248	1	1
		211	57.38	13.75	7.89	4.098	1128	2	2
		36/14	55.21	13.15	7.26	3.943	1038	3	3
		38/22	45.30	14.35	6.50	3.236	928	4	4
MT.EDGECOMBE	Plant 16 Mths	211	47.56	14.28	6.79	2.972	848	2	1
		376	48.04	13.50	6.49	3.002	811	1	3
		36/14	47.13	13.13	6.19	2.945	774	3	4
		38/22	42.75	15.19	6.49	2.672	812	4	2
PHOENIX	Plant 13 Mths	376	63.27	14.5	9.17	4.867	1412	2	2
		211	58.65	14.7	8.62	4.511	1326	3	3
		36/14	64.49	14.2	9.16	4.961	1409	1	1
		38/22	51.23	14.8	7.58	3.941	1166	4	4

HULETT'S S.A. SUGAR MILLS & ESTATES LIMITED.

SUMMARY OF PRE-RELEASE VARIETY TRIALS

C.B. 38/22 C.B. 36/14

ESTATE	AGE	VARIETY	T.C.A.	SUC.%	T.S.A.	T.C.A.M.	LBS S.A.M.	Rank	
								1	2
PROSPECT	Plant 23 Mths	36/14	50.90	13.83	7.04	2.313	640	1	1
		38/22	38.26	15.99	6.12	1.739	556	4	3
		376	47.80	13.53	6.47	2.172	588	3	2
		50/211	47.89	13.83	6.47	2.176	588	2	2
HOLWOOD	Plant 22 Mths	36/14	59.64	16.29	9.71	2.710	882	2	2
		38/22	49.38	17.34	8.56	2.244	778	4	4
		376	61.45	15.96	9.81	2.793	891	1	1
		293	54.20	15.98	8.66	2.463	787	3	3
SPROWSTON	Plant 22 Mths	36/14	68.7	17.24	11.84	3.122	1076	2	2
		38/22	57.6	17.48	10.07	2.618	915	4	3
		376	74.2	17.47	12.96	3.372	1178	1	1
		293	64.6	-	-	2.936	-	3	4
TUGELA	Plant 22 Mths	36/14	52.49	15.59	8.18	2.385	743	3	3
		38/22	41.35	16.51	6.83	1.879	620	4	4
		376	57.71	15.74	9.08	2.623	825	1	1
		50/211	53.50	15.34	8.21	2.431	746	2	2

COMMENTS

- 1) Both C.B. 38/22 and C.B. 36/14 are varieties introduced from Brazil, South America.
- 2) Both have a similar growth habit of limited stooling, sturdy canes and broad leaves.
- 3) There have been no indications of Mosaic or Smut susceptibility.
- 4) Only a plant cane crop has been taken from this series and the general indication is that neither of the above varieties are superior to 376 or 211. In most cases C.B. 36/14 has shown a better performance than C.B. 38/22.

M.J. Stewart
Agronomist.

HULETT'S S.A. SUGAR MILLS & ESTATES LIMITED.

SUMMARY OF PRE-RELEASE VARIETY TRIALS

N53/216

(Samson)

ESTATE	AGE	VARIETY	T.C.A.	SUC.%	T.S.A.	1 T.P.A.M.	2 LBS S.A.M.	RANK	
								1	2
<u>CORNUBIA</u> Red Sands	Plant 20 Mths	216	52.40	16.66	8.73	2.620	873	4	4
		382	65.88	15.92	10.49	3.294	1049	2	2
		376	67.01	15.79	10.58	3.350	1058	1	1
		310	52.96	18.09	9.58	2.648	958	3	3
	1st Rat. 15 Mths	216	43.8	15.66	6.86	2.920	914	3	2
		382	50.9	13.53	6.89	3.393	918	1	1
		376	50.4	13.58	6.84	3.360	912	2	3
		310	38.8	15.40	5.97	2.587	796	4	4
<u>WESTBROOK</u> Loam	Plant 20 Mths	216	60.97	16.24	9.90	3.048	990	4	3
		382	69.44	14.16	9.83	3.472	983	2	4
		376	71.54	14.88	10.65	3.577	1065	1	1
		310	64.60	15.90	10.27	3.230	1027	3	2
	1st Rat. 13 Mths	216	51.04	14.95	7.63	3.926	1174	3	3
		382	56.92	13.83	7.87	4.378	1210	2	2
		376	66.03	13.60	8.98	5.079	1382	1	1
		310	48.75	15.32	7.46	3.750	1148	4	4
<u>MT. EDGECOMBE</u> Black Loam	Plant 20 Mths	216	69.00	15.41	10.63	3.450	1063	4	4
		382	80.22	13.59	10.90	4.110	1090	2	3
		376	84.20	13.90	11.70	4.210	1170	1	1
		310	71.34	15.39	10.98	3.567	1098	3	2
	1st Rat. 14 Mths	216	50.2	15.51	7.79	3.586	1112	3	2
		382	49.1	15.26	7.49	3.507	1070	4	4
		376	52.2	14.53	7.58	3.728	1082	2	3
		310	53.1	16.29	8.65	3.793	1236	1	1

HULETT'S S.A. SUGAR MILLS & ESTATES LIMITED

SUMMARY OF PRE-RELEASE VARIETY TRIALS

N53/216

(Samson)

ESTATE	AGE	VARIETY	T.C.A.	SUC.%	T.S.A.	1	2	Rank	
						T.C.A.M.	Lbs S.A.M.	1	2
HOLWOOD	Plant 23 Mths	376	76.58	13.79	10.58	3.330	920	1	
		293	72.05	14.27	10.29	3.133	894	2	
		Samson	62.80	13.90	8.76	2.730	761	3	
		Salute	62.44	15.51	9.04	2.715	786	4	
PROSPECT	Plant 23 Mths	376	62.07	14.46	8.92	2.699	775	1	
		293	55.86	14.98	8.37	2.429	727	2	
		Samson	50.78	15.17	7.70	2.208	669	4	
		Salute	54.26	14.73	8.01	2.359	696	3	
TUGELA	Plant 23 Mths	376	69.50			2.994		1	
		293	66.15			2.850		2	
		Samson	47.73		SPOILT	2.056		4	
		Salute	61.99		SAMPLE	2.671		3	
SPROWSTON	Plant 23Mths	376	64.46			2.777		1	
		293	51.47			1.754		4	
		Samson	55.34		SPOILT	1.889		3	
		Salute	53.67		SAMPLE	2.080		2	

COMMENTS

- 1) Parentage of N53/216 is NCo 293 x Co 453.
- 2) This variety has average stooling properties, sturdy sticks of medium height.
- 3) There has been no indication of Mosaic or Smut disease.
- 4) Flowering is very limited when compared with the profuse flowering of NCo 310 and its parent NCo 293.
- 5) This variety shows no advantages over current varieties grown on N.E.L. In higher altitudes it may find a place together with its parent NCo 293.

M.J. Stewart
Agronomist.

HERBICIDES - TRAYS

The following tray experiments can be seen:

1. Bromacil Damage to Cane.

Object: To determine the effect of bromacil on cane in twelve soil series, and to relate phytotoxicity to soil properties such as organic matter content and adsorption per cent. Four rates of bromacil (0, 2, 4, 6 lb. Hyvar X per acre) x 4 replications = 192 trays.

Twelve one-eyed setts planted per tray and germination counts were carried out prior to treatment. Germination was uniformly good in all soils. Subsidiary measurements of soil temperature (at 5 cm depth) and soil strength (measured by penetrometer) are of interest.

Soil Series	Temperature °C 8.30a.m.	Temperature °C 2.30p.m.	Temperature range	Soil Strength	Germination (Max.12)	% Clay
Avoca	20.7	28.9	8.2	1.5	10.9	19
Cartref	21.6	29.7	8.1	1.1	10.1	6
Clansthal	21.4	27.6	6.2	1.2	9.6	6
Fernwood	21.2	28.1	6.9	1.1	10.4	10
Glenrosa	20.6	28.9	8.3	0.7	10.4	42
Inanda	19.6	27.3	7.7	0.8	9.5	48
Milkwood	20.0	28.5	8.5	1.7	10.8	65
Rydalvale	19.9	28.5	8.6	1.6	9.9	57
Shortlands	20.0	27.9	7.9	0.7	9.9	58
Waldene	20.6	28.7	8.1	2.1	9.6	20
Williamson	20.6	29.4	8.8	1.8	10.3	22
Windermere	20.0	29.4	9.4	2.9	10.1	60

Very sandy soils e.g. Clansthal and Fernwood had the highest morning temperatures and lowest afternoon temperatures, while black clay soils such as Windermere, Milkwood and Rydalvale had the lowest morning and highest afternoon temperatures.

2. Level of 2,4-D and Paraquat on *Cyperus rotundus*.
and 3. Time of Application and Formulation of 2,4-D on *Cyperus rotundus*.

Levels of 2,4-D from 0.6 to 9.6 lb. a.e./acre; three times of application (pre-emergence, early post-emergence and late post-emergence); five formulations (amine, butyl ester, glycol ester, iso-octyl ester and MCPA) and paraquat are being tested out on *Cyperus rotundus*. Twelve tubers were planted per tray. Early results indicate a possible stimulation of germination by low rates of 2,4-D applied pre-emergence, and some suppression with high rates.

Treatment lb. a.e./acre	Product Rate pints Shellamine 7.2/acre	Germination Tillers/4 trays
0	0	65
0.6	$\frac{2}{3}$	70
1.2	$1\frac{1}{3}$	81
2.4	$2\frac{2}{3}$	69
3.6	4	61
4.8	$5\frac{1}{3}$	52
7.2	8	51
9.6	$10\frac{2}{3}$	47

4. Effect of Weed exudate on Cane Growth.

Commelina sp and Cyperus rotundus have been planted on two soils (Clansthal and Shortlands) and, together with controls, will be grown for some months, after which they will be removed and cane planted to test for any residual effect of the weeds.

29th September, 1965.