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# Yields of the Field Experiments 1955

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## 55/R/BA/1 Three-course Rotation

### Rothamsted Research

Rothamsted Research (1956) *55/R/BA/1 Three-course Rotation* ; Yields Of The Field Experiments 1955, pp 17 - 23 - DOI: <https://doi.org/10.23637/ERADOC-1-175>

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  $53\frac{1}{3}$  cwt cut straw per acre in autumn  
Nitrogen dressing: 0.2; 0.4; 0.6 cwt N per acre as sulphate of  
ammonia  
K<sub>s</sub> Muriate of potash equivalent to K<sub>2</sub>O in straw  
K 0.5 cwt K<sub>2</sub>O per acre as muriate of potash.

55/Ba/1.2

# Summary of Results

## Potatoes

| Treatments applied: | 1953 and 1955 | 1955                  |                             |           |           |                |          |      |      |
|---------------------|---------------|-----------------------|-----------------------------|-----------|-----------|----------------|----------|------|------|
|                     |               | 0                     | 0.4N                        | St + 0.2N | St + 0.6N | K <sub>s</sub> | K + 0.4N | K    | K    |
| 1950                | 1951          | 1952 & 1954           | Total tubers: tons per acre |           |           |                |          |      |      |
| Ar                  | Ar            | 0                     | 3.67                        | 3.66      | 3.78      | 4.32           |          |      |      |
|                     |               | 0.4N                  |                             |           |           |                |          |      |      |
|                     |               | 0                     | 3.43                        | 3.72      | 4.40      | 4.05           |          |      |      |
| St1 St2             | St1 St2       | 0                     | 4.35                        | 4.06      | 4.16      | 4.12           | 4.56     | 4.47 | 5.26 |
|                     |               | 0.4N                  |                             |           |           |                |          |      |      |
|                     |               | 0                     | 4.09                        | 4.19      | 3.68      | 4.15           | 4.00     | 4.08 | 5.40 |
| Ad                  | Ad            | St + 0.2N             | 4.07                        | 4.38      | 4.13      | 4.52           |          |      |      |
|                     |               | St + 0.6N             |                             |           |           |                |          |      |      |
|                     |               | K <sub>s</sub> + 0.4N | 3.54                        | 3.45      | 4.46      | 4.06           |          |      |      |
| Ad                  | Ad            | 0                     | 3.40                        | 3.13      | 4.23      | 4.46           | 4.95     | 5.48 | 4.38 |
|                     |               | 0.4N                  |                             |           |           |                |          |      |      |
|                     |               | St + 0.6N             | 4.46                        | 4.23      |           |                |          |      |      |
|                     |               | K <sub>s</sub> + 0.4N | 3.94                        | 3.71      |           |                |          |      |      |

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55/Ba/1.4

|                                         |         |                       | Barley |      |           |           |                |                       |
|-----------------------------------------|---------|-----------------------|--------|------|-----------|-----------|----------------|-----------------------|
| Treatments applied: 1953 and 1955       |         |                       | 0      | 0.4N | St + 0.2N | St + 0.6N | K <sub>s</sub> | K <sub>s</sub> + 0.4N |
| 1950                                    | 1951    | 1952 & 1954           |        |      |           |           |                |                       |
| Grain (at 85% dry matter): cwt per acre |         |                       |        |      |           |           |                |                       |
| Ar                                      | Ar      | 0                     |        | 38.2 |           |           |                |                       |
|                                         |         | 0.4N                  | 32.8   |      |           |           |                |                       |
|                                         | St1 St2 | 0                     |        | 40.0 |           |           |                |                       |
|                                         |         | 0.4N                  | 34.4   |      |           |           |                |                       |
| St1 St2                                 | 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   |      |           |           |                |                       |
|                                         | St1 St2 | St+ 0.2N              |        | 34.9 |           |           |                |                       |
|                                         |         | St+ 0.6N              | 29.5   |      |           |           |                |                       |
|                                         | St1 St2 | K <sub>s</sub>        |        | 40.3 |           |           |                |                       |
|                                         |         | K <sub>s</sub> + 0.4N | 35.7   |      |           |           |                |                       |
| Ad                                      | Ad      | 0                     |        | 39.4 |           | 37.0      |                | 38.1                  |
|                                         |         | 0.4N                  | 39.9   |      |           |           |                |                       |
|                                         | Ad      | St+ 0.6N              | 41.1   |      |           |           |                |                       |
|                                         |         | K <sub>s</sub> + 0.4N | 30.6   |      |           |           |                |                       |
| Straw (at 85% dry matter): cwt per acre |         |                       |        |      |           |           |                |                       |
| Ar                                      | Ar      | 0                     |        | 39.8 |           |           |                |                       |
|                                         |         | 0.4N                  | 32.6   |      |           |           |                |                       |
|                                         | St1 St2 | 0                     |        | 43.0 |           |           |                |                       |
|                                         |         | 0.4N                  | 34.8   |      |           |           |                |                       |
| St1 St2                                 | 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   |      |           |           |                |                       |
|                                         | St1 St2 | St+ 0.2N              |        | 34.5 |           |           |                |                       |
|                                         |         | St+ 0.6N              | 29.2   |      |           |           |                |                       |
|                                         | St1 St2 | K <sub>s</sub>        |        | 43.9 |           |           |                |                       |
|                                         |         | K <sub>s</sub> + 0.4N | 33.6   |      |           |           |                |                       |
| Ad                                      | Ad      | 0                     |        | 43.0 |           | 37.9      |                | 39.6                  |
|                                         |         | 0.4N                  | 36.9   |      |           |           |                |                       |
|                                         | Ad      | St+ 0.6N              | 38.9   |      |           |           |                |                       |
|                                         |         | K <sub>s</sub> + 0.4N | 27.8   |      |           |           |                |                       |

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

55/Ba/1.5

|                                   |         |                       | Sugar Beet                    |      |           |           |                |                       |
|-----------------------------------|---------|-----------------------|-------------------------------|------|-----------|-----------|----------------|-----------------------|
| Treatments applied: 1953 and 1955 |         |                       | 0                             | 0.4N | St + 0.2N | St + 0.6N | K <sub>s</sub> | K <sub>s</sub> + 0.4N |
| 1950                              | 1951    | 1952 & 1954           | 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 <sub>s</sub>        |                               | 8.01 |           |           |                |                       |
|                                   |         | K <sub>s</sub> + 0.4N | 8.18                          |      |           |           |                |                       |
|                                   | Ad      | 0                     |                               | 9.54 |           | 7.44      |                | 7.77                  |
| Ad                                |         | 0.4N                  | 6.29                          |      |           |           |                |                       |
|                                   |         | St+ 0.6N              | 5.98                          |      |           |           |                |                       |
|                                   |         | K <sub>s</sub> + 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 <sub>s</sub>        |                               | 16.8 |           |           |                |                       |
|                                   |         | K <sub>s</sub> + 0.4N | 17.6                          |      |           |           |                |                       |
|                                   | Ad      | 0                     |                               | 17.2 |           | 16.6      |                | 16.1                  |
| Ad                                |         | 0.4N                  | 16.8                          |      |           |           |                |                       |
|                                   |         | St+ 0.6N              | 16.6                          |      |           |           |                |                       |
|                                   |         | K <sub>s</sub> + 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 <sub>s</sub> | K <sub>s</sub> + 0.4N |
|-----------------------------------|---------|-----------------------|------|------|-----------|-----------|----------------|-----------------------|
| 1950                              | 1951    | 1952 & 1954           |      |      |           |           |                |                       |
| Total sugar: cwt per acre         |         |                       |      |      |           |           |                |                       |
| Ar                                | 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 <sub>s</sub>                    |         | 27.0                  |      |      |           |           |                |                       |
| K <sub>s</sub> + 0.4N             |         | 28.8                  |      |      |           |           |                |                       |
| Ad                                | Ad      | 0                     | 32.9 |      | 24.8      |           | 25.1           |                       |
|                                   |         | 0.4N                  | 21.1 |      |           |           |                |                       |
|                                   | Ad      | St+ 0.6N              | 19.9 |      |           |           |                |                       |
|                                   |         | K <sub>s</sub> + 0.4N | 33.5 |      |           |           |                |                       |
|                                   |         | Tops: tons per acre   |      |      |           |           |                |                       |
| Ar                                | 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 <sub>s</sub>                    |         | 5.70                  |      |      |           |           |                |                       |
| K <sub>s</sub> + 0.4N             |         | 4.74                  |      |      |           |           |                |                       |
| Ad                                | Ad      | 0                     | 6.59 |      | 5.78      |           | 6.59           |                       |
|                                   |         | 0.4N                  | 3.78 |      |           |           |                |                       |
|                                   | Ad      | St+ 0.6N              | 3.95 |      |           |           |                |                       |
|                                   |         | K <sub>s</sub> + 0.4N | 6.37 |      |           |           |                |                       |

55/Ba/1.7

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