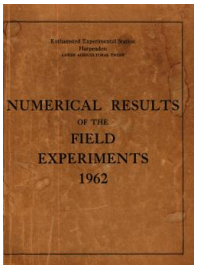
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ROTHAMSTED RESEARCH

Yields of the Field Experiments 1962

Full Table of Content



Yields of the Field Experiments 1962 - Numerical Results

Rothamsted Research

Rothamsted Research (1963) *Yields of the Field Experiments 1962 - Numerical Results ;* Yields Of The Field Experiments 1962, pp 1 - 151 **- DOI: https://doi.org/10.23637/ERADOC-1-164**

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Rothamsted Experimental Station
Harpenden
LAWES AGRICULTURAL TRUST

NUMERICAL RESULTS OF THE FIELD EXPERIMENTS 1962

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Rothamsted Experimental Station

Harpenden

Lawes Agricultural Trust

NUMERICAL RESULTS

of the

FIELD

EXPERIMENTS

1962

The summaries given in this report are similar to those contained in the appendices to the Annual Reports of the Station before the war. This year's report includes only experiments conducted at Rothamsted and Woburn. The design and supervision of these experiments are the responsibility of the Field Plots Committee (present members: F. Yates (Chairman), G.V. Dyke (Secretary), G.W. Cooke, P.H. Gregory, J.R. Moffatt, C.A. Thorold, R.G. Warren, D.J. Watson).

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*at Rothamsted unless otherwise stated.

Sugar beet and mangold seed

In 1961 and 1962, and at Rothamsted in 1960, rubbed and graded seed of sugar beet and mangolds was sown on experiments. At Woburn in 1960, and on both farms in earlier years natural seed was sown. In future rubbed and graded seed will normally be used; the grade used will be recorded in the White Books.

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62/A/1.1

WHEAT - BROADBALK 1962

The 119th year

For history, treatments, etc., see "Details of the Classical and Long Term Experiments" 1956.

Cultivations, etc.:

Cropped sections. Dung and ground chalk applied, all plots ploughed: Sept 7, 1961. Autumn fertilisers applied: Sept 29. Seed drilled at 3 bushels per acre: Nov 1. Spring fertilisers applied: Apr 17, 1962. Section IA sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: Apr 24. Second dressing of nitrate of soda applied to plot 16: May 4. Combine harvested: Sept 15. Variety: Squarehead's Master 13/4.

Fallow section. (II) Ploughed: Sept 7, 1961; May 16, 1962; July 16.

Broadbalk Wilderness. N.

Cultivations, etc.: Shrubs grubbed out: Nov 17 - 30, 1961. Part grazed: Dec 12 - 13; May 11 - 30, 1962; June 12 - 18; July 27 - Aug 1; Sept 6 - 26. Grass topped: May 23; Aug 1; Sept 26.

Summary of Results

Grain (at 85% dry matter): cwt per acre

Section	IB	III	IV	VA	VB	IA	
Years after fallow	1	2	3	unlimed 4	limed 4	11	Mean
2A	40.9	22.2	26.0	24.3	23.3	26.9	26.5
2B	37.5	25.9	26.7	25.2	24.2	27.0	27.4
3	18.5	11.7	9.5	11.2	10.8	12.5	11.9
5	23.1	11.8	12.4	12.4	11.4	13.1	13.6
6	23.0	16.0	14.8	12.2	14.1	17.3	15.9
7	29.4	23.1	21.4	16.6	15.3	22.7	21.5
8	26.5	32.4	28.1	24.6	20.6	31.9	27.7
9	23.8	19.3	17.5	14.6	12.9	22.6	18.1
10	19.7	24.2	21.8	20.6	18.1	20.9	21.4
11	22.9	24.9	20.3	19.0	15.8	28.2	21.6
12	22.2	24.6	19.0	19.5	17.3	25.3	21.2
13	27.6	20.7	17.1	17.1	15.7	26.4	19.9
14	25.0	24.9	19.7	19.2	16.9	26.7	21.8
15	24.0	20.2	19.0	16.8	12.0	19.6	18.8
16	24.2	27.7	25.8	21.9	21.7	27.2	25.1
17	24.8	25.1	21.3	19.8	18.4	24.8	22.4
18	17.2	10.7	8.9	9.4	9.9	12.9	11.0
19	25.0	20.4	15.0	13.0	14.4	21.9	17.9
20	16.9					14.9	16.2

Mean dry matter % as harvested: 78.6

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62/A/1.2

Straw (at 85% dry matter): cwt per acre

Section	IB	III	IV	VA	VB	IA	
Years after fallow	1	2	3	unlimed 4	limed 4	11	Mean
2A	45.5	32.8	29.8	24.9	24.8	30.5	31.4
2B	44.4	38.6	32.7	32.9	26.5	26.9	34.6
3	15.8	13.0	8.2	10.6	9.3	10.7	11.1
5	27.7	13.6	12.4	15.6	14.1	12.7	15.5
6	27.5	18.8	17.0	15.9	18.1	20.6	19.1
7	36.5	27.0	30.3	28.6	25.7	25.3	29.1
8	35.8	38.4	34.5	33.0	28.4	36.8	34.8
9	27.7	27.8	27.4	22.0	21.1	30.1	26.1
10	16.8	25.5	20.0	23.1	13.5	22.0	20.7
11	20.9	26.4	18.0	19.6	13.5	25.4	20.7
12	21.8	23.3	19.9	20.7	17.4	25.7	21.2
13	35.3	25.4	24.5	25.3	23.6	31.8	26.7
14	26.4	25.4	20.8	22.8	19.2	30.0	23.4
15	31.9	22.4	19.2	21.5	11.8	24.7	21.4
16	31.2	37.3	32.2	28.0	28.8	39.6	32.9
17	29.4	29.4	26.7	24.9	24.4	30.0	27.4
18	20.4	9.9	10.2	9.3	9.5	13.1	11.5
19	30.4	22.5	18.6	16.3	17.3	24.9	21.2
20	20.8					17.2	19.6

Mean dry matter % as harvested: 87.2

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62/A/2.1

BARLEY - HOOSFIELD 1962

For history, treatments, etc., see "Details of the Classical and Long Term Experiments" 1956.

From 1962 grain yields will be estimated from the two central combine cuts on each plot, and straw yields from one.

Cultivations, etc.: All plots sprayed with 2,4-D ester at 1¾ pints in 40 gallons per acre: Sept 5, 1961. Plot 1N and parts of plots 2C, 4C, 5-0 and 5A sprayed with dalapon at 8 lb in 40 gallons per acre: Sept 8. Patches on 2N, 2C, 3C and 4C sprayed by hand with dalapon at 8 lb in 40 gallons per acre: Sept 11. Areas sprayed on Sept 8 and 11 resprayed with dalapon at 4 lb in 40 gallons per acre: Sept 27. Dung applied, ploughed: Oct 31. Fertilisers applied: Mar 27, 1962. Seed drilled at 2¾ bushels per acre: Apr 11. Sprayed with MCPA/MBA at 4 pints in 40 gallons per acre: June 4. Combined: Sept 14. Variety: Plumage Archer.

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Summary of Results

Plot	Grain (at 85% dry matter): cwt per acre	Straw (at 85% dry matter): cwt per acre
1 0	8.2	5.1
2 0	9.8	5.1
3 0	7.7	4.7
4 0	10.2	5.5
5 0	10.5	6.5
1 A	11.6	7.0
2 A	17.0	9.8
3 A	12.5	9.3
4 A	21.9	11.9
5 A	24.3	19.0
1 AA	13.1	10.2
2 AA	22.1	15.8
3 AA	13.4	10.9
4 AA	20.9	16.6
1 AAS	16.5	9.9
2 AAS	24.0	15.3
3 AAS	18.8	13.2
4 AAS	27.3	21.5
1 C	17.7	10.2
2 C	20.3	13.3
3 C	18.1	8.4
4 C	23.0	14.0
7 - 1	13.3	7.6
7 - 2	33.0	16.8
6 - 1	8.2	5.7
6 - 2	9.2	10.2
1 N	10.8	8.2
2 N	15.5	11.2
Mean dry matter % as harvested:	79.9	78.5

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62/A/3

WHEAT AFTER FALLOW - HOOSFIELD 1962

Without manure 1851 and since

For history, treatments etc., see "Details of the Classical and Long Term Experiments" 1956.

Area harvested: 0.0362 acres.

Cultivations, etc.:

Cropped plots. Ploughed: Sept 15, 1961. Seed sown at 3 bushels per acre: Nov 1. Combine harvested: Sept 15, 1962. Variety: Squarehead's Master 13/4.

Fallowed plots. Ploughed three times: Sept 15, 1961; May 17, 1962; July 16.

Note: Counts of straw number and estimates of Eyespot (Cercosporella herpotrichoides) and Take-all (Ophiobolus graminis) were made.

Summary of Results

Grain (at 85% dry matter): cwt per acre

Plot	A_1	A_2	A_3	
No. of years of fallow	1	1	3	Mean
	12.5	11.8	12.2	12.2

Mean dry matter % as harvested: 78.0

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GRASS AND MULTIPLE CROPPING AND DIRECT AND RESIDUAL P

AGDELL 1962

For history, treatments, etc., see "Details of the Classical and Long Term Experiments" 1956.

Multiple cropping 1962

The experiment carried out in 1961 on plots 1, 3 and 5 was repeated on the arable halves of plots 2, 4 and 6 of the old rotation. The areas carrying strip crops in 1961 were bare fallowed. Yields were taken from the cocksfoot ley sown in 1960.

Area of each sub plot (acres): 0.0050. Area harvested (acres) Grass - 0.0023, barley and sugar beet - 0.0038, potatoes - 0.0050.

Cultivations, etc.:

Grass. 'Nitro-Chalk' applied: Mar 19, 1962. Cut 3 times: June 6, Aug 20 and Oct 2. 'Nitro-Chalk' applied after 2nd cut.

Fallow areas. Ploughed: Nov 4, 1961. Rotary cultivated: June 20, 1962.

Microplots. Fertilisers applied for ploughing in: Oct 12, 1961. Ploughed: Oct 21.

Barley. Seedbed fertilisers applied, seed drilled at 2½ bushels per acre: Mar 21, 1962. Sprayed with CMPP at 5 pints in 50 gallons per acre: May 9. Harvested: Aug 22. Variety: Proctor.

Potatoes. K applied after ploughing: Feb 23, 1962. Ridged, fertilisers applied in bouts, potatoes planted: Apr 27. Sprayed twice with demeton methyl at 12 fluid oz in 50 gallons per acre: June 14 and Aug 17. Sprayed four times with copper oxychloride fungicide at 2.3 lb Cu in 40 gallons per acre: July 19, Aug 1, Aug 10 and Sept 5. Lifted: Oct 8. Variety: Majestic (chitted).

Sugar beet. K applied after ploughing: Feb 23, 1962. Seedbed fertilisers applied, seed drilled at 10 lb per acre: Mar 21. Singled: May 30. Sprayed four times with demeton methyl at 12 fluid oz in 50 gallons per acre: June 14, June 29, July 7 and Aug 17. Lifted: Oct 5. Variety: Klein E (rubbed and graded seed).

Errata to 'Numerical Results of the Field Experiments 1961'.

(1) Page 61/A/4.2 sugar beet. 2nd line of page should read: '..... seed drilled at 10 lb per acre (rubbed and graded)'.

(2) Page 61/A/4.3. All yields of Barley straw should be halved.

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62/4/4.2

Summary of Results

Manure to turnips until 1948	None since 1848		Mineral manure* no nitrogen		Mineral* and nitrogenous manure+		
Plot	5	6	3	4	1	2	
Rotation	Fallow	Clover	Fallow	Clover	Fallow	Clover	Mean
Grass dry matter: cwt per acre							
1st cut	22.7	15.7	41.0	35.5	39.9	39.1	32.3
2nd cut	13.8	12.3	19.2	18.7	19.6	20.7	17.4
3rd cut	3.8	2.4	7.2	5.8	10.3	8.9	6.4
Total of 3 cuts	40.3	30.5	67.4	60.0	69.9	68.8	56.2

Mean dry matter % as cut:

1st cut	26.2
2nd cut	24.5
3rd cut	18.7
Total of 3 cuts	23.1

*P, K, Na, Mg.

+Rape dust (or castor meal + ammonium sulphate).

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Clover rotation only

Manure to turnips until 1948 Plot	None since 1848 6	Mineral* manure no nitrogen 4	Mineral* and nitrogenous+ manure 2	Mean
Barley, Grain (at 85% dry matter): cwt per acre				
P_2O_5 cwt per acre				
None	25.0	34.5	31.5	30.3
Ploughed in				
0.75	33.6	36.6	26.5	32.2
1.50	34.0	35.7	31.4	33.7
Broadcast				
0.75	29.4	36.0	25.7	30.4
1.50	28.4	35.5	29.6	31.2
½ Ploughed in ½ Broadcast				
1.50	33.0	31.4	26.5	30.3
3.00	33.5	36.7	28.2	32.8
Mean	30.2	35.1	28.9	31.4
Barley, Straw (at 85% dry matter): cwt per acre				
P_2O_5 cwt per acre				
None	19.2	30.3	27.2	25.6
Ploughed in				
0.75	30.2	36.3	29.3	31.9
1.50	33.3	37.1	33.6	34.7
Broadcast				
0.75	23.5	31.4	28.6	27.8
1.50	28.0	40.5	31.5	33.3
½ Ploughed in ½ Broadcast				
1.50	31.6	33.9	33.1	32.9
3.00	35.0	40.9	34.0	36.6
Mean	27.5	35.1	30.6	31.0

Mean dry matter % as harvested: Grain 78.0
Straw 50.7

*P, K, Na, Mg.

+Rape dust (or castor meal + ammonium sulphate).

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Clover rotation only

Manure to turnips until 1948 Plot	None since 1848 6	Mineral* manure no nitrogen 4	Mineral* and nitrogenous manure+ 2	Mean
Potatoes, Total tubers: tons per acre				
P_2O_5 cwt per acre				
None	7.23	12.38	15.81	11.81
Ploughed in				
0.75	9.14	14.29	15.34	12.92
1.50	11.16	11.18	13.70	12.01
Broadcast				
0.75	8.86	12.43	17.89	13.06
1.50	10.26	19.69	17.58	15.84
½ Ploughed in ½ Broadcast				
1.50	10.54	16.40	18.13	15.02
3.00	10.68	14.40	19.20	14.76
Mean	9.39	14.14	16.68	13.40
Sugar beet, Roots (washed): tons per acre				
P_2O_5 cwt per acre				
None	19.30	20.85	19.53	19.89
Ploughed in				
0.75	21.80	22.62	20.43	21.62
1.50	20.96	24.26	23.72	22.98
Broadcast				
0.75	20.00	21.50	19.80	20.43
1.50	20.26	20.62	22.54	21.14
½ Ploughed in ½ Broadcast				
1.50	20.88	23.70	23.32	22.63
3.00	21.84	23.53	19.98	21.78
Mean	20.54	22.24	21.11	21.30
Sugar beet, Sugar percentage				
P_2O_5 cwt per acre				
None	16.2	16.2	16.0	16.1
Ploughed in				
0.75	16.7	16.4	16.2	16.4
1.50	16.0	16.4	16.3	16.2
Broadcast				
0.75	16.0	16.3	16.3	16.2
1.50	16.4	16.8	16.0	16.4
½ Ploughed in ½ Broadcast				
1.50	15.9	16.7	16.1	16.2
3.00	17.0	16.2	16.5	16.6
Mean	16.3	16.4	16.2	16.3

*P, K, Na, Mg.

+Rape dust (or castor meal + ammonium sulphate).

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Clover rotation only

Manure to turnips until 1948 Plot	None since 1848 6	Mineral* manure no nitrogen 4	Mineral* and nitrogenous manure+ 2	Mean
Sugar beet, Total sugar: cwt per acre				
P_2O_5 cwt per acre				
None	62.4	67.2	62.6	64.1
Ploughed in				
0.75	72.7	74.1	66.3	71.0
1.50	67.2	79.5	77.2	74.6
Broadcast				
0.75	64.2	70.2	64.6	66.3
1.50	66.3	69.2	72.1	69.2
½ Ploughed in ½ Broadcast				
1.50	66.5	79.0	75.3	73.6
3.00	74.4	76.2	66.1	72.2
Mean	67.0	72.8	68.4	69.4
Sugar beet, Tops: tons per acre				
P_2O_5 cwt per acre				
None	20.79	23.94	23.14	22.62
Ploughed in				
0.75	22.22	22.10	18.00	20.77
1.50	25.32	24.96	26.10	25.46
Broadcast				
0.75	23.31	23.32	19.70	22.11
1.50	21.33	19.73	25.02	22.03
½ Ploughed in ½ Broadcast				
1.50	23.63	22.48	24.61	23.57
3.00	22.07	24.00	19.29	21.79
Mean	22.43	23.06	22.38	22.62

*P, K, Na, Mg.

+Rape dust (or castor meal + ammonium sulphate).

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MANGOLDS AND POTATOES - BARNFIELD 1962

The following changes were made in 1962 to the treatments and cropping of Barnfield. Several rates of nitrogen as sulphate of ammonia and nitrate of soda were substituted for the single rate and potatoes were grown on half-plots alongside the mangolds.

For history, treatments etc., see "Details of the Classical and Long Term Experiments" 1956.

All strips of the experiment are now divided lengthways into two halves, one cropped with mangolds and one with potatoes. The treatments to the series (excluding Series 0) are modified as follows:-

The application of castor meal to Series C and AC is discontinued.

Each plot in each series is now divided into 8 sub plots, 4 per crop and a test of none; 0.6; 1.2; 1.8 cwt N per acre is applied, using sulphate of ammonia on Series C, AC and A and nitrate of soda on Series N and Plot 9. The former nitrogen dressings to the series are discontinued.

Series 0 still receives no nitrogen, and the half-plots are not subdivided.

The division of plot 4N introduced in 1903 is discontinued; the plot reverts to the standard strip and series manuring, modified as above.

Area of each sub plot (acres): Strips 2, 5, 6, 7 and 8 - 0.0182
Strips 4 and 9 - 0.0251.
Strip 1 - 0.0137.

Area harvested: Series 0 - 0.0265, remainder - 0.0053.

Note: In 1960 and 1961 no crop was grown, but the manures were applied annually as in the past.

Cultivations, etc.: Dung applied: Nov 20, 1961. Ploughed: Nov 21.
Mineral fertilisers applied to strips: Apr 30, 1962.

Mangolds: N fertilisers applied: May 1, 1962. Seed (rubbed and graded) drilled at 6 lb per acre: May 3. Singled: June 12 - 23. Lifted: Nov 29 - Dec 13. Variety: Prizewinner Yellow Globe.

Potatoes: N fertilisers applied: May 1, 1962. Potatoes machine planted: May 2. Earthed up: July 17. Sprayed with copper oxychloride fungicide at 2.3 lb Cu in 20 gallons per acre: Aug 10. Haulm destroyed with diquat at 3 pints in 40 gallons per acre: Sept 27. Lifted: Oct 17. Variety: Majestic.

Note (1): On Series A, N and 0, plot 9 and certain sub-plots (indicated by asterisks in the tables) of Series AC the mangolds were severely damaged by frost before lifting.

Note (2): Mangolds - plot 6C. There were gaps in the two sub-plots receiving none and 1.8 cwt N. No adjustment has been made to the yields.

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Summary of Results

62/A/5.2

Mangolds, Roots weight: tons per acre

Strip	N: cwt per acre	Series 0	N	A	AC	C
1	None	24.58	0.91	31.74	35.53 *	34.77
	0.6		36.62	36.87	39.82	38.89
	1.2		44.87	37.80	44.11	45.21
	1.8		43.44	41.00	44.87	45.63
2	None	17.43	25.26	23.23	30.05	29.63
	0.6		29.04	33.93	34.52 *	39.99
	1.2		38.72	35.86	41.00	38.56
	1.8		35.61	38.56	41.00	43.27
4	None	5.29	13.47	18.94	33.76	17.51
	0.6		23.23	25.76	37.29	31.91
	1.2		37.55	30.98	37.71 *	32.66
	1.8		34.77	31.74	41.25	39.48
5	None	4.50	9.85	13.81	19.87 *	12.12
	0.6		19.61	14.90	20.71	17.68
	1.2		33.08	15.15	21.21	19.36
	1.8		31.82	14.14	21.13	20.88
6	None	5.47	5.72	17.34	28.96	20.46
	0.6		15.24	30.98	31.06	22.14
	1.2		26.77	32.66	40.32 *	28.12
	1.8		32.24	36.62	33.42	32.41
7	None	5.77	8.00	20.37	31.06	25.26
	0.6		22.65	28.71	34.85	32.83
	1.2		35.44	33.51	33.67 *	29.97
	1.8		30.90	29.21	33.51	34.52
8	None	5.32	9.93	6.73	12.88	6.40
	0.6		12.63	13.81	14.65	11.53
	1.2		17.68	8.17	17.76	12.96
	1.8		25.17	12.46	15.57 *	11.87
9	None		12.71			
	0.6		22.73			
	1.2		35.27			
	1.8		33.84			

* Severely damaged by frost: also the whole of Series A, N, and Plot 9.

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62/A/5.3

Mangolds, Leaf weight: tons per acre

Strip	N: cwt per acre	Series 0	N	A	AC	C
1	None	4.06	3.96	5.56	4.80*	5.89
	0.6		3.87	4.38	6.23	7.32
	1.2		5.05	5.22	7.49	8.42
	1.8		5.14	5.30	7.91	7.24
2	None	3.35	2.95	2.86	6.06	4.97
	0.6		3.28	4.13	5.56*	7.07
	1.2		4.46	4.88	10.02	7.24
	1.8		3.87	4.80	7.41	8.92
4	None	1.16	2.10	1.68	5.81	2.86
	0.6		3.37	2.53	5.81	4.38
	1.2		4.80	2.95	6.06	5.81
	1.8		4.80	3.87	5.56*	7.24
5	None	1.04	1.43	2.19	3.54*	2.95
	0.6		2.36	2.69	4.97	4.71
	1.2		3.45	3.96	6.15	5.30
	1.8		4.63	3.62	4.88	5.22
6	None	1.13	1.18	1.60	5.05	4.38
	0.6		1.85	3.54	4.97*	3.79
	1.2		3.37	3.54	5.89	5.14
	1.8		3.37	3.79	6.06	5.47
7	None	0.96	1.52	2.53	5.72	5.22
	0.6		2.95	2.86	6.57	6.90
	1.2		3.45	5.14	4.46*	5.39
	1.8		3.96	4.29	5.98	7.74
8	None	1.35	1.60	1.35	3.79	2.95
	0.6		2.27	3.37	4.63	3.70
	1.2		2.86	3.11	4.80	5.05
	1.8		4.04	3.87	4.63*	5.05
9	None		1.43			
	0.6		3.11			
	1.2		3.70			
	1.8		4.97			

*Severely damaged by frost: also the whole of Series A, N, O and Plot 9.

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62/A/5.4

Potatoes, Total tubers: tons per acre

Strip	N: cwt per acre	Series 0	N	A	AC	C
1	None	7.43	15.92	11.31	14.12	10.04
	0.6		17.58	17.39	15.48	16.42
	1.2		16.28	17.27	17.71	14.96
	1.8		14.48	18.28	17.48	17.86
2	None	9.48	11.85	15.78	11.96	11.50
	0.6		16.27	16.87	15.28	14.08
	1.2		16.97	16.58	15.71	15.78
	1.8		15.19	13.71	14.09	16.53
4	None	4.32	6.55	8.12	8.51	8.56
	0.6		11.20	11.51	12.30	13.96
	1.2		12.87	14.93	13.51	13.26
	1.8		12.66	13.10	13.30	13.36
5	None	3.93	5.35	5.60	7.03	6.78
	0.6		8.38	5.98	8.14	9.39
	1.2		6.52	6.57	8.90	9.13
	1.8		9.34	5.68	7.96	9.64
6	None	3.63	5.67	7.76	9.45	8.29
	0.6		9.31	10.45	14.95	10.75
	1.2		9.08	12.18	14.24	14.73
	1.8		9.16	12.13	14.77	13.44
7	None	4.83	4.65	5.91	6.21	5.67
	0.6		7.09	5.91	7.48	8.06
	1.2		8.65	6.48	8.04	10.51
	1.8		8.00	6.19	9.39	6.86
8	None	3.62	3.69	3.01	6.29	5.89
	0.6		3.03	3.10	6.23	7.77
	1.2		1.78	4.10	6.40	6.55
	1.8		3.93	2.95	6.21	7.11
9	None		3.98			
	0.6		4.00			
	1.2		5.18			
	1.8		4.08			

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62/A/5.5

Potatoes, Percentage ware (1½" riddle)

Strip	N: cwt per acre	Series 0	N	A	AC	C
1	None	93.1	96.2	97.0	97.8	96.1
	0.6		95.3	96.5	97.0	95.8
	1.2		98.0	97.1	96.4	96.6
	1.8		95.3	96.2	97.7	96.3
2	None	95.8	97.7	97.2	97.6	97.3
	0.6		95.8	96.0	95.0	96.9
	1.2		94.7	96.2	96.3	94.4
	1.8		95.4	95.5	96.2	95.5
4	None	89.9	94.2	95.3	97.0	94.1
	0.6		97.1	95.8	96.7	95.3
	1.2		96.0	95.7	95.9	95.1
	1.8		95.3	94.2	94.4	92.5
5	None	90.2	92.9	92.5	94.9	96.9
	0.6		92.5	91.9	94.1	95.5
	1.2		88.4	90.1	94.1	95.6
	1.8		92.8	88.9	93.9	95.6
6	None	88.5	91.1	94.3	96.4	94.9
	0.6		92.4	92.8	95.6	96.1
	1.2		92.3	94.6	95.9	98.8
	1.8		94.9	94.4	96.9	96.1
7	None	91.8	90.0	89.3	89.8	95.2
	0.6		89.3	85.8	90.4	95.6
	1.2		91.7	88.6	89.8	95.6
	1.8		92.6	89.5	92.4	93.6
8	None	88.9	88.0	83.9	92.0	91.8
	0.6		72.9	73.5	91.6	93.8
	1.2		60.0	82.6	89.8	90.4
	1.8		85.0	73.6	91.5	92.9
9	None		91.5			
	0.6		87.4			
	1.2		89.4			
	1.8		86.6			

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62/A/6

HAY - THE PARK GRASS PLOTS 1962

For history, treatments etc., see "Details of the Classical and Long Term Experiments" 1956.

Cultivations, etc.: Mineral fertilisers applied: Nov 8, 1961.
Nitrogenous fertilisers applied: 1st dressing - Mar 12, 1962;
2nd dressing - Apr 6. Cut twice: June 13 and Oct 3.

Summary of Results

Dry matter: cwt per acre

Plot	Not limed			Limed		
	1st crop	2nd crop	Total	1st crop	2nd crop	Total
1	4.5	5.5	10.0	10.6	14.0	24.6
2	8.7	10.9	19.6	10.9	10.8	21.7
3	9.6	9.9	19.5	12.3	10.5	22.8
4-1	13.8	17.0	30.8	13.6	14.3	27.9
4-2	14.5	14.0	28.5	20.4	14.1	34.5
5-1	7.7	8.3	16.0			
5-2	15.6	18.3	33.9			
6	18.4	21.1	39.5			
7	21.4	17.8	39.2	36.4	26.7	63.1
8	15.7	15.8	31.5	14.4	13.0	27.4
9	32.8	17.5	50.3	40.5	14.8	55.3
10	21.5	13.0	34.5	24.6	11.9	36.5
11-1	37.7	27.0	64.7	43.3	16.9	60.2
11-2	43.9	28.1	72.0	47.8	25.1	72.9
12	10.2	15.0	25.2			
13	24.4	20.8	45.2	29.0	26.5	55.5
14	45.9	19.5	65.4	38.3	12.5	50.8
15	23.2	17.8	41.0	28.6	17.4	46.0
16	26.1	15.8	41.9	35.5	22.3	57.8
17	17.9	13.6	31.5	18.5	10.0	28.5
18	8.4	6.4	14.8	19.3*	14.4*	33.7*
				19.4+	13.0+	32.4+
19	29.8	22.9	52.7	36.5*	21.6*	58.1*
				35.0+	25.2+	60.2+
20	38.8	26.8	65.6	39.9*	38.0*	77.9*
				39.5+	32.5+	72.0+

*Heavy liming. +Light liming.

Mean dry matter % as cut: 1st crop 25.2; 2nd crop 21.8

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62/A/7

BARLEY - EXHAUSTION LAND HOOSFIELD 1962

For history, treatments etc., see "Details of the Classical and Long Term Experiments" 1956.

Cultivations, etc.: Plots 5 and 6, and parts of 2 sprayed with dalapon at 8 lb in 40 gallons per acre: Sept 8, 1961 and again at 4 lb in 40 gallons per acre: Sept 27. Ploughed: Oct 31. 'Nitro-Chalk' applied, seed drilled at 3 bushels per acre: Mar 28, 1962. Sprayed with MCPA/MBA at 4 pints in 40 gallons per acre: June 4. Combine harvested: Sept 14. Variety: Plumage Archer.

Summary of Results

Yields (at 85% dry matter): cwt per acre

Plot	Manuring to potatoes 1876 - 1901*	Grain	Straw
1	Unmanured	16.0	10.9
2	Unmanured after dung 1876 - 81	14.1	8.9
3	Dung	24.4	16.2
4	Dung	24.5	18.0
5	Ammonium salts	14.3	9.8
6	Nitrate of soda	12.6	9.4
7	Ammonium salts and complete minerals	20.7	14.4
8	Nitrate of soda and complete minerals	21.0	13.4
9	Superphosphate	19.2	14.2
10	Complete minerals	20.0	17.9
Mean dry matter % as harvested		77.7	83.4

*For certain changes see history.

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62/A/8

CLOVER - ROTHAMSTED GARDEN 1962

The 109th year

For history, etc. see "Details of the Classical and Long Term Experiments" 1956.

The molybdenum treatment is now discontinued.

Cultivations, etc.: Surface lightly forked, plants removed, muriate of potash applied and raked in, seed drilled at 45 lb per acre: May 16, 1962. Cut: Nov 14. Variety: Late Flowering Red S123.

Note: The clover planted in 1961 died. The new crop made slow growth.

Summary of Results

Dry matter: cwt per acre

Muriate of potash: cwt per acre	Spray in 1961		
	None	Sodium molybdate	Mean
None	5.2	3.7	4.4
2	12.7	12.3	12.5
Mean	9.0	8.0	8.5

Mean dry matter % as harvested: 14.4

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62/A/9.1

OATS, AND MICROPLOTS, SITES OF CONTINUOUS WHEAT AND BARLEY EXPERIMENTS

WOBURN STACKYARD 1962

For history, treatments, etc., see "Details of the Classical and Long Term Experiments" 1956.

In 1962 the sites were sown with oats except for the areas occupied by microplots in 1961 and 1962.

Microplots 1962. Microplots with treatments similar to those of 1961 were laid down on parts of plots 7, 8 and 9 of the Continuous Wheat site; the area used for microplots in 1961 was bare fallow in 1962. Crop sequences were as follows:-

1960	1961	1962
Winter wheat	Fallow	Sugar beet*
Barley*	Fallow	Potatoes*
Potatoes*	Fallow	Barley*

*microplots.

On potatoes and barley the residual effects of the 1960 treatments P_4, K_4 and K_8 were measured, the plots involved receiving basal N and K or P at appropriate rates.

Note: A strip of land across the south-east end of plot 4 of the Continuous Barley site was used for a microplot experiment on soil structure, the crop being sugar beet.

Area of each main plot (acres): Area harvested (acres):
10a - 11b 0.0274 0.0106 - 0.0206
Remainder 0.0411 0.0097 - 0.0236
Area of each microplot 0.0026 acres. Area harvested (acres): Potatoes - 0.0010, barley - 0.0013, sugar beet - 0.0012.

Basal dressings per acre: Oats - 0.4 cwt N as 'Nitro-Chalk'.
Remainder - as 1961.

Cultivations, etc.:-
Oats: Ploughed: Oct 19, 1961. Seed drilled at 4 bushels per acre, 'Nitro-Chalk' applied: Feb 24, 1962. Sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: May 15. Combine harvested: Aug 27. Variety: Condor.

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Microplots: Basal P,K and ploughed-in treatment fertilisers applied, plots ploughed: Jan 26, 1962.
Potatoes: Basal N and broadcast treatment fertilisers applied on the flat, chitted seed planted by machine: Mar 27, 1962. Sprayed with demeton methyl at 6 fluid oz in 50 gallons per acre: June 14. Sprayed 3 times with copper oxychloride fungicide at 2.3 lb Cu in 40 gallons per acre: July 17, July 31 and Aug 10. Lifted: Sept 25. Variety: Majestic.
Barley: Broadcast treatment fertilisers applied, seed drilled at 2¾ bushels per acre, basal N applied: Mar 5, 1962. Harvested: Aug 27. Variety: Proctor.
Sugar beet: Basal N and broadcast treatment fertilisers applied, seed drilled at 12 lb per acre: Mar 27, 1962. Sprayed 3 times with demeton methyl at 6 fluid oz in 50 gallons per acre: June 14, June 29 and July 16. Lifted: Oct 19. Variety: Klein E (rubbed and graded).

Errata to 'Number Results of the Field Experiments' 1961 page 61/A/8.5. The basal K dressing on the first 8 lines of Total tubers and Percentage ware should read 12 NOT 4.

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62/A/9.3

Summary of Results

Main plots

Crop in old scheme 1877-1927	Continuous wheat		Continuous barley	
Crop 1959-61	Wheat	Barley	Wheat	Barley
Crop in 1962	Oats			
Grain (at 85% dry matter): cwt per acre				
Plot 1	21.7	21.1	22.6	30.6
2	20.0	24.6	20.7	30.0
3	19.8	20.2	27.6	23.0
4	29.5	29.9	24.4	21.2
5	22.0	27.9	24.5	21.1
6	24.3	28.8	32.3	26.6
7	19.5		19.3	
8	21.7		32.6	
9	27.4		31.2	
10 ax	19.5	22.8	24.9	23.6
10 bx	19.2	20.9	26.3	21.7
10 ay	21.5		27.5	
10 by	22.5		28.5	
11 ay		26.1		28.4
11 by		28.7		29.6
11 az	23.9		29.5	
11 bz	30.0		33.9	
Straw (at 85% dry matter): cwt per acre				
Plot 1	11.9	12.2	11.4	18.8
2	9.4	12.6	9.8	17.6
3	10.2	9.5	15.8	10.9
4	18.4	21.2	10.5	12.1
5	10.2	14.6	13.9	10.9
6	11.9	15.6	16.2	14.7
7	9.0		9.7	
8	9.9		14.8	
9	14.5		15.1	
10 ax	9.1	8.2	10.7	9.7
10 bx	6.8	10.8	10.7	7.6
10 ay	9.8		11.9	
10 by	10.7		12.7	
11 ay		13.9		13.5
11 by		14.0		14.0
11 az	13.2		17.9	
11 bz	15.4		14.3	

Mean dry matter % as harvested: Grain 85.2
Straw 82.7

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Microplots on continuous wheat site

Potatoes

Treatment	Plots 7	8	9
P K	Total tubers: tons per acre		
0 12	12.50	11.46	14.82
1 12	11.92	13.43	13.20
4 12	12.85	15.51	16.44
(4)12	14.82	14.35	15.51
0 12*	11.00	13.66	15.28
1 12*	13.31	14.35	13.43
4 12*	15.16	13.89	14.47
(4)12	14.12	13.89	14.58
4 0	10.76	10.76	13.20
4 3	12.39	13.54	12.85
4 12	11.81	14.35	14.47
4(4)	11.58	9.95	13.20
4 0*	9.14	10.53	8.10
4 3*	12.39	11.69	12.27
4 12*	13.31	13.54	13.54
4(4)	11.34	12.50	12.73
P K	Percentage ware ($1\frac{5}{8}$ inch riddle)		
0 12	90.7	88.9	92.2
1 12	92.2	87.9	86.0
4 12	89.2	90.3	86.6
(4)12	91.4	91.9	93.3
0 12*	91.6	89.8	91.7
1 12*	93.0	88.7	88.8
4 12*	93.1	90.8	89.6
(4)12	91.8	90.0	89.7
4 0	84.9	87.1	86.0
4 3	85.0	89.7	91.9
4 12	93.1	87.9	92.0
4(4)	85.0	86.0	84.2
4 0*	81.0	82.4	84.3
4 3*	88.8	83.2	90.6
4 12*	88.7	88.0	90.6
4(4)	91.8	83.3	90.0

( ) Indicates applied in 1960. * Indicates applied to seedbed, remainder ploughed in.

All values based on 1 microplot only.

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62/A/9.5

Microplots on continuous wheat site

Barley

Treatment	Plots 7	8	9
P K	Grain (at 85% dry matter): cwt per acre		
0 4	29.1	26.5	31.6
1 4	27.5	28.3	29.1
4 4	27.2	25.0	32.1
(4)4	27.4	28.6	31.1
0 4*	26.3	26.0	31.7
1 4*	26.0	23.6	31.4
4 4*	32.4	28.1	29.9
(4)4*	26.0	26.7	32.4
4 0	29.0	27.0	28.5
4 1	31.9	26.4	29.1
4 4	32.1	27.4	26.6
4(8)	34.2	30.8	27.8
4 0*	32.5	33.4	25.6
4 1*	34.8	28.2	29.9
4 4*	34.9	32.7	27.1
4(8)*	33.4	31.3	27.4

Mean dry matter % as harvested: 82.9

P K	Straw (at 85% dry matter): cwt per acre		
0 4	26.2	24.3	32.2
1 4	24.6	22.0	29.3
4 4	25.0	21.2	30.1
(4)4	26.7	25.9	28.4
0 4*	25.0	22.0	30.8
1 4*	23.6	22.5	30.8
4 4*	30.4	25.8	30.4
(4)4*	24.0	25.1	33.6
4 0	13.5	21.1	28.0
4 1	27.7	23.7	25.7
4 4	30.7	24.5	29.6
4(8)	29.6	27.3	27.6
4 0*	29.3	27.1	23.0
4 1*	31.2	24.5	28.5
4 4*	34.0	29.9	26.8
4(8)*	31.4	27.5	28.9

Mean dry matter % as harvested: 71.3

( ) Indicates applied in 1960. * Indicates applied to seedbed, remainder ploughed in.

All values based on 1 microplot only.

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Microplots on continuous wheat site

Sugar beet

Treatment	Plots 7	8	9
P K	Roots (washed): tons per acre		
0 24	14.90	15.34	15.04
1 24	13.19	13.47	13.22
4 24	13.96	13.81	15.69
0 24*	15.44	12.08	14.44
1 24*	18.20	15.03	11.88
4 24*	14.33	13.84	15.70
4 0	9.78	10.15	12.85
4 6	12.65	13.86	12.41
4 12	13.99	12.82	16.93
4 24	14.76	10.19	14.51
4 0*	11.56	10.22	13.37
4 6*	12.23	11.79	12.42
4 12*	13.31	12.39	14.52
4 24*	15.48	13.43	13.32
P K	Sugar percentage		
0 24	16.8	17.0	17.0
1 24	16.6	16.8	17.2
4 24	17.0	16.5	17.3
0 24*	16.8	16.4	17.2
1 24*	17.4	16.9	17.5
4 24*	17.3	16.4	17.2
4 0	16.2	16.1	16.4
4 6	16.6	16.4	17.1
4 12	16.5	16.7	17.6
4 24	17.2	16.6	16.8
4 0*	16.4	16.2	17.0
4 6*	16.7	16.7	17.4
4 12*	16.4	15.8	17.3
4 24*	17.0	16.0	17.0

All values based on 1 microplot only except $\frac{P\ K}{0\ 24}$ which are based on 2.

*Indicates applied to seedbed, remainder ploughed in.

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Microplots on continuous wheat site

Sugar beet

Treatment P K	Plots 7	8	9
	Total sugar: cwt per acre		
0 24	50.2	52.0	51.0
1 24	43.8	45.2	45.5
4 24	47.4	45.7	54.3
0* 24	52.0	39.6	49.7
1* 24	63.3	50.7	41.5
4* 24	49.7	45.3	53.9
4 0	31.6	32.6	42.0
4 6	41.9	45.4	42.5
4 12	46.3	42.7	59.7
4 24	50.8	33.7	48.8
4 0*	38.0	33.1	45.5
4 6*	40.9	39.4	43.1
4 12*	43.7	39.0	50.2
4 24*	52.5	43.0	45.3
	Tops: tons per acre		
0 24	13.24	13.15	15.38
1 24	13.80	13.33	12.59
4 24	13.15	13.98	11.48
0* 24	14.82	12.04	13.34
1* 24	14.72	13.98	12.13
4* 24	12.78	13.15	14.08
4 0	10.93	11.30	13.80
4 6	12.96	14.72	12.87
4 12	13.43	13.06	14.08
4 24	12.32	10.83	12.78
4 0*	13.33	11.48	13.15
4 6*	12.32	11.11	12.41
4 12*	13.71	11.85	15.00
4 24*	12.96	12.13	12.32

All values based on 1 microplot only except P K 0 24 which are based on 2.

*Indicates applied to seedbed, remainder ploughed in.

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62/B/1.1

LEY AND ARABLE ROTATIONS

Highfield and Fosters Field 1962 - the 14th year.

For details of treatments, rotations etc., see "Details of the Classical and Long Term Experiments" 1956.

Cut grass leys: Commencing with the first year plots in 1962, these leys are to be progressively converted to "all grass" leys sown with Cocksfoot S37 at 30 lb per acre and receiving high dressings of N. Cuts of grass are taken as before.

Grazed leys: Similarly, these leys are to be converted to "clover grass" leys, receiving no N and high PK. Cuts of grass are taken with the forage harvester at early silage stage. Seeds mixture, sown at 33 lb per acre: 5 lb Timothy S51, 6 lb Meadow Fescue S215, 1 lb White Clover S100.

Permanent (Old) grass: All plots are split lengthwise for "all grass" and "clover grass" treatments similar to the above.

Test crop potatoes: From 1962 onwards the dung is ploughed in in autumn, all fertilisers are broadcast before ridging, and the potatoes are machine planted.

Revised basal dressings in cwt per acre:-

	Fertiliser* and time of application	N	P_2O_5	K_2O
All grass leys				
1st year	'Nitro-Chalk' and 0/14/28 in seed-bed.	0.6	0.6	1.2
	16/0/16 after each cut except the last.	0.6		0.6
2nd and 3rd year	0/14/28 in winter.		0.6	1.2.
	'Nitro-Chalk' in spring.	0.6		
	16/0/16 after each cut except the last.	0.6		0.6
Clover grass leys	0/14/28 in seedbed, or in winter for 2nd and 3rd years.		0.6	1.2
	Muriate of potash, after each cut except the last.			0.6
Permanent (Old) grass				
All grass	'Nitro-Chalk' in spring.	0.6		
	16/0/16 after each cut except the last.	0.6		0.6
Clover grass	0/14/28 in winter.		0.6	1.2

*Granular compound fertilisers are described thus - 0/14/28 etc. to show percentages of N, P_2O_5 and K_2O in order.

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Revised sub-plot treatments to test crop barley (cwt per acre):-

Nitrogen (applied to ¼ plots as 'Nitro-Chalk' in seedbed):

Highfield	0.0;	0.1;	0.2;	0.3 N	(all rotations)
Fosters	0.0;	0.2;	0.4;	0.6 N	(except after arable rotation)
	0.0;	0.4;	0.6;	0.8 N	(arable rotation).

Cultivations, etc.:

HIGHFIELD

1st year Treatment Crops

All grass ley. Ploughed twice: Sept 15 and Nov 24, 1961. Basal PK compound and 'Nitro-Chalk' applied, seed sown at 30 lb per acre: Apr 24, 1962. Cut 3 times: July 25, Aug 13, Oct 2. NK compound applied after first and second cuts.

Clover grass ley. Ploughed twice: Sept 15 and Nov 24, 1961. Basal PK compound applied, seed sown at 33 lb per acre: Apr 24, 1962. Cut twice: Aug 22 and Sept 27. Muriate of potash applied after 1st cut.

Lucerne. Ploughed twice: Sept 15 and Nov 24, 1961. Basal PK compound applied: Apr 16, 1962. Seed drilled at 22 lb per acre: Apr 17. Cut twice: Aug 1 and Oct 1. Variety: Du Puits.

Hay. Seeds undersown in barley: Apr 19, 1961. Basal NPK compound applied: Feb 28, 1962. Cut twice: June 12 and Aug 23. NK compound applied after 1st cut.

2nd year Treatment Crops

Cut grass. Basal PK compound applied: Nov 20, 1961. Nitrogen and potash applied as compound fertiliser (16% N, 16% K_2O): Apr 6, 1962 and after every cut except the last. Cut 4 times: May 29, July 9, Aug 13, Oct 2.

Grazed ley. Basal PK compound applied: Nov 20, 1961. 'Nitro-Chalk' applied: Apr 16 and July 27, 1962. Grazed: 8 circuits, May 7 - Oct 19.

Lucerne. Basal PK compound applied: Nov 20, 1961. Cut 4 times: June 5, July 9, Aug 16, Oct 2, 1962.

Sugar beet. Ploughed 3 times: Aug 4, Oct 19, Nov 24, 1961. Muriate of potash applied: Jan 26, 1962. Basal NPK compound (8% N, 8% P_2O_5, 8% K_2O) applied: Mar 20. Seed drilled at 6½ lb per acre: Mar 21. Singled: May 16. Lifted: Nov 22. Variety: Klein E (rubbed and graded seed).

3rd year Treatment Crops

Cut grass. Basal PK compound applied: Nov 20, 1961. NK compound applied: Apr 6, 1962 and after every cut except the last. Cut 4 times: May 30, July 9, Aug 13, Sept 12.

Grazed ley. Basal PK compound applied: Nov 20, 1961. 'Nitro-Chalk' applied: Apr 16 and July 27, 1962. Grazed: 5 circuits, May 14 - Sept 14.

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Lucerne. Basal PK compound applied: Nov 22, 1961. Cut 3 times: June 5, July 9, Sept 6, 1962.

Oats. Ploughed: Nov 8, 1961. 'Nitro-Chalk' applied: Feb 23, 1962. Seed combine drilled at 4 bushels per acre: Mar 2. Sprayed with CMPP at 6 pints in 40 gallons per acre: May 29. Combine harvested: Aug 24. Variety: Sun II.

1st Test Crop, Wheat

Ploughed: Oct 3, 1961. Seed combine drilled at 2¾ bushels per acre: Oct 11. 'Nitro-Chalk' applied: Apr 6, 1962. Sprayed with CMPP at 6 pints in 40 gallons per acre: Apr 24. Combine harvested: Sept 3. Variety: Cappelle.

2nd Test Crop, Potatoes

Ploughed: Sept 15, 1961. Dung applied, plots ploughed second time: Nov 24. Fertilisers applied: Apr 13, 1962. Potatoes machine planted: Apr 14. Earthed up: July 2. Sprayed with maneb at 1½ lb in 18 gallons per acre: July 20. Sprayed with copper oxychloride fungicide at 2.3 lb Cu in 20 gallons per acre: Aug 10. Sprayed with undiluted BOV at 15 gallons per acre: Sept 25. Lifted: Nov 1. Variety: Majestic.

3rd Test Crop, Barley

Additional P & K applied: Oct 16, 1961. Ground chalk applied: Oct 30. Ploughed: Nov 3. Seed combine drilled at 2 bushels per acre: Feb 23, 1962. 'Nitro-Chalk' applied: Feb 24. Sprayed with CMPP at 6 pints in 40 gallons per acre (except undersown plots), undersown plots sprayed with MCPB/MCPA at 4 pints in 40 gallons per acre: May 29. Combine harvested: Aug 29. Variety: Proctor.

Permanent grasses. 12th, 13th and 14th experimental years, all blocks. Ground chalk applied to blocks 9 and 12: Oct 30, 1961. Basal PK compound+ applied: Nov 20. Equalising PK+ applied as compound fertiliser, 'Nitro-Chalk' applied to "all grass" half plots: Apr 25, 1962. Cut 3 times: May 30, Aug 22, Oct 2. Muriate of potash and NK compound applied to appropriate half plots after first two cuts.

Reseeded grasses. Basal PK compound applied to all plots: Nov 20, 1961.

12th year, Blocks 9 - 12.

Blocks 9 and 11. Ground chalk applied to block 9: Oct 30, 1961. 'Nitro-Chalk' applied: Apr 16, 1962. Cut for silage: May 30. 2nd dressing of 'Nitro-Chalk' applied: June 2. Grazed: Block 9, 5 circuits, June 18 - Oct 26; Block 11, 3 circuits, June 18 - Sept 7.

Blocks 10 and 12. Ground chalk applied to block 12: Oct 30, 1961. 'Nitro-Chalk' applied twice: Apr 16 and July 27, 1962. Grazed: Block 10, 5 circuits, May 14 - Sept 7; Block 12, 7 circuits, May 14 - Oct 26.

+The first application of PK was made at 2 rates under the old scheme, in preparation for silage vs. grazing management. The application of Apr 25 was made to equalise the total amounts.

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13th year, Blocks 5 - 8.
Blocks 5 and 6. 'Nitro-Chalk' applied: Apr 16, 1962. Cut for silage: May 30. 2nd dressing of 'Nitro-Chalk' applied: June 2. Grazed: 5 circuits, June 25 - Oct 26.
Blocks 7 and 8. 'Nitro-Chalk' applied twice: Apr 16 and July 27, 1962. Grazed: 7 circuits, May 7 - Oct 26.

14th year, Blocks 1 - 4.
Blocks 1 and 3. 'Nitro-Chalk' applied twice: Apr 16 and July 27, 1962. Grazed: 7 circuits, May 7 - Oct 19.
Blocks 2 and 4. 'Nitro-Chalk' applied: Apr 16, 1962. Cut for silage: May 30. 2nd dressing of 'Nitro-Chalk' applied: June 2. Grazed: 5 circuits, June 25 - Oct 26.

FOSTERS

1st year Treatment Crops

All grass ley. Ploughed twice: Sept 16 and Nov 23, 1961. Basal PK compound and 'Nitro-Chalk' applied, seed sown at 30 lb per acre: Apr 24, 1962. Cut 3 times: July 25, Aug 13, Sept 27. NK compound applied after first and second cuts.
Clover grass ley. Ploughed twice: Sept 16 and Nov 23, 1961. Basal PK compound applied, seed sown at 33 lb per acre: Apr 24, 1962. Cut twice: Aug 22 and Sept 27. Muriate of potash applied after 1st cut.
Lucerne. Ploughed twice: Sept 16 and Nov 23, 1961. Basal PK compound applied: Apr 16, 1962. Seed drilled at 22 lb per acre: Apr 17. Cut twice: Aug 1 and Oct 1. Variety: Du Puits.
Hay. Seeds undersown in barley: Apr 19, 1961. Basal NPK compound applied: Feb 28, 1962. Cut twice: June 12 and Aug 23. NK compound applied after 1st cut.

2nd year Treatment Crops

Cut grass. Basal PK compound applied: Nov 20, 1961. NK compound applied: Apr 6, 1962 and after every cut except the last. Cut 4 times: May 29, July 9, Aug 13, Sept 27.
Grazed ley. Basal PK compound applied: Nov 20, 1961. 'Nitro-Chalk' applied: Apr 16 and July 27, 1962. Grazed: 8 circuits, May 7 - Oct 19.
Lucerne. Basal PK compound applied: Nov 20, 1961. Cut 4 times: June 5, July 9, Aug 16, Oct 1, 1962.
Sugar beet. Ploughed 3 times: Aug 4, Oct 19, Nov 23, 1961. Muriate of potash applied: Jan 26, 1962. Basal NPK compound (8% N, 8% P_2O_5, 8% K_2O) applied: Mar 20. Seed drilled at $6\frac{1}{2}$ lb per acre: Mar 21. Singled: May 16 - 23. Lifted: Nov 22. Variety: Klein E (rubbed and graded seed).

3rd year Treatment Crops

Cut grass. Basal PK compound applied: Nov 20, 1961. NK compound applied: Apr 6, 1962 and after every cut except the last. Cut 4 times: May 29, July 9, Aug 13, Sept 12.
Grazed ley. Basal PK compound applied: Nov 20, 1961. 'Nitro-Chalk' applied: Apr 16 and July 27, 1962. Grazed: 5 circuits, May 14 - Sept 14.

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Lucerne. Basal PK compound applied: Nov 22, 1961. Cut 3 times: June 5, July 9, Sept 7, 1962.
Oats. Ploughed: Nov 9, 1961. 'Nitro-Chalk' applied: Feb 23, 1962. Seed combine drilled at 4 bushels per acre: Mar 2. Sprayed with CMPP at 6 pints in 40 gallons per acre: May 29. Combine harvested: Aug 24. Variety: Sun II.

1st Test Crop, Wheat
Ploughed: Oct 3, 1961. Seed combine drilled at 2¾ bushels per acre: Oct 11. 'Nitro-Chalk' applied: Apr 6, 1962. Sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: Apr 24. Combine harvested: Sept 3. Variety: Cappelle.

2nd Test Crop, Potatoes
Ploughed: Sept 15, 1961. Dung applied, plots ploughed second time: Nov 23. Fertilisers applied: Apr 12, 1962. Potatoes machine planted: Apr 13. Earthed up: July 2. Sprayed with maneb at 1½ lb in 18 gallons per acre: July 20. Sprayed with copper oxychloride fungicide at 2.3 lb Cu in 20 gallons per acre: Aug 10. Sprayed with undiluted BOV at 15 gallons per acre: Sept 25. Lifted: Nov 1. Variety: Majestic.

3rd Test Crop, Barley
Additional P and K applied: Oct 14, 1961. Ploughed: Oct 19. Seed combine drilled at 2 bushels per acre: Feb 23, 1962. 'Nitro-Chalk' applied: Feb 24 and Mar 17+. Sprayed with CMPP at 6 pints in 40 gallons per acre (except undersown plots), undersown plots sprayed with MCPB/MCPA at 4 pints in 40 gallons per acre: May 29. Combine harvested: Aug 27. Variety: Proctor.

Permanent grasses. Basal PK compound applied to all plots: Nov 20, 1961.
12th year reseeded grass, Blocks 6, 10, 11, 12.
Blocks 6 and 10. 'Nitro-Chalk' applied: Apr 16 and July 27, 1962. Grazed: Block 6, 7 circuits, May 14 - Oct 26; Block 10, 5 circuits, May 14 - Sept 7.
Blocks 11 and 12. 'Nitro-Chalk' applied: Apr 16, 1962. Cut for silage: May 31. 2nd dressing of 'Nitro-Chalk' applied: June 1. Grazed: Block 11, 5 circuits, June 18 - Oct 26; block 12, 3 circuits, June 18 - Sept 7.

13th year reseeded grass, Blocks 5, 7, 8, 9.
Blocks 5 and 9. 'Nitro-Chalk' applied: Apr 16 and July 27, 1962. Grazed: 7 circuits, May 7 - Oct 26.
Blocks 7 and 8. 'Nitro-Chalk' applied: Apr 16, 1962. Cut for silage: May 31. 2nd dressing of 'Nitro-Chalk' applied: June 1. Grazed: 5 circuits, June 25 - Oct 26.

+The first applications were at rates as for 1961; these were made up to the 1962 dressings by means of additional applications.

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14th year reseeded grass, Blocks 1 - 4.
Blocks 1 and 2. 'Nitro-Chalk' applied: Apr 16 and July 27, 1962. Grazed: 7 circuits, May 7 - Oct 19.
Blocks 3 and 4. 'Nitro-Chalk' applied: Apr 16, 1962. Cut for silage: May 31. 2nd dressing of 'Nitro-Chalk' applied: June 1. Grazed: 5 circuits, June 25 - Oct 26.

Standard errors per plot.	Test crops.	
Wheat, grain (at 85% dry matter).	Highfield:	4.40 cwt per acre or 9.0% (40 d.f.)
	Fosters:	3.10 cwt per acre or 7.2% (40 d.f.)
Barley, grain (at 85% dry matter).	Highfield:	3.13 cwt per acre or 6.6% (23 d.f.)
	Fosters:	2.52 cwt per acre or 5.9% (23 d.f.)

Errata to "Numerical Results of the Field Experiments" 1961

pages 61/B/1.12 - 1.15
The headings "N cwt per acre etc" should read:

Highfield

N cwt per acre*
0.75
1.25

Fosters

N cwt per acre*
1.00
1.50

Delete the * against the headings "P_2O_5 cwt per acre" and "K_2O cwt per acre".

pages 61/B/1.19 and 20
Experimental years. For 11th read 13th
12th read 11th
13th read 12th.

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Summary of Results

Wheat 1st test crop

N: cwt per acre	Treatment crops 1959 - 1961 Lucerne	Ley	Cut grass	Arable with hay	Mean
Grain (at 85% dry matter): cwt per acre					
Highfield					
Mean	57.4	42.3	42.6	52.7	48.8
		(±2.20)*			(±1.10)
To test crop					
None	51.2	34.4	30.3	46.4	40.5
0.3	59.5	40.3	40.7	50.7	47.8
0.6	61.5	45.0	47.7	54.2	52.1
0.9	57.4	49.6	51.8	59.8	54.6
Fosters					
Mean	54.0	39.3	36.4	42.7	43.1
		(±1.55)*			(0.77)
To test crop					
None	48.6	31.7	27.5	28.8	34.1
0.4	54.4	38.4	35.2	39.2	41.8
0.8	57.1	42.5	41.6	49.5	47.6
1.2	56.1	44.6	41.3	53.3	48.8

* For use only in vertical and interaction comparisons

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Wheat 1st test crop

N: cwt per acre	Arable with hay only Dung to potatoes 1960: tons per acre None	12	Mean	Diff.
Grain (at 85% dry matter): cwt per acre				
Highfield				
To test crop	(±3.11)		(±2.20)	(±4.40)
None	48.2	44.4	46.4	-3.8
0.3	51.7	49.7	50.7	-2.0
0.6	51.2	57.2	54.2	+6.0
0.9	60.6	58.9	59.8	-1.7
Mean (±1.55)	52.9	52.6	52.7	-0.3 (±2.20)

Mean dry matter % as harvested: 83.8

Fosters

To test crop	(±2.19)		(±1.55)	(±3.10)
None	25.8	31.7	28.8	+5.9
0.4	36.2	42.2	39.2	+6.0
0.8	50.9	48.0	49.4	-2.9
1.2	55.4	51.3	53.3	-4.1
Mean (±1.10)	42.1	43.3	42.7	+1.2 (±1.55)

Mean dry matter % as harvested: 83.9

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Wheat 1st test crop

Treatment crops 1959 - 1961

N: cwt per acre	Lucerne	Ley	Cut grass	Arable with hay	Mean
Straw (at 85% dry matter): cwt per acre					
Highfield					
Mean	47.0	37.8	30.9	45.2	40.2
To test crop					
None	37.8	30.5	19.7	29.0	29.2
0.3	42.4	33.0	29.1	42.0	36.6
0.6	52.4	43.6	35.9	50.6	45.6
0.9	55.6	44.2	39.1	59.3	49.5
Fosters					
Mean	46.5	35.6	33.2	38.1	38.4
To test crop					
None	38.6	25.5	21.4	20.7	26.5
0.4	46.9	35.0	33.3	34.0	37.3
0.8	48.8	41.1	39.0	46.9	43.9
1.2	51.9	41.1	38.9	51.0	45.7

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Wheat 1st test crop

N: cwt per acre	Arable with hay only Dung to potatoes 1960: tons per acre None	12	Mean	Diff.
Straw (at 85% dry matter): cwt per acre				
Highfield				
To test crop				
None	26.2	31.8	29.0	+5.6
0.3	43.8	40.2	42.0	-3.6
0.6	49.7	51.5	50.6	+1.8
0.9	59.0	59.4	59.2	+0.4
Mean	44.7	45.8	45.2	+1.1
Fosters				
To test crop				
None	17.9	23.4	20.6	+5.5
0.4	32.8	35.2	34.0	+2.4
0.8	47.2	46.6	46.9	-0.6
1.2	52.2	49.8	51.0	-2.4
Mean	37.5	38.8	38.1	+1.3

Mean dry matter % as harvested:
Highfield 73.2
Fosters: 74.0

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Potatoes 2nd test crop. Total tubers: tons per acre

Treatment crops 1958 - 1960

	Lucerne	Ley	Cut grass	Arable with hay	Mean
		Highfield			
Mean	21.84	22.42	20.31	19.43	21.00
N: cwt per acre to wheat 1961					
None	21.50	22.69	20.72	19.29	21.05
0.3	22.29	21.93	20.08	19.66	20.99
0.6	21.14	22.62	20.11	19.36	20.81
0.9	22.42	22.42	20.34	19.39	21.14
N: cwt per acre 1962*					
0.75	21.51	22.63	20.55	19.29	21.00
1.25	22.17	22.20	20.07	19.56	21.00
Difference	+0.66	-0.43	-0.48	+0.27	0.00
PK	21.24	21.62	19.03	19.52	20.35
Dung	22.44	23.21	21.60	19.34	21.65
Difference	+1.20	+1.59	+2.57	-0.18	+1.30
P_2O_5: cwt per acre					
0.9	21.64	22.29	20.02	18.95	20.72
1.8	22.04	22.54	20.60	19.90	21.27
Difference	+0.40	+0.25	+0.58	+0.95	+0.55
K_2O: cwt per acre					
0.9	21.56	22.18	19.92	19.33	20.75
1.8	22.12	22.65	20.70	19.52	21.25
Difference	+0.56	+0.47	+0.78	+0.19	+0.50

*Including basal dressing

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Potatoes 2nd test crop. Total tubers: tons per acre

	N: cwt per acre to wheat 1961			
	None	0.3	0.6	0.9
	Highfield			
N: cwt per acre 1962*				
0.75	21.04	21.12	20.85	20.97
1.25	21.07	20.87	20.77	21.31
Difference	+0.03	-0.25	-0.08	+0.34
PK	20.56	20.55	19.94	20.36
Dung	21.55	21.44	21.67	21.93
Difference	+0.99	+0.89	+1.73	+1.57
P_2O_5: cwt per acre				
0.9	20.69	21.10	20.60	20.51
1.8	21.41	20.88	21.01	21.78
Difference	+0.72	-0.22	+0.41	+1.27
K_2O: cwt per acre				
0.9	20.69	20.83	20.43	21.05
1.8	21.42	21.15	21.19	21.24
Difference	+0.73	+0.32	+0.76	+0.19

			P_2O_5: cwt per acre		K_2O: cwt per acre	
	PK	Dung	0.9	1.8	0.9	1.8
N: cwt per acre 1962*						
0.75	20.37	21.62	20.84	21.15	20.68	21.31
1.25	20.33	21.67	20.61	21.40	20.81	21.19
PK			20.33	20.37	20.31	20.39
Dung			21.12	22.17	21.19	22.10
P_2O_5: cwt per acre						
0.9					20.38	21.07
1.8					21.12	21.43

*Including basal dressing

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Potatoes 2nd test crop. Total tubers: tons per acre

Treatment crops 1958 - 1960

	Lucerne	Ley	Cut grass	Arable with hay	Mean
		Fosters			
Mean	18.29	18.82	18.68	17.82	18.40
N: cwt per acre to wheat 1961					
None	18.11	18.75	18.35	18.17	18.34
0.4	19.37	19.22	19.09	18.41	19.02
0.8	18.18	18.69	18.25	17.31	18.11
1.2	17.52	18.60	19.01	17.37	18.12
N: cwt per acre 1962*					
1.00	17.94	19.00	18.62	17.45	18.25
1.50	18.65	18.63	18.73	18.18	18.55
Difference	+0.71	-0.37	+0.11	+0.73	+0.30
PK	17.94	18.84	18.47	17.32	18.14
Dung	18.65	18.79	18.88	18.31	18.66
Difference	+0.71	-0.05	+0.41	+0.99	+0.52
P_2O_5: cwt per acre					
0.9	17.76	18.24	18.39	17.75	18.04
1.8	18.83	19.39	18.97	17.88	18.77
Difference	+1.07	+1.15	+0.58	+0.13	+0.73
K_2O: cwt per acre					
0.9	18.37	18.22	18.43	17.67	18.17
1.8	18.21	19.41	18.92	17.96	18.63
Difference	-0.16	+1.19	+0.49	+0.29	+0.46

*Including basal dressing

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62/B/1.14

Potatoes 2nd test crop. Total tubers: tons per acre

	N: cwt per acre to wheat 1961			
	None	0.4	0.8	1.2
	Fosters			
N: cwt per acre 1962*				
1.00	18.60	18.44	17.65	18.33
1.50	18.10	19.61	18.57	17.92
Difference	-0.50	+1.17	+0.92	-0.41
PK	18.33	18.00	18.45	17.79
Dung	18.36	20.04	17.77	18.47
Difference	+0.03	+2.04	-0.68	+0.68
P_2O_5: cwt per acre				
0.9	17.70	18.95	17.75	17.75
1.8	19.00	19.09	18.47	18.50
Difference	+1.30	+0.14	+0.72	+0.75
K_2O: cwt per acre				
0.9	18.02	18.82	18.05	17.79
1.8	18.67	19.22	18.17	18.46
Difference	+0.65	+0.40	+0.12	+0.67

			P_2O_5: cwt per acre		K_2O: cwt per acre	
	PK	Dung	0.9	1.8	0.9	1.8
N: cwt per acre 1962*						
1.00	17.89	18.61	17.74	18.77	18.05	18.45
1.50	18.39	18.71	18.33	18.76	18.29	18.80
PK			17.84	18.44	17.96	18.32
Dung			18.23	19.09	18.38	18.94
P_2O_5: cwt per acre						
0.9					17.72	18.35
1.8					18.63	18.90

*Including basal dressing

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Potatoes 2nd test crop. Percentage ware ($1\frac{1}{2}$" riddle)

Treatment crops 1958 - 1960

	Lucerne	Ley	Cut grass	Arable with hay	Mean
		Highfield			
Mean	95.8	94.4	94.8	95.4	95.1
N: cwt per acre to wheat 1961					
None	93.5	95.0	95.5	95.7	94.9
0.3	96.3	92.0	94.1	95.0	94.4
0.6	97.2	95.5	95.0	95.8	95.9
0.9	96.3	95.2	94.8	95.3	95.4
N: cwt per acre 1962*					
0.75	96.5	94.0	94.6	95.7	95.2
1.25	95.2	94.8	95.0	95.2	95.0
Difference	-1.3	+0.8	+0.4	-0.5	-0.2
PK	95.0	95.4	94.8	95.5	95.2
Dung	96.7	93.5	94.9	95.4	95.1
Difference	+1.7	-1.9	+0.1	-0.1	-0.1
P_2O_5: cwt per acre					
0.9	96.4	93.8	95.0	95.3	95.1
1.8	95.3	95.0	94.6	95.6	95.1
Difference	-1.1	+1.2	-0.4	+0.3	0.0
K_2O: cwt per acre					
0.9	96.2	93.3	95.0	95.5	95.0
1.8	95.5	95.5	94.7	95.4	95.3
Difference	-0.7	+2.2	-0.3	-0.1	+0.3

*Including basal dressing

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Potatoes 2nd test crop. Percentage ware ($1\frac{1}{2}$" riddle)

	N: cwt per acre to wheat 1961			
	None	0.3	0.6	0.9
	Highfield			
N: cwt per acre 1962*				
0.75	95.3	93.8	95.9	95.7
1.25	94.5	94.9	95.8	95.1
Difference	-0.8	+1.1	-0.1	-0.6
PK	94.2	95.3	96.1	95.0
Dung	95.6	93.3	95.6	95.8
Difference	+1.4	-2.0	-0.5	+0.8
P_2O_5: cwt per acre				
0.9	95.7	93.4	96.0	95.5
1.8	94.2	95.3	95.8	95.3
Difference	-1.5	+1.9	-0.2	-0.2
K_2O: cwt per acre				
0.9	95.6	93.5	95.7	95.2
1.8	94.3	95.2	96.0	95.6
Difference	-1.3	+1.7	+0.3	+0.4

	PK	Dung	P_2O_5: cwt per acre 0.9	P_2O_5: cwt per acre 1.8	K_2O: cwt per acre 0.9	K_2O: cwt per acre 1.8
N: cwt per acre 1962*						
0.75	95.5	94.9	94.9	95.5	94.7	95.7
1.25	94.9	95.3	95.4	94.8	95.3	94.8
PK			95.6	94.8	95.3	95.0
Dung			94.7	95.5	94.6	95.5
P_2O_5: cwt per acre						
0.9					94.9	95.4
1.8					95.1	95.2

*Including basal dressing

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Potatoes 2nd test crop. Percentage ware ($1\frac{1}{2}$" riddle)

Treatment crops 1958 - 1960

	Lucerne	Ley	Cut grass	Arable with hay	Mean
			Fosters		
Mean	95.3	95.3	94.8	94.8	95.1
N: cwt per acre to wheat 1961					
None	95.6	95.0	94.5	95.2	95.1
0.4	95.3	95.1	95.0	94.7	95.0
0.8	95.0	95.1	94.7	94.5	94.8
1.2	95.3	96.0	95.0	95.0	95.3
N: cwt per acre 1962*					
1.00	95.7	95.5	95.1	94.6	95.2
1.50	95.0	95.2	94.5	95.0	94.9
Difference	-0.7	-0.3	-0.6	+0.4	-0.3
PK	95.0	95.4	94.5	94.5	94.8
Dung	95.6	95.2	95.1	95.1	95.2
Difference	+0.6	-0.2	+0.6	+0.6	+0.4
P_2O_5: cwt per acre					
0.9	95.4	95.3	95.0	94.8	95.1
1.8	95.2	95.3	94.6	94.8	95.0
Difference	-0.2	0.0	-0.4	0.0	-0.1
K_2O: cwt per acre					
0.9	95.4	95.0	94.7	94.7	95.0
1.8	95.2	95.6	94.9	95.0	95.1
Difference	-0.2	+0.6	+0.2	+0.3	+0.1

*Including basal dressing

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Potatoes 2nd test crop. Percentage ware ($1\frac{1}{2}$" riddle)

N: cwt per acre to wheat 1961

	None	0.4	0.8	1.2
	Fosters			
N: cwt per acre 1962*				
1.00	95.0	95.3	95.2	95.4
1.50	95.2	94.7	94.4	95.3
Difference	+0.2	-0.6	-0.8	-0.1
PK	95.2	94.7	94.6	95.0
Dung	94.9	95.3	95.1	95.7
Difference	-0.3	+0.6	+0.5	+0.7
P_2O_5: cwt per acre				
0.9	95.0	95.3	95.1	95.1
1.8	95.2	94.8	94.5	95.6
Difference	+0.2	-0.5	-0.6	+0.5
K_2O: cwt per acre				
0.9	95.2	95.0	94.8	94.9
1.8	95.0	95.0	94.9	95.7
Difference	-0.2	0.0	+0.1	+0.8

	PK	Dung	P_2O_5: cwt per acre 0.9	P_2O_5: cwt per acre 1.8	K_2O: cwt per acre 0.9	K_2O: cwt per acre 1.8
N: cwt per acre 1962*						
1.00	95.1	95.3	95.3	95.2	95.2	95.2
1.50	94.6	95.2	94.9	94.8	94.7	95.1
PK			94.9	94.8	94.8	95.0
Dung			95.3	95.2	95.1	95.3
P_2O_5: cwt per acre						
0.9					94.9	95.3
1.8					95.1	95.0

*Including basal dressing

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Barley 3rd test crop. Grain (at 85% dry matter): cwt per acre

Treatment crops 1957 - 1959

	Lucerne	Ley	Cut grass	Arable with hay	Mean
		Highfield			
Mean	48.6	49.8	46.3	43.7	47.1
N: cwt per acre		(±1.56)*			(±0.78)
None	47.8	50.0	44.5	41.1	45.8
0.1	50.2	50.5	47.3	43.6	47.9
0.2	49.7	49.2	48.0	45.8	48.2
0.3	46.7	49.6	45.4	44.3	46.5
Dung to potatoes 1961: tons per acre					
None	48.8	49.8	46.0	42.5	46.8
12	48.4	49.8	46.5	44.9	47.4
Difference (±1.56)	-0.4	0.0	+0.5	+2.4	+0.6 (±0.78)

Dung to potatoes 1961: tons per acre	N: cwt per acre None	0.1	0.2	0.3
		(±1.11)		
None	45.7	47.7	48.4	45.3
12	45.9	48.0	48.0	47.7
Difference (±1.56)	+0.2	+0.3	-0.4	+2.4

*For use in vertical and interaction comparisons

Mean dry matter % as harvested: 80.0

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Barley 3rd test crop. Grain (at 85% dry matter): cwt per acre

	Treatment crops 1957 - 1959				
	Lucerne	Ley	Cut grass	Arable with hay	Mean
Fosters					
Mean	43.4	45.3	42.6	39.7	42.7
N: cwt per acre		(±1.26)*			(±0.63)
None	43.4	44.2	42.5	35.6	41.4
0.2	44.4	46.1	41.8	-	-
0.4	44.0	45.9	43.3	40.8	43.5
0.6	41.8	45.3	42.8	41.8	42.9
0.8	-	-	-	41.4	-
Dung to potatoes 1961: tons per acre					
None	43.6	45.3	42.3	39.3	42.6
12	43.2	45.4	42.9	40.0	42.9
Difference (±1.26)	-0.4	+0.1	+0.6	+0.7	+0.3 (±0.63)

Dung to potatoes 1961: tons per acre	Excluding arable with hay N: cwt per acre				
	None	0.2	0.4	0.6	Mean
		(±1.03)			
None	41.8	44.5	43.4	45.1	43.7
12	44.9	43.7	45.4	41.5	43.9
Mean (±0.73)	43.4	44.1	44.4	43.3	43.8
Difference (±1.45)	+3.1	-0.8	+2.0	-3.6	+0.2 (±0.73)

*For use in vertical and interaction comparisons

Mean dry matter % as harvested: 79.8

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Treatment crops Arable and Hay rotation

	Highfield Mean	Fosters Mean
Hay (dry matter): cwt per acre		
No dung	75.8	72.0
Dung in 1960	82.2	72.8
Mean	79.0	72.4
Sugar beet		
Roots washed: tons per acre	21.44	16.57
Sugar percentage	16.1	16.7
Total sugar: cwt per acre	69.1	55.4
Tops: tons per acre	21.12	15.14
Oats		
Grain (at 85% dry matter): cwt per acre	39.5	32.8

Oats, grain, mean dry matter % as harvested, Highfield: 77.0
Fosters: 78.3

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Cut grass. Dry matter: cwt per acre

	Highfield Mean	Fosters Mean
2nd year (4 cuts)	64.0	59.0
3rd year (4 cuts)	49.7	49.9

Lucerne. Dry matter: cwt per acre

1st year (2 cuts)	Highfield N to 3 previous test crops Single rate	Highfield N to 3 previous test crops Double rate	Highfield Mean	Fosters N to 3 previous test crops Single rate	Fosters N to 3 previous test crops Double rate	Fosters Mean
Dung to potatoes 1960: tons per acre						
None	30.7	33.8	32.3	35.1	35.8	35.5
12	32.3	33.5	32.9	36.3	37.0	36.7
Mean	31.5	33.7	32.6	35.7	36.4	36.1
2nd year (4 cuts)			66.8			71.8
3rd year (3 cuts)			58.2			76.9

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Grazed ley. Dry matter: cwt per acre (estimated from sample cuts)

	Highfield Mean	Fosters Mean
2nd year	49.0	43.4
3rd year	30.3	24.7

All grass ley. Dry matter: cwt per acre

	Highfield Dung to potatoes 1960: tons per acre None	12	Mean	Fosters Dung to potatoes 1960: tons per acre None	12	Mean
1st year (3 cuts)	57.5	56.3	56.9	47.2	48.5	47.8

Clover grass ley. Dry matter: cwt per acre

	Highfield Dung to potatoes 1960: tons per acre None	12	Mean	Fosters Dung to potatoes 1960: tons per acre None	12	Mean
1st year (2 cuts)	29.3	28.1	28.7	25.9	27.9	26.9

Permanent grass, cut for silage

Dry matter: cwt per acre

	N: cwt per acre (per cut) None	0.6
Highfield		
12th exptl. year		
Blocks 9 and 12	30.3	58.5
Blocks 10 and 11	30.4	57.8
13th exptl. year		
Blocks 5 and 8	32.6	56.6
Blocks 6 and 7	30.3	54.7
14th exptl. year		
Blocks 1 and 4	32.7	59.7
Blocks 2 and 3	33.1	59.2

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Reseeded grass. Dry matter: cwt per acre

	Cut for silage Mean	Grazed. Estimated from sampling cuts Mean
Highfield		
12th exptl. year		
Blocks 10 and 12		25.6
Blocks 9 and 11	19.3	27.4*
13th exptl. year		
Blocks 7 and 8		37.4
Blocks 5 and 6	25.5	19.1*
14th exptl. year		
Blocks 1 and 3		27.1
Blocks 2 and 4	27.9	21.6*
Fosters		
12th exptl. year		
Blocks 6 and 10		28.7
Blocks 11 and 12	15.7	32.2*
13th exptl. year		
Blocks 5 and 9		37.7
Blocks 7 and 8	25.2	24.1*
14th exptl. year		
Blocks 1 and 2		35.1
Blocks 3 and 4	25.3	19.0*

*Aftermath grazing

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62/B/2.1

REFERENCE PLOTS

ROTHAMSTED (R) GREAT FIELD IV

WOBURN (W) STACKYARD SERIES C 1962

The effects of N,P,K and Dung (R and W), and of Mg,Ca,S and trace elements in the presence of N,P,K (R), on a sequence of five arable crops. Also the effects of N,P,K and Dung on permanent grass (R and W) and soft fruit (W).

Cultivations, etc.:

Great Field IV (R):-

Winter wheat: Dug by hand: Sept 18, 1961. P,K,Mg,Ca and S applied and seed drilled: Oct 9. First N dressings applied: Mar 13, 1962. Second N dressings and trace element spray applied: May 1. Harvested: Aug 29. Variety: Cappelle.

Kale: Dung applied, all plots* dug by hand: Nov 30, 1961. P,K,Mg,Ca and S and first dressings of N applied, all plots rotary cultivated, seed sown: Mar 22, 1962. Second dressing of N applied: June 12. Trace element spray applied: July 2. Harvested: Nov 20. Variety: Thousand Head.

Barley: Dug by hand: Dec 8, 1961. N,P,K,Mg,Ca and S applied and rotary cultivated in, seed drilled: Mar 20, 1962. Trace element spray applied: May 18. Harvested: Aug 24. Variety: Proctor.

Grass - clover ley: Undersown in barley: Mar 9, 1961. N,P,K,Mg,Ca and S applied: Mar 12, 1962. Trace element spray applied: May 1. Cut four times: Oct 31, June 12, Aug 1 and Oct 10. Varieties: S22 Italian Ryegrass and Dorset Marl Red Clover.

Potatoes: Dung applied: Nov 30, 1961. Dug by hand: Dec 7. P,K,Mg,Ca and S and first dressing of N applied and setts planted: Mar 22, 1962. Second dressing of N applied: June 12. Trace element spray applied: July 2. Harvested: Aug 25* and Sept 17.** Variety: King Edward.

Permanent grass: Dung applied: Nov 30, 1961. P and K and first N dressing applied: Mar 12, 1962. Second N dressing applied: June 12. Cut twice: June 12 and Oct 4.

Stackyard Series C (W):-

Oats: Hydrated lime applied at 25 cwt per acre: Oct 30, 1961. Rotary cultivated: Mar 2, 1962. Hydrated lime applied at 25 cwt per acre+ P and K and first dressing of N applied, seed drilled: Mar 5. Resown because of pheasant damage: Apr 26. Second N dressing applied: May 10. Harvested: Aug 27. Variety: Condor.

Sugar beet: Dung applied, all plots dug by hand: Feb 6, 1962. Hydrated lime applied at 25 cwt per acre: Mar 2. P and K and first N dressing applied and rotary cultivated in, seed sown: Mar 26. Second N dressing applied: June 7. Harvested: Oct 18. Variety: Klein E.

*All plots without K, **remainder.

+Insert ": Mar 2."

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Barley: Hydrated lime applied at 25 cwt per acre: Oct 30, 1961. Rotary cultivated: Mar 2, 1962. Hydrated lime applied at 25 cwt per acre[+] P and K and first N dressing applied and rotary cultivated in, seed drilled: Mar 5. Resown because of pheasant damage: Apr 14. Second N dressing applied: May 10. Harvested: Aug 16. Variety: Proctor.

Grass - clover ley: Undersown in barley: Mar 8, 1961. Hydrated lime applied at 25 cwt per acre: Mar 2, 1962. N,P and K applied: Mar 9. Cut four times: Oct 23, June 7, July 31 and Sept 27. Varieties: S22 Italian Ryegrass and Dorset Marl Red Clover.

Potatoes: Dung applied, all plots dug by hand: Feb 6, 1962. Hydrated lime applied at 25 cwt per acre: Mar 2. P and K and first N dressing applied and rotary cultivated in, setts planted: Mar 26. Second N dressing applied: June 7. Harvested: Sept 18. Variety: King Edward.

Permanent grass: Dung applied: Feb 6, 1962. Hydrated lime applied at 25 cwt per acre; Mar 2. P and K and first N dressing applied: Mar 9. Second N dressing applied: June 7. Cut twice: June 7 and Sept 27.

Soft fruit: Dung applied: Feb 6, 1962. N,P and K applied: Mar 9. Varieties: Blackcurrants - Wellington XXX; Gooseberry - Careless; Strawberry - Cambridge Vigour.

Note: For details of the previous years' results, and for rates of fertilisers etc., see "Results of the Field Experiments" 58/Bc/1, 59/Bc/1, 60/B/3 and 61/B/2.

Addendum to "Results of the Field Experiments" 61/B/2.1: sowing date for winter wheat - Oct 7, 1960.

[+]Insert ": Mar 2."

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Summary of Results

Great Field IV (R): Original plots

Treatment	cwt per acre Winter wheat Grain (at 85% D.M.)	Straw (at 85% D.M.)	tons per acre Kale: total weight	Barley Grain (at 85% D.M.)	Straw (at 85% D.M.)	cwt per acre Ley: dry matter 1st cut	2nd cut	3rd cut	4th cut	Total of 4 cuts	tons per acre Potatoes: total tubers	cwt per acre Permanent grass: dry matter 1st cut	2nd cut	Total of 2 cuts
None	18.1	23.2	6.94	17.6	14.6	5.6	24.7	14.4	16.3	61.0	3.31	10.3	17.0	27.3
N_1	22.0	30.1	10.42	20.5	18.6	2.8	36.3	11.3	18.1	68.5	2.76	19.2	17.7	36.9
P	32.8	43.9	7.82	20.5	19.5	3.4	32.0	12.1	16.6	64.1	2.36	10.0	14.5	24.5
N_1P	29.9	37.4	17.36	25.6	23.9	2.9	31.4	7.6	13.7	55.6	2.72	23.1	19.7	42.8
K	33.1	46.5	5.90	15.3	13.8	4.6	27.9	16.7	18.6	67.8	8.48	10.5	12.9	23.4
N_1K	36.7	52.6	7.29	21.6	17.2	7.2	24.9	13.4	15.7	61.2	9.40	31.7	26.6	58.3
PK	38.1	51.4	10.59	18.5	17.2	6.3	49.1	20.8	25.1	101.3	12.00	15.8	20.2	36.0
N_1PK	42.0	55.1	15.28	31.6	28.1	6.8	49.4	19.1	25.0	100.3	13.32	36.2	18.8	55.0
N_2PK	38.8	60.5	19.44	34.8	34.7	7.7	43.0	13.0	21.2	84.9	12.76	38.2	27.7	65.9
D	38.6	49.8	9.20	21.6	21.1	6.4	40.2	17.6	20.6	84.8	12.94	28.3	17.2	45.5
N_1PKD	46.7	68.8	19.44	31.5	28.9	5.8	47.6	19.5	26.6	99.5	14.06	45.7	26.3	72.0
N_2PKD	42.7	65.4	24.83	30.0	40.0	7.0	50.8	13.1	20.7	91.6	17.12	48.7	27.4	76.1
Mean dry matter % as harvested:	79.3	71.9		75.8	54.1	22.0	23.4	23.8	19.7	22.2		27.8	26.0	26.9

62/B/2.3

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Great Field IV (R): Additional plots

Treatment	cwt per acre Winter wheat Grain (at 85% D.M.)	Straw (at 85% D.M.)	tons per acre Kale: total weight	Barley Grain (at 85% D.M.)	Straw (at 85% D.M.)	cwt per acre Ley: dry matter 1st cut	2nd cut	3rd cut	4th cut	Total of 4 cuts	tons per acre Potatoes: total tubers
None	39.6	51.5	11.37	19.9	14.0	7.7	33.5	15.3	20.8	77.3	6.08
N_2PK	48.0	81.2	19.18	38.8	41.6	7.7	48.3	10.6	12.5	79.1	15.58
N_2PK Mg Ca	41.8	64.4	21.79	37.8	37.8	8.0	45.3	9.3	11.6	74.2	13.96
N_2PK Mg S	42.5	68.9	24.40	40.9	39.5	9.4	38.9	8.4	10.5	67.2	15.52
N_2PK Ca S	45.6	71.9	20.22	45.3	41.8	8.9	48.3	10.5	16.4	84.1	14.84
N_2PK Mg Ca S	37.3	67.6	22.66	39.2	39.2	8.3	42.5	8.7	13.9	73.4	14.98
N_2PK Mg Ca S TE	49.2	69.2	22.14	41.5	41.5	8.3	43.4	10.4	20.4	82.5	14.28
Mean dry matter % as harvested:	80.5	79.1		76.3	46.1	20.6	27.1	25.5	20.3	23.4	

62/B/2.4

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Stackyard Series C (W)

Treatment	cwt per acre Oats Grain (at 85% D.M.)	Oats Straw (at 85% D.M.)	tons per acre Sugar beet roots (washed)	Barley Grain (at 85% D.M.)	Barley Straw (at 85% D.M.)	cwt per acre Ley: dry matter 1st cut	Ley 2nd cut	Ley 3rd cut	Ley 4th cut	Total of 4 cuts	tons per acre Potatoes total tubers	cwt per acre Permanent grass: dry matter 1st cut	Permanent grass 2nd cut	Total of 2 cuts
None	12.7	10.8	10.25	10.5	8.4	10.4	28.0	7.5	16.4	62.3	5.52	30.4	10.0	40.4
N_1	21.2	17.4	12.26	16.9	15.8	9.9	29.7	10.2	18.6	68.4	7.16	37.0	19.2	56.2
P	18.7	15.6	11.59	13.2	10.8	11.0	25.3	8.2	15.8	60.3	5.04	26.6	8.1	34.7
N_1P	26.1	19.5	11.36	17.3	16.5	10.3	30.1	9.1	17.1	66.6	6.68	37.8	17.0	54.8
K	14.1	12.4	10.50	12.5	10.4	12.6	29.1	7.6	20.0	69.3	7.00	31.3	14.6	45.9
N_1K	21.4	17.3	13.24	18.2	16.0	10.2	34.3	9.7	20.3	74.5	10.00	41.9	20.7	62.6
PK	18.5	15.3	11.85	9.4	8.8	12.9	31.7	8.7	21.6	74.9	8.32	35.5	13.7	49.2
N_1PK	20.9	18.4	13.64	18.4	20.5	12.8	34.9	7.1	21.1	75.9	9.24	43.1	20.8	63.9
N_2PK	23.3	18.5	13.14	20.5	22.4	9.8	37.3	10.1	19.6	76.8	10.92	52.5	31.0	83.5
D	16.9	13.8	13.40	14.2	12.6	12.2	32.6	8.2	20.6	73.6	12.72	39.3	11.3	50.6
N_1PKD	23.6	20.1	7.43*	22.2	24.7	14.9	30.2	10.3	22.4	77.8	14.91	46.9	28.7	75.6
N_2PKD	27.2	23.1	15.54	26.8	21.9	10.2	37.1	7.7	22.5	77.5	19.41	54.3	39.9	94.2
Mean dry matter % as harvested:	75.1	40.9		72.1	56.7	14.0	21.9	22.4	17.9	19.0		25.8	19.6	22.7

*Badly damaged by pheasants. All the other plots were affected to some extent.

61/B/2.5

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62/B/3.1

GREEN MANURING EXPERIMENT

Woburn Stackyard - 1962, the 9th year of the revised scheme.

For history, treatments etc., see "Details of the Classical and Long Term Experiments" 1956. Proctor has replaced Herta as the barley variety.

Area of each plot (acres): 0.0396. Area harvested: Potatoes - 0.0221; barley - 0.0295.

Cultivations, etc.:

Green manures after barley 1961 (for early potatoes 1962): Trefoil at 30 lb per acre, ryegrass at 40 lb per acre, undersown: Apr 19, 1961. Varieties: Trefoil - English; Ryegrass - Italian.

Early potatoes: Straw applied (green manure and "fallow" plots): Sept 14, 1961. "Fallow" plots ploughed: Oct 2; reploughed: Dec 18. All plots ploughed: Feb 2, 1962. Basal fertiliser applied: Mar 12. 'Nitro-Chalk' applied, potatoes mechanically planted: Mar 14. Earthed up: June 14. Haulm destroyed mechanically: July 19. Lifted: July 20. Variety: Ulster Chieftain.

Green manures after early potatoes 1961 (for barley 1962): Ground chalk applied at 21 cwt per acre: July 14, 1961. Trefoil sown at 30 lb per acre: July 15. Ryegrass sown at 40 lb per acre: July 17. Varieties: Trefoil - English; Ryegrass - Western Wolths.

Barley: "Fallow" plots and "early" green manure plots ploughed: Oct 18 and Dec 22, 1961. All plots ploughed: Feb 6, 1962. 'Nitro-Chalk' applied: Feb 20. Seed drilled at 2½ bushels per acre: Feb 21. Trefoil and ryegrass undersown: Apr 28. Combine harvested: Aug 29. Variety: Proctor.

Standard errors per plot.

Potatoes.	Total tubers:	0.410 tons per acre or 12.7% (18 d.f.)
Barley.	Grain (at 85% D.M.):	5.45 cwt per acre or 22.4% (20 d.f.)

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Erratum to "The Numerical Results of the Field Experiments" 1961 page 61/B/3.3. The table under 'Plots fallow under old scheme' should read:-

N: cwt per acre	Dung: tons per acre 1952 None	10	Mean
	(±1.82)		(±1.28)
0.23	14.5	18.0	16.3
0.46	21.9	24.7	23.3
Mean (±1.28)	18.2	21.4	19.8

and not as given.

Estimates of produce (roots and tops) of green manure crops: cwt per acre

	Green manures	Ploughed in	Dry matter	Nitrogen
For early potatoes	Trefoil		21.0	0.657
	Ryegrass		18.3	0.231
For barley	Trefoil	Early	36.8	1.090
	Ryegrass	Early	50.3	0.850
	Trefoil	Late	11.9	0.317
	Ryegrass	Late	38.2	0.764

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62/B/3.3

Summary of Results

Early potatoes, total tubers: tons per acre

	Straw: tons per acre		N: cwt per acre (including basal)		Dung to cabbages 1952: tons per acre		Mean
	None	1½	0.6	1.2	None	10	
Excluding plots fallow under old scheme							
Undersown green manures for potatoes	(±0.145)		(±0.145)		(±0.145)		(±0.102)
None	3.24	3.12	3.31	3.05	2.89	3.47	3.18
	(±0.205)		(±0.205)		(±0.205)		(±0.145)
Trefoil	3.67	3.66	3.60	3.73	3.50	3.83	3.66
Ryegrass	3.12	3.18	2.89	3.42	3.21	3.10	3.15
Straw: tons per acre			(±0.145)		(±0.145)		(±0.102)
None			3.15	3.49	3.02	3.62	3.32
1½			3.40	3.14	3.22	3.32	3.27
N: cwt per acre (including basal)							
0.6					3.09	3.46	3.27
1.2					3.15	3.47	3.31
Mean (±0.102)					3.12	3.47	3.29
Plots fallow under old scheme							
Straw: tons per acre			(±0.290)		(±0.290)		(±0.205)
None			2.66	2.85	2.40	3.11	2.76
1½			2.80	3.52	2.94	3.38	3.16
N: cwt per acre (including basal)							
0.6					2.14	3.32	2.73
1.2					3.20	3.18	3.19
Mean (±0.205)					2.67	3.25	2.96

Undersown green manures for potatoes

Old scheme	None	None	Trefoil	Ryegrass	Mean
	Fallow	Excluding fallow			
	2.96 (±0.145)	3.18 (±0.102)	3.66	3.15 (±0.145)	3.22

Barley, Grain (at 85% dry matter): cwt per acre

	Green manures: In barley for potatoes: None	Green manures: In barley for potatoes: Undersown	Green manures: After potatoes for barley: Trefoil	Green manures: After potatoes for barley: Ryegrass	N: cwt per acre (including basal): 0.23	N: cwt per acre (including basal): 0.46	Dung to cabbages 1953: tons per acre: None	Dung to cabbages 1953: tons per acre: 10	Mean
Excluding plots fallow under old scheme									
	(±1.93)		(±1.93)		(±1.93)		(±1.93)		(±1.36)
Green manures ploughed in: Early	23.2	21.3	24.3	20.1	20.1	24.3	21.0	23.4	22.2
Green manures ploughed in: Late	26.9	27.0	25.1	28.8	26.4	27.5	29.1	24.8	26.9
Green manures in barley for potatoes: None			25.5	24.6	24.0	26.0	26.8	23.2	25.0
Green manures in barley for potatoes: Undersown			24.0	24.3	22.5	25.8	23.3	25.0	24.1
Green manures after potatoes for barley: Trefoil					22.7	26.8	25.9	23.5	24.7
Green manures after potatoes for barley: Ryegrass					23.9	25.0	24.2	24.7	24.4
N: cwt per acre (including basal): 0.23							24.2	22.4	23.3
N: cwt per acre (including basal): 0.46							25.9	25.9	25.9
Mean (±1.36)							25.1	24.1	24.6

Old scheme	Green manures after potatoes for barley: None Fallow	Green manures after potatoes for barley: Trefoil	Green manures after potatoes for barley: Ryegrass	Mean
		Excluding fallow		
	23.3 (±1.93)	24.7	24.4 (±1.36)	24.3

Mean dry matter % as harvested: 83.9

Plots fallow under old scheme

N: cwt per acre (including basal)	(±3.86)		(±2.73)
0.23	25.4	21.1	23.3
0.46	23.4	23.5	23.4
Mean (±2.73)	24.4	22.3	23.3

62/B/3.4

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62/B/4.1

LEY AND ARABLE ROTATIONS

Woburn Stackyard 1962 - the 25th year.

For history, treatments etc., see "Details of the Classical and Long Term Experiments" 1956.

Corrective K dressings (in cwt K_2O per acre, applied to sugar beet as muriate of potash half in autumn before ploughing and half broadcast on the plough furrow in February - commencing autumn 1961):-

Continuous rotations

Rotation	Fertiliser plots	Dung plots
Arable	3.6	3.2
Arable with hay	3.6	3.2
Lucerne	3.6	3.2
Grazed ley	1.3	0.0

Alternating rotations

Last two rotations in order	Fertiliser plots	Dung plots
Arable with hay/Ley	2.9	2.3
Ley/Arable with hay	3.6	3.2
Lucerne/Arable	3.6	3.2
Arable/Lucerne	3.6	3.2

Revised PK basal dressings (in cwt P_2O_5 and K_2O per acre, for all crops, commencing 1962):-

Treatment crops:

	Fertilisers* and time of application	P_2O_5	K_2O
Potatoes.	Superphosphate and muriate of potash, before ridging.	0.9	1.8
Rye.	0/14/28, combine drilled.	0.3	0.6
Carrots.	Superphosphate and muriate of potash, in seedbed.	0.6	1.8
Hay.	0/14/28, in spring,	0.6	1.2
	plus muriate of potash, after first cut.	-	0.6
Lucerne.			
1st year	Superphosphate and muriate of potash, in seedbed.	1.5	1.0
2nd year	Muriate of potash, in spring.	-	1.5
3rd year	Muriate of potash, in spring.	-	1.5
Grazed ley.			
1st year	Superphosphate and muriate of potash, in seedbed	1.5	1.0
2nd year	16/0/16, $\frac{1}{3}$ in spring, $\frac{1}{3}$ in early summer, $\frac{1}{3}$ in late summer	-	0.55
3rd year	as second year	-	0.55

*Granular compound fertilisers are described thus - 0/14/28 etc. to show percentages of N, P_2O_5 and K_2O in order.

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Test crops:-

	Fertilisers and time of application	P_2O_5	K_2O
Sugar beet			
Fertiliser plots	Muriate of potash ploughed in, superphosphate on plough furrow	0.9	3.0+
Dung plots	Superphosphate and muriate of potash on plough furrow	0.3	0.9
Barley	Superphosphate in winter	0.3	-

+Basal K_2O to sugar beet fertiliser plots to be equivalent to K_2O applied in dung in future.

Sub-plot fertiliser tests (in addition to basals) in cwt per acre:-

Sugar beet

All combinations of:-

'Nitro-Chalk': None; 0.72 N Magnesium sulphate: None; 500 lb per acre

Muriate of potash: None; 0.9 K_2O

Muriate of potash at 0.9 K_2O is applied in winter for barley to the sub-plots which did not receive the "test" potash for sugar beet.

Barley variety: This is now Proctor, and not Herta as hitherto.

Cultivations, etc.,

Treatment crops

Ley rotations

Ley 1st year. Ploughed twice: Aug 15 and Dec 22, 1961. Seedbed fertilisers applied: Mar 28, 1962. Seed sown at 40 lb per acre: Apr 10. Sprayed with MCPB/MCPA at 4 pints in 40 gallons per acre: May 30. 'Nitro-Chalk' applied: July 19 and Aug 16. Grazed 4 circuits: July 17 - Oct 8.

Ley 2nd year. Compound fertiliser applied: Mar 29, June 18, Aug 16, 1962. Grazed 5 circuits: May 15 - Sept 22.

Ley 3rd year. Compound fertiliser applied: Mar 29, June 20, Aug 16, 1962. Grazed 5 circuits: May 23 - Sept 30.

Lucerne 1st year. Ploughed: Aug 15, 1961. Treated for control of stem eelworm by injection of "D.D" soil fumigant at 800 lb per acre: Oct 31. Ploughed: Dec 22. Fertilisers applied: Mar 28, 1962. Seed drilled at 15 lb per acre: Apr 13. Cut twice: Aug 14 and Oct 1.

Lucerne 2nd year. Muriate of potash applied: Mar 29, 1962. Cut 3 times: June 27, Aug 14, Oct 1.

Lucerne 3rd year. Muriate of potash applied: Mar 29, 1962. Cut 3 times: June 27, Aug 14, Oct 1.

Arable rotations

Potatoes. Ploughed twice: Aug 15 and Dec 22, 1961. Fertilisers applied, potatoes machine planted: Mar 16, 1962. Earthed up: June 15. Sprayed twice with copper oxychloride fungicide at 2.3 lb Cu in 40 gallons per acre: July 23 and Aug 9. Haulm burnt off with diquat at 3 pints in 40 gallons per acre: Sept 22. Lifted: Oct 3.

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Rye. Ploughed: Sept 23, 1961. Seed combine drilled at 2½ bushels per acre with PK compound: Oct 10. 'Nitro-Chalk' applied: Mar 30, 1962. Seeds hay mixture undersown on 4 plots: Apr 10. Combine harvested: Aug 31.

Seeds hay. Seeds undersown at 30 lb per acre in rye: Apr 11, 1961. PK compound and 'Nitro-Chalk' applied: Mar 29, 1962. Cut once: June 13. Muriate of potash and 'Nitro-Chalk' applied: June 14.

Carrots. Ploughed twice: Sept 4 and Dec 22, 1961. Fertilisers applied: Apr 24, 1962. Seed drilled at 4½ lb per acre: Apr 27. Sprayed twice with demeton methyl at 12 fluid oz in 40 gallons per acre: May 29 and June 23. Thinned: June 29 - July 6. Lifted: Sept 19.

Test crops

Sugar beet. Dung equivalent K and half corrective K applied: Oct 23, 1961. Dung applied, all plots ploughed: Oct 25. Half corrective K, basal superphosphate and muriate of potash applied: Feb 22, 1962. 'Nitro-Chalk', "test" muriate of potash and magnesium sulphate applied, seed drilled at 7 lb per acre: Mar 21. Singled: May 30. Lifted: Sept 24.

Barley. Ground chalk applied at 40 cwt per acre: Nov 3, 1961. Ploughed: Nov 4. "Balancing" muriate of potash and basal superphosphate applied: Feb 19, 1962. Seed drilled at 2½ bushels per acre: Feb 20. 'Nitro-Chalk' applied: Feb 23. Plots re-drilled at 1 bushel per acre (because of bird damage): Mar 21. Combine harvested: Aug 25.

Standard errors per plot. Test crops.

Sugar beet.	Roots (washed)	Whole plot:	1.112 tons per acre or 7.7% (4 d.f.)
		½ plot:	0.590 tons per acre or 4.1% (4 d.f.)
		⅛ plot:	0.987 tons per acre or 6.9% (24 d.f.)
		1/16 plot:	0.900 tons per acre or 6.3% (32 d.f.)
	Total sugar	Whole plot:	4.27 cwt per acre or 9.2% (4 d.f.)
		½ plot:	1.81 cwt per acre or 3.9% (4 d.f.)
		⅛ plot:	3.39 cwt per acre or 7.3% (24 d.f.)
		1/16 plot:	3.06 cwt per acre or 6.6% (32 d.f.)
	Tops	Whole plot:	0.615 tons per acre or 2.7% (4.d.f.)
		½ plot:	1.484 tons per acre or 6.4% (4 d.f.)
		⅛ plot:	1.290 tons per acre or 5.6% (24 d.f.)
		1/16 plot:	2.225 tons per acre or 9.6% (32 d.f.)

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Standard errors per plot. Test crops.

Barley.	Grain (at 85% dry matter)	Whole plot:	1.10 cwt per acre or 2.6% (4 d.f.)
		½ plot:	1.58 cwt per acre or 3.7% (4 d.f.)

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Summary of Results

Treatment crops

Ley, sheep days of grazing per acre

1st year	2nd year	3rd year
1265	1211	1397

Lucerne, dry matter: cwt per acre

	1st cut	2nd cut	3rd cut	Total
1st year				
Dung in 1960: tons per acre				
None	9.0	10.0		19.0
15	12.8	13.0		25.8
Difference	+3.8	+3.0		+6.8
Previous rotation				
Lucerne	8.4	9.0		17.4
Arable with hay	13.2	14.0		27.2
Mean	10.8	11.5		22.3
2nd year				
Dung in 1959: tons per acre				
None	17.3	16.3	14.7	48.3
15	26.8	18.3	16.4	61.5
Difference	+9.5	+2.0	+1.7	+13.2
Previous rotation				
Lucerne	19.8	18.9	14.7	53.4
Arable with roots	24.2	15.7	16.4	56.3
Mean	22.0	17.3	15.6	54.8
3rd year				
Dung in 1958: tons per acre				
None	13.6	10.6	7.3	31.5
15	22.4	12.2	5.8	40.4
Difference	+8.8	+1.6	-1.5	+8.9
Previous rotation				
Lucerne	15.2	10.6	5.9	31.7
Arable with hay	20.8	12.2	7.2	40.2
Mean	18.0	11.4	6.6	36.0

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Treatment crops

	Potatoes		Rye	
	Total tubers: tons per acre	Percentage ware ($1\frac{5}{8}$" riddle)	Grain: (at 85% D.M.) cwt per acre	Straw: cwt per acre
Dung: tons per acre				
None	9.45	94.8	36.7	44.2
15*	11.86	94.8	34.8	45.3
Difference	+2.41	0.0	-1.9	+1.1
Previous rotation				
Ley	12.84	95.2	35.3	45.0
Lucerne	10.84	95.2	40.0	52.5
Arable with hay	10.64	94.7	31.1	36.3
Arable with roots	8.32	94.0	36.4	45.2
Mean	10.66	94.8	35.7	44.7

Hay

Yield, dry matter: cwt per acre

	1st and only cut
Dung in 1958: tons per acre	
None	52.5
15	55.5
Difference	+3.0
Previous rotation	
Lucerne	54.6
Arable with hay	53.4
Mean	54.0

Carrots

	Roots washed: tons per acre	Tops: tons per acre
Dung in 1958: tons per acre		
None	14.58	7.67
15	15.86	8.36
Difference	1.28	0.69
Previous rotation		
Ley	16.37	8.10
Arable with roots	14.07	7.94
Mean	15.22	8.02

*Dung applied: Potatoes for test crop sugar beet in 1960.
Rye for test crop sugar beet in 1959.

Mean dry matter % as harvested: Rye, Grain: 82.0
Straw: 76.8

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1st Test crop

Sugar beet

Previous rotation

	Ley	Lucerne	Arable with hay	Arable with roots	Mean
Roots (washed): tons per acre					
Mean (±1.112)	14.45	14.54	14.09	14.45	14.39
Dung: tons per acre					
None (±1.188)*	13.68	13.73	13.32	13.45	13.55
15	15.22	15.35	14.87	15.45	15.22
Difference (±0.834)	+1.54	+1.62	+1.55	+2.00	+1.67
Response to additional 0.72 cwt N per acre		(±0.987)			(±0.494)
No dung	-0.54	-0.78	+1.36	+0.15	+0.05
Dung 15 tons per acre	-0.03	+0.29	+0.30	+0.22	+0.19
Response to additional 0.9 cwt K_2O per acre		(±0.987)			(±0.494)
No dung	+0.18	+1.32	+0.58	-0.38	+0.43
Dung 15 tons per acre	+1.47	-0.01	-0.38	-0.16	+0.23
Sugar Percentage					
Mean	15.7	15.8	16.6	16.3	16.1
Dung: tons per acre					
None	15.9	15.9	17.0	16.8	16.4
15	15.5	15.7	16.2	15.8	15.8
Difference	-0.4	-0.2	-0.8	-1.0	-0.6
Response to additional 0.72 cwt N per acre					
No dung	-1.1	-0.2	-0.8	-0.7	-0.7
Dung 15 tons per acre	-0.7	-0.7	-1.0	-0.7	-0.8
Response to additional 0.9 cwt K_2O per acre					
No dung	0.0	+0.6	-0.4	-0.2	0.0
Dung 15 tons per acre	-0.2	+0.1	+0.1	-0.1	0.0

*For use in horizontal and diagonal comparisons only.

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1st Test Crop

Sugar beet

	Previous rotation				
	Ley	Lucerne	Arable with hay	Arable with roots	Mean
Total sugar: cwt per acre					
Mean (±4.27)	45.4	45.8	46.7	46.9	46.2
Dung: tons per acre					
None (±4.46)*	43.6	43.6	45.2	45.2	44.4
15	47.2	48.0	48.2	48.7	48.0
Difference (±2.56)	+3.6	+4.4	+3.0	+3.5	+3.6
Response to additional 0.72 cwt N per acre		(±3.39)			(±1.70)
No dung	-4.7	-2.9	+2.5	-1.4	-1.7
Dung 15 tons per acre	-2.1	-1.2	-1.9	-1.6	-1.7
Response to additional 0.9 cwt K_2O per acre		(±3.39)			(±1.70)
No dung	+0.5	+5.9	+1.0	-2.0	+1.4
Dung 15 tons per acre	+4.1	+0.2	-1.0	-0.7	+0.7
Tops: tons per acre					
Mean (±0.615)	23.96	23.82	22.16	22.64	23.15
Dung: tons per acre					
None (±1.216)*	22.60	22.40	19.30	21.14	21.36
15	25.33	25.24	25.02	24.14	24.93
Difference (±2.098)	+2.73	+2.84	+5.99	+3.00	+3.57
Response to additional 0.72 cwt N per acre		(±1.290)			(±0.645)
No dung	+4.20	+1.61	+5.46	+5.22	+4.12
Dung 15 tons per acre	+0.55	+3.42	+2.44	+3.02	+2.36
Response to additional 0.9 cwt K_2O per acre		(±1.290)			(±0.645)
No dung	+2.50	+1.29	-0.05	+0.32	+1.02
Dung 15 tons per acre	+3.10	+1.33	-0.32	+0.41	+1.13

*For use in horizontal and diagonal comparisons only.

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1st Test Crop

Sugar beet

Plots receiving no additional N or K

Dung: tons per acre		Previous rotation: Ley	Lucerne	Arable with hay	Arable with roots	Mean
Roots (washed): tons per acre						
Mean	(±1.035)	14.29	14.38	14.14	14.52	14.33
None	(±1.380)*	14.26	13.94	12.75	13.50	13.61
15		14.33	14.82	15.53	15.54	15.05
Difference	(±1.469)	+0.07	+0.88	+2.78	+2.04	+1.44
Sugar percentage						
Mean		16.2	15.8	17.0	16.7	16.4
None		16.7	15.6	17.7	17.1	16.8
15		15.7	16.0	16.2	16.3	16.1
Difference		-1.0	+0.4	-1.5	-0.8	-0.7
Total sugar: cwt per acre						
Mean	(±3.78)	46.4	45.4	47.7	48.4	47.0
None	(±5.03)*	47.8	43.5	45.1	46.1	45.6
15		45.1	47.3	50.3	50.6	48.3
Difference	(±4.88)	-2.7	+3.8	+5.2	+4.5	+2.7
Tops: tons per acre						
Mean	(±1.167)	21.40	21.78	20.93	20.20	21.08
None	(±1.557)*	18.94	21.11	17.17	18.62	18.96
15		23.86	22.46	24.69	21.78	23.20
Difference	(±2.626)	+4.92	+1.35	+7.52	+3.16	+4.24

*For use in horizontal and diagonal comparisons only.

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62/B/4.10

1st Test Crop

Sugar beet

Previous rotation

Magnesium sulphate: lb per acre	Ley	Lucerne	Arable with hay	Arable with roots	Mean
Roots (washed): tons per acre					
			(±0.840)*		
None	14.28	14.47	14.01	14.44	14.30
500	14.63	14.61	14.18	14.46	14.47
Difference (±0.318)	+0.35	+0.14	+0.17	+0.02	+0.17 (±0.159)
Sugar percentage					
None	15.7	15.8	16.6	16.4	16.1
500	15.6	15.7	16.6	16.2	16.1
Difference	-0.1	-0.1	0.0	-0.2	0.0
Total sugar: cwt per acre					
			(±3.14)*		
None	45.1	45.6	46.4	47.1	46.0
500	45.8	46.0	47.0	46.8	46.4
Difference (±1.08)	+0.7	+0.4	+0.6	-0.3	+0.4 (±0.54)
Tops: tons per acre					
			(±0.860)*		
None	24.16	23.93	22.55	22.54	23.29
500	23.77	23.72	21.77	22.74	23.00
Difference (±0.787)	-0.39	-0.21	-0.78	+0.20	-0.29 (±0.393)

*for use in horizontal and diagonal comparisons only.

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2nd Test Crop

Barley

Dung in 1961: tons per acre		Previous rotation: Ley	Lucerne	Arable with hay	Arable with roots	Mean
Grain (at 85% dry matter): cwt per acre						
None	(±1.11)*	43.5	41.2	40.0	40.0	41.2
15		42.7	43.4	44.9	43.9	43.7
Mean	(±0.77)	43.1	42.3	42.4	42.0	42.4
Difference	(±1.58)	-0.8	+2.2	+4.9	+3.9	+2.5 (±0.79)
Straw (at 85% dry matter): cwt per acre						
None		31.8	28.9	23.7	29.2	28.4
15		35.6	36.2	32.0	32.3	34.0
Mean		33.7	32.5	27.8	30.7	31.1
Difference		+3.8	+7.3	+8.3	+3.1	+5.6

*For use in horizontal and diagonal comparisons only.

Mean dry matter % as harvested: Grain 80.0
Straw 85.0

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62/B/5.1

WOBURN MARKET GARDEN EXPERIMENT

Organic manures, N,P,K and Mg - Lansome Field 1962, the 21st year of the experiment, the 2nd year with revised treatments.

Further revised treatments commencing 1962:-

Vegetable compost replaced by dung at the same two rates (C&D) (1&2). Vegetable compost last applied for early potatoes only, 1962.

The following treatments are now discontinued:

Sewage sludge (S)

Sewage sludge compost (T)

The following additional treatments and alterations are now in operation:-

N to plots of former S and T treatments: The plots are split* for an alternating test of none v 0.9 cwt N per acre as 'Nitro-Chalk'. These plots receive PK at the lower rate of K_2O.

Magnesium sulphate test: This is no longer applied to globe beet.

*For potatoes and leeks the sub plots so formed lie at right angles to the sub plots for the magnesium sulphate test.

1962 globe beet, 1st crop only:

Depth of sowing of globe beet seed (to columns of 4 half-plots): Shallow - $\frac{3}{4}$"; deep - $1\frac{1}{2}$".

Area of each sub plot (acres): 0.0063. Area harvested (acres): Leeks - 0.0011; early potatoes (sub plots) - 0.0023; globe beet - 1st harvest (sub plots) - 0.0012; 2nd harvest - 0.0044.

Note: The results for the 1962 - 63 leeks will be included in the 1963 report.

Cultivations, etc.:

Leeks 1961 - 62. Organic manures and NPK applied, plots ploughed: July 26, 1961. Second half of NPK applied, leeks planted: July 27. Magnesium sulphate applied: July 28. Harvested: Jan 8 - Mar 8, 1962. Variety: Musselburgh.

Early potatoes. Ploughed: Sept 7, 1961. PK applied: Nov 21. Organic manures applied, plots ploughed second time: Nov 22. N and second half of PK applied, potatoes machine planted: Mar 22, 1962. Earthed up: June 14. Lifted: July 23. Variety: Arran Pilot.

Globe beet. Ground chalk applied at 20 cwt per acre, organic manures and NPK applied, plots ploughed: Apr 6, 1962. Second half of NPK applied, seed drilled at 11 lb per acre: Apr 27. Singled: June 19. Lifted: July 12.+ Cultivated with thistle bar and harrow: July 13. Seed drilled at 12 lb per acre: July 17. Sprayed against black aphis with demeton methyl at 6 fluid oz in 40 gallons per acre: Aug 28. Sprayed against cutworms with dieldrin at 4 pints in 40 gallons per acre: Sept 8. Singled: Sept 17. Lifted: Nov 26. Variety: Detroit.

+Harvested early because of much bolting.

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Standard errors per plot.

Leeks 1961 - 62. Saleable produce.

1st lifting

Whole plot: 0.569 tons per acre or 9.3% (15 d.f.)
Sub plot: 0.456 tons per acre or 7.5% (16 d.f.)

2nd lifting

Whole plot: 0.593 tons per acre or 9.5% (15 d.f.)
Sub plot: 0.489 tons per acre or 7.8% (16 d.f.)

Mean of 2 liftings

Whole plot: 0.441 tons per acre or 7.2% (15 d.f.)
Sub plot: 0.373 tons per acre or 6.1% (16 d.f.)

Errata to "Numerical Results of the Field Experiments" 1961, pages 61/B/5.3 - 5.8. The rates of application tons per acre of vegetable compost should read "5 and 10" not "10 and 20" for leeks and "10 and 20" not "5 and 10" for early potatoes and globe beet.

Summary of Results

Organic manures	tons per acre	Mag. sulph. lb p.a. Mean	None	500	Diff.	Fertiliser None	$N_1P_1K_1$	Diff.
Leeks, 1st lifting saleable produce: tons per acre								
		(±0.285)	(±0.327)(1)		(±0.323)	(±0.403)		(±0.569)
Dung	10	6.56	6.61	6.51	-0.10	6.56	6.56	0.00
	20	6.63	6.61	6.66	+0.05	6.66	6.61	-0.05
Sludge	10	6.07	6.26	5.88	-0.38	5.83	6.31	+0.48
compost	20	6.43	6.46	6.41	-0.05	6.38	6.48	+0.10
Sludge	10	5.15	5.10	5.20	+0.10	5.28	5.03	-0.25
	20	5.19	5.35	5.03	-0.32	5.46	4.93	-0.53
Vegetable	5	6.14	6.11	6.18	+0.07	5.50	6.78	+1.28
compost	10	6.52	7.04	6.01	-1.03	6.36	6.69	+0.33
Mean		6.09	6.19	5.98	-0.21 (±0.114)	6.00	6.17	+0.17 (±0.201)
NPK								
111		5.18	5.23	5.13	-0.10			
111*		5.33	5.43	5.23	-0.20			
211		3.97	4.32	3.62	-0.70			
211*		4.72	4.82	4.62	-0.20			
112		5.63	5.43	5.83	+0.40			
112*		5.63	5.73	5.53	-0.20			
212		4.12	4.42	3.82	-0.60			
212*		3.92	3.62	4.22	+0.60			
Mean		4.81	4.88	4.75	-0.13			

(1) For use in vertical and diagonal comparisons.

* NPK ½ ploughed in, ½ in seedbed.

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Organic manures	tons per acre	Mean	Mag.sulph. lb p.a. None	500	Diff.	Fertiliser None	$N_1P_1K_1$	Diff.
Leeks, 2nd lifting saleable produce: tons per acre								
		(±0.296)	(±3.43)(1)		(±0.346)	(±0.419)		(±0.593)
Dung	10	6.33	6.41	6.26	-0.15	6.06	6.61	+0.55
	20	6.61	6.71	6.51	-0.20	7.06	6.16	-0.90
Sludge	10	5.95	5.78	6.13	+0.35	5.88	6.03	+0.15
compost	20	6.24	6.18	6.31	+0.13	6.18	6.31	+0.13
Sludge	10	5.89	5.81	5.98	+0.17	5.45	6.33	+0.88
	20	5.67	5.88	5.45	-0.43	5.71	5.63	-0.08
Vegetable	5	6.36	6.28	6.43	+0.15	5.78	6.93	+1.15
compost	10	6.87	6.86	6.88	+0.02	6.91	6.83	-0.08
Mean		6.24	6.24	6.24	0.00 (±0.122)	6.13	6.35	+0.22 (±0.210)
NPK								
111		5.08	5.02	5.13	+0.11			
111*		5.22	5.73	4.72	-1.01			
211		4.32	3.92	4.72	+0.80			
211*		4.62	4.82	4.42	-0.40			
112		4.92	4.92	4.92	0.00			
112*		6.28	6.13	6.43	+0.30			
212		3.06	3.22	2.91	-0.31			
212*		3.87	3.82	3.92	+0.10			
Mean		4.67	4.70	4.65	-0.05			
Leeks, Mean of 2 liftings saleable produce: tons per acre								
		(±0.221)	(±0.257)(1)		(±0.264)	(±0.312)		(±0.441)
Dung	10	6.44	6.51	6.38	-0.13	6.31	6.58	+0.27
	20	6.62	6.66	6.58	-0.08	6.86	6.38	-0.48
Sludge	10	6.01	6.02	6.01	-0.01	5.86	6.17	+0.31
compost	20	6.34	6.32	6.36	+0.04	6.28	6.39	+0.11
Sludge	10	5.52	5.46	5.59	+0.13	5.37	5.68	+0.31
	20	5.43	5.62	5.24	-0.38	5.58	5.28	-0.30
Vegetable	5	6.25	6.20	6.31	+0.11	5.64	6.86	+1.22
compost	10	6.70	6.95	6.44	-0.51	6.63	6.76	+0.13
Mean		6.16	6.21	6.11	-0.10 (±0.093)	6.06	6.26	+0.20 (±0.156)
NPK								
111		5.13	5.12	5.13	+0.01			
111*		5.28	5.58	4.98	-0.60			
211		4.14	4.12	4.17	+0.05			
211*		4.67	4.82	4.52	-0.30			
112		5.28	5.18	5.38	+0.20			
112*		5.96	5.93	5.98	+0.05			
212		3.59	3.82	3.36	-0.46			
212*		3.90	3.72	4.07	-0.35			
Mean		4.74	4.79	4.70	-0.09			

(1) For use in vertical and diagonal comparisons

* NPK $\frac{1}{2}$ ploughed in, $\frac{1}{2}$ in seedbed.

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Organic manures	tons per acre	Mean	Mag.sulph. lb p.a. None	500	Diff.	Fertiliser None	$N_1P_1K_1$	Diff.
		Early potatoes, Total tubers: tons per acre						
Dung	10	4.56	4.78	4.35	-0.43	4.41	4.71	+0.30
	20	5.30	5.30	5.30	0.00	5.06	5.55	+0.49
Vegetable	10	3.78	4.00	3.56	-0.44	3.50	4.06	+0.56
compost	20	4.63	4.71	4.56	-0.15	4.56	4.71	+0.15
Mean		4.57	4.70	4.44	-0.26	4.38	4.76	+0.38

	Mag.Sulph. lb per acre None	500
	4.35	4.42
	5.04	4.47

NPK				
111	3.36	3.68	3.05	-0.63
111*	4.56	4.65	4.46	-0.19
211	2.88	2.96	2.81	-0.15
211*	2.54	2.37	2.71	+0.34
112	2.91	2.62	3.20	+0.58
112*	4.51	5.14	3.88	-1.26
212	2.18	2.47	1.89	-0.58
212*	2.96	2.96	2.96	0.00
Mean	3.24	3.36	3.12	-0.24

*NPK ½ ploughed in, ½ in seedbed.

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Dung: tons per acre	Organic manure applied 1942-61	Mean	Drilled		Diff.	Fertiliser		Diff.
			Shallow	Deep		None	$N_1P_1K_1$	
	Globe beet. 1st sowing, Total produce: tons per acre							
10	D1	4.60	4.89	4.32	-0.57	4.65	4.56	-0.09
20	D2	6.45	6.90	5.99	-0.91	6.95	5.94	-1.01
10	C1	4.69	5.08	4.30	-0.78	4.63	4.75	+0.12
20	C2	6.20	6.75	5.65	-1.10	6.57	5.83	-0.74
Mean		5.48	5.91	5.06	-0.85	5.70	5.27	-0.43
					Drilled			
					Shallow	5.97	5.84	
					Deep	5.43	4.70	
NPK								
111		2.91	2.67	3.14	+0.47			
111*		3.50	3.48	3.52	+0.04			
211		2.19	2.24	2.14	-0.10			
211*		3.50	3.14	3.86	+0.72			
112		2.45	2.90	2.00	-0.90			
112*		3.90	3.80	4.00	+0.20			
212		1.81	1.90	1.72	-0.18			
212*		3.14	3.57	2.72	-0.85			
Mean		2.92	2.96	2.89	-0.07			

*NPK $\frac{1}{2}$ ploughed in, $\frac{1}{2}$ in seedbed.

62/B/5.5

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Dung: tons per acre	Organic manure applied 1942-61	Mean	Fertiliser None	Fertiliser $N_1P_1K_1$	Diff.
	Globe beet. 2nd sowing. Total produce: tons per acre				
10	D1	3.60	1.56	5.64	+4.08
20	D2	6.72	4.84	8.59	+3.75
10	C1	4.91	2.11	7.71	+5.60
20	C2	7.04	5.68	8.39	+2.71
Mean		5.57	3.55	7.58	+4.03

NPK	
111	2.79
111*	3.12
211	3.07
211*	2.06
112	4.32
112*	1.21
212	8.49
212*	1.71
Mean	3.35

*NPK $\frac{1}{2}$ ploughed in, $\frac{1}{2}$ in seedbed.

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62/B/6.1

IRRIGATION EXPERIMENT

The 12th year - revised 1960

The effects of irrigation and nitrogen - Woburn Butt Close 1962.

For details of previous cropping, treatments etc. see "Details of the Classical and Long Term Experiments" 1956.

Lucerne: The ryegrass is now replaced by lucerne, which receives the following treatments and basal dressings:

Treatments

All combinations of:-

Irrigation (to whole plots): None (0); full irrigation (C).

Nitrogen (to half plots): None; 0.3 cwt N per acre as 'Nitro-Chalk' in seedbed, and in early spring in subsequent years.

Potash (to half plots): 0.3; 0.9 cwt K_2O per acre as muriate of potash for every cut.

The above fertiliser treatments balance those applied to ryegrass.

Basal dressings per acre: 0.6 cwt P_2O_5 as superphosphate in seedbed and in early spring in subsequent years.

Beans: As a result of bird damage the third year crop in the rotation was spring, and not winter beans.

Trietazine at 1½ lb in 40 gallons per acre now replaces simazine as pre-emergence weedkiller on early potatoes.

Area of each plot: Lucerne (sub plot): 0.0264 acres. Remainder as 1961.

Area harvested (acres): Early potatoes: 0.0171; barley: 0.0099; spring beans: 0.0175; lucerne: 0.0160.

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Rainfall and Irrigation: inches

Week ending	Rainfall	Early potatoes C	Barley C	Spring beans A	Spring beans B	Spring beans C	Lucerne C
May 7	0.18		0.50				
14	0.64			0.50		0.50	
21	0.67						
28	0.78						
June 4	0.03						
11	0.07	0.50	0.50	0.50		0.50	0.50
18	0.02	0.50	0.50	0.50		0.50	0.50
25	0.03	0.50	0.50				0.50
July 2	0.16	0.75	0.75		0.50	0.50	0.75
9	0.01	0.75	0.75		0.75	0.75	0.75
16	0.91				0.50	0.50	0.50
23	0.11						
30	0.92						
Aug 6	0.20						
13	1.94						
20	0.42						
27	0.53						
Sept 3	0.02						
10	0.50						
17	1.47						
24	0.02						
Oct 1	1.24						
Total	10.87	3.00	3.50	1.50	1.75	3.25	3.50

Cultivations, etc.:

Early potatoes: Ploughed: Aug 25, 1961. Subsoiled: Oct 23. Ploughed second time: Oct 25. PK basal compound applied: Mar 12, 1962. Sulphate of ammonia applied, potatoes machine planted: Mar 13. Appropriate plots sprayed with trietazine: Apr 12. Earthed up (except the trietazine plots): June 15. Tops removed mechanically: July 17. Lifted: July 18. All plots ploughed: July 19. Trefoil sown on appropriate plots at 30 lb per acre: July 20. Variety: Arran pilot.

Barley: Plots (except trefoil plots) fixed-tine cultivated: Nov 27, 1961. All plots ploughed: Feb 2, 1962. Ground chalk applied at 37 cwt per acre, fertilisers applied, seed drilled at 2¼ bushels per acre: Mar 2. Sprayed with MCPA/MBA at 4 pints in 40 gallons per acre: May 14. Combine harvested: Aug 22. Variety: Proctor.

Spring beans: Ground chalk applied at 46 cwt per acre, plots ploughed: Aug 25, 1961. Subsoiled: Oct 23. Ploughed second time: Oct 25. Winter beans placement drilled at 275 lb per acre: Nov 1. Crop abandoned, plots springtine cultivated twice: Mar 16, 1962. Cross-drilled with spring beans at 200 lb per acre: Mar 19. Sprayed with simazine at 1 lb in 40 gallons per acre: Apr 12. Combine harvested: Sept 20. Variety: Tick 30b.

Lucerne: Subsoiled: Oct 23, 1961. Ploughed: Oct 25. Fertilisers applied: Apr 5, 1962. Seed drilled at 19 lb per acre:

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Apr 17 - 24. Cut 3 times: July 17, Aug 20, Oct 3. Muriate of potash applied for every cut. Variety: Du Puits.

Standard errors per plot.

Spring beans: (grain at 85% dry matter)

Whole plot: 4.54 cwt per acre or 16.2% (6 d.f.)

Lucerne, dry matter

1st cut	Whole plot:	1.40 cwt per acre or 6.9%	(6 d.f.)
	Sub plot:	2.05 cwt per acre or 10.1%	(8 d.f.)
2nd cut	Whole plot:	1.82 cwt per acre or 10.0%	(6 d.f.)
	Sub plot:	0.90 cwt per acre or 5.0%	(8 d.f.)
3rd cut	Whole plot:	1.68 cwt per acre or 13.9%	(6 d.f.)
	Sub plot:	1.30 cwt per acre or 10.7%	(8 d.f.)
Total of 3 cuts	Whole plot:	4.68 cwt per acre or 9.3%	(6 d.f.)
	Sub plot:	3.12 cwt per acre or 6.2%	(8 d.f.)

Corrigenda to "Results of the Field Experiments 1960 and 1961".

Page 60/B/7.1:- Early potatoes - Delete last sentence of "Note" and substitute "0.5 inches were applied in 1960".

Page 61/B/6.1:- Cut grass - Add: "The low and high rates of potash are applied to half plots and are accompanied by 'Nitro-Chalk' at 0.3 and 0.6 cwt N per acre per cut respectively. This comparison is made on 2 whole plots per block, on the other 2 'Nitro-Chalk' at 0.3 and 0.6 cwt N per acre is applied for each cut without potash.

Summary of Results

Early potatoes, Total tubers: tons per acre

Weed control	Irrigation 0	Irrigation C
Normal cultivation	2.81	5.75
Trietazine spray	1.80	4.77

N: cwt per acre including basal	Weed control: Normal cultivation	Weed control: Trietazine spray	Mean
0.6	4.07	3.33	3.70
1.2	4.48	3.24	3.86
Mean	4.28	3.29	3.78

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Barley, Grain(at 85% dry matter): cwt per acre

Weed control**	Irrigation 0	C
Normal cultivation	25.0	38.2
Simazine spray	21.8	38.7

Green manure	Weed control** Normal cultivation	Simazine spray
None	20.3	31.8	27.2	24.8
Trefoil	25.0	41.8	33.8	33.0

N: cwt per acre including basal	Irrigation 0	C	Weed control** Normal cultivation	Simazine spray	Green manure None	Trefoil	Mean
0.2	24.5	36.3	30.7	30.0	22.7	34.2	30.4
0.4	22.4	40.7	32.5	30.6	29.3	32.6	31.5
Mean	23.4	38.5	31.6	30.3	26.0	33.4	30.9

Mean dry matter % as harvested: 83.0

Spring beans, Grain (at 85% dry matter): cwt per acre

Irrigation 0	A	B	C	Mean
21.0	27.5	30.0	33.5	28.0
	(±2.61)			

Mean dry matter % as harvested: 74.5

Lucerne, dry matter: cwt per acre

1st cut

K_2O: cwt per acre*	Irrigation 0	C
	(±0.84)(1)	(±0.82)(2)
0.3	14.3	25.0
0.9	14.4	27.0

N: cwt per acre	Irrigation 0	C	K_2O: cwt per acre* 0.3	0.9	Mean
	(±0.84)(1)	(±0.82)(2)	(±0.82)		(±0.84)
None	13.6	25.0	18.7	20.0	19.3
0.3	15.1	27.0	20.6	21.5	21.1
Mean	14.4	26.0	19.6	20.7	20.2
	(±0.57)		(±0.84)		

Mean dry matter % as harvested: 25.0

(1) For use in vertical and interaction comparisons
(2) For use in horizontal and diagonal comparisons
*For each cut ** To early potatoes 1961

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Lucerne, dry matter: cwt per acre

	Irrigation O	Irrigation C
	2nd cut	
K_2O: cwt per acre*	(±0.37)(1)	(±0.79)(2)
0.3	18.9	16.3
0.9	19.0	18.2

N: cwt per acre	(±0.37)(1)	(±0.79)(2)	K_2O: cwt per acre* 0.3	0.9	Mean
			(±0.79)		(±0.37)
None	18.2	17.6	17.3	18.5	17.9
0.3	19.8	16.9	17.9	18.8	18.4
Mean	19.0	17.3	17.6	18.6	18.1
	(±1.05)		(±0.37)		

3rd cut

K_2O: cwt per acre*	(±0.53)(1)	(±0.78)(2)
0.3	13.2	10.0
0.9	14.0	11.4

N: cwt per acre	(±0.53)(1)	(±0.78)(2)	K_2O: cwt per acre* 0.3	0.9	Mean
			(±0.78)		(±0.53)
None	14.2	11.2	11.7	13.6	12.7
0.3	13.0	10.1	11.4	11.7	11.6
Mean	13.6	10.7	11.6	12.7	12.1
	(±0.97)		(±0.53)		

Mean dry matter % as harvested:
2nd cut: 17.7
3rd cut: 21.0

(1) For use in vertical and interaction comparisons
(2) For use in horizontal and diagonal comparisons

* For each cut

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Lucerne, dry matter: cwt per acre

	Irrigation 0	Irrigation C			
	Total of 3 cuts				
K_2O: cwt per acre*	$(\pm 1.27)^{(1)}$	$(\pm 2.11)^{(2)}$			
0.3	46.4	51.3			
0.9	47.5	56.7			
			K_2O: cwt per acre* 0.3	0.9	Mean
N: cwt per acre	$(\pm 1.27)^{(1)}$	$(\pm 2.11)^{(2)}$	(± 2.11)		(± 1.27)
None	46.0	53.9	47.7	52.1	49.9
0.3	47,9	54.1	50.0	52.0	51.0
Mean	46.9	54.0	48.9	52.1	50.5
	(± 2.70)		(± 1.27)		

Mean dry matter % as harvested: 21.3

* For each cut

(1) For use in vertical and interaction comparisons
(2) For use in horizontal and diagonal comparisons

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62/B/7.1

CONCENTRATED FERTILISER ROTATION

Concentrated compound fertiliser and forms of N - West Barnfield I 1962, the third year.

Rotation: Kale, ryegrass, barley.

Design (each crop): 2 randomised blocks of 14 plots each.

Area of each plot (acres): 0.0174. Area harvested: Kale - 0.0084, ryegrass - 0.0056, barley - 0.0114.

Treatments (per acre):
- No fertiliser (0)
- P_2O_5 and K_2O each at 0.3 cwt to barley and each at 1.0 cwt to kale and ryegrass, as triple superphosphate and potassium bicarbonate. (B)
- Compound fertiliser, 20% N, 10% P_2O_5, 10% K_2O at 0.3(1), 0.6(2) cwt N to barley and 1.0(1), 2.0(2) to kale and ryegrass. (F)
- Sulphate of ammonia, granular superphosphate and muriate of potash at rates equivalent to treatments F(1) and (2). (P)
- PK as treatment B plus
  - Sulphate of ammonia (S)
  - Calcium nitrate (C)
  - Urea (U)
  - Ammonium nitrate (A)

  each at rates 1 and 2 of N.

Basal dressing: None.

Cultivations, etc.: Ploughed: Dec 13, 1961. Fertilisers broadcast for barley, barley drilled at 2½ bushels per acre: Feb 21, 1962. Fertilisers broadcast for ryegrass, ryegrass sown at 30 lb per acre: Apr 13. Fertilisers applied for kale: Apr 24. Kale drilled at 3 lb per acre: Apr 25. Barley sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: May 30. Grass cut twice: July 30 and Oct 1. Barley combine harvested: Aug 27. Kale harvested: Nov 6 and 15. Varieties: Kale - Thousand head (Canson); ryegrass - S22; barley - Proctor.

Note: For previous year's results see "Results of the Field Experiments" 60/B/8 and 61/B/7.

Standard errors per plot.
- Kale, fresh weight: 0.973 tons per acre or 4.6% (13 d.f.)
- Ryegrass, dry matter:
  - 1st cut: 2.53 cwt per acre or 11.3% (13 d.f.)
  - 2nd cut: 2.71 cwt per acre or 13.6% (13 d.f.)
  - Total of 2 cuts: 3.06 cwt per acre or 7.2% (13 d.f.)
- Barley, grain (at 85% dry matter): 1.86 cwt per acre or 6.0% (13 d.f.)

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Summary of Results

Fertiliser	Kale fresh weight: tons per acre	Ryegrass dry matter: cwt per acre 1st cut	2nd cut	Total of 2 cuts	Barley (at 85% dry matter): cwt per acre Grain	Straw
	(±0.688)	(±1.79)	(±1.91)	(±2.16)	(±1.31)	
0	10.69	5.3	4.6	9.9	12.1	5.8
B	12.73	8.0	5.4	13.4	13.2	7.0
F_1	21.82	21.7	19.3	41.0	31.3	20.1
F_2	25.11	28.1	25.8	53.8	38.1	29.3
P_1	21.08	20.2	20.9	41.1	30.6	20.6
P_2	24.87	24.0	23.2	47.2	36.5	29.4
S_1	17.95	24.7	15.5	40.2	27.1	18.1
S_2	23.24	24.7	31.7	56.4	38.2	29.9
C_1	20.75	23.2	18.3	41.5	30.7	22.3
C_2	26.31	27.3	26.7	54.0	37.4	28.8
U_1	21.10	23.7	17.3	41.0	27.7	19.1
U_2	22.68	25.4	25.6	51.0	39.7	28.8
A_1	20.74	27.0	18.7	45.7	30.3	20.9
A_2	24.08	29.3	27.3	56.6	40.8	30.1
Mean	20.94	22.3	20.0	42.3	30.9	22.1
Mean dry matter % as harvested:		17.6	20.7	19.2	81.0	67.5

Treatments

0 = No fertiliser
B = P_2O_5 and K_2O each at 0.3 cwt to barley and each at 1.0 cwt to kale and ryegrass, as triple superphosphate and potassium bicarbonate.
F = Compound fertiliser, 20% N, 10% P_2O_5, 10% K_2O at 0.3(1), 0.6(2) cwt N to barley and 1.0(1), 2.0(2) to kale and ryegrass.
P = Sulphate of ammonia, granular superphosphate and muriate of potash at rates equivalent to treatments F (1) and (2).
S = Sulphate of ammonia Plus PK as treatment B.
C = Calcium nitrate " " " " ".
U = Urea " " " " ".
A = Ammonium nitrate " " " " ".

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62/B/8.1

RESIDUAL PHOSPHATE ROTATIONS

The long term and residual effects of a number of phosphate fertilisers compared with superphosphate - Great Field IV and Sawyers I 1962, the third year.

Rotation: Potatoes, barley, swedes.

Note: Swede tops are ploughed in.

Design: Great Field IV: 1 randomised block of 12 plots per crop.
Sawyers I: 2 randomised blocks of 12 plots per crop.

Area of each plot (acres):
Great Field IV: 0.0193. Area harvested: Potatoes and barley - 0.0129, swedes - 0.0096.
Sawyers I: 0.0212. Area harvested: Potatoes and barley - 0.0141, swedes - 0.0106.

Treatments:
Granular superphosphate treatments broadcast in spring before sowing or ridging:-
1. No phosphate.
2. 0.25 cwt P_2O_5 per acre per year.
3. 0.50 cwt P_2O_5 per acre per year.
4. 0.75 cwt P_2O_5 per acre in 1962.
5. 1.50 cwt P_2O_5 per acre in 1962.

Phosphate fertilisers ploughed in at 3.0 cwt P_2O_5 per acre in September 1959.
6. Nitrophosphate I (17.1% P_2O_5, none water soluble)
7. Nitrophosphate II (18.8% P_2O_5, one quarter water soluble)
8. Nitrophosphate III (22.4% P_2O_5, half water soluble)
9. Gafsa rock phosphate (28.9% P_2O_5)
10. Bessemer basic slag (15.2% P_2O_5)
11. Potassium metaphosphate* (57.9% P_2O_5, 38.8% K_2O)
12. Granular superphosphate (20.4% P_2O_5)

*Note: To balance the K_2O content of potassium metaphosphate, all the other treatments included 2.0 cwt K_2O per acre as sulphate of potash in autumn 1959.

Basal dressings per acre: Broadcast in spring before sowing or ridging:
N as 'Nitro-Chalk' 21:-
To potatoes: 1.2 cwt; to barley: 0.6 cwt; to swedes: 0.5 cwt.
K_2O as sulphate of potash:-
To potatoes: 1.0 cwt; to barley: 1.0 cwt; to swedes: 1.0 cwt.

Cultivations, etc. (both fields, except as indicated):
Ploughed: Nov 16, 1961. Ground chalk applied at 20 cwt per acre: Feb 20.

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Potatoes: Fertilisers applied: Mar 26, 1962. Potatoes planted: Mar 27. Earthed up: July 6. Sprayed with maneb at 1½ lb in 18 gallons per acre: July 19. Sprayed with copper fungicide at 5 lb in 20 gallons per acre: Aug 10. Sprayed with indiluted BOV at 15 gallons per acre: Sept 25. Lifted: Sawyers I - Oct 5, Great Field IV - Oct 12. Variety: Majestic.

Barley: Fertilisers applied: Mar 8, 1962. Seed drilled at 2¼ bushels per acre: Mar 15. Sawyers I sprayed with MCPA/TBA and Great Field IV with MCPA/MBA, each at 4 pints in 40 gallons per acre: May 30. Combine harvested: Aug 29. Variety: Proctor.

Swedes: P & K fertilisers applied: May 14, 1962. Seed hand drilled at 2½ lb per acre: May 23. 'Nitro-Chalk' applied: May 24. Singled: July 2. Lifted: Nov 8. Variety: Wilhelmsburger.

Standard errors per plot:

Sawyers I

Potatoes, Total tubers: 1.406 tons per acre or 12.7% (11 d.f.)

Barley, Grain (at 85% dry matter): 4.18 cwt per acre or 11.9% (11 d.f.)

Swedes, Roots: 1.489 tons per acre or 7.8% (11 d.f.)

Note (1). There were gaps in the swedes on some plots of both fields. It was decided that no adjustment should be made and the yields shown are as harvested.

Note (2). For details of the previous year's results see "Results of the Field Experiments" 60/B/9 and 61/B/8.

Summary of Results

Potatoes

Phosphate		Total tubers: tons per acre				Percentage ware (1½" riddle)			
		Great Field IV		Sawyers I		Great Field IV		Sawyers I	
		Mean	Increase	Mean	Increase	Mean	Increase	Mean	Increase
				(±0.995)	(±1.406)				
None	1	10.70		8.35		96.8		93.8	
	2	13.52	+2.82	11.41	+3.06	95.7	-1.1	94.5	+0.7
	3	13.72	+3.02	11.32	+2.97	94.7	-2.1	95.2	+1.4
	4	14.42	+3.72	11.74	+3.39	94.2	-2.6	94.6	+0.8
	5	16.63	+5.93	12.10	+3.75	96.3	-0.5	93.3	-0.5
	6	14.25	+3.55	9.94	+1.59	90.9	-5.9	93.0	-0.8
	7	12.85	+2.15	12.31	+3.96	94.1	-2.7	96.0	+2.2
	8	12.44	+1.74	12.01	+3.66	93.4	-3.4	93.8	0.0
	9	11.95	+1.25	10.98	+2.63	94.8	-2.0	94.7	+0.9
	10	12.62	+1.92	11.47	+3.12	93.7	-3.1	95.4	+1.6
	11	13.74	+3.04	10.59	+2.24	92.7	-4.1	95.3	+1.5
	12	13.06	+2.36	10.92	+2.57	95.7	-1.1	93.6	-0.2
Mean		13.33		11.09		94.4		94.4	

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Phosphate		Great Field IV Mean	Great Field IV Increase	Sawyers I Mean	Sawyers I Increase	Great Field IV Mean	Great Field IV Increase	Sawyers I Mean	Sawyers I Increase
		Barley							
		Grain (at 85% dry matter): cwt per acre				Straw (at 85% dry matter): cwt per acre			
				(±2.95)	(±4.18)				
None	1	35.6		34.0		32.6		20.5	
	2	39.5	+3.9	31.8	-2.2	35.2	+2.6	16.6	-3.9
	3	34.7	-0.9	34.4	+0.4	38.3	+5.7	22.1	+1.6
	4	35.9	+0.3	34.7	+0.7	36.7	+4.1	21.0	+0.5
	5	40.3	+4.7	38.1	+4.1	41.8	+9.2	26.3	+5.8
	6	39.8	+4.2	31.4	-2.6	32.9	+0.3	16.5	-4.0
	7	39.3	+3.7	36.1	+2.1	35.7	+3.1	22.1	+1.6
	8	34.8	-0.8	30.4	-3.6	32.1	-0.5	16.8	-3.7
	9	41.7	+6.1	35.6	+1.6	34.4	+1.8	19.7	-0.8
	10	38.2	+2.6	39.2	+5.2	32.0	-0.6	23.7	+3.2
	11	38.2	+2.6	36.9	+2.9	33.8	+1.2	20.2	-0.3
	12	38.6	+3.0	36.9	+2.9	33.1	+0.5	23.1	+2.6
Mean		38.1		34.9		34.9		20.7	
Mean dry matter % as harvested:		82.9		83.2		48.6		65.4	

Swedes, Roots: tons per acre

				(±1.053)	(±1.489)
None	1	3.89		5.00	
	2	18.95	+15.06	17.97	+12.97
	3	25.35	+21.46	19.15	+14.15
	4	23.28	+19.39	19.96	+14.96
	5	24.63	+20.74	20.75	+15.75
	6	23.09	+19.20	25.91	+20.91
	7	24.02	+20.13	18.52	+13.52
	8	19.87	+15.98	23.38	+18.38
	9	26.58	+22.69	19.04	+14.04
	10	23.90	+20.01	19.37	+14.37
	11	22.53	+18.64	20.81	+15.81
	12	24.23	+20.34	20.62	+15.62
Mean		21.69		19.20	

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62/B/9.1

N LEVELS AND RESIDUES ROTATION

Direct and residual effects of sulphate of ammonia - Long Hoos III 1962, the 3rd year.

Rotation: Wheat, potatoes.

Design (eachcrop): 3 randomised blocks of 9 plots each.

Area of each plot: 0.0212 acres. Area harvested: 0.0141 acres.

Treatments. All combinations of:-
Nitrogen (applied as sulphate of ammonia) at 3 levels in 1961.
Nitrogen at 3 levels in 1960, and repeated on the same plots in 1962.
To wheat: None; 0.5; 1.0 cwt N per acre.
To potatoes: None; 0.75; 1.50 cwt N per acre.

Basal dressing (per acre):
To wheat: $2\frac{1}{4}$ cwt compound fertiliser, 14% P_2O_5, 28% K_2O combine drilled.
To potatoes: 5 cwt compound fertiliser, 14% P_2O_5, 28% K_2O broadcast on the flat.

Cultivations, etc.:
Wheat: Ploughed: Oct 6, 1961. Rotary cultivated: Oct 9. Seed drilled at $2\frac{1}{2}$ bushels per acre: Oct 12. Sulphate of ammonia applied: Apr 9, 1962. Sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: Apr 24. Combine harvested: Sept 3. Variety: Cappelle.
Potatoes: Ploughed: Oct 12, 1961. Rotary cultivated: Mar 26, 1962. Basal fertiliser and sulphate of ammonia applied: Apr 11. Ridged, potatoes planted: Apr 13. Earthed up: July 7. Sprayed with maneb at $1\frac{1}{2}$ lb in 18 gallons per acre: July 19. Sprayed with copper oxychloride fungicide at 2.3 lb Cu in 20 gallons per acre: Aug 10 and again Aug 24. Sprayed with undiluted BOV at 15 gallons per acre: Sept 25. Lifted: Oct 11. Variety: Ulster Supreme.

Standard errors per plot.
Wheat. Grain (at 85% dry matter): 2.59 cwt per acre or 6.7% (16 d.f.)
Potatoes. Total tubers: 0.790 tons per acre or 9.4% (16 d.f.)

Note: For details of the previous years results see "Results of the Field Experiments" 60/B/10 and 61/B/9.

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Summary of Results

Wheat, Grain (at 85% dry matter): cwt per acre

N: cwt per acre in 1960 & 1962

	None	0.5	1.0	Mean
N: cwt per acre to potatoes in 1961		(±1.49)		(±0.86)
None	28.2	34.2	42.2	34.8
0.75	30.6	40.2	44.4	38.4
1.50	37.1	43.9	48.4	43.1
Mean (±0.86)	32.0	39.4	45.0	38.7

Mean dry matter % as harvested: 84.0

Potatoes

N: cwt per acre in 1960 & 1962

	None	0.75	1.50	Mean
N: cwt per acre to wheat in 1961	Total tubers: tons per acre			
		(±0.455)		(±0.263)
None	4.95	8.95	11.64	8.52
0.5	4.60	8.90	10.76	8.08
1.0	4.94	9.42	11.53	8.63
Mean (±0.263)	4.83	9.09	11.31	8.40
N: cwt per acre to wheat in 1961	Percentage ware (1½" riddle)			
None	94.6	96.6	96.7	95.9
0.5	94.6	96.9	97.6	96.4
1.0	94.9	96.1	97.2	96.1
Mean	94.7	96.5	97.2	96.1

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62/B/10.1

WEEDKILLER CULTIVATION ROTATION

Great Harpenden I 1962, the second year

A comparison of weed control by various cultivation methods and by pre-emergence weedkillers.

For previous history, rotation etc., see "Numerical Results of the Field Experiments" 61/B/10.

Area harvested (acres): Beans - 0.0201; Wheat, potatoes, barley - 0.0107 (sub plots).

Prometryne, at 2½ lb active material in 20 gallons per acre, has replaced simazine as the weedkiller on potatoes.

Basal dressings per acre:- Spring wheat: 3 cwt compound fertiliser (16% N, 9% P_2O_5, 9% K_2O) combine drilled. All other crops - as 1961.

Operations in 1962

Note: Spring beans and spring wheat were again sown instead of winter beans and winter wheat.

Cultivations, etc.: All plots except barley plots sprayed with dalapon at 8 lb in 40 gallons per acre: Sept 7, 1961 and again at 4 lb in 40 gallons per acre: Sept 26.

Spring beans: T plots rigid-tine cultivated 3 times: Nov 1, 3 and 4, 1961. P and reserve plots ploughed: Nov 6. R plots rotary cultivated: Nov 23. All plots except R plots spring-tine cultivated twice: Feb 23 and Mar 13, 1962. R plots rotary cultivated: Mar 13. Seed drilled at 200 lb per acre, all plots harrowed: Mar 14. X plots sprayed with simazine: Apr 11. M and reserve plots mechanically weeded: May 2. M and reserve plots tractor hoed 3 times: May 10, June 1 and June 20. Combine harvested: Sept 20. Variety: Tick 30B.

Spring wheat: T plots rigid-tine cultivated 3 times: Nov 1, 3 and 4, 1961. P and reserve plots ploughed: Nov 6. R plots rotary cultivated: Nov 23. Spring-tine cultivated twice (except R plots): Mar 2 and 15, 1962. R plots rotary cultivated, seed drilled at 3 bushels per acre, all plots harrowed: Mar 16. Rolled: Apr 30. H sub plots and reserve plots sprayed with MCPA/MBA at 4 pints in 40 gallons per acre: May 28. Combine harvested: Sept 14. Variety: Jufy I.

Potatoes: T plots rigid-tine cultivated 3 times: Nov 1, 3 and 4, 1961. P and reserve plots ploughed: Nov 6. R plots rotary cultivated: Nov 22. Spring-tine cultivated twice (except R plots), R plots rotary cultivated once: Mar 22, 1962. Basal compound fertiliser applied: Mar 23. Seed machine planted: Mar 27. Rolled: Mar 28. Mechanically weeded (except X plots): May 1. Chain harrowed (except X plots): May 2.

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Grubbed (except X plots): May 4. X plots sprayed with prometryne: May 23. Reridged (except X plots): May 31. Y plots sprayed with prometryne: June 2. Mechanically weeded (except X and Y plots): June 7. M and reserve plots grubbed: June 18. M, reserve plots and E sub plots of X plots grubbed and ridged: July 5 Sprayed with maneb at 1½ lb active material in 18 gallons per acre: July 20. Sprayed with copper oxychloride fungicide at 2.3 lb Cu in 20 gallons per acre: Aug 10. Sprayed with undiluted BOV at 15 gallons per acre: Sept 25. Lifted: Oct 12. Variety: Majestic.

Barley: T plots rigid-tine cultivated twice, P and reserve plots ploughed: Oct 17, 1961. R plots rotary cultivated: Nov 22. Spring-tine cultivated twice (except R plots): Feb 23 and Mar 15, 1962. R plots rotary cultivated, seed drilled at 2¼ bushels per acre, all plots harrowed: Mar 16. Rolled: Apr 30. H sub plots and reserve plots sprayed with MCPA/MBA at 4 pints in 40 gallons per acre: May 28. Combine harvested: Aug 27. Variety: Proctor.

Standard errors per plot.

Spring beans, grain (at 85% dry matter): 3.84 cwt per acre or 13.2% (15 d.f.)

Spring wheat, grain (at 85% dry matter)
- Whole plot: 2.49 cwt per acre or 7.6% (15 d.f.)
- Sub plot: 1.27 cwt per acre or 3.9% (18 d.f.)

Potatoes, total tubers
- Whole plot: 1.458 tons per acre or 10.3% (12 d.f.)
- Sub plot: 0.900 tons per acre or 6.3% (15 d.f.)

Barley, grain (at 85% dry matter)
- Whole plot: 3.21 cwt per acre or 7.8% (12 d.f.)
- Sub plot: 1.60 cwt per acre or 3.9% (15 d.f.)

Summary of Results

Beans, grain (at 85% dry matter): cwt per acre

Treatment after planting	Initial cultivation P	R	T	Mean
M (±2.72)	27.0	31.1	27.8	28.6 (±1.57)
X (±1.92)	29.4	30.0	28.1	29.2 (±1.11)
Mean (±1.57)	28.6	30.3	28.0	29.0

Reserve plots 29.3 (±1.57)
General mean: 29.1
Mean dry matter % as harvested: 78.0

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Spring wheat, grain (at 85% dry matter): cwt per acre

	Initial cultivation P	R	T	Mean
Mean (±1.02)	31.8	33.7	34.0	33.2
Treatment in 1961				
M (±1.76)	32.5	33.2	35.1	33.6 (±1.02)
X (±1.24)	31.5	34.0	33.4	33.0 (±0.72)
Spray in 1962				
- (±1.08)(2)	33.2	33.7	35.4	34.1
H	30.5	33.8	32.5	32.3
Diff (±0.74)	-2.7	+0.1	-2.9	-1.8 (±0.42)

Reserve plots: 30.8 (±1.02)

General mean: 32.6

Mean dry matter % as harvested: 74.2

Potatoes

Treatment after planting	Initial cultivation P	R	T	Mean	Not earthed up	Earthed up
	Total tubers: tons per acre					
	(±1.031)			(±0.595)	(±0.367)(1)	(±0.649)(2)
M	14.97	15.44	14.44	14.95	14.92	14.98
X	14.09	12.63	12.15	12.95	13.17	12.74
Y	13.11	15.51	14.29	14.30		
Mean (±0.595)	14.06	14.53	13.62	14.07		

Reserve plots: 14.56 (±0.595)

General mean: 14.19

(1) For use in vertical and interaction comparisons
(2) For use in horizontal and diagonal comparisons

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Potatoes

Treatment after planting	Initial cultivation P	R	T	Mean	Not earthed up	Earthed up
	Percentage ware (1½" riddle)					
M	96.4	97.1	96.4	96.6	96.2	97.1
X	96.9	97.2	96.8	97.0	97.1	96.8
Y	95.7	96.3	95.7	95.9		
Mean	96.3	96.9	96.3	96.5		

Reserve plots: 95.8

General mean: 96.3

Barley, grain (at 85% dry matter): cwt per acre

	Initial cultivation P	R	T	Mean
Mean (±1.31)	41.8	39.8	38.3	40.0
Treatment in 1961		(±2.27)		(±1.31)
M	40.5	41.0	38.3	39.9
X	44.3	40.3	36.9	40.5
Y	40.6	38.3	39.8	39.6
Spray in 1962				
- (±1.39)*	42.8	41.0	38.8	40.8
H	40.8	38.7	37.9	39.1
Diff (±0.92)	-2.0	-2.3	-0.9	-1.7 (±0.53)

Reserve plots: 43.9 (±1.31)

General mean: 41.0

Mean dry matter % as harvested: 82.2

*For use in horizontal and diagonal comparisons.

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62/B/11.1

WEEDKILLER CULTIVATION ROTATION

A comparison of weed control by various cultivation methods and by a pre-emergence weedkiller - Woburn Great Hill I and II 1962, the third year.

For history, rotation etc. see "Results of the Field Experiments" 60/B/11 and 61/B/11.

Area of each plot (acres): 0.0482. Area harvested: Potatoes - 0.0107 (X plots - 0.0054); barley - 0.0230.

Treatments:

Potatoes: All combinations of:-

Initial cultivations: Ploughed (P); rotary cultivated (R); rigid-tine cultivated (T).

Treatments after planting: Normal cultivations (M); prometryne* applied after planting (X); prometryne* applied after early cultivations (Y).

Barley: All combinations of:-

Initial cultivations: As for potatoes.

Simazine to potatoes 1961: None (0); after planting (X); after early cultivations (Y).

*Prometryne at 2½ lb active ingredient in 40 gallons per acre.

Basal dressings per acre:

Potatoes: 10 cwt compound fertiliser, 17% N, 11% P_2O_5, 22% K_2O.

Barley: 3½ cwt compound fertiliser, 16% N, 9% P_2O_5, 9% K_2O, combine drilled.

Cultivations, etc.

Potatoes: Subsoiled: Oct 27, 1961. T plots rigid-tine cultivated 3 times: Nov 17. P plots ploughed: Nov 22. R plots rotary cultivated: Mar 2, 1962. P and T plots spring-tine cultivated: Mar 3 and 17. Basal dressing applied: Mar 19. Potatoes machine planted: Mar 20. M and Y plots chain harrowed: Apr 24. M and Y plots earthed up and harrowed: May 1. M and Y plots harrowed, X plots sprayed with prometryne: May 4. M and Y plots grubbed: May 14. Y plots earthed up: May 16 and 25. Y plots sprayed with prometryne, M plots harrowed: May 26. M plots grubbed and harrowed: May 31. M plots grubbed: June 15. M plots hand hoed: June 22. M plots earthed up: June 25. Sprayed twice with copper oxychloride fungicide at 2.3 lb Cu in 40 gallons per acre: July 23 and Aug 9. Haulm destroyed with diquat at 3 pints in 40 gallons per acre: Sept 22. Lifted: Oct 4. Variety: Majestic.

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Barley: Subsoiled: Oct 27, 1961. T plots rigid-tine cultivated twice: Nov 17. P plots ploughed: Nov 22. P and T plots spring-tine cultivated: Feb 23, 1962. R plots rotary cultivated, P and T plots spring-tine harrowed, seed drilled at 2¼ bushels per acre: Mar 2. Sprayed with MCPA/MBA at 4 pints in 40 gallons per acre: May 14. Combine harvested: Aug 30. Variety: Proctor.

Note: When potatoes of treatment X were sprayed sloping ground caused the delivery of a low rate of weedkiller affecting half of each plot. The affected halves were therefore mechanically cultivated and only the yields from the correctly treated halves were recorded.

Standard errors per plot.
Potatoes, total tubers: 1.761 tons per acre or 15.8% (8 d.f.)
Barley, grain (at 85% dry matter): 3.14 cwt per acre or 15.6% (8 d.f.)

Summary of Results

Potatoes

Treatments after planting	Initial cultivation P	R	T	Mean
Total tubers: tons per acre				
		(±1.245)		(±0.719)
M	11.51	12.88	13.15	12.52
X	11.81	8.99	8.21	9.67
Y	10.36	11.37	12.31	11.35
Mean (±0.719)	11.23	11.08	11.23	11.18
Percentage ware (1½" riddle)				
M	94.8	94.8	93.2	94.3
X	91.2	88.3	84.6	88.1
Y	91.9	92.7	92.4	92.3
Mean	92.7	91.9	90.1	91.6

Initial cultivations

P = Ploughed
R = Rotary cultivated
T = Rigid-tine

Treatments after planting

M = Normal cultivations
X = Prometryne applied after planting
Y = Prometryne applied after early cultivations

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Barley

Simazine to potatoes 1961	Initial cultivation P	R	T	Mean
Grain (at 85% dry matter): cwt per acre				
		(±2.22)		(±1.28)
0	20.3	23.3	21.9	21.8
X	18.8	18.6	19.3	18.9
Y	18.8	21.4	18.3	19.5
Mean (±1.28)	19.3	21.1	19.8	20.1

Mean dry matter % as harvested: 83.6

Initial cultivation

P = Ploughed
R = Rotary cultivated
T = Rigid-tine

Simazine to potatoes 1961

0 = None
X = After planting
Y = After early cultivations

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62/C/1.1

CEREALS AND BEANS ROTATIONS

The effect of crop sequences on the incidence of cereal foot and root rot diseases - Great Field I 1962 - the 6th and last year.

Design: Three series each of 3 randomised blocks of 6 plots, starting in each of the years 1957, 1958 and 1959.

Area of each plot: 0.0305 acres. Area harvested (sub plot): 0.0096 acres.

Treatments:

Crop sequences for each series:

1st year:	WW	SW	0	WW	B	WW
2nd year:	WW	WW	WW	0	WW	0
3rd year:	SW	SW	SW	SW	B	Be

WW = Winter wheat, SW = Spring wheat, 0 = Oats, B = Barley, Be = Beans.

In the 4th year the plots are split for N and all cropped with winter wheat, the series starting in 1959 falling due for this treatment this year, and receiving N at 0.5, 1.0 cwt per acre in 2 doses, in March and May, as 'Nitro-Chalk'.

Basal dressing: 1.6 cwt compound fertiliser (20% P_2O_5, 20% K_2O) per acre combine drilled; all blocks received 23 cwt ground chalk per acre in Nov 1956 and 54 cwt per acre in Oct 1960.

Cultivations, etc.: Ploughed: Sept 14, 1961. Seed drilled at 2½ bushels per acre: Oct 10. 'Nitro-Chalk' applied: Mar 2 and May 4, 1962. Sprayed with CMPP/2,4-D at 7 pints in 40 gallons per acre: Apr 25. Combine harvested: Sept 3. Variety: Cappelle.

Note: Estimates of plant height, % area lodged, incidence of Eyespot (Cercosporella herpotrichoides) and Take-all (Ophiobolus graminis) and counts of plants and shoots were made.

Standard errors per plot, Grain (at 85% dry matter):
Whole plot: 2.44 cwt per acre or 5.9% (10 d.f.)
Sub plot: 3.78 cwt per acre or 9.1% (12 d.f.)

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62/C/1.2

Summary of Results

Winter Wheat. Grain (at 85% dry matter): cwt per acre

Crop in 1959 1960 1961	WW WW SW	SW WW SW	O WW SW	WW O SW	B WW B	WW O Be	Mean
N cwt per acre			(±2.09)*				
0.5	41.0	37.7	31.9	29.5	38.6	52.9	38.6
1.0	48.8	42.1	39.8	36.5	40.6	56.1	44.0
Mean (±1.40)	44.9	39.9	35.8	33.0	39.6	54.5	41.2
Diff.(±3.09)	7.8	4.4	7.9	7.0	2.0	3.2	5.4 (±1.26)

Mean dry matter % as harvested: 84.2

*For use only in horizontal and diagonal comparisons.

Crops

WW = Winter wheat
SW = Spring wheat
O = Oats
B = Barley
Be = Beans

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62/C/2.1

WINTER WHEAT

The comparison of different one year leys as a preparation for wheat - Stackyard 1962 - the 2nd year.

Design: 4 randomised blocks of 18 plots each, each plot split into 3 for the application of nitrogen.

Area of each sub plot: 0.0053 acres. Area harvested: 0.0046 acres.

Treatments. All combinations of:-

Whole plots:

Leys undersown 1960 and cut 1961, with nitrogen as follows:-
Clover: None (Co).
Ryegrass: None (Ro); 1 cwt (R1); 2 cwt (R2) N per acre.
Clover-ryegrass: None (CRo); 1 cwt (CR1) N per acre.

Potassium to wheat: None; 1.2; 2.4 cwt K_2O per acre, half ploughed in as muriate of potash, half combine drilled as compound fertilisers (16% P_2O_5, 16% K_2O or 14% P_2O_5, 28% K_2O) - in order to include basal P_2O_5 described below.

Sub plots:

Nitrogen to wheat: None; 0.5; 1.0 cwt N per acre as 'Nitro-Chalk' applied in 2 equal dressings.

Basal dressings per acre:
To barley nurse crop 1960: 3 cwt compound fertiliser (16% N, 9% P_2O_5, 9% K_2O) combine drilled.
To leys, combine drilled in seedbed 1960: 1½ cwt superphosphate.
To wheat 1962: 0.6 cwt P_2O_5 combine drilled, either as granular superphosphate, or as compound fertilisers (16% P_2O_5, 16% K_2O or 14% P_2O_5, 28% K_2O).

Cultivations, etc.: Ploughed: Sept 28, 1961. Seed drilled at 150 lb per acre: Oct 4. 1st dressing of 'Nitro-Chalk' applied: Mar 23, 1962. Sprayed with CMPP at 6 pints in 40 gallons per acre: Apr 24. 2nd dressing of 'Nitro-Chalk' applied: May 1. Green crop samples taken: June 13. Combine harvested: Sept 10. Variety: Cappelle.

Note: For details of the previous year's results see 'The Numerical Results of the Field Experiments' 61/C/2.

Standard errors per plot. Grain (at 85% dry matter):
Whole plot: 2.38 cwt per acre or 5.1% (51 d.f.)
Sub plot: 3.08 cwt per acre or 6.6% (108 d.f.)

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Summary of Results

Grain (at 85% dry matter): cwt per acre

N to leys 1961

	C_o	R_o	R_1	R_2	CR_o	CR_1	Mean
K_2O: cwt per acre 1962			(±1.19)				(±0.49)
None	53.5	42.5	43.0	39.1	45.0	44.8	44.6
1.2	53.0	46.2	45.2	44.9	49.6	45.9	47.5
2.4	54.3	44.8	44.5	45.0	47.8	47.4	47.3
N: cwt per acre 1962			(±0.89)(1)	(±1.00)(2)			(±0.36)
None	47.3	31.2	33.3	33.6	38.4	35.8	36.6
0.5	55.9	46.3	45.7	43.6	49.7	47.4	48.1
1.0	57.6	56.0	53.8	51.7	54.3	55.0	54.7
Mean (±0.69)	53.6	44.5	44.2	43.0	47.5	46.0	46.5

	K_2O: cwt per acre 1962		
	None	1.2	2.4
N: cwt per acre 1962	(±0.63)(1)	(±0.71)(2)	
None	35.1	37.9	36.8
0.5	45.9	49.5	48.9
1.0	52.9	55.0	56.2

(1) For use in vertical and interaction comparisons
(2) For use in horizontal and diagonal comparisons

Mean dry matter % as harvested: 73.9

Ley 1961	N: cwt per acre 1961
C_o = Clover	None
R_o = Ryegrass	None
R_1 = "	1
R_2 = "	2
CR_o = Clover-ryegrass	None
CR_1 = " "	1

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62/C/3.1

BARLEY

Residues of grass species and nitrogen - Harwoods Piece 1962, the 5th year.

Design: 4 × 3 × 4 in 4 blocks of 12 plots each, with certain high order interactions confounded with block differences.

Area of each plot: 0.0087 acres. Area harvested: 0.0077 acres.

Treatments. All combinations of:-

Grass species sown in spring 1958:

S37 Cocksfoot at 30 lb per acre	(C)
S215 Meadow Fescue at 30 lb per acre	(M)
S24 Perennial Ryegrass at 25 lb per acre	(R)
Timothy "Scotia" at 20 lb per acre	(T)

Nitrogen (applied 1958-1960): None; 0.3; 0.6 cwt N per acre as 'Nitro-Chalk', applied for each cut.

Nitrogen applied to barley 1962: None; 0.3; 0.6; 0.9 cwt N per acre as 'Nitro-Chalk'.

Note: The 1962 treatments were so arranged as to render negligible the effects of the 1961 K treatments, which are therefore ignored.

Basal dressing: 2 cwt compound fertiliser (14% P_2O_5, 28% K_2O) per acre combine drilled.

Cultivations, etc.: Sprayed with dalapon at 8 lb in 40 gallons per acre: Sept 7, 1961 and again at 4 lb in 40 gallons per acre: Sept 27. Ploughed: Nov 8. Seed drilled at $2\frac{1}{2}$ bushels per acre: Feb 23, 1962. 'Nitro-Chalk' applied: Mar 20. Sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: May 14. Combine harvested: Aug 29. Variety: Proctor.

Note: For details of the previous years' results see 'Results of the Field Experiments' 58/Cg/3, 59/Cg/3, 60/Ci/2 and 61/C/3.

Standard error per plot.

Grain (at 85% dry matter): 2.21 cwt per acre or 6.1% (15 d.f.)

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62/C/3.2

Summary of Results

Species of grass, 1958 - 60

	C	M	R	T	Mean
	Grain (at 85% dry matter): cwt per acre				
N: cwt per acre 1958 - 60*		(±1.10)			(±0.55)
None	34.7	38.5	35.3	34.9	35.8
0.3	35.2	35.8	38.1	34.9	36.0
0.6	38.2	37.3	36.0	37.9	37.4
N: cwt per acre 1962		(±1.28)			(±0.64)
None	28.4	29.3	27.9	27.8	28.3
0.3	34.5	35.9	33.9	34.6	34.7
0.6	39.4	41.2	40.5	38.6	39.9
0.9	41.9	42.4	43.6	42.6	42.6
Mean (±0.64)	36.0	37.2	36.5	35.9	36.4

	N: cwt per acre 1958 - 60*		
	None	0.3	0.6
N: cwt per acre 1962	(±1.10)		
None	28.0	28.6	28.4
0.3	34.0	33.5	36.6
0.6	38.9	39.4	41.5
0.9	42.5	42.4	43.0

Mean dry matter % as harvested: 83.3

Grass species

C = S37 Cocksfoot at 30 lb per acre
M = S215 Meadow Fescue at 30 lb per acre
R = S24 Perennial Ryegrass at 25 lb per acre
T = Timothy "Scotia" at 20 lb per acre

*For each cut of grass

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62/C/3.3

Species of grass, 1958 - 60

	C	M	R	T	Mean
	Straw (at 85% dry matter): cwt per acre				
N: cwt per acre 1958 - 60*					
None	28.5	30.9	27.9	26.7	28.5
0.3	27.7	29.6	28.8	29.0	28.8
0.6	30.6	30.7	28.1	30.3	29.9
N: cwt per acre 1962					
None	19.2	19.6	16.2	17.4	18.1
0.3	26.5	28.5	25.2	27.0	26.8
0.6	33.0	36.2	32.6	32.8	33.6
0.9	37.2	37.4	39.0	37.5	37.8
Mean	29.0	30.4	28.3	28.7	29.1

N: cwt per acre 1958 - 60*

	None	0.3	0.6
N: cwt per acre 1962			
None	17.9	18.2	18.0
0.3	25.0	26.2	29.2
0.6	33.6	32.3	34.9
0.9	37.5	38.3	37.5

Mean dry matter % as harvested: 85.9

Grass species

C = S37 Cocksfoot at 30 lb per acre
M = S215 Meadow Fescue at 30 lb per acre
R = S24 Perennial Ryegrass at 25 lb per acre
T = Timothy "Scotia" at 20 lb per acre

*For each cut of grass

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BARLEY

Effects of green manures, N and straw - Stackyard 1962, the 3rd year.

Design: 2 replicates of a 3 × 3 × 3 in 6 randomised blocks of 9 plots each, certain high order interactions being confounded with block differences.

Area of each plot: 0.0212 acres. Area harvested: 0.0140 acres.

Treatments. All combinations of:-
Nitrogen to barley 1962: None; 0.3; 0.6 cwt N per acre applied as 'Nitro-Chalk'.
Nitrogen to barley 1960 and 1961: None; 0.3; 0.6 cwt N per acre applied as 'Nitro-Chalk'.
Green manures and straw: None; ryegrass undersown 1960 and 1961; ryegrass undersown 1960 and 1961 plus straw left on the plot after harvest 1960 and 1961. (0; R; RS)

Basal dressing: 2 cwt compound fertiliser (20% P_2O_5, 20% K_2O) per acre combine drilled.

Cultivations, etc.: Straw spread on "S" plots: 21 Aug, 1961. All plots ploughed: 14 Dec. 'Nitro-Chalk' applied: 21 Feb, 1962. Seed combine drilled at 2½ bushels per acre with basal fertiliser: 22 Feb. Sprayed with 2,4-DP/MCPA at 8 pints in 40 gallons per acre: 24 May. Combine harvested: 27 Aug. Variety: Proctor.

Note: (1) For the previous years' results see "Results of the Field Experiments" 60/Cb/2 and 61/C/4.
(2) Samples were taken for the estimation of the incidence of Take-all (Ophiobolus graminus)

Standard error per plot.
Grain (at 85% dry matter): 1.40 cwt per acre or 4.5% (22 d.f.)

Erratum to "Numerical Results of Field Experiments" 1961 page 61/C/4.1.
The area of each plot should be 0.0212 acres and not 0.0114 as given.

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Summary of Results

Grain (at 85% dry matter): cwt per acre

Green manure and straw 1960 & 1961	N: cwt per acre 1962 None	0.3	0.6	Green manure and straw 1960 & 1961 0	R	RS	Mean
		(±0.57)					
0	21.9	32.4	38.0				
R	22.5	32.7	37.9				
RS	22.3	31.9	38.4				
N: cwt per acre 1960 & 1961							
		(±0.57)			(±0.57)		(±0.33)
None	21.8	31.7	37.8	30.0	31.5	29.7	30.4
0.3	21.8	32.3	37.8	30.4	30.5	31.0	30.6
0.6	23.2	33.0	38.7	31.9	31.1	31.8	31.6
Mean (±0.33)	22.2	32.3	38.1	30.8	31.0	30.8	30.9

Mean dry matter % as harvested: 81.2

Green manure and straw

0 = None
R = Ryegrass
RS = Ryegrass and straw

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62/C/5.1

SUGAR BEET

Effects of trefoil and ryegrass green manures and N - Woburn Lansome Field 1962.

Design: 3 randomised blocks of 16 plots each.

Area of each plot: 0.0169 acres. Area harvested: 0.0121 acres.

Treatments. All combinations of:-
Nitrogen: None (0); 0.5; 1.0; 1.5 cwt N per acre as 'Nitro-Chalk'.
Green manures undersown in barley 1961: None; trefoil; ryegrass; ryegrass with 0.6 cwt N per acre as 'Nitro-Chalk'.

Basal dressings per acre:
To barley:- 2 cwt compound fertiliser (16% N, 9% P_2O_5, 9% K_2O) combine drilled.
To sugar beet:- 5 cwt salt; 2¼ cwt compound fertiliser (20% P_2O_5, 20% K_2O).

Cultivations, etc.: Ploughed: Jan 25, 1961. Barley drilled at 2¼ bushels per acre: Mar 8. Trefoil undersown at 30 lb and ryegrass at 40 lb per acre: Apr 21. Barley combine harvested: Aug 20. 'Nitro-Chalk' treatment applied to ryegrass: Aug 21. "Fallow" plots ploughed twice: Sept 4 and Dec 22. All plots ploughed: Feb 2, 1962. Salt applied: Feb 15. 'Nitro-Chalk' treatments and basal dressing applied: Mar 23. Seed drilled at 8 lb per acre: Mar 26. Singled: May 23. Lifted: Oct 23. Varieties: Ryegrass - S22 Italian; barley - Proctor; sugar beet - Klein E. Previous crops: Spring wheat 1959, potatoes 1960.

Standard errors per plot.
Roots (washed): 1.473 tons per acre or 8.3% (30 d.f.)
Total sugar: 5.93 cwt per acre or 9.1% (30 d.f.)

Note: Estimates were made of dry matter and N per acre in green manures just before ploughing.

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Summary of Results

N: cwt per acre

Green manure undersown 1961	None	0.5	1.0	1.5	Mean
	Roots (washed): tons per acre				
		(±0.850)			(±0.425)
None	10.78	17.25	21.15	19.08	17.07
Trefoil	12.80	19.46	20.92	21.33	18.63
Ryegrass	10.46	17.78	19.42	20.37	17.01
Ryegrass + N	14.16	18.52	18.99	22.28	18.49
Mean (±0.425)	12.05	18.25	20.12	20.77	17.79
	Sugar percentage				
None	17.7	18.7	18.5	17.5	18.1
Trefoil	18.6	18.5	18.5	18.1	18.4
Ryegrass	18.8	18.7	18.3	17.9	18.4
Ryegrass + N	18.7	18.0	18.8	17.6	18.3
Mean	18.4	18.5	18.5	17.8	18.3
	Total sugar: cwt per acre				
		(±3.43)			(±1.71)
None	38.1	64.4	78.5	66.7	61.9
Trefoil	47.7	72.2	77.4	77.0	68.6
Ryegrass	39.5	66.6	71.1	73.1	62.6
Ryegrass + N	52.9	66.6	71.3	78.3	67.3
Mean (±1.71)	44.5	67.4	74.6	73.8	65.0

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CLOVER

K and Mg - Woburn Stackyard Series C 1962 the third year.

Design: 4 randomised blocks of 9 plots each.

Area of each plot: 0.0011 acres. Area harvested: 0.0005 acres.

Treatments. All combinations of:-
Mg: None; 29; 58 lb Mg per acre applied as kieserite.
K: None; 95; 190 lb K per acre (approximately 1; 2 cwt K_2O per acre) applied as sulphate of potash.

Basal dressings per acre: 1.0 cwt P_2O_5 as triple superphosphate, 0.2 cwt N as ammonium nitrate in seedbed.

Cultivations, etc.: Magnesium-free calcium carbonate applied at 50 cwt per acre: Dec 13, 1961. Rotary cultivated: Mar 2, 1962. Magnesium-free calcium carbonate applied at 50 cwt per acre: Mar 9. Rotary cultivated: Mar 26. Rotary cultivated, treatments and basal dressings applied, seed sown at 30 lb per acre: Apr 12. Cut twice: Aug 16, Oct 5. Variety: Dorset Marl Red Clover.

Standard errors per plot. Clover dry matter

1st cut:	1.00 cwt per acre or 8.6%	(24 d.f.)
2nd cut:	0.78 cwt per acre or 7.4%	(24 d.f.)
Total of 2 cuts:	1.53 cwt per acre or 6.9%	(24 d.f.)

Note: For details of the previous year's results see "Results of the Field Experiments" 60/Ci/3 and 61/C/7. No yields were taken from the similar experiment on Sawyers Rothamsted as the growth was poor.

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62/C/6.2

Summary of Results

Clover. Dry matter: cwt per acre

K: lb per acre	Mg: lb per acre None	29	58	Mean	Mg: lb per acre None	29	58	Mean
	1st cut				2nd cut			
		(±0.50)		(±0.29)		(±0.39)		(±0.21)
None	5.0	5.5	5.2	5.2	4.0	5.3	4.7	4.6
95	12.9	14.1	14.4	13.8	12.1	13.1	12.6	12.6
190	15.1	16.1	16.1	15.8	13.5	14.9	14.3	14.3
Mean	11.0	11.9 (±0.29)	11.9	11.5	9.9	11.1 (±0.21)	10.5	10.4

	Total of 2 cuts			
		(±0.76)		(±0.44)
None	9.0	10.8	9.8	9.9
95	25.0	27.1	27.0	26.4
190	28.7	31.0	30.4	30.0
Mean	20.9	23.0 (±0.44)	22.4	22.0

Mean dry matter % as cut: 1st cut 14.8
2nd cut 15.7
Total of 2 cuts 15.2

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62/C/7.1

INTENSIVE BARLEY GROWING EXPERIMENT

Little Knott I - 1962, the second year

For treatments etc., see "The Numerical Results of the Field Experiments" 61/C/8.

Area of each plot (acres): 0.0212. Area harvested: 0.0140.

Cultivations, etc.: Ploughed: Sept 16, 1961.

Spring beans: Seed placement drilled at 200 lb per acre: Feb 21, 1962. Combine harvested: Sept 21. Variety: Tick 30B.

Oats: 'Nitro-Chalk' applied: Feb 23, 1962. Seed combine drilled at 4 bushels per acre: Mar 2. Sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: May 24. Combine harvested: Aug 25. Variety: Condor.

Spring wheat: 'Nitro-Chalk' applied: Feb 23, 1962. Seed combine drilled at 3 bushels per acre: Mar 2. Sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: May 24. Combine harvested: Sept 13. Variety: Jufy I.

Barley: 'Nitro-Chalk' applied, seed combine drilled at $2\frac{1}{2}$ bushels per acre: Feb 22, 1962. Sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: May 24. Combine harvested: Aug 27. Variety: Proctor.

Winter wheat: Seed combine drilled at $2\frac{1}{2}$ bushels per acre: Oct 11, 1961. 'Nitro-Chalk' applied: Feb 23, 1962. Sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: Apr 24. Combine harvested: Sept 3. Variety: Cappelle.

Note: (1) One plot (non-continuous spring wheat preceding beans), which should have received 0.45 cwt N per acre, received 0.9 by mistake.
(2) Yields were only taken for sequences 3, 6, 7, 8, 9 and 10

Standard errors per plot. Grain (at 85% dry matter):
Winter wheat (9 and 10): 4.53 cwt per acre or 11.9% (7 d.f.)
Spring wheat (3,6 and 8): 2.44 cwt per acre or 8.7% (14 d.f.)

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Summary of Results

Grain (at 85% dry matter): cwt per acre

Winter wheat (9 and 10)

N: cwt per acre

Crop in 1961	None	0.3	0.6	0.9	Mean
		(±3.20)			(±1.60)
Spring wheat	23.9	24.2	35.6	39.2	30.7
Beans	39.0	45.5	46.1	51.3	45.5
Mean (±2.26)	31.4	34.9	40.8	45.2	38.0

Mean dry matter % as harvested: 83.6

Spring wheat (3, 6, 8)

Previous crop	Spring wheat					Oats	
N: cwt per acre	None	0.3	0.45*+	0.6	0.9	0.45*	Mean
	19.3	21.7	26.2	29.7	26.6	33.2	27.9
	(±1.72)		(±0.86)	(±1.72)		(±0.86)	

Mean dry matter % as harvested: 73.8

Barley 7

N: cwt per acre

None	0.3	0.6	0.9	Mean
33.0	42.9	42.9	46.8	41.4

Mean dry matter % as harvested: 82.6

*mean of 8 - others mean of 2

+includes 1 estimated value

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62/0/8.1

LONG TERM LIMING EXPERIMENT - SPRING BEANS 1962

The effect of lime on the yield and composition of crops and on the status of P and K in soils - Rothamsted (R) Sawyers I and Woburn (W) Stackyard Series C 1962, the first year.

Design (each field): 2 blocks of 16 plots each, columns of 4 plots being split for uninoculated v. inoculated seed.

Area of each sub plot: 0.0145 acres. Area harvested: 0.0093 acres.

Treatments. All combinations of:-

Ground chalk: None; 2; 4; 6 tons $CaCO_3$ per acre applied in March 1962.

P: None; 0.5 cwt P_2O_5 per acre as superphosphate.

K: None; 1.0 cwt K_2O per acre as muriate of potash.

Inoculation of seed: None; Inoculated with Rhizobium leguminosarum.

The maximum pH range between plots was 4.8 - 5.6 on Sawyers I (R) and 5.6 - 6.3 on Stackyard Series C (W).

Basal dressing: None.

Cultivations, etc.:-

Sawyers I (R): Ploughed: Nov 17, 1961. Ground chalk applied: Mar 5, 1962. Rotary cultivated: Mar 14. Superphosphate and muriate of potash applied: Mar 15. Seed drilled at 200 lb per acre: Mar 16. Sprayed with simazine at 1 lb in 40 gallons per acre: Apr 11. Sprayed with demeton methyl at 6 fluid oz in 60 gallons per acre: July 6. Combine harvested: Sept 20. Variety: Tick 30B. Previous crops: Potatoes and fallow 1960, potatoes and fallow 1961.

Stackyard Series C (W): Ploughed: Nov 24, 1961. Ground chalk applied: Mar 9, 1962. Superphosphate and muriate of potash applied: Mar 15. Seed drilled at 200 lb per acre: Mar 19. Sprayed with simazine at 1 lb in 40 gallons per acre: Apr 12. Sprayed with demeton methyl at 6 fluid oz in 60 gallons per acre: July 12. Combine harvested: Sept 20. Variety: Tick 30B. Previous crops: Barley 1960, sugar beet 1961.

Note: Samples were taken for counts of pods and beans.

Standard errors per plot. Grain (at 85% dry matter):

Sawyers I (R)	Whole plot:	4.26 cwt per acre or 25.4% (15 d.f.)
	Sub plot:	1.42 cwt per acre or 8.4% (16 d.f.)
Stackyard Series C (W)	Whole plot:	2.44 cwt per acre or 13.1% (15 d.f.)
	Sub plot:	2.79 cwt per acre or 14.9% (16 d.f.)

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Summary of Results

Sawyers I (R)

Grain (at 85% dry matter): cwt per acre

Ground chalk: tons per acre

	None	2	4	6	Mean
Mean (±1.51)	12.3	16.0	20.3	18.6	16.8
P_2O_5: cwt per acre		(±2.13)			
None	12.7	17.2	21.2	17.5	17.2
0.5	12.0	14.7	19.5	19.7	16.5
Diff. (±3.01)	-0.7	-2.5	-1.7	+2.2	-0.7 (±1.51)
K_2O: cwt per acre					
None	13.8	15.2	19.1	18.7	16.7
1.0	10.9	16.8	21.6	18.5	16.9
Diff. (±3.01)	-2.9	+1.6	+2.5	-0.2	+0.2 (±1.51)
Inoculation of seed		(±1.55)[1]			
None	12.1	15.9	19.7	18.4	16.5
Inoculated	12.5	16.1	20.9	18.8	17.1
Diff. (±0.71)[2]	+0.4	+0.2	+1.2	+0.4	+0.6

	P_2O_5: cwt per acre None	P_2O_5: cwt per acre 0.5	K_2O: cwt per acre None	K_2O: cwt per acre 1.0
K_2O: cwt per acre	(±1.51)			
None	16.7	16.7		
1.0	17.6	16.3		
Inoculation of seed	(±1.10)[1]		(±1.10)[1]	
None	17.0	16.1	16.5	16.6
Inoculated	17.3	16.8	16.9	17.3

Mean dry matter % as harvested: 76.2

(1) For use only in horizontal comparisons.
(2) For use only in testing the difference of 2 differences.

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62/C/8.3

Stackyard Series C (W)

Grain (at 85% dry matter): cwt per acre

	Ground chalk: tons per acre				
	None	2	4	6	Mean
Mean (±0.86)	14.8	19.0	19.1	22.0	18.7
P_2O_5: cwt per acre		(±1.22)			
None	13.1	19.2	19.4	21.7	18.3
0.5	16.6	18.8	18.8	22.3	19.1
Diff. (±1.73)	+3.5	-0.4	-0.6	+0.6	+0.8 (±0.86)
K_2O: cwt per acre					
None	14.9	19.1	20.2	23.8	19.5
1.0	14.8	19.0	18.0	20.2	18.0
Diff. (±1.73)	-0.1	-0.1	-2.2	-3.6	-1.5 (±0.86)
Inoculation of seed		(±1.11)[1]			
None	14.7	20.2	18.0	21.6	18.6
Inoculated	14.9	17.9	20.2	22.4	18.8
Diff. (±1.40)[2]	+0.2	-2.3	+2.2	+0.8	+0.2

	P_2O_5: cwt per acre		K_2O: cwt per acre	
	None	0.5	None	1.0
K_2O: cwt per acre	(±0.86)			
None	20.2	18.8		
1.0	16.5	19.4		
Inoculation of seed	(±0.79)[1]		(±0.79)[1]	
None	18.7	18.5	18.8	18.4
Inoculated	18.0	19.7	20.2	17.5

Mean dry matter % as harvested: 77.6

(1) For use only in horizontal comparisons
(2) For use only in testing the differences of 2 differences

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62/C/9.1

POTATOES

Methods of application of fertiliser - Great Knott I 1962, the first year.

Design: 3 randomised blocks of 12 plots each.

Area of each plot: 0.0199 acres. Area harvested: 0.0133 acres.

Treatments: None (0) (3 plots per block); and all combinations of:-
Levels of compound fertiliser (13% N, 13% P_2O_5, 20% K_2O) to supply (cwt per acre):-

N	P_2O_5	K_2O	
0.66	0.66	1.02	(1)
1.32	1.32	2.03	(2)
2.00	2.00	3.07	(3)

Methods of application: Broadcast (B); placed (P); broadcast and rotary cultivated in (BR).

Note: The experiment is designed to include an additional factor applied to the 1963 wheat crop, viz. compound fertiliser (14% P_2O_5, 28% K_2O) and superphosphate broadcast on seedbed and 'Nitro-Chalk' as spring top dressing to supply:-

N, P_2O_5 and K_2O at levels as (0), (1), (2) above.

Basal dressing: None.

Cultivations, etc.: Ploughed: Oct 26, 1961. 'BR' treatments applied, all plots rotary cultivated, 'B' treatments applied: Apr 16, 1962. Potatoes planted with 'P' treatments: Apr 17. Earthed up: July 6. Sprayed with maneb at 1½ lb in 18 gallons per acre: July 18. Sprayed with copper oxychloride fungicide at 2.3 lb Cu in 20 gallons per acre: Aug 9. Sprayed with undiluted BOV at 18 gallons per acre: Sept 18. Haulm destroyed mechanically, crop lifted: Oct 9. Variety: Majestic. Previous crops: Winter wheat 1960, barley 1961.

Standard error per plot.
Total tubers: 0.942 tons per acre or 7.4% (24 d.f.)

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Summary of Results

Method of application of fertiliser	Level of compound fertiliser 0	1	2	3	Mean
	Total tubers: tons per acre (±0.544)				(±0.314)
Broadcast		13.05	14.04	14.37	13.82
Placed		14.48	13.63	11.15	13.09
Broadcast and rotovated in		13.19	14.24	15.23	14.22
Mean (±0.314)	9.52	13.57	13.97	13.58	12.65* (±0.181)
	Percentage ware ($1\frac{1}{2}$" riddle)				
Broadcast		94.9	95.2	95.4	95.2
Placed		95.8	95.4	94.7	95.3
Broadcast and rotovated in		95.7	96.1	95.6	95.8
Mean	94.3	95.5	95.6	95.2	95.1*

Level of compound fertiliser

	cwt per acre N	P_2O_5	K_2O
(0)	None		
(1)	0.66	0.66	1.02
(2)	1.32	1.32	2.03
(3)	2.00	2.00	3.07

*General mean

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62/C/10.1

EFFECT OF SUBSOILING

Woburn Roadpiece and Great Hill. Test crops: Sugar beet, spring wheat and barley - the 1st year 1962.

Design: 3 randomised blocks of 2 plots each, with three crops grown in strips across the plots.

Area of each plot (acres):		Area harvested (acres):	
Sugar beet:	0.0068	0.0051	
Spring wheat:	0.0290	Roadpiece - 0.0138	Great Hill - 0.0119
Barley:	0.0290	Roadpiece - 0.0138	Great Hill - 0.0130

Treatments: None; subsoiled, 7 strokes per plot, 3 feet apart, 18 inches deep.

Basal dressings:-

Sugar beet: 8 cwt per acre compound fertiliser (17% N, 11% P_2O_5, 22% K_2O).

Spring wheat and barley: $3\frac{1}{2}$ cwt per acre compound fertiliser (16% N, 9% P_2O_5, 9% K_2O) combine drilled.

Cultivations, etc. (both fields except where stated): - Subsoiled: Oct 25, 1961. Ploughed: Roadpiece - Nov 1 - 11, Great Hill - Oct 31 - Nov 6, 1961.

Sugar beet: Basal dressing applied, seed drilled at 7 lb per acre: Mar 20, 1962. Singled: May 11. Lifted: Oct 3. Variety: Klein E.

Spring wheat: Seed drilled at $2\frac{3}{4}$ bushels per acre: Mar 2, 1962. Roadpiece sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: May 9. Great Hill sprayed with MCPA/MBA at 4 pints in 40 gallons per acre: May 14. Combine harvested: Aug 31. Variety: Jufy I.

Barley: Seed drilled at $2\frac{1}{4}$ bushels per acre: Feb 23, 1962. Roadpiece sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: May 9. Great Hill sprayed with MCPA/MBA at 4 pints in 40 gallons per acre: May 14. Combine harvested: Aug 22. Variety: Proctor.

Previous crops:-

Roadpiece: sugar beet 1960, spring wheat 1961.

Great Hill: potatoes 1960, barley 1961, except barley 1962 which followed potatoes 1960, spring wheat 1961.

Note: The spring wheat on Great Hill was severely and irregularly infected with Fusarium.

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62/C/10.2

Summary of Results

	Treatment: None	Treatment: Subsoiled	Mean
Sugar beet. Roots (washed): tons per acre			
Roadpiece	16.63	15.95	16.29
Great Hill	14.61	15.38	14.99
Sugar beet. Sugar percentage			
Roadpiece	17.2	17.3	17.2
Great Hill	17.8	17.7	17.7
Sugar beet. Total sugar: cwt per acre			
Roadpiece	57.4	55.1	56.2
Great Hill	51.9	54.3	53.1
Sugar beet. Tops: tons per acre			
Roadpiece	17.49	17.78	17.63
Great Hill	10.37	10.49	10.43
Spring wheat. Grain (at 85% dry matter): cwt per acre			
Roadpiece	15.7	19.2	17.5
Great Hill	10.2	8.8	9.5

Mean dry matter % as harvested: Roadpiece 81.3
Great Hill 80.9

Barley. Grain (at 85% dry matter): cwt per acre			
Roadpiece	23.1	29.3	26.2
Great Hill	15.6	18.1	16.8

Mean dry matter % as harvested: Roadpiece 84.3
Great Hill 83.8

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GRASS

Levels of N and K - Harwoods Piece 1962 - the 5th year.

Design: 4 randomised blocks of 12 plots each.

Area of each plot: 0.0087 acres. Area harvested: 0.0059 acres.

Treatments: None and all combinations of:-
Nitrogen: 0.3; 0.6; 0.9 cwt N per acre as 'Nitro-Chalk'.
Potash: None; 0.3; 0.6 cwt K_2O per acre as muriate of potash.
All the above in the presence of 0.6 cwt P_2O_5 per acre as superphosphate.
In addition 2 plots per block, receiving 0.9 cwt N and 0.6 cwt K_2O per acre, also received phosphate at either None or 1.2 cwt P_2O_5 per acre as superphosphate.

Note: (1) N and K dressings are applied for each cut. All P dressings are applied once annually.
(2) All treatments were applied to the same plots as in the previous seasons.

Basal dressing: None.

Cultivations, etc.: Ryegrass sprayed with dalapon at 8 lb in 40 gallons per acre: Sept 7, 1961 and again at 4 lb in 40 gallons per acre: Sept 27. Ploughed: Nov 8. Ground chalk at 3 tons per acre applied to plots 1 - 24: Feb 21, 1962. Rotary cultivated: Apr 13. 1st dressing of fertilisers applied: Apr 16. Seed drilled at 40 lb per acre: Apr 24. Sprayed with MCPB/MCPA at 5 pints in 40 gallons per acre: June 5. Cut twice: Aug 13 and Oct 3. Variety: S37 Cocksfoot.

Note: (3) For details of the previous years' results see "Results of the Field Experiments" 58/Cg/2, 59/Cg/2, 60/Ci/1 and 61/Dg/1.

Standard errors per plot. Dry matter:

1st cut:	1.44 cwt per acre or 8.7%	(33 d.f.)
2nd cut:	2.51 cwt per acre or 9.5%	(33 d.f.)
Total of 2 cuts:	3.34 cwt per acre or 7.8%	(33 d.f.)

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62/C/11.2

Summary of Results

Dry matter: cwt per acre

cwt per acre													
N*	0.0	0.3	0.3	0.3	0.6	0.6	0.6	0.9	0.9	0.9	0.9	0.9	
P_2O_5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.0	1.2	
K_2O*	0.0	0.0	0.3	0.6	0.0	0.3	0.6	0.0	0.3	0.6	0.6	0.6	Mean
1st cut (±0.71)	8.5	14.1	17.5	18.0	14.2	18.3	20.1	13.5	18.0	19.8	17.6	19.4	16.6
2nd cut (±1.25)	7.0	22.9	23.8	22.2	28.2	30.4	29.3	29.9	30.4	30.2	31.1	31.1	26.4
Total of 2 cuts (±1.66)	15.5	37.1	41.2	40.2	42.4	48.7	49.3	43.4	48.4	50.0	48.8	50.6	42.9

*For each cut.

Mean dry matter % as cut:

1st cut:	18.3
2nd cut:	14.5
Total of 2 cuts:	16.4

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WINTER WHEAT

Varieties and Nitrogen - Long Hoos IV 1962.

Design: 4 randomised blocks of 16 plots each.

Area of each plot: 0.0212 acres. Area harvested: 0.0141 acres.

Treatments. All combinations of:-
Varieties: Cappelle (Ca); Champlein (Ch); Professeur Marchal (M); Viking (V).
Nitrogen: None; 0.3; 0.6; 0.9 cwt N per acre applied as 'Nitro-Chalk'.

Basal dressing: $2\frac{1}{2}$ cwt compound fertiliser (20% P_2O_5, 20% K_2O) per acre combine drilled.

Cultivations, etc.: Ploughed: 13 Sept, 1961. Seed drilled at $2\frac{3}{4}$ bushels per acre: 12 Oct. 'Nitro-Chalk' applied: 6 Apr, 1962. Sprayed with CMPP at 6 pints in 40 gallons per acre: 24 Apr. Combine harvested: 8 Sept. Previous crops: Beans 1961; various crops (6 Course Rotation experiment) 1960.

Standard error per plot.
Grain (at 85% dry matter): 2.23 cwt per acre or 5.4% (45 d.f.)

Summary of Results

Grain (at 85% dry matter): cwt per acre

	Variety				
N: cwt per acre	Ca	Ch	M	V	Mean
		(±1.11)			(±0.55)
None	27.2	28.4	32.3	28.7	29.1
0.3	38.0	36.3	40.1	39.7	38.5
0.6	45.7	46.8	47.9	45.2	46.4
0.9	50.4	52.6	52.3	47.9	50.8
Mean (±0.55)	40.3	41.0	43.2	40.4	41.2

Mean dry matter % as harvested: 79.7

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62/Da/2

WINTER WHEAT

Effects of nitrogen and inoculation with Azotobacter - Long Hoos IV 1962.

Design: 4 randomised blocks of 4 plots each.

Area of each plot: 0.0106 acres.

Treatments. All combinations of:-
Nitrogen: None; 0.6 cwt N per acre applied as 'Nitro-Chalk'
Azotobacter inoculation: None (sterile medium, no carbon source); Azotobacter culture applied to seed.

Basal dressing: 480 lb compound fertiliser (20% P_2O_5, 20% K_2O) per acre combine drilled.

Cultivations, etc.: Ploughed: Sept 13, 1961. Seed drilled at $2\frac{3}{4}$ bushels per acre: Oct 18. Appropriate plots re-inoculated with culture at base of seedlings, seed inoculation having failed: Dec 13. 'Nitro-Chalk' applied: Apr 6, 1962. Sprayed with CMPP at 6 pints in 40 gallons per acre: Apr 24. Combine harvested: Sept 8. Variety: Cappelle. Previous crops: Clover 1960; spring beans 1961.

Note: Crop samples were taken throughout the season for counts of Azotobacter. Measurements of the height of the crop were made in May and June.

Standard error per plot.
Grain (at 85% dry matter): 1.55 cwt per acre or 4.0% (9 d.f.)

Summary of Results

Grain (at 85% dry matter): cwt per acre

Inoculation	N: cwt per acre None	0.6	Mean
	(±0.78)		(±0.54)
None	31.6	45.8	38.7
Azotobacter	31.9	47.2	39.6
Mean (±0.54)	31.8	46.5	39.1

Mean dry matter % as harvested: 80.5

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WINTER WHEAT

Levels and times of application of nitrogen - Woburn Stackyard Series B 1962.

Design: 4 randomised blocks of 18 plots each.

Area of each plot: 0.0186 acres. Area harvested: 0.0133 acres.

Treatments: None (2 plots per block) and all combinations of:-
Nitrogen: 0.5; 1.0; 1.5; 2.0 cwt N per acre as 'Nitro-Chalk'.
Times of application: February (F); April (A); May (M).
In addition 1.0; 2.0 cwt N per acre, each in equal divided dressings FM; FAM.

Basal dressing: 240 lb compound fertiliser (6% N, 15% P_2O_5, 15% K_2O) per acre combine drilled.

Cultivations, etc.: Ploughed: Sept 11, 1961. Seed drilled at 2½ bushels per acre: Oct 17. 'Nitro-Chalk' applied: F - Mar 1, 1962; A - Apr 9; M - May 9. Sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: Apr 13. Combine harvested: Aug 31. Variety: Cappelle. Previous crops: Various crops (6 Course Rotation experiment) 1960; spring beans 1961.

Standard error per plot.
Grain (at 85% dry matter): 4.85 cwt per acre or 14.7% (52 d.f.)

Summary of Results

Grain (at 85% dry matter): cwt per acre

N: cwt per acre (in addition to basal)

	0.5	1.0	1.5	2.0	Mean
Time of application		(±2.42)			(±1.21)
February	31.7	33.9	37.3	34.8	34.4
April	28.5	40.3	37.4	40.6	36.7
May	29.6	35.7	38.0	34.2	34.4
Mean (±1.40)	29.9	36.6	37.6	36.5	35.2
Divided application		(±2.42)			
February & May	-	37.4	-	37.2	-
February, April & May	-	36.7	-	34.4	-

Mean yield with basal dressing only: 13.3 (±1.71)
General mean: 33.0
Mean dry matter % as harvested: 82.7

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Straw (at 85% dry matter): cwt per acre

N: cwt per acre (in addition to basal)

	0.5	1.0	1.5	2.0	Mean
Time of application					
February	24.5	27.6	33.7	29.3	28.8
April	21.6	31.6	28.9	32.2	28.6
May	19.6	21.8	23.4	20.8	21.4
Mean	21.9	27.0	28.7	27.4	26.2
Divided application					
February & May	-	28.0	-	30.7	-
February, April & May	-	27.1	-	25.1	-

Mean yield with basal dressing only: 9.2
General mean: 24.7
Mean dry matter % as harvested: 87.1

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SPRING WHEAT

Effects of nitrogen and inoculation with Azotobacter - Fosters Corner 1962.

Design: 4 randomised blocks of 6 plots each.

Area of each plot: 0.0112 acres.

Treatments. All combinations of:-
Nitrogen: None; 0.2; 0.8 cwt N per acre applied as 'Nitro-Chalk'.
Azotobacter inoculation: None (sterile medium, no carbon source); Azotobacter culture applied to seed.

Basal dressing: $2\frac{1}{2}$ cwt compound fertiliser (20% P_2O_5, 20% K_2O) per acre combine drilled.

Cultivations, etc.: Ploughed: Dec 16, 1961 - Jan 30, 1962. 'Nitro-Chalk' applied, seed drilled at $2\frac{3}{4}$ bushels per acre: Mar 17. Sprayed with MCPA/MBA at 4 pints in 40 gallons per acre: June 2. Combine harvested: Sept 13. Variety: Jufy I. Previous crops: Spring wheat 1960; sugar beet 1961.

Note: Crop samples were taken during the season for counts of Azotobacter. Measurements of the height of the crop were made in July.

Standard error per plot.
Grain (at 85% dry matter): 2.96 cwt per acre or 7.6% (15 d.f.)

Summary of Results

Grain (at 85% dry matter): cwt per acre

Inoculation	N cwt per acre None	0.2	0.8	Mean
		(±1.48)		(±0.85)
None	37.9	37.6	40.7	38.7
Azotobacter	39.3	39.3	40.2	39.6
Mean (±1.04)	38.6	38.4	40.4	39.1

Mean dry matter % as harvested: 72.4

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62/Db/1

BARLEY

The effect of insecticides on thrips, aphids and the spread of virus - Long Hoos I and II 1962.

Design: 6 randomised blocks of 4 plots each.

Area of each plot: 0.0212 acres. Area harvested: 0.0139 acres.

Treatments: Rogor: None (0); applied early (E); applied late (L); applied throughout (EL). Rate of application 16 fluid oz in 40 gallons per acre.

Basal dressing: 3 cwt compound fertiliser (16% N, 9% P_2O_5, 9% K_2O) per acre combine drilled.

Cultivations, etc.: Ploughed: Feb 16 - Mar 23, 1962. Seed drilled at $3\frac{1}{2}$ bushels per acre: Mar 26. E and EL plots sprayed with Rogor: Apr 26. Sprayed with MCPA/MBA at 4 pints in 40 gallons per acre: May 30. E and EL plots sprayed with Rogor: June 1. EL and L plots sprayed with Rogor: June 28. Combine harvested: Aug 29. Variety: Proctor. Previous crops: Winter wheat 1960; kale 1961.

Note: Water traps were used and trapping records of thrips and aphids made throughout most of the season. Crop samples were taken for thrips extraction from Apr 30 - June 25 and from June 27 - July 31.

Standard error per plot.
Grain (at 85% dry matter): 1.66 cwt per acre or 5.3% (15 d.f.)

Summary of Results

Grain (at 85% dry matter): cwt per acre

Rogor				
0	E	L	EL	Mean
31.0	31.2	31.8	30.6	31.2
	(±0.68)			

Mean dry matter % as harvested: 83.6

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WINTER BEANS

The residual effect of levels of chalk - Great Field I 1962, the 2nd year.

Design: 4 randomised blocks of 5 plots each.

Area of each plot: 0.0193 acres. Area harvested: 0.0117 acres.

Treatments: Ground chalk tons per acre applied in two dressings, half before ploughing on Dec 6, 1960 and half after ploughing on Dec 13, 1960:- None; 1; 2; 3; 4.

Basal dressing: 3¼ cwt per acre compound fertiliser (14% P_2O_5, 28% K_2O) placement drilled.

Cultivations, etc.: Ploughed: Sept 18, 1961. Seed placement drilled at 275 lb per acre: Oct 10. Combine harvested: Sept 5, 1962. Variety: Garton's SQ. Previous crops: Winter wheat 1960, spring beans 1961.

Notes: (1) Samples were taken for counts of pods and beans.
(2) For the previous year's results see 'Numerical Results of the Field Experiments' 61/Dd/1.

Standard error per plot.
Grain (at 85% dry matter): 1.31 cwt per acre or 4.5% (12 d.f.)

Erratum to the 'Numerical Results of the Field Experiments' 1961 page 61/Dd/1. Area of each plot should read 0.0193 not 0.0212 acres.

Summary of Results

Grain (at 85% dry matter): cwt per acre

Ground chalk: tons per acre applied Dec, 1960

None	1	2	3	4	Mean
26.3	28.1	29.9 (±0.65)	31.9	30.7	29.4

Mean dry matter % as harvested: 76.8

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SPRING BEANS

Control of weeds by residual herbicides - Delafield 1962.

Design: 3 randomised blocks of 8 plots each.

Area of each plot: 0.0193 acres. Area harvested: 0.0121 acres.

Treatments:
None (0)
Mechanical inter row cultivations (M)
Residual herbicide sprays (lb active material in 40 gallons per acre):-
Simazine: 1; 1½ (S_1;S_2)
2,6-DBN: 2; 4 (D_1;D_2) applied either in autumn (A) or in spring (B).

Basal dressing: 3¼ cwt compound fertiliser (14% P_2O_5, 28% K_2O) per acre placement drilled.

Cultivations, etc.: Ploughed: Oct 6, 1961. All plots spring tine cultivated, DA plots sprayed and spring tine harrowed: Nov 17. DB plots sprayed: Feb 19, 1962. DB plots harrowed: Feb 20. All plots spring tine cultivated: Mar 20. Seed drilled at 200 lb per acre and harrowed in: Mar 21. Simazine applied: Apr 12. Weeder used on M plots: May 4. M plots steerage hoed: May 11, May 31 and June 22. Sprayed with demeton-methyl at 12 fluid oz in 60 gallons per acre: July 7. Combine harvested: Sept 26. Variety: Tick 30B. Previous crops: Spring wheat 1960; winter wheat 1961.

Notes (1) The crop failed on all plots of treatments D_1B, D_2B.
(2) Weed counts were made on all plots.

Standard error per plot.
Grain (at 85% dry matter): 2.04 cwt per acre or 7.1% (10 d.f.)

Summary of Results

Grain (at 85% dry matter): cwt per acre

Treatment						
0	M	S_1	S_2	D_1A	D_2A	Mean
27.8	30.4	31.2	32.0	28.4	23.2	28.8
		(±1.18)				

Mean dry matter % as harvested: 76.7

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62/Dc/3.1

SPRING BEANS

Control of aphids by insecticides - Rothamsted (R) Great Knott II and Woburn (W) Butt Close 1962.

Design: Great Knott II (R): 4 randomised blocks of 10 plots each.
Butt Close (W): 4 randomised blocks of 8 plots each.

Area of each plot: 0.0216 acres. Area harvested: 0.0090 acres.

Treatments:
No insecticide (0);
Menazon (1b active ingredient per acre):-
As a seed dressing: 1; 3 (S_1; S_3)
Combine drilled: 1*; 3 (C_1; C_3)
Broadcast on young foliage: 1; 3* (B_1; B_3)
In liquid form as emulsifiable spray: 1 (in 60 gallons) (L).
"Disyston" granules broadcast on young foliage: 1 lb active ingredient per acre (DB).
Demeton-methyl: 6 fluid oz active ingredient in 60 gallons per acre (ML).

*On Butt Close (W) C_1 and B_3 were omitted.

Basal dressing: 3¼ cwt compound fertiliser (14% P_2O_5, 28% K_2O) per acre placement drilled.

Cultivations, etc.:
Great Knott II (R): Sprayed with dalapon at 8 lb in 40 gallons per acre: Sept 8, 1961 and again at 4 lb in 40 gallons per acre: Sept 27. Ploughed: Oct 25. Seed drilled at 200 lb per acre: Mar 15, 1962. Sprayed with simazine at 1 lb in 40 gallons per acre: Apr 11. Menazon and "Disyston" granules broadcast: June 5. Demeton-methyl and menazon sprays applied: July 4. Combine harvested: Sept 21. Variety: Tick 30B. Previous crops: Winter wheat and potatoes 1960; barley 1961.
Butt Close (W): Ploughed twice: Aug 25 and Oct 27, 1961. Seed drilled at 200 lb per acre: Mar 17, 1962. Sprayed with simazine at 1 lb in 40 gallons per acre: Apr 12. Menazon and "Disyston" granules broadcast: June 6. Demeton-methyl and menazon sprays applied: July 12. Combine harvested: Sept 20. Variety: Tick 30B. Previous crops: Barley 1960 and 1961.

Note: Counts of virus infected plants and estimates of numbers of aphids were made.

Standard errors per plot, Grain (at 85% dry matter):
Great Knott II (R) 2.95 cwt per acre or 10.7% (27 d.f.)
Butt Close (W): 3.48 cwt per acre or 22.3% (21 d.f.)

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Summary of Results

Grain (at 85% dry matter): cwt per acre

Treatments										
0	S_1	S_3	C_1	C_3	B_1	B_3	L	ML	DB	Mean
Great Knott II (R)										
24.4	30.2	27.2	28.6	26.6 (±1.48)	26.4	27.6	27.0	29.3	28.2	27.5
Butt Close (W)										
16.9	14.2	16.5		14.3 (±1.74)	13.1		15.3	15.5	18.8	15.6

Mean dry matter % as harvested:
Great Knott II (R): 76.3
Butt Close (W): 76.3

Treatments

0 = No insecticide
S_1 S_3 = Menazon (1lb active ingrdient per acre), as a seed dressing 1; 3
C_1 C_3 = " " " " " " combine drilled 1; 3
B_1 B_3 = " " " " " " broadcast on young foliage 1; 3
L = Menazon " " " " " In liquid form as emulsifiable spray 1 (in 60 gallons)
DB = "Disyston" granules broadcast on young foliage: 1 lb active ingredient per acre
ML = Demeton-methyl: 6 fluid oz active ingredient in 60 gallons per acre.

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POTATOES

Control of weeds by residual herbicides - Rothamsted (R) Great Knott I and Woburn (W) Great Hill 1962.

Design: 4 randomised blocks of 10 plots each, plots on Great Knott I (R) being split for 0 v final earthing up.

Area of each plot (acres): 0.0216 Area harvested:
R - 0.0072
W - 0.0096

Treatments (in lb active material in 40 gallons per acre):-

None	(0)
Mechanical cultivations	(M)
2,6-DBN: 1, 2 lb	(DB1; DB2)
Dinoseb: 4, 6 lb	(DS1; DS2)
Prometryne: $1\frac{3}{4}$*; $2\frac{1}{2}$ lb	(Ta1; Ta2)
Trietazine: $1\frac{1}{2}$ lb	(Te)
Trietazine: $1\frac{1}{2}$ lb + paraquat: $\frac{3}{4}$ lb**	(TeP)

In addition plots on Great Knott I (R) were split for 0 v final eartning up (E).

*$1\frac{1}{4}$ lb on Great Hill (W)

**paraquat spray repeated on Great Hill (W).

Note: On Great Knott I (R) weeds and haulm on 0, DB1 and DB2 plots were mown on July 31, and the yields are omitted from the analysis.

Basal dressing: 8 cwt compound fertiliser (17% N, 11% P_2O_5, 22% K_2O).

Cultivations, etc.:

Great Knott I (R): Ploughed: Dec 26, 1961. Rotary cultivated, basal dressing applied: Apr 16, 1962. Potatoes planted: Apr 26. Ridges rolled: Apr 28. DB and Te sprays applied: May 9. M plots chain harrowed: May 11. M plots grubbed: May 14. DS, Ta and TeP sprays applied: May 30. M plots re-ridged: June 6. M plots grubbed: June 18. E sub-plots grubbed and earthed up: July 5. Sprayed with maneb at $1\frac{1}{2}$ lb active material in 18 gallons per acre: July 18. Weeds and haulm mown on 0 and DB plots: July 31. Sprayed with copper fungicide at 5 lb in 20 gallons per acre: Aug 9 and again at 5 lb in 40 gallons per acre: Aug 24. Sprayed with undiluted BOV at 18 gallons per acre: Sept 18. Lifted: Oct 8. Variety: King Edward. Previous crops: Winter wheat 1960, barley 1961.

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Great Hill (W): Subsoiled: Oct 26, 1961. Ploughed: Oct 31. Basal dressing applied: Apr 7, 1962. Potatoes planted: Apr 9. Ridges rolled: Apr 12. DB, Te and TeP sprays applied: Apr 19. Ta, DS sprays applied and second paraquat spray of ¾ lb in 40 gallons per acre applied to TeP plots: May 16. Cultivations to M plots: chain harrowed - May 1; harrowed with weeder - May 5; grubbed - May 14; harrowed - May 26; re-ridged - May 24; grubbed - May 31 and June 15; earthed up - June 21. Sprayed with copper oxychloride at 2.3 lb copper in 40 gallons per acre: July 24. Tops and weeds burnt off with paraquat at 0.9 lb in 40 gallons per acre: Aug 9. Haulm destroyed mechanically: Aug 22. Lifted: Sept 5. Variety: Majestic. Previous crops: Potatoes 1960, barley 1961.

Note: At Woburn dry weights of weeds were estimated on plots of certain treatments.

Standard errors per plot. Total tubers:
Great Knott I (R): Whole plot: 1.414 tons per acre or 10.4% (18 d.f.)
Sub plot: 1.311 tons per acre or 9.6% (21 d.f.)
Great Hill (W): 1.086 tons per acre or18.1% (27 d.f.)

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Summary of Results

Final cultivation	Treatments: 0	M	DB1	DB2	DS1	DS2	Ta1	Ta2	Te	TeP	Mean
Total tubers: tons per acre											
Great Knott I (R)					(±0.655)[1]	(±0.845)[2]					
None	+	14.66		+	12.88	14.62	12.34	14.40	12.37	13.77	13.57
Earthed up		14.22			13.83	14.48	12.75	14.18	12.46	13.44	13.62
Mean (±0.706)		14.44			13.35	14.55	12.54	14.29	12.42	13.60	13.59
Diff. (±0.927)		-0.44			+0.95	-0.14	+0.41	-0.22	+0.09	-0.33	+0.05 (±0.350)
Great Hill (W)											
Mean (±0.543)	2.21	7.49	5.75	6.36	6.32	6.50	4.91	5.71	5.79	8.98	6.00
Percentage ware ($1\frac{1}{2}$" riddle)											
Great Knott I (R)											
None	+	92.9		+	92.9	94.7	93.4	94.4	93.3	92.9	93.5
Earthed up		94.2			94.6	94.0	92.6	93.9	92.7	92.9	93.5
Mean		93.6			93.8	94.4	93.0	94.1	93.0	92.9	93.5
Diff.		+1.3			+1.7	-0.7	-0.8	-0.5	-0.6	0.0	0.0
Great Hill (W)											
					Not recorded						

(1) for use in vertical and interaction comparisons
(2) for use in horizontal and diagonal comparisons

* $1\frac{1}{4}$ lb on Great Hill (W)
** paraquat spray repeated on Great Hill (W)

Treatments

0 = None
M = Mechanical cultivations
DB1; DB2 = 2,6-DBN: 1, 2 lb
DS1; DS2 = Dinoseb: 4, 6 lb
Ta1; Ta2 = Prometryne: $1\frac{3}{4}$*; $2\frac{1}{2}$ lb
Te = Trietazine: $1\frac{1}{2}$ lb
TeP = Trietazine: $1\frac{1}{2}$ lb + paraquat: $\frac{3}{4}$ lb**
+ crop failed

62/Dd/1.3

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62/Dd/2.1

POTATOES

Time of burning off haulm - Great Knott III 1962.

Design: 4 randomised blocks of 10 plots each.

Area of each plot: 0.0565 acres. Area harvested: 0.0141 acres.

Treatments. All combinations of:-

Fungicide sprays: None (0); sprayed on 3 occasions (the first with maneb*, the second and third with commercial copper oxychloride wettable powder**)(Cu).

Burning off haulm***: None (0); haulm burnt off when 1 - 5% (A); when 10 - 20% (B); when 50% (C) blighted on Cu plots.

In addition two plots per block (CuL C; MC) were sprayed as follows:-

CuL C: As "Cu" but all sprays applied later (1st and 2nd on dates of 2nd and 3rd sprayings of "Cu" plots).

MC: As "Cu", but all sprayings with maneb*; both were burnt off at date C.

* At 1½ lb active ingredient in 18 gallons per acre.
** At 2.3 lb Cu in 20 gallons per acre.
*** With undiluted BOV - A at 15 gallons, B and C at 18 gallons per acre each.

Note: In fact the haulm was burnt off when 1% (A); when 7% (B); and when 55% (C) blighted on Cu plots.

Basal dressing per acre: 20 tons of dung; 8 cwt compound fertiliser (10% N, 10% P_2O_5, 18% K_2O).

Cultivations, etc.: Patches sprayed with dalapon at 8 lb in 40 gallons per acre: Sept 8, 1961 and again at 4 lb in 40 gallons per acre: Sept 27. Dung applied and ploughed in: Nov 21. Basal fertiliser applied, plots rotary cultivated, potatoes machine planted: Apr 16, 1962. Earthed up: July 3. Cu and MC plots sprayed with maneb: July 17. Cu plots sprayed with copper oxychloride, CuL C and MC plots with maneb: Aug 9. Cu and CuL C plots sprayed with copper oxychloride, MC plots with maneb: Aug 29. A plots sprayed with BOV: Sept 7. CuL C plots sprayed with copper oxychloride, B plots with BOV: Sept 14. C plots sprayed with BOV: Sept 25. Haulm destroyed mechanically: Oct 9. Lifted: Oct 18. Variety: King Edward. Previous crops: Winter wheat 1960, spring beans 1961.

Note: Periodic samples were taken for the weight of tops and tubers, and an assessment of blight on foliage and in tubers was made.

Standard error per plot.
Total tubers: 0.778 tons per acre or 5.1% (27 d.f.)

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Summary of Results

Date of burning off

Spray	0	A	B	C	Mean
	Total tubers: tons per acre				
		(±0.389)			(±0.194)
0	14.70	13.85	13.87	14.74	14.29
Cu	17.09	14.34	15.78	16.02	15.81
Mean (±0.275)	15.90	14.10	14.82	15.38	15.05 (±0.138)

CuL C	MC
16.43	16.85

(±0.389)

General mean: 15.37

Percentage ware ($1\frac{1}{2}$" riddle)

0	92.9	92.7	92.9	92.5	92.8
Cu	94.2	92.6	93.9	94.1	93.7
Mean	93.6	92.6	93.4	93.3	93.2

CuL C	MC
93.7	94.3

General mean: 93.4

Date of burning off

0 = None
A = Haulm burnt off when 1 - 5%
B = When 10 - 20%
C = Blighted on Cu plots.

Sprays

0 = None
Cu= Sprayed on 3 occasions (the first with maneb*, the second and third with commercial copper oxychloride wettable powder**)
CuL C = As "Cu" but all sprays applied later (1st and 2nd on dates of 2nd and 3rd sprayings of "Cu" plots).
MC = As "Cu", but all sprayings with maneb*; both were burnt off at date C.

* At $1\frac{1}{2}$ lb active ingredient in 18 gallons per acre.
** At 2.3 lb Cu in 20 gallons per acre.
*** With undiluted BOV - A at 15 gallons, B and C at 18 gallons per acre each.

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62/Dd/3.1

POTATOES

Control of blight (Phytophthora infestans) by copper and tin fungicides - Long Hoos V 1962.

Design: Two 6 × 6 Latin squares, one for each variety, - King Edward and Ulster Supreme.

Area of each plot: 0.0129 acres. Area harvested: 0.0077 acres.

Treatments:
No fungicide (0)
Sprayed twice with:-
Commercial copper oxychloride wettable powder at 2½ lb Cu per acre (1)
Copper oxychloride at 2½ lb Cu per acre with either 0.25 (2), 0.50 (3), or 1.00% wax (4)
Commercial triphenyltin acetate wettable powder at 0.75 lb triphenyltin acetate per acre (5).
All sprays applied in 100 gallons per acre.

Basal dressing: 10 cwt compound fertiliser (10% N, 10% P_2O_5, 18% K_2O) per acre.

Cultivations, etc.: Sprayed with dalapon at 8 lb in 40 gallons per acre: Sept 7, 1961 and again at 4 lb in 40 gallons per acre: Sept 26. Ploughed: Oct 17. Rotary cultivated, basal dressing applied, potatoes machine planted: Apr 24, 1962. Earthed up: July 7. Copper and tin fungicides applied: King Edward - July 20 and Aug 9, Ulster Supreme - July 25 and Aug 22. King Edward lifted: Oct 11. Ulster Supreme haulm destroyed mechanically, crop lifted: Oct 15. Previous crops: Spring beans 1960; spring wheat 1961.

Note: The destruction of foliage by blight and the percentage weight of infected tubers at harvest were estimated.

Standard errors per plot. Total tubers tons per acre:
King Edward: 0.626 tons per acre or 4.8% (20 d.f.)
Ulster Supreme: 1.027 tons per acre or 7.5% (20 d.f.)

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62/Dd/3.2

Summary of Results

Variety	Fungicide 0	1	2	3	4	5	Mean
	Total tubers: tons per acre						
King Edward							
Mean (±0.256)	12.43	12.66	13.04	13.21	12.89	14.04	13.05
Increase (±0.361)		0.23	0.61	0.78	0.46	1.61	
Ulster Supreme							
Mean (±0.419)	12.02	13.20	13.57	13.79	13.95	15.45	13.67
Increase (±0.593)		1.18	1.55	1.77	1.93	3.43	
	Percentage ware (1½" riddle)						
King Edward							
Mean	88.3	89.5	90.0	88.9	89.9	90.3	89.5
Increase		1.2	1.7	0.6	1.6	2.0	
Ulster Supreme							
Mean	97.7	97.9	97.9	97.7	97.8	98.1	97.8
Increase		0.2	0.2	0.0	0.1	0.4	

Fungicide

0 = No fungicide
1 = Commercial copper oxychloride wettable powder at 2½ lb Cu per acre.
2 = Copper oxychloride at 2½ lb Cu per acre with 0.25% wax.
3 = " " " " " " " " " 0.50% wax.
4 = " " " " " " " " " 1.00% wax.
5 = Commercial triphenyltin acetate wettable powder at 0.75 lb triphenyltin acetate per acre.

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62/De/1

SUGAR BEET

Control of virus spread by insecticides - Fosters West 1962.

Design: 4 × 4 Latin square.

Area of each plot: 0.0522 acres. Area harvested: 0.0121 acres.

Treatments:

Unsprayed (0).
Seedbed application of "Disyston" at 2 lb active ingredient per acre (Di).
Sprayed with demeton methyl* at 6 fluid oz in 60 gallons per acre on 6 July, 1962 (Mt).
Sprayed with menazon* at 2.4 fluid oz in 30 gallons per acre on 6 July, 1962 (Mn).

*It was intended to spray after receipt of spray warning, but none was issued.

Basal dressing per acre: 3 cwt agricultural salt and 6 cwt compound fertiliser (16% N, 9% P_2O_5, 9% K_2O).

Cultivations, etc.: Areas of field sprayed with dalapon at 8 lb in 40 gallons per acre: Sept 8, 1961, and again at 4 lb in 40 gallons per acre: Sept 26. Ploughed: Oct 21. Salt applied: Feb 16, 1962. Basal compound fertiliser applied: Mar 19. "Disyston" applied and harrowed in: Apr 10 Seed drilled at 9 lb per acre: Apr 11. Singled: May 22. Lifted: Dec 18. Variety: Klein E (rubbed and graded). Previous crops: Sugar beet 1960, spring wheat 1961.

Note (1): Regular counts of aphid numbers and estimates of incidence of virus yellows were made. The final incidence recorded was 6% on all treatments.

Note (2): Because of the severe weather conditions it was impracticable to wash and analyse the samples of beet.

Standard error per plot.
Roots (unwashed): 1.140 tons per acre or 5.1% (6 d.f.)

Summary of Results

Roots (unwashed): tons per acre

	Treatment 0	Di	Mt	Mn	Mean
Mean (±0.570)	22.67	22.63	21.78	21.54	22.15
Increase (±0.806)		-0.04	-0.89	-1.13	

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62/Df/1

KALE

Control of weeds by residual herbicides - West Barnfield I 1962.

Design: 2 randomised blocks of 7 plots each, plots being split for 0 ▼ mechanical cultivations.

Area of each sub plot: 0.0106 acres.

Treatments. All combinations of:-

Whole plots: Residual herbicides as follows:

Herbicide	Rates (in lb active material in 40 gallons per acre)	
None	Nil	(0)
Dinoseb	3; 6	(D1; D2)
Paraquat	$\frac{1}{2}$; $\frac{3}{4}$	(Pa1; Pa2)
Prometryne	$1\frac{3}{4}$; $2\frac{1}{2}$	(Pr1; Pr2)

Sub plots: None; mechanical cultivations (M)

Basal dressings per acre: $5\frac{3}{4}$ tons dung, 10 cwt compound fertiliser (10% N, 10% P_2O_5, 18% K_2O), $2\frac{1}{2}$ cwt 'Nitro-Chalk'.

Cultivations, etc.: Dung applied: Dec 18, 1961. Ploughed: Dec 21. Rotary cultivated: Apr 24, 1962. Basal compound fertiliser applied: Apr 27. Seed drilled at 3 lb per acre: May 23. Residual herbicides applied: May 30. Appropriate sub plots steerage hoed: June 23. Basal 'Nitro-Chalk' applied: July 11. 'M' sub plots steerage hoed: July 12. Variety: Thousand Head. Previous crops: Barley 1960 and 1961.

* Note 1: Except on one plot of treatment D2 on which no kale had survived.

Note 2: No yields were taken, as the crop was destroyed by the severe frost and by birds.

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62/Dg/1.1

LUCERNE

Control of weeds by simazine and row spacing - Woburn Mill Dam Close 1962, the second year.

Design: 2 replicates of 12 treatments arranged in one randomised block*.

Area of each plot: 0.0082 acres. Area harvested: 0.0046 acres.

Treatments. All combinations of:
Row spacing: 7 inches; 14 inches.
Method of control: None (0); mechanically cultivated (M); Simazine 1½; 3 lb active ingredient per acre per year each applied in spring (1½E; 3E) or half in spring half in autumn (1½EL; 3EL).

Basal dressing per acre: None in 1962.

Cultivations, etc.: Autumn EL treatments applied: Sept 19, 1961. Spring E and EL treatments applied: Apr 12, 1962. M plots planet hoed: Apr 13. M plots tiller hoed: June 5. Cut 4 times: June 1, July 13, Aug 17, Oct 5. Variety: Du Puits. Previous crop: Kale 1960.

*Originally 2 randomised blocks of 20 plots each, but some plots were abandoned because of damage by birds and moles.

Standard errors per plot. Dry matter:

1st cut:	4.56 cwt per acre or 25.7%	(12 d.f.)
2nd cut:	6.42 cwt per acre or 21.9%	(12 d.f.)
3rd cut:	3.52 cwt per acre or 17.7%	(12 d.f.)
4th cut:	3.20 cwt per acre or 22.7%	(12 d.f.)
Total of 4 cuts:	14.81 cwt per acre or 18.3%	(12 d.f.)

Note: For details of the previous year's results see "Numerical Results of the Field Experiments" 61/Dh/1.

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Summary of Results

Dry matter: cwt per acre

Row spacing: inches	Method of control: 0	M	1½E	3E	1½EL	3EL	Mean
			1st cut (±3.22)				
7	26.5	24.2	16.8	19.6	17.6	13.0	19.6
14	20.4	20.0	16.8	14.5	13.3	8.1	15.7
Mean (±2.28)	23.4	22.1	16.8	17.6	15.5	10.6	17.7
Diff.(±4.56)	-6.1	-4.2	0.0	-4.0	-4.3	-4.9	-3.9 (±1.86)
			2nd cut (±4.54)				
7	35.2	27.4	28.4	29.7	37.1	25.7	30.6
14	35.2	33.7	29.9	25.7	26.1	17.3	28.0
Mean (±3.21)	35.2	30.6	29.2	27.7	31.6	21.5	29.3
Diff.(±6.42)	0.0	+6.3	+1.5	-4.0	-11.0	-8.4	-2.6 (±2.62)

Mean dry matter % as harvested:
1st cut: 18.9
2nd cut: 21.5

Method of control

0 = None
M = Mechanically cultivated
1½E; 3E = Simazine 1½; 3 lb active ingredient per acre per year each applied in spring
1½EL; 3EL = Half in spring half in autumn.

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62/Dg/1.3

Dry matter: cwt per acre

Row spacing: inches	Method of control: 0	M	1½E	3E	1½EL	3EL	Mean
3rd cut (±2.49)							
7	18.5	21.6	19.1	20.1	24.6	21.7	21.0
14	20.4	19.3	21.0	19.6	18.7	13.7	18.8
Mean (±1.76)	19.5	20.4	20.1	19.8	21.7	17.7	19.9
Diff. (±3.52)	+1.9	-2.3	+1.9	-0.5	-5.9	-8.0	-2.2 (±1.44)
4th cut (±2.26)							
7	12.9	15.9	12.5	14.6	16.4	16.7	14.9
14	15.3	13.5	15.1	13.5	13.3	8.8	13.3
Mean (±1.60)	14.1	14.7	13.8	14.0	14.9	12.7	14.1
Diff. (±3.20)	+2.4	-2.4	+2.6	-1.1	-3.1	-7.9	-1.6 (±1.31)
Total of 4 cuts (±10.47)							
7	93.1	89.2	77.0	84.1	95.8	77.2	86.1
14	91.3	86.6	82.9	74.4	71.5	47.9	75.8
Mean (±7.40)	92.2	87.9	80.0	79.2	83.6	62.6	80.9
Diff. (±14.81)	-1.8	-2.6	+5.9	-9.7	-24.3	-29.3	-10.3 (±6.05)

Mean dry matter % as harvested:

3rd cut:	15.5
4th cut:	19.1
Total of 4 cuts:	18.8

Method of control

0 = None
M = Mechanically cultivated
1½E; 3E = Simazine 1½; 3 lb active ingredient per acre per year each applied in spring
1½EL; 3EL = Half in spring half in autumn.

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62/Dh/1.1

CARROTS

The effect of systemic insecticides on yield through control of motley dwarf virus - Woburn Butt Close 1962.

Design: A plaid rectangle of 4 rows and 8 columns.

Area of each plot: 0.0212 acres. Area harvested: 0.0016 acres.

Treatments. All combinations of:-
Seed dressing (to columns): None; 2% menazon.
Early spraying: None; sprayed twice (applied May 29 and June 8). (E)
Mid-season spraying: None; sprayed twice (applied June 23 and July 4). (M)
Late spraying: None; sprayed twice (applied July 16 and July 28). (L)
The spray used was demeton-methyl at 6 fluid oz active ingredient in 40 gallons per acre.

Basal dressing: 8 cwt compound fertiliser (10% N, 10% P_2O_5, 18% K_2O) per acre.

Cultivations, etc.: Ploughed twice: Aug 25 and Oct 27, 1961. Basal fertiliser applied: Apr 24, 1962. Seed drilled at $4\frac{1}{4}$ lb per acre: Apr 26. Lifted: Sept 12. Variety: Scarlet Intermediate.
Previous crops: Barley 1960 and 1961.

Note: Aphid counts and estimates of virus infection were made.

Standard errors per plot.
Saleable roots: 1.159 tons per acre or 4.6% (14 d.f.)
Tops from
saleable roots: 1.238 tons per acre or 10.3% (14 d.f.)

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Summary of Results

Date of spraying

Seed dressing	-	E	M	EM	L	EL	ML	EML	Mean
Saleable roots: tons per acre									
None (±0.820)	24.58	24.60	25.15	25.97	22.93	25.13	25.13	25.85	24.92
Menazon	26.26	24.30	24.85	25.57	25.82	25.84	25.43	25.82	25.49
Mean (±0.580)	25.42	24.45	25.00	25.77	24.38	25.49	25.28	25.84	25.20
Diff. (±1.159)*	+1.68	-0.30	-0.30	-0.40	+2.89	+0.71	+0.30	-0.03	+0.57
Tops from saleable roots: tons per acre									
None (±0.875)	12.26	12.04	11.34	12.54	11.90	12.40	12.68	11.62	12.10
Menazon	12.74	11.43	11.02	11.90	10.74	12.60	12.18	13.24	11.98
Mean (±0.619)	12.50	11.74	11.18	12.22	11.32	12.50	12.43	12.43	12.04
Diff. (±1.238)*	+0.48	-0.61	-0.32	-0.64	-1.16	+0.20	-0.50	+1.62	-0.12

*For use only in testing the difference of 2 differences.

Date of spraying
E = Early spraying: None; sprayed twice (applied May 20 and June 8).
M = Mid-season spraying: None; sprayed twice (applied June 23 and July 4).
L = Late spraying: None; sprayed twice (applied July 16 and July 28).

62/Dh/1.2

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METEOROLOGICAL RECORDS 1962 - ROTHAMSTED

(Departure from long period means in brackets)

Month	Total sunshine: hours	Mean temperature: °F Air(1)	Dew point	In ground 1 ft.	In ground 4 ft.	Ground(2) frosts	Total rainfall: in. 1/1000 acre gauge	Rain(3) days	Drainage through 20 in. soil: in.	Wind(4) m.p.h.
Jan.	69 (+16.3)	38.5 (+1.2)	35.7	37.8	41.6	21	4.11 (+1.58)	21	4.58	5.8
Feb.	62 (-6.9)	38.3 (0.0)	34.3	38.9	42.0	18	0.84 (-1.10)	11	0.40	8.1
Mar.	105 (-12.0)	36.0 (-5.4)	31.9	37.0	40.6	27	1.91 (+0.03)	12	0.70	4.6
Apr.	130 (-25.3)	45.1 (-0.8)	39.4	44.4	42.3	9	2.49 (+0.58)	19	1.20	6.3
May	154 (-42.5)	49.7 (-2.3)	43.2	50.6	46.8	4	2.04 (-0.08)	15	0.23	5.2
June	265 (+61.2)	55.7 (-1.6)	46.3	56.9	50.5	7	0.28 (-1.91)	6	-	3.9
July	136 (-58.2)	58.6 (-2.1)	50.8	59.3	54.1	0	2.61 (+0.06)	14	0.61	3.3
Aug.	159 (-24.4)	58.7 (-1.5)	51.8	59.2	55.9	0	2.67 (+0.07)	17	0.70	3.8
Sept.	143 (-1.8)	54.6 (-1.5)	50.4	56.2	55.7	1	3.39 (+1.00)	14	1.34	3.3
Oct.	110 (+5.6)	50.6 (+1.6)	48.0	52.3	53.7	6	1.29 (-1.71)	14	0.43	3.1
Nov.	27 (-35.2)	40.9 (-1.6)	38.5	44.2	46.5	14	2.52 (-0.28)	16	2.04	3.6
Dec.	87 (+42.1)	33.5 (-5.2)	29.8	37.3	44.6	26	2.73 (+0.11)	15	1.13	5.5
Year*	1447 (-81.1)	46.7 (-1.6)	41.7	47.8	47.9	133	26.88 (-1.65)	174	13.36	4.7

(1) Mean of maximum and minimum.
(2) Number of nights grass minimum was 30°F or less.
(3) Number of days rainfall was 0.01 in. or more.
(4) At 2 metres above ground level.

*Mean or total

62/E/1.1

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METEOROLOGICAL RECORDS 1962 - WOBURN

Month	Total sunshine: hours	Mean temperature: °F Air(1)	In ground 1 ft.	Grass minimum: °F	Total rainfall: in 8" gauge	Rain(2) days
January	68	39.2	37.9	31.1	2.93	19
February	63	39.5	39.5	30.3	0.34	10
March	98	36.0	37.2	23.2	1.26	12
April	126	45.3	44.8	33.5	1.71	16
May	156	49.7	51.3	38.6	2.40	21
June	243	55.7	59.0	41.3	0.29	6
July	118	58.5	61.0	46.8	2.00	12
August	153	58.5	60.2	47.2	3.02	15
September	131	54.5	57.1	42.4	3.15	18
October	104	50.2	52.8	38.2	1.18	11
November	30	41.1	44.4	33.4	1.88	17
December	78	33.5	37.5	25.1	1.76	16
Year*	1368	46.8	48.6	35.9	21.92	173

(1) Mean of maximum and minimum

(2) Number of days rainfall was 0.01 inches or more

*Mean or total

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CONVERSION FACTORS

Factors for the Conversion of Imperial to Metric Units

1 inch (in.)	= 2·540 centimetres (cm)
1 foot (ft) (=12 in.)	= 30·48 cm
1 yard (yd) (=3 ft)	= 0·9144 metre (m)
1 square yard (yd²)	= 0·8361 m²
1 acre (ac) (=4840 yd²)	= 0·4047 hectare (ha)
1 ounce (oz)	= 28·35 grams (g)
1 pound (lb)	= 0·4536 kilogram (kg)
1 hundredweight (cwt) (=112 lb)	= 50·80 kg
1 ton (=2240 lb)	= 1016 kg = 1·016 metric tons (tonnes) (t)
1 pint	= 0·5682 litre (l)
1 gallon (gal) (=8 pints)	= 4·546 litres
1 fluid ounce = 1/20 pint	= 0·02841 litre = 28·41 ml
1 cubic foot	= 28·32 litres

To convert	*Multiply by*
oz ac^{-1} to g ha^{-1}	70·06
lb ac^{-1} to kg ha^{-1}	1·121
cwt ac^{-1} to kg ha^{-1}	125·5
cwt ac^{-1} to t ha^{-1}	0·1255
ton ac^{-1} to kg ha^{-1}	2511
ton ac^{-1} to t ha^{-1}	2·511
gal ac^{-1} to l ha^{-1}	11·233

The following factors are accurate to about 2 parts in 100:

1 lb ac^{-1} = 1·1 kg ha^{-1}
1 gal ac^{-1} = 11 litres ha^{-1}
1 ton ac^{-1} = 2·5 t ha^{-1}

In general reading of the text there will be no great inaccuracy in regarding:

1 lb = 0·5 kg
1 lb ac^{-1} = 1 kg ha^{-1}

Temperatures

To convert °F into °C subtract 32 and multiply by $\frac{5}{9}$ (0.556)
To convert °C into °F multiply by $\frac{9}{5}$ (1·8) and add 32

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CONVERSION FACTORS

Factors for the Conversion of Metric to Imperial Units

1 centimetre (cm) = 0·3937 inch (in.) = 0·03281 ft
1 metre (m) = 1·094 yards (yd)
1 square metre (m^2) = 1·196 square yards (yd^2)
1 hectare (ha) = 2·471 acres (ac)
1 gram (g) = 0·03527 ounce (oz)
1 kilogram (kg) = 2·205 pounds (lb)
1 kg = 0·01968 hundredweight (cwt) = 0·0009842 ton
1 metric ton (tonne) (t) = 0·9842 ton
1 litre = 1·760 pints = 0·2200 gallon (gal)
1 litre = 1000 millilitres (ml) = 35·20 fluid ounces = 0·03531 cubic foot (ft^3)

To convert	*Multiply by*
g ha^{-1} to oz ac^{-1}	0·01427
kg ha^{-1} to lb ac^{-1}	0·8921
kg ha^{-1} to cwt ac^{-1}	0·007966
t ha^{-1} to cwt ac^{-1}	7·966
kg ha^{-1} to tons ac^{-1}	0·0003983
t ha^{-1} to tons ac^{-1}	0·3983
l ha^{-1} to gal ac^{-1}	0·08902

Plant nutrients

Plant nutrients are best stated in terms of amounts of the elements (P, K, Na, Ca, Mg, S); the old 'oxide' terminology (P_2O_5, K_2O, Na_2O, CaO, MgO, SO_3) is still used in work involving fertilisers and liming since Regulations require statements of P_2O_5, K_2O, etc.

For quick conversions

(accurate to within 2%) the following factors may be used:

$2\frac{1}{3} \times P = P_2O_5$ $\quad$ $\frac{3}{7} \times P_2O_5 = P$
$1\frac{1}{5} \times K = K_2O$ $\quad$ $\frac{5}{6} \times K_2O = K$
$1\frac{2}{5} \times Ca = CaO$ $\quad$ $\frac{7}{10} \times CaO = Ca$
$1\frac{2}{3} \times Mg = MgO$ $\quad$ $\frac{3}{5} \times MgO = Mg$

For accurate conversions:

To convert	*Multiply by*	*To convert*	*Multiply by*
P_2O_5 to P	0·4364	P to P_2O_5	2·2915
K_2O to K	0·8301	K to K_2O	1·2047
CaO to Ca	0·7146	Ca to CaO	1·3994
MgO to Mg	0·6031	Mg to MgO	1·6581

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