

Thank you for using eradoc, a platform to publish electronic copies of the Rothamsted Documents. Your requested document has been scanned from original documents. If you find this document is not readable, or you suspect there are some problems, please let us know and we will correct that.



ROTHAMSTED  
RESEARCH

## Rothamsted Report for 1938

[Full Table of Content](#)



---

### Special Group of Experiments

#### Rothamsted Research

Rothamsted Research (1939) *Special Group of Experiments* ; Rothamsted Report For 1938, pp 166 - 191 - DOI: <https://doi.org/10.23637/ERADOC-1-86>

## EXPERIMENTS ON POULTRY MANURE

Centres	Type of experiment	No. of plots	Year
Rothamsted (see p. 150 for details)	2aCR	48	5
Woburn (see p. 164 for details)	2aCR	48	5
Lady Manner's School, Bakewell	1C	16	5
St. Joseph's School, Castleford, Yorks	1C	16	3
Sailors' Orphan Homes School, Newland, Hull	1C	16	5
A. G. Brightman, Esq., Maulden, Beds. J. W. Dallas, Esq., County Organiser	3	24	4
Norton New Council School, Doncaster, Yorks	1C	16	3
Council School, Oxted, Surrey	1C	16	2
L. Pope, Esq., Pelton, Durham	1C	12	4
J. F. Broughton and Son, South Petherton, Somerset. University of Bristol, Agricultural Department	2CR	36	2
Church of England School, Staindrop, Darlington, Co. Durham	1C	16	5
Horticultural College, Swanley	2CR	24	1
County School, Welshpool, Montgomeryshire	1C	16	5
Central School, Withernsea, Yorks	1	16	1

### *Experimental arrangements*

- (1) 2<sup>2</sup> factorial design. P.M., S/A.  
4 × 4 Latin squares or randomized blocks.  
\* Basal manuring : 1.0 cwt. K<sub>2</sub>O and 0.8 cwt. P<sub>2</sub>O<sub>5</sub> per acre.
- (1C) Cumulative : As (1) with treatments applied on the same plots each year.
- (2CR) Immediate, cumulative and residual effects. Manures S/A (S) and P.M. (M). Treatments as follows :
- |          |    |    |    |    |    |    |    |    |
|----------|----|----|----|----|----|----|----|----|
| 1st year | .. | .. | O  | O  | 1S | 1M | 2S | 2M |
| 2nd year | .. | .. | 2S | 2M | 1S | 1M | O  | O  |
- Randomized blocks.  
\* Basal manuring : 1.0 cwt. K<sub>2</sub>O and 1.0 cwt. P<sub>2</sub>O<sub>5</sub> per acre.
- (2aCR) As (2CR) with soot and rape dust, for the past four years. In the present year, the treatments were : O, half S/A, S/A, P.M., soot, rape dust, dung and double dung.
- (3) Immediate, cumulative and residual effects. Treatments as follows :
- |          |    |    |   |   |   |   |   |   |   |   |
|----------|----|----|---|---|---|---|---|---|---|---|
| 1st year | .. | .. | O | O | M | M | O | O | S | S |
| 2nd year | .. | .. | O | M | O | M | O | S | O | S |
| 3rd year | .. | .. | M | M | O | O | S | S | O | O |
| 4th year | .. | .. | M | O | M | O | S | O | S | O |
- Randomized blocks.  
\* Basal manuring : 1.0 cwt. K<sub>2</sub>O and 0.8 cwt. P<sub>2</sub>O<sub>5</sub> per acre.  
\* *Note.*—In all cases the mineral manures per plot were made up to 1.0 cwt. K<sub>2</sub>O and 0.8 cwt. or 1.0 cwt. P<sub>2</sub>O<sub>5</sub>, using muriate of potash and superphosphate.

### *Rates of Manuring*

- (1), (1C) : N at the rate of 0, 0.6 and 1.2 cwt. per acre  
(2CR) : N at the rate of 0, 0.4 and 0.8 cwt. per acre  
(3) : N at the rate of 0, and 0.6 cwt. per acre.

Place	Crop	Area Acres	Soil	Variety	Manures applied	Seed sown	Harvested	Previous crop
Bakewell Castleford	Potatoes Cabbages	1/102 1/166	Limestone Heavy loam	Gladstone Ellams	April 29 April 6-13 June 30-July 6	May 4-6 April 6-13	Sept. 28-Oct. 31 Aug. 30- Sept. 30	Ryegrass Potatoes
Hull Maulden	Potatoes Marrows	1/161 1/73	Heavy alluvium Sandy	Catriona Green Bush	May 6 April 28	May 6 May 21	Oct. 11 Aug. 3-Oct. 12 (weekly)	Cabbages Runner beans
Norton Oxted Pelfon South	Dwarf beans Cabbages Potatoes	1/237 1/161 1/186	Light loam Gault clay Medium loam	Canadian Wonder Late Autumn Arran Banner	May 2 May 28 April 8	May 9 June 4 April 7, 8	July-Oct. Oct. Sept. 7, 8	Cabbages Potatoes Swedes
Petherton Staindrop Swanley	Potatoes Beetroot Onions	1/110 1/160 1/152	Sandy loam Loam Light calcareous	Sharpe's Express Carter's Red Globe Unwin's Reliance	March 22 May 18 April 1	March 23 May 20 April 1-13	June 30 Oct. 20 Sept. 19	Mangolds Potatoes Peas and spring cabbages
Welshpool Withernsea	Potatoes Swedes	1/160 1/290	Medium loam Clay loam	Arran Banner Gartons	May 5 June 17	May 8 May 6	Oct. 7 Oct. 18	Potatoes Potatoes

*Cumulative Experiments Types 1 and 1C*

Year of experiment	Place	Crop	No. N	P.M.	S/A	S/A and P.M.	Mean	St. Error
First	Withernsea	Swedes : roots and tops : tons per acre	22.49	39.25	33.12	29.98	31.21	±0.855
Second	Oxted	Cabbages, total produce : tons per acre	12.20	14.05	16.82	14.66	14.43	±0.910
		Cabbages, saleable %	77.0	82.0	81.3	78.8	79.8	±5.20
Third	Castleford	Cabbages, total produce : tons per acre	21.50	18.69	19.43	19.82	19.86	±0.562
		Cabbages, saleable %	94.2	95.0	92.5	95.4	94.3	±0.834
Fourth	Norton	Dwarf beans : cwt. per acre	16.2	21.7	20.4	21.7	20.0	±0.252
	Pelton	Potatoes : tons per acre	10.85	11.10	14.48	13.62	12.51	±1.18
	Staindrop	Beetroot : tons per acre	8.53	8.98	9.42	6.80	8.43	±0.396
Fifth	Bakewell	Potatoes : tons per acre	4.80	6.11	8.09	6.97	6.49	±0.675
	Hull	Potatoes : tons per acre	6.56	7.74	6.49	7.65	7.11	±0.218
	Welshpool	Potatoes : tons per acre	8.11	9.96	11.29	9.80	9.79	±0.240

*Conclusions*

*Poultry manure and sulphate of ammonia alone and in combination.*

At Withernsea there were large responses to nitrogen in swedes total produce. The response to poultry manure was significantly greater than that to sulphate of ammonia, while the response to the combined dressing was significantly smaller than the responses to either of the individual dressings.

There was a significant response to nitrogen in cabbages at Oxted, the response to sulphate of ammonia being greater than that to poultry manure, though the difference did not reach significance. The increase to nitrogen in the percentage of saleable cabbages was not significant.

At Castleford, on the other hand, the dressings of nitrogen decreased the yields of cabbages significantly, there being no significant difference between the decreases to sulphate of ammonia and poultry manure. Nitrogen had no apparent effect on the percentage of saleable cabbages, which was high on all plots.

There was a substantial response to nitrogen in dwarf beans at Norton, poultry manure giving a significantly higher yield than sulphate of ammonia.

At Staindrop, both sulphate of ammonia and poultry manure gave small but not significant increases in the yield of beetroot, while the combined dressing produced a significant depression in yield of 1.7 tons per acre. A similar result was obtained when beetroot was grown on these plots in 1935.

All four experiments on potatoes showed significant increases to nitrogen. At Bakewell and Welshpool sulphate of ammonia gave a significantly higher yield than poultry manure, while at Pelton the difference in favour of sulphate of ammonia approached significance. At Hull, on the other hand, poultry manure gave a significant increase while there was no response to sulphate of ammonia applied alone.

*Experiments on immediate, cumulative and residual effects*

*Type 2CR*

Place	Year of experiment	Crop	1937 1938	2N	IN	ON	Mean	St. error
				ON	IN	2N		
Swanley	First	Onions : tons per acre ( $\pm 0.950$ )	PM	16.51 <sup>1</sup>	16.20	18.08	17.14	$\pm 0.672$
			S/A		16.80	15.11	15.96	
	Mean ( $\pm 0.672$ )			16.51	16.50	16.60	16.54	
		Percentage first grade ( $\pm 4.63$ )	PM	54.6 <sup>2</sup>	48.0	61.2	54.6	$\pm 3.27$
S/A			50.1		51.0	50.6		
Mean ( $\pm 3.27$ )			54.6	49.0	56.1	53.2		
South Petherton	Second	Potatoes : tons per acre ( $\pm 0.133$ )	PM	4.12	4.03	4.37	4.17	$\pm 0.077$
			S/A		4.48	5.00	4.80	
	Mean ( $\pm 0.094$ )			4.30	4.52	4.58	4.47	
		Percentage Ware ( $\pm 1.01$ )	PM	87.8	87.9	87.9	87.9	$\pm 0.583$
S/A			88.9		86.6	89.2	88.2	
Mean ( $\pm 0.714$ )			88.4	87.2	88.6	88.0		

Standard errors : (1)  $\pm 0.672$ , (2)  $\pm 3.27$ .

*Conclusions*

*Immediate, cumulative and residual effects*

The first-year experiments on onions at Swanley tests the immediate effects only of single and double dressings of poultry manure and sulphate of ammonia. There were no significant differences between treatments either in total produce or in the percentage of first grade onions.

There was a significant response to the direct application of nitrogen on potatoes at South Petherton, sulphate of ammonia giving significantly higher yields than poultry manure. The difference between the residual effects of sulphate of ammonia and poultry manure was not significant.

*Experiments on immediate, cumulative and residual effects*

*Type 3*

Place	Crop	1935 1936 1937 1938	N	O	N	O	Mean	St. error
			N	N	O	O		
Maulden . .	Marrows : tons per acre ( $\pm 0.947$ )	PM	14.06	14.76	16.34	13.64	14.70	$\pm 0.474$
		S/A	13.97	14.26	12.84	15.66	14.18	
		Mean ( $\pm 0.670$ )			14.02	14.51	14.59	

*Conclusions*

The yields under the different treatments varied somewhat irregularly, but there were no significant differences.

## SUGAR BEET FERTILISER EXPERIMENTS

### Factory Series

**SYSTEM OF REPLICATION :** 3 randomized blocks of 9 plots each with two degrees of freedom, representing second order interactions, confounded with block differences.

**AREA OF EACH PLOT :** Wissington II and Oaklands I : 1/80 acre. Wissington I and Wissington III : 1/100 acre. Oaklands II : 1/110 acre. Remainder : 1/40 acre.

**TREATMENTS :** 3 × 3 × 3 factorial design.

Sulphate of ammonia : None, 0.4 cwt., 0.8 cwt. N per acre.

Superphosphate : None, 0.5 cwt., 1.0 cwt. P<sub>2</sub>O<sub>5</sub> per acre.

Muriate of potash : None, 0.6 cwt., 1.2 cwt. K<sub>2</sub>O per acre.

**VARIETIES :** Schreiber S.K.W.E. : Colwick. Schreiber S.K.W. : King's Lynn II, Bardney I, Oaklands I, Newark I. Johnson's Perfection : Cupar I. Marsters : Kidderminster, Spalding I, Ely, Peterborough II. Sharpe's E. : Bury I. Kühn E. : Ipswich II. Remainder : Kleinwanzleben E.

Mechanical and chemical analyses of soil samples from each experiment have been carried out.

Station	Yield in tons per acre.	Plants in thousands per acre	Distance in inches between rows	Weight of roots in lb. per plant	Total sugar in lb. per plant	Increase in sugar for one addi- tional plant
<b>COARSE SANDS</b>						
1 Allscott I .. ..	12.43	26.8	20	1.038	.176	+.104*
2 Allscott II .. ..	11.30	25.7	20	0.984	.162	-.017
3 Cantley I .. ..	4.15	26.1	16	0.356	.052	+.064**
4 Cantley II .. ..	6.00	41.4	19	0.325	.050	+.013
5 Colwick .. ..	6.31	25.0	20	0.566	.092	-.023
6 King's Lynn I .. ..	5.00	29.3	18	0.382	.059	+.002
7 King's Lynn II .. ..	5.95	26.6	19	0.500	.077	-.092**
8 Newark I .. ..	8.07	25.6	18	0.705	.123	+.031
9 Selby I .. ..	9.23	30.7	24	0.671	.110	+.033
10 Wissington I .. ..	12.75	24.2	15	1.176	.195	+.096*
11 Wissington III .. ..	8.19	36.8	22	0.499	.081	+.177*
<b>FINE SANDS</b>						
12 Bardney I .. ..	13.41	29.8	20	1.022	.170	—
13 Bardney II .. ..	9.23	29.9	18	0.692	.118	+.160**
14 Brigg I .. ..	14.24	25.2	18	1.263	.211	+.183*
15 Brigg II .. ..	10.57	25.5	18	0.926	.158	+.019
16 Bury II .. ..	5.06	17.4	21	0.650	.108	+.036
17 Cupar I .. ..	8.48	19.7	22	0.967	.157	-.163*
18 Ipswich I .. ..	6.08	24.5	19	0.555	.081	+.124*
19 Kidderminster .. ..	11.07	26.6	20	0.931	.157	+.092
20 Poppleton .. ..	6.59	22.7	22	0.648	.119	+.063
<b>LIGHT LOAMS</b>						
21 Bury I .. ..	—	—	22	—	—	—
22 Cupar II .. ..	8.59	29.8	20	0.644	.109	+.019
23 Ipswich II .. ..	6.79	28.6	18	0.530	.081	+.083*
24 Oaklands II .. ..	3.85	24.5	22	0.352	.050	+.013
25 Spalding I .. ..	4.07	25.1	22	0.363	.060	+.142**
<b>HEAVY LOAM</b>						
26 Peterboro' I .. ..	9.07	22.2	22	0.914	.153	+.115**
<b>CLAY LOAMS</b>						
27 Felstead .. ..	7.60	18.4	22	0.922	.147	+.016
28 Oaklands I .. ..	7.45	17.2	26	0.966	.161	+.074
29 Selby II .. ..	8.94	20.9	22	0.956	.146	+.078*
<b>FENS</b>						
30 Ely .. ..	14.62	32.4	20	1.011	.159	-.326**
31 Peterboro' II .. ..	6.26	30.0	20	0.466	.083	+.047
32 Wissington II .. ..	5.20	20.9	24	0.555	.072	+.164*

\*=5% significance.

\*\*=1% significance

*Note :* At centres 1, 2, 6, 7, 9, 17, 18, 22, 23, 27 and 29, plant numbers were counted for only a fraction of the plot. For these centres the increases in sugar for one additional plant are not directly comparable with the yields of sugar per plant.

Station	Soil	Previous crop	Date of sowing	Date of lifting	Farming notes
1 Allscott I	Sandy loam	Potatoes	April 5	Oct. 29	Dung and lime to beet
2 Allscott II ..	Sandy loam	Permanent pasture	May 20	Nov. 30	After old grass. Limed for beet
3 Cantley I ..	Mixed	Barley	April 7	Nov. 21 & 22	Suffered from drought
4 Cantley II ..	Sandy	Barley	Mid-April	Nov. 16	Suffered from drought
5 Colwick ..	Sand	Oats	April 12	Oct. 17	Very poor land
6 King's Lynn I	Sandy	Barley	May 16	Nov. 23	Suffered from drought
7 King's Lynn II	Sandy loam	Wheat	April 15	Oct. 26	Suffered from drought
8 Newark I ..	Moorland	Wheat	April 19	Nov. 4, 5 & 7	Factory "lime" for beet
9 Selby I ..	Light	Peas	April 15	Oct. 17, 18 & 19	—
10 Wissington I ..	Light loam	Barley	April 12	Nov. 18	Deep ploughed
11 Wissington III	Sand	Rye	April 13	Oct. 25	—
12 Bardney I ..	Sand	Wheat	April 14	Oct. 27	Dung for beet
13 Bardney II ..	Loam	Wheat	May 5*	Oct. 26	Redrilled
14 Brigg I ..	Sand	Oats	April 14	Nov. 1	Limed for beet
15 Brigg II ..	Medium loam	Barley	April 11	Nov. 28	—
16 Bury II ..	Light	Wheat	April 18	Nov. 8	Suffered from drought
17 Cupar I ..	Medium	Wheat	April 25	Oct. 24-26	Some game damage
18 Ipswich I ..	Sandy loam	Barley	April 28	Nov. 10 & 11	Suffered from drought
19 Kidderminster	Medium sand	Brussels Sprouts	April 23	Oct. 28-29	Very good land
20 Poppleton ..	Medium loam	Barley	April 28	Nov. 7	Limed for beet
21 Bury I ..	Light	Wheat	April 26	Nov. 17	—
22 Cupar II ..	Medium loam	Hay	April 25	Oct. 20	—
23 Ipswich II ..	Loam	Wheat	May 4	Nov. 21	Suffered from drought
24 Oaklands II ..	Gravel	Oats	April 13	Oct. 18	Suffered from drought
25 Spalding I ..	Medium gravel	Barley	April 19	Oct. 13 & 14	Suffered from drought
26 Peterboro' I ..	Heavy loam	Wheat	Mar. 28	Oct. 10	Dunged for beet
27 Felstead ..	Heavy clay	Fallow	April 20	Oct. 19	Suffered from drought
28 Oaklands I ..	Heavy loam	Oats	April 23	Nov. 15	—
29 Selby II ..	Strong warp	Wheat	April 12	Oct. 27	Limed for beet
30 Ely ..	Black fen	Potatoes	April 13	Nov. 25	Good land
31 Peterboro' II ..	Light black fen	Wheat	April 18	Nov. 17	—
32 Wissington II	Black fen	Wheat	April 13	Nov. 17	—

\*Second sowing

*Significant Responses*

		N	P	K	Symbols
Total sugar	(32)	+*	+*	+*	+ = Positive } Significant 0 = No } average - = Negative } responses (32) No. of centres * = Significant differences between centres
Tops	(28)	+*	0	0*	
		Curvature			
Total sugar	..	-*	0	0	
Tops	..	0	0	0	
		<b>N × P</b>	<b>N × K</b>	<b>P × K</b>	
Total sugar	..	0	0*	0	
Tops	..	0	0*	0	

*Mean Responses per 1 cwt. of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O*

	N		P		K	
	Average 1933-37	1938	Average 1933-37	1938	Average 1933-37	1938
Total sugar—cwt.	+4.8	+2.4	+1.4	+1.1	+1.3	+2.4
Roots—tons ..	+1.70	+0.95	+0.40	+0.39	+0.26	+0.59
Tops—tons ..	+3.47	+3.44	+0.42	+0.32	+0.14	+0.10
Sugar % ..	-0.55	-0.50	+0.02	-0.08	+0.22	+0.28
Plant number ..	+0.4	-0.2	+0.4	-0.1	+0.3	+0.3
Purity % ..	-0.5	-0.2	+0.3	-0.2	+0.1	+0.2



*Main Effects and First Order Interactions*  
*Total Sugar : cwt. per acre*

Centre		P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean		K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	
1	N <sub>0</sub>	39.2	40.9	40.4	37.9	41.4	41.3	40.2	P <sub>0</sub>	39.3	43.2	44.6	
	N <sub>1</sub>	45.8	45.1	43.5	44.1	45.0	45.4	44.8		P <sub>1</sub>	42.3	43.2	42.6
	N <sub>2</sub>	42.1	42.1	40.4	39.9	42.3	42.4	41.5		P <sub>2</sub>	40.3	42.3	41.8
	Mean	42.4	42.7	41.5	40.6	42.9	43.0	42.2	±1.44. Means : ±0.830				
2	N <sub>0</sub>	35.7	34.3	37.9	33.7	37.1	37.1	36.0	P <sub>0</sub>	31.3	36.4	41.0	
	N <sub>1</sub>	38.0	39.5	40.9	37.7	39.0	41.8	39.5		P <sub>1</sub>	35.4	36.3	39.4
	N <sub>2</sub>	35.0	37.4	37.1	34.8	36.4	38.2	36.5		P <sub>2</sub>	39.4	39.8	36.7
	Mean	36.2	37.1	38.6	35.4	37.5	39.0	37.3	±1.31. Means : ±0.757				
3	N <sub>0</sub>	10.5	13.2	10.0	10.5	11.5	11.8	11.3	P <sub>0</sub>	9.2	11.4	14.1	
	N <sub>1</sub>	11.6	13.0	13.3	9.9	11.9	16.1	12.6		P <sub>1</sub>	10.4	12.5	14.2
	N <sub>2</sub>	12.6	10.9	13.7	9.5	13.4	14.2	12.4		P <sub>2</sub>	10.4	12.9	13.8
	Mean	11.6	12.4	12.3	10.0	12.3	14.0	12.1	±1.15. Means : ±0.667				
4	N <sub>0</sub>	18.6	17.6	16.5	17.3	17.3	18.0	17.6	P <sub>0</sub>	17.4	20.2	18.7	
	N <sub>1</sub>	19.1	18.4	18.4	16.7	19.2	19.9	18.6		P <sub>1</sub>	17.7	18.7	20.2
	N <sub>2</sub>	18.7	20.6	19.9	18.6	20.1	20.5	19.7		P <sub>2</sub>	17.6	17.7	19.5
	Mean	18.8	18.9	18.3	17.6	18.9	19.5	18.6	±0.883. Means : ±0.510				
5	N <sub>0</sub>	17.6	21.4	20.1	14.8	20.9	23.3	19.7	P <sub>0</sub>	12.9	20.0	23.7	
	N <sub>1</sub>	19.3	23.8	22.3	16.3	23.4	25.7	21.8		P <sub>1</sub>	16.4	23.5	25.5
	N <sub>2</sub>	19.8	20.2	20.3	13.7	20.6	25.8	20.1		P <sub>2</sub>	15.5	21.5	25.6
	Mean	18.9	21.8	20.9	15.0	21.7	25.0	20.5	±0.785. Means : ±0.453				
6	N <sub>0</sub>	12.4	13.9	16.0	13.6	14.8	13.9	14.1	P <sub>0</sub>	13.3	14.8	16.0	
	N <sub>1</sub>	16.4	15.4	16.2	14.3	16.0	17.7	16.0		P <sub>1</sub>	14.6	16.2	16.3
	N <sub>2</sub>	15.2	17.9	16.6	14.2	16.1	19.4	16.6		P <sub>2</sub>	14.2	15.9	18.7
	Mean	14.7	15.7	16.3	14.0	15.6	17.0	15.6	±0.872. Means : ±0.503				
7	N <sub>0</sub>	20.5	20.9	20.8	20.9	19.5	21.8	20.7	P <sub>0</sub>	17.8	19.1	19.7	
	N <sub>1</sub>	20.3	16.5	17.0	16.9	18.2	18.7	17.9		P <sub>1</sub>	18.8	18.3	17.3
	N <sub>2</sub>	15.8	17.0	17.0	17.3	16.9	15.7	16.6		P <sub>2</sub>	18.6	17.2	19.1
	Mean	18.9	18.1	18.3	18.4	18.2	18.7	18.4	±1.26. Means : ±0.727				
8	N <sub>0</sub>	20.6	23.3	25.4	18.2	23.8	27.4	23.1	P <sub>0</sub>	21.8	27.0	29.3	
	N <sub>1</sub>	27.7	31.1	33.1	23.7	31.0	37.2	30.6		P <sub>1</sub>	21.9	29.7	34.9
	N <sub>2</sub>	29.7	32.1	30.7	23.4	33.9	35.3	30.8		P <sub>2</sub>	21.6	31.9	35.7
	Mean	26.0	28.8	29.7	21.8	29.5	33.3	28.2	±1.14. Means : ±0.657				
9	N <sub>0</sub>	22.1	24.0	18.3	22.3	20.5	21.6	21.5	P <sub>0</sub>	30.9	29.1	31.0	
	N <sub>1</sub>	32.2	34.1	32.9	35.6	32.5	31.1	33.1		P <sub>1</sub>	33.2	32.2	30.2
	N <sub>2</sub>	36.6	37.5	32.6	34.0	36.4	36.3	35.6		P <sub>2</sub>	27.8	28.2	27.9
	Mean	30.3	31.9	27.9	30.6	29.8	29.7	30.0	±1.73. Means : ±0.997				
10	N <sub>0</sub>	41.9	44.7	41.9	43.2	42.9	42.5	42.8	P <sub>0</sub>	38.6	43.4	43.4	
	N <sub>1</sub>	43.3	43.2	41.8	38.9	44.1	45.4	42.8		P <sub>1</sub>	41.8	42.3	43.1
	N <sub>2</sub>	40.2	39.3	43.3	39.2	40.9	42.8	40.9		P <sub>2</sub>	40.9	42.1	44.0
	Mean	41.8	42.4	42.3	40.4	42.6	43.5	42.2	±1.92. Means : ±1.11				
11	N <sub>0</sub>	20.8	26.2	27.2	22.9	26.1	25.2	24.7	P <sub>0</sub>	24.4	28.0	25.2	
	N <sub>1</sub>	29.0	25.9	23.6	26.1	25.8	26.6	26.2		P <sub>1</sub>	22.5	27.9	31.8
	N <sub>2</sub>	27.8	30.2	28.1	25.0	31.7	29.3	28.7		P <sub>2</sub>	27.0	27.7	24.2
	Mean	25.9	27.4	26.3	24.6	27.9	27.1	26.5	±2.63. Means : ±1.52				

Centre		Total Sugar : cwt. per acre						Mean		K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
		P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>					
12	N <sub>0</sub>	41.6	44.4	45.6	44.4	41.5	45.7	43.9	P <sub>0</sub>	43.2	43.9	43.7
	N <sub>1</sub>	45.3	44.5	44.5	42.8	45.1	46.4	44.8	P <sub>1</sub>	42.6	43.4	47.6
	N <sub>2</sub>	43.8	44.7	47.1	42.8	45.6	47.2	45.2	P <sub>2</sub>	44.1	44.9	48.1
	Mean	43.6	44.5	45.7	43.3	44.1	46.4	44.6	±1.39. Means : ±0.800			
13	N <sub>0</sub>	29.7	30.5	22.4	30.6	24.9	27.0	27.5	P <sub>0</sub>	32.5	30.6	27.4
	N <sub>1</sub>	30.6	31.8	34.4	32.4	30.1	34.4	32.3	P <sub>1</sub>	33.2	32.8	32.3
	N <sub>2</sub>	30.2	36.0	36.4	35.5	38.0	29.1	34.2	P <sub>2</sub>	32.8	29.6	30.8
	Mean	30.2	32.8	31.1	32.8	31.0	30.2	31.3	±2.61. Means : ±1.51			
14	N <sub>0</sub>	44.3	41.7	48.4	44.3	44.9	45.1	44.8	P <sub>0</sub>	44.2	48.0	48.7
	N <sub>1</sub>	48.7	49.0	54.3	51.6	48.3	52.1	50.7	P <sub>1</sub>	46.8	45.7	45.6
	N <sub>2</sub>	47.8	47.3	46.5	44.2	47.0	50.4	47.2	P <sub>2</sub>	49.2	46.6	53.4
	Mean	46.9	46.0	49.7	46.7	46.7	49.2	47.6	±2.63. Means : ±1.52			
15	N <sub>0</sub>	32.3	28.4	29.7	27.5	28.8	34.1	30.1	P <sub>0</sub>	34.3	33.7	39.6
	N <sub>1</sub>	33.0	35.5	37.5	35.1	36.2	34.7	35.3	P <sub>1</sub>	34.1	38.4	35.5
	N <sub>2</sub>	42.2	44.1	41.1	39.2	45.2	43.0	42.5	P <sub>2</sub>	33.5	38.1	36.7
	Mean	35.8	36.0	36.1	33.9	36.7	37.3	36.0	±2.37. Means : ±1.37			
16	N <sub>0</sub>	17.2	15.9	18.5	15.4	18.0	18.2	17.2	P <sub>0</sub>	13.4	16.0	17.9
	N <sub>1</sub>	15.4	17.5	17.6	14.4	17.0	19.1	16.8	P <sub>1</sub>	14.7	17.2	18.0
	N <sub>2</sub>	14.7	16.4	17.0	14.6	15.8	17.8	16.1	P <sub>2</sub>	16.3	17.5	19.2
	Mean	15.7	16.6	17.7	14.8	16.9	18.3	16.7	±0.970. Means : ±0.560			
17	N <sub>0</sub>	25.6	27.2	27.0	29.0	26.1	24.6	26.6	P <sub>0</sub>	28.7	24.9	26.8
	N <sub>1</sub>	29.8	27.9	31.4	28.6	29.2	31.3	29.7	P <sub>1</sub>	26.7	28.0	26.2
	N <sub>2</sub>	25.0	25.9	27.4	27.0	28.2	23.1	26.1	P <sub>2</sub>	29.1	30.6	26.0
	Mean	26.8	27.0	28.6	28.2	27.8	26.4	27.5	±2.22. Means : ±1.28			
18	N <sub>0</sub>	18.9	18.8	14.2	16.5	14.4	21.0	17.3	P <sub>0</sub>	15.9	18.2	18.9
	N <sub>1</sub>	18.4	17.4	21.4	14.7	18.9	23.6	19.1	P <sub>1</sub>	16.5	17.9	18.9
	N <sub>2</sub>	15.7	17.0	16.2	15.0	16.8	17.1	16.3	P <sub>2</sub>	13.8	14.1	24.0
	Mean	17.7	17.8	17.3	15.4	16.7	20.6	17.6	±2.42. Means : ±1.40			
19	N <sub>0</sub>	36.2	40.0	40.7	43.5	36.9	36.5	39.0	P <sub>0</sub>	36.2	36.9	32.1
	N <sub>1</sub>	32.2	39.9	38.2	34.6	41.2	34.5	36.8	P <sub>1</sub>	37.5	40.7	39.0
	N <sub>2</sub>	36.8	37.3	33.9	32.2	35.6	40.1	36.0	P <sub>2</sub>	36.6	36.2	40.0
	Mean	35.1	39.0	37.6	36.8	37.9	37.0	37.2	±2.12. Means : ±1.22			
20	N <sub>0</sub>	18.9	20.1	19.9	18.0	16.6	24.4	19.7	P <sub>0</sub>	22.6	20.5	23.9
	N <sub>1</sub>	21.5	25.8	22.8	23.9	24.8	21.5	23.4	P <sub>1</sub>	22.7	23.9	27.7
	N <sub>2</sub>	26.4	28.3	32.3	28.6	28.3	30.2	29.0	P <sub>2</sub>	25.2	25.3	24.5
	Mean	22.3	24.7	25.0	23.5	23.2	25.4	24.0	±2.27. Means : ±1.31			
21(a)	N <sub>0</sub>	13.9	16.2	16.8	13.3	17.1	16.6	15.6	P <sub>0</sub>	13.3	14.9	16.7
	N <sub>1</sub>	14.6	15.5	15.5	14.1	14.7	16.6	15.2	P <sub>1</sub>	15.1	16.3	18.3
	N <sub>2</sub>	16.4	18.1	17.7	16.4	17.2	18.6	17.4	P <sub>2</sub>	15.4	17.8	16.8
	Mean	15.0	16.6	16.7	14.6	16.3	17.3	16.0	±0.820. Means : ±0.473			
22	N <sub>0</sub>	26.9	25.0	26.5	26.8	23.8	27.8	26.1	P <sub>0</sub>	29.2	30.0	30.2
	N <sub>1</sub>	30.0	26.7	32.3	27.7	27.8	33.4	29.6	P <sub>1</sub>	27.3	25.3	29.8
	N <sub>2</sub>	32.5	30.7	30.6	31.1	32.2	30.5	31.3	P <sub>2</sub>	29.0	28.5	31.8
	Mean	29.8	27.5	29.8	28.5	27.9	30.6	29.0	±1.78. Means : ±1.03			

(a) At this centre three plots were missing. Only the yields for total sugar adjusted for plant number were analyzed.

Total Sugar : *cwt. per acre*

Centre		P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean		K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	
23	N <sub>0</sub>	17.9	22.1	18.9	20.9	18.2	19.8	19.6	P <sub>0</sub>	22.1	18.5	18.2	
	N <sub>1</sub>	20.5	21.0	20.8	21.2	20.0	21.1	20.8		P <sub>1</sub>	20.6	21.6	22.3
	N <sub>2</sub>	20.4	21.5	22.8	20.3	22.1	22.1	21.5		P <sub>2</sub>	19.8	20.2	22.5
	Mean	19.6	21.5	20.8	20.8	20.1	21.0	20.6	±1.21. Means: ±0.700				
24	N <sub>0</sub>	11.8	11.5	10.7	10.8	11.9	11.3	11.3	P <sub>0</sub>	10.8	12.0	10.5	
	N <sub>1</sub>	11.5	11.4	11.2	10.4	12.1	11.6	11.4		P <sub>1</sub>	11.7	11.2	10.6
	N <sub>2</sub>	10.1	10.5	10.0	10.7	9.7	10.2	10.2		P <sub>2</sub>	9.5	10.5	11.9
	Mean	11.1	11.1	10.6	10.7	11.2	11.0	11.0	±0.664. Means: ±0.383				
25	N <sub>0</sub>	11.8	13.7	14.4	13.1	10.2	16.5	13.3	P <sub>0</sub>	11.4	11.9	13.7	
	N <sub>1</sub>	11.8	15.4	16.0	12.9	13.7	16.7	14.4		P <sub>1</sub>	13.1	13.3	16.1
	N <sub>2</sub>	13.2	13.4	12.7	11.1	13.2	15.0	13.1		P <sub>2</sub>	12.6	11.9	18.5
	Mean	12.3	14.1	14.3	12.4	12.4	16.1	13.6	±1.67. Means: ±0.967				
26	N <sub>0</sub>	27.0	32.0	30.2	29.8	29.3	30.1	29.7	P <sub>0</sub>	26.5	28.0	25.9	
	N <sub>1</sub>	26.9	31.1	31.4	30.7	31.3	27.4	29.8		P <sub>1</sub>	30.6	31.7	35.0
	N <sub>2</sub>	26.5	34.2	37.6	31.1	32.3	35.0	32.8		P <sub>2</sub>	34.4	33.2	31.6
	Mean	26.8	32.4	33.1	30.5	31.0	30.8	30.8	±1.80. Means: ±1.04				
27	N <sub>0</sub>	22.0	22.6	24.1	20.3	23.8	24.7	22.9	P <sub>0</sub>	22.1	23.2	25.1	
	N <sub>1</sub>	26.2	26.3	26.1	27.2	25.2	26.3	26.2		P <sub>1</sub>	23.8	24.5	24.7
	N <sub>2</sub>	22.1	24.0	23.8	22.3	22.6	25.0	23.3		P <sub>2</sub>	23.9	23.9	26.2
	Mean	23.4	24.3	24.7	23.3	23.9	25.3	24.2	±1.12. Means: ±0.647				
28	N <sub>0</sub>	24.6	23.7	24.2	19.8	26.1	26.6	24.2	P <sub>0</sub>	19.4	26.2	28.4	
	N <sub>1</sub>	23.1	24.3	30.6	19.3	26.3	32.4	26.0		P <sub>1</sub>	17.1	25.7	28.5
	N <sub>2</sub>	26.2	23.4	24.0	18.3	24.7	30.7	24.5		P <sub>2</sub>	20.9	25.2	32.7
	Mean	24.6	23.8	26.3	19.1	25.7	29.9	24.9	±2.02. Means: ±1.17				
29	N <sub>0</sub>	27.5	24.2	25.4	26.0	24.1	27.0	25.7	P <sub>0</sub>	29.4	29.2	25.1	
	N <sub>1</sub>	28.4	29.6	26.2	28.7	27.2	28.3	28.1		P <sub>1</sub>	26.9	24.5	29.4
	N <sub>2</sub>	27.8	27.0	27.5	28.8	25.1	28.4	27.4		P <sub>2</sub>	27.2	22.8	29.1
	Mean	27.9	26.9	26.4	27.8	25.5	27.9	27.1	±1.86. Means: ±1.07				
30	N <sub>0</sub>	50.0	50.5	42.1	44.7	46.2	51.7	47.6	P <sub>0</sub>	47.2	44.7	52.2	
	N <sub>1</sub>	46.4	47.2	39.6	43.4	40.1	49.6	44.4		P <sub>1</sub>	45.4	47.0	48.8
	N <sub>2</sub>	47.7	43.5	45.9	43.8	45.3	47.9	45.7		P <sub>2</sub>	39.4	40.0	48.3
	Mean	48.0	47.1	42.5	44.0	43.9	49.8	45.9	±3.27. Means: ±1.89				
31	N <sub>0</sub>	22.9	19.6	31.1	22.1	21.7	29.9	24.6	P <sub>0</sub>	21.2	19.7	23.6	
	N <sub>1</sub>	22.7	25.7	20.7	19.7	23.8	25.7	23.0		P <sub>1</sub>	17.3	21.8	28.1
	N <sub>2</sub>	18.7	21.9	17.6	18.4	19.4	20.4	19.4		P <sub>2</sub>	21.8	23.3	24.4
	Mean	21.5	22.4	23.1	20.1	21.6	25.3	22.3	±2.96. Means: ±1.71				
32	N <sub>0</sub>	4.9	11.9	17.2	9.8	10.7	13.4	11.3	P <sub>0</sub>	8.7	8.2	10.1	
	N <sub>1</sub>	9.8	12.7	22.0	14.9	16.5	13.1	14.8		P <sub>1</sub>	12.1	14.6	12.5
	N <sub>2</sub>	12.3	14.6	15.4	14.8	14.1	13.4	14.1		P <sub>2</sub>	18.7	18.5	17.3
	Mean	9.0	13.0	18.2	13.2	13.8	13.3	13.4	±1.89. Means: ±1.09				

Centre		Roots (washed) : tons per acre						Mean					
		P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>						
1	N <sub>0</sub>	11.41	11.96	11.95	11.12	12.17	12.04	11.77	P <sub>0</sub>	11.72	12.80	12.89	
	N <sub>1</sub>	13.47	12.99	12.97	12.89	13.25	13.27	13.14		P <sub>1</sub>	12.43	12.52	12.48
	N <sub>2</sub>	12.53	12.49	12.15	12.23	12.43	12.50	12.39		P <sub>2</sub>	12.10	12.53	12.44
	Mean	12.47	12.48	12.35	12.08	12.62	12.60	12.43					
2	N <sub>0</sub>	10.83	10.72	11.59	10.37	11.42	11.36	11.05	P <sub>0</sub>	9.90	10.92	12.14	
	N <sub>1</sub>	11.40	11.83	12.40	11.60	11.56	12.48	11.88		P <sub>1</sub>	10.75	11.03	11.89
	N <sub>2</sub>	10.73	11.11	11.10	10.85	11.01	11.09	10.98		P <sub>2</sub>	12.17	12.04	10.89
	Mean	10.99	11.22	11.70	10.94	11.33	11.64	11.30					
3	N <sub>0</sub>	3.55	4.38	3.43	3.59	3.79	3.99	3.79	P <sub>0</sub>	3.26	3.94	4.74	
	N <sub>1</sub>	3.93	4.49	4.50	3.54	4.08	5.31	4.31		P <sub>1</sub>	3.64	4.33	4.75
	N <sub>2</sub>	4.45	3.85	4.72	3.46	4.72	4.85	4.34		P <sub>2</sub>	3.68	4.32	4.66
	Mean	3.98	4.24	4.22	3.53	4.20	4.72	4.15					
4	N <sub>0</sub>	5.87	5.58	5.29	5.53	5.48	5.73	5.58	P <sub>0</sub>	5.64	6.44	6.02	
	N <sub>1</sub>	6.20	5.91	5.84	5.47	6.15	6.33	5.98		P <sub>1</sub>	5.74	6.06	6.43
	N <sub>2</sub>	6.03	6.74	6.58	6.25	6.50	6.60	6.45		P <sub>2</sub>	5.87	5.63	6.21
	Mean	6.03	6.08	5.90	5.75	6.04	6.22	6.00					
5	N <sub>0</sub>	5.33	6.53	6.18	4.70	6.45	6.90	6.02	P <sub>0</sub>	4.12	6.15	7.16	
	N <sub>1</sub>	5.95	7.23	6.94	5.15	7.13	7.84	6.70		P <sub>1</sub>	5.17	7.17	7.67
	N <sub>2</sub>	6.15	6.24	6.27	4.36	6.44	7.86	6.22		P <sub>2</sub>	4.93	6.69	7.77
	Mean	5.81	6.67	6.46	4.74	6.67	7.53	6.31					
6	N <sub>0</sub>	3.98	4.35	4.91	4.28	4.66	4.30	4.41	P <sub>0</sub>	4.42	4.82	5.11	
	N <sub>1</sub>	5.29	4.92	5.23	4.74	5.10	5.60	5.14		P <sub>1</sub>	4.68	5.21	5.19
	N <sub>2</sub>	5.08	5.81	5.45	4.67	5.39	6.27	5.45		P <sub>2</sub>	4.60	5.12	5.87
	Mean	4.78	5.03	5.19	4.56	5.05	5.39	5.00					
7	N <sub>0</sub>	6.40	6.39	6.44	6.49	6.15	6.60	6.41	P <sub>0</sub>	5.66	6.23	6.23	
	N <sub>1</sub>	6.41	5.36	5.69	5.60	5.87	6.00	5.82		P <sub>1</sub>	6.11	5.74	5.57
	N <sub>2</sub>	5.30	5.66	5.92	5.73	5.75	5.39	5.62		P <sub>2</sub>	6.05	5.81	6.19
	Mean	6.04	5.80	6.02	5.94	5.92	6.00	5.95					
8	N <sub>0</sub>	5.90	6.59	7.35	5.35	6.74	7.75	6.61	P <sub>0</sub>	6.38	7.59	8.36	
	N <sub>1</sub>	7.83	8.89	9.23	6.80	8.80	10.35	8.65		P <sub>1</sub>	6.35	8.56	9.88
	N <sub>2</sub>	8.60	9.32	8.92	7.07	9.55	10.21	8.94		P <sub>2</sub>	6.50	8.94	10.07
	Mean	7.44	8.26	8.50	6.41	8.36	9.44	8.07					
9	N <sub>0</sub>	6.91	7.37	5.81	7.02	6.31	6.77	6.70	P <sub>0</sub>	9.50	8.59	9.59	
	N <sub>1</sub>	9.75	10.58	10.08	10.75	9.88	9.77	10.13		P <sub>1</sub>	10.07	9.87	9.33
	N <sub>2</sub>	11.01	11.32	10.21	10.47	11.07	10.99	10.84		P <sub>2</sub>	8.67	8.81	8.62
	Mean	9.22	9.76	8.70	9.41	9.09	9.18	9.23					
10	N <sub>0</sub>	12.54	13.55	12.54	13.13	12.89	12.60	12.88	P <sub>0</sub>	11.56	13.33	12.99	
	N <sub>1</sub>	12.99	12.86	12.62	11.78	13.37	13.31	12.82		P <sub>1</sub>	12.85	12.98	12.74
	N <sub>2</sub>	12.36	12.16	13.13	12.00	12.82	12.83	12.55		P <sub>2</sub>	12.50	12.77	13.01
	Mean	12.63	12.86	12.76	12.30	13.03	12.92	12.75					
11	N <sub>0</sub>	6.33	7.79	8.25	7.04	7.89	7.43	7.46	P <sub>0</sub>	7.75	8.62	7.46	
	N <sub>1</sub>	8.89	8.04	7.37	8.27	8.04	8.00	8.10		P <sub>1</sub>	7.12	8.56	9.64
	N <sub>2</sub>	8.60	9.50	8.96	8.08	9.79	9.18	9.02		P <sub>2</sub>	8.52	8.54	7.52
	Mean	7.94	8.44	8.19	7.80	8.57	8.20	8.19					

Roots (washed) : tons per<sup>2</sup>acre

Centre		P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean		K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	
12	N <sub>0</sub>	12.24	13.28	13.60	13.40	12.36	13.36	13.04	P <sub>0</sub>	13.20	13.04	12.96	
	N <sub>1</sub>	13.51	13.43	13.36	12.92	13.50	13.88	13.44		P <sub>1</sub>	12.96	13.23	14.19
	N <sub>2</sub>	13.45	13.67	14.14	13.16	13.82	14.27	13.75		P <sub>2</sub>	13.33	13.40	14.36
	Mean	13.07	13.46	13.70	13.16	13.23	13.84	13.41					
13	N <sub>0</sub>	8.73	8.92	6.46	8.80	7.35	7.96	8.04	P <sub>0</sub>	9.56	8.97	8.12	
	N <sub>1</sub>	8.93	9.68	10.12	9.65	9.01	10.07	9.58		P <sub>1</sub>	9.85	9.89	9.60
	N <sub>2</sub>	8.99	10.73	10.54	10.54	11.06	8.65	10.08		P <sub>2</sub>	9.58	8.57	8.96
	Mean	8.88	9.78	9.04	9.66	9.14	8.89	9.23					
14	N <sub>0</sub>	13.34	12.43	14.52	13.37	13.35	13.58	13.43	P <sub>0</sub>	13.36	14.36	14.61	
	N <sub>1</sub>	14.69	14.31	15.88	15.23	14.36	15.29	14.96		P <sub>1</sub>	13.89	13.47	13.61
	N <sub>2</sub>	14.30	14.24	14.46	13.58	14.22	15.20	14.33		P <sub>2</sub>	14.93	14.09	15.84
	Mean	14.11	13.66	14.95	14.06	13.98	14.69	14.24					
15	N <sub>0</sub>	9.39	8.28	8.80	8.23	8.45	9.79	8.82	P <sub>0</sub>	10.32	9.93	11.30	
	N <sub>1</sub>	9.73	10.34	11.00	10.46	10.55	10.05	10.36		P <sub>1</sub>	10.08	11.17	10.30
	N <sub>2</sub>	12.43	12.93	12.22	11.90	13.34	12.34	12.52		P <sub>2</sub>	10.19	11.24	10.59
	Mean	10.52	10.52	10.67	10.20	10.78	10.73	10.57					
16	N <sub>0</sub>	5.27	4.91	5.52	4.83	5.46	5.41	5.23	P <sub>0</sub>	4.28	5.04	5.24	
	N <sub>1</sub>	4.77	5.16	5.22	4.57	5.07	5.51	5.05		P <sub>1</sub>	4.56	5.18	5.35
	N <sub>2</sub>	4.52	5.01	5.18	4.46	4.91	5.35	4.90		P <sub>2</sub>	5.01	5.22	5.68
	Mean	4.86	5.03	5.30	4.62	5.14	5.42	5.06					
17	N <sub>0</sub>	7.97	8.22	8.09	8.61	7.90	7.77	8.09	P <sub>0</sub>	8.73	7.59	8.44	
	N <sub>1</sub>	8.82	8.81	9.37	8.60	8.83	9.56	9.00		P <sub>1</sub>	8.25	9.01	8.29
	N <sub>2</sub>	7.97	8.52	8.58	8.59	8.98	7.51	8.36		P <sub>2</sub>	8.82	9.11	8.12
	Mean	8.25	8.52	8.68	8.60	8.57	8.28	8.48					
18	N <sub>0</sub>	6.33	6.36	4.82	5.70	4.90	6.90	5.84	P <sub>0</sub>	5.57	6.31	6.21	
	N <sub>1</sub>	6.27	6.08	7.40	5.27	6.60	7.88	6.58		P <sub>1</sub>	5.87	6.19	6.47
	N <sub>2</sub>	5.49	6.08	5.85	5.47	5.95	6.00	5.81		P <sub>2</sub>	5.01	4.95	8.11
	Mean	6.03	6.18	6.02	5.48	5.82	6.93	6.08					
19	N <sub>0</sub>	10.79	12.31	11.72	12.55	11.52	10.75	11.61	P <sub>0</sub>	10.81	11.29	9.36	
	N <sub>1</sub>	9.71	11.77	11.42	10.51	11.94	10.45	10.96		P <sub>1</sub>	10.92	12.30	11.87
	N <sub>2</sub>	10.96	11.02	9.96	9.48	10.76	11.69	10.65		P <sub>2</sub>	10.82	10.63	11.66
	Mean	10.48	11.70	11.03	10.85	11.41	10.96	11.07					
20	N <sub>0</sub>	5.17	5.37	5.48	4.86	4.52	6.63	5.34	P <sub>0</sub>	6.22	5.57	6.56	
	N <sub>1</sub>	5.83	7.18	6.30	6.52	6.91	5.88	6.44		P <sub>1</sub>	6.17	6.61	7.47
	N <sub>2</sub>	7.35	7.71	8.91	7.89	7.76	8.31	7.99		P <sub>2</sub>	6.89	7.01	6.79
	Mean	6.11	6.75	6.90	6.42	6.40	6.94	6.59					
22	N <sub>0</sub>	8.07	7.33	7.97	8.01	7.14	8.23	7.79	P <sub>0</sub>	8.74	8.83	8.84	
	N <sub>1</sub>	8.82	8.08	9.50	8.36	8.29	9.75	8.80		P <sub>1</sub>	8.08	7.56	8.74
	N <sub>2</sub>	9.52	8.97	9.03	9.08	9.53	8.91	9.17		P <sub>2</sub>	8.63	8.57	9.31
	Mean	8.80	8.12	8.84	8.48	8.32	8.96	8.59					

Roots (washed) : tons per acre

Centre		P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean		K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
23	N <sub>0</sub>	5.83	6.99	6.22	6.76	5.84	6.44	6.34	P <sub>0</sub>	7.34	6.09	5.98
	N <sub>1</sub>	6.80	6.97	6.81	7.04	6.55	6.99	6.86	P <sub>1</sub>	6.80	7.03	7.38
	N <sub>2</sub>	6.78	7.25	7.46	6.87	7.29	7.33	7.16	P <sub>2</sub>	6.53	6.56	7.40
	Mean	6.47	7.07	6.83	6.89	6.56	6.92	6.79				
24	N <sub>0</sub>	4.00	3.94	3.65	3.76	4.05	3.78	3.86	P <sub>0</sub>	3.84	4.24	3.67
	N <sub>1</sub>	4.02	4.13	3.91	3.69	4.22	4.16	4.02	P <sub>1</sub>	4.07	3.91	3.78
	N <sub>2</sub>	3.73	3.69	3.58	3.80	3.62	3.58	3.67	P <sub>2</sub>	3.34	3.74	4.07
	Mean	3.92	3.92	3.71	3.75	3.96	3.84	3.85				
25	N <sub>0</sub>	3.46	4.06	4.13	3.94	3.02	4.68	3.88	P <sub>0</sub>	3.41	3.53	4.00
	N <sub>1</sub>	3.50	4.64	4.77	3.91	4.16	4.84	4.30	P <sub>1</sub>	3.98	4.07	4.74
	N <sub>2</sub>	3.98	4.09	4.03	3.47	4.13	4.51	4.04	P <sub>2</sub>	3.93	3.71	5.29
	Mean	3.65	4.26	4.31	3.77	3.77	4.68	4.07				
26	N <sub>0</sub>	7.90	9.11	8.78	8.66	8.52	8.60	8.59	P <sub>0</sub>	8.04	8.40	7.76
	N <sub>1</sub>	8.05	9.10	9.08	9.09	9.04	8.10	8.74	P <sub>1</sub>	9.15	9.27	10.12
	N <sub>2</sub>	8.24	10.33	11.03	9.47	9.70	10.44	9.87	P <sub>2</sub>	10.04	9.58	9.26
	Mean	8.06	9.52	9.63	9.08	9.08	9.05	9.07				
27	N <sub>0</sub>	6.67	7.02	7.45	6.31	7.27	7.56	7.05	P <sub>0</sub>	6.92	7.32	7.71
	N <sub>1</sub>	8.05	8.33	8.03	8.38	8.05	7.99	8.14	P <sub>1</sub>	7.50	7.92	7.74
	N <sub>2</sub>	7.23	7.81	7.80	7.28	7.47	8.09	7.62	P <sub>2</sub>	7.55	7.55	8.18
	Mean	7.32	7.72	7.76	7.32	7.60	7.88	7.60				
28	N <sub>0</sub>	7.26	6.83	7.09	5.90	7.59	7.68	7.06	P <sub>0</sub>	5.84	7.81	8.36
	N <sub>1</sub>	6.87	7.20	9.35	5.97	7.86	9.59	7.81	P <sub>1</sub>	5.22	7.57	8.40
	N <sub>2</sub>	7.88	7.17	7.44	5.68	7.49	9.32	7.50	P <sub>2</sub>	6.50	7.56	9.83
	Mean	7.33	7.07	7.96	5.85	7.65	8.86	7.45				
29	N <sub>0</sub>	8.88	7.88	8.39	8.48	7.96	8.71	8.38	P <sub>0</sub>	9.88	9.38	8.20
	N <sub>1</sub>	9.38	9.81	8.75	9.46	8.99	9.48	9.31	P <sub>1</sub>	8.87	8.17	9.62
	N <sub>2</sub>	9.21	8.98	9.15	9.59	8.47	9.29	9.11	P <sub>2</sub>	8.77	7.87	9.65
	Mean	9.16	8.89	8.76	9.17	8.48	9.16	8.94				
30	N <sub>0</sub>	15.83	16.04	13.57	14.41	14.55	16.48	15.15	P <sub>0</sub>	14.88	14.20	16.44
	N <sub>1</sub>	14.67	14.87	12.75	13.82	12.87	15.59	14.10	P <sub>1</sub>	14.69	14.84	15.48
	N <sub>2</sub>	15.01	14.11	14.75	14.06	14.46	15.36	14.62	P <sub>2</sub>	12.72	12.84	15.51
	Mean	15.17	15.01	13.69	14.10	13.96	15.81	14.62				
31	N <sub>0</sub>	6.35	5.54	8.43	6.26	5.96	8.11	6.78	P <sub>0</sub>	5.98	5.46	6.53
	N <sub>1</sub>	6.36	7.24	5.85	5.59	6.65	7.20	6.48	P <sub>1</sub>	5.00	6.22	7.81
	N <sub>2</sub>	5.26	6.25	5.04	5.27	5.53	5.75	5.52	P <sub>2</sub>	6.14	6.46	6.72
	Mean	5.99	6.34	6.44	5.70	6.05	7.02	6.26				
32	N <sub>0</sub>	1.84	4.73	6.45	3.85	4.13	5.04	4.34	P <sub>0</sub>	3.50	3.25	3.83
	N <sub>1</sub>	3.92	4.96	8.23	5.81	6.15	5.16	5.70	P <sub>1</sub>	4.77	5.60	5.03
	N <sub>2</sub>	4.82	5.71	6.11	5.83	5.56	5.25	5.55	P <sub>2</sub>	7.22	7.00	6.57
	Mean	3.53	5.13	6.93	5.16	5.28	5.15	5.20				

Centre	Tops : tons per acre							Mean				
	P <sub>0</sub>	P <sub>1</sub>	P <sub>1</sub>	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	K <sub>0</sub>		K <sub>1</sub>	K <sub>2</sub>		
1	N <sub>0</sub>	11.48	10.54	10.13	11.18	10.22	10.75	10.72	P <sub>0</sub>	12.33	13.29	10.37
	N <sub>1</sub>	11.36	12.12	12.27	13.06	12.33	10.37	11.92	P <sub>1</sub>	13.50	12.62	11.07
	N <sub>2</sub>	13.15	14.52	12.53	13.09	13.70	13.41	13.40	P <sub>2</sub>	11.51	10.34	13.09
	Mean	12.00	12.40	11.64	12.44	12.08	11.51	12.01	±1.13. Means : ±0.650			
2	N <sub>0</sub>	9.98	9.92	12.42	10.95	11.57	9.81	10.77	P <sub>0</sub>	11.71	12.41	10.98
	N <sub>1</sub>	13.76	11.48	12.53	13.35	11.80	12.62	12.59	P <sub>1</sub>	12.80	11.45	11.45
	N <sub>2</sub>	11.36	14.29	13.12	13.24	12.24	13.30	12.92	P <sub>2</sub>	13.03	11.74	13.29
	Mean	11.70	11.90	12.69	12.51	11.87	11.91	12.10	±1.08. Means : ±0.623			
3	N <sub>0</sub>	5.48	5.33	5.24	5.49	5.41	5.15	5.35	P <sub>0</sub>	6.76	6.80	6.87
	N <sub>1</sub>	6.77	6.93	7.14	7.39	6.52	6.93	6.95	P <sub>1</sub>	7.21	7.21	6.17
	N <sub>2</sub>	8.18	8.33	9.13	8.50	9.35	7.78	8.55	P <sub>2</sub>	7.41	7.27	6.83
	Mean	6.81	6.86	7.17	7.13	7.09	6.62	6.95	±0.400. Means : ±0.231			
4	N <sub>0</sub>	5.11	4.96	4.73	5.04	4.76	4.98	4.93	P <sub>0</sub>	6.68	6.56	6.09
	N <sub>1</sub>	6.50	6.17	6.24	6.21	6.61	6.09	6.30	P <sub>1</sub>	6.40	6.55	6.40
	N <sub>2</sub>	7.72	8.23	8.79	8.98	8.04	7.72	8.24	P <sub>2</sub>	7.16	6.31	6.29
	Mean	6.44	6.45	6.59	6.75	6.47	6.26	6.49	±0.224. Means : ±0.158			
5	N <sub>0</sub>	8.54	7.92	9.61	7.46	8.82	9.79	8.69	P <sub>0</sub>	9.16	12.78	13.18
	N <sub>1</sub>	12.50	12.44	11.25	8.60	12.55	15.04	12.06	P <sub>1</sub>	9.39	11.59	11.93
	N <sub>2</sub>	14.08	12.56	11.71	10.24	13.91	14.20	12.78	P <sub>2</sub>	7.75	10.91	13.91
	Mean	11.71	10.97	10.86	8.77	11.76	13.01	11.18	±0.930. Means : ±0.537			
6	N <sub>0</sub>	5.15	5.20	4.94	5.25	5.25	4.79	5.10	P <sub>0</sub>	6.69	6.12	6.09
	N <sub>1</sub>	5.88	6.72	6.95	7.19	6.20	6.16	6.52	P <sub>1</sub>	7.01	6.77	6.69
	N <sub>2</sub>	7.87	8.55	9.07	8.83	8.76	7.91	8.50	P <sub>2</sub>	7.57	7.32	6.08
	Mean	6.30	6.82	6.99	7.09	6.74	6.29	6.70	±0.400. Means : ±0.231			
7	N <sub>0</sub>	5.24	5.04	4.52	5.02	4.74	5.04	4.93	P <sub>0</sub>	5.95	5.72	5.61
	N <sub>1</sub>	5.99	4.88	5.18	5.24	5.41	5.39	5.35	P <sub>1</sub>	5.22	5.41	5.21
	N <sub>2</sub>	6.06	5.92	7.01	6.37	6.53	6.09	6.33	P <sub>2</sub>	5.45	5.55	5.71
	Mean	5.76	5.28	5.57	5.54	5.56	5.51	5.54	±0.387. Means : ±0.223			
8	N <sub>0</sub>	6.61	6.33	7.63	6.02	7.30	7.25	6.86	P <sub>0</sub>	7.83	9.40	9.56
	N <sub>1</sub>	8.85	10.21	9.74	8.12	10.21	10.46	9.60	P <sub>1</sub>	7.97	10.01	10.14
	N <sub>2</sub>	11.32	11.58	12.68	10.22	12.29	13.07	11.86	P <sub>2</sub>	8.56	10.39	11.09
	Mean	8.93	9.37	10.01	8.12	9.93	10.26	9.44	±0.391. Means : ±0.226			
9	N <sub>0</sub>	5.81	5.74	4.17	5.50	4.64	5.57	5.24	P <sub>0</sub>	8.79	7.94	9.95
	N <sub>1</sub>	9.05	9.20	9.09	9.17	8.67	9.49	9.11	P <sub>1</sub>	9.10	9.59	9.36
	N <sub>2</sub>	11.81	13.11	10.92	11.45	12.48	11.92	11.95	P <sub>2</sub>	8.23	8.27	7.68
	Mean	8.89	9.35	8.06	8.71	8.60	9.00	8.77	±0.670. Means : ±0.387			
10	N <sub>0</sub>	8.50	11.88	9.29	11.68	9.29	8.70	9.89	P <sub>0</sub>	10.33	11.48	11.24
	N <sub>1</sub>	10.41	9.97	11.76	9.69	11.40	11.04	10.71	P <sub>1</sub>	12.43	11.92	9.89
	N <sub>2</sub>	14.14	12.39	12.11	12.71	13.74	12.19	12.88	P <sub>2</sub>	11.32	11.04	10.80
	Mean	11.02	11.41	11.06	11.36	11.48	10.64	11.16	±1.34. Means : ±0.773			
11	N <sub>0</sub>	5.71	6.23	6.20	5.83	6.66	5.64	6.04	P <sub>0</sub>	7.54	7.58	6.47
	N <sub>1</sub>	7.60	7.04	6.93	8.18	6.77	6.62	7.19	P <sub>1</sub>	6.77	7.43	7.48
	N <sub>2</sub>	8.29	8.41	8.37	8.31	8.83	7.93	8.36	P <sub>2</sub>	8.02	7.25	6.25
	Mean	7.20	7.22	7.17	7.44	7.42	6.73	7.20	±0.572. Means : ±0.330			

*Tops*: [tons per acre]

Centre		P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean		K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
12	N <sub>0</sub>	13.33	12.20	13.27	14.05	11.67	13.09	12.94	P <sub>0</sub>	16.13	15.00	14.29
	N <sub>1</sub>	14.29	14.41	13.15	13.16	14.11	14.58	13.95	P <sub>1</sub>	13.81	14.17	14.88
	N <sub>2</sub>	17.80	16.25	16.73	16.55	17.85	16.37	16.92	P <sub>2</sub>	13.81	14.46	14.88
	Mean	15.14	14.28	14.38	14.58	14.54	14.68	14.60	±0.785. Means : ±0.453			
13	N <sub>0</sub>	8.00	8.27	6.23	7.63	7.03	7.83	7.50	P <sub>0</sub>	11.02	9.92	10.41
	N <sub>1</sub>	9.83	9.80	9.95	10.15	9.08	10.35	9.86	P <sub>1</sub>	11.18	10.25	10.42
	N <sub>2</sub>	13.52	13.78	14.70	14.34	14.49	13.17	14.00	P <sub>2</sub>	9.92	10.43	10.53
	Mean	10.45	10.62	10.29	10.71	10.20	10.45	10.45	±0.733. Means : ±0.423			
14	N <sub>0</sub>	10.91	10.71	11.88	10.77	11.20	11.53	11.16	P <sub>0</sub>	12.29	14.06	13.41
	N <sub>1</sub>	14.25	13.28	13.82	13.93	13.89	13.53	13.78	P <sub>1</sub>	12.83	12.78	12.73
	N <sub>2</sub>	14.60	14.35	16.20	14.15	15.17	15.83	15.05	P <sub>2</sub>	13.73	13.41	14.75
	Mean	13.25	12.78	13.97	12.95	13.42	13.63	13.33	±0.791. Means : ±0.457			
15	N <sub>0</sub>	7.11	7.04	7.28	6.50	6.45	8.47	7.14	P <sub>0</sub>	8.17	8.82	9.39
	N <sub>1</sub>	8.87	8.57	9.24	9.25	8.75	8.68	8.89	P <sub>1</sub>	9.03	8.68	9.16
	N <sub>2</sub>	10.40	11.26	10.14	9.29	11.75	10.76	10.60	P <sub>2</sub>	7.84	9.45	9.37
	Mean	8.79	8.96	8.89	8.35	8.98	9.30	8.88	±0.751. Means : ±0.433			
16	N <sub>0</sub>	5.17	4.90	5.13	5.10	5.09	5.00	5.06	P <sub>0</sub>	5.04	5.06	5.14
	N <sub>1</sub>	5.04	5.40	5.71	4.90	5.63	5.61	5.38	P <sub>1</sub>	5.02	5.29	5.58
	N <sub>2</sub>	5.04	5.59	5.64	5.46	5.13	5.68	5.42	P <sub>2</sub>	5.39	5.51	5.57
	Mean	5.08	5.30	5.49	5.15	5.28	5.43	5.29	±0.267. Means : ±0.154			
17	N <sub>0</sub>	10.16	8.33	7.50	9.86	7.40	8.73	8.66	P <sub>0</sub>	11.71	8.52	11.71
	N <sub>1</sub>	11.28	9.19	9.32	10.02	9.46	10.31	9.93	P <sub>1</sub>	10.21	10.05	9.32
	N <sub>2</sub>	10.50	12.06	12.89	10.72	12.00	12.73	11.82	P <sub>2</sub>	8.68	10.29	10.74
	Mean	10.64	9.86	9.90	10.20	9.62	10.59	10.14	±1.11. Means : ±0.643			
19	N <sub>0</sub>	11.56	12.45	11.37	14.03	12.95	8.42	11.80	P <sub>0</sub>	13.99	13.78	10.34
	N <sub>1</sub>	12.50	15.23	12.77	14.81	13.31	12.38	13.50	P <sub>1</sub>	14.39	13.57	14.12
	N <sub>2</sub>	14.05	14.40	11.49	12.03	14.47	13.43	13.31	P <sub>2</sub>	12.48	13.38	9.77
	Mean	12.70	14.03	11.88	13.62	13.58	11.41	12.87	±0.947. Means : ±0.547			
20	N <sub>0</sub>	4.01	3.67	3.84	3.44	3.41	4.66	3.84	P <sub>0</sub>	5.94	4.74	5.65
	N <sub>1</sub>	5.49	4.76	4.86	5.77	4.95	4.40	5.04	P <sub>1</sub>	5.05	4.81	4.88
	N <sub>2</sub>	6.83	6.31	7.83	7.26	6.79	6.92	6.90	P <sub>2</sub>	5.48	5.60	5.45
	Mean	5.44	4.91	5.51	5.49	5.05	5.32	5.29	±0.519. Means : ±0.300			
22	N <sub>0</sub>	7.03	7.77	6.65	6.60	8.05	6.79	7.15	P <sub>0</sub>	8.03	6.38	8.91
	N <sub>1</sub>	8.70	7.89	9.93	9.24	7.79	9.48	8.84	P <sub>1</sub>	8.91	8.81	8.06
	N <sub>2</sub>	7.60	10.13	8.43	8.15	8.12	9.89	8.72	P <sub>2</sub>	7.05	8.77	9.20
	Mean	7.77	8.59	8.34	8.00	7.99	8.72	8.23	±1.14. Means : ±0.657			



*Tops: tons per acre*

Centre		P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean		K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	
24	N <sub>0</sub>	5.09	5.06	4.87	4.55	5.44	5.02	5.00	P <sub>0</sub>	5.40	6.02	5.46	
	N <sub>1</sub>	5.86	6.02	5.46	5.18	6.26	5.90	5.76		P <sub>1</sub>	5.22	6.15	5.51
	N <sub>2</sub>	5.93	5.79	5.77	5.86	6.02	5.62	5.83		P <sub>2</sub>	4.98	5.55	5.57
	Mean	5.62	5.61	5.37	5.20	5.89	5.51	5.54	±0.240. Means: ±0.139				
25	N <sub>0</sub>	3.17	3.70	3.86	3.65	3.48	3.59	3.57	P <sub>0</sub>	4.34	4.29	3.91	
	N <sub>1</sub>	4.39	4.88	4.40	4.50	4.50	4.66	4.55		P <sub>1</sub>	4.07	4.50	4.61
	N <sub>2</sub>	4.98	4.61	4.93	4.50	5.25	4.77	4.84		P <sub>2</sub>	4.23	4.45	4.50
	Mean	4.18	4.39	4.39	4.22	4.41	4.34	4.32	±0.241. Means: ±0.139				
27	N <sub>0</sub>	5.03	6.23	6.15	5.08	6.44	5.89	5.80	P <sub>0</sub>	6.60	6.89	5.89	
	N <sub>1</sub>	7.55	8.17	6.44	8.02	7.96	6.18	7.39		P <sub>1</sub>	7.65	8.20	6.78
	N <sub>2</sub>	6.81	8.22	8.48	8.33	6.92	8.27	7.84		P <sub>2</sub>	7.18	6.23	7.67
	Mean	6.46	7.54	7.03	7.14	7.11	6.78	7.01	±0.849. Means: ±0.490				
28	N <sub>0</sub>	6.79	5.87	7.02	6.72	6.95	6.01	6.56	P <sub>0</sub>	7.18	9.14	8.53	
	N <sub>1</sub>	8.38	8.19	11.09	8.28	8.97	10.41	9.22		P <sub>1</sub>	7.46	8.18	8.38
	N <sub>2</sub>	9.68	9.95	9.96	8.88	9.90	10.81	9.86		P <sub>2</sub>	9.24	8.51	10.32
	Mean	8.28	7.99	9.36	7.96	8.61	9.08	8.55	±0.710. Means: ±0.410				
29	N <sub>0</sub>	12.43	10.90	12.64	12.91	11.23	11.83	11.99	P <sub>0</sub>	13.42	13.47	12.04	
	N <sub>1</sub>	12.49	14.16	11.89	12.49	13.09	12.96	12.84		P <sub>1</sub>	11.95	12.73	14.04
	N <sub>2</sub>	14.01	13.65	14.34	13.89	13.50	14.61	14.00		P <sub>2</sub>	13.92	11.62	13.32
	Mean	12.98	12.90	12.96	13.10	12.61	13.13	12.94	±1.42. Means: ±0.820				
30	N <sub>0</sub>	20.95	19.83	21.22	21.48	20.21	20.30	20.67	P <sub>0</sub>	21.38	20.97	20.47	
	N <sub>1</sub>	20.30	20.54	20.01	20.30	20.50	20.06	20.29		P <sub>1</sub>	19.86	20.12	20.53
	N <sub>2</sub>	21.56	20.13	21.87	21.28	21.47	20.81	21.19		P <sub>2</sub>	21.82	21.10	20.18
	Mean	20.94	20.17	21.03	21.02	20.73	20.39	20.71	±0.681. Means: ±0.393				
31	N <sub>0</sub>	11.00	10.83	10.65	11.30	10.42	10.77	10.83	P <sub>0</sub>	10.83	10.65	9.48	
	N <sub>1</sub>	10.13	12.06	11.30	11.94	10.54	11.00	11.16		P <sub>1</sub>	10.89	10.71	12.23
	N <sub>2</sub>	9.83	10.95	11.00	9.60	11.36	10.83	10.60		P <sub>2</sub>	11.12	10.95	10.89
	Mean	10.32	11.28	10.98	10.95	10.77	10.87	10.86	±0.670. Means: ±0.387				
32	N <sub>0</sub>	5.72	8.89	15.16	8.75	9.20	11.82	9.92	P <sub>0</sub>	8.00	8.48	9.28	
	N <sub>1</sub>	9.38	11.72	15.59	11.66	12.67	12.35	12.23		P <sub>1</sub>	10.18	11.17	11.87
	N <sub>2</sub>	10.66	12.62	13.52	13.20	12.46	11.13	12.26		P <sub>2</sub>	15.43	14.69	14.15
	Mean	8.59	11.07	14.76	11.20	11.44	11.77	11.47	±1.24. Means: ±0.713				

Responses to Fertilizers

Station	Mean yield	*5 per cent. significance.			St. error	**1 per cent significance.			St. error
		Linear Response (response to the double dressing)				Curvature (excess of extra response to second dressing over response to first dressing)			
		N	P	K		N	P	K	
TOTAL SUGAR : cwt. per acre									
<b>COARSE SANDS</b>									
1 Allscott I (a) ..	42.2	+1.8	-1.2	+1.9	±0.981	-6.8**	-2.6	-2.0	±1.70
2 Allscott II ..	37.3	+0.5	+2.4*	+3.6**	±1.07	-6.6**	+0.8	-0.6	±1.85
3 Cantley I (a) ..	12.1	+1.2	-0.1	+2.6**	±0.655	0.0	+0.6	+0.2	±1.13
4 Cantley II ..	18.6	+2.2**	-0.5	+1.9*	±0.725	0.0	-0.7	-0.7	±1.25
5 Colwick ..	20.5	+0.4	+2.0**	+10.0**	±0.641	-3.8**	-3.9**	-3.4**	±1.11
6 King's Lynn I ..	15.6	+2.5**	+1.6*	+3.0**	±0.712	-1.3	-0.5	-0.2	±1.23
7 King's Lynn II (a) ..	18.4	-3.1**	-0.3	+1.4	±0.731	+1.9	+0.1	-1.4	±1.27
8 Newark I ..	28.2	+7.7**	+3.7**	+11.5**	±0.929	-7.3**	-1.9	-4.0*	±1.61
9 Selby I ..	30.0	+14.1**	-2.4	-0.9	±1.41	-9.1**	-5.5*	+0.7	±2.44
10 Wissington I (a) ..	42.2	-1.1	0.0	+3.7*	±1.34	-1.8	-0.6	-2.5	±2.32
11 Wissington III (a) ..	26.5	+5.3*	-1.4	+2.8	±1.84	+0.5	-2.6	-2.2	±3.18
Mean .. ..	26.5	+2.9	+0.3	+3.8		-3.1	-1.5	-1.5	
<b>FINE SANDS</b>									
12 Bardney I ..	44.5	+1.4	+2.1	+3.3*	±1.13	-0.4	+0.2	+1.7	±1.96
13 Bardney II (a) ..	31.3	+4.7*	+3.6	-1.4	±1.71	-1.4	-6.2	+1.8	±2.96
14 Brigg I (a) ..	47.6	+2.0	+2.9	+2.2	±1.78	-6.1	+4.9	+4.2	±3.08
15 Brigg II ..	36.0	+12.3**	+0.2	+3.3	±1.93	+1.9	-0.1	-2.3	±3.35
16 Bury II ..	16.7	-1.1	+1.9*	+3.6**	±0.792	-0.4	+0.2	-0.7	±1.37
17 Cupar I ..	27.5	-0.5	+1.8	-1.8	±1.81	-6.7*	+1.4	-1.1	±3.14
18 Ipswich I (a) ..	17.6	+0.2	0.0	+5.3**	±1.67	-4.4	+4.5	+5.7	±2.90
19 Kidderminster ..	37.2	-3.0	+2.5	+0.3	±1.73	+1.4	-5.4	-2.1	±3.00
20 Poppleton ..	24.0	+9.4**	+2.7	+1.8	±1.85	+1.9	-2.1	+2.5	±3.21
Mean .. ..	31.4	+2.8	+2.0	+1.8		-1.6	-0.3	+1.1	
<b>LIGHT LOAMS</b>									
21 Bury I (a) ..	16.1	+1.8*	+1.7*	+2.7**	±0.668	+2.7*	-1.6	-0.8	±1.15
22 Cupar II ..	29.0	+5.1**	0.0	+2.1	±1.45	-1.9	+4.6	+3.2	±2.51
23 Ipswich II (a) ..	20.6	+1.4	+1.0	+0.6	±0.820	-1.2	-1.9	+1.5	±1.42
24 Oaklands II ..	11.0	-1.1	-0.5	+0.4	±0.542	-1.2	-0.5	-0.8	±0.939
25 Spalding I (a) ..	13.6	+0.3	+2.0*	+4.1**	±0.834	-1.0	-1.0	+1.0	±1.45
Mean .. ..	18.1	+1.5	+0.8	+2.0		-0.5	-0.1	+0.8	
<b>HEAVY LOAM</b>									
26 Peterboro' I (a) ..	30.8	+2.6*	+6.2**	+0.9	±1.12	-0.4	-3.3	-0.3	±1.94
<b>CLAY LOAMS</b>									
27 Felstead ..	24.2	+0.4	+1.2	+2.1*	±0.915	-6.3**	-0.5	+0.8	±1.58
28 Oaklands I ..	24.9	+0.4	+1.6	+10.8**	±1.65	-3.3	+3.3	-2.4	±2.86
29 Selby II (a) ..	27.1	+0.6	-1.3	0.0	±1.31	-2.1	+0.8	+3.9	±2.26
Mean .. ..	25.4	+0.5	+0.5	+4.3		-3.9	+1.2	+0.8	
<b>FENS</b>									
30 Ely ..	45.9	-3.0	-7.0**	+6.8**	±2.08	+4.0	-5.0	+3.0	±3.60
31 Peterboro' II ..	22.3	-5.2*	+1.7	+5.3*	±2.42	-2.1	-0.2	+2.2	±4.19
32 Wissington II (a) ..	13.4	+1.7	+7.9**	-1.3	±1.32	-0.8	+1.2	-4.2	±2.29
Mean .. ..	27.2	-2.2	+0.9	+3.6		+0.4	-1.3	+0.3	
Mean .. ..	26.7	+1.9	+1.1	+2.9		-1.9	-0.7	0.0	

(a) = adjusted for Plant Number.

Station	Mean yield	Linear Response (response to the double dressing)			Curvature (excess of extra response to second dressing over response to first dressing)			
		N	P	K	N	P	K	
ROOTS (washed) : tons per acre								
<b>COARSE SANDS</b>								
1 Allscott I .. ..	12.43	+0.62	-0.11	+0.52	-2.12	-0.13	-0.55	
2 Allscott II .. ..	11.30	-0.06	+0.71	+0.70	-1.73	+0.24	-0.08	
3 Cantley I .. ..	4.15	+0.55	+0.24	+1.19	-0.49	-0.28	-0.15	
4 Cantley II .. ..	6.00	+0.87	-0.13	+0.47	+0.07	-0.23	-0.11	
5 Colwick .. ..	6.31	+0.20	+0.65	+2.80	-1.17	-1.06	-1.08	
6 King's Lynn I .. ..	5.00	+1.03	+0.41	+0.82	-0.43	-0.08	-0.15	
7 King's Lynn II .. ..	5.95	-0.79	-0.02	+0.06	+0.40	+0.44	+0.09	
8 Newark I .. ..	8.07	+2.33	+1.06	+3.03	-1.74	-0.59	-0.88	
9 Selby I .. ..	9.23	+4.14	-0.52	-0.23	-2.72	-1.59	+0.42	
10 Wisington I .. ..	12.75	-0.32	+0.13	+0.61	-0.22	-0.32	-0.83	
11 Wisington III .. ..	8.19	+1.56	+0.25	+0.41	+0.27	-0.75	-1.14	
Mean .. ..	8.13	+0.92	+0.24	+0.94	-0.90	-0.40	-0.41	
<b>FINE SANDS</b>								
12 Bardney I .. ..	13.41	+0.71	+0.63	+0.68	-0.09	-0.15	+0.54	
13 Bardney II .. ..	9.23	+2.05	+0.15	-0.77	-1.04	-1.63	+0.27	
14 Brigg I .. ..	14.24	+0.90	+0.84	+0.63	-2.16	+1.75	+0.80	
15 Brigg II .. ..	10.57	+3.70	+0.16	+0.53	+0.64	+0.16	-0.64	
16 Bury II .. ..	5.06	-0.33	+0.45	+0.80	+0.04	+0.10	-0.25	
17 Cupar I .. ..	8.48	+0.27	+0.43	-0.32	-1.54	-0.10	-0.26	
18 Ipswich I .. ..	6.08	-0.03	-0.01	+1.45	-1.52	-0.30	+0.77	
19 Kidderminster .. ..	11.07	-0.96	+0.55	+0.12	+0.32	-1.88	-1.00	
20 Poppleton .. ..	6.59	+2.65	+0.78	+0.52	+0.46	-0.49	+0.57	
Mean .. ..	9.41	+1.00	+0.44	+0.40	-0.54	-0.28	+0.09	
<b>LIGHT LOAMS</b>								
22 Cupar II .. ..	8.59	+1.38	+0.03	+0.48	-0.64	+1.39	+0.81	
23 Ipswich II .. ..	6.79	+0.82	+0.36	+0.03	-0.21	-0.84	+0.69	
24 Oaklands II .. ..	3.85	-0.19	-0.20	+0.09	-0.52	-0.21	-0.34	
25 Spalding I .. ..	4.07	+0.16	+0.66	+0.90	-0.69	-0.57	+0.91	
Mean .. ..	5.82	+0.54	+0.21	+0.38	-0.52	-0.06	+0.52	
<b>HEAVY LOAM</b>								
26 Peterboro' I .. ..	9.07	+1.28	+1.56	-0.03	+0.98	-1.34	-0.05	
<b>CLAY LOAMS</b>								
27 Felstead .. ..	7.60	+0.57	+0.44	+0.56	-1.62	-0.36	+0.01	
28 Oaklands I .. ..	7.45	+0.44	+0.62	+3.01	-1.06	+1.16	-0.58	
29 Selby II .. ..	8.94	+0.73	-0.39	-0.02	-1.13	+0.14	+1.38	
Mean .. ..	8.00	+0.58	+0.22	+1.18	-1.27	+0.31	+0.27	
<b>FENS</b>								
30 Ely .. ..	14.62	-0.53	-1.48	+1.71	+1.57	-1.16	+1.99	
31 Peterboro' II .. ..	6.26	-1.26	+0.45	+1.31	-0.67	-0.26	+0.63	
32 Wisington II .. ..	5.20	+1.21	+3.40	-0.02	-1.52	+0.19	-0.25	
Mean .. ..	8.69	-0.19	+0.79	+1.00	-0.21	-0.41	+0.79	
Mean .. ..	8.28	+0.76	+0.39	+0.71	-0.67	-0.28	+0.05	

Station	Mean yield	Linear Response (response to the double dressing)			St. error	Curvature (excess of extra response to second dressing over response to first dressing)			St. error
		N	P	K		N	P	K	
TOPS : tons per acre									
COARSE SANDS									
1 Allscott I	12.01	+2.68*	-0.35	-0.94	±0.919	+0.28	-1.15	-0.21	±1.59
2 Allscott II ..	12.10	+2.15*	+0.99	-0.60	±0.882	-1.48	+0.60	+0.68	±1.53
3 Cantley I ..	6.95	+3.19**	+0.36	-0.51	±0.326	+0.01	+0.26	-0.44	±0.565
4 Cantley II ..	6.49	+3.31**	+0.14	-0.49*	±0.224	+0.57	+0.13	+0.06	±0.387
5 Colwick ..	11.18	+4.09**	-0.85	+4.24**	±0.759	-2.66	+0.62	-1.75	±1.31
6 King's Lynn I	6.70	+3.40**	+0.69	-0.80*	±0.326	+0.56	-0.36	-0.10	±0.565
7 King's Lynn II	5.54	+1.40**	-0.19	-0.04	±0.316	+0.57	+0.77	-0.07	±0.547
8 Newark I ..	9.44	+5.00**	+1.09**	+2.14**	±0.320	-0.48	+0.20	-1.48*	±0.554
9 Selby I ..	8.77	+6.71**	-0.83	+0.29	±0.547	-1.04	-1.75	+0.50	±0.947
10 Wisington I ..	11.16	+2.99*	+0.04	-0.72	±1.09	+1.35	-0.76	-0.95	±1.89
11 Wisington III	7.20	+2.31**	-0.03	-0.71	±0.467	+0.02	-0.08	-0.66	±0.808
Mean .. ..	8.87	+3.38	+0.10	+0.17		-0.21	-0.14	-0.40	
FINE SANDS									
12 Bardney I ..	14.60	+3.99**	-0.76	+0.10	±0.641	+1.96	+0.95	+0.18	±1.11
13 Bardney II ..	10.45	+6.50**	-0.16	-0.25	±0.599	+1.78	-0.49	+0.76	±1.04
14 Brigg I ..	13.33	+3.89**	+0.72	+0.68	±0.646	-1.35	+1.66	-0.26	±1.12
15 Brigg II ..	8.88	+3.46**	+0.09	+0.96	±0.613	-0.05	-0.23	-0.32	±1.06
16 Bury II ..	5.29	+0.36	+0.41	+0.28	±0.218	-0.28	-0.02	+0.01	±0.377
17 Cupar I ..	10.14	+3.15**	-0.74	+0.39	±0.910	+0.62	+0.83	+1.55	±1.58
19 Kidderminster	12.87	+1.52	-0.82	-2.21*	±0.773	-1.89	-3.47*	-2.12	±1.34
20 Poppleton ..	5.29	+3.15**	+0.06	-0.16	±0.424	+0.75	+1.12	+0.72	±0.734
Mean .. ..	10.11	+3.25	-0.15	0.00		+0.19	+0.04	+0.06	
LIGHT LOAMS									
22 Cupar II ..	8.23	+1.57	+0.56	+0.72	±0.929	-1.81	-1.08	+0.74	±1.61
24 Oaklands II ..	5.54	+0.83**	-0.26	+0.32	±0.196	-0.68	-0.22	-1.06**	±0.340
25 Spalding I ..	4.32	+1.27**	+0.21	+0.12	±0.197	-0.69	-0.21	-0.27	±0.341
Mean .. ..	6.03	+1.22	+0.17	+0.39		-1.06	-0.50	-0.20	
CLAY LOAMS									
27 Felstead ..	7.01	+2.03*	+0.57	-0.36	±0.693	-1.13	-1.60	-0.29	±1.20
28 Oaklands I ..	8.55	+3.31**	+1.08	+1.12	±0.580	-2.01	+1.66	-0.18	±1.00
29 Selby II ..	12.94	+2.02	-0.02	+0.04	±1.16	+0.30	+0.12	+1.02	±2.01
Mean .. ..	9.50	+2.45	+0.54	+0.27		-0.95	+0.06	+0.18	
FENS									
30 Ely .. ..	20.71	+0.52	+0.09	-0.63	±0.556	+1.28	+1.64	-0.04	±0.963
31 Peterboro' II ..	10.86	-0.23	+0.66	-0.08	±0.546	-0.90	-1.25	+0.27	±0.946
32 Wisington II ..	11.47	+2.34*	+6.17**	+0.57	±1.01	-2.27	+1.20	+0.08	±1.75
Mean .. ..	14.35	+0.88	+2.31	-0.05		-0.63	+0.53	+0.10	
Mean .. ..	9.57	+2.75	+0.32	+0.12		-0.31	-0.03	-0.13	

Station	Mean	Linear Response (response to the double dressing)			St. error	Curvature (excess of extra response to second dressing over response to first dressing)			St. error
		N	P	K		N	P	K	
SUGAR PERCENTAGE									
COARSE SANDS									
1 Allscott I ..	16.97	-0.29	-0.17	+0.27	±0.187	-0.29	-0.47	-0.17	±0.323
2 Allscott II ..	16.51	+0.31	+0.07	+0.60*	±0.218	-0.41	+0.01	-0.14	±0.377
3 Cantley I ..	14.54	-0.63**	+0.11	+0.78**	±0.173	-0.14	+0.02	-0.31	±0.300
4 Cantley II ..	15.52	-0.41**	-0.04	+0.40**	±0.134	-0.08	-0.04	-0.31	±0.232
5 Colwick ..	16.24	-0.25*	-0.04	+0.75**	±0.086	-0.01	-0.34*	-0.07	±0.149
6 King's Lynn I ..	15.61	-0.77**	+0.29	+0.44*	±0.153	+0.09	-0.33	+0.18	±0.265
7 King's Lynn II ..	15.48	-1.35**	-0.42	+0.06	±0.205	+0.21	-0.48	+0.18	±0.355
8 Newark I ..	17.46	-0.25	-0.10	+0.63**	±0.203	-0.79*	+0.02	-0.73	±0.351
9 Selby I ..	16.28	+0.37	-0.37	-0.07	±0.255	-0.17	-0.23	-0.41	±0.443
10 Wissington I ..	16.55	-0.35*	+0.02	+0.45*	±0.156	-0.37	+0.14	+0.59*	±0.270
11 Wissington III ..	16.18	-0.69**	-0.22	+0.77**	±0.139	+0.13	-0.14	-0.23	±0.241
Mean ..	16.12	-0.39	-0.08	+0.46		-0.17	-0.17	-0.13	
FINE SANDS									
12 Bardney I ..	16.65	-0.39**	+0.03	+0.35**	±0.102	-0.11	+0.25	-0.11	±0.177
13 Bardney II ..	16.99	-0.18	+0.22	+0.01	±0.180	+0.38	+0.68*	+0.05	±0.312
14 Brigg I ..	16.72	-0.22	0.00	+0.14	±0.175	-0.70*	-0.40	-0.16	±0.303
15 Brigg II ..	17.03	-0.14	-0.13	+0.70**	±0.137	-0.14	-0.29	-0.08	±0.237
16 Bury II ..	16.50	0.00	+0.49	+0.93**	±0.279	-0.46	-0.25	+0.05	±0.483
17 Cupar I ..	16.17	-0.78*	+0.23	-0.53	±0.273	-1.02*	+0.93	-0.21	±0.474
18 Ipswich I ..	14.45	-0.72**	-0.40*	+0.81**	±0.145	0.00	+0.12	+0.15	±0.251
19 Kidderminster ..	16.84	+0.09	+0.30	-0.02	±0.341	+0.21	+0.36	+0.54	±0.590
20 Poppleton ..	18.29	-0.27	-0.19	-0.07	±0.154	+0.19	-0.29	+0.25	±0.267
Mean ..	16.63	-0.29	+0.06	+0.26		-0.18	+0.12	+0.05	
LIGHT LOAMS									
22 Cupar II ..	16.90	+0.31	-0.06	+0.26	±0.181	+0.15	-0.12	+0.24	±0.314
23 Ipswich II ..	15.24	-0.45**	+0.06	+0.07	±0.151	+0.17	-0.04	-0.37	±0.262
24 Oaklands II ..	14.30	-0.73*	+0.15	+0.14	±0.257	+0.33	+0.03	+0.36	±0.445
25 Spalding I ..	16.73	-0.89**	-0.36	+0.74**	±0.170	-0.13	+0.32	+0.56	±0.295
Mean ..	15.79	-0.44	-0.05	+0.30		+0.13	+0.05	+0.20	
HEAVY LOAM									
26 Peterboro' I ..	16.97	-0.74**	+0.55**	+0.24	±0.156	-0.20	-0.29	-0.26	±0.270
CLAY LOAM									
27 Felstead ..	15.91	-0.96**	-0.14	+0.22	±0.185	-0.68	+0.46	+0.46	±0.321
28 Oaklands I ..	16.72	-0.79**	-0.31*	+0.51**	±0.112	+0.19	-0.29	-0.41	±0.194
29 Selby II ..	15.18	-0.32	-0.18	+0.07	±0.210	+0.26	+0.02	+0.41	±0.363
Mean ..	15.94	-0.69	-0.21	+0.27		-0.08	+0.06	+0.15	
FENS									
30 Ely ..	15.67	-0.07	-0.28	+0.14	±0.161	-0.13	+0.03	-0.10	±0.279
31 Peterboro' II ..	17.80	-0.52**	-0.02	+0.40**	±0.129	+0.12	+0.54*	-0.18	±0.223
32 Wissington II ..	12.81	-0.18	+0.34	+0.18	±0.268	0.00	+0.54	-0.48	±0.464
Mean ..	15.43	-0.26	+0.01	+0.24		0.00	+0.37	-0.25	
Mean ..	16.17	-0.40	-0.08	+0.33		-0.11	+0.01	-0.02	

Station	Mean	Linear Response (response to the double dressing)			St. error	Curvature (excess of extra response to second dressing over response to first dressing)			St. error
		N	P	K		N	P	K	
PLANT NUMBER : thousands per acre									
COARSE SANDS									
1 Allscott I ..	26.8	-0.5	+0.3	+0.5	±0.745	-1.2	+1.2	-0.2	±1.29
2 Allscott II ..	25.7	+1.0	+1.1	-0.4	±0.952	-1.6	-0.3	-2.1	±1.65
3 Cantley I ..	26.1	-0.2	+1.5	+2.6	±1.23	-2.8	-2.5	-1.3	±2.12
4 Cantley II ..	41.4	+0.3	-0.1	+1.2	±1.17	+0.1	-2.0	-0.5	±2.03
5 Colwick ..	25.0	-1.3	-0.8	+2.3*	±0.886	0.0	+2.0	-2.1	±1.54
6 King's Lynn I ..	29.3	0.0	0.0	-0.6	±0.981	+0.8	-1.0	+0.9	±1.70
7 King's Lynn II ..	26.6	-1.2	-0.3	-1.3	±0.915	-0.5	+1.0	+2.5	±1.58
8 Newark I ..	25.6	+0.1	+0.5	+2.1**	±0.415	+0.5	-0.5	-1.7*	±0.719
9 Selby I ..	30.7	-0.9	+0.7	+0.3	±0.764	-0.3	+0.4	+1.9	±1.32
10 Wissington I ..	24.2	-0.9	+0.7	-0.6	±1.04	0.0	-0.1	+1.4	±1.80
11 Wissington II ..	36.8	-0.8	+1.1	-0.2	±0.768	+0.3	0.0	-1.2	±1.33
Mean ..	28.9	-0.4	+0.4	+0.5		-0.4	-0.2	-0.2	
FINE SANDS									
12 Bardney I ..	29.8	-1.4*	+0.3	-0.8	±0.599	+0.4	-2.0	+1.3	±1.04
13 Bardney II ..	29.9	+1.4	-1.9	-0.8	±0.948	-1.0	+1.3	-0.6	±1.64
14 Brigg I ..	25.2	+0.2	-0.1	+0.2	±0.792	-2.0	-0.1	-1.1	±1.37
15 Brigg II ..	25.5	+0.8	+0.1	-1.9	±0.915	+1.3	+0.9	+0.8	±1.58
16 Bury II ..	17.4	-1.3	-0.2	+1.3	±0.849	-3.7*	+2.8	-0.8	±1.47
17 Cupar I ..	19.7	+1.7*	-0.3	-0.5	±0.726	-0.6	-1.1	+1.5	±1.26
18 Ipswich I ..	24.5	-1.1	-0.3	0.0	±1.03	-0.1	-4.6*	-2.8	±1.78
19 Kidderminster ..	26.6	-1.5	+0.2	-0.4	±0.882	0.0	-1.1	-1.9	±1.53
20 Poppleton ..	22.7	+0.6	+0.3	+0.6	±0.806	+2.4	+0.9	+0.7	±1.40
Mean ..	24.6	-0.1	-0.2	-0.3		-0.4	-0.3	-0.3	
LIGHT LOAMS									
22 Cupar II ..	29.8	+1.4	-0.1	+2.1	±1.16	+1.2	-2.0	+0.4	±2.01
23 Ipswich II ..	28.6	+0.7	+0.4	-0.5	±0.797	+1.1	-0.9	+0.2	±1.38
24 Oaklands II ..	24.5	+0.7	+0.4	-0.8	±0.688	-1.8	+1.1	-1.2	±1.19
25 Spalding ..	25.1	-0.4	+0.1	-0.3	±0.872	-1.1	-0.5	+2.2	±1.51
Mean ..	27.0	+0.6	+0.2	+0.1		-0.2	-0.6	+0.4	
HEAVY LOAM									
26 Peterboro' I ..	22.2	+0.4	0.0	-0.6	±0.976	+3.3	-1.6	-0.3	±1.69
CLAY LOAMS									
27 Felstead ..	18.4	+1.1	+0.3	+1.2	±1.11	+1.3	+0.6	+0.4	±1.93
28 Oaklands I ..	17.2	-0.8	-0.5	+2.6*	±0.999	-0.3	+1.6	-3.4	±1.73
29 Selby II ..	20.9	+1.7	-0.3	+0.1	±1.21	-1.3	-0.4	+1.2	±2.10
Mean ..	18.8	+0.7	-0.2	+1.3		-0.1	+0.6	-0.6	
FENS									
30 Ely ..	32.4	-0.4	-0.5	+0.4	±0.606	-0.2	-0.5	-1.0	±1.05
31 Peterboro' II ..	30.0	-5.6*	+0.2	+5.0*	±2.03	+0.3	-5.9	+1.2	±3.51
32 Wissington II ..	20.9	+0.8	+0.9	+1.0	±0.589	-2.3*	-0.1	+2.1	±1.02
Mean ..	27.8	-1.7	+0.2	+2.1		-0.7	-2.2	+0.8	
Mean ..	26.1	-0.2	+0.1	+0.4		-0.3	-0.4	-0.1	

Station	Mean	Linear Response (response to the double dressing)			St. error	Curvature (excess of extra response to second dressing over response to first dressing)			St. error
		N	P	K		N	P	K	
PERCENTAGE PURITY									
COARSE SANDS									
5 Colwick ..	86.6	-0.7	-0.5	+0.3	±0.329	-0.4	+0.8	-0.6	±0.570
6 King's Lynn I ..	89.9	-1.1	+0.4	+0.3	±0.570	-0.7	-0.3	+0.2	±0.988
7 King's Lynn II ..	89.4	-1.3*	-0.4	-1.7**	±0.465	+0.4	-0.3	+0.2	±0.805
8 Newark I ..	90.3	+0.2	-0.2	-0.1	±0.481	-0.1	-0.2	-0.5	±0.833
9 Selby I ..	86.8	+1.0	-2.5**	+1.2	±0.811	-0.8	-2.5	-1.2	±1.40
10 Wissington I ..	89.6	+0.2	-0.4	+0.3	±0.324	+0.4	+0.6	-0.7	±0.562
11 Wissington III ..	89.8	-0.3	-0.1	-0.2	±0.297	-0.5	-0.1	-0.9	±0.513
Mean .. ..	88.9	-0.3	-0.5	0.0		-0.2	-0.3	-0.5	
FINE SANDS									
12 Bardney I ..	87.3	-0.2	-0.8	-0.3	±0.476	-1.6	-1.0	+1.4	±0.825
14 Brigg I ..	90.2	-0.2	+0.2	-0.1	±0.314	-0.3	+0.4	+1.2*	±0.545
15 Brigg II ..	90.1	+0.2	-0.3	+0.4	±0.365	0.0	+0.1	0.0	±0.633
16 Bury II ..	85.5	+2.0	-1.4	+1.1	±1.20	-0.9	-1.5	-5.3*	±2.08
17 Cupar I ..	87.1	0.0	-0.2	0.0	±0.159	0.0	+0.1	0.0	±0.275
20 Poppleton ..	90.6	0.0	-0.1	0.0	±0.140	+0.6*	+0.2	-0.3	±0.243
Mean .. ..	88.5	+0.3	-0.4	+0.2		-0.4	-0.3	-0.5	
LIGHT LOAMS									
22 Cupar II ..	88.2	+0.2	+0.3	0.0	±0.412	-0.2	-0.5	+1.0	±0.714
HEAVY LOAM									
26 Peterboro' I	82.9	-1.4	+0.7	+3.0**	±0.867	0.0	-0.8	+0.8	±1.50
CLAY LOAMS									
27 Felstead ..	86.8	-0.2	+0.1	+0.4*	±0.169	-0.4	-0.1	+0.4	±0.293
29 Selby II ..	87.2	-0.5	-0.4	+0.3	±0.448	+0.2	+0.5	+0.8	±0.776
Mean .. ..	85.6	-0.4	-0.2	+0.4		-0.1	+0.2	+0.6	
FENS									
30 Ely ..	88.5	-0.5	-0.1	-0.1	±0.504	-0.2	-0.4	-0.1	±0.873
31 Peterboro' II ..	80.7	-0.9	+0.3	+1.2	±0.773	+0.6	+0.9	-0.5	±1.34
32 Wissington II	83.2	-0.1	+0.6	-0.4	±0.379	+0.5	-0.4	+0.3	±0.656
Mean .. ..	84.1	-0.5	+0.3	+0.2		+0.3	0.0	-0.1	
Mean .. ..	87.5	-0.2	-0.2	+0.3		-0.2	-0.2	-0.2	

Station	Interactions			St. error	Interaction of linear responses (one half of the extra response to one fertilizer through the addition of a second)					
	N×P	N×K	P×K		N×P	N×K	P×K			
	TOTAL SUGAR : cwt. per acre				ROOTS (washed) : tons per acre					
COARSE SANDS										
1	Allscott I (a)	..	..	-1.5	+0.1	-0.9	±1.20	-0.46	-0.33	-0.41
2	Allscott II	..	..	-0.1	-0.1	-6.2**	±1.31	-0.20	-0.38	-1.76
3	Cantley I (a)	..	..	+1.7	+2.1	0.0	±0.802	+0.20	+0.50	-0.25
4	Cantley II	..	..	+1.6	+0.6	+0.2	±0.884	+0.56	+0.08	-0.02
5	Colwick ..	..	..	-1.0	+1.8*	-0.3	±0.785	-0.36	+0.65	-0.10
6	King's Lynn I ..	..	..	-1.0	+2.4*	+0.9	±0.872	-0.28	+0.79	+0.29
7	King's Lynn II (a)	..	..	-0.8	-0.7	-2.1*	±0.895	+0.29	-0.23	-0.22
8	Newark I ..	..	..	-1.9	+1.3	+3.3*	±1.14	-0.56	+0.37	+0.80
9	Selby I ..	..	..	-0.1	+1.5	0.0	±1.73	+0.15	+0.38	-0.07
10	Wissington I (a)	..	..	+2.2	+2.3	-0.4	±1.64	+0.39	+0.69	-0.46
11	Wissington III (a)	..	..	-4.7	-1.3	-3.4	±2.25	-0.78	+0.36	-0.36
	Mean ..	..	..	-0.5	+0.9	-0.8		-0.10	+0.26	-0.23
FINE SANDS										
12	Bardney I ..	..	..	-0.3	+1.5	+1.8	±1.39	-0.34	+0.58	+0.64
13	Bardney II (a)	..	..	+3.6	-0.9	+3.9	±2.09	+1.91	-0.53	+0.41
14	Brigg I (a)	..	..	-0.8	+2.3	+0.1	±2.18	-0.51	+0.70	-0.17
15	Brigg II ..	..	..	+0.8	-1.4	-1.1	±2.37	+0.19	-0.56	-0.29
16	Bury II ..	..	..	+0.4	+0.1	-0.8	±0.970	+0.21	+0.15	-0.15
17	Cupar I ..	..	..	+0.5	+0.3	-0.6	±2.22	+0.24	-0.12	-0.21
18	Ipswich I (a)	..	..	+4.3	-1.4	+2.1	±2.05	+0.94	-0.33	+1.23
19	Kidderminster ..	..	..	-3.7	+7.4**	+3.8	±2.12	-0.97	+2.01	+1.14
20	Poppleton ..	..	..	+2.4	-2.3	-1.0	±2.27	+0.63	-0.67	-0.22
	Mean ..	..	..	+0.8	+0.6	+0.9		+0.26	+0.14	+0.26
LIGHT LOAMS										
21	Bury I (a)	..	..	-0.8	-0.5	-1.0	±0.818	—	—	—
22	Cupar II ..	..	..	-0.8	-0.8	+0.9	±1.78	-0.20	-0.19	+0.29
23	Ipswich II (a)	..	..	+0.6	+1.0	+2.2*	±1.00	+0.15	+0.39	+1.11
24	Oaklands II ..	..	..	+0.5	-0.5	+1.4	±0.664	+0.10	-0.12	+0.45
25	Spalding I (a)	..	..	-1.1	+0.7	+1.3	±1.02	-0.31	+0.15	+0.39
	Mean ..	..	..	-0.3	0.0	+1.0		-0.06	+0.06	+0.56
HEAVY LOAM										
26	Peterboro' I (a)	..	..	+3.6*	+0.4	+0.6	±1.37	+0.95	+0.51	-0.25
CLAY LOAMS										
27	Felstead ..	..	..	-0.3	-0.8	-0.3	±1.12	-0.11	-0.22	-0.08
28	Oaklands I ..	..	..	-0.9	+2.8	+1.4	±2.02	-0.13	+0.93	+0.40
29	Selby I (a)	..	..	+0.8	-0.5	+1.3	±1.60	+0.21	-0.26	+1.28
	Mean ..	..	..	-0.1	+0.5	+0.8		-0.01	+0.15	+0.53
FENS										
30	Ely (a)	..	..	+2.2	-4.3	+1.6	±2.55	+1.00	-0.38	+0.62
31	Peterboro' II ..	..	..	-4.7	-2.9	+0.1	±2.96	-1.15	-0.68	+0.02
32	Wissington II (a)	..	..	-2.8	-1.3	-0.1	±1.62	-1.66	-0.89	-0.49
	Mean ..	..	..	-1.8	-2.8	+0.5		-0.60	-0.65	+0.05
Mean	..	..	..	-0.1	+0.3	+0.3		0.00	+0.11	+0.11

(a) Total sugar adjusted for plant number.



Station	Interaction of linear responses (one half of the extra response to one fertilizer through the addition of a second)			St. error	Interaction of linear responses (one half of the extra response to one fertilizer through the addition of a second)			St. error
	N×P	N×K	P×K		N×P	N×K	P×K	
COARSE SANDS								
TOPS : tons per acre								
SUGAR PERCENTAGE								
1 Allscott I ..	+0.37	+0.38	+1.77	±1.13	+0.04	+0.26	-0.18	±0.229
2 Allscott II ..	-0.34	+0.60	+0.50	±1.08	+0.26	+0.51	-0.22	±0.267
3 Cantley I ..	+0.59	-0.19	-0.35	±0.399	+0.42	+0.35	-0.12	±0.212
4 Cantley II ..	+0.73*	-0.60*	-0.14	±0.274	-0.05	+0.27	+0.22	±0.164
5 Colwick ..	-1.72	+0.82	+1.07	±0.930	+0.14	-0.22	-0.10	±0.106
6 King's Lynn I	+0.70	-0.23	-0.45	±0.400	-0.18	-0.09	+0.02	±0.188
7 King's Lynn II	+0.83*	-0.15	+0.30	±0.387	-0.28	-0.45	-0.03	±0.251
8 Newark I ..	+0.17	+0.81	+0.40	±0.391	+0.08	+0.04	+0.39	±0.248
9 Selby I ..	+0.37	+0.20	-0.86	±0.670	-0.22	+0.09	+0.12	±0.313
10 Wisington I ..	-1.41	+1.23	-0.72	±1.34	+0.10	-0.03	+0.30	±0.191
11 Wisington III	-0.21	-0.10	-0.35	±0.572	-0.30	-0.14	-0.46*	±0.170
Mean .. ..	+0.01	+0.25	+0.11		0.00	+0.05	-0.01	
FINE SANDS								
12 Bardney I ..	-0.51	+0.39	+1.46	±0.785	+0.30*	-0.15	-0.15	±0.125
13 Bardney II ..	+1.47	-0.68	+0.61	±0.733	+0.04	+0.18	+0.06	±0.221
14 Brigg I ..	+0.32	+0.46	-0.05	±0.791	-0.36	+0.20	+0.16	±0.214
15 Brigg II ..	-0.21	-0.25	+0.15	±0.751	+0.12	+0.14	-0.02	±0.167
16 Bury II ..	+0.32	+0.16	+0.04	±0.267	-0.26	-0.38	-0.34	±0.341
17 Cupar I ..	+2.52*	+1.57	+1.03	±1.11	-0.06	+0.39	+0.08	±0.335
18 Ipswich I ..	—	—	—	—	-0.12	-0.08	+0.06	±0.177
19 Kidderminster	-1.18	+3.51**	+0.47	±0.947	-0.18	+0.20	-0.06	±0.417
20 Poppleton ..	+0.58	-0.78	+0.13	±0.519	+0.16	+0.16	-0.12	±0.189
Mean .. ..	+0.41	+0.55	+0.48		-0.04	+0.07	-0.04	
LIGHT LOAMS								
22 Cupar II ..	+0.61	+0.77	+0.63	±1.14	-0.02	-0.12	-0.04	±0.222
23 Ipswich II ..	—	—	—	—	+0.14	+0.15	-0.03	±0.185
24 Oaklands II ..	+0.03	-0.36	+0.26	±0.240	+0.27	-0.21	+0.16	±0.315
25 Spalding I ..	-0.37	+0.16	+0.35	±0.241	-0.50*	-0.14	+0.38	±0.208
Mean .. ..	+0.09	+0.19	+0.41		-0.03	-0.08	+0.12	
HEAVY LOAM								
26 Peterboro' I ..	—	—	—	—	+0.42*	+0.06	-0.15	±0.191
CLAY LOAMS								
27 Felstead ..	+0.27	-0.43	+0.60	±0.849	+0.12	-0.03	-0.09	±0.227
28 Oaklands I ..	+0.02	+1.32	-0.14	±0.710	-0.30*	-0.08	+0.06	±0.137
29 Selby II ..	+0.06	+0.90	+0.39	±1.42	+0.10	+0.03	-0.44	±0.257
Mean .. ..	+0.12	+0.60	+0.28		-0.03	-0.03	-0.16	
FENS								
30 Ely .. ..	+0.02	+0.35	-0.36	±0.681	-0.02	-0.05	+0.03	±0.197
31 Peterboro' II ..	+0.76	+0.88	+0.56	±0.669	-0.44*	-0.28	-0.10	±0.158
32 Wisington II ..	-3.29*	-2.57	-1.27	±1.24	-0.32	-0.21	-0.21	±0.328
Mean .. ..	-0.84	-0.45	-0.36		-0.26	-0.18	-0.09	
Mean .. ..	+0.05	+0.29	+0.22		-0.03	+0.01	-0.03	

Station	Interaction of linear responses (one half of the extra response to one fertilizer through the addition of a second)			St. error	Interaction of linear responses (one half of the extra response to one fertilizer through the addition of a second)			St. error
	N×P	N×K	P×K		N×P	N×K	P×K	
	PLANT NUMBER : thousands per acre				PERCENTAGE PURITY			
<b>COARSE SANDS</b>								
1 Allscott I ..	+0.1	-0.6	-1.0	±0.912	—	—	—	—
2 Allscott II ..	-2.2	-0.7	-1.8	±1.17	—	—	—	—
3 Cantley I ..	-1.6	-0.7	-1.4	±1.50	—	—	—	—
4 Cantley II ..	+0.5	-2.0	+0.2	±1.44	—	—	—	—
5 Colwick ..	+0.3	-0.4	+1.3	±1.09	0.0	+0.5	+0.4	±0.403
6 King's Lynn I	-1.7	-0.4	+1.1	±1.20	-0.7	+0.4	+0.5	±0.699
7 King's Lynn II	+1.6	-0.6	+1.8	±1.12	-0.2	-1.3*	-0.7	±0.569
8 Newark I ..	-0.1	-0.7	-0.1	±0.508	-0.8	-0.2	-0.6	±0.589
9 Selby I ..	-0.3	0.0	+0.5	±0.935	-1.2	+1.0	-0.3	±0.993
10 Wisington I ..	-0.8	-0.2	-0.5	±1.28	+0.2	-0.8	+0.4	±0.397
11 Wisington III	+1.1	+1.4	+1.1	±0.941	-0.1	-0.3	-0.8*	±0.363
Mean .. ..	-0.3	-0.4	+0.1		-0.4	-0.1	-0.2	
<b>FINE SANDS</b>								
12 Bardney I ..	-0.6	+0.8	+0.5	±0.733	-0.2	+0.1	-1.1	±0.583
13 Bardney II ..	+2.2	-0.4	-1.7	±1.16	—	—	—	—
14 Brigg I ..	-1.1	+0.3	-0.1	±0.970	0.0	-0.1	+0.4	±0.385
15 Brigg II ..	-0.8	+0.5	-1.3	±1.12	+0.1	+0.2	-0.2	±0.447
16 Bury II ..	+1.2	-0.9	-0.1	±1.04	+0.4	+0.3	+3.4*	±1.47
17 Cupar I ..	-0.2	0.0	-0.3	±0.889	+0.2	0.0	0.0	±0.195
18 Ipswich I ..	-1.5	+0.2	+1.3	±1.26	—	—	—	—
19 Kidderminster	-1.5	+1.4	+1.8	±1.08	—	—	—	—
20 Poppleton ..	0.0	+0.4	+0.1	±0.987	-0.1	-0.2	-0.1	±0.172
Mean .. ..	-0.3	+0.3	0.0		+0.1	0.0	+0.4	
<b>LIGHT LOAMS</b>								
22 Cupar II ..	-2.9	-0.1	-1.3	±1.42	-1.0	-0.3	+1.0	±0.505
23 Ipswich II ..	+0.2	+0.6	+1.5	±0.976	—	—	—	—
24 Oaklands II ..	+0.3	-0.5	+1.1	±0.843	—	—	—	—
25 Spalding I ..	-0.3	-0.3	+0.4	±1.07	—	—	—	—
Mean .. ..	-0.7	-0.1	+0.4		-1.0	-0.3	+1.0	
<b>HEAVY LOAM</b>								
26 Peterboro' I ..	+0.4	+1.4	-1.6	±1.20	+0.9	-1.1	-1.3	±1.06
<b>CLAY LOAMS</b>								
27 Felstead ..	0.0	-1.1	-0.3	±1.36	-0.1	+0.2	-0.1	±0.207
28 Oaklands I ..	-0.6	+0.9	-1.1	±1.22	—	—	—	—
29 Selby II ..	+0.1	-0.2	+2.6	±1.48	+0.5	+0.8	-0.5	±0.549
Mean .. ..	-0.2	-0.1	+0.4		+0.2	+0.5	-0.3	
<b>FENS</b>								
30 Ely .. ..	-0.3	-1.0	-0.1	±0.742	-0.4	-0.3	+0.8	±0.617
31 Peterboro' II ..	-2.6	-0.6	+1.5	±2.48	-1.6	-1.0	0.0	±0.947
32 Wisington II ..	-1.2	-0.8	-0.9	±0.722	-0.4	-0.7	-0.5	±0.464
Mean .. ..	-1.4	-0.8	+0.2		-0.8	-0.7	+0.1	
Mean .. ..	-0.4	-0.1	+0.1		-0.2	-0.1	0.0	

### Conclusions

Owing to the exceptional drought in spring, the yields of roots and sugar and the sugar percentages in these experiments were substantially lower than in any previous year, the mean yield of total sugar being 26.7 cwt. per acre against an average of 38.9 cwt. for the period 1933-7. Plant numbers also were variable and rather low. Tops recovered somewhat in September and October, and the mean yield, 9.57 tons per acre, is about the average for the preceding five years.

#### *Effects of sulphate of ammonia*

The average response in total sugar to the double dressing of sulphate of ammonia was 1.9 cwt. per acre. This is the smallest response in any year except 1933. There were as usual significant differences in the response from centre to centre; in particular yields were significantly depressed at King's Lynn II and Peterborough II. The additional increase to the second dressing was on the average significantly smaller than the increase to the first dressing.

All except six of the twenty-eight centres where tops were weighed showed significant increases to sulphate of ammonia. The mean response to the double dressing was 2.8 tons per acre. This figure has varied little in the past five seasons.

The responses varied significantly from centre to centre. At King's Lynn II, where total sugar was significantly depressed by sulphate of ammonia, tops nevertheless shared a significant increase. There was little indication of any falling-off in effectiveness at the higher level of application.

Sugar percentage was decreased at all except five centres, the average decrease being 0.40. The effects on roots were in general similar to those on total sugar. The average effects on plant numbers were small, the only exception being a marked depression on the fen soil at Peterboro' II.

#### *Effects of superphosphate*

The average response in sugar to the 6 cwt. dressing was 1.1 cwt. per acre. There was a striking depression of 7.0 cwt. per acre on the good crop at Ely. There was some indication of a falling-off in response to the second dressing at centres which responded well to superphosphate, though this was not significant. The effects on tops were small at most centres, though there was a striking increase at Wisington II and a significant increase at Newark I. Superphosphate had little effect on sugar percentage, percentage purity or plant number.

#### *Effects of muriate of potash*

The average increase in sugar to the double dressing was 2.9 cwt. per acre, this being practically the same as last year. Responses of over 10 cwt. per acre were obtained at Colwick, Newark I and Oaklands I, the last centre being in the clay loam soil group on which muriate of potash has not been very effective in past years. There was no indication of a decrease in responsiveness with the double dressing, except at the three centres which showed very high responses.

The average effect on tops was small and not significant. There were, however, significant increases at Colwick and Newark I and significant decreases at Cantley I, King's Lynn I and Kidderminster.

Sugar percentages were increased significantly at fifteen centres, the average increase over all centres being 0.33. Plant numbers were increased significantly at four centres, but the average effect was small.

#### *Interactions*

The positive interaction between sulphate of ammonia and muriate of potash was not so marked as in previous years. The average interaction over all centres, though positive, was not significant.

#### *Bolters*

Counts of bolters were made at Bardney I, the mean percentage of bolted plants being 3.0. All three fertilizers produced significant increases in the percentage of bolters.