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# Yields of the Field Experiments 1960

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## Classical Experiments

### Rothamsted Research

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60/A/1.1

## WHEAT - BROADBALK 1960

The 117th year

For history, treatments, etc., see "Details of the Classical and Long Term Experiments" 1956.

Cultivations, etc.:

Cropped sections. Ground chalk applied: Sept 4, 1959. Section IA sprayed with 2,4-D ester at  $1\frac{3}{4}$  pints in 40 gallons per acre: Sept 8. Dung applied: Sept 21. Ploughed: Sept 21 - 28. Autumn fertilisers applied: Oct 7. Seed drilled at  $2\frac{3}{4}$  bushels per acre: Oct 19. Spring fertilisers applied: Apr 4, 1960. Second dressing of nitrate of soda applied to plot 16; Section IA sprayed with CMFP at 6 pints in 40 gallons per acre: Apr 28. Combined: Aug 31 - Sept 9. Variety: Squarehead's Master 13/4.

Fallow section. (III) Ploughed: Sept 21 - 28, 1959; Apr 26, 1960; July 2.

Broadbalk Wilderness. N.

In 1960 grazing of the mown portion of Broadbalk Wilderness was introduced.

Cultivations, etc.: Shrubs grubbed out: Nov 18 - 27, 1959. Part grazed (originally mown): Mar 18 - 21, 1960, Apr 19 - 22, May 17 - 21, June 14 - 18, July 11 - 15, Aug 4 - 8, Sept 2 - 7. The grass was topped after each grazing except the first two.

Summary of Results

Grain (at 85% dry matter): cwt per acre

| Section<br>Years<br>after<br>fallow | IV<br>1 | VA<br>unlimed<br>2 | VB<br>limed<br>2 | II<br>3 | IB<br>4 | IA<br>9 | Mean |
|-------------------------------------|---------|--------------------|------------------|---------|---------|---------|------|
| 2A                                  | 24.8    | 23.0               | 20.5             | 23.3    | 16.8    | 21.6    | 22.3 |
| 2B                                  | 21.8    | 19.6               | 18.1             | 21.2    | 16.9    | 19.7    | 20.0 |
| 3                                   | 17.3    | 14.4               | 12.6             | 10.1    | 11.1    | 11.0    | 13.1 |
| 5                                   | 17.4    | 14.6               | 11.4             | 11.5    | 11.8    | 11.8    | 13.5 |
| 6                                   | 19.1    | 16.8               | 16.0             | 13.2    | 14.5    | 13.4    | 15.8 |
| 7                                   | 22.5    | 21.2               | 19.5             | 18.7    | 18.1    | 18.6    | 20.1 |
| 8                                   | 25.7    | 24.4               | 17.8             | 23.5    | 23.1    | 21.6    | 23.2 |
| 9                                   | 20.3    | 20.4               | 18.7             | 14.9    | 16.9    | 18.3    | 18.1 |
| 10                                  | 21.5    | 23.9               | 22.1             | 17.3    | 19.0    | 20.8    | 20.4 |
| 11                                  | 17.7    | 23.5               | 21.5             | 19.1    | 18.4    | 19.2    | 19.6 |
| 12                                  | 18.8    | 23.3               | 19.6             | 19.8    | 18.9    | 20.7    | 19.9 |
| 13                                  | 17.4    | 15.4               | 14.7             | 17.5    | 17.1    | 16.8    | 16.7 |
| 14                                  | 20.1    | 19.8               | 16.4             | 18.0    | 16.8    | 20.8    | 18.6 |
| 15                                  | 22.2    | 21.3               | 12.8             | 17.9    | 16.2    | 18.6    | 18.6 |
| 16                                  | 22.9    | 22.5               | 19.7             | 21.9    | 20.1    | 23.5    | 21.8 |
| 17                                  | 22.3    | 19.7               | 17.8             | 16.3    | 17.1    | 15.8    | 18.6 |
| 18                                  | 17.0    | 8.3                | 9.9              | 6.7     | 8.7     | 7.7     | 10.4 |
| 19                                  | 23.5    | 18.1               | 14.2             | 17.4    | 20.0    | 18.8    | 19.1 |
| 20                                  |         |                    |                  | 14.5    | 16.3    | 14.6    | 15.2 |

60/A/1.2

Straw (at 85% dry matter): cwt per acre

| Section | IV   | VA      | VB    | II   | IB   | IA   |      |
|---------|------|---------|-------|------|------|------|------|
| Years   |      | unlimed | limed |      |      |      |      |
| after   | 1    | 2       | 2     | 3    | 4    | 9    | Mean |
| fallow  |      |         |       |      |      |      |      |
| 2A      | 45.9 | 41.0    | 37.4  | 34.9 | 29.9 | 25.2 | 37.6 |
| 2B      | 41.9 | 41.3    | 37.2  | 37.8 | 37.9 | 18.6 | 38.1 |
| 3       | 23.4 | 18.2    | 14.5  | 13.2 | 14.5 | 11.2 | 16.8 |
| 5       | 28.0 | 20.9    | 19.4  | 19.1 | 20.5 | 14.6 | 21.6 |
| 6       | 35.0 | 26.0    | 29.1  | 20.7 | 25.7 | 16.6 | 26.7 |
| 7       | 37.4 | 34.2    | 32.5  | 29.4 | 29.9 | 23.4 | 32.3 |
| 8       | 37.9 | 35.6    | 35.3  | 33.1 | 38.8 | 29.5 | 35.6 |
| 9       | 35.8 | 27.7    | 27.1  | 22.0 | 28.5 | 26.8 | 28.3 |
| 10      | 25.0 | 26.9    | 27.5  | 19.1 | 23.2 | 23.8 | 23.7 |
| 11      | 28.9 | 33.1    | 25.6  | 22.1 | 24.3 | 22.7 | 26.2 |
| 12      | 29.1 | 35.6    | 28.5  | 24.6 | 24.4 | 27.6 | 28.0 |
| 13      | 32.8 | 27.7    | 29.4  | 29.0 | 20.6 | 24.0 | 28.4 |
| 14      | 31.2 | 28.5    | 26.3  | 19.9 | 19.0 | 21.5 | 24.9 |
| 15      | 33.1 | 32.1    | 24.1  | 24.7 | 29.1 | 27.8 | 28.6 |
| 16      | 42.0 | 37.7    | 36.7  | 27.1 | 26.0 | 27.4 | 33.7 |
| 17      | 35.8 | 30.3    | 30.8  | 23.7 | 26.9 | 18.7 | 28.9 |
| 18      | 29.1 | 22.6    | 24.7  | 11.8 | 17.6 | 8.4  | 20.1 |
| 19      | 40.5 | 32.0    | 29.9  | 26.3 | 30.3 | 24.2 | 31.7 |
| 20      |      |         |       | 22.6 | 24.6 | 18.6 | 22.6 |

Mean dry matter % as harvested: Grain 77.3  
Straw 90.0

60/A/2.1

BARLEY - HOOSFIELD 1960

For history, treatments etc., see "Details of the Classical and Long Term Experiments" 1956.

Note:

In 1960 on strips 1, 2, 3 and 4 the number of row spaces was reduced from 98 to 96 and yields estimated from 4 combine cuts per plot. On strip 6 there were 72 row spaces instead of 74 and yields estimated from 3 combine cuts per plot. On strip 7 yields were estimated from 2 combine cuts per plot. Manures were applied to the full plot areas as hitherto.

On plots showing an uneven growth, straw weights were recorded for all cuts; on the remainder one weight only was taken from a cut chosen at random.

Cultivations, etc.: Sprayed part of plots 5A, 4C, 5.0 with dalapon at 8 lb in 20 gallons per acre: Aug 26, 1959. All plots sprayed with 2,4-D ester at  $1\frac{3}{4}$  pints in 40 gallons per acre: Aug 27. Quinquennial chalk supplement applied to series A, C and plot 5A; resprayed part of plots 5A, 4C, 5.0 with dalapon at 4 lb in 40 gallons per acre: Sept 7. Dung applied, ploughed: <sup>Nov</sup>Mar 20. Fertilisers applied: Apr 4, 1960. Seed drilled at  $2\frac{3}{4}$  bushels per acre: Apr 7. Strips 1, 2 and 3 sprayed with MCPA at  $6\frac{1}{2}$  pints (30% potassium salt) in 40 gallons per acre; and strips 4, 6 and 7 sprayed with CMPP at 6 pints in 40 gallons per acre: May 24. Combined: Sept 5. Variety: Plumage Archer.

60/A/2.2

Summary of Results

| Plot                              |     | Grain<br>(at 85% dry<br>matter):<br>cwt per acre | Straw<br>(at 85% dry<br>matter):<br>cwt per acre |
|-----------------------------------|-----|--------------------------------------------------|--------------------------------------------------|
| 1                                 | O   | 8.6                                              | 3.8                                              |
| 2                                 | O   | 10.5                                             | 3.8                                              |
| 3                                 | O   | 9.8                                              | 4.5                                              |
| 4                                 | O   | 12.9                                             | 7.1                                              |
| 5                                 | O   | 12.0                                             | 8.0                                              |
| 1                                 | A   | 10.8                                             | 5.2                                              |
| 2                                 | A   | 12.2                                             | 6.9                                              |
| 3                                 | A   | 12.9                                             | 9.6                                              |
| 4                                 | A   | 19.1                                             | 12.7                                             |
| 5                                 | A   | 20.4                                             | 14.6                                             |
| 1                                 | AA  | 12.7                                             | 7.4                                              |
| 2                                 | AA  | 17.5                                             | 11.1                                             |
| 3                                 | AA  | 14.2                                             | 10.8                                             |
| 4                                 | AA  | 18.4                                             | 12.8                                             |
| 1                                 | AAS | 19.9                                             | 10.6                                             |
| 2                                 | AAS | 22.5                                             | 11.6                                             |
| 3                                 | AAS | 20.0                                             | 14.8                                             |
| 4                                 | AAS | 26.5                                             | 19.1                                             |
| 1                                 | C   | 17.4                                             | 7.4                                              |
| 2                                 | C   | 19.1                                             | 6.9                                              |
| 3                                 | C   | 18.2                                             | 10.4                                             |
| 4                                 | C   | 22.0                                             | 13.6                                             |
| 7                                 | - 1 | 16.4                                             | 10.8                                             |
| 7                                 | - 2 | 31.7                                             | 20.1                                             |
| 6                                 | - 1 | 10.1                                             | 9.4                                              |
| 6                                 | - 2 | 10.8                                             | 6.2                                              |
| 1                                 | N   | 11.4                                             | 6.6                                              |
| 2                                 | N   | 14.7                                             | 8.5                                              |
| Mean dry matter %<br>as harvested |     | 77.6                                             | 79.8                                             |

60/A/3

# WHEAT AFTER FALLOW - HOOSFIELD 1960

Without manure 1851 and since

For history, treatments etc., see "Details of the Classical and Long Term Experiments" 1956.

Area harvested: 0.0331 acres.

Cultivations, etc.:

Cropped plots. Ploughed: Sept 12, 1959. Seed sown at 3 bushels per acre: Oct 19. Combine harvested: Aug ~~15~~<sup>31</sup>, 1960. Variety: Squarehead's Master 13/4.

Fallowed plots. Ploughed twice: Sept 11 and Sept 12, 1959.

Note: Counts of plant shoot and ear number and estimates of Eyespot (*Cercospora herpotrichoides*) and Take-All (*Ophiobolus graminis*) were made. There was no lodging.

## Summary of Results

Grain (at 85% dry matter): cwt per acre

| Plot<br>No. of years<br>of fallow | A <sub>1</sub> | A <sub>4</sub> | A <sub>2</sub> | Mean |
|-----------------------------------|----------------|----------------|----------------|------|
|                                   | 1              | 1              | 3              |      |
|                                   | 6.1            | 5.0            | 8.8            | 6.6  |

Mean dry matter % as harvested: 79.5

60/A/4.1

## GRASS AND MULTIPLE CROPPING AND DIRECT AND RESIDUAL P

AGDELL 1960

For history, treatments, etc., see "Details of the Classical and Long Term Experiments" 1956.

### Multiple cropping 1960

In order to measure the residues of 1959 applications the sub plots were split to carry the phosphate treatments described below.  
Rotation (commencing 1959): barley, potatoes, sugar beet.

Area of each sub plot (acres): 0.0017. Area harvested (approx.):  
Barley - 0.0009, Potatoes - 0.0007, Sugar beet - 0.0008.

Treatments (per acre).

To sub plots receiving no  $P_2O_5$  in 1959: none; 0.25 cwt  $P_2O_5$ .  
To sub plots receiving 0.25 cwt  $P_2O_5$  in 1959: 1.00; 1.50 cwt  $P_2O_5$ .  
To sub plots receiving 1.00 cwt  $P_2O_5$  in 1959: none; 1.50 cwt  $P_2O_5$ .

Note:  $P_2O_5$  applied as superphosphate.

Basal dressings. To grass: as 1959.

To potatoes and sugar beet: 1.2 cwt N per acre as sulphate of ammonia and 1.2 cwt  $K_2O$  per acre as sulphate of potash.

To barley: 0.6 cwt N per acre as sulphate of ammonia and 0.6 cwt  $K_2O$  per acre as sulphate of potash.

Cultivations, etc.: All plots ploughed: Nov 23, 1959.

Grass. Seed drilled at 40 lb per acre: Apr 8, 1960. 'Nitro-Chalk' applied: May 19. Sprayed with CMPP at 5 pints in 18 gallons per acre; parts of plots 4, 5 and 6 re-drilled: June 30. Part of plot 3 re-drilled: July 7. Plots 1 and 2 cut, other plots topped: July 22. 'Nitro-Chalk' applied: July 26. Plots 1 and 2 cut (2nd cut), plots 3, 4, 5 and 6 cut (1st cut): Sept 26.  
Variety: S37 Cocksfoot.

Barley. Treatment fertilisers applied: Apr 7, 1960. Seed drilled at 3 bushels per acre; basal NK applied: Apr 8. Sprayed with CMPP at 4 pints in 25 gallons per acre: May 30. Harvested: Aug 18 - 25. Variety: Proctor.

Potatoes. Rotary cultivated: Apr 14, 1960. Ridged: Apr 19. Fertilisers applied; potatoes hand planted: Apr 20. Earthed up: June 9. Sprayed with copper fungicide at 5 lb in 40 gallons per acre: July 15 and Aug 10. Sprayed with demeton methyl at 12 fluid oz in 25 gallons per acre: July 27. Lifted: Sept 27. Variety: Majestic (chitted).

Sugar beet. Fertilisers applied: Apr 7, 1960. Seed drilled at 20 lb per acre: Apr 8. Dusted with aldrin against flea beetle: May 7. Singled: June 8. Sprayed with demeton methyl at 12 fluid oz in 25 gallons per acre: June 22, July 15 and July 27. Harvested: Oct 18. Variety: Klein E.

60/A/4.2

Summary of Results

| Manure to<br>turnips until<br>1948<br>Plot<br>Rotation | Mineral manure* |        |             |        | Mineral* and<br>nitrogenous<br>manure† |        | Mean |
|--------------------------------------------------------|-----------------|--------|-------------|--------|----------------------------------------|--------|------|
|                                                        | None since 1848 |        | no nitrogen |        |                                        |        |      |
|                                                        | 5               | 6      | 3           | 4      | 1                                      | 2      |      |
|                                                        | Fallow          | Clover | Fallow      | Clover | Fallow                                 | Clover |      |
| <u>Grass dry matter: cwt per acre</u>                  |                 |        |             |        |                                        |        |      |
| 1st cut                                                | 0.0             | 0.0    | 0.0         | 0.0    | 12.9                                   | 9.4    | 3.7  |
| 2nd cut                                                | 7.1             | 11.0   | 36.4        | 36.1   | 36.4                                   | 35.6   | 27.1 |
| Total of 2<br>cuts                                     | 7.1             | 11.0   | 36.4        | 36.1   | 49.3                                   | 45.0   | 30.8 |

Barley grain (at 85% dry matter): cwt per acreP<sub>2</sub>O<sub>5</sub> cwt per acre

| 1959 | 1960 |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|
| None | None | 10.7 | 10.3 | 22.6 | 23.4 | 22.8 | 20.7 | 18.4 |
| None | 0.25 | 12.0 | 13.3 | 22.4 | 24.4 | 23.1 | 20.9 | 19.4 |
| 0.25 | 1.00 | 14.0 | 19.4 | 27.3 | 26.4 | 24.4 | 24.8 | 22.7 |
| 0.25 | 1.50 | 14.8 | 23.3 | 27.6 | 26.5 | 25.1 | 24.0 | 23.6 |
| 1.00 | None | 15.1 | 18.5 | 24.7 | 24.6 | 23.4 | 22.3 | 21.4 |
| 1.00 | 1.50 | 17.2 | 25.0 | 27.2 | 26.1 | 24.9 | 25.6 | 24.3 |
| Mean |      | 14.0 | 18.3 | 25.3 | 25.2 | 23.9 | 23.0 | 21.6 |

Barley straw (at 85% dry matter): cwt per acre

| 1959 | 1960 |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|
| None | None | 15.2 | 11.7 | 23.3 | 22.3 | 26.0 | 24.6 | 20.5 |
| None | 0.25 | 14.8 | 14.2 | 21.5 | 22.1 | 24.3 | 23.9 | 20.1 |
| 0.25 | 1.00 | 16.8 | 18.0 | 26.6 | 24.6 | 25.5 | 25.9 | 22.9 |
| 0.25 | 1.50 | 17.1 | 19.7 | 25.4 | 24.3 | 25.7 | 26.0 | 23.0 |
| 1.00 | None | 17.1 | 17.6 | 23.9 | 21.9 | 25.2 | 23.4 | 21.5 |
| 1.00 | 1.50 | 18.5 | 21.6 | 25.9 | 24.7 | 24.9 | 26.6 | 23.7 |
| Mean |      | 16.6 | 17.1 | 24.4 | 23.3 | 25.3 | 25.1 | 22.0 |

Mean dry matter % as harvested: Grain 71.9  
Straw 45.4

\*P, K, Na, Mg.

†Rape dust (or castor meal + ammonium sulphate).

60/A/4.3

| Manure to<br>turnips until<br>1948<br>Plot<br>Rotation | None since 1848 |        | Mineral manure*<br>no nitrogen |        | Minereal* and<br>nitrogenous<br>manure† |        | Mean |
|--------------------------------------------------------|-----------------|--------|--------------------------------|--------|-----------------------------------------|--------|------|
|                                                        | 5               | 6      | 3                              | 4      | 1                                       | 2      |      |
|                                                        | Fallow          | Clover | Fallow                         | Clover | Fallow                                  | Clover |      |

Potatoes, total tubers tons per acreP<sub>2</sub>O<sub>5</sub> cwt per acre

| 1959 | 1960 |       |       |       |       |       |       |       |
|------|------|-------|-------|-------|-------|-------|-------|-------|
| None | None | 5.74  | 6.66  | 18.15 | 14.60 | 18.27 | 19.22 | 13.77 |
| None | 0.25 | 9.08  | 9.08  | 18.94 | 16.46 | 19.45 | 20.36 | 15.56 |
| 0.25 | 1.00 | 12.72 | 11.97 | 20.40 | 19.65 | 22.26 | 23.12 | 18.35 |
| 0.25 | 1.50 | 13.77 | 14.60 | 20.56 | 19.53 | 22.42 | 23.52 | 19.07 |
| 1.00 | None | 9.47  | 9.87  | 17.72 | 16.57 | 19.10 | 20.36 | 15.52 |
| 1.00 | 1.50 | 13.77 | 14.64 | 21.03 | 19.81 | 22.81 | 23.60 | 19.28 |
| Mean |      | 10.75 | 11.13 | 19.46 | 17.77 | 20.71 | 21.69 | 16.92 |

Sugar beet, Roots (washed): tons per acre

| 1959 | 1960 |       |       |       |       |       |       |       |
|------|------|-------|-------|-------|-------|-------|-------|-------|
| None | None | 9.89  | 7.28  | 15.99 | 11.51 | 11.91 | 16.06 | 12.11 |
| None | 0.25 | 12.02 | 8.99  | 16.15 | 13.51 | 12.20 | 16.92 | 13.30 |
| 0.25 | 1.00 | 15.30 | 12.41 | 16.98 | 13.49 | 14.21 | 15.86 | 14.71 |
| 0.25 | 1.50 | 16.44 | 14.50 | 15.64 | 12.94 | 14.49 | 15.43 | 14.91 |
| 1.00 | None | 14.24 | 12.52 | 15.21 | 12.18 | 14.12 | 14.98 | 13.88 |
| 1.00 | 1.50 | 15.39 | 14.16 | 15.33 | 15.74 | 14.80 | 16.30 | 15.29 |
| Mean |      | 13.88 | 11.64 | 15.88 | 13.23 | 13.62 | 15.92 | 14.03 |

Sugar beet, Sugar percentage

| 1959 | 1960 |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|
| None | None | 15.3 | 14.5 | 15.8 | 15.5 | 14.8 | 15.7 | 15.3 |
| None | 0.25 | 15.5 | 14.6 | 15.3 | 15.5 | 14.8 | 15.7 | 15.2 |
| 0.25 | 1.00 | 16.3 | 15.1 | 16.2 | 15.4 | 15.4 | 15.7 | 15.7 |
| 0.25 | 1.50 | 16.0 | 15.3 | 16.1 | 15.5 | 15.5 | 16.0 | 15.7 |
| 1.00 | None | 16.2 | 15.6 | 16.0 | 16.0 | 15.0 | 15.8 | 15.8 |
| 1.00 | 1.50 | 16.2 | 15.4 | 16.1 | 16.0 | 15.3 | 15.6 | 15.8 |
| Mean |      | 15.9 | 15.1 | 15.9 | 15.6 | 15.1 | 15.7 | 15.6 |

Sugar beet, Total sugar:cwt per acre

| 1959 | 1960 |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|
| None | None | 30.4 | 21.0 | 50.5 | 35.8 | 35.2 | 50.4 | 37.2 |
| None | 0.25 | 37.1 | 26.4 | 49.6 | 41.9 | 36.1 | 53.1 | 40.7 |
| 0.25 | 1.00 | 49.8 | 37.4 | 54.9 | 41.4 | 43.9 | 49.6 | 46.2 |
| 0.25 | 1.50 | 52.4 | 44.2 | 50.3 | 40.2 | 45.0 | 49.2 | 46.9 |
| 1.00 | None | 46.2 | 39.2 | 48.5 | 39.0 | 42.4 | 47.3 | 43.8 |
| 1.00 | 1.50 | 49.7 | 43.6 | 49.2 | 50.3 | 45.0 | 51.0 | 48.1 |
| Mean |      | 44.3 | 35.3 | 50.5 | 41.4 | 41.3 | 50.1 | 43.8 |

\*P, K, Na, Mg.

†Rape dust (or castor meal + ammonium sulphate).

60/A/4.4

| Manure to<br>turnips until<br>1948             |          | None since 1848                                     |        | Mineral manure*<br>no nitrogen |        | Mineral* and<br>nitrogenous<br>manure† |        | Mean  |
|------------------------------------------------|----------|-----------------------------------------------------|--------|--------------------------------|--------|----------------------------------------|--------|-------|
| Plot                                           | Rotation | 5                                                   | 6      | 3                              | 4      | 1                                      | 2      |       |
|                                                |          | Fallow                                              | Clover | Fallow                         | Clover | Fallow                                 | Clover |       |
| <u>P<sub>2</sub>O<sub>5</sub> cwt per acre</u> |          | <u>Sugar beet, Tops: tons per acre</u>              |        |                                |        |                                        |        |       |
| 1959                                           | 1960     |                                                     |        |                                |        |                                        |        |       |
| None                                           | None     | 14.14                                               | 9.60   | 17.58                          | 17.28  | 16.91                                  | 16.78  | 15.38 |
| None                                           | 0.25     | 15.40                                               | 13.69  | 18.21                          | 17.78  | 18.85                                  | 18.31  | 17.04 |
| 0.25                                           | 1.00     | 18.75                                               | 19.16  | 18.22                          | 19.45  | 18.72                                  | 16.57  | 18.48 |
| 0.25                                           | 1.50     | 19.46                                               | 20.01  | 15.00                          | 18.52  | 19.52                                  | 16.44  | 18.16 |
| 1.00                                           | None     | 16.89                                               | 16.15  | 14.40                          | 15.40  | 17.85                                  | 14.40  | 15.85 |
| 1.00                                           | 1.50     | 18.49                                               | 18.71  | 15.50                          | 19.86  | 19.49                                  | 18.15  | 18.37 |
| Mean                                           |          | 17.19                                               | 16.22  | 16.48                          | 18.05  | 18.55                                  | 16.77  | 17.21 |
|                                                |          | <u>Sugar beet, Plant number: thousands per acre</u> |        |                                |        |                                        |        |       |
| 1959                                           | 1960     |                                                     |        |                                |        |                                        |        |       |
| None                                           | None     | 33.0                                                | 36.3   | 37.2                           | 34.5   | 33.3                                   | 31.8   | 34.4  |
| None                                           | 0.25     | 36.0                                                | 34.3   | 33.0                           | 34.2   | 32.7                                   | 33.6   | 34.0  |
| 0.25                                           | 1.00     | 34.0                                                | 34.7   | 36.9                           | 33.9   | 34.2                                   | 31.8   | 34.2  |
| 0.25                                           | 1.50     | 34.7                                                | 35.7   | 36.9                           | 32.4   | 32.7                                   | 34.2   | 34.4  |
| 1.00                                           | None     | 34.0                                                | 33.4   | 34.5                           | 32.7   | 34.2                                   | 31.2   | 33.3  |
| 1.00                                           | 1.50     | 35.3                                                | 36.4   | 32.7                           | 34.2   | 33.6                                   | 32.4   | 34.1  |
| Mean                                           |          | 34.5                                                | 35.1   | 35.2                           | 33.6   | 33.4                                   | 32.5   | 34.1  |

\*P, K, Na, Mg.

†Rape dust (or castor meal + ammonium sulphate).

60/A/5

## HAY - THE PARK GRASS PLOTS 1960

For history, treatments etc., see "Details of the Classical and Long Term Experiments" 1956.

Use of the flail-type forage harvester

Yields are based on sample cuts as for the second cut in 1959.

Cultivations, etc.: Ground chalk applied: Jan 27, 1960. Mineral fertilisers applied: Feb 5. Nitrogenous fertilisers applied: 1st dressing - Mar 31; 2nd dressing - Apr 28. Cut twice: June 15 and Oct 11.

Note: Commencing in 1960 yields from both 1st and 2nd crops will be presented as dry matter.

Summary of Results

Dry matter: cwt per acre

| Plot | Not limed |          |       | Limed             |                   |                   |
|------|-----------|----------|-------|-------------------|-------------------|-------------------|
|      | 1st crop  | 2nd crop | Total | 1st crop          | 2nd crop          | Total             |
| 1    | 5.9       | 4.2      | 10.1  | 15.2              | 10.7              | 25.9              |
| 2    | 13.4      | 11.2     | 24.6  | 13.8              | 11.8              | 25.6              |
| 3    | 12.4      | 9.8      | 22.2  | 13.5              | 9.9               | 23.4              |
| 4-1  | 17.9      | 13.1     | 31.0  | 13.3              | 10.5              | 23.8              |
| 4-2  | 17.8      | 16.1     | 33.9  | 27.3              | 14.0              | 41.3              |
| 5-1  | 10.1      | 9.2      | 19.3  |                   |                   |                   |
| 5-2  | 16.7      | 15.6     | 32.3  |                   |                   |                   |
| 6    | 20.1      | 18.4     | 38.5  |                   |                   |                   |
| 7    | 23.6      | 17.3     | 40.9  | 30.9              | 21.1              | 52.0              |
| 8    | 18.6      | 15.8     | 34.4  | 12.1              | 13.7              | 25.8              |
| 9    | 42.3      | 16.5     | 58.8  | 41.3              | 14.4              | 55.7              |
| 10   | 26.5      | 17.1     | 43.6  | 29.3              | 11.1              | 40.4              |
| 11-1 | 50.7      | 32.6     | 83.3  | 42.9              | 27.6              | 70.5              |
| 11-2 | 54.1      | 28.7     | 82.8  | 49.8              | 29.6              | 79.4              |
| 12   | 14.5      | 15.7     | 30.2  |                   |                   |                   |
| 13   | 24.0      | 16.9     | 40.9  | 24.8              | 22.4              | 47.2              |
| 14   | 41.8      | 21.4     | 63.2  | 45.9              | 18.4              | 64.3              |
| 15   | 18.2      | 13.0     | 31.2  | 30.4              | 23.8              | 54.2              |
| 16   | 34.7      | 18.4     | 53.1  | 40.4              | 21.5              | 61.9              |
| 17   | 21.4      | 13.9     | 35.3  | 20.6              | 10.7              | 31.3              |
| 18   | 5.7       | 13.9     | 19.6  | 21.6*             | 8.3*              | 29.9*             |
|      |           |          |       | 23.0 <sup>+</sup> | 11.0 <sup>+</sup> | 34.0 <sup>+</sup> |
| 19   | 24.6      | 18.3     | 42.9  | 28.9*             | 17.3*             | 46.2*             |
|      |           |          |       | 29.5 <sup>+</sup> | 20.7 <sup>+</sup> | 50.2 <sup>+</sup> |
| 20   | 28.4      | 18.9     | 47.3  | 33.9*             | 19.9*             | 53.8*             |
|      |           |          |       | 35.5 <sup>+</sup> | 19.1 <sup>+</sup> | 54.6 <sup>+</sup> |

\*Heavy liming.    <sup>+</sup>Light liming.

Mean dry matter % as cut: 1st crop 24.9; 2nd crop 25.6.

60/A/6

# BARLEY - EXHAUSTION LAND HOOSFIELD 1960

For history, treatments etc., see "Details of the Classical and Long Term Experiments" 1956.

Basal dressing: 0.5 cwt N per acre as sulphate of ammonia.

Cultivations, etc.: Sprayed with dalapon at 8 lb in 20 gallons per acre: Aug 26, 1959. Sprayed with dalapon at 4 lb in 40 gallons per acre: Sept 2. Ground chalk applied to plot 2 at 21 cwt per acre: Sept 7. Ploughed: Nov 17. Sulphate of ammonia applied: Mar 7, 1960. Seed drilled at  $2\frac{3}{4}$  bushels per acre: Mar 17. Sprayed with CMPP at 6 pints in 40 gallons per acre: May 25. Combine harvested: Sept 6. Variety: Plumage Archer.

## Summary of Results

### Barley

#### Yields (at 85% dry matter): cwt per acre

Plots not cross cropped in 1957 and 1958 and combine harvested in 1959

| Plot. Manuring to potatoes 1876 - 1901* | Grain | Straw |
|-----------------------------------------|-------|-------|
| 2 Unmanured after dung 1876 - 81        | 17.0  | 10.7  |
| 4 Dung                                  | 24.8  | 15.0  |
| 6 Nitrate of soda                       | 16.2  | 10.0  |
| 8 Nitrate of soda and complete minerals | 19.7  | 13.4  |
| 10 Complete minerals                    | 21.6  | 13.8  |

Plots cross cropped in 1957 and 1958 and combine harvested in 1959

| Plot. Manuring to potatoes 1876 - 1901* | Grain | Straw |
|-----------------------------------------|-------|-------|
| 1 Unmanured                             | 19.0  | 12.4  |
| 3 Dung                                  | 24.6  | 17.2  |
| 5 Ammonium salts                        | 17.6  | 11.3  |
| 7 Ammonium salts and complete minerals  | 20.3  | 14.0  |
| 9 Superphosphate                        | 20.4  | 12.9  |
| Mean dry matter % as harvested:         | 77.6  | 88.9  |

\*For certain changes see history.

60/A/7

CLOVER - ROTHAMSTED GARDEN 1960

The 107th year

For history, etc. see "Details of the Classical and Long Term Experiments" 1956.

Molybdenum test 1960: The two plots were sub-divided for a test of molybdenum spray:-

None; 1 lb sodium molybdate in about 5000 gallons of water per acre.

Cultivations, etc.: Muriate of potash applied: Dec 18, 1959. Blank patches resown: Apr 11, 1960. Molybdenum spray applied: June 17. Cut twice: July 5, Sept 28.

Summary of Results

Dry matter: cwt per acre

| Muriate of Potash:<br>cwt per acre | Spray Sodium<br>molybdate |      | Mean |
|------------------------------------|---------------------------|------|------|
|                                    | None                      |      |      |
|                                    | <u>1st cut</u>            |      |      |
| None                               | 4.9                       | 1.0  | 3.0  |
| 2                                  | 14.2                      | 3.9  | 9.0  |
| Mean                               | 9.6                       | 2.4  | 6.0  |
|                                    | <u>2nd cut</u>            |      |      |
| None                               | 8.7                       | 4.7  | 6.7  |
| 2                                  | 12.5                      | 9.8  | 11.2 |
| Mean                               | 10.6                      | 7.2  | 8.9  |
|                                    | <u>Total of 2 cuts</u>    |      |      |
| None                               | 13.6                      | 5.7  | 9.6  |
| 2                                  | 26.7                      | 13.7 | 20.2 |
| Mean                               | 20.2                      | 9.7  | 14.9 |

Mean dry matter % as harvested: 1st cut 22.9  
2nd cut 22.2  
Total of 2 cuts 22.6

60/A/8.1

WHEAT AND BARLEY, AND BARLEY AND POTATOES MICROPLOTS -  
WOBURN STACKYARD 1960

For history, treatments, etc., see "Details of the Classical and Long Term Experiments" 1956.

592 Strip cropping and microplots 1960: Wheat and barley were sown in strips as in 1949, except that on the south eastern of the 3 blocks of each of the old experiments, the barley strip was replaced by 2 strips, one of potatoes, one of barley, for microplot tests of P and K fertilisers.

|                                 |                         |
|---------------------------------|-------------------------|
| Area of each main plot (acres): | Area harvested (acres): |
| 10a - 11b            0.0274     | 0.0206                  |
| Remainder            0.0411     | 0.0234                  |

|                                 |                         |
|---------------------------------|-------------------------|
| Area of each microplot (acres): | Area harvested (acres): |
| 11a and 11b            0.0034   | Barley - 0.0019         |
|                                 | Potatoes - 0.0014       |
| Remainder            0.0026     | Barley - 0.0013         |
|                                 | Potatoes - 0.0010       |

Treatments (to microplots only). Certain combinations of:-  
 Superphosphate:- None, 0.25 ( $P_1$ ), 1.0 ( $P_4$ ) cwt  $P_2O_5$  per acre (barley and potatoes).  
 Sulphate of potash:- None, 0.15 ( $K_1$ ), 0.6 ( $K_4$ ) cwt  $K_2O$  per acre (barley).  
 Sulphate of potash:- None, 0.30 ( $K_2$ ), 1.2 ( $K_8$ ) cwt  $K_2O$  per acre (potatoes).

Plots 11a and 11b being narrower than the rest were divided into 4 microplots each instead of 16 and carried tests of K only (continuous wheat site) or P only (continuous barley site).

Basal dressings per acre:

To wheat and barley:- 0.9 cwt N as 'Nitro-Chalk'.

To microplots:-

Potatoes: 1.2 cwt N as 'Nitro-Chalk'.

Barley: 0.6 cwt N as 'Nitro-Chalk'.

Cultivations, etc.: Ground chalk applied to whole area at 11 cwt per acre: Sept 10, 1959.

Wheat: Permanent wheat site ploughed: Sept 11.

Permanent barley site ploughed: Sept 15. Seed drilled at 3 bushels per acre: Oct 22, 1959. 'Nitro-Chalk' applied: Mar 21, 1960. Sprayed with DNOC at 2 gallons in 8 gallons per acre: May 3. Combine harvested: Aug 31. Variety: Squarehead's Master 13/4.

Barley: Ploughed 2nd time: Nov 12 - 23, 1959. Seed drilled at  $2\frac{3}{4}$  bushels per acre; 'Nitro-Chalk' applied: Mar 21, 1960. Sprayed with TCB/MCPA at 4 pints in 40 gallons per acre: May 23. Combine harvested: Aug 30. Variety: Plumage Archer.

60/A/8.2

**Microplots.**

Potatoes: Ploughed 2nd time: Nov 12 - 23, 1959. Basal N, basal and treatment P and K applied on the flat: Apr 21, 1960.

Potatoes planted by machine: Apr 22. Blanks in rows planted with chitted seed: May 27. Earthed up: June 13. Lifted: Sept 19. Variety: Majestic.

Barley: Basal and treatment P and K applied: Mar 22, 1960.

Basal N applied, seed drilled at  $2\frac{3}{4}$  bushels per acre: Mar 23.

Sprayed with TCB/MCPA at 4 pints in 40 gallons per acre: May 23.

Harvested: Aug 10. Variety: Plumage Archer.

Summary of ResultsMain plots

| Crop in 1960<br>Crop in old<br>scheme          | Wheat               |                      | Barley              |                      |
|------------------------------------------------|---------------------|----------------------|---------------------|----------------------|
|                                                | Continuous<br>wheat | Continuous<br>barley | Continuous<br>wheat | Continuous<br>barley |
| <u>Grain (at 85% dry matter): cwt per acre</u> |                     |                      |                     |                      |
| Plot 1                                         | 12.2                | 24.9                 | 21.3                | 17.9                 |
| 2                                              | 9.7                 | 24.2                 | 15.4                | 16.9                 |
| 3                                              | 20.0                | 27.4                 | 20.4                | 16.0                 |
| 4                                              | 15.1                | 21.9                 | 21.9                | 19.2                 |
| 5                                              | 15.0                | 24.0                 | 23.0                | 19.0                 |
| 6                                              | 20.2                | 25.9                 | 24.7                | 23.5                 |
| 7                                              | 20.9                | 27.3                 |                     |                      |
| 8                                              | 20.3                | 27.2                 |                     |                      |
| 9                                              | 23.7                | 27.6                 |                     |                      |
| 10a                                            | 19.3                | 25.9                 | 19.6                | 20.4                 |
| 10b                                            | 20.3                | 24.5                 | 18.7                | 17.7                 |
| 11a                                            | 25.3                | 24.9                 | 20.9                | 21.9                 |
| 11b                                            | 25.7                | 24.5                 | 22.5                | 21.8                 |
| <u>Straw (at 85% dry matter): cwt per acre</u> |                     |                      |                     |                      |
| Plot 1                                         | 26.4                | 29.3                 | 18.4                | 13.5                 |
| 2                                              | 18.6                | 25.9                 | 12.8                | 13.3                 |
| 3                                              | 22.9                | 41.4                 | 15.1                | 12.4                 |
| 4                                              | 26.9                | 23.0                 | 18.1                | 13.3                 |
| 5                                              | 19.2                | 26.7                 | 17.3                | 12.9                 |
| 6                                              | 22.8                | 31.2                 | 17.5                | 15.6                 |
| 7                                              | 23.5                | 34.7                 |                     |                      |
| 8                                              | 20.3                | 44.2                 |                     |                      |
| 9                                              | 29.3                | 47.4                 |                     |                      |
| 10a                                            | 22.0                | 34.8                 | 11.2                | 13.6                 |
| 10b                                            | 26.8                | 33.4                 | 10.3                | 11.6                 |
| 11a                                            | +                   | +                    | 13.5                | 14.3                 |
| 11b                                            | 32.4                | 44.1                 | 15.2                | 13.3                 |
| Mean dry matter % as harvested:                |                     |                      |                     |                      |
|                                                | Grain               | 76.6                 | 78.7                |                      |
|                                                | Straw               | 84.5                 | 83.9                |                      |

+ Not recorded.

60/A/8.3

MicroplotsBarley

| Crop in old scheme | Treatment | No. sub plots | Continuous wheat                        |      |        | Continuous barley |      |      |        |      |      |      |      |
|--------------------|-----------|---------------|-----------------------------------------|------|--------|-------------------|------|------|--------|------|------|------|------|
|                    |           |               | 7                                       | 8    | Plot 9 | 11a*              | 11b* | 11a* | Plot 9 | 8    | 7    |      |      |
|                    | P K       |               | Grain (at 85% dry matter): cwt per acre |      |        |                   |      |      |        |      |      |      |      |
|                    | 0 4       | 4             | 20.0                                    | 18.6 | 27.0   |                   |      | 23.8 |        | 24.3 | 23.0 | 23.4 | 16.6 |
|                    | 1 4       | 2             | 20.4                                    | 18.6 | 26.3   |                   |      | 24.1 |        | 26.1 | 25.8 | 24.4 | 19.3 |
|                    | 4 4       | 2             | 23.2                                    | 18.1 | 28.4   |                   |      | 24.5 |        | 26.9 | 26.9 | 25.8 | 19.7 |
|                    | 4 0       | 4             | 24.6                                    | 19.0 | 24.2   | 23.2              | 24.6 |      |        |      | 25.0 | 23.5 | 20.6 |
|                    | 4 1       | 2             | 25.9                                    | 18.8 | 24.6   | 22.5              | 26.6 |      |        |      | 27.4 | 24.0 | 21.3 |
|                    | 4 4       | 2             | 26.2                                    | 18.0 | 26.4   | 25.0              | 26.8 |      |        |      | 26.9 | 23.8 | 23.0 |
|                    |           |               | Mean dry matter % as harvested: 75.7    |      |        |                   |      |      |        |      |      |      |      |
|                    |           |               | Straw (at 85% dry matter): cwt per acre |      |        |                   |      |      |        |      |      |      |      |
|                    | 0 4       | 4             | 24.0                                    | 24.3 | 31.6   |                   |      | 26.9 |        | 28.0 | 24.0 | 24.2 | 19.6 |
|                    | 1 4       | 2             | 24.1                                    | 24.9 | 30.9   |                   |      | 26.2 |        | 29.1 | 29.5 | 24.9 | 21.1 |
|                    | 4 4       | 2             | 26.9                                    | 26.5 | 31.6   |                   |      | 27.7 |        | 28.1 | 29.0 | 28.8 | 23.3 |
|                    | 4 0       | 4             | 27.8                                    | 24.3 | 28.6   | 26.5              | 29.9 |      |        |      | 27.1 | 24.4 | 22.0 |
|                    | 4 1       | 2             | 26.0                                    | 26.5 | 30.0   | 27.5              | 26.7 |      |        |      | 28.1 | 23.9 | 22.0 |
|                    | 4 4       | 2             | 30.7                                    | 27.2 | 32.4   | 30.9              | 33.5 |      |        |      | 28.7 | 26.4 | 24.0 |

\*On these plots the number of sub plots was halved.

60/4/8.4

| Microplots         |               |                  |       |        |                              |      |      |      |        |       |       |       |       |
|--------------------|---------------|------------------|-------|--------|------------------------------|------|------|------|--------|-------|-------|-------|-------|
| Potatoes           |               |                  |       |        |                              |      |      |      |        |       |       |       |       |
| Crop in old scheme | No. sub plots | Continuous wheat |       |        | Continuous barley            |      |      |      |        |       |       |       |       |
|                    |               | 7                | 8     | Plot 9 | 11a*                         | 11b* | 11a* | 11b* | Plot 9 | 8     | 7     |       |       |
| Treatment          |               |                  |       |        |                              |      |      |      |        |       |       |       |       |
| P K                |               |                  |       |        | Total tubers: tons per acre  |      |      |      |        |       |       |       |       |
| 0 4                | 4             | 15.10            | 14.85 | 18.64  |                              |      |      |      | 15.71  | 16.23 | 17.78 | 18.67 | 17.34 |
| 1 4                | 2             | 15.34            | 16.96 | 17.71  |                              |      |      |      | 16.03  | 15.07 | 18.64 | 19.39 | 16.67 |
| 4 4                | 2             | 16.32            | 16.09 | 19.74  |                              |      |      |      | 18.59  | 14.58 | 19.15 | 19.85 | 18.99 |
| 4 0                | 4             | 11.92            | 15.16 | 16.30  |                              |      |      |      |        |       | 16.41 | 16.93 | 14.27 |
| 4 2                | 2             | 14.18            | 14.87 | 17.71  |                              |      |      |      |        |       | 16.44 | 17.19 | 16.96 |
| 4 8                | 2             | 16.96            | 16.15 | 19.33  |                              |      |      |      |        |       | 18.17 | 18.75 | 18.23 |
|                    |               |                  |       |        | Percentage ware (1½" riddle) |      |      |      |        |       |       |       |       |
| 0 4                | 4             | 91.5             | 88.7  | 91.2   |                              |      |      |      | 91.6   | 88.3  | 93.6  | 94.8  | 94.6  |
| 1 4                | 2             | 90.9             | 88.1  | 92.0   |                              |      |      |      | 90.0   | 89.9  | 93.5  | 94.4  | 93.5  |
| 4 4                | 2             | 91.8             | 92.0  | 91.9   |                              |      |      |      | 87.5   | 89.0  | 92.9  | 93.4  | 95.7  |
| 4 4                | 4             | 84.6             | 85.9  | 89.8   |                              |      |      |      |        |       | 92.1  | 91.2  | 91.0  |
| 4 0                | 2             | 91.5             | 89.5  | 88.2   |                              |      |      |      |        |       | 92.8  | 91.6  | 94.2  |
| 4 2                | 2             | 89.4             | 93.3  | 92.7   |                              |      |      |      |        |       | 90.6  | 91.9  | 92.0  |
| 4 8                | 2             |                  |       |        |                              |      |      |      |        |       |       |       |       |

\* On these plots the number of sub plots was halved.