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Yields of the Field Experiments 1956

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56/R/BC/1 Ley and Arable Rotations

Rothamsted Research

Rothamsted Research (1957) *56/R/BC/1 Ley and Arable Rotations* ; Yields Of The Field Experiments 1956, pp 32 - 49 - DOI: <https://doi.org/10.23637/ERADOC-1-176>

56/Bc/1.1

LEY AND ARABLE ROTATIONS

Highfield and Fosters Field 1956 - the 8th year.

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

Rates of application of supplementary (corrective) potash
(K₂O: cwt per acre)

| Crop | Year of cycle | Rate | |
|----------------------------------|-----------------|------|-------------------------------|
| Cut grass | "1st treatment" | 3.0 | (3 years previous cutting) |
| | "2nd treatment" | 1.5 | (received supplement in 1955) |
| | "3rd treatment" | 1.5 | (received supplement in 1955) |
| Lucerne | "1st treatment" | 3.0 | (3 years previous lucerne) |
| | "2nd treatment" | 1.0 | (received supplement in 1955) |
| | "3rd treatment" | 1.0 | (received supplement in 1955) |
| Permanent and Reseeded Remainder | "1st treatment" | 1.2 | (1 previous hay crop taken) |
| | | None | |

Cultivations, etc.:

HIGHFIELD

1st year Treatment Crops

Cut grass. Ploughed twice: Sept 8, 1955 and Nov 29. 1st dressing of supplementary K applied: Mar 9, 1956. Basal PK and 'Nitro-Chalk' applied: Apr 17. Seed sown at 33 lb per acre: Apr 19. 2nd dressing of supplementary K applied: July 11. Cut 4 times: July 10, Aug 9, Sept 6, Nov 12. 'Nitro-Chalk' applied after each cut except the last.

Grazed ley. Ploughed twice: Sept 8, 1955 and Nov 29. Basal PK applied: Apr 17, 1956. 'Nitro-Chalk' applied: Apr 18. Seed sown at 44 lb per acre: Apr 19. 'Nitro-Chalk' applied: Aug 23. Grazed: 7 - 8 circuits, July 5 - Nov 1.

Lucerne. Ploughed twice: Sept 8, 1955 and Nov 29. 1st dressing of supplementary K applied: Mar 9, 1956. Basal PK applied: Apr 17. Seed drilled at 28 lb per acre: Apr 19. 2nd dressing of supplementary K applied: Aug 3. Cut twice: Aug 3, Nov 9. Variety: Du Puits.

Hay. Seeds undersown in barley at 28 lb per acre: Apr 25, 1955. Basal PK applied: Dec 5. 'Nitro-Chalk' applied: Mar 20, 1956. Cut: June 27.

2nd year Treatment Crops

Cut grass. Basal PK applied: Dec 6, 1955. Supplementary K applied: Mar 9, 1956. 'Nitro-Chalk' applied: Mar 15 and after each cut except the last. Cut 6 times: May 16, June 20, July 10, Aug 9, Sept 6, Nov 12.

Grazed ley. Basal PK applied: Dec 6, 1955. 'Nitro-Chalk' applied: May 7, 1956 and Aug 23. Grazed: 9 circuits, Apr 24 - Oct 28.

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Lucerne. Basal PK applied: Dec 6, 1955. Supplementary K applied: Mar 9, 1956. Cut 3 times: June 21, Aug 2, Nov 9.
Potatoes. Ploughed twice: June 11, 1955 and Oct 14. Ridged: Mar 26, 1956. Basal PK applied: Mar 27. Sulphate of ammonia and dung applied, potatoes planted: Mar 29. For later cultivations see Potato Test Crop.

3rd year Treatment Crops

Cut grass. Basal PK applied: Dec 6, 1955. Supplementary K applied: Mar 9, 1956. 'Nitro-Chalk' applied: Mar 15 and after each cut except the last. Cut 6 times: May 16, June 20, July 10, Aug 9, Sept 6, Oct 18.
Grazed ley. Basal PK applied: Dec 6, 1955. 'Nitro-Chalk' applied: May 7, 1956 and Aug 23. Grazed: 8 circuits, Apr 28 - Oct 5.
Lucerne. Basal PK applied: Dec 6, 1955. Sprayed with TCA (Sodium trichloroacetate), 20 lb in 90 gallons per acre: Mar 8, 1956. Supplementary K applied: Mar 9. Cut 3 times: June 21, Aug 3, Oct 18.
Oats. Ploughed: Oct 14, 1955. 'Nitro-Chalk' applied, seed drilled at $3\frac{1}{2}$ bushels per acre with basal PK: Mar 13, 1956. Combine harvested: Sept 15. Variety: Sun II.

1st Test Crop, Wheat

Ploughed after oats: Sept 8, 1955. Ploughed leys: Oct 25 - 27. Seed drilled at $2\frac{3}{4}$ bushels per acre with basal PK: Nov 1. 'Nitro-Chalk' applied: Apr 25, 1956. Sprayed with MCPA, 3 pints in 40 gallons per acre: May 22. Combine harvested: Sept 17. Variety: Yeoman.

2nd Test Crop, Potatoes

Ploughed twice: Sept 8, 1955 and Nov 29. Ridged: Mar 26, 1956. Basal PK applied: Mar 27. Dung, sulphate of ammonia and additional P and K applied, potatoes planted: Mar 29. Earthed up: June 22. Sprayed with copper fungicide, 5 lb in 40 gallons per acre: July 25. Sprayed with sulphuric acid, 20% BOV at 80 gallons per acre: Sept 13. Lifted: Oct 12. Variety: Majestic.

3rd Test Crop, Barley

Ploughed: Oct 14, 1955. Ground chalk applied to blocks 9 and 12: Dec 5. 'Nitro-Chalk' applied: Mar 13, 1956. Seed drilled at 2 bushels per acre with basal PK: Mar 14. Combine harvested: Sept 15 - 17. Variety: Proctor.

Permanent grasses. Basal PK applied to all plots: Dec 6, 1955.
6th year reseeded, 6th experimental year of permanent grass, Blocks 9-12.
Blocks 9 and 12. Ground chalk applied: Dec 5, 1955. 'Nitro-Chalk' applied to reseeded grass: May 30, 1956 and Sept 7. 'Nitro-Chalk' applied to permanent grass: June 4 and Aug 27. Grazed: 8 circuits, May 6 - Nov 3.
Blocks 10 and 11. 'Nitro-Chalk' to reseeded grass: May 28, 1956 and Sept 3. 'Nitro-Chalk' to permanent grass: May 30 and Aug 27. Grazed: 8 circuits, May 6 - Oct 30.

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7th year reseeded, 7th experimental year of permanent grass, Blocks 5-8.
Blocks 5 and 8. Supplementary K applied: Mar 9, 1956. 'Nitro-Chalk' applied: Mar 20. Cut for hay, 'Nitro-Chalk' applied: June 27. Grazed aftermath: 4 circuits, July 21 - Oct 22.
Blocks 6 and 7. 'Nitro-Chalk' applied: May 24 - 26, 1956 and Aug 23. Grazed: 8 circuits, May 2 - Oct 30.

8th year reseeded, 8th experimental year of permanent grass, Blocks 1-4.
'Nitro-Chalk' applied: Mar 18, 1956 and Aug 27 - Sept 3. Grazed: 8-9 circuits, Apr 24 - Nov 7.

FOSTERS

1st year Treatment Crops

Cut grass. Ploughed twice: Sept 7, 1955 and Nov 28. 1st dressing of supplementary K applied: Mar 8, 1956. Basal PK applied: Mar 17. 'Nitro-Chalk' applied: Mar 18. Seed sown at 33 lb per acre: Mar 19. 2nd dressing of supplementary K applied: July 12. Cut 4 times: July 11, Aug 8, Sept 8, Nov 12. 'Nitro-Chalk' applied after each cut except the last.

Grazed ley. Ploughed twice: Sept 8, 1955 and Nov 29. Basal PK applied: Apr 17, 1956. 'Nitro-Chalk' applied: Apr 18. Seed sown at 44 lb per acre: Apr 19. 'Nitro-Chalk' applied: Aug 24. Grazed: 5 circuits, July 6 - Oct 19.

Lucerne. Ploughed twice: Sept 7, 1955 and Nov 28. 1st dressing of supplementary K applied: Mar 8, 1956. Basal PK applied: Apr 17. Seed drilled at 28 lb per acre: Apr 19. 2nd dressing of supplementary K applied: Aug 2. Cut twice: Aug 1 and Nov 9. Variety: Du Puits.

Hay. Seeds undersown in barley at 28 lb per acre: Apr 25, 1955. Basal PK applied: Dec 5. 'Nitro-Chalk' applied: Mar 20, 1956. Cut: June 25.

2nd year Treatment Crops

Cut grass. Basal PK applied: Dec 5, 1955. Supplementary K applied: Mar 8, 1956. 'Nitro-Chalk' applied: Mar 14 and after each cut except the last. Cut 6 times: May 16, June 20, July 11, Aug 8, Sept 8, Nov 12.

Grazed ley. Basal PK applied: Dec 5, 1955. 'Nitro-Chalk' applied: May 7, 1956 and Aug 25. Grazed: 7-8 circuits, Apr 25 - Oct 23.

Lucerne. Basal PK applied: Dec 6, 1955. Supplementary K applied: Mar 8, 1956. Cut 3 times: June 22, July 31, Nov 9.

Potatoes. Ploughed twice: June 11, 1955 and Oct 14. Ridged: Mar 26, 1956. Basal PK applied: Mar 27. Sulphate of ammonia and dung applied, potatoes planted: Mar 28. For later cultivations see Potato Test Crop.

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3rd year Treatment Crops

Cut grass. Basal PK applied: Dec 5, 1955. Supplementary K applied: Mar 8, 1956. 'Nitro-Chalk' applied: Mar 14 and after each cut except the last. Cut 6 times: May 16, June 20, July 11, Aug 8, Sept 8, Oct 19.

Grazed ley. Basal PK applied: Dec 5, 1955. 'Nitro-Chalk' applied: May 7, 1956 and Aug 24. Grazed: 7 circuits, Apr 29 - Oct 15.

Lucerne. Basal PK applied: Dec 5, 1955. Supplementary K applied: Mar 8, 1956. Cut 3 times: June 22, July 31, Oct 19.

Oats. Ploughed: Oct 13, 1955. 'Nitro-Chalk' applied, seed drilled at $3\frac{1}{2}$ bushels per acre with basal PK: Mar 13, 1956. Combine harvested: Sept 14. Variety: Sun II.

1st Test Crop, Wheat

Ploughed after oats: Sept 7, 1955. Ploughed leys: Oct 27. Seed drilled at $2\frac{3}{4}$ bushels per acre with basal PK: Nov 1. 'Nitro-Chalk' applied: Apr 25, 1956. Sprayed with MCPA, 3 pints in 40 gallons per acre: May 17. Combined harvested: Sept 4. Variety: Yeoman.

2nd Test Crop, Potatoes

Ploughed twice: Sept 7, 1955 and Nov 28. Ridged: Mar 26, 1956. Basal PK applied: Mar 27. Dung, sulphate of ammonia and additional P and K applied, potatoes planted: Mar 27 - 28. Earthed up: June 22. Sprayed with copper sulphate, 5 lb in 40 gallons per acre: July 24. Sprayed with sulphuric acid, 20% BOV at 80 gallons per acre: Sept 13. Lifted: Oct 9. Variety: Majestic.

3rd Test Crop, Barley

Ploughed: Oct 13, 1955. 'Nitro-Chalk' applied: Mar 13, 1956. Seed drilled at 2 bushels per acre with basal PK: Mar 14. Combine harvested: Sept 14. Variety: Proctor.

Note: One block received a basal dressing of sulphate of ammonia in error.

Permanent grasses. Basal PK applied to all plots: Dec 5, 1955.

6th year reseeded grass, Blocks 6, 10, 11, 12.

'Nitro-Chalk' applied: May 14, 1956 and Aug 25. Grazed: 7 circuits, May 3 - Oct 27.

7th year reseeded grass, Blocks 5, 7, 8, 9.

Blocks 5 and 7. Supplementary K applied: Mar 8, 1956. 'Nitro-Chalk' applied: Mar 20. Cut for hay, 'Nitro-Chalk' applied: June 25. Grazed aftermath: 4 circuits, July 28 - Oct 7.

Blocks 8 and 9. 'Nitro-Chalk' applied: May 14, 1956 and Aug 24. Grazed: 7 circuits, May 3 - Oct 19.

8th year reseeded grass, Blocks 1, 2, 3, 4.

'Nitro-Chalk' applied: May 14, 1956 and Aug 29 - Sept 3. Grazed: 8-9 circuits, Apr 25 - Oct 31.

56/Bc/1.5

Standard errors per $\frac{1}{4}$ plot. Test Crops.

Wheat, grain Highfield: 1.78 cwt per acre or 5.5% (13 d.f.)
(at 85% dry matter). Fosters: 1.36 cwt per acre or 3.8% (13 d.f.)

Potatoes, Highfield $\frac{1}{4}$ plot: 1.507 tons per acre or 9.4% (14 d.f.)
total tubers. $\frac{1}{8}$ plot: 1.134 tons per acre or 7.1% (20 d.f.)
Fosters $\frac{1}{4}$ plot: 0.531 tons per acre or 3.7% (14 d.f.)
 $\frac{1}{8}$ plot: 1.011 tons per acre or 7.1% (20 d.f.)

Barley, grain Highfield: 2.73 cwt per acre or 8.0% (15 d.f.)
(at 85% dry matter). Fosters: 1.64 cwt per acre or 4.2% (15 d.f.)

Summary of Results

Wheat 1st test crop

| N: cwt per acre | Treatment crops 1953-1955 | | | | Mean |
|---|---------------------------|------|-----------|-----------------|------------------------|
| | Lucerne | Ley | Cut Grass | Arable with hay | |
| Grain (at 85% dry matter): cwt per acre | | | | | |
| <u>Highfield</u> | | | | | |
| Mean | 34.2 | 36.2 | 20.4 | 39.7 | 32.6 |
| To test crop | | | | | |
| 0.3 | 34.8 | 36.9 | 21.4 | 38.2 | 32.8 |
| 0.6 | 33.7 | 35.4 | 19.5 | 41.1 | 32.4 |
| Difference (± 1.26) | -1.1 | -1.5 | -1.9 | +2.9 | -0.4 (± 0.63) |
| To treatment crops | | | | | |
| Single rate | | 36.3 | 22.2 | 39.2 | 32.6 |
| Double rate | | 36.1 | 18.7 | 40.1 | 31.6 |
| Difference (± 1.26) | | -0.2 | -3.5 | +0.9 | -1.0 (± 0.73) |
| <u>Fosters</u> | | | | | |
| Mean | 41.7 | 36.1 | 33.8 | 30.5 | 35.5 |
| To test crop | | | | | |
| 0.3 | 40.4 | 34.6 | 32.0 | 27.1 | 33.5 |
| 0.6 | 43.0 | 37.6 | 35.7 | 34.0 | 37.6 |
| Difference (± 0.96) | +2.6 | +3.0 | +3.7 | +6.9 | +4.1 (± 0.48) |
| To treatment crops | | | | | |
| Single rate | | 35.2 | 33.4 | 28.8 | 32.5 |
| Double rate | | 37.0 | 34.3 | 32.3 | 34.5 |
| Difference (± 0.96) | | +1.8 | +0.9 | +3.5 | +2.0 (± 0.56) |

56/Bc/1.6

Wheat 1st test crop

| N: cwt per acre | Excluding Lucerne N to previous treatment crop | | | Arable with hay only Dung to potatoes 1954: tons per acre | | |
|-----------------|--|----------------|------|--|----|------|
| | Single rate | Double rate | Mean | None | 12 | Mean |

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

Highfield

| | | | | | | |
|--------------------------------|----------------|------|----------------|----------------|------|----------------|
| To test crop | (± 0.73) | | (± 0.51) | (± 1.26) | | (± 0.89) |
| 0.3 | 32.0 | 32.4 | 32.2 | 37.0 | 39.3 | 38.2 |
| 0.6 | 33.2 | 30.9 | 32.0 | 39.3 | 42.9 | 41.1 |
| Mean | 32.6 | 31.6 | 32.1 | 38.2 | 41.1 | 39.7 |
| | (± 0.51) | | | (± 0.89) | | |
| To previous treatment crops | | | | (± 1.26) | | (± 0.89) |
| Single rate | | | | 37.9 | 40.4 | 39.2 |
| Double rate | | | | 38.5 | 41.8 | 40.1 |
| Mean | | | | 38.2 | 41.1 | 39.7 |
| | | | | (± 0.89) | | |

Mean dry matter % as harvested: 81.6

Fosters

| | | | | | | |
|--------------------------------|----------------|------|----------------|----------------|------|----------------|
| To test crop | (± 0.56) | | (± 0.39) | (± 0.96) | | (± 0.68) |
| 0.3 | 30.2 | 32.3 | 31.2 | 26.7 | 27.6 | 27.1 |
| 0.6 | 34.8 | 36.8 | 35.8 | 32.6 | 35.3 | 34.0 |
| Mean | 32.5 | 34.5 | 33.5 | 29.6 | 31.5 | 30.5 |
| | (± 0.39) | | | (± 0.68) | | |
| To previous treatment crops | | | | (± 0.96) | | (± 0.68) |
| Single rate | | | | 28.2 | 29.3 | 28.8 |
| Double rate | | | | 31.0 | 33.6 | 32.3 |
| Mean | | | | 29.6 | 31.5 | 30.5 |
| | | | | (± 0.68) | | |

Mean dry matter % as harvested: 71.4

56/Bc/1.7

Wheat 1st test crop

| N: cwt per acre | Treatment crops 1953-1955 | | | | Mean |
|-----------------|---------------------------|-----|-----------|-----------------|------|
| | Lucerne | Ley | Cut Grass | Arable with hay | |

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

Highfield

| | | | | | |
|--------------------|------|------|------|------|------|
| Mean | 24.2 | 37.1 | 15.3 | 26.7 | 25.8 |
| To test crop | | | | | |
| 0.3 | 24.8 | 37.3 | 15.0 | 28.9 | 26.5 |
| 0.6 | 23.6 | 37.0 | 15.6 | 24.5 | 25.2 |
| Difference | -1.2 | -0.3 | +0.6 | -4.4 | -1.3 |
| To treatment crops | | | | | |
| Single rate | | 36.3 | 17.2 | 25.8 | 26.4 |
| Double rate | | 38.0 | 13.4 | 27.6 | 26.3 |
| Difference | | +1.7 | -3.8 | +1.8 | -0.1 |

Fosters

| | | | | | |
|--------------------|------|------|------|------|------|
| Mean | 26.2 | 27.5 | 22.0 | 21.2 | 24.2 |
| To test crop | | | | | |
| 0.3 | 27.1 | 26.7 | 20.4 | 18.9 | 23.3 |
| 0.6 | 25.3 | 28.3 | 23.6 | 23.4 | 25.2 |
| Difference | -1.8 | +1.6 | +3.2 | +4.5 | +1.9 |
| To treatment crops | | | | | |
| Single rate | | 27.0 | 22.9 | 18.6 | 22.8 |
| Double rate | | 27.9 | 21.2 | 23.7 | 24.3 |
| Difference | | +0.9 | -1.7 | +5.1 | +1.5 |

56/Bc/1.8

Wheat 1st test crop

| N: cwt per acre | Excluding Lucerne | | | Arable with hay only | | |
|-----------------|-------------------|-------------|------|--------------------------------------|----|------|
| | Single rate | Double rate | Mean | Dung to potatoes 1954: tons per acre | | Mean |
| | | | | None | 12 | |

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

Highfield

| | | | | | | |
|-----------------------------|------|------|------|------|------|------|
| To test crop | | | | | | |
| 0.3 | 26.4 | 27.8 | 27.1 | 26.7 | 31.2 | 28.9 |
| 0.6 | 26.5 | 24.9 | 25.7 | 24.8 | 24.2 | 24.5 |
| Mean | 26.4 | 26.3 | 26.4 | 25.8 | 27.7 | 26.7 |
| To previous treatment crops | | | | | | |
| Single rate | | | | 26.1 | 25.6 | 25.8 |
| Double rate | | | | 25.4 | 29.8 | 27.6 |
| Mean | | | | 25.8 | 27.7 | 26.7 |

Mean dry matter % as harvested: 84.6

Fosters

| | | | | | | |
|-----------------------------|------|------|------|------|------|------|
| To test crop | | | | | | |
| 0.3 | 21.0 | 23.0 | 22.0 | 17.1 | 20.8 | 18.9 |
| 0.6 | 24.6 | 25.6 | 25.1 | 24.8 | 21.9 | 23.4 |
| Mean | 22.8 | 24.3 | 23.6 | 21.0 | 21.4 | 21.2 |
| To previous treatment crops | | | | | | |
| Single rate | | | | 18.8 | 18.5 | 18.6 |
| Double rate | | | | 23.2 | 24.2 | 23.7 |
| Mean | | | | 21.0 | 21.4 | 21.2 |

Mean dry matter % as harvested: 83.4

56/Bc/1.9

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

| | Treatment crops 1952-1954 | | | | Mean |
|---|---------------------------|-------|-----------|-----------------|--------------------------|
| | Lucerne | Ley | Cut Grass | Arable with hay | |
| | <u>Highfield</u> | | | | |
| Mean | 15.64 | 17.86 | 14.81 | 15.54 | 15.96 |
| N: cwt per acre | | | | | |
| 0.5 | 16.13 | 17.89 | 14.74 | 15.18 | 15.98 |
| 1.0 | 15.15 | 17.82 | 14.87 | 15.90 | 15.94 |
| Difference (± 1.066) | -0.98 | -0.07 | +0.13 | +0.72 | -0.04 (± 0.533) |
| Dung: tons per acre | | | | | |
| None | 13.10 | 16.62 | 13.38 | 13.92 | 14.25 |
| 12 | 18.19 | 19.10 | 16.23 | 17.16 | 17.67 |
| Difference (± 1.066) | +5.09 | +2.48 | +2.85 | +3.24 | +3.42 (± 0.533) |
| P ₂ O ₅ : cwt per acre* | | | | | |
| 0.9 | 15.75 | 17.99 | 14.47 | 15.12 | 15.83 |
| 1.8 | 15.54 | 17.72 | 15.14 | 15.96 | 16.09 |
| Difference (± 0.567) | -0.21 | -0.27 | +0.67 | +0.84 | +0.26 (± 0.284) |
| K ₂ O: cwt per acre* | | | | | |
| 0.9 | 14.53 | 17.47 | 13.65 | 14.40 | 15.01 |
| 1.8 | 16.75 | 18.25 | 15.96 | 16.67 | 16.91 |
| Difference (± 0.567) | +2.22 | +0.78 | +2.31 | +2.27 | +1.90 (± 0.284) |
| | <u>Fosters</u> | | | | |
| Mean | 14.23 | 14.76 | 13.37 | 14.70 | 14.27 |
| N: cwt per acre | | | | | |
| 0.5 | 14.22 | 14.40 | 13.62 | 14.18 | 14.10 |
| 1.0 | 14.24 | 15.12 | 13.12 | 15.22 | 14.43 |
| Difference (± 0.375) | +0.02 | +0.72 | -0.50 | +1.04 | +0.33 (± 0.188) |
| Dung: tons per acre | | | | | |
| None | 12.95 | 14.28 | 12.01 | 13.37 | 13.15 |
| 12 | 15.51 | 15.24 | 14.73 | 16.03 | 15.38 |
| Difference (± 0.375) | +2.56 | +0.96 | +2.72 | +2.66 | +2.23 (± 0.188) |
| P ₂ O ₅ : cwt per acre* | | | | | |
| 0.9 | 14.44 | 14.79 | 12.94 | 14.53 | 14.17 |
| 1.8 | 14.02 | 14.73 | 13.80 | 14.87 | 14.36 |
| Difference (± 0.505) | -0.42 | -0.06 | +0.86 | +0.34 | +0.19 (± 0.253) |
| K ₂ O: cwt per acre* | | | | | |
| 0.9 | 13.65 | 14.41 | 13.13 | 14.68 | 13.97 |
| 1.8 | 14.81 | 15.11 | 13.61 | 14.72 | 14.56 |
| Difference (± 0.505) | +1.16 | +0.70 | +0.48 | +0.04 | +0.59 (± 0.253) |

*Including basal dressing

56/Bc/1.10

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

| | Dung: tons per acre | P ₂ O ₅ : cwt per acre* | K ₂ O: cwt per acre* |
|------|------------------------|--|------------------------------------|
| None | 12 | 0.9 1.8 | 0.9 1.8 |

Highfield

| N: cwt per acre | (±0.533) | (1) and (2) | (1) and (2) |
|---------------------|-------------|-------------|-------------|
| 0.5 | 13.88 18.09 | 16.07 15.90 | 15.02 16.95 |
| 1.0 | 14.63 17.25 | 15.60 16.27 | 15.01 16.87 |
| Dung: tons per acre | | (1) and (2) | (1) and (2) |
| None | | 14.09 14.42 | 12.51 15.99 |
| 12 | | 17.58 17.76 | 17.51 17.82 |

| Lucerne rotation only | K ₂ O: cwt per acre* | | Mean |
|---|---------------------------------|-------|-------|
| | 0.9 | 1.8 | |
| P ₂ O ₅ : cwt per acre* | (3) and (4) | | |
| 0.9 | 14.87 | 16.63 | 15.75 |
| 1.8 | 14.19 | 16.88 | 15.54 |
| Mean | 14.53 | 16.75 | 15.64 |

| | Dung: tons per acre | P ₂ O ₅ : cwt per acre* | K ₂ O: cwt per acre* |
|------|------------------------|--|------------------------------------|
| None | 12 | 0.9 1.8 | 0.9 1.8 |

Fosters

| N: cwt per acre | (± 0.188) | (1) and (2) | (1) and (2) |
|---------------------|-------------|-------------|-------------|
| 0.5 | 13.04 15.17 | 14.08 14.13 | 13.82 14.38 |
| 1.0 | 13.27 15.58 | 14.27 14.58 | 14.11 14.74 |
| Dung: tons per acre | | (1) and (2) | (1) and (2) |
| None | | 13.18 13.13 | 12.59 13.71 |
| 12 | | 15.17 15.58 | 15.34 15.41 |

| Lucerne rotation only | K ₂ O: cwt per acre* | | Mean |
|---|---------------------------------|-------|-------|
| | 0.9 | 1.8 | |
| P ₂ O ₅ : cwt per acre* | (3) and (4) | | |
| 0.9 | 13.80 | 15.09 | 14.44 |
| 1.8 | 13.49 | 14.54 | 14.02 |
| Mean | 13.65 | 14.81 | 14.23 |

*Including basal dressing.

| Highfield | Fosters |
|------------|---|
| (1) ±0.284 | (1) ±0.253 for use in horizontal and interaction comparisons. |
| (2) ±0.427 | (2) ±0.223 for use in all others. |
| (3) ±1.066 | (3) ±0.375 for use only in testing the PK interaction. |
| (4) ±0.854 | (4) ±0.445 for use in all other comparisons. |

56/Bc/1.11

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

| | Treatment crops 1952-1954 | | | | Mean |
|---|---------------------------|------|-----------|-----------------|------|
| | Lucerne | Ley | Cut Grass | Arable with hay | |
| <u>Highfield</u> | | | | | |
| Mean | 77.3 | 74.3 | 69.6 | 67.5 | 72.2 |
| N: cwt per acre | | | | | |
| 0.5 | 80.6 | 75.3 | 69.5 | 70.8 | 74.0 |
| 1.0 | 74.0 | 73.3 | 69.7 | 64.2 | 70.3 |
| Difference | -6.6 | -2.0 | +0.2 | -6.6 | -3.7 |
| Dung: tons per acre | | | | | |
| None | 74.7 | 75.1 | 71.7 | 67.6 | 72.3 |
| 12 | 79.9 | 73.5 | 67.5 | 67.4 | 72.1 |
| Difference | +5.2 | -1.6 | -4.2 | -0.2 | -0.2 |
| P ₂ O ₅ : cwt per acre* | | | | | |
| 0.9 | 79.9 | 73.7 | 69.2 | 65.6 | 72.1 |
| 1.8 | 74.6 | 75.0 | 70.0 | 69.4 | 72.2 |
| Difference | -5.3 | +1.3 | +0.8 | +3.8 | +0.1 |
| K ₂ O: cwt per acre* | | | | | |
| 0.9 | 78.0 | 70.6 | 70.0 | 66.0 | 71.2 |
| 1.8 | 76.6 | 78.0 | 69.2 | 69.0 | 73.2 |
| Difference | -1.4 | +7.4 | -0.8 | +3.0 | +2.0 |
| <u>Fosters</u> | | | | | |
| Mean | 91.2 | 89.3 | 89.7 | 91.0 | 90.3 |
| N: cwt per acre | | | | | |
| 0.5 | 91.4 | 89.7 | 90.2 | 91.8 | 90.8 |
| 1.0 | 90.9 | 88.9 | 89.1 | 90.3 | 89.8 |
| Difference | -0.5 | -0.8 | -1.1 | -1.5 | -1.0 |
| Dung: tons per acre | | | | | |
| None | 90.3 | 91.3 | 89.6 | 90.8 | 90.5 |
| 12 | 92.0 | 87.3 | 89.8 | 91.4 | 90.1 |
| Difference | +1.7 | -4.0 | +0.2 | +0.6 | -0.4 |
| P ₂ O ₅ : cwt per acre* | | | | | |
| 0.9 | 92.2 | 88.4 | 89.4 | 91.2 | 90.3 |
| 1.8 | 90.1 | 90.2 | 89.9 | 90.9 | 90.2 |
| Difference | -2.1 | +1.8 | +0.5 | -0.3 | -0.1 |
| K ₂ O: cwt per acre* | | | | | |
| 0.9 | 90.4 | 89.3 | 90.3 | 90.1 | 90.0 |
| 1.8 | 91.9 | 89.3 | 89.0 | 92.0 | 90.6 |
| Difference | +1.5 | 0.0 | -1.3 | +1.9 | +0.6 |

*Including basal dressing.

56/Bc/1.12

Potatoes 2nd test crop. Percentage ware (1½" riddle)

| | Dung: tons per acre | P ₂ O ₅ : cwt per acre* | K ₂ O: cwt per acre* |
|------|------------------------|--|------------------------------------|
| None | 12 | 0.9 1.8 | 0.9 1.8 |

Highfield

| | | | | | | |
|---------------------|------|------|------|------|------|------|
| N: cwt per acre | | | | | | |
| 0.5 | 74.7 | 73.4 | 75.0 | 73.1 | 73.9 | 74.2 |
| 1.0 | 69.8 | 70.8 | 69.2 | 71.4 | 68.4 | 72.2 |
| Dung: tons per acre | | | | | | |
| None | | | 73.0 | 71.5 | 71.8 | 72.7 |
| 12 | | | 71.2 | 72.9 | 70.5 | 73.6 |

| <u>Lucerne rotation only</u> | K ₂ O: cwt per acre* | | Mean |
|---|---------------------------------|------|------|
| | 0.9 | 1.8 | |
| P ₂ O ₅ : cwt per acre* | | | |
| 0.9 | 81.0 | 78.9 | 79.9 |
| 1.8 | 75.0 | 74.2 | 74.6 |
| Mean | 78.0 | 76.6 | 77.3 |

| | Dung: tons per acre | P ₂ O ₅ : cwt per acre* | K ₂ O: cwt per acre* |
|------|------------------------|--|------------------------------------|
| None | 12 | 0.9 1.8 | 0.9 1.8 |

Fosters

| | | | | | | |
|---------------------|------|------|------|------|------|------|
| N: cwt per acre | | | | | | |
| 0.5 | 90.9 | 90.7 | 90.4 | 91.2 | 90.6 | 91.0 |
| 1.0 | 90.0 | 89.5 | 90.2 | 89.3 | 89.5 | 90.1 |
| Dung: tons per acre | | | | | | |
| None | | | 90.9 | 90.0 | 90.6 | 90.3 |
| 12 | | | 89.7 | 90.5 | 89.4 | 90.8 |

| <u>Lucerne rotation only</u> | K ₂ O: cwt per acre* | | Mean |
|---|---------------------------------|------|------|
| | 0.9 | 1.8 | |
| P ₂ O ₅ : cwt per acre* | | | |
| 0.9 | 90.5 | 94.0 | 92.2 |
| 1.8 | 90.4 | 89.8 | 90.1 |
| Mean | 90.4 | 91.9 | 91.2 |

*Including basal dressing.

56/Bc/1.13

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

| | Treatment crops 1951-1953 | | | | Mean |
|---|---------------------------|------|-----------------|-----------------|------------------------|
| | Lucerne | Ley | Cut Grass | Arable with hay | |
| | <u>Highfield</u> | | | | |
| Mean | 31.5 | 33.2 | 35.9 | 36.8 | 34.3 |
| N: cwt per acre | | | | | |
| None | 32.8 | 33.9 | 35.4 | 39.7 | 35.4 |
| 0.2 | 30.2 | 32.5 | 36.4 | 34.0 | 33.3 |
| Difference (± 1.93) | -2.6 | -1.4 | +1.0 | -5.7 | -2.1 (± 0.97) |
| Dung to potatoes 1955: tons per acre | | | | | |
| None | 30.6 | 32.6 | 37.2 | 35.9 | 34.1 |
| 12 | 32.3 | 33.8 | 34.6 | 37.7 | 34.6 |
| Difference (± 1.93) | +1.7 | +1.2 | -2.6 | +1.8 | +0.5 (± 0.97) |
| | <u>Fosters</u> | | | | |
| Mean | 36.7 | 38.8 | 40.3 | 39.8 | 38.9 |
| N: cwt per acre | | | | | |
| 0.2 | 36.6 | 39.3 | 41.6 | 39.9 | 39.3 |
| 0.4 | 36.9 | 38.4 | 39.1 | 39.7 | 38.5 |
| Difference (± 1.16) | +0.3 | -0.9 | -2.5 | -0.2 | -0.8 (± 0.58) |
| Dung to potatoes 1955: tons per acre | | | | | |
| None | 38.2 | 38.9 | 40.3 | 40.5 | 39.5 |
| 12 | 35.3 | 38.7 | 40.4 | 39.1 | 38.4 |
| Difference (± 1.16) | -2.9 | -0.2 | +0.1 | -1.4 | -1.1 (± 0.58) |
| | <u>Highfield</u> | | <u>Fosters</u> | | |
| | N: cwt per acre | | N: cwt per acre | | |
| | None 0.2 | | 0.2 0.4 | | |
| Dung to potatoes 1955: tons per acre | (± 0.97) | | (± 0.58) | | |
| None | 36.4 | 31.8 | 39.6 | 39.4 | |
| 12 | 34.5 | 34.7 | 39.1 | 37.6 | |
| Mean dry matter % as harvested: | | | | | |
| Highfield: 79.3 | | | | | |
| Fosters: 80.3 | | | | | |

56/Bc/1.14

Barley 3rd test crop. Straw: cwt per acre

| | Treatment crops 1951-53 | | | | Mean |
|---|-------------------------|------|-----------|-----------------|------|
| | Lucerne | Ley | Cut Grass | Arable with hay | |
| | <u>Highfield*</u> | | | | |
| Mean | 38.4 | 37.5 | 33.5 | 35.4 | 36.2 |
| N: cwt per acre | | | | | |
| None | 38.1 | 33.9 | 33.9 | 33.1 | 34.8 |
| 0.2 | 38.7 | 41.1 | 33.1 | 37.8 | 37.7 |
| Difference | +0.6 | +7.2 | -0.8 | +4.7 | +2.9 |
| Dung to potatoes 1955: tons per acre | | | | | |
| None | 35.8 | 36.8 | 31.2 | 34.2 | 34.5 |
| 12 | 41.1 | 38.2 | 35.8 | 36.7 | 37.9 |
| Difference | +5.3 | +1.4 | +4.6 | +2.5 | +3.4 |
| | <u>Fosters</u> | | | | |
| Mean | 27.7 | 30.0 | 28.2 | 29.6 | 28.9 |
| N: cwt per acre | | | | | |
| 0.2 | 26.5 | 28.5 | 28.0 | 29.5 | 28.1 |
| 0.4 | 29.0 | 31.5 | 28.5 | 29.6 | 29.6 |
| Difference | +2.5 | +3.0 | +0.5 | +0.1 | +1.5 |
| Dung to potatoes 1955: tons per acre | | | | | |
| None | 27.7 | 29.1 | 28.1 | 30.1 | 28.8 |
| 12 | 27.8 | 30.9 | 28.4 | 29.0 | 29.0 |
| Difference | +0.1 | +1.8 | +0.3 | -1.1 | +0.2 |

| | <u>Highfield</u> | | <u>Fosters</u> | |
|---|------------------|------|-----------------|------|
| | N: cwt per acre | | N: cwt per acre | |
| | None | 0.2 | 0.2 | 0.4 |
| Dung to potatoes 1955: tons per acre | | | | |
| None | 33.5 | 35.5 | 28.2 | 29.3 |
| 12 | 36.0 | 39.8 | 28.1 | 30.0 |

Mean dry matter % as harvested:
Highfield: 73.7
Fosters: 84.0

*At 85% dry matter.

56/Bc/1.15

Treatment crops Arable and Hay rotation

(values based on Mean of 2 sub plots only)

| | Highfield | | | Fosters | | |
|---|---------------------------------|-------------|-------|---------------------------------|-------------|-------|
| | N: cwt per acre applied in 1956 | | | N: cwt per acre applied in 1956 | | |
| | Single rate | Double rate | Mean | Single rate | Double rate | Mean |
| Hay (dry matter): cwt per acre | | | | | | |
| No dung | 50.7 | 59.2 | 55.0 | 41.4 | 48.3 | 44.9 |
| Dung in 1954 | 61.0 | 55.4 | 58.2 | 39.6 | 57.0 | 48.3 |
| Mean | 55.8 | 57.3 | 56.6 | 40.5 | 52.7 | 46.6 |
| Potatoes, total tubers: tons per acre | | | | | | |
| No dung | 11.78 | 13.14 | 12.46 | 12.77 | 12.17 | 12.47 |
| Dung in 1956 | 17.46 | 18.91 | 18.19 | 14.35 | 15.14 | 14.74 |
| Mean | 14.62 | 16.03 | 15.32 | 13.56 | 13.66 | 13.61 |
| Potatoes, percentage ware (1½" riddle) | | | | | | |
| No dung | 64.2 | 73.0 | 68.6 | 92.2 | 89.3 | 90.8 |
| Dung in 1956 | 71.1 | 74.2 | 72.6 | 88.6 | 90.4 | 89.5 |
| Mean | 67.7 | 73.6 | 70.6 | 90.4 | 89.9 | 90.2 |
| Oats | | | | | | |
| | None | 0.2 | | 0.2 | 0.4 | |
| Grain (at 85% dry matter): cwt per acre | | | | | | |
| No dung | 30.6 | 30.0 | 30.3 | 33.6 | 38.7 | 36.2 |
| Dung in 1955 | 32.4 | 30.2 | 31.3 | 37.1 | 34.4 | 35.8 |
| Mean | 31.5 | 30.1 | 30.8 | 35.3 | 36.6 | 36.0 |
| Straw: cwt per acre | | | | | | |
| No dung | 32.7 | 28.7 | 30.7 | 25.0 | 24.2 | 24.6 |
| Dung in 1955 | 25.8 | 31.2 | 28.5 | 25.5 | 33.3 | 29.4 |
| Mean | 29.2 | 29.9 | 29.6 | 25.3 | 28.7 | 27.0 |

Highfield, Oats, Mean dry matter % as harvested Grain: 78.3 Straw: 85.7
 Fosters, Oats, Mean dry matter % as harvested Grain: 81.5 Straw: 84.7

Cut grass. Dry Matter: cwt per acre

| | Corrective dressing of K ₂ O: cwt per acre 3.0 | Highfield | | Fosters | | Mean |
|----------------------------|--|---|--|---|--|------|
| | | N: to previous 3 test crops Single rate Double rate | Dung to potatoes 1954: tons per acre None 12 | N: to previous 3 test crops Single rate Double rate | Dung to potatoes 1954: tons per acre None 12 | |
| 1st year | | | | | | |
| N(1) to cut grass (4 cuts) | | | | | | |
| Single rate | | 55.7 | 56.7 | 56.2 | 36.4 | 38.5 |
| Double rate | | 63.4 | 61.9 | 62.7 | 46.2 | 47.7 |
| N to test crops | | | | | | |
| Single rate | | 59.0 | 60.1 | 59.5 | 41.4 | 41.3 |
| Double rate | | 57.5 | 61.1 | 59.3 | 44.9 | 45.0 |
| Mean | | 58.2 | 60.6 | 59.4 | 43.1 | 43.1 |
| | | Highfield | | Fosters | | Mean |
| | | N to cut grass (1) Single rate Double rate | Mean | N to cut grass (1) Single rate Double rate | Mean | |
| 2nd year (6 cuts) | 1.5 | 60.6 | 86.9 | 54.2 | 73.3 | 63.7 |
| 3rd year (6 cuts) | 1.5 | 65.1 | 86.2 | 63.2 | 77.9 | 70.6 |

(1) 0.15 v. 0.3 cwt N as 'Nitro-Chalk' for every cut.

56/Bc/1.17

Lucerne. Dry matter: cwt per acre

| 1st year (2 cuts) | Corrective dressing of K ₂ O: cwt per acre 3.0 | Highfield | | | Fosters | | |
|--------------------------|---|----------------------------------|----------------|------|----------------------------------|----------------|-------|
| | | N to 3 previous test crops | | Mean | N to 3 previous test crops | | Mean |
| | | Single rate | Double rate | | Single rate | Double rate | |
| Dung to potatoes 1954 | | | | | | | |
| None | | 43.0 | 48.0 | 45.5 | 32.9 | 35.7 | 34.3 |
| 12 tons | | 45.1 | 48.6 | 46.8 | 32.2 | 33.0 | 32.6 |
| Mean | | 44.1 | 48.3 | 46.2 | 32.6 | 34.4 | 33.5 |
| 2nd year (3 cuts) | 1.0 | | | 88.0 | | | 90.1 |
| 3rd year (3 cuts) | 1.0 | | | 96.6 | | | 105.4 |

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

| | Highfield | | | Fosters | | |
|----------|-----------------------------|------|------|-----------------------------|------|------|
| | N: cwt per acre (yearly) | | Mean | N: cwt per acre (yearly) | | Mean |
| | 0.15 | 0.30 | | 0.15 | 0.30 | |
| 1st year | 20.7 | 19.8 | 20.3 | 15.4 | 18.2 | 16.8 |
| 2nd year | 25.0 | 29.5 | 27.2 | 25.0 | 23.0 | 24.0 |
| 3rd year | 29.8 | 30.6 | 30.2 | 21.1 | 24.3 | 22.7 |

56/Bc/1.18

Reseeded Grass. Dry matter: cwt per acre

| | Corrective dressing of K ₂ O: cwt per acre | Cut for hay | | Mean | Grazed Estimated from sampling cuts | | |
|------------------------------------|---|-------------|-------------|------|-------------------------------------|-------------|-------|
| | | Single rate | Double rate | | Single rate | Double rate | Mean |
| <u>Highfield</u> | | | | | | | |
| 6th exptl. year Blocks 9-12 | None | | | | 32.5 | 33.6 | 33.0 |
| 7th exptl. year Blocks 6 and 7 | None | | | | 25.0 | 33.3 | 29.1 |
| Blocks 5 and 8 | 1.2 | 59.8 | 63.2 | 61.5 | 19.9* | 25.9* | 22.9* |
| 8th exptl. year Blocks 1-4 | None | | | | 23.5 | 28.8 | 26.2 |
| <u>Fosters</u> | | | | | | | |
| 6th exptl. year Blocks 6, 10-12 | None | | | | 17.2 | 18.5 | 17.8 |
| 7th exptl. year Blocks 8 and 9 | None | | | | 13.0 | 17.0 | 15.0 |
| Blocks 5 and 7 | 1.2 | 33.1 | 37.7 | 35.4 | 16.2* | 21.6* | 18.9* |
| 8th exptl. year Blocks 1-4 | None | | | | 24.5 | 21.4 | 22.9 |

Permanent Grass. Dry matter: cwt per acre

| | | | | | | | |
|-----------------------------------|------|------|------|------|-------|-------|-------|
| <u>Highfield</u> | | | | | | | |
| 6th exptl. year Blocks 9-12 | None | | | | 31.4 | 31.9 | 31.6 |
| 7th exptl. year Blocks 6 and 7 | None | | | | 21.7 | 25.0 | 23.4 |
| Blocks 5 and 8 | 1.2 | 39.6 | 43.9 | 41.7 | 25.1* | 26.6* | 25.8* |
| 8th exptl. year Blocks 1-4 | None | | | | 24.7 | 29.1 | 26.9 |

*Aftermath grazing.