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Yields of the Field Experiments 1951

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51/BA/2 Four-course Rotation - Rothamsted

Rothamsted Research

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51/Ba/2.1

FOUR COURSE ROTATION EXPERIMENT

The 22nd year

Direct and residual effects of organics and phosphates - Hoosfield 1951.

For details of treatments and rotation see Appendix Z 1950.

Area of each plot: Potatoes: 0.0242 acre. Barley: 0.030.
Ryegrass and wheat: 0.0244 acre.

Manures (cwt per acre) applied 1950-51

| Treatment | Organic fertilizers | | | | Additional 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 (as F.Y.M.) | 1.514 | 0.566 | 1.121 | 0.286 | 0.634 | 1.879 |
| Adco | 50 (as Adco) | 1.207 | 0.522 | 0.826 | 0.593 | 0.678 | 2.174 |
| Straw | 126 (as Straw) | 0.992 | 0.290 | 1.614 | 0.808 | 0.910 | 1.386 |
| Super | | | None | | 0.36 | 1.2 | 0.6 |
| Rock | | | None | | 0.36 | 1.2 ² | 0.6 |
| Phosphate | | | | | | | |

²As rock phosphate

Cultivations, etc.:

Potatoes: Ploughed: Aug 30. Dung and Adco applied: Jan 26. Supplementary fertilizers to dung and Adco and first two dressings to straw plots applied: Jan 30. Straw applied, all plots ploughed: Mar 5. Spring fertilizers, including third dressing to straw plots applied, ridged: May 9. Potatoes planted with dropper machine: May 10. Earthed up ridges: July 19. Sprayed with copper fungicide 5 lb per acre: Aug 14 and again Sept 3. Sprayed with 15% sulphuric acid: Sept 26. Lifted: Oct 9. Variety: Majestic.

Barley. Dung, Adco and supplementary fertilizers, and first two dressings to straw plots applied: Jan 30. Straw applied, all plots ploughed: Feb 7. Ground chalk 19 cwt per acre applied: Apr 5. Spring fertilizers and third dressing to straw plots applied, seed drilled at 3 bushels per acre: Apr 17. Harvested: Sept 10. Variety: Plumage Archer.

51/Ba/2.2

Ryegrass. Dung, Adco and supplementary fertilizers, and first dressing to straw plots applied: Sept 14. Straw applied, all plots ploughed: Sept 18. Autumn fertilizers and second dressing to straw plots applied: Oct 12. Sulphate of ammonia and third dressing to straw plots applied: Apr 17. Seed sown at 70 lb per acre: Apr 19. Harvested: July 20. Variety: Western Wolths.

Wheat. Ploughed: Aug 5. Dung, Adco and supplementary fertilizers, and first dressing to straw plots applied: Sept 18. Straw applied, ploughed all plots: Sept 19. Autumn fertilizers applied: Oct 9. Seed drilled at 3 bushels per acre: Oct 18. Second dressing to straw plots applied: Jan 31. Sulphate of ammonia and third dressing to straw plots applied: May 9. Harvested: Aug 24. Variety: Squareheads Master 13/4.

51/Ba/2.3

Summary of Results

| Manure + | Year of Cycle | Potatoes | | | | Ware Mean | Resp. to Nitrogen | Barley | | Ryegrass | | Wheat | |
|--------------------------------|---------------|-----------------------------------|-------------------|---------------------------------|------------------------------|-----------|-------------------|--------------------|----------------|-------------------------|--------------------|----------------|--|
| | | Total clean tubers, tons per acre | Resp. to Nitrogen | Percentage Additional N Without | Percentage Additional N With | | | Grain cwt per acre | Straw per acre | Dry matter cwt per acre | Grain cwt per acre | Straw per acre | |
| Manure as F.Y.M. | I | 4.63 | 5.76 | 73.9 | 85.7 | 79.8 | 11.8 | 25.0 | 21.4 | 8.3 | 15.0 | 28.3 | |
| | II | 5.03 | 7.85 | 78.1 | 88.0 | 83.0 | 9.9 | 16.6 | 11.3 | 6.1 | 13.7 | 21.1 | |
| | III | 5.13 | 6.56 | 78.4 | 83.5 | 81.3 | 5.1 | 15.0 | 9.8 | 5.2 | 13.3 | 18.6 | |
| | IV | 4.01 | 4.87 | 78.4 | 84.6 | 81.5 | 6.2 | 12.1 | 7.9 | 5.7 | 11.5 | 14.7 | |
| | V | 4.67 | 5.72 | 77.8 | 83.5 | 80.6 | 5.7 | 15.3 | 11.6 | 5.8 | 12.9 | 17.3 | |
| Manure as Adco (straw compost) | I | 6.20 | 7.82 | 84.8 | 89.7 | 87.2 | 4.9 | 23.7 | 19.9 | 9.8 | 22.0 | 38.9 | |
| | II | 4.08 | 5.30 | 82.5 | 86.2 | 84.4 | 3.7 | 17.6 | 13.1 | 5.7 | 15.0 | 21.1 | |
| | III | 4.85 | 6.20 | 82.3 | 86.2 | 84.2 | 3.9 | 13.7 | 10.2 | 5.2 | 12.6 | 19.4 | |
| | IV | 4.87 | 4.61 | 78.3 | 76.6 | 77.4 | -1.7 | 14.8 | 11.2 | 7.2 | 12.3 | 16.5 | |
| | V | 3.34 | 3.74 | 74.6 | 77.6 | 76.1 | 3.0 | 9.7 | 7.2 | 5.2 | 12.6 | 17.7 | |
| Manure as Straw | I | 5.89 | 5.24 | 79.3 | 81.4 | 80.4 | 2.1 | 24.6 | 18.0 | 7.0 | 18.0 | 26.6 | |
| | II | 4.99 | 6.99 | 76.3 | 82.0 | 79.2 | 5.7 | 17.8 | 12.8 | 2.3 | 15.4 | 23.5 | |
| | III | 4.99 | 4.99 | 81.0 | 80.8 | 80.9 | -0.2 | 15.4 | 10.8 | 6.1 | 15.2 | 23.3 | |
| | IV | 4.71 | 5.79 | 78.4 | 79.6 | 79.0 | 1.2 | 12.5 | 9.6 | 7.4 | 12.0 | 15.7 | |
| | V | 4.59 | 5.59 | 79.8 | 84.2 | 82.0 | 4.4 | 15.7 | 11.0 | 4.7 | 12.6 | 16.9 | |
| Super-phosphate | I | 6.05 | 6.18 | 81.0 | 87.1 | 84.0 | 6.1 | 22.8 | 18.3 | 7.7 | 16.7 | 27.6 | |
| | II | 6.32 | 7.15 | 82.7 | 86.4 | 84.6 | 3.7 | 21.6 | 17.0 | 5.6 | 15.2 | 21.8 | |
| | III | 5.52 | 5.54 | 82.6 | 87.0 | 84.8 | 4.4 | 23.5 | 18.4 | 5.8 | 16.0 | 23.0 | |
| | IV | 5.76 | 7.30 | 80.3 | 89.9 | 85.1 | 9.6 | 18.7 | 14.6 | 4.2 | 16.5 | 25.5 | |
| | V | 4.40 | 6.72 | 82.8 | 89.3 | 86.0 | 6.5 | 20.8 | 18.1 | 5.9 | 16.3 | 24.0 | |
| Rock phosphate | I | 4.68 | 4.87 | 86.0 | 85.7 | 85.8 | -0.3 | 15.5 | 11.3 | 6.6 | 18.4 | 25.7 | |
| | II | 4.32 | 5.45 | 89.3 | 88.6 | 89.0 | -0.7 | 21.1 | 15.8 | 4.7 | 16.4 | 23.5 | |
| | III | 3.80 | 3.65 | 80.2 | 82.1 | 81.2 | 1.9 | 19.5 | 16.7 | 5.5 | 15.2 | 22.5 | |
| | IV | 4.01 | 3.46 | 81.5 | 82.2 | 81.8 | 0.7 | 22.3 | 17.8 | 5.1 | 17.8 | 27.2 | |
| | V | 4.33 | 2.87 | 83.7 | 73.9 | 78.8 | -9.8 | 20.6 | 17.2 | 8.0 | 15.3 | 22.3 | |

*Note. All manures are supplemented by fertilizers as shown in table on page 51/Ba/2.1