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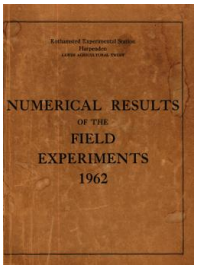
Yields of the Field Experiments 1962

Full Table of Content



62/R/B/1 Ley and Arable Rotations

Rothamsted Research

Rothamsted Research (1963) *62/R/B/1 Ley and Arable Rotations ;* Yields Of The Field Experiments 1962, pp 30 - 53 **- DOI: https://doi.org/10.23637/ERADOC-1-164**

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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 $\frac{1}{4}$ 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 $6\frac{1}{2}$ 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 $2\frac{3}{4}$ 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 $1\frac{1}{2}$ 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
To test crop		(±2.20)*			(±1.10)
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
To test crop		(±1.55)*			(0.77)
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				
	(±3.11)		(±2.20)	(±4.40)
To test crop				
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

	(±2.19)		(±1.55)	(±3.10)
To test crop				
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

			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	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

			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	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