

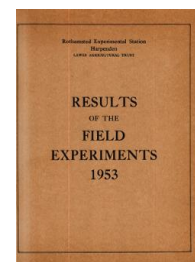
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# Yields of the Field Experiments 1953

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## Short-term Experiments

### Rothamsted Research

Rothamsted Research (1954) *Short-term Experiments* ; Yields Of The Field Experiments 1953, pp 68 - 106 - DOI: <https://doi.org/10.23637/ERADOC-1-173>

53/Ca/1.1

### WHEAT

The effects of various crop sequences on the incidence of Eyespot  
(Cercospora herpotrichoides) - Little Knott 1953, the 4th year.

Arrangement of previous treatment crops: 4 longitudinal and 8 cross  
strips.

Area of each sub plot, acres: In 3 longitudinal strips - 0.0498; in the  
other - 0.0348 acre. Area harvested: 0.0482 and 0.0335 respectively.

Preparatory crops 1950-52:-

1950 North and South, strips of Fallow, Ryegrass, Wheat, Potatoes

1951 East and West, strips of Ryegrass, Wheat, Fallow, Potatoes

1951 East and West, strips  $\frac{1}{2}$  width Ryegrass, Wheat, Oats, Beans  
Wheat, Oats, Barley, Wheat

giving 32 crop sequences in all.

In 1949 the field carried a crop of wheat heavily infested with Eyespot,  
Take-all (Ophiobolus graminis) and weeds.

Basal dressing:  $2\frac{1}{2}$  cwt sulphate of ammonia per acre in spring.

Cultivations, etc.: Ploughed: Aug 7, 1952. Seed drilled at  $2\frac{3}{4}$   
bushels per acre: Oct 29. Sulphate of ammonia applied:  
Apr 24, 1953. Harvested: Aug 28. Variety: Squareheads Master 13/4.

53/Ca/1.2

Summary of Results

Previous crop			Grain (at 85% dry matter): cwt per acre		Straw (less cavings and chaff): cwt per acre	
1950	1951	1952		Mean		Mean
W	W	W	15.5	15.5	54.0	54.0
H	W	W	19.2		50.3	
P	W	W	23.7	19.3	56.8	53.0
F	W	W	15.1		51.8	
W	H	W	24.4		56.4	
W	P	W	24.4	23.5	41.5	48.7
W	F	B	21.5		48.2	
H	H	W	23.9		56.1	
P	H	W	30.7		57.4	
F	H	W	22.6		52.8	
H	P	W	29.9		44.2	
P	P	W	30.5	27.6	45.3	49.7
F	P	W	27.3		41.8	
H	F	B	25.7		48.3	
P	F	B	30.6		51.4	
F	F	B	27.4		50.0	
W	W	O	32.9	32.9	58.8	58.8
H	W	O	36.1		54.6	
P	W	O	38.6	35.8	57.7	57.2
F	W	O	32.6		59.3	
W	H	H	34.6		70.3	
W	F	O	36.7	36.0	57.0	62.1
W	P	Be	36.8		59.1	
H	F	O	38.6		57.9	
F	F	O	37.6		60.3	
P	F	O	39.2		54.8	
F	H	H	31.3		63.1	
F	P	Be	38.8	37.1	58.7	62.2
H	H	H	32.8		63.1	
P	H	H	36.3		73.5	
H	P	Be	39.9		64.2	
P	P	Be	39.0		64.2	
Mean				30.4		55.7

Mean dry matter %: 82.1

Crop symbols: B - Barley. Be - Beans. F - Fallow. H - Ryegrass.  
O - Oats. P - Potatoes. W - Wheat.

53/Ca/2.1

## WHEAT

The effects of varieties, seed rates and time of applying N on the incidence of Eyespot - Great Field 1953, the 2nd year.

System of replication: 8 randomized blocks of 8 plots each, certain high order interactions and the effect of spraying being confounded with block differences. In addition each block contained two extra plots with no nitrogen, the variety  $\times$  seed rate interaction being confounded.

Area of each plot: 0.0197 acre. Area harvested: 0.0129 acre.

Treatments: All combinations of

Variety: Squareheads Master 13/4; Bersee ( $V_1$ ;  $V_2$ ).

Seedrate:  $1\frac{1}{2}$ ; 3 bushels per acre ( $R_1$ ;  $R_2$ ).

Nitrogen: 0.4; 0.8 cwt per acre applied as sulphate of ammonia ( $N_1$ ;  $N_2$ ).

Time of application of N: At time of autumn sowing; early March; mid-April; 3rd week May ( $T_1$ ;  $T_2$ ;  $T_3$ ;  $T_4$ ).

Spraying: 4 blocks sprayed with  $12\frac{1}{2}\%$  sulphuric acid at 100 gallons per acre.

Basal dressing: None.

Cultivations, etc.: Ploughed: Sept 2, 1952. Seed drilled:  $V_1$  - Oct 17,  $V_2$  - Oct 21.  $T_1$  applied: Oct 24. Sprayed 4 blocks with sulphuric acid: Mar 4, 1953.  $T_2$  applied: Mar 5.  $T_3$  applied: Apr 11.  $T_4$  applied: May 22. Combine harvested: Aug 22. Previous crop: Wheat.

Standard error per plot:

Grain (at 85% D.M.): 3.41 cwt per acre or 16.3% (24 d.f.)

N.B. (1) In the Summary of Results:-

(a) The standard errors given are not valid for testing the effects of spraying for any particular treatment level; the interactions of spraying with treatments may however be tested.

(b) The  $V \times R$  tables do not include the plots receiving no nitrogen

(2) Records of incidence of disease (Take-all and Eyespot) and counts of plant, shoot and straw numbers were made.

Estimates of % area lodged were also recorded.

Summary of Results

Grain (at 85% Dry Matter): cwt per acre

	Unsprayed				Mean
	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	
Mean (±1.20)	20.6	21.8	21.4	23.5	21.8 (±0.85)
		(±1.70)			
V <sub>1</sub>	17.1	18.9	18.6	23.4	19.5
V <sub>2</sub>	24.1	24.8	24.1	23.7	24.2
Difference (±2.41)	+7.0	+5.9	+5.5	+0.3	+4.7 (±1.20)
R <sub>1</sub>	21.5	22.0	23.7	27.2	23.6
R <sub>2</sub>	19.7	21.7	19.0	19.9	20.1
Difference (±2.41)	-1.8	-0.3	-4.7	-7.3	-3.5 (±1.20)
N <sub>1</sub>	17.5	23.1	18.8	22.0	20.3
N <sub>2</sub>	23.7	20.6	24.0	25.0	23.3
Difference (±2.41)	+6.2	-2.5	+5.2	+3.0	+3.0 (±1.20)

	R <sub>1</sub>	R <sub>2</sub>	Diff.	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
Mean (±0.85)				15.1 <sup>(2)</sup>	20.3	23.3	20.5
	(±1.20)		(±1.70)	(±1.70)	(±1.20)		(±0.76)
V <sub>1</sub>	22.1	16.9	-5.2	11.7	19.1	19.9	17.9
V <sub>2</sub>	25.2	23.2	-2.0	18.5	21.6	26.8	23.1
Diff. (±1.70)	+3.1	+6.3	+3.2	+6.8 <sup>(1)</sup>	+2.5	+6.9	+5.2
				(±1.70)	(±1.20)		(±0.76)
R <sub>1</sub>				16.2	22.2	25.1	22.1
R <sub>2</sub>				14.1	18.5	21.6	18.9
Diff. (±1.70)				-2.1 <sup>(1)</sup>	-3.7	-3.5	-3.2

(1) ±2.41 (2) ±1.70 Mean D.M. %: 87.3

Treatment symbols

V<sub>1</sub> Squareheads Master 13/4 R<sub>1</sub> 1½ bushels per acre N<sub>0</sub> No N  
 V<sub>2</sub> Bersee R<sub>2</sub> 3 bushels per acre N<sub>1</sub> 0.4 cwt N per acre  
 N<sub>2</sub> 0.8 cwt N per acre

T<sub>1</sub> Sulphate of ammonia at time of autumn sowing  
 T<sub>2</sub> Sulphate of ammonia in early March  
 T<sub>3</sub> Sulphate of ammonia mid-April  
 T<sub>4</sub> Sulphate of ammonia 3rd week May

53/Ca/2.3

Grain (at 85% Dry Matter): cwt per acre

	Sprayed				Mean
	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	
Mean (±1.20)	22.6	22.9	21.0	21.0	21.9 (±0.85)
	(±1.70)				
V <sub>1</sub>	20.0	21.8	18.3	19.3	19.8
V <sub>2</sub>	25.2	24.1	23.7	22.7	23.9
Difference (±2.41)	+5.2	+2.3	+5.4	+3.4	+4.1 (±1.20)
R <sub>1</sub>	25.1	22.0	22.8	24.7	23.6
R <sub>2</sub>	20.1	23.9	19.1	17.4	20.1
Difference (±2.41)	-5.0	+1.9	-3.7	-7.3	-3.5 (±1.20)
N <sub>1</sub>	21.2	25.1	18.8	23.2	22.1
N <sub>2</sub>	24.0	20.8	23.1	18.9	21.7
Difference (±2.41)	+2.8	-4.3	+4.3	-4.3	-0.4 (±1.20)

	R <sub>1</sub>	R <sub>2</sub>	Diff.	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
Mean (±0.85)				18.7 <sup>(2)</sup>	22.1	21.7	21.2
	(±1.20)		(±1.70)	(±1.70)	(±1.20)		(±0.76)
V <sub>1</sub>	22.0	17.7	-4.3	19.0	19.7	19.9	19.7
V <sub>2</sub>	25.3	22.6	-2.7	18.3	24.4	23.5	22.8
Diff. (±1.70)	+3.3	+4.9	+1.6	-0.7 <sup>(1)</sup>	+4.7	+3.6	+3.1
				(±1.70)	(±1.20)		(±0.76)
R <sub>1</sub>				24.7	24.0	23.3	23.8
R <sub>2</sub>				12.6	20.2	20.1	18.6
Diff. (±1.70)				-12.1 <sup>(1)</sup>	-3.8	-3.2	-5.2

(1) ±2.41 (2) ±1.20 Mean D.M. %: 85.3

Treatment symbols

V<sub>1</sub> Squareheads Master 13/4 R<sub>1</sub> 1½ bushels per acre N<sub>0</sub> No N  
 V<sub>2</sub> Bersee R<sub>2</sub> 3 bushels per acre N<sub>1</sub> 0.4 cwt N per acre  
 N<sub>2</sub> 0.8 cwt N per acre

T<sub>1</sub> Sulphate of ammonia at time of autumn sowing  
 T<sub>2</sub> Sulphate of ammonia in early March  
 T<sub>3</sub> Sulphate of ammonia mid-April  
 T<sub>4</sub> Sulphate of ammonia 3rd week May

53/Ca/3

WHEAT

The effect of varieties, seed rates and N on the incidence of Eyespot - Great Field I 1953.

System of replication: 4 randomized blocks of 8 plots each, certain high order interactions and the effect of spraying being confounded with block differences.

Area of each plot: 0.0197 acre. Area harvested: 0.0129 acre.

Treatments: All combinations of:

Varieties: Hybrid 46; Yeoman; Cappelle; Scandia.  
 Seed rates: 1½; 3 bushels per acre.  
 Nitrogen: 0.4; 0.8 cwt N per acre as sulphate of ammonia applied in spring.  
 Spraying (on blocks): None; 100 gallons of 12½% Sulphuric acid per acre.

Basal dressing: None

Cultivations, etc.: Ploughed: Sept 2, 1952. Seed drilled: Oct 24.  
 Sprayed with sulphuric acid: Mar 4, 1953. Sulphate of ammonia applied: Mar 5. Combine harvested: Sept 9. Previous crop: Wheat.

Standard error per plot:

Grain: 3.50 cwt per acre or 15.0% (11 d.f.)

Summary of Results

Grain: cwt per acre

	Variety				Seed rate:		N:		Mean
	Hybrid 46	Yeoman	Cappelle	Scandia	bu. per acre		cwt per acre		
	(±1.79)*				(±1.27)*				
Unsprayed	22.0	22.5	24.9	24.6	24.1	22.9	21.7	25.4	23.5
Sprayed	26.9	22.2	24.7	24.1	25.5	23.4	23.7	25.2	24.5
Mean	24.5	22.3	24.8	24.3	24.8	23.2	22.7	25.3	24.0
	(±1.27)				(±0.90)				
	Variety				(±1.79)				
	Hybrid 46				25.0	24.0	22.5	26.5	
	Yeoman				24.2	20.5	20.5	24.2	
	Cappelle				24.9	24.7	23.7	25.9	
	Scandia				25.1	23.5	24.0	24.6	
							(±1.27)		
	Seed rate:								
	bushels per acre				1.5		23.0	26.6	
					3.0		22.3	24.0	

\*For use in horizontal and interaction comparisons only

N.B. Records of incidence of disease (Eyespot and Take-all) and counts of plant shoot and straw numbers were made. Estimates of % area lodged were also recorded.

53/Ca/4

WHEAT

Residual effect of dung - West Barnfield II 1953.

System of replication: 4 randomized blocks of 12 plots each.

Area of each plot: 0.0318 acre. Area harvested: 0.0129 acre.

Treatments: All combinations of:-

Dung: None; 5; 10; 15 tons per acre applied to potatoes 1951-52.

Methods of application: Ploughed in, in winter (1951); ploughed in, in spring (1952); placed in ridges (1952).

Basal dressing: 3 cwt sulphate of ammonia per acre as top dressing in spring.

Cultivations, etc.: Cultivated: Oct 22 and again Oct 30 1952. Seed drilled at 3 bushels per acre: Nov 4. Sulphate of ammonia applied: April 24, 1953. Sprayed with M.C.P.A. low volume, 2 pints per acre: May 21. Combine harvested: Aug 21. Variety: Cappelle. Previous crop: Potatoes.

Standard error per plot:

Grain\* : 5.06 cwt per acre or 12.4% (35 d.f.)

Summary of Results

Method of application	Dung applied to potatoes 1951-52: tons per acre				Mean
	None	5	10	15	
	Grain*: cwt per acre				
		(±2.53)			(±1.46)
Ploughed in, in winter	40.6	42.8	42.3		41.9
Ploughed in, in spring	41.9	39.3	45.4		42.2
Placed in ridges	37.7	41.4	42.8		40.6
Mean (±1.46)	38.6	40.1	41.2	43.5	40.8

\*Corrected to 85% D.M. Mean D.M.%:84.3.

N.B. For details of original experiment see "Results of the Field Experiments 1952", Section Cc/1.



53/Ca/5

WHEAT

The residual effect of insecticides on the control of wireworm - Geescroft 1953.

System of replication: 3 randomized blocks of 8 plots each.

Area of each plot: 0.0289 acre. Area harvested: 0.0178 acre.

Treatments (applied autumn 1951 to previous wheat):

None (triplicate plots)							(O)
Gammexane seed dressing, 2 oz per bushel							(S)
Gammexane combine drilled with seed at	56 lb per acre,	3.5% dust					(G)
Aldrin	" " " "	200 lb per acre,	1.78%	"			(A)
Chlordane	" " " "	100 lb per acre,	5%	"			(C)
D. D. T.	" " " "	150 lb per acre,	5%	"			(D)

Basal dressing: 3 cwt sulphate of ammonia per acre.

Cultivations, etc.: Ploughed: Sept 8, 1952. Seed drilled at 2 1/4 bushels per acre: Oct 27. Sulphate of ammonia applied: Apr 25, 1953. Combine harvested: Sept 26. Variety: Nord Desprez. Previous crop: Wheat.

Standard error per plot:

Grain: 2.76 cwt per acre or 10.4% (16 d.f.)

Note: Wireworm counts were made and are available.

For details of original experiment see "Results of the Field Experiments 1952", Section Ca/4.

Summary of Results

	O	S	G	A	C	D	Mean
Grain: cwt per acre							
Mean (±1.60)	21.6 <sup>(1)</sup>	22.9	30.2	34.6	32.9	26.7	26.5
Increase (±1.84)		1.3	8.6	13.0	11.3	5.1	

Standard error (1) ±0.92

53/Ca/6

WHEAT

Late application of nitrogen - Highfield 1953.

System of replication: 4 randomized blocks of 3 plots each.

Area of each plot: 0.0204 acre.

Treatments:

Nitrogen: None; 0.23; 0.46 cwt per acre applied as nitrochalk top dressing.

Basal dressing: 2 cwt sulphate of ammonia per acre.

Cultivations, etc.: Ploughed: Aug 23, 1952. Seed drilled at 3 bushels per acre: Oct 30. Sulphate of ammonia applied: Apr 29, 1953. Nitrochalk applied: June 26. Harvested: Aug 19. Variety: Nord Desprez. Previous crop: Wheat.

Standard error per plot:

Grain: 1.12 cwt per acre or 3.5% (6 d.f.)

Summary of Results

	Nitrogen (as nitrochalk top dressing): cwt per acre			Mean
	None	0.23	0.46	
Yield: cwt per acre				
Grain ( $\pm 0.56$ )	31.8	32.2	31.8	31.9
Straw <sup>‡</sup>	44.6	43.3	43.3	43.7
Crude protein: cwt per acre				
Grain	3.79	3.91	3.88	
Increase		+0.12	+0.09	
Straw	1.78	1.73	1.82	
Increase		-0.05	+0.04	
Percentage uptake of added nitrogen				
Grain		+8	+3	
Straw		-3	+1	

<sup>‡</sup>Corrected to 85% dry matter. Mean dry matter %: 83.6.

53/Ca/7

### WHEAT

The effects of sowing date and N on the incidence of Powdery Mildew - Long Hoos I, II and III 1953.

System of replication: 4 randomized blocks of 4 plots each, arranged in 2 block pairs, the effect of sowing date being confounded with block differences.

Area of each plot: 0.0197 acre.

Treatments: All combinations of:-

Sowing date (on blocks): Early; Late - 3 weeks later than Early sown.

N in seed bed: None; 0.2 cwt N per acre applied as sulphate of ammonia.

N top dressing: 0.3; 0.6 cwt N per acre applied as sulphate of ammonia in spring.

Basal dressing: None.

Cultivations, etc.:

'Early' blocks. Harrowed after potatoes: Oct 17 and again Oct 29, 1952. Seed drilled at  $2\frac{3}{4}$  bushels per acre: Oct 29. Sulphate of ammonia applied: Oct 31.

'Late' blocks. Harrowed after potatoes: Oct 17 and again Nov 12. Seed drilled at  $2\frac{3}{4}$  bushels per acre, sulphate of ammonia applied: Nov 12. Crop failed, resown: Mar 13, 1953.

All blocks. Sulphate of ammonia top dressing applied: June 5.

Variety: Squareheads Master 13/4, the 'Late' blocks were resown with Fylgia. Previous crop: Potatoes.

Note: No yields were taken as owing to the resowing, the main object of the experiment could not be tested. In addition the crop was poor, particularly the 'Early' blocks which were sown under very wet conditions.

53/Ca/8

WHEAT

Methods of harvesting and levels of N - Sawyers III 1953.

System of replication: 4 randomized blocks of 9 plots each.

Area of each plot: 0.0200 acre. Area harvested: Binder - full area, combine - 0.0129 acre.

Treatments: All combinations of:-

N: None; 0.4; 0.8 cwt N per acre applied as nitrochalk.

Method of harvesting: Binder; Combine (Massey Harris 726).

Note: The experiment was originally designed to test also the N.I.A.E. combine (i.e. 3 methods in all) but this was not available. The 3 plots per block (1 at each level of N) which should have been harvested by the N.I.A.E. combine were harvested by Binder in 2 of the blocks, and by the Massey Harris 726 in the other 2 blocks: each treatment combination was therefore replicated 6 times.

Basal dressing: None.

Cultivations, etc.: Cultivated twice: Nov 7, 1952. Seed drilled at 3 bushels per acre: Nov 9. Nitrochalk applied: May 20, 1953. Sprayed with M.C.F.A.: May 21. Harvested: Binder plots - Sept 3. Combine plots - Sept 10. Variety: Cappelle. Previous crop: Potatoes.

Standard error per plot:

Grain: 2.67 cwt per acre or 8.9% (27 d.f.)

Summary of Results

Grain: cwt per acre

Method of Harvesting	N: cwt per acre			Mean
	None	0.4	0.8	
	(1) and (2)			
Binder	26.3	30.4	33.4	30.0
Combine	25.9	29.9	35.2	30.3
Mean ( $\pm 0.77$ )	26.1	30.2	34.3	30.2
Difference ( $\pm 1.57$ )	-0.4	-0.5	+1.8	+0.3 ( $\pm 0.94$ )

(1)  $\pm 1.09$  for use in horizontal comparisons only.

(2)  $\pm 1.11$  for use in diagonal comparisons only.

BARLEY

Late application of nitrogen - Deacons. Field 1953.

System of replication: 4 randomized blocks of 3 plots each.

Area of each plot: 0.0204 acre.

Treatments:

Nitrogen: None; 0.23; 0.46 cwt per acre applied as nitrochalk top dressing.

Basal dressing per acre:  $2\frac{1}{4}$  cwt sulphate of ammonia, 1 cwt superphosphate.

Cultivations, etc.: Ploughed: Feb 5. Seed drilled at 3 bushels per acre with Superphosphate: Mar 7. Sulphate of ammonia applied: Mar 9. Nitrochalk applied: June 25. Harvested: Aug 13. Variety: Herta. Previous crop: Potatoes.

Standard error per plot:

Grain: 0.582 cwt per acre or 1.4% (6 d.f.)

Summary of Results

	Nitrogen (as nitrochalk top dressing): cwt per acre			Mean
	None	0.23	0.46	
	Yield: cwt per acre			
Grain ( $\pm 0.29$ )	38.6	40.3	42.0	40.3
Straw <sup>✱</sup>	39.8	39.3	40.8	40.0
	Crude protein: cwt per acre			
Grain	3.74	4.26	4.63	
Increase		0.52	0.89	
Straw	0.80	0.96	1.22	
Increase		0.16	0.42	
	Percentage uptake of added nitrogen			
Grain		36	31	
Straw		11	14	

<sup>✱</sup>Corrected to 85% dry matter. Mean dry matter %:85.1.

53/Cb/2

BARLEY

Nitrophosphate and fertilizers broadcast or drilled - Highfield 5 1953.

System of replication: 4 randomized blocks of 8 plots each.

Area of each plot: 0.0194 acre.

Treatments:

Sulphate of ammonia broadcast; Nitrochalk broadcast; Nitrophosphate (British) broadcast or drilled; Compound fertilizer (9% N; 9% P<sub>2</sub>O<sub>5</sub>) broadcast or drilled; Nitrochalk and superphosphate mixture broadcast or drilled. All fertilizers were applied at rates to give 0.5 cwt N and 0.5 cwt. P<sub>2</sub>O<sub>5</sub> per acre.

Basal dressing: 94 lb sulphate of potash per acre.

Cultivations, etc.: Ploughed: Sept 24, 1952 and again Jan 20, 1953.

Seed drilled at 3 bushels per acre, fertilizers applied: Mar 9.

Combine harvested: Aug 19. Variety: Herta. Previous crop: Linseed.

Standard error per plot:

Grain (at 85% D.M.): 2.74 cwt per acre or 3.7% (20 d.f.)

Note: The yield of grain (at 85% D.M.) has been adjusted to allow for tractor damage to two plots.

Summary of Results

Sulphate of ammonia Broadcast	Nitro- chalk Broadcast	Nitrophosphate (British)		National Compound No. 9		Nitrochalk and Superphosphate		Mean
		Broad- cast	Drilled	Broad- cast	Drilled	Broad- cast	Drilled	

Grain (at 85% Dry Matter): cwt per acre

Mean (±1.37)	30.3	29.5	31.0	30.0	31.5	33.6	33.3	32.2	31.4
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Mean D.M.%: 79.8

53/Cb/3.1

BARLEY

Control of Powdery Mildew - Little Knott I 1953.

System of replication: 8 randomized blocks of 2 plots each, each plot being split into two for spraying, one group of 4 blocks being sown early, the other late.

Area of each sub plot: 0.0159 acre.

Treatments: All combinations of:

Blocks. Sowing date: Early, 12th March; Late, 15th April.

Whole plots. Varieties: Plumage Archer; Haisa II.

Sub plots. Spraying: None; 160 gals. per acre of 1 in 80 Lime sulphur.

Basal dressing per acre: 2 cwt sulphate of ammonia; 1 cwt superphosphate combine drilled.

Cultivations, etc.:

'Early' plots: Ploughed: Feb 23. Seed drilled at 3 bushels per acre with superphosphate, sulphate of ammonia applied: Mar 12. Harvested: Aug 17.

'Late' plots: Ploughed: Apr 11. Seed drilled at 3 bushels per acre with superphosphate, sulphate of ammonia applied: Apr 15. Harvested: Aug 18.

Whole experiment: Sprayed appropriate plots with lime sulphur: May 5 and again June 11. Previous crop: Kale.

Standard errors per plot. Grain:

Whole plot: 1.92 cwt per acre or 5.7% (6 d.f.)

Sub plot: 1.55 cwt per acre or 4.6% (12 d.f.)

Note: Counts of incidence of Powdery Mildew were made.

53/Cb/3.2

Summary of Results

Lime sulphur	Early sowing 11th March			Late sowing 15th April		
	Plumage	Haisa	Mean	Plumage	Haisa	Mean
	Archer	II		Archer	II	

Grain: cwt per acre

	(a) and (b)		(±0.55)	(a) and (b)		(±0.55)
-	33.6	31.4	32.5	34.6	35.8	35.2
Sprayed	33.3	31.6	32.4	35.9	35.0	35.5
Mean (±0.96)	33.4	31.5	32.5	35.3	35.4	35.3

Straw: cwt per acre

-	42.2	42.4	42.3	41.9	41.9	41.9
Sprayed	45.3	40.5	42.9	46.5	43.3	44.9
Mean	43.7	41.5	42.6	44.2	42.6	43.4

- (a) ±0.77 for use in vertical comparisons only.  
 (b) ±1.11 for use in all others.

N.B. The standard errors given are not valid for testing the effect of sowing date for any particular treatment; the interactions of sowing date with treatments may, however, be tested.



53/Cb/4

BARLEY

Methods of harvesting - Deacons Field 1953.

System of replication: 12 randomized blocks of 2 plots each.

Area of each plot: 0.0200 acre. Area harvested: Binder - full area;  
Combine harvester - 0.0129 acre.

Treatments:

Methods of harvesting: Binder; Combine harvester (Massey Harris 726  
8'6" cut).

Basal dressing per acre: 1 cwt superphosphate;  $2\frac{1}{2}$  cwt sulphate of  
ammonia.

Cultivations, etc.: Ploughed: Feb 5. Seed drilled with superphosphate:  
Mar 7. Sulphate of ammonia applied: Mar 9. Harvested: Combine  
plots - Aug 22, Binder - Aug 25. Variety: Herta. Previous crop:  
Potatoes.

Standard error per plot:

Grain: 2.41 cwt per acre or 6.1% (11 d.f.)

Summary of Results

	Methods of Harvesting		Mean	Difference
	Binder	Combine Harvester		
Yields: cwt per acre				
Grain	36.8	41.6	39.2	4.8 ( $\pm 0.98$ )
Straw	39.4	-		

Mean Dry Matter %: Combine plots - 84.2, Binder plots - no value  
available.

53/Cc/1

SPRING OATS

Late application of nitrogen - Great Field II 1953.

System of replication: 4 randomized blocks of 3 plots each.

Area of each plot: 0.0204 acre. Area harvested: 0.0103 acre.

Treatments:

Nitrogen: None; 0.23; 0.46 cwt per acre applied as nitrochalk top dressing.

Basal dressing: 2 cwt nitrochalk per acre.

Cultivations, etc.: Ploughed: Sept 26, 1952. Seed drilled at 3 bushels per acre with basal nitrochalk: Feb 26, 1953. Nitrochalk applied: June 26. Combine harvested: Sept 10. Variety: Marne. Previous crop: Barley.

Standard error per plot:

Grain: 2.50 cwt per acre or 6.0% (6 d.f.)

Summary of Results

	Nitrogen (as nitrochalk top dressing): cwt per acre			Mean
	None	0.23	0.46	
Yield: cwt per acre				
Grain ( $\pm 1.25$ )	42.1	41.5	40.9	41.5
Straw <sup>*</sup>	42.4	43.7	42.0	42.7
Crude protein: cwt per acre				
Grain	5.05	5.16	5.21	
Increase		0.11	0.16	
Straw	1.62	1.85	1.90	
Increase		0.23	0.28	
Percentage uptake of added nitrogen				
Grain		8	5	
Straw		16	9	

<sup>\*</sup>Corrected to 85% dry matter. Mean dry matter %: 78.2.

53/Cd/1.1

WINTER BEANS

Effect of cultivations on ploughed in beans - Long Hoos V 1953.

System of replication: 6 randomized blocks of 6 plots each, in 3 block pairs, the effect of spraying being confounded with block differences.

Area of each plot: 0.0145 acre.

Treatments: All combinations of:

Cultivations on furrows: Work down furrows in autumn (A); work down furrows in spring (B); A and B.

Cultivations by weeding: None; mechanical weeder cultivation in spring (W).

Spraying (on blocks): None; DNBP medium volume.

Basal dressing: None.

Cultivations, etc.: Beans ploughed in at 3 cwt per acre: Nov 4, 1952. Heavy harrowed 'A' and 'AB' plots: Nov 7. Medium harrowed 'A' and 'AB' plots twice: Nov 8. Sprayed appropriate blocks with DNBP: Apr 28, 1953. Harrowed 'B' plots: May 5. Weeded 'W' plots: May 12. Horse hoed all plots: May 12 and again June 6. Hand weeded: June 17, June 29, July 27. Harvested: Sept 5. Variety: Deneb (own seed). Previous crop: Potatoes.

Standard errors per plot:

Unsprayed blocks: 4.25 cwt per acre or 17.2% (10 d.f.).

Sprayed blocks: 1.50 cwt per acre or 6.1% (9 d.f.)\*

\* 1 missing value.

53/cd/1.2

Summary of Results

Weeding	Grain: cwt per acre								
	Unsprayed Work down furrows				Mean	Sprayed Work down furrows			Mean
	In Autumn	In Spring	In Autumn and Spring	In Autumn		In Spring	In Autumn and Spring		
	(±2.46)					(±0.87)			
None	25.6	26.4	24.4	25.5	21.6	23.7	25.9	23.8	
Mechanical	24.3	24.8	23.1	24.1	26.6	25.4	23.6	25.2	
Mean	24.9	25.6	23.8	24.8	24.1	24.6	24.8	24.5	
	(±1.74)					(±0.61)			
Difference	-1.3	-1.6	-1.3	-1.4	+5.0	+1.7	-2.3	+1.4	
	(±3.47)				(±2.01)	(±1.23)			(±0.71)

Straw: cwt per acre								
None	40.3	35.2	41.5	39.0	40.4	27.5	37.2	35.0
Mechanical	38.5	35.4	36.4	36.8	37.7	30.2	33.7	33.8
Mean	39.4	35.3	39.0	37.9	39.0	28.8	35.4	34.4
Difference	-1.8	+0.2	-5.1	-2.2	-2.7	+2.7	-3.5	-1.2

Grain: cwt per acre

Weeding	Responses to spraying			Mean
	In Autumn	In Spring	In Autumn and Spring	
	(±2.66)*			
None	-4.0	-2.7	+1.5	-1.7
Mechanical	+2.3	+0.6	+0.5	+1.1
Mean	-0.8	-1.0	+1.0	-0.3
	(±1.88)*			
Difference	+6.3	+3.3	-1.0	+2.8
	(±3.76)			(±2.17)

\*for use in testing the differences of 2 responses to spraying.

53/Oa/2

WINTER BEANS

Fertilizer placement - Sawyers I 1953.

System of replication: 8 randomized blocks of 9 plots each.

Area of each plot: 0.0152 acre.

Treatments: All combinations of:-

Superphosphate, cwt. per acre: None; 3.2 broadcast on seed bed;  
3.2 drilled in band 2" to side of seed.

Sulphate of potash, cwt per acre: None; 2.3 broadcast on seed bed;  
2.3 drilled in band 2" to side of seed.

Basal manuring: None.

Cultivations, etc.: Ploughed: Sept 22, 1952. Seed drilled at 3  
bushels per acre, fertilizers applied: Nov 13. Variety: S. Q. Giant.  
Previous crop: Wheat.

Note: Owing to the heavy bird damage and infestation with weeds, the  
crop was not harvested and therefore no yields are available.

53/cd/3

SPRING BEANS

Phosphate placement - Sawyers I 1953.

System of replication: 6 randomized blocks of 6 plots each.

Area of each plot: 0.0092 acre.

Treatments: No phosphate (two plots per block) and all combinations of:-

Phosphate: Dicalcium phosphate; Superphosphate, each providing 0.5 cwt P<sub>2</sub>O<sub>5</sub> per acre.

Method of placement: Broadcast; Drilled in band beneath seed.

Basal dressing: None.

Cultivations, etc.: Ploughed: Sept 22, 1952. Seed drilled at 3 bushels per acre, fertilizers applied: Mar 2, 1953. Harvested: Sept 8. Variety: Ashwells Selection. Previous crop: Wheat.

Standard error per plot:

Grain (at 85% Dry Matter): 1.60 cwt per acre or 13.9% (25 d.f.)

Note: The yield of grain has been adjusted to allow for the fact that several plots were drilled at the wrong seed rate.

Summary of Results

	Phosphate				Mean	
	None	Dicalcium Broadcast	Super Drilled	Dicalcium Super Drilled		
Grain (at 85% Dry Matter): cwt per acre						
Mean (±0.65)	11.8 <sup>(1)</sup>	9.7	9.7	12.9	13.1	11.5
Increase (±0.80)		-2.1	-2.1	+1.1	+1.3	

(1) ±0.46

Mean Dry Matter %: 83.1

53/oa/4

SPRING BEANS

Control of Black Aphis by insecticides - Woburn, Stackyard and Warren Field.

System of replication: 4 randomized blocks of 5 plots each.

Area of each plot: 0.000735 acre. Area harvested: 0.000367 acre.

Treatments:

- No insecticide (two plots per block).
- Seed soaked 4 hours in 2% emulsion Systox active ingredient.
- Seed dressing, 0.012 grams active ingredient of Systox per seed.
- Soil dressing, 0.75 grams active ingredient of Systox per foot of drill.

Basal dressing: None.

Cultivations, etc.:

Stackyard

Ploughed: Sept 10, 1952. Seed drilled at 100 lb per acre: Mar 10, 1953. Harvested: Aug 28. Variety: Spring Tick. Previous crop: Fallow.

Warren Field

Ploughed: Sept 12, 1952. Seed drilled at 100 lb per acre: Mar 14, 1953. Variety: Spring Tick. Previous crop: Barley. No yields were recorded.

Standard error per plot. Stackyard.

Grain: 2.51 cwt per acre or 14.1% (13 d.f.)

Note. Counts of Black Aphis, Pea and Bean Weevil were made on both fields.

Summary of Results

Grain: cwt per acre

Stackyard

	Systox			Mean
	None	Seed soaked	Seed dressing	
Mean ( $\pm 1.25$ )	16.0 <sup>(1)</sup>	17.4	19.1	17.8
Increase ( $\pm 1.54$ )		1.4	3.1	4.4

(1)  $\pm 0.89$

BEANS

Control of Black Aphis - Long Hoos V 1953.

System of replication: 8 randomized blocks of 2 plots each, arranged in 4 block pairs, the effect of sowing date being confounded with block differences.

Area of each plot: 0.0339 acre.

Treatments: All combinations of:

Sowing date (by blocks): Winter; Spring.

Insecticidal spray: None; Systox 0.1% active ingredient at 100 gallons per acre.

N.B. The experiment was originally designed to test a control and 4 sprays, but owing to the lack of aphids, it was decided to test Systox only.

Basal dressing: None.

Cultivations, etc.: Ploughed in winter beans at 340 lb per acre: Nov 13, 1952. Ploughed in spring beans at 320 lb per acre: Feb 23, 1953. Sprayed with Systox: June 8. Harvested: Sept 5. Variety: Winter - S.Q.Giant; Spring - Garton's Tick. Previous crop: Potatoes.

Standard error per plot:

Grain: 2.81 cwt per acre or 9.4% (6 d.f.)

Summary of Results

Spray	Sown		Mean
	Winter	Spring	
Grain: cwt per acre			
None	26.4	28.8	27.6
Systox	31.3	33.1	32.2
Mean	28.8	30.9	29.9
Difference ( $\pm 1.99$ )	+4.9	+4.3	+4.6 ( $\pm 1.41$ )
Straw: cwt per acre			
None	35.3	31.7	33.5
Systox	32.4	33.8	33.1
Mean	33.8	32.8	33.3
Difference	-2.9	+2.1	-0.4



53/ca/6.

BROAD BEANS

Fertilizer placement - Sawyers I 1953.

System of replication: 4 randomized blocks of 6 plots each.

Area of each plot: 0.00379 acre. Area harvested: 0.00318 acre.

Treatments: No fertilizer (duplicate plots) and all combinations of:-

Compound granular NPK fertilizer (8% N, 6% P<sub>2</sub>O<sub>5</sub>, 10½% K<sub>2</sub>O):  
3; 6 cwt per acre.

Method of placement: Broadcast on seed bed; drilled in band beside seed.

Basal dressing: None.

Cultivations, etc.: Ploughed: Sept 22, 1952. Beans sown at 2 cwt per acre fertilizers applied: Feb 6, 1953. Harvested: 1st picking - July 15, 2nd - July 27. Variety: Prolific Longpod. Previous crop: Wheat.

Standard errors per plot. Yield of green beans in pod:

1st picking: 7.31 cwt per acre or 16.6% (16 d.f.)

2nd picking: 5.08 cwt per acre or 16.0% (16 d.f.)

Total of 2 pickings: 9.77 cwt per acre or 12.9% (16 d.f.)

Summary of Results

Yield of green beans in pod: cwt per acre

		Compound PK fertilizer: cwt per acre					
		3		6			
		None	Broad- cast	Drilled	Broad- cast	Drilled	Mean
1st Picking							
Mean	(±3.66)	38.0 <sup>(1)</sup>	36.4	54.4	47.7	50.7	44.2
Increase	(±4.48)		-1.6	+16.4	+9.7	+12.7	
2nd Picking							
Mean	(±2.54)	29.7 <sup>(2)</sup>	25.7	33.8	26.7	45.5	31.9
Increase	(±3.11)		-4.0	+4.1	-3.0	+15.8	
Total of two pickings							
Mean	(±4.89)	67.7 <sup>(3)</sup>	62.2	88.2	74.4	96.1	76.0
Increase	(±5.98)		-5.5	+20.5	+6.7	+28.4	

(1) ±2.59

(2) ±1.80

(3) ±3.46

POTATOES

Dung, N, P and K - West Barnfield I 1953.

System of replication: 4 randomized blocks of 8 plots each, the interaction DNPk being confounded with block differences.

Area of each plot: 0.0210 acre. Area harvested: 0.0140 acre.

Treatments: All combinations of:-

- Dung: None; 10 tons per acre.
- N: None; 0.6 cwt per acre applied as sulphate of ammonia.
- P<sub>2</sub>O<sub>5</sub>: None; 0.6 cwt per acre applied as superphosphate.
- K<sub>2</sub>O: None; 1.0 cwt per acre applied as muriate of potash.

Basal dressing: None.

Cultivations, etc.: Ploughed: Sept 18, 1952. Dung applied and ploughed in: Feb 26, 1953. Ridged and fertilizers applied in ridges: Apr 10. Potatoes planted: Apr 11. Earthed up: June 25. Sprayed with copper fungicide: Aug 5. Sprayed with 20% sulphuric acid: Sept 25. Lifted: Oct 2. Variety: Majestic. Previous crop: Wheat.

Standard error per plot:

Total tubers: 1.44 tons per acre or 12.6% (18 d.f.)

Summary of Results

Responses to Treatments

Response to	Mean	Dung: tons per acre		N		P <sub>2</sub> O <sub>5</sub> cwt per acre		K <sub>2</sub> O	
		0.0	10	0.0	0.6	0.0	0.6	0.0	1.0

Total tubers: Mean yield 11.45 tons per acre  
(±0.510) (±0.721)

Dung	+3.70	-	-	+3.72	+3.68	+2.68	+4.72	+4.65	+2.75
N	+1.67	+1.69	+1.65	-	-	+1.78	+1.56	+1.51	+1.83
P <sub>2</sub> O <sub>5</sub>	-0.05	-1.07	+0.97	+0.06	-0.16	-	-	-1.25	+1.15
K <sub>2</sub> O	+2.12	+3.07	+1.17	+1.96	+2.28	+0.92	+3.32	-	-

Percentage ware (1½" riddle): Mean 87.6

Dung	+4.8	-	-	+4.5	+5.1	+2.8	+6.8	+7.7	+1.9
N	0.0	-0.3	+0.3	-	-	+0.8	-0.8	+1.2	-1.2
P <sub>2</sub> O <sub>5</sub>	-2.3	-4.3	-0.3	-1.5	-3.1	-	-	-4.9	+0.3
K <sub>2</sub> O	+4.1	+7.0	+1.2	+5.3	+2.9	+1.5	+6.7	-	-

53/Ce/2.1

## POTATOES

Methods of planting and fertilizer application - Deacons Field 1953.

System of replication: 4 randomized blocks of 12 plots each, plots being split into 2 for the application of N and K with the NK interaction confounded with whole plot differences, and certain high order interactions confounded with block differences.

Area of each sub-plot: 0.0140 acre. Area harvested: 0.0105 acre.

### Treatments:

Whole plots: All combinations of:-

Compound granular fertilizer (7% N, 7% P<sub>2</sub>O<sub>5</sub>, 10.5% K<sub>2</sub>O):  
None; 7½; 15 cwt per acre.

Methods of planting and fertilizer application: Ridge, broadcast fertilizer, hand plant and split back at once (A); Ridge, expose ridges for 7 days, broadcast fertilizer over ridges, hand plant same time as A and split back ridges (B); Broadcast fertilizer on flat, plant from flat with dropper (C); plant from flat with dropper, fertilizers placed 2" to side of seed (D).

Sub plots: All combinations of:-

N: None; 0.53 cwt per acre applied as Sulphate of ammonia.

K<sub>2</sub>O: None; 0.79 cwt per acre applied as Muriate of potash.

Both N and K<sub>2</sub>O were applied as top dressings before the final earthing up.

Basal dressing: None.

Cultivations, etc.: Ploughed: Sept 15, 1952. Ridged 'B' plots: Apr 9, 1953. Ridged 'A' plots, fertilizers applied and potatoes planted on 'A' and 'B' plots: Apr 16. Fertilizers applied, potatoes planted on 'C' and 'D' plots: Apr 17. Top dressings applied, earthed up: June 30. Sprayed with copper fungicide, 5 lb per acre: Aug 1. Sprayed with sulphuric acid, 15% B.O.V: Sept 23. Lifted: Oct 5. Variety: Majestic. Previous crop: Barley.

Standard errors per plot, Total tubers:

Whole plot: 1.02 tons per acre or 8.6% (33 d.f.)

Sub plot: 0.550 tons per acre or 4.6% (26 d.f.)

53/Ce/2.2

Summary of Results

	Compound fertilizer: cwt per acre				Total tubers: tons per acre				Mean
	A	B	C	D	A	B	C	D	
N: cwt per acre	7.5				15.0				
None									
0.53									
Difference ( $\pm 0.389$ )									
K <sub>2</sub> O: cwt per acre									
None									
0.79									
Difference ( $\pm 0.369$ )									
Mean									

( $\pm 0.548$ )<sup>#</sup>

( $\pm 0.387$ )<sup>#</sup>

( $\pm 0.548$ )<sup>#</sup>

( $\pm 0.387$ )<sup>#</sup>

(1)  $\pm 0.275$  (2)  $\pm 0.362$

<sup>#</sup> for use in comparisons other than vertical.

Treatments A. Ridge, broadcast fertilizer, hand plant and split back ridges at once.  
 B Ridge, expose ridges for 7 days, broadcast fertilizer over ridges, hand plant, same time as A, split back ridges.  
 C Broadcast fertilizer on flat, plant from flat with dropper  
 D Plant from flat with dropper, fertilizer placement 2" to side of seed.

N: cwt per acre	None	0.53
	( $\pm 0.296$ )	
K <sub>2</sub> O: cwt per acre	None	0.79
	11.84	11.83
	11.97	11.74

	Compound fertilizer: cwt per acre										Mean					
	None		7.5		15.0		A		B			C		D		
	A	B	C & D	A	B	C	D	A	B	C	D	A	B	C	D	Mean
N: cwt per acre	87.4	88.4	87.0	87.9	90.5	88.5	85.7	91.4	87.0	91.7	89.9	88.5	87.0	91.7	89.9	88.5
None	90.9	87.8	87.3	88.4	88.2	90.5	83.6	89.4	86.8	86.4	88.8	87.9	86.4	86.4	88.8	87.9
Difference	+3.5	-0.6	+0.3	+0.5	-2.3	+2.0	-2.1	-2.0	-0.2	-5.3	-1.1	-0.6	-0.2	-5.3	-1.1	-0.6
K <sub>2</sub> O: cwt per acre	88.4	87.2	86.7	88.1	89.3	89.1	82.6	91.0	88.2	89.4	87.9	87.9	88.2	89.4	87.9	87.9
None	89.8	89.0	87.6	88.2	89.4	89.9	86.8	89.8	85.6	88.7	90.8	88.6	85.6	88.7	90.8	88.6
Difference	+1.4	+1.8	+0.9	+0.1	+0.1	+0.8	+4.2	-1.2	-2.6	-0.7	+2.9	+0.7	-2.6	-0.7	+2.9	+0.7
Mean	89.2	88.1	87.1	88.1	89.3	89.5	84.7	90.4	86.9	89.1	89.3	88.2	86.9	89.1	89.3	88.2

Percentage ware

Treatments	N: cwt per acre		K <sub>2</sub> O: cwt per acre	
	A	B	None	0.53
Ridge, broadcast fertilizer, hand plant and split back ridges at once.	88.1	89.3	88.1	89.3
Ridge, expose ridges for 7 days, broadcast fertilizer over ridges, hand plant, same time as A, and split back ridges.	88.1	89.3	88.1	89.3
Broadcast fertilizers on flat, plant from flat with dropper.	88.1	89.3	88.1	89.3
Plant from flat with dropper, fertilizer placement 2" to side of seed.	88.1	89.3	88.1	89.3

53/0e/3.1

## POTATOES

Control of Blight - Deacons Field 1953.

System of replication: 4 x 4 Latin Square, plots being split into 2 for determination of tractor damage.

Area of each sub plot: 0.0175 acre.

### Treatments:

Whole plots: No spray; Copper fungicide 5 lb in 40 gallons per acre sprayed twice; 100 gallons Sulphuric acid, 15% B.O.V. sprayed to destroy haulms; Copper fungicide and sulphuric acid sprayed as above. The tractor used for spraying was driven over all the plots on each occasion.

Sub plots: The 4 inner rows damaged by three passages of the tractor were compared with the 4 outer and undamaged rows.

Basal dressing: 15 cwt compound granular fertilizer (7% N; 7% P<sub>2</sub>O<sub>5</sub>; 10 $\frac{1}{2}$ % K<sub>2</sub>O) per acre.

Cultivations, etc.: Ploughed: Sept 15, 1952. Cultivated twice: Mar 17, 1953. Ridged: Mar 26. Potatoes planted: Apr 16. Earthed up: June 26. Sprayed appropriate plots with copper fungicide: Aug 1 and again Aug 13. Sprayed appropriate plots with sulphuric acid: Sept 14. Lifted: Oct 6. Variety: Majestic. Previous crop: Barley.

Standard errors per plot: Total tubers.

Whole plot: 0.361 tons per acre or 2.7% (6 d.f.)

Sub plot: 0.454 tons per acre or 3.4% (12 d.f.)

Blight counts were made and are available. The mean level of infection was only 0.3%.

53/Ce/3.2

Summary of Results

	Spray				Mean
	None	Copper fungicide	Sulphuric Acid	Copper fungicide and sulphuric Acid	
Total tubers: tons per acre ( $\pm 0.242$ ) <sup>†</sup>					
Undamaged rows	13.45	13.87	13.28	14.66	13.82
Damaged rows	12.49	13.67	12.71	13.52	13.10
Mean ( $\pm 0.181$ )	12.97	13.77	13.00	14.09	13.46
Difference ( $\pm 0.321$ )	-0.96	-0.20	-0.57	-1.14	-0.72 ( $\pm 0.161$ )

Percentage Ware

Undamaged rows	91.4	88.4	91.8	89.7	90.3
Damaged rows	90.6	89.6	90.7	92.5	90.9
Mean	91.0	89.0	91.2	91.1	90.6
Difference	-0.8	+1.2	-1.1	+2.8	+0.6

<sup>†</sup> for use in comparisons other than vertical.

53/Cf/1.1

SUGAR BEET

Control of Virus Yellows - Long Hoos VII 1953.

System of replication: 4 randomized blocks of 9 plots each.

Area of each plot: 0.0300 acre.

Treatments: All combinations of:-

Sowing date: 1 - As early as possible; 2 - As soon as first sowing above ground; 3 - As soon as second sowing above ground.

Singling date: A - Early (Cotyledons and first leaf less than 1");  
B - Normal (Cotyledons and 4 leaves); C - Late (8-12 leaves).

Basal manuring per acre: 3 cwt nitrate of soda; 4 cwt superphosphate;  
2 cwt muriate of potash; 5 cwt salt.

Cultivations, etc.: Ploughed: Jan 21. Basal fertilizers except nitrate of soda applied: Mar 17. Seed drilled at 18 lb per acre, nitrate of soda applied: '1' plots - Mar 17, '2' - Apr 9, '3' - May 4. Sprayed with D.D.T. emulsion: May 11. Singled: '1A' plots - May 18; '1B', '2A' - May 26; '2B', '2C' - May 29; '3A', '2B', '1C' - June 1; '2C', '2B' - June 10; '3C' - June 24. Lifted: Nov 30. Variety: Klein E. Previous crop: Cauliflower.

Standard errors per plot:

Total sugar: 3.55 cwt per acre or 6.3% (24 d.f.)

Percentage Virus Yellows (transformed values): 6.53 or 66.1% (24 d.f.)

Note. The analysis of the incidence of Virus Yellows has been carried out on percentages transformed to degrees, and all tests of significance should be carried out on the transformed values.

Summary of Results

Sowing Date	Singling Date			Mean
	Early	Normal	Late	
Roots (washed): tons per acre				
17th March	16.80	16.46	16.36	16.54
9th April	16.40	15.81	16.31	16.17
4th May	13.66	13.91	13.23	13.60
Mean	15.62	15.39	15.30	15.44



53/cf/1.2

Sowing Date	Singling Date			Mean
	Early	Normal	Late	
Sugar Percentage				
17th March	17.95	18.27	18.06	18.09
9th April	18.25	18.62	18.22	18.36
4th May	18.32	18.18	18.38	18.29
Mean	18.17	18.35	18.22	18.25
Total Sugar: cwt per acre				
		(±1.78)		(±1.03)
17th March	60.4	60.2	59.2	59.9
9th April	59.8	58.9	59.6	59.4
4th May	50.1	50.7	48.7	49.8
Mean (±1.03)	56.8	56.6	55.8	56.4
Plant Number: thousands per acre				
17th March	31.2	29.0	26.8	29.0
9th April	29.4	27.2	27.9	28.2
4th May	26.0	26.6	25.0	25.9
Mean	28.9	27.6	26.6	27.7
Noxious Nitrogen: mg per 100 g.				
17th March	17.5	16.2	16.2	16.7
9th April	22.5	18.8	20.0	20.4
4th May	22.5	21.2	23.8	22.5
Mean	20.8	18.7	20.0	19.9

53/Cf/1.3

Sowing Date	Singling Date			Mean
	Early	Normal	Late	
Percentage Virus Yellows (means calculated from transformed values)				
17th March	3.5	2.2	1.7	2.4
9th April	0.9	2.9	4.6	2.6
4th May	1.0	8.2	4.2	3.9
Mean	1.6	4.1	3.4	3.0

Percentage Virus Yellows (transformed values)				
	( $\pm 3.27$ )			( $\pm 1.89$ )
17th March	10.8	8.6	7.6	9.0
9th April	5.4	9.8	12.4	9.2
4th May	5.7	16.6	11.8	11.4
Mean ( $\pm 1.89$ )	7.3	11.7	10.6	9.9

LUCERNE

Fertilizer placement - Highfield 5 1953 - the 2nd year.

System of replication: 8 randomized blocks of 8 plots each, a high order interaction being confounded with block differences.

Area of each plot: 0.0136 acre.

Treatments, applied 1952: All combinations of:-

P<sub>2</sub>O<sub>5</sub>: None; 1.0 cwt per acre applied as superphosphate.

K<sub>2</sub>O: None; 1.0 cwt per acre applied as muriate of potash.

Method of placement: Broadcast on seed bed; Ploughed in 10".

Starter: None; 2 cwt granular superphosphate per acre placed beneath seed.

Basal dressing: None.

Cultivations, etc.: Cut and weighed green: three times - June 30, Aug 11 and Oct 20. Variety: Du Puits.

Standard errors per plot. Dry Matter:

1st cut: 3.89 cwt per acre or 6.8% (42 d.f.)  
 2nd cut: 2.52 cwt per acre or 12.9% (42 d.f.)  
 3rd cut: 1.21 cwt per acre or 10.5% (42 d.f.)  
 Total of 3 cuts: 5.20 cwt per acre or 5.9% (42 d.f.)

Note: For the 1st year's results see "Results of the Field Experiments 1952", Section Cf/1.

Summary of Results

Starter	Dry Matter: cwt per acre Treatments applied 1952								Mean	
	No ferti- lizer	Superphosphate		Muriate of Potash		Superphosphate and Muriate of Potash				
		Broad- cast	Ploughed in	Broad- cast	Ploughed in	Broad- cast	Ploughed in			
1st cut										
None	55.0 <sup>(1)</sup>	55.8	57.3	(±1.94)		57.9	60.1	57.7	56.1	56.9
Granular Super	56.1 <sup>(1)</sup>	55.5	57.1	60.3	59.1	58.6	58.3			57.6
Mean (±1.37)	55.5 <sup>(2)</sup>	55.6	57.2	59.1	59.6	58.1	57.2			57.2
Difference (±2.75)	+1.1 <sup>(3)</sup>	-0.3	-0.2	+2.4	-1.0	+0.9	+2.2			+0.7 <sup>(2)</sup>
		(1) ±1.37		Mean Dry Matter %: 23.0						
		(2) ±0.97								
		(3) ±1.94								

53/Cg/1.2

Starter	Dry Matter: cwt per acre Treatments applied 1952								Mean	
	No ferti- lizer	Superphosphate Broad- cast	Ploughed in	Muriate of Potash Broad- cast	Ploughed in	Superphosphate and Muriate of Potash Broad- cast	Ploughed in			
2nd cut										
None	16.5 <sup>(1)</sup>	19.0	18.2	(±1.26)		18.3	20.7	22.5	21.0	19.1
Granular										
Super	19.4 <sup>(1)</sup>	18.6	20.8	20.6	19.9	20.8	21.0	20.8	21.0	20.1
Mean (±0.89)	17.9 <sup>(2)</sup>	18.8	19.5	19.5	20.3	21.6	21.0	21.6	21.0	19.6
Difference (±1.78)	+2.9 <sup>(3)</sup>	-0.4	+2.6	+2.3	-0.8	-1.7	0.0	-1.7	0.0	+1.0 <sup>(2)</sup>
		(1) ±0.89	Mean Dry Matter %: 37.5							
		(2) ±0.63								
		(3) ±1.26								
3rd cut										
None	10.6 <sup>(1)</sup>	11.1	9.5	(±0.60)		12.6	11.3	12.4	12.0	11.3
Granular										
Super	10.9 <sup>(1)</sup>	10.7	12.1	11.5	13.1	12.7	11.6	12.7	11.6	11.7
Mean (±0.43)	10.8 <sup>(2)</sup>	10.9	10.8	12.1	12.2	12.6	11.8	12.6	11.8	11.5
Difference (±0.85)	+0.3 <sup>(3)</sup>	-0.4	+2.6	-1.1	+1.8	+0.3	-0.4	+0.3	-0.4	+0.4 <sup>(2)</sup>
		(1) ±0.43	Mean Dry Matter %: 26.2							
		(2) ±0.30								
		(3) ±0.60								
Total of 3 cuts										
None	82.1 <sup>(1)</sup>	85.8	85.1	(±2.60)		88.9	92.1	92.6	89.1	87.2
Granular										
Super	86.4 <sup>(1)</sup>	84.7	89.9	92.4	92.1	92.0	90.9	92.0	90.9	89.4
Mean (±1.84)	84.3 <sup>(2)</sup>	85.3	87.5	90.6	92.1	92.3	90.0	92.3	90.0	88.3
Difference (±3.67)	+4.3 <sup>(3)</sup>	-1.1	+4.8	+3.5	0.0	-0.6	+1.8	-0.6	+1.8	+2.2 <sup>(2)</sup>
		(1) ±1.84	Mean Dry Matter %: 28.9							
		(2) ±1.30								
		(3) ±2.60								

53/Ch/1.1

## CARROTS

Residual effects of Krilium - Rothamsted, Fosters and Barnfield;  
Woburn, Stackyard and Warren Field.

System of replication: 4 x 4 Latin Square.

Area of each plot: 0.00207 acre. Area harvested: 0.00138 acre.

Treatments, applied 1952:

Krilium per acre: None; 3 cwt broadcast and twice rotary cultivated  
in; 6 cwt broadcast and twice rotary cultivated in;  
3 cwt broadcast and raked into seed bed.

Basal dressing: 5 cwt compound fertilizer (7% N, 7% P<sub>2</sub>O<sub>5</sub>, 10.5% K<sub>2</sub>O).

Cultivations, etc.:

Fosters: Ploughed: Mar 13. Roto tilled: Mar 13. Basal dressing  
applied, seed drilled: Apr 22. Lifted: Sept 24 and Oct 23.

Barnfield: Ploughed: Jan 28. Basal dressing applied, seed  
drilled: Apr 21. Lifted: Oct 20 and 26.

Stackyard: Hand dug: Jan 23. Seed sown: May 5. Basal dressing  
applied: May 14. Lifted: Sept 22.

Warren Field: Hand dug: Jan 27. Seed sown: May 6. Basal  
dressing applied: May 15. Singled: June 26. Lifted: Oct 5.

All fields, Variety: James' Scarlet Intermediate. Previous crop:  
Clover, Carrots, Ryegrass and Red Beet in strips on all plots.

Standard errors per plot. Roots tons per acre:

Fosters:	0.995	tons per acre	or	4.5%	(6 d.f.)
Barnfield:	1.41	"	"	"	11.1% (6 d.f.)
Stackyard:	1.46	"	"	"	17.2% (6 d.f.)
Warren Field:	0.573	"	"	"	7.7% (6 d.f.)

53/Ch/1.2

Summary of Results

Krilium: cwt per acre (applied 1952)					
	None	Rotary Cultivated in 3	6	Raked into seed bed 3	Mean
Roots: tons per acre					
<u>Fosters</u>					
Mean ( $\pm 0.497$ )	22.80	21.82	21.43	21.58	21.91
Increase ( $\pm 0.704$ )		-0.98	-1.37	-1.22	
<u>Barnfield</u>					
Mean ( $\pm 0.71$ )	13.76	11.20	13.50	12.38	12.71
Increase ( $\pm 1.00$ )		-2.56	-0.26	-1.38	
<u>Stackyard</u>					
Mean ( $\pm 0.73$ )	7.70	9.02	9.02	8.22	8.49
Increase ( $\pm 1.03$ )		1.32	1.32	0.52	
<u>Warren Field</u>					
Mean ( $\pm 0.286$ )	8.25	7.35	7.92	6.35	7.47
Increase ( $\pm 0.405$ )		-0.90	-0.33	-1.90	

	Plant no. thousands per acre	Percentage over $1\frac{1}{2}$ " diameter
General means: Stackyard	173	43.8
Warren Field	161	29.2

53/Ch/2.1

### CARROTS

Soil conditioners - Rothamsted, Long Hoos VI and Stackyard; Woburn, Stackyard and Warren Field.

System of replication: 4 x 4 Latin square.

Area of each plot: 0.00207 acre. Area harvested: 0.00138 acre.

#### Treatments:

None and 3 proprietary soil conditioners A, B and C each at 10 cwt per acre active material, rotary cultivated in to 6".

Basal dressing: 5 cwt compound fertilizer (7% N; 7% P<sub>2</sub>O<sub>5</sub>; 10.5% K<sub>2</sub>O) per acre.

#### Cultivations, etc.:

Long Hoos VI (R). Ploughed: Jan 22. Roto tilled, soil conditioners and basal dressing applied, rotor tilled: Mar 20. Seed drilled: Apr 20. Lifted: Sept 25 and Oct 28. Previous crop: Sugar beet.

Stackyard (R). Ploughed: Oct 20, 1952 and again Mar 9, 1953. Roto tilled, soil conditioners and basal dressing applied, roto tilled: Mar 21. Seed drilled: Apr 20. Lifted: Oct 19 and 24. Previous crop: Wheat.

Stackyard (W). Hand dug: Jan 23. Soil conditioners applied: Mar 25 and Apr 23. Seed drilled: May 5. Basal dressing applied: May 15. Singled: July 2. Lifted: Oct 12. Previous crop: Fallow.

Warren Field (W). Hand dug: Jan 27. Soil conditioners applied: Mar 25 and Apr 23. Seed sown: May 6. Basal dressing applied: May 15. Singled: June 23. Lifted: Aug 27-Sept 22. Previous crop: Barley.

All fields, Variety: James' Scarlet Intermediate.

Standard errors per plot: Roots: tons per acre

Long Hoos VI (R):	1.21 tons per acre or 4.3% (6 d.f.)
Stackyard (R):	1.51 tons per acre or 6.5% (6 d.f.)
Stackyard (W):	1.24 tons per acre or 13.3% (3 d.f.) <sup>‡</sup>
Warren Field (W):	0.82 tons per acre or 6.4% (6 d.f.)

<sup>‡</sup>1 row of the Latin square received incorrect treatments.

53/Ch/2.2

Summary of Results

	Soil conditioners 10 cent per acre active material				
	None	A	B	C	Mean
Roots: tons per acre					
<u>Rothamsted, Long Hoos VI</u>					
Mean ( $\pm 0.606$ )	28.26	28.91	27.13	29.08	28.35
Increase ( $\pm 0.858$ )		+0.65	-1.13	+0.82	
<u>Rothamsted, Stackyard</u>					
Mean ( $\pm 0.756$ )	23.80	24.93	21.65	23.06	23.36
Increase ( $\pm 1.069$ )		+1.13	-2.15	-0.74	
<u>Woburn, Stackyard</u>					
Mean ( $\pm 0.761$ )	8.74	9.66	9.38	9.62	9.35
Increase ( $\pm 1.077$ )		+0.92	+0.64	+0.88	
<u>Woburn, Warren Field</u>					
Mean ( $\pm 0.410$ )	11.75	12.30	13.75	13.35	12.79
Increase ( $\pm 0.579$ )		+0.55	+2.00	+1.60	

General means:	Plant no. thousands per acre	Percentage over $1\frac{1}{2}$ " diameter
Woburn, Stackyard	167	50.9
Woburn, Warren Field	174	56.6