

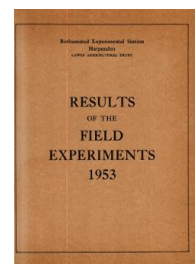
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Yields of the Field Experiments 1953

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53/BA/2 Four-course Rotation - Rothamsted

Rothamsted Research

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FOUR COURSE ROTATION EXPERIMENT

The 24th year

Direct and residual effects of organic manures and phosphatic fertilizers - Hoosfield 1953.

For details of treatments and rotation see "Results of the Field Experiments 1939-47" Vol. I, Section Ba/3.

Area of each plot: Potatoes (whole plot): 0.0242 acre. Barley and ryegrass: 0.0244 acre. Wheat: 0.0233 acre.

Manures (cwt per acre) applied 1952-53

| Treatment | Organic manures and phosphates | | | | Supplementary fertilizers | | |
|----------------|--------------------------------|--------|-------------------------------|------------------|---------------------------|--|------------------------------------|
| | Organic matter | N | P ₂ O ₅ | K ₂ O | N as Sulph. of amm. | P ₂ O ₅ as Super | K ₂ O as Mur. of potash |
| Dung | 50 | 2.131* | 0.820 | 1.066 | - | 0.380 | 1.934 |
| Adco | 50 | 1.012 | 0.600 | 0.750 | 0.788 | 0.600 | 2.250 |
| Straw | 112 | 0.496 | 0.108 | 0.312 | 1.304† | 1.092 | 2.688 |
| Super | | | 1.2 | | 0.36† | | 0.6† |
| Rock phosphate | | | 1.2 | | 0.36† | | 0.6† |

*In excess of the standard rate (1.800 cwt N).

†Yearly dressings totalling to the standard rate in the 5 year period.

Cultivations, etc.:

Potatoes.

Ploughed: Sept 1, 1952. Supplementary fertilizers to dung and adco plots applied: Jan 20, 1953. Dung and adco applied: Jan 21. Straw and first dressing to straw plots applied, all plots ploughed: Jan 26. Ridged: Mar 31. Spring fertilizers, including second and third dressing to straw plots, and sulphate of ammonia to half plots, applied: Apr 1. Potatoes planted: Apr 2. Earthed up: June 27. Sprayed with copper fungicide 5½ lb per acre: July 28 and again Aug 8. Sprayed with sulphuric acid, 20% B.O.V.: Sept 26. Lifted: Oct 1. Variety: Majestic.

Barley.

Dung, adco and supplementary fertilizers and first dressing to straw plots applied: Jan 20, 1953. Straw applied, all plots ploughed: Jan 21. 19 cwt ground chalk per acre applied: Feb 25. Spring fertilizers and second and third dressing to straw plots applied: Feb 27. Seed drilled at 3 bushels per acre: Feb 28. Harvested: Aug 11. Variety: Plumage Archer.

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Ryegrass.

Dung and adco applied: Sept 13, 1952. Straw applied, all plots ploughed: Sept 15. Supplementary fertilizers to dung and adco plots, first dressing to straw plots, autumn fertilizers applied and seed sown at 112 lb per acre: Sept 19. Second dressing to straw plots applied: Jan 23, 1953. Sulphate of ammonia and third dressing to straw plots applied: Apr 7. Harvested: June 25. Variety: Western Wolths.

Wheat.

Ploughed: Aug 7, 1952. Supplementary fertilizers to dung and adco plots and first dressing to straw plots applied: Sept 16. Dung, adco and straw applied, ploughed all plots: Sept 17. Autumn fertilizers applied: Oct 8. Seed drilled at 3 bushels per acre: Oct 27. Second dressing to straw plots applied: Jan 23, 1953. Sulphate of ammonia and third dressing to straw plots applied: Apr 22. Harvested: Aug 20. Variety: Squareheads Master 13/4.

Summary of Results

| Manure + | Year of Cycle | Potatoes | | | | | Percentage Ware | | Resp. to Nitrogen | Barley (at 85% D.M.) Grain Straw cwt per acre | Ryegrass Dry Matter cwt per acre | Wheat Grain Straw cwt per acre | |
|----------------------|---------------|--------------------|----------------------|-------|-------|-------------------|----------------------|------|-------------------|---|----------------------------------|--------------------------------|------|
| | | Total tubers, tons | Additional N Without | With | Mean | Resp. to Nitrogen | Additional N Without | With | | | | | Mean |
| Dung | I | 8.33 | 10.40 | 9.36 | +2.07 | 87.1 | 91.1 | 89.1 | +4.0 | 31.9 | 20.7 | 20.7 | |
| | II | 7.23 | 8.90 | 8.06 | +1.67 | 87.5 | 91.1 | 89.3 | +3.6 | 27.8 | 21.4 | 21.4 | |
| | III | 8.03 | 5.77 | 6.90 | -2.26 | 91.5 | 88.3 | 89.9 | -3.2 | 24.4 | 17.5 | 17.5 | |
| | IV | 6.04 | 8.68 | 7.36 | +2.64 | 87.6 | 88.7 | 88.2 | +1.1 | 21.9 | 12.3 | 17.7 | |
| | V | 5.45 | 8.05 | 6.75 | +2.60 | 81.2 | 82.6 | 81.9 | +1.4 | 23.7 | 11.9 | 17.7 | |
| Adco (Straw compost) | I | 10.09 | 12.04 | 11.06 | +1.95 | 81.1 | 93.1 | 87.1 | +12.0 | 28.1 | 34.1 | 29.6 | |
| | II | 7.23 | 8.91 | 8.07 | +1.68 | 84.4 | 83.4 | 83.9 | -1.0 | 26.4 | 15.7 | 15.8 | |
| | III | 5.31 | 6.40 | 5.86 | +1.09 | 84.2 | 86.2 | 85.2 | +2.0 | 21.7 | 12.5 | 15.9 | |
| | IV | 6.17 | 7.40 | 6.78 | +1.23 | 87.3 | 90.6 | 89.0 | +3.3 | 24.5 | 13.9 | 16.9 | |
| | V | 5.86 | 7.70 | 6.78 | +1.84 | 86.8 | 86.6 | 86.7 | -0.2 | 21.5 | 12.2 | 18.5 | |
| Straw | I | 8.52 | 12.84 | 10.68 | +4.32 | 89.6 | 93.4 | 91.5 | +3.8 | 26.0 | 59.7 | 28.7 | |
| | II | 6.84 | 7.66 | 7.25 | +0.82 | 81.6 | 90.3 | 86.0 | +8.7 | 13.3 | 14.7 | 17.6 | |
| | III | 6.75 | 8.17 | 7.46 | +1.42 | 88.5 | 91.0 | 89.8 | +2.5 | 25.1 | 17.3 | 18.7 | |
| | IV | 7.19 | 8.80 | 8.00 | +1.61 | 88.4 | 89.2 | 88.8 | +0.8 | 27.1 | 12.2 | 18.9 | |
| | V | 6.99 | 8.41 | 7.70 | +1.42 | 89.5 | 90.6 | 90.0 | +1.1 | 22.0 | 12.2 | 16.8 | |
| Super-phosphate | I | 9.07 | 9.18 | 9.12 | +0.11 | 87.2 | 87.3 | 87.5 | +0.6 | 30.9 | 32.7 | 19.7 | |
| | II | 7.58 | 9.46 | 8.52 | +1.83 | 86.2 | 85.4 | 85.8 | -0.8 | 25.1 | 30.2 | 21.5 | |
| | III | 8.41 | 8.34 | 8.62 | +0.43 | 89.0 | 89.9 | 89.4 | +0.9 | 26.9 | 26.7 | 20.6 | |
| | IV | 7.19 | 9.11 | 8.15 | +1.92 | 89.7 | 89.9 | 89.8 | +0.2 | 24.3 | 30.3 | 22.3 | |
| | V | 8.33 | 7.78 | 8.06 | -0.55 | 94.0 | 89.3 | 91.6 | -4.7 | 26.6 | 30.3 | 22.5 | |
| Rock phosphate | I | 5.93 | 6.01 | 5.97 | +0.03 | 83.3 | 86.6 | 85.0 | +3.3 | 29.3 | 29.4 | 21.5 | |
| | II | 4.87 | 6.00 | 5.44 | +1.13 | 84.3 | 88.1 | 86.2 | +3.8 | 25.7 | 23.5 | 19.9 | |
| | III | 6.39 | 5.77 | 6.03 | -0.62 | 89.6 | 80.1 | 84.8 | -9.5 | 27.3 | 29.4 | 20.8 | |
| | IV | 6.43 | 7.23 | 6.86 | +0.75 | 89.5 | 91.7 | 90.6 | +2.2 | 22.9 | 28.0 | 21.5 | |
| | V | 5.10 | 6.48 | 5.79 | +1.38 | 88.2 | 90.1 | 89.2 | +1.9 | 29.0 | 26.9 | 20.6 | |
| Mean Dry Matter % | | | | | | | | | | | 84.5 | 83.4 | |

53/Ba/2.3

+Note. All manures are supplemented by fertilizers as shown in table on page 53/Ba/2.1