

SOUTH AFRICAN SUGAR ASSOCIATION

AGRONOMISTS' ASSOCIATION

3 x 3 x 3 NPK FACTORIAL

Catalogue No.: 50 (First Cycle)  
This crop: P 1R 2R  
Site: Crompton, Frosterley  
Altitude: 400'  
Soil series: Cartref  
Design: 3 x 3 x 3 NPK, 1 Rep.  
Variety: Co.301  
Fertilizer: See below  
Water regime: Dryland

Soil Analysis: No samples taken

Age: P = 21 months Oct. '51 - July '53  
 1R = 22 months July '53 - July '55  
 2R = 22 months July '55 - July '57

Rainfall: P = 67.44"  
 1R = 82.23"  
 2R = 74.87"

Object: To compare three levels of K in a plant crop and two ratoons.

Fertilizer:

Amm. sulph. N<sub>0</sub> -  
 N<sub>1</sub> 95 lb N/ac  
 N<sub>2</sub> 190 "  
 Super Phos. P<sub>1</sub> 43.5 lb P/ac  
 P<sub>2</sub> 87.1 "  
 Mur. of potash K<sub>0</sub> -  
 K<sub>1</sub> 83 lb K/ac  
 K<sub>2</sub> 167 "

Treatments:

K<sub>1</sub>: 83 lbs K/ac  
 K<sub>2</sub> 167 "

Results:

	Treatment	T.C.A.	Suc. %	T.S.A.
P	K <sub>0</sub>	34.0	16.9	4.7
	K <sub>1</sub>	34.5	17.3	4.8
	K <sub>2</sub>	38.6	17.1	6.4
1R	K <sub>0</sub>	27.7	-	-
	K <sub>1</sub>	29.1	-	-
	K <sub>2</sub>	30.1	-	-
2R	K <sub>0</sub>	35.1	14.0	3.9
	K <sub>1</sub>	34.4	14.5	4.0
	K <sub>2</sub>	39.1	14.3	5.4

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Rainfall: P = 67.44"  
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Object: To compare three levels of N in a plant crop and two ratoons.

Fertilizer:

Amm. sulph.    N<sub>0</sub> -  
                   N<sub>1</sub> 95 lb N/ac.  
                   N<sub>2</sub> 190    "  
  
 Super Phos.    P<sub>1</sub> 43.5 lb P/ac.  
                   P<sub>2</sub> 87.1    "  
  
 Mur. of potash K<sub>0</sub> -  
                   K<sub>1</sub> 83 lb K/ac.  
                   K<sub>2</sub> 167    "

Treatments: 1b N/ac.

N<sub>0</sub> Nil  
 N<sub>1</sub> 95  
 N<sub>2</sub> 190

Results:

	Treatment	T.C.A.	% Suc.	T.S.A.
Plant	N <sub>0</sub>	33.3	17.6	5.8
	N <sub>1</sub>	36.4	17.2	6.2
	N <sub>2</sub>	36.6	16.4	5.9
1R	N <sub>0</sub>	22.4	-	-
	N <sub>1</sub>	32.9	-	-
	N <sub>2</sub>	35.3	-	-
2R	N <sub>0</sub>	38.3	14.5	4.8
	N <sub>1</sub>	33.3	15.6	5.3
	N <sub>2</sub>	37.5	13.8	5.2

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

3 x 3 x 3 NPK FACTORIAL

Catalogue No.: 50 (Second cycle)  
 This crop: P, 1R, 2R, 3R  
 Site: Crompton, Brosterley  
 Altitude: 400'  
 Soil series: Cartref  
 Design: 3 x 3 x 3 NPK, 1 Rep.  
 Variety: N:Co.293  
 Fertilizer: See below  
 Water regime: Dryland

Soil Analysis:

	pH	OM%	Clay%
P	4.9	1.5	-
1R	4.7	1.2	-
2R	4.4	.6	-
3R	5.2	1.9	-
4R	5.2	0.7	-

	p.p.m.			
	P	K	Ca	Mg
P	19	70	1684	-
1R	19	70	4251	.25
2R	19	69	4374	.49
3R	10	84	5881	1.5
4R	22	84	7920	235

Age: P = 18 mths. March '58 - Nov. '59  
 1R = 22 mths. Nov. '59 - Oct. '61  
 2R = 22 mths. Oct. '61 - June '63  
 3R = 22 mths. June '63 - June '65  
 4R = 16 mths. June '65 - Nov. '66

Rainfall: P = 74.8" 1R = 75.0"  
 2R = 84.3" 3R = 66.5"  
 4R = 20.3"

Object: To compare three levels of K in a plant crop and three ratoons, second cycle.

Fertilizer:

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Super Phos.			Mur. of Pot.		
				P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
P Amm. nit.	-	148	297	-	41.5	83	-	125	250
1R Amm. nit.	-	207	414	-	37.3	74.7	-	125	250
2R Urea	-	155	310	-	41.5	83	-	125	250
3R Lan.	-	135	270	-	41.5	83	-	125	250
4R Lan.	-	100	200	-	41.5	83	-	100	200

Treatments:

	Plant	1 Rat.	2 Rat.	3 Rat.	4 Rat.
K <sub>1</sub> :	125	125	125	125	100
K <sub>2</sub> :	250	250	250	250	200

Results:

	Treatment	T.C.A.	Suc. %	T.S.A.
P	K <sub>0</sub>	31.6	14.76	4.6
	K <sub>1</sub>	35.7	14.8	5.3
	K <sub>2</sub>	35.7	14.8	5.3
1R	K <sub>0</sub>	44.6	15.0	6.7
	K <sub>1</sub>	47.7	14.9	7.1
	K <sub>2</sub>	50.1	15.0	7.5

Catalogue No.: 50 (Second cycle)

	Treatment	T.C.A.	Suc. %	T.S.A.
2R	K <sub>0</sub>	23.8	15.2	3.6
	K <sub>1</sub>	27.4	15.3	4.2
	K <sub>2</sub>	25.7	15.5	3.9
3R	K <sub>0</sub>	.12	14.9	2.6
	K <sub>1</sub>	.8	15.2	2.7
	K <sub>2</sub>	.10	15.0	2.9

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Site: Crompton, Frosterley  
Altitude: 400'  
Soil series: Cartref  
Design: 3 x 3 x 3 NPK, 1 rep.  
Variety: N:Co.293  
Fertilizer: See below  
Water regime: Dryland

Soil Analysis:

	pH	OM%	Clay%
P	4.9	1.5	-
1R	4.7	1.2	-
2R	4.4	.6	-
3R	5.2	1.9	-
4R	5.2	0.7	-

	p.p.m.			
	P	K	Ca	Mg
P	19	70	1684	-
1R	19	70	4251	.25
2R	19	69	4374	.49
3R	10	84	5881	1.5
4R	22	84	7920	235

Age: P = 18 mths. March '58 - Nov. '59 '  
 1R = 22 mths. Nov. '59 - Oct. '61—  
 2R = 22 mths. Oct. '61 - June '63 ✓  
 3R = 22 mths. June '63 - June '65 —  
 4R = 16 mths. June '65 - Nov. '66 ✓

Rainfall: P = 74.8" 1R = 75.0"  
 2R = 84.3" 3R = 66.5"  
 4R = 20.3"

Object: To compare three levels of N in a plant crop and three ratoons, second cycle.

Fertilizer:

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Super Phos.			Mur. of Pot.		
				P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
P Amm. nit.	-	148	297	-	41.5	83	-	125	250
1R Amm. nit.	-	207	414	-	37.3	74.7	-	125	250
2R Urea	-	155	310	-	41.5	83	-	125	250
3R Lan.	-	135	270	-	41.5	83	-	125	250
4R Lan.	-	100	200	-	41.5	83	-	100	200

Treatments:

Plant	lb N/acre			
	1 Rat.	2 Rat.	3 Rat.	4 Rat.
N <sub>1</sub> : 148	207	155	135	100
N <sub>2</sub> : 297	414	310	270	200

Results:

Treatment	T.C.A.	Suc. %	T.S.A.
P	N <sub>0</sub>	30.6	4.5
	N <sub>1</sub>	36.8	5.4
	N <sub>2</sub>	34.5	5.1
1R	N <sub>0</sub>	40.2	6.0
	N <sub>1</sub>	52.4	7.6
	N <sub>2</sub>	49.7	7.5

Catalogue No.: 50 (Second Cycle)

- 2 -

	Treatment	T.C.A.	Suc. %	T.S.A.
2R	N <sub>0</sub>	22.4	15.5	3.5
	N <sub>1</sub>	28.6	15.3	4.4
	N <sub>2</sub>	25.9	15.2	3.9
3R	N <sub>0</sub>	15.6	15.0	2.3
	N <sub>1</sub>	20.0	15.1	3.0
	N <sub>2</sub>	18.7	14.9	2.8

11.28  
3.92

5.1  
2.7