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# Yields of the Field Experiments 1952

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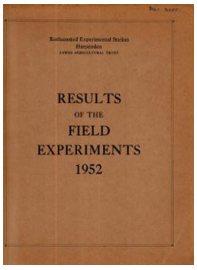


## 52/BA/2 Four-course Rotation - Rothamsted

### Rothamsted Research

Rothamsted Research (1953) *52/BA/2 Four-course Rotation - Rothamsted ;* Yields Of The Field Experiments 1952, pp 20 - 22 **- DOI: https://doi.org/10.23637/ERADOC-1-178**

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# FOUR COURSE ROTATION EXPERIMENT

## The 23rd year

Direct and residual effects of organics and phosphates - Hoosfield 1952.

For details of treatments and rotation see "Results of the Field Experiments 1939-47".

Area of each plot: Potatoes: 0.0242 acre. Barley and wheat: 0.0244 acre. Ryegrass: 0.0233 acre.

Manures (cwt per acre) applied 1951-52

| | Organic manures | | | | Supplementary fertilizers | | |
|---|---|---|---|---|---|---|---|
| | Organic matter | N | $P_2O_5$ | $K_2O$ | N as Sulph. of amm. | $P_2O_5$ as Super | $K_2O$ as Mur. of potash |
| Dung† | 50 | 1.191 | 0.526 | 2.485 | 0.609 | 0.674 | 0.515 |
| Adco | 50 | 1.140 | 0.795 | 0.351 | 0.660 | 0.405 | 2.649 |
| Straw | 132 | 0.684 | 0.262 | 1.395 | 1.116 | 0.938 | 1.605 |
| Super | | | None | | 0.36 | 1.2 | 0.6 |
| Rock phosphate | | | None | | 0.36 | 1.2* | 0.6 |

*As rock phosphate

†Note: The application of Dung to the Ryegrass and Wheat was made in error at a rate to supply:

| Organic matter | N | $P_2O_5$ | $K_2O$ |
|---|---|---|---|
| 59 | 1.413 | 0.625 | 2.950 |

Cultivations, etc.:

Potatoes:

Ploughed: Sept 13, 1951. Dung, Adco and supplementary fertilizers and first dressing to straw plots applied: Dec 18. Straw applied, all plots ploughed: Dec 19. Second dressing to straw plots applied: Feb 7, 1952. Ridged: Apr 25. Spring fertilizers, including third dressing to straw plots, and sulphate of ammonia to half plots, applied: Apr 26. Potatoes planted: Apr 28. Earthed up: July 10. Sprayed with copper fungicide 5 lb per acre: Sept 4. Sprayed with sulphuric acid, 20% B.O.V.: Sept 23. Lifted: Oct 7. Variety: Majestic.

Barley:

Dung and Adco applied: Dec 18, 1951. Supplementary fertilizers to dung and Adco, and first dressing to straw plots applied: Dec 19. Straw applied, all plots ploughed: Dec 20. Second dressing to straw plots applied: Feb 7, 1952. Ground chalk 22½ cwt per acre applied: Feb 26. Spring fertilizers and

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third dressing to straw plots applied, seed drilled at 3 bushels per acre: Mar 3. Sprayed with M.C.P.A. 5 pints per acre: May 10. Harvested: July 30. Variety: Plumage Archer.

Ryegrass:

Dung, Adco and supplementary fertilizers, and first dressing to straw plots applied: Sept 24, 1951. Straw applied, all plots ploughed: Sept 25. Autumn fertilizers applied: Oct 22. Seed sown at 112 lb per acre: Oct 25. Second dressing to straw plots applied: Dec 20. Sulphate of ammonia and third dressing to straw plots applied: Apr 16, 1952. Sprayed with M.C.P.A. 5 pints per acre: May 10. Harvested: June 16. Variety: Western Wolths.

Wheat:

Ploughed: Aug 1, 1951. Dung, Adco and supplementary fertilizers, and first dressing to straw plots applied: Sept 25. Straw applied, ploughed all plots: Sept 26. Autumn fertilizers applied, seed drilled at 3 bushels per acre: Oct 20. Second dressing to straw plots applied: Dec 20. Sulphate of ammonia and third dressing to straw plots applied: Apr 24, 1952. Sprayed with M.C.P.A. 5 pints per acre: May 10. Harvested: July 29. Variety: Squareheads Master 13/4.

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## Summary of Results

| Manure+ | Year of Cycle | Potatoes: Total tubers, tons per acre: Additional N Without | With | Mean | Response to N | Percentage Ware: Additional N Without | With | Mean | Response to N | Barley: Grain cwt per acre | Straw cwt per acre | Ryegrass: Dry Matter cwt per acre | Wheat: Grain cwt per acre | Straw cwt per acre |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Manure as F.Y.M. | I | 11.59 | 11.62 | 11.60 | 0.03 | 87.1 | 82.4 | 84.8 | -4.7 | 35.0 | 38.1 | 25.0 | 16.6 | 38.0 |
| | II | 5.93 | 7.07 | 6.50 | 1.14 | 77.1 | 79.3 | 78.2 | 2.2 | 20.0 | 18.3 | 15.6 | 9.9 | 20.4 |
| | III | 6.56 | 9.19 | 7.88 | 2.63 | 74.1 | 83.0 | 78.6 | 8.9 | 20.4 | 19.0 | 14.0 | 7.0 | 15.5 |
| | IV | 6.74 | 9.66 | 8.20 | 2.92 | 80.0 | 83.9 | 82.0 | 3.9 | 16.9 | 14.3 | 11.4 | 10.4 | 18.2 |
| | V | 3.21 | 5.73 | 4.47 | 2.52 | 60.0 | 78.7 | 69.4 | 18.7 | 17.2 | 16.5 | 13.6 | 10.4 | 19.5 |
| Manure as Adco | I | 7.38 | 7.26 | 7.32 | -0.12 | 79.2 | 73.1 | 76.2 | -6.1 | 31.1 | 34.2 | 23.0 | 19.7 | * |
| | II | 5.38 | 6.14 | 5.76 | 0.76 | 81.0 | 77.8 | 79.4 | -3.2 | 26.1 | 25.4 | 15.0 | 13.4 | 24.9 |
| | III | 7.34 | 7.30 | 7.32 | -0.04 | 80.9 | 82.9 | 81.9 | 2.0 | 19.1 | 15.4 | 15.1 | 9.7 | 18.7 |
| | IV | 5.65 | 8.52 | 7.08 | 2.87 | 76.5 | 85.4 | 81.0 | 8.9 | 20.7 | 18.3 | 15.5 | 8.2 | 14.0 |
| | V | 5.65 | 6.48 | 6.06 | 0.83 | 72.1 | 78.2 | 75.2 | 6.1 | 14.1 | 12.6 | 12.8 | 11.8 | 23.8 |
| Manure as Straw | I | 5.89 | 8.55 | 7.22 | 2.66 | 76.9 | 74.6 | 75.8 | -2.3 | 31.9 | 35.6 | 31.4 | 14.3 | 36.6 |
| | II | 6.60 | 6.95 | 6.78 | 0.35 | 78.9 | 81.1 | 80.0 | 2.2 | 17.4 | 14.3 | 14.2 | 8.7 | 16.4 |
| | III | 6.68 | 9.46 | 8.07 | 2.78 | 74.6 | 75.0 | 74.8 | 0.4 | 20.1 | 17.8 | 17.5 | 10.7 | 22.4 |
| | IV | 8.27 | 9.94 | 9.10 | 1.67 | 76.9 | 80.0 | 78.4 | 3.1 | 19.8 | 21.8 | 13.7 | 8.8 | 18.5 |
| | V | 5.46 | 7.09 | 6.28 | 1.63 | 75.5 | 81.1 | 78.3 | 5.6 | 18.2 | 16.6 | 14.5 | 8.8 | 16.2 |
| Super-phosphate | I | 8.97 | 8.72 | 8.84 | -0.25 | 76.4 | 75.9 | 76.2 | -0.5 | 28.3 | 28.5 | 24.5 | 13.7 | 32.7 |
| | II | 8.45 | 9.39 | 8.92 | 0.94 | 82.8 | 81.1 | 82.0 | -1.7 | 24.9 | 26.3 | 24.6 | 8.6 | 23.6 |
| | III | 4.05 | 5.58 | 4.82 | 1.53 | 64.9 | 77.9 | 71.4 | 13.0 | 23.5 | 29.2 | 26.2 | 10.0 | 19.7 |
| | IV | 5.10 | 5.22 | 5.16 | 0.12 | 80.3 | 78.5 | 79.4 | -1.8 | 27.5 | 27.5 | 22.5 | 7.3 | 20.0 |
| | V | 6.52 | 7.82 | 7.17 | 1.30 | 72.0 | 81.2 | 76.6 | 9.2 | 28.2 | 30.1 | 24.3 | 10.6 | 23.1 |
| Rock phosphate | I | 4.20 | 5.27 | 4.74 | 1.07 | 60.0 | 71.7 | 65.8 | 11.7 | 26.0 | 26.3 | 21.1 | 15.2 | 28.8 |
| | II | 5.41 | 6.56 | 5.98 | 1.15 | 84.8 | 81.4 | 83.1 | -3.4 | 26.1 | 26.5 | 22.8 | 12.5 | 21.7 |
| | III | 3.22 | 2.76 | 2.99 | -0.46 | 69.9 | 62.2 | 66.0 | -7.7 | 27.6 | 29.2 | 21.6 | 13.5 | 26.5 |
| | IV | 3.77 | 6.25 | 5.01 | 2.48 | 76.2 | 79.0 | 77.6 | 2.8 | 24.6 | 25.6 | 25.9 | 10.2 | 20.6 |
| | V | 6.20 | 6.35 | 6.28 | 0.15 | 82.1 | 87.4 | 84.8 | 5.3 | 25.8 | 28.4 | 21.6 | 16.8 | 31.0 |

+Note: All manures are supplemented by fertilizers as shown in table on page 52/Ba/2.1

*Recorded yield obviously incorrect. No estimate possible at this stage.

52/Ba/2.3