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Yields of the Field Experiments 1955

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55/R/BA/1 Three-course Rotation

Rothamsted Research

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55/Ba/1.1

THREE COURSE ROTATION EXPERIMENT

4th year of revised scheme

For details of treatments and rotation see "Results of the Field Experiments 1952", Section Ba/1.

Area of each plot: Potatoes (sub-plot), 0.0093 acre;
Barley, 0.0200 acre; Sugar beet, 0.0205 acre.

Cultivations, etc.:

- Potatoes. Straw applied, all plots ploughed: Feb 3, 1955.
Fertilizers applied, potatoes planted: May 3. Earthed up:
July 5. Sprayed with sulphuric acid, 15% B.O.V: Sept 26.
Lifted: Oct 1. Variety: Majestic. Note: The crop yellowed
off and died down very early in the season.
- Barley. Straw applied, all plots ploughed: Feb 3, 1955.
Ground chalk applied at 20 cwt per acre: Mar 19. Seed drilled
at 3 bushels per acre: Mar 22. Fertilizers applied: Mar 28.
Harvested: Aug 11. Variety: Plumage Archer.
- Sugar beet. Straw applied, all plots ploughed: Feb 3, 1955.
Fertilizers applied: Apr 15. Seed drilled at 18 lb per acre:
Apr 16. Sprayed with D.D.T. emulsion, 3 pints in 40 gallons
per acre: June 13. Singled: June 18. Lifted: Nov 17.
Variety: Klein E.

Treatment symbols:-

Old Scheme

- Ar Complete artificials only
St1 Straw ploughed in in autumn, artificials applied in spring
St2 Straw ploughed in in autumn, artificials applied half in autumn,
half in spring
Ad Adco ploughed in in autumn with supplementary artificials.

Revised Scheme

- St $5\frac{1}{3}$ cwt cut straw per acre in autumn
Nitrogen dressing: 0.2; 0.4; 0.6 cwt N per acre as sulphate of
ammonia
K_s Muriate of potash equivalent to K₂O in straw
K 0.5 cwt K₂O per acre as muriate of potash.

Summary of Results

Potatoes

| Treatments applied: | 1953 and 1955 | 1955 | 0 | 0.4N | St + 0.2N | St + 0.6N | K _s | K + 0.4N |
|---------------------|---------------|-----------------------|------|------|-----------|-----------|----------------|----------|
| 1950 | 1952 & 1954 | 1955 | - | - | - | - | - | - |
| Ar | Ar | 0 | 3.67 | 3.78 | 4.00 | 4.56 | 4.23 | 5.26 |
| Ar | Ar | 0.4N | 3.66 | 4.32 | 4.08 | 4.47 | 4.00 | 5.40 |
| Ar | Ar | 0 | 3.43 | 4.05 | 4.00 | 4.47 | 4.00 | 5.40 |
| Ar | Ar | 0.4N | 3.72 | 4.40 | 4.08 | 4.47 | 4.00 | 5.40 |
| St1 St2 | St1 St2 | 0 | 4.35 | 4.12 | 4.08 | 4.47 | 4.00 | 5.40 |
| St1 St2 | St1 St2 | 0.4N | 4.06 | 4.16 | 4.08 | 4.47 | 4.00 | 5.40 |
| St1 St2 | St1 St2 | 0 | 4.09 | 4.19 | 4.08 | 4.47 | 4.00 | 5.40 |
| St1 St2 | St1 St2 | 0.4N | 4.19 | 4.68 | 4.08 | 4.47 | 4.00 | 5.40 |
| St1 St2 | St1 St2 | St+ 0.2N | 4.07 | 4.13 | 4.08 | 4.47 | 4.00 | 5.40 |
| St1 St2 | St1 St2 | St+ 0.6N | 4.38 | 4.46 | 4.08 | 4.47 | 4.00 | 5.40 |
| St1 St2 | St1 St2 | K _s | 3.54 | 4.46 | 4.08 | 4.47 | 4.00 | 5.40 |
| St1 St2 | St1 St2 | K _s +0.4N | 3.45 | 4.46 | 4.08 | 4.47 | 4.00 | 5.40 |
| Ad | Ad | 0 | 3.40 | 4.23 | 4.08 | 4.47 | 4.00 | 5.40 |
| Ad | Ad | 0.4N | 3.13 | 4.23 | 4.08 | 4.47 | 4.00 | 5.40 |
| Ad | Ad | St+ 0.6N | 4.46 | 4.46 | 4.08 | 4.47 | 4.00 | 5.40 |
| Ad | Ad | K _s + 0.4N | 3.94 | 4.46 | 4.08 | 4.47 | 4.00 | 5.40 |

Total tubers: tons per acre

| Treatments applied: | | Potatoes | | | | | | | | | | | |
|---------------------|---------|-----------------------|-----------------------|------------------------------|-----------------------|----------------|-----------------------|------|------|-----------|-----------|----------------|-----------------------|
| 1953 and 1955 | | 0 | 0.4N | St + 0.2N | St + 0.6N | K _s | K _s + 0.4N | 0 | 0.4N | St + 0.2N | St + 0.6N | K _s | K _s + 0.4N |
| 1950 | 1951 | 1955 | 1952 & 1954 | Percentage Ware (1½" riddle) | | | | | | | | | |
| Ar | Ar | 0 | 0.4N | 0 | 0.4N | 0 | 0.4N | 0 | 0.4N | 0 | 0.4N | 0 | 0.4N |
| | | 64.7 | 69.4 | 69.8 | 73.0 | 64.7 | 69.4 | 69.8 | 73.0 | 64.7 | 69.4 | 69.8 | 73.0 |
| Ar | Ar | 0 | 0.4N | 0 | 0.4N | 63.4 | 68.6 | 75.1 | 73.7 | 63.4 | 68.6 | 75.1 | 73.7 |
| St1 St2 | St1 St2 | 0 | 0.4N | 0 | 0.4N | 70.2 | 69.6 | 69.1 | 71.7 | 68.6 | 69.8 | 69.4 | 74.5 |
| | | 76.2 | 67.7 | 68.1 | 71.9 | 70.2 | 69.6 | 69.1 | 71.7 | 68.6 | 69.8 | 69.4 | 74.5 |
| St1 St2 | St1 St2 | 0.4N | 0 | 0.4N | 0 | 76.2 | 67.7 | 68.1 | 71.9 | 76.2 | 67.7 | 68.1 | 71.9 |
| | | St+ 0.2N | St+ 0.6N | St+ 0.2N | St+ 0.6N | 78.2 | 71.7 | 65.1 | 75.6 | 78.2 | 71.7 | 65.1 | 75.6 |
| Ad | Ad | K _s + 0.4N | 0 | K _s + 0.4N | 0 | 66.5 | 73.3 | 76.1 | 66.5 | 66.5 | 73.3 | 77.7 | 80.3 |
| | | 0 | 0.4N | 0 | 0.4N | 66.5 | 73.3 | 68.8 | 74.1 | 66.5 | 73.3 | 77.7 | 80.3 |
| Ad | Ad | St+ 0.6N | K _s + 0.4N | St+ 0.6N | K _s + 0.4N | 73.2 | 71.9 | 73.2 | 75.8 | 73.2 | 71.9 | 73.2 | 75.8 |
| | | 77.6 | 81.0 | 77.6 | 81.0 | 73.2 | 71.9 | 73.2 | 75.8 | 73.2 | 71.9 | 73.2 | 75.8 |
| | | 72.6 | 71.1 | 72.6 | 71.1 | 72.6 | 71.1 | 72.6 | 71.1 | 72.6 | 71.1 | 72.6 | 71.1 |

55/Ba/1.4

| Treatments applied: | | | Barley | | | | | | |
|---|---------|-----------------------|--------|------|-----------|-----------|----------------|-----------------------|--|
| 1953 and 1955 | | | 0 | 0.4N | St + 0.2N | St + 0.6N | K _s | K _s + 0.4N | |
| 1950 | 1951 | 1952 & 1954 | | | | | | | |
| Grain (at 85% dry matter): cwt per acre | | | | | | | | | |
| | Ar | 0 | | 38.2 | | | | | |
| | | 0.4N | 32.8 | | | | | | |
| Ar | | 0 | | 40.0 | | | | | |
| | | 0.4N | 34.4 | | | | | | |
| | St1 St2 | 0 | | 40.3 | | 34.4 | | 38.2 | |
| | | 0.4N | 32.9 | | 29.5 | | 33.1 | | |
| St1 St2 | | 0 | | 40.6 | | | | | |
| | | 0.4N | 32.8 | | | | | | |
| | | St+ 0.2N | | 34.9 | | | | | |
| | | St+ 0.6N | 29.5 | | | | | | |
| | | K _s | | 40.3 | | | | | |
| | | K _s +0.4N | 35.7 | | | | | | |
| | Ad | 0 | | 39.4 | | 37.0 | | 38.1 | |
| Ad | | 0.4N | 39.9 | | | | | | |
| | | St+ 0.6N | 41.1 | | | | | | |
| | | K _s + 0.4N | 30.6 | | | | | | |
| Straw (at 85% dry matter): cwt per acre | | | | | | | | | |
| | Ar | 0 | | 39.8 | | | | | |
| | | 0.4N | 32.6 | | | | | | |
| Ar | | 0 | | 43.0 | | | | | |
| | | 0.4N | 34.8 | | | | | | |
| | St1 St2 | 0 | | 42.8 | | 37.6 | | 39.0 | |
| | | 0.4N | 29.9 | | 36.1 | | 31.0 | | |
| St1 St2 | | 0 | | 45.0 | | | | | |
| | | 0.4N | 29.7 | | | | | | |
| | | St+ 0.2N | | 34.5 | | | | | |
| | | St+ 0.6N | 29.2 | | | | | | |
| | | K _s | | 43.9 | | | | | |
| | | K _s +0.4N | 33.6 | | | | | | |
| | Ad | 0 | | 43.0 | | 37.9 | | 39.6 | |
| Ad | | 0.4N | 36.9 | | | | | | |
| | | St+ 0.6N | 38.9 | | | | | | |
| | | K _s + 0.4N | 27.8 | | | | | | |

Mean dry matter % as harvested Grain: 83.7
Straw: 80.8

55/Ba/1.5

| Treatments applied: 1953 and 1955 | | | Sugar Beet | | | | | |
|-----------------------------------|---------|-----------------------|-------------------------------|------|-----------|-----------|----------------|-----------------------|
| 1950 | 1951 | 1952 & 1954 | 0 | 0.4N | St + 0.2N | St + 0.6N | K _s | K _s + 0.4N |
| | | | Roots (washed): tons per acre | | | | | |
| | Ar | 0 | | 9.56 | | | | |
| | | 0.4N | 6.74 | | | | | |
| Ar | | 0 | | 8.18 | | | | |
| | | 0.4N | 6.72 | | | | | |
| | St1 St2 | 0 | | 7.40 | | 8.45 | | 7.55 |
| | | 0.4N | 7.05 | | 7.07 | | 8.47 | |
| St1 St2 | | 0 | | 7.70 | | | | |
| | | 0.4N | 7.07 | | | | | |
| | | St+ 0.2N | | 7.31 | | | | |
| | | St+ 0.6N | 7.99 | | | | | |
| | | K _s | | 8.01 | | | | |
| | | K _s + 0.4N | 8.18 | | | | | |
| | Ad | 0 | | 9.54 | | 7.44 | | 7.77 |
| Ad | | 0.4N | 6.29 | | | | | |
| | | St+ 0.6N | 5.98 | | | | | |
| | | K _s + 0.4N | 9.49 | | | | | |
| | | | Sugar Percentage | | | | | |
| | Ar | 0 | | 17.1 | | | | |
| | | 0.4N | 17.1 | | | | | |
| Ar | | 0 | | 16.9 | | | | |
| | | 0.4N | 16.7 | | | | | |
| | St1 St2 | 0 | | 16.8 | | 16.5 | | 17.0 |
| | | 0.4N | 16.8 | | 17.3 | | 16.9 | |
| St1 St2 | | 0 | | 16.8 | | | | |
| | | 0.4N | 17.0 | | | | | |
| | | St+ 0.2N | | 17.0 | | | | |
| | | St+ 0.6N | 17.5 | | | | | |
| | | K _s | | 16.8 | | | | |
| | | K _s + 0.4N | 17.6 | | | | | |
| | Ad | 0 | | 17.2 | | 16.6 | | 16.1 |
| Ad | | 0.4N | 16.8 | | | | | |
| | | St+ 0.6N | 16.6 | | | | | |
| | | K _s + 0.4N | 17.6 | | | | | |

55/Ba/1.6

Sugar Beet

| Treatments applied: 1953 and 1955 | | | 0 | 0.4N | St + 0.2N | St + 0.6N | K _s | K _s + 0.4N |
|-----------------------------------|---------|-----------------------|---------------------------|------|-----------|-----------|----------------|-----------------------|
| 1950 | 1951 | 1952 & 1954 | Total sugar: cwt per acre | | | | | |
| | Ar | 0 | | 32.6 | | | | |
| | | 0.4N | 23.1 | | | | | |
| Ar | | 0 | | 27.7 | | | | |
| | | 0.4N | 22.4 | | | | | |
| | St1 St2 | 0 | | 24.8 | | 27.9 | | 25.8 |
| | | 0.4N | 23.7 | | 24.5 | | 28.7 | |
| St1 St2 | | 0 | | 25.9 | | | | |
| | | 0.4N | 24.1 | | | | | |
| | | St+ 0.2N | | 24.8 | | | | |
| | | St+ 0.6N | 28.0 | | | | | |
| | | K | | 27.0 | | | | |
| | | K _s + 0.4N | 28.8 | | | | | |
| | Ad | 0 | | 32.9 | | 24.8 | | 25.1 |
| Ad | | 0.4N | 21.1 | | | | | |
| | | St+ 0.6N | 19.9 | | | | | |
| | | K _s + 0.4N | 33.5 | | | | | |
| | | | Tops: tons per acre | | | | | |
| | Ar | 0 | | 6.87 | | | | |
| | | 0.4N | 3.91 | | | | | |
| Ar | | 0 | | 6.18 | | | | |
| | | 0.4N | 4.12 | | | | | |
| | St1 St2 | 0 | | 5.09 | | 6.83 | | 5.85 |
| | | 0.4N | 4.34 | | 4.69 | | 5.28 | |
| St1 St2 | | 0 | | 5.65 | | | | |
| | | 0.4N | 4.54 | | | | | |
| | | St+ 0.2N | | 5.28 | | | | |
| | | St+ 0.6N | 4.82 | | | | | |
| | | K | | 5.70 | | | | |
| | | K _s + 0.4N | 4.74 | | | | | |
| | Ad | 0 | | 6.59 | | 5.78 | | 6.59 |
| Ad | | 0.4N | 3.78 | | | | | |
| | | St+ 0.6N | 3.95 | | | | | |
| | | K _s + 0.4N | 6.37 | | | | | |

| Treatments applied: | | | Sugar Beet | | | | | |
|---------------------|---------|-----------------------|----------------------------------|------|-----------|-----------|----------------|-----------------------|
| 1953 and 1955 | | | 0 | 0.4N | St + 0.2N | St + 0.6N | K _s | K _s + 0.4N |
| 1950 | 1951 | 1952 & 1954 | | | | | | |
| | | | Plant number: thousands per acre | | | | | |
| | Ar | 0 | | 27.7 | | | | |
| | | 0.4N | 31.1 | | | | | |
| Ar | | 0 | | 27.8 | | | | |
| | | 0.4N | 29.6 | | | | | |
| | St1 St2 | 0 | | 26.7 | | 28.2 | | 26.9 |
| | | 0.4N | 27.7 | | 29.5 | | 28.0 | |
| St1 St2 | | 0 | | 27.8 | | | | |
| | | 0.4N | 29.7 | | | | | |
| | | St+ 0.2N | | 25.8 | | | | |
| | | St+ 0.6N | 30.6 | | | | | |
| | | K _s | | 27.6 | | | | |
| | | K _s + 0.4N | 28.7 | | | | | |
| | Ad | 0 | | 27.8 | | 26.7 | | 29.5 |
| Ad | | 0.4N | 28.3 | | | | | |
| | | St+ 0.6N | 25.8 | | | | | |
| | | K _s + 0.4N | 26.9 | | | | | |