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ROTHAMSTED
RESEARCH

Report for 1931

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The Classical Experiments

Rothamsted Research

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DATES OF SOWING AND HARVESTING, AND YIELD PER ACRE, ROTHAMSTED, 1931

| Field. | Crop. | Variety. | Principal Cultivations and Dates. | Manuring cwt. per acre. | Sowing Dates. | Cutting Dates. | Carting Dates. | Yield per acre. |
|--|---------------------|---|--|---|---------------|----------------|----------------|-------------------------------------|
| <i>I. Arable and Replicated Experiments—</i> Pastures (1) | Mangolds | Yellow Globe | Jan. 26 plough, Feb. 26 horse harrow. April 15 roll. May 13, 29 and June 25 grubbed. June 2-3 side hoe. June 19-July 8 single. Hoed throughout summer. | 2 S/Amm. 1 S/Potash ¾ Super. | April 14 | — | Oct. 2 and 3 | 30 tons |
| | Potatoes (Expt.) | Ally | Jan. 26, Mar. 4-21 plough. Mar. 28 cultivate with tractor, then roll and harrow. Mar. 30 cultivate 2nd time. | see p. 154 | April 13 | — | Sept. 30 | see p. 154-5 |
| | Oats | Marvellous | Jan. 26 plough, Feb. 26 horse harrow. Feb. 27 harrow in. | — | Feb. 27 | Aug. 18 | Sept. 9 | 14 cwt. |
| | Beans and Barley | | Jan. 26 plough, Feb. 26 horse harrow. Feb. 27 harrow in. | — | Feb. 27 | Aug. 21 | Sept. 10 | 23 cwt. |
| | Kale | | June 27 plough in spring oats near gate. Work down and harrow in with tractor. Folded off in Sept. | 1 S/Amm. | June 27 | — | — | — |
| Gt. Harpenden | Winter Oats | Grey Winter | Sept. 23, 1930, plough. Oct. 7 tractor harrow and harrow in oats. Mar. 23-25 harrow. April 24 sow N/Soda. | 3 Super. 3 Potash Salt ¾ N/Soda late spring. | Oct. 6-7 | Aug. 7 | Aug. 24 and 25 | 18 cwt. |
| | Wheat Varieties | Wilhelmina Swedish Iron Victor | Sept. 23, 1930, plough. Oct. 7 tractor harrow. Oct. 14-15 harrow in. April 24 sow N/Soda. | 3 Super. 3 Potash Salt ¾ N/Soda late spring. | Oct. 14-15 | Aug. 21 | Aug. 24 and 25 | 17 cwt. (W) 19 " (S) 18 " (V) |
| | Spring Oats (Expt.) | Marvellous, Victory and Golden Rain | Dec. 29, 1930-Jan. 12 horse plough. Feb. 25 horse harrow and then harrow in. Mar. 19 sow N/Soda. | 3 Super. 3 Potash Salt ¾ N/Soda early spring. | Feb. 25 | Aug. 17 | Sept. 7 | see p. 143-4 |

DATES OF SOWING AND HARVESTING, AND YIELD PER ACRE, ROTHAMSTED, 1931 (Cont.)

| Field. | Crop. | Variety. | Principal Cultivations and Dates. | Manuring cwt. per acre. | Sowing Dates. | Cutting Dates. | Carting Dates. | Yield per acre. |
|---------------------------|-------------------------------|--------------------------------------|---|--|---------------|---------------------------|----------------------|-----------------|
| Gt. Harpenden (cont.) (4) | Rye | — | Sept. 22, 1930, plough. Oct. 7 tractor harrow. Oct. 14-15 harrow in. April 24 sow N/Soda. All undersown trefoil (5 lb.) and Western Wolths Ryegrass (20 lb.) on April 15. April 17-24 horse harrow. Mar. 17 plough in dung with horses, harrow after with tooth harrows. May 1 harrow and roll. Hand dig the plots marked for this treatment. May 8 cultivate with Duotrac implements, harrow and roll. June 15-July 9 hand hoe. Oct. 3-10, 1930, cultivate. April 1 harrow and roll. | 3 Super. 3 Potash Salt ¾ N/Soda late spring. | Oct. 14-15 | Aug. 7 | Aug. 24 and 25 | 18 cwt. |
| (5) | Sugar Beet (Expt.) | Kuhn | Mar. 17 plough in dung with horses, harrow after with tooth harrows. May 1 harrow and roll. Hand dig the plots marked for this treatment. May 8 cultivate with Duotrac implements, harrow and roll. June 15-July 9 hand hoe. Oct. 3-10, 1930, cultivate. April 1 harrow and roll. | see p. 157 | May 8 and 9 | — | Nov. 3 | see p. 157-9 |
| Little Hoos (1) | Wheat (Cultivation Expt.) | Million | Sept. 18, 1930, tractor plough. Oct. 10, tooth-harrow twice. Mar. 26 roll. Sept. 18-23, 1930, horse plough. Oct. 10-11 horse drag and disc harrow. Mar. 26 tooth-harrow and roll. Jan. 13 plough. Feb. 26 horse harrow before and after drilling. Sept. 10-22, 1930, plough. Oct. 1 harrow in. Horse and hand hoe Feb.-June. Sept. 1930 cart dung and plough in. Sept. 26 sow rye. Eaten by sheep April-May. May 21-June 12 several times tractor plough and cultivate. Aug. 4 horse hoe. April 30-May 6 plough and cultivate. May 7 roll and harrow. | see p. 148 | Oct. 10 | Aug. 24 | Sept. 9-11 | see p. 148-9 |
| (2) | Wheat (Top Dressing Expt.) | Million | Sept. 18, 1930, tractor plough. Oct. 10, tooth-harrow twice. Mar. 26 roll. Sept. 18-23, 1930, horse plough. Oct. 10-11 horse drag and disc harrow. Mar. 26 tooth-harrow and roll. Jan. 13 plough. Feb. 26 horse harrow before and after drilling. Sept. 10-22, 1930, plough. Oct. 1 harrow in. Horse and hand hoe Feb.-June. Sept. 1930 cart dung and plough in. Sept. 26 sow rye. Eaten by sheep April-May. May 21-June 12 several times tractor plough and cultivate. Aug. 4 horse hoe. April 30-May 6 plough and cultivate. May 7 roll and harrow. | see p. 145 | Oct. 10 | Aug. 19-22 | Sept. 7-9 | see p. 145-6 |
| (3) | Forage (Expt.) | Oats, Wheat, Vetches, Peas and Beans | Sept. 18-23, 1930, horse plough. Oct. 10-11 horse drag and disc harrow. Mar. 26 tooth-harrow and roll. Jan. 13 plough. Feb. 26 horse harrow before and after drilling. Sept. 10-22, 1930, plough. Oct. 1 harrow in. Horse and hand hoe Feb.-June. Sept. 1930 cart dung and plough in. Sept. 26 sow rye. Eaten by sheep April-May. May 21-June 12 several times tractor plough and cultivate. Aug. 4 horse hoe. April 30-May 6 plough and cultivate. May 7 roll and harrow. | see p. 150 | Oct. 9-11 | July 9-14 | Sept. 11-17 | see p. 151-3 |
| Pennell's Piece | Spring Oats | Marvellous | Sept. 18-23, 1930, horse plough. Oct. 10-11 horse drag and disc harrow. Mar. 26 tooth-harrow and roll. Jan. 13 plough. Feb. 26 horse harrow before and after drilling. Sept. 10-22, 1930, plough. Oct. 1 harrow in. Horse and hand hoe Feb.-June. Sept. 1930 cart dung and plough in. Sept. 26 sow rye. Eaten by sheep April-May. May 21-June 12 several times tractor plough and cultivate. Aug. 4 horse hoe. April 30-May 6 plough and cultivate. May 7 roll and harrow. | — | Feb. 26 | Aug. 20 | Sept. 10 | 24 cwt. |
| Great Knott | Beans | Winter | Sept. 18-23, 1930, horse plough. Oct. 10-11 horse drag and disc harrow. Mar. 26 tooth-harrow and roll. Jan. 13 plough. Feb. 26 horse harrow before and after drilling. Sept. 10-22, 1930, plough. Oct. 1 harrow in. Horse and hand hoe Feb.-June. Sept. 1930 cart dung and plough in. Sept. 26 sow rye. Eaten by sheep April-May. May 21-June 12 several times tractor plough and cultivate. Aug. 4 horse hoe. April 30-May 6 plough and cultivate. May 7 roll and harrow. | 3 Potash Salt 3 Super. | Oct. 1 | Aug. 10-12 | Sept. 8-12 | 26 cwt. |
| Long Hoos (1) | Kale (after Rye for sheep) | Marrow-stem and Thousand-headed | Sept. 18-23, 1930, horse plough. Oct. 10-11 horse drag and disc harrow. Mar. 26 tooth-harrow and roll. Jan. 13 plough. Feb. 26 horse harrow before and after drilling. Sept. 10-22, 1930, plough. Oct. 1 harrow in. Horse and hand hoe Feb.-June. Sept. 1930 cart dung and plough in. Sept. 26 sow rye. Eaten by sheep April-May. May 21-June 12 several times tractor plough and cultivate. Aug. 4 horse hoe. April 30-May 6 plough and cultivate. May 7 roll and harrow. | 15 tons dung for rye. 2 N/Soda. | June 13 | Sheep folded and February | January and February | 16-18 tons |
| (II and III) | Linseed (after Rye for sheep) | Argentine ? | Sept. 18-23, 1930, horse plough. Oct. 10-11 horse drag and disc harrow. Mar. 26 tooth-harrow and roll. Jan. 13 plough. Feb. 26 horse harrow before and after drilling. Sept. 10-22, 1930, plough. Oct. 1 harrow in. Horse and hand hoe Feb.-June. Sept. 1930 cart dung and plough in. Sept. 26 sow rye. Eaten by sheep April-May. May 21-June 12 several times tractor plough and cultivate. Aug. 4 horse hoe. April 30-May 6 plough and cultivate. May 7 roll and harrow. | 15 tons dung for rye. 1 S/Amm. | May 7 | Sept. 16-19 | Oct. 7 | 10½ cwt. |

DATES OF SOWING AND HARVESTING, AND YIELD PER ACRE, ROTHAMSTED, 1931 (Cont.)

| Field. | Crop. | Variety. | Principal Cultivations and Dates. | Manuring, cwt. per Acre. | Sowing Dates. | Cutting Dates. | Carting Dates. | Yield per acre. |
|---|---|---|---|---|-------------------------------------|---|---|---------------------------------------|
| Long Hoos (V) (cont.) | Temporary Ley (Expt.) | — | April 11 roll. June 16-18 plough with horses, plots that had one crop only. | see p. 141 | April 11 | July 2, 1st crop Aug. 27, 2nd crop | July 3, 1st crop, for silage Sept. 21, 2nd crop, for hay | see p. 141 |
| (VI) | Maize after Rye | Giant Horse Tooth | May 20-21 tractor plough. May 30 harrow, then roll. Harrow in. June 1 roll. July 22-Sept. 1 hand and horse hoe. | 2 S/Amm. | May 30 | Sept. for cows | — | — |
| (VII) | Rape Kale (after Rye) | — | July 25 harrow. July 27-30 carting and spreading dung. Aug. 1 harrow and roll. Sept. 14-15 horse hoe. | 20 tons dung. | Aug. 1 | — | — | — |
| Fosters | Barley (Expt. undersown for ley) | Plumage Archer | Mar. 19-21 horse plough. Mar. 23 harrow twice. Mar. 24 harrow in Mar. 27 horse roll. | see p. 142 | Mar. 23 barley April 23 the rest | Aug. 27 | Sept. 14 | see p. 142 |
| | Forage (Expt.) | — | July 8-11 plough. July 16 tractor cultivate. July 20-21 harrow. July 25 harrow in all seeds. | 3 Super. 2 Potash Salt 3 S/Amm. 2 1/2 Super. | July 22-24 | Nov. 17 and 18 | Nov. 18 and 19 | Expt. still in progress |
| | Seeds Hay | 16lb. Ital. Rye Grass 12lb. Broad Red Clover | Dec. 3-4 sow manure. Mar. 4, 1st application of N/Soda. Apr. 25 2nd application of N/Soda. Apr. 7 horse roll. | 3 Potash Salt (30% N). 2 N/Soda. | April 11, 1930 | (1) June 11-12 for silage June 16 for Hay (2) Aug. 26 | June 12-13 June 22-23 Sept. 21 | 40 cwt. (10 acr.) 20 cwt. (4 acr.) |
| II. Grass Land— Little Knott (1) (2) (3) | Grazing Grazing Grass for silage Grazing | — — — | — — — | — — — | — — — | — — — | — — — | — — — |
| Foster's Corner | Grazing | — | — | 3 Potash Salt (winter) | — | June 23 | June 24 | — |

DATES OF SOWING AND HARVESTING, AND YIELD PER ACRE, ROTHAMSTED, 1931 (Cont.)

| Field. | Crop. | Variety. | Principal Cultivations and Dates. | Manuring cwt. per acre. | Sowing Dates. | Cutting Dates. | Carting Dates. | Yield per acre. |
|---|--------------------------|--------------|--|---|---------------|--------------------------------|----------------|-----------------|
| Great Knott (1) | Grazing then hay | — | June 27 turn hay. | — | — | June 20-22 | June 29 | 15 cwt. |
| (2) | Grazing | — | June 20-22 topped with tractor mower. | — | — | — | — | — |
| Great Field | Grazing | — | Mar. 14 horse roll. June 9 topped section 2 with horse mower. July 13 topped section 1 with tractor mower. | 3½ Potash Salt (winter) | — | — | — | — |
| New Zealand | Grazing | — | June 21 topped with tractor mower. | — | — | — | — | — |
| Stackyard | Grazing | — | June 19 topped with tractor mower. | — | — | — | — | — |
| West Barn-field (1) | Grazing | — | July 21 topped with tractor mower. | 3 Potash Salt (winter) | — | — | — | — |
| (2) | Grazing | — | July 21 topped with tractor mower. | 3 Potash Salt (winter) | — | — | — | — |
| Sawyers (1) | Grazing, then hay | — | Feb. 12-13 sow N/Soda. Jun. 19 tractor topped. | 1 N/Soda. | — | June 29 | July 6-8 | 20 cwt. |
| (2) | Grazing, then hay | — | Dec. 9-15, 1930, Super. and Potash Salt applied. June 30-31 topped with tractor mower. | 3 Super. | — | July 1 | July 9-11 | 20 cwt. |
| (3) | Hay, after early grazing | — | Dec. 9-15 Super. and Potash Salt applied. Feb. 12 N/Soda applied. May 10 closed for hay. | 3 Potash Salt | — | June 26 | July 3 | 30 cwt. |
| Gt. Harpenden | Grazing | — | Mid July topped with tractor mower. Then put up for crop of wild white clover seed, but weather prevented, so made into ordinary hay. | 2½ Super. 2 Potash Salt 1 N/Soda (spring) | — | Sept. 16-21 (cut with tractor) | — | 20 cwt. |
| III. Classical and Rotation—Experiments—Broadbalk | Wheat | Red Standard | Aug. 30 and Sept. 1, 1930, tractor cultivate. Oct. 2-7 tractor plough. Oct. 15 tractor drawing disc harrows followed by drag harrow. Oct. 16 harrow in seed. | see p. 126 | Oct. 16 | Aug. 17 and 18 | Aug. 27-29 | see p. 125-6 |

DATES OF SOWING AND HARVESTING, AND YIELD PER ACRE, ROTHAMSTED, 1931 (Cont.)

| Field. | Crop. | Variety. | Principal Cultivations and Dates. | Manuring, cwt. per acre. | Sowing Dates. | Cutting Dates. | Carting Dates. | Yield per acre. |
|----------------------------|---------------------|--|---|--------------------------|--|--|----------------------------|-----------------------|
| Hoos | Barley | Plumage Archer Spratt Archer | Sept. 15, 1930, cultivate. Mar. 7 plough in dung. Mar. 16 harrow all plots except 7 ¹ and 7 ² . Mar. 18 harrow in seed. Hand and horse hoe on various dates. May 11-July 23. Rows again 18 ins. apart. Nov. 17-19, 1930, steam plough. Mar. 26 and 27 cultivate across. April 15 cultivate for seed bed. May 21 preparing land for re-sowing. July to Aug. horse and hand hoe. Oct. 14 and 15, 1930, tractor plough. Oct. 31 disc harrow. | see p. 128 | Mar. 17 | Aug. 28 and 29 | Sept. 24-25 | see p. 128 |
| Barnfield | Mangolds and Swedes | (M) Prize Winner Yel-low Globe (S) Purple Top | Oct. 14 and 15, 1930, tractor plough. Oct. 31 disc harrow. | see p. 120 | April 15-17 Mangolds (Resown with Mangolds and Swedes May 26) Oct. 31 and Nov. 1 | — | Oct. 19-28 | see p. 120-1 |
| Agdell | Wheat | Red Standard | Mar. 28 drag harrow. Mar. 30 horse roll. | see p. 118 | — | Aug. 24 | Aug. 26 | see p. 118 |
| Park | Hay | — | Aug. 5 and Oct. 29, 1930 plough Oct. 30 harrow before and after sowing seed. April 1 roll. Dec. 8-9, 1930, plough. May 8-9 plough and harrow after. May 20 harrow and roll. June 26 and Sept. 15 horse hoe. April 1, roll. | see p. 122 | — | June 25-27 (1st crop) and July 1 Nov. 10-13 (2nd crop) | June 30 and July 1 Nov. 13 | see p. 122 |
| Gt. Hoos 4 Course Rotation | Wheat Swedes | Yeoman Garton's Magnificent | — | see p. 132 | Oct. 30 May 20 | Aug. 27 | Sept. 7 Nov. 6-17 | see p. 133 see p. 133 |
| | Seeds | Italian Rye Grass, Dutch White Clover, Alsike Clover | — | see p. 132 | April 22 | June 24 | June 24 | see p. 133 |
| | Barley | Plumage Archer | Dec. 8-10, 1930, plough. Mar. 6 harrow before and after sowing. Mar. 25 roll. | see p. 132 | Mar. 6 | Aug. 27 | Sept. 14 | see p. 134 |

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DATES OF SOWING AND HARVESTING, AND YIELD PER ACRE, ROTHAMSTED, 1931 (Cont.)

| Field | Crop. | Variety. | Principal Cultivations and Dates. | Manuring, cwt. per acre. | Sowing Dates. | Cutting Dates. | Carting Dates. | Yield per acre. |
|-----------------------------------|------------|--|--|--------------------------|---------------|----------------|----------------|-----------------|
| Long Hoos 6 Course Rotation | Wheat | Yeoman II | Aug. 20-26, 1930, cultivate. | see p. 131 | Oct. 3 | Aug. 21 | Aug. 27 | see p. 135 |
| | Sugar Beet | Kuhn | Aug. 20-26, 1930, cultivate. Feb. 5-May 6 plough. May 7 harrow and roll. June 26-July 27 hand and horse hoe. | see p. 131 | May 9 | — | Nov. 3-6 | see p. 135 |
| | Barley | Plumage Archer | Aug. 20-26, 1930 cultivate. Feb. 5-6 plough. Mar. 6 harrow before and after sowing. Mar. 26 roll | see p. 131 | Mar. 6 | Aug. 29 | Sept. 7 | see p. 135 |
| | Clover | Broad Red | Aug. 20-26, 1930, cultivate. April 1 roll. | see p. 131 | April 22 | June 10 | June 10 | see p. 136 |
| | Potatoes | Ally | Aug. 20-26, 1930, cultivate. Feb. 4 plough. April 11 harrow | see p. 131 | April 14 | — | Oct. 1 | see p. 136 |
| | Forage | Rye, Beans, Vetches, followed by Mustard | Aug. 20-26, 1930, cultivate. | see p. 131 | Oct. 3 | June 10 | June 10 | see p. 136 |

CROP YIELDS ON THE EXPERIMENTAL PLOTS

Notes.—In each case the year refers to the harvest, *e.g.*, Wheat 1931 means wheat harvested in 1931. In the tables, total straw includes straw, cavings and chaff. These were weighed separately prior to 1928. Since 1928 the figure given as total straw in the replicated experiments has been arrived at as the difference: total sheaf weight—weight of grain.

CONVERSION TABLE.

| | | |
|---|------------------------------------|---------------------------------|
| 1 acre = | 0.405 Hectare | 0.963 Feddan. |
| 1 bushel (Imperial) .. = | 0.364 Hectolitre (36.364 litres) | 0.184 Ardeb. |
| 1 lb. (pound avoirdupois) = | 0.453 Kilogramme | 1.009 Rotls. |
| 1 cwt. (hundredweight, 112 lb.) = | 50.8 Kilogrammes | } 113.0 Rotls. 1.366 Maunds. |
| 1 ton (20 cwt. or 2,240 lb.) = | 1016 Kilogrammes. | |
| 1 metric quintal or Doppel Zentner (dz.) .. = | { 100.0 Kilogrammes. 220.46 lb. | |
| 1 bushel per acre .. = | | 0.9 Hectolitre per Hectare .. |
| 1 lb. per acre .. = | 1.12 Kilogramme per Hectare | 1.049 Rotls per Feddan |
| 1 cwt. per acre .. = | 1.256 dz. per Hectare .. | 117.4 Rotls per Feddan |
| 1 ton per acre .. = | 25.12 dz. per Hectare. | |
| 1 dz. per Hectare .. = | 0.796 cwt. per acre. | |
| 1 kg. per Hectare .. = | 0.892 lb. per acre | |

In America the Winchester bushel is used = 35.236 litres. 1 English bushel = 1.032 American bushels.

CONVERSION TABLE.—CWT. TO BUSHELS.

| Crop. | Cwt. | | | | | | | | | |
|---------------------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 | 10 | 15 | 20 | 25 | 30 |
| Wheat (60 lb.) bushels .. | 1.87 | 3.73 | 5.60 | 7.47 | 9.33 | 18.67 | 28.00 | 37.33 | 46.67 | 56.00 |
| Barley (52 lb.) | 2.15 | 4.31 | 6.46 | 8.62 | 10.77 | 21.54 | 32.31 | 43.08 | 53.85 | 64.62 |
| Oats (42 lb.) | 2.67 | 5.33 | 8.00 | 10.67 | 13.33 | 26.67 | 40.00 | 53.33 | 66.67 | 80.00 |

The yields of grain in the 1925-26 Report were given for the replicated experiments in standard bushels of 60, 52 and 42 lb. respectively.

Average Wheat Yield of Various Countries.

| Country. | Mean yield per acre, 1919-28. cwt. | Country. | Mean yield per acre, 1919-28. cwt. |
|---------------------|------------------------------------|-----------------------------|------------------------------------|
| Great Britain | 17.5 | Denmark | 22.8 |
| England | 17.4 | Argentina | 6.6 |
| Hertfordshire | 16.4 | Australia | 6.4 |
| France | 10.9 | Canada | 8.9 |
| Germany | 14.5 | United States | 7.6 |
| Belgium | 20.3 | U.R.S.S. (Europe and Asia)* | 5.8 |

Note.—Figures for Great Britain, England and Hertfordshire are taken from the Ministry of Agriculture's "Agricultural Statistics," Vols. 54-63. Other figures from "International Year Book of Agricultural Statistics," 1919-29.
*1924-28.

METEOROLOGICAL RECORDS, 1931

| | Rain. | | Drainage through soil. | | | Bright Sun-shine. | Temperature (Mean). | | | | |
|---------------|---------------------------------|---|------------------------|---------------|---------------|-------------------|---------------------|------|-----------------|------------|------------|
| | Total Fall 1/1000th Acre Gauge. | No. of Rainy Days (0.01 inch or more) 1/1000th Acre. Gauge. | 20 ins. deep. | 40 ins. deep. | 60 ins. deep. | | Max. | Min. | 1 ft. in ground | Solar Max. | Grass Min. |
| 1931. | Inches. | No. | Inches. | Inches. | Inches. | Hours. | °F. | °F. | °F. | °F. | °F. |
| Jan. .. | 1.704 | 21 | 1.231 | 1.323 | 1.321 | 64.8 | 41.6 | 32.8 | 36.9 | 64.9 | 28.7 |
| Feb. .. | 1.870 | 20 | 1.180 | 1.329 | 1.301 | 65.4 | 42.7 | 32.7 | 37.1 | 81.4 | 29.8 |
| Mar. .. | 0.091 | 3 | 0.073 | 0.166 | 0.160 | 153.6 | 46.2 | 31.8 | 38.0 | 97.1 | 27.9 |
| April .. | 3.460 | 20 | 1.538 | 1.683 | 1.669 | 115.7 | 51.4 | 39.2 | 44.3 | 104.5 | 36.7 |
| May .. | 2.532 | 15 | 0.878 | 0.971 | 0.993 | 172.6 | 59.2 | 44.3 | 51.3 | 118.4 | 39.6 |
| June .. | 1.520 | 9 | 0.007 | 0.054 | 0.041 | 198.0 | 65.3 | 50.8 | 58.9 | 133.6 | 46.9 |
| July .. | 3.942 | 19 | 1.440 | 1.666 | 1.703 | 157.8 | 65.9 | 52.5 | 60.6 | 132.7 | 48.7 |
| Aug. .. | 3.455 | 17 | 1.609 | 1.681 | 1.662 | 155.6 | 64.1 | 51.3 | 58.7 | 127.8 | 47.8 |
| Sept. .. | 2.128 | 15 | 0.829 | 0.904 | 0.862 | 120.6 | 58.2 | 46.4 | 54.4 | 113.2 | 42.0 |
| Oct. .. | 0.664 | 9 | 0.000 | 0.010 | 0.003 | 118.4 | 54.4 | 40.9 | 49.2 | 101.1 | 35.7 |
| Nov. .. | 3.202 | 21 | 2.425 | 2.429 | 2.374 | 68.9 | 50.0 | 39.0 | 44.7 | 78.6 | 33.8 |
| Dec. .. | 1.109 | 12 | 0.643 | 0.696 | 0.662 | 40.5 | 44.6 | 36.2 | 41.1 | 62.9 | 32.3 |
| Total or Mean | 25.677 | 181 | 11.853 | 12.912 | 12.751 | 1431.9 | 53.6 | 41.5 | 47.9 | 101.3 | 37.5 |

RAIN AND DRAINAGE.

MONTHLY MEAN FOR 61 HARVEST YEARS, 1870-1—1930-31.

| | Rain-fall. | Drainage. | | | Drainage % of Rainfall. | | | Evaporation. | | |
|----------|------------|---------------|---------------|---------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| | | 20-in. Gauge. | 40-in. Gauge. | 60-in. Gauge. | 20-in. Gauge. | 40-in. Gauge. | 60-in. Gauge. | 20-in. Gauge. | 40-in. Gauge. | 60-in. Gauge. |
| Sept. .. | Ins. 2.381 | Ins. 0.819 | Ins. 0.794 | Ins. 0.733 | % 34.4 | % 33.3 | % 30.8 | Ins. 1.562 | Ins. 1.587 | Ins. 1.648 |
| Oct. .. | 3.139 | 1.791 | 1.760 | 1.629 | 57.1 | 56.1 | 51.9 | 1.348 | 1.379 | 1.510 |
| Nov. .. | 2.881 | 2.204 | 2.260 | 2.131 | 76.5 | 78.4 | 74.0 | 0.677 | 0.621 | 0.750 |
| Dec. .. | 2.871 | 2.451 | 2.553 | 2.437 | 85.4 | 88.9 | 84.9 | 0.420 | 0.318 | 0.434 |
| Jan. .. | 2.410 | 1.975 | 2.169 | 2.070 | 81.9 | 90.0 | 85.9 | 0.435 | 0.241 | 0.340 |
| Feb. .. | 2.029 | 1.511 | 1.625 | 1.552 | 74.5 | 80.1 | 76.5 | 0.518 | 0.404 | 0.477 |
| March .. | 1.966 | 1.048 | 1.176 | 1.112 | 53.3 | 59.8 | 56.6 | 0.918 | 0.790 | 0.854 |
| April .. | 2.051 | 0.673 | 0.754 | 0.718 | 32.8 | 36.8 | 35.0 | 1.378 | 1.297 | 1.333 |
| May .. | 2.068 | 0.483 | 0.551 | 0.518 | 23.3 | 26.6 | 25.0 | 1.585 | 1.517 | 1.550 |
| June .. | 2.213 | 0.531 | 0.561 | 0.540 | 24.0 | 25.3 | 24.4 | 1.682 | 1.652 | 1.673 |
| July .. | 2.739 | 0.728 | 0.758 | 0.709 | 26.6 | 27.7 | 25.9 | 2.011 | 1.981 | 2.030 |
| Aug. .. | 2.663 | 0.717 | 0.731 | 0.687 | 26.9 | 27.5 | 25.8 | 1.946 | 1.932 | 1.976 |
| Year .. | 29.411 | 14.931 | 15.692 | 14.836 | 50.8 | 53.3 | 50.4 | 14.480 | 13.719 | 14.575 |

Area of each gauge 1/1000th acre.

CHEMICAL ANALYSES OF MANURES USED IN REPLICATED EXPERIMENTS, 1931

| Manures. | % N. | Manures. | Total. | % P ₂ O ₅ | |
|-----------------------|------|------------------------|--------|---------------------------------|----------------------|
| | | | | Soluble in water. | Soluble in Cit. Acid |
| Sulphate of A mm. (1) | 20.8 | Superphosphate (3) .. | 16.7 | 15.9 | — |
| Sulphate of A mm. (2) | 21.0 | Superphosphate (4) .. | 17.0 | 15.4 | — |
| Muriate of Amm. .. | 26.0 | Superphosphate (5) .. | 16.1 | — | — |
| Nitrate of Soda .. | 15.7 | Mineral Phosphate .. | 25.9 | — | — |
| Cyanamide .. | 20.0 | (90% through 120 mesh) | | | |
| | | Basic Slag—High Sol. | 14.9 | — | 14.4 |
| | | Basic Slag—Low Sol. .. | 15.1 | — | 3.5 |

| Manures. | % K ₂ O | % Cl | Manures. | % N. | % P ₂ O ₅ | % K ₂ O |
|------------------------------|--------------------|------|-----------------------------------|------|---------------------------------|--------------------|
| Sulphate of Potash | 49.3 | — | Chicken Manure .. | 1.37 | 1.61 | 0.72 |
| Muriate of Potash .. | 51.4 | — | Guano | 12.1 | 10.3 | 2.82 |
| Potash Manure Salts (30%) .. | 31.2 | — | Complete Fertiliser, I.C.I. | 10.3 | 10.8 | 20.7 |
| Agricultural Salt .. | — | 56.8 | | | | |

- (1) Used in R.F. 1-144, R.W. 1-48, R.O. 1-72, R.B. 1-32.
- (2) Used in R.P. 1-162, R.S. 1-48, W.S. 1-144.
- (3) Used in R.F. 1-144.
- (4) Used in R.P. 1-162, R.S. 1-48, W.S. 1-144.
- (5) Used in T.H. 1-25, M.A. 1-150, H.G. 1-25, O.G. 1-25, K.G. 1-16, F.G. 1-25.

FOUR-COURSE ROTATION

| Manures. | % Organic matter | | % N. | | % P ₂ O ₅ | | % K ₂ O | |
|--|------------------|-------|-------|--------------------|---------------------------------|-------|--------------------|-------|
| | 1930 | 1931 | 1930 | 1931 | 1930 | 1931 | 1930 | 1931 |
| Chaff | 82.2 | 83.3 | 0.376 | 0.273 | 0.113 | 0.080 | 0.625 | 0.925 |
| Dung | 25.5 | 16.8 | 0.882 | 0.498 | 0.330 | 0.154 | 1.44 | 0.449 |
| Adco | 21.1 | 12.83 | 0.367 | 0.330 | 0.195 | 0.262 | 0.287 | 0.121 |
| Superphosphate | — | — | — | — | 17.4 | 16.7 | — | — |
| Mineral Phosphate (90% through 120 mesh) | — | — | — | — | 26.1 | 26.1 | — | — |
| Muriate of Potash | — | — | — | — | — | — | 52.6 | 51.4 |
| Sulphate of Ammonia .. | — | — | 21.2 | 20.8(1) 21.0(2) | — | — | — | — |

- (1) Used on all cases except swedes, treatments 4 and 5.
- (2) Used for swedes treatments 4 and 5.

SIX-COURSE ROTATION

| Manures. | % N. | | % P ₂ O ₅ | | % K ₂ O | |
|---------------------|------|--------------------|---------------------------------|--------------------|--------------------|------|
| | 1930 | 1931 | 1930 | 1931 | 1930 | 1931 |
| Sulphate of Ammonia | 20.9 | 20.8(1) 21.0(2) | — | — | — | — |
| Superphosphate .. | — | — | 17.4 | 16.7(1) 17.0(2) | — | — |
| Muriate of Potash | — | — | — | — | 51.3 | 51.4 |

- (1) Used in all cases except potatoes and sugar beet at Rothamsted and Woburn.
- (2) Used for potatoes and sugar beet at Rothamsted and Woburn.

CROPS GROWN IN ROTATION, AGDELL FIELD

PRODUCE PER ACRE.

| Year. | Crop. | O. Unmanured since 1848. | | M. Mineral Manure† No Nitrogen. | | C. Complete Mineral and Nitrogenous Manure. | | |
|--|--|--------------------------------|---------------------------|---------------------------------------|---------------------------|--|---------------------------|--|
| | | 5. Fallow. | 6. Clover or Beans. | 3. Fallow. | 4. Clover or Beans. | 1. Fallow. | 2. Clover or Beans. | |
| Average of First Twenty-one Courses, 1848-1931. | | | | | | | | |
| | Roots (Swedes) .. cwt.* | 32.0 | 16.1 | 174.0 | 206.5 | 352.0 | 310.0 | |
| | Barley— | | | | | | | |
| | Dressed Grain bush. | 21.6 | 19.8 | 22.7 | 26.6 | 30.3 | 35.0 | |
| | Total Straw† cwt. | 13.3 | 13.2 | 13.6 | 15.6 | 18.4 | 21.7 | |
| | Beans— | | | | | | | |
| | Dressed Grain bush.‡‡ | — | 13.1 | — | 18.2 | — | 22.3 | |
| | Total Straw cwt. | — | 9.2 | — | 13.2 | — | 15.3 | |
| | Clover Hay cwt.§ | — | 25.6 | — | 52.1 | — | 52.0 | |
| | Wheat— | | | | | | | |
| | Dressed Grain bush. | 23.1 | 21.6 | 26.9 | 29.4 | 27.5 | 29.0 | |
| | Total Straw .. cwt. | 22.9 | 21.2 | 28.2 | 29.8 | 29.4 | 29.3 | |
| Present Course (21st), 1928, 1929, 1930 and 1931. | | | | | | | | |
| 1928 | Roots (Swedes) cwt. | 19.7 | 11.7 | 143.8 | 163.6 | 293.2 | 223.2 | |
| 1929 | Barley— | | | | | | | |
| | Dressed Grain bush. | 9.9 | 11.8 | 14.4 | 11.5 | 13.4 | 26.0 | |
| | Offal Grain lb. | 46.0 | 56.0 | 92.0 | 48.0 | 40.0 | 64.0 | |
| | Straw lb. | 516.0 | 750.0 | 765.0 | 1011.0 | 746.0 | 1619.0 | |
| | Total Straw† cwt. | 7.0 | 9.5 | 11.5 | 12.8 | 9.3 | 18.9 | |
| | Wt. of Dressed Grain per bush. } lb. | 55.3 | 53.2 | 55.8 | 56.6 | 55.4 | 56.9 | |
| | Proportion of Total Grain to 100 of Total Straw } cwt. | 75.6 | 64.5 | 69.6 | 48.8 | 74.7 | 72.9 | |
| 1930 | Clover Hay (1st Crop) cwt. | — | 4.3 | — | 36.2 | — | 28.9 | |
| | (2nd „) cwt.** | — | 3.3 | — | 13.6 | — | 15.6 | |
| 1931 | Wheat— | | | | | | | |
| | Dressed Grain bush. | 5.0 | 8.2 | 3.2 | 5.6 | 0.1 | 2.0 | |
| | Offal Grain lb. | 60.0 | 122.5 | 94.4 | 61.9 | 5.0 | 285.0 | |
| | Straw lb. | 1170.0 | 1441.0 | 1748.0 | 3000.0 | 194.0 | 2064.0 | |
| | Total Straw† cwt. | 11.8 | 14.2 | 20.2 | 29.1 | 2.8 | 20.3 | |
| | Wt. of Dressed Grain per bush. } lb. | 58.6 | 60.0 | 58.0 | 59.9 | 59.0†† | 58.2 | |
| | Proportion of Total Grain to 100 of Total Straw } cwt. | 26.6 | 38.4 | 12.5 | 12.3 | 3.2 | 17.8 | |

* Plots 1, 3 and 5 based upon 19 courses. Plots 2, 4 and 6 based upon 18 courses.
 † Includes straw, cavings and chaff.
 ‡ Mineral Manure : 528 lb. Superphosphate (35%); 500 lb. Sulphate of Potash ; 100 lb. Sulphate of Soda ; 200 lb. Sulphate of Magnesia. All per acre.
 Nitrogenous Manure—206 lb. Sulphate of Ammonia and 2,000 lb. Rape Dust per acre.
 Manures applied once every four years, prior to sowing of Swedes.
 ** Estimated hay yields, calculated from the dry matter.
 †† Estimated from the remaining plots.
 ‡‡ Based on 8 courses.
 § Based on 13 courses.

Wheat after Fallow (without Manure, 1851 and since).
Hoos Field, 1931.

| | 1931 | Average 76 years 1856—1931 |
|--|--------|----------------------------------|
| Dressed Grain { Yield per acre—bushels | 12.99 | 14.20 |
| { Weight per bushel—lb. | 61.1 | 58.7 |
| Offal Grain per Acre—lb. | 100.0 | 51.1 |
| Straw per Acre—lb. | 1270.0 | — |
| Total straw per Acre—cwt. | 14.5 | 12.5 |
| Proportion of Total Grain to 100 of total Straw | 54.9 | — |

MANGOLDS AND SWEDES—BARNFIELD, 1931*
 Mangolds each year since 1876.
PRODUCE PER ACRE, MIXED ROOTS.

| Strip. | Wide—normal spacing 26in. (as bitherto). Narrow—spacing of 20in. | 1931. | | | | | | | | | | 50-Year Average, 1876-1928† | | | | |
|--------|---|--|------------|-------|-------|-------|------------------|-------|-------|-------|-------|-----------------------------|-------|-------|-------|-------|
| | | Cross Dressings. | | | | | Cross Dressings. | | | | | Cross Dressings. | | | | |
| | | O | N | A | AC | C | O | N | A | AC | C | O | N | A | AC | C |
| | | Strip Manures. (Amounts stated are per acre). | | | | | | | | | | | | | | |
| | | None. | | | | | | | | | | | | | | |
| | | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. |
| | | 17.47 | 29.10 | 23.91 | 25.67 | 24.33 | 17.47 | 26.16 | 21.70 | 23.58 | 23.53 | 17.47 | 26.16 | 21.70 | 23.58 | 23.53 |
| | Wide | 9.33 | 17.33 | 19.32 | 22.66 | 15.66 | 17.33 | 19.32 | 22.66 | 15.66 | 15.66 | 17.33 | 19.32 | 22.66 | 15.66 | 15.66 |
| | Narrow | 19.03 | 30.14 | 24.88 | 25.84 | 27.44 | 30.14 | 24.88 | 25.84 | 27.44 | 27.44 | 30.14 | 24.88 | 25.84 | 27.44 | 27.44 |
| | Wide | 20.25 | 28.88 | 24.24 | 27.65 | 26.51 | 28.88 | 24.24 | 27.65 | 26.51 | 26.51 | 28.88 | 24.24 | 27.65 | 26.51 | 26.51 |
| | Narrow | 4.55 | (b)21.04 | 15.10 | 27.75 | 20.42 | (a)21.04 | 15.10 | 27.75 | 20.42 | 20.42 | (a)17.55 | 14.37 | 26.06 | 20.96 | 20.96 |
| | Wide | 4.47 | (a)17.16** | 15.32 | 25.46 | 17.54 | (a)17.16** | 15.32 | 25.46 | 17.54 | 17.54 | (b)17.81‡ | 6.70 | 9.49 | 10.16 | 10.16 |
| | Narrow | 3.64 | 17.87 | 12.51 | 12.13 | 13.05 | 17.87 | 12.51 | 12.13 | 13.05 | 13.05 | 14.63 | 6.70 | 9.49 | 10.16 | 10.16 |
| | Wide | 4.67 | 18.76 | 14.60 | 14.89 | 14.88 | 18.76 | 14.60 | 14.89 | 14.88 | 14.88 | 16.12 | 13.60 | 22.55 | 18.14 | 18.14 |
| | Narrow | 3.52 | 16.92 | 14.62 | 21.89 | 15.70 | 16.92 | 14.62 | 21.89 | 15.70 | 15.70 | 16.12 | 13.60 | 22.55 | 18.14 | 18.14 |
| | Wide | 3.62 | 19.05 | 15.00 | 24.81 | 15.08 | 19.05 | 15.00 | 24.81 | 15.08 | 15.08 | 16.04 | 14.70 | 22.31 | 19.10 | 19.10 |
| | Narrow | 2.73 | 16.84 | 16.92 | 21.99 | 16.92 | 16.84 | 16.92 | 21.99 | 16.92 | 16.92 | 16.04 | 14.70 | 22.31 | 19.10 | 19.10 |
| | Wide | 3.26 | 20.03 | 16.28 | 22.97 | 16.92 | 20.03 | 16.28 | 22.97 | 16.92 | 16.92 | 9.61 | 5.32 | 8.52 | 8.89 | 8.89 |
| | Narrow | 1.31 | 11.25 | 11.34 | 15.27 | 13.14 | 11.25 | 11.34 | 15.27 | 13.14 | 13.14 | — | — | — | — | — |
| | Wide | 2.08 | 15.80 | 15.14 | 17.87 | 16.24 | 15.80 | 15.14 | 17.87 | 16.24 | 16.24 | — | — | — | — | — |
| | Narrow | 16.23 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| | Wide | 16.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| | Narrow | 5.66 | 9.05 | 8.81 | 8.68 | 7.42 | 9.05 | 8.81 | 8.68 | 7.42 | 7.42 | 4.65 | 4.93 | 5.25 | 4.54 | 4.54 |
| | Wide | 3.27 | 5.61 | 7.22 | 6.82 | 4.75 | 5.61 | 7.22 | 6.82 | 4.75 | 4.75 | 5.15 | 5.49 | 6.29 | 4.80 | 4.80 |
| | Narrow | 5.14 | 8.73 | 6.80 | 6.68 | 6.84 | 8.73 | 6.80 | 6.68 | 6.84 | 6.84 | 5.15 | 5.49 | 6.29 | 4.80 | 4.80 |
| | Wide | 6.30 | 10.13 | 8.58 | 9.03 | 8.07 | 10.13 | 8.58 | 9.03 | 8.07 | 8.07 | 3.87 | 2.88 | 5.33 | 3.37 | 3.37 |
| | Narrow | 1.01 | (b) 8.16 | 4.44 | 7.23 | 4.82 | (b) 8.16 | 4.44 | 7.23 | 4.82 | 4.82 | (a) 3.87 | 2.88 | 5.33 | 3.37 | 3.37 |
| | Wide | 0.95 | (a) 6.67 | 3.96 | 7.80 | 4.34 | (a) 6.67 | 3.96 | 7.80 | 4.34 | 4.34 | (b) 4.09‡ | 2.81 | 3.29 | 2.84 | 2.84 |
| | Narrow | 0.92 | 5.61 | 4.45 | 7.42 | 4.33 | 5.61 | 4.45 | 7.42 | 4.33 | 4.33 | 3.19 | 2.61 | 3.29 | 2.84 | 2.84 |
| | Wide | 0.84 | 6.04 | 4.44 | 8.20 | 4.47 | 6.04 | 4.44 | 8.20 | 4.47 | 4.47 | 3.04 | 2.81 | 5.20 | 2.87 | 2.87 |
| | Narrow | 0.83 | 4.85 | 2.94 | 6.63 | 3.85 | 4.85 | 2.94 | 6.63 | 3.85 | 3.85 | 3.04 | 2.81 | 5.20 | 2.87 | 2.87 |
| | Wide | 0.94 | 5.68 | 3.44 | 7.02 | 3.65 | 5.68 | 3.44 | 7.02 | 3.65 | 3.65 | 3.31 | 3.01 | 6.23 | 3.31 | 3.31 |
| | Narrow | 0.84 | 4.95 | 3.67 | 8.44 | 5.30 | 4.95 | 3.67 | 8.44 | 5.30 | 5.30 | 3.31 | 3.01 | 6.23 | 3.31 | 3.31 |
| | Wide | 0.85 | 6.37 | 4.17 | 7.68 | 4.24 | 6.37 | 4.17 | 7.68 | 4.24 | 4.24 | 3.19 | 2.62 | 3.30 | 2.84 | 2.84 |
| | Narrow | 0.87 | 3.33 | 3.22 | 6.76 | 4.37 | 3.33 | 3.22 | 6.76 | 4.37 | 4.37 | — | — | — | — | — |
| | Wide | 0.51 | 4.82 | 3.54 | 7.52 | 5.47 | 4.82 | 3.54 | 7.52 | 5.47 | 5.47 | — | — | — | — | — |
| | Narrow | 3.49 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| | Wide | 3.31 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| | Narrow | 3.31 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

* The first sowing of Mangolds failed. For the second sowing a mixture of Mangolds and Swedes was used.
 ** From 1904 onwards plot 4N has been divided, 4(a) receiving Superphosphate, Sulphate of Potash, Sulphate of Magnesia, Sodium Chloride and Nitrate of Soda, amounts as above; two-thirds as top dressing at a later date, except with Rape Cake which all goes on with seed.
 † Excluding 1885, when Nitrogenous fertilisers were not applied, owing to poor crop, and 1908 and 1927 when the crop was swedes.
 ‡ 23 years only, 1904-1928. For this period the average yield of plot 4(a) was 18.11 for roots and 4.06 for leaves.
 †† Normal spacing.

MANGOLDS AND SWEDES—BARNFIELD, 1931 (Continued)
PERCENTAGE YIELD AND PLANT NUMBER OF MANGOLDS.

| Strip. | Yield of Mangolds Expressed as Percentage of Total Yield. | | | | | | Plant Number of Mangolds Expressed as Percentage of Total Plant Number. | | | | | | |
|--------|---|---------------------------|-------------------------------|------------------|---------------------------|-------------------------------|---|---------------------------|-------------------------------|------------------|---------------------------|-------------------------------|-----------------------|
| | ROOTS. | | | LEAVES. | | | CROSS DRESSINGS. | | | CROSS DRESSINGS. | | | |
| | Cross Dressings. | | | Cross Dressings. | | | Cross Dressings. | | | Cross Dressings. | | | |
| | O | N | A | O | N | A | O | N | A | O | N | A | C |
| | None. | Nitrate of Soda (550 lb.) | Sulphate of Ammonia (412 lb.) | None | Nitrate of Soda (550 lb.) | Sulphate of Ammonia (412 lb.) | None | Nitrate of Soda (550 lb.) | Sulphate of Ammonia (412 lb.) | None | Nitrate of Soda (550 lb.) | Sulphate of Ammonia (412 lb.) | Rape Cake (2,000 lb.) |
| 1 | 95.4 | 97.2 | 91.8 | 97.2 | 97.8 | 94.3 | 97.2 | 97.8 | 92.1 | 96.7 | 97.6 | 96.1 | 97.6 |
| | 87.7 | 92.9 | 66.6 | 93.4 | 95.4 | 71.8 | 93.4 | 95.4 | 21.4 | 94.2 | 94.8 | 83.6 | 88.3 |
| 2 | 99.5 | 97.8 | 94.5 | 99.7 | 98.7 | 96.4 | 99.7 | 98.7 | 97.4 | 98.8 | 99.0 | 98.5 | 99.2 |
| | 56.3 | 93.3 | 87.7 | 93.3 | 95.7 | 93.1 | 93.3 | 95.7 | 92.0 | 95.9 | 96.9 | 97.6 | 97.0 |
| 4 | 56.3 | 89.0 | 79.6 | 75.4 | 80.7 | 84.2 | 84.6 | 80.7 | 88.2 | 84.3 | 94.0 | 90.2 | 90.9 |
| | 63.8 | 79.6 | 66.3 | 81.3 | 88.9 | 82.4 | 84.6 | 88.9 | 87.7 | 88.4 | 89.5 | 90.7 | 91.5 |
| 5 | 57.7 | 76.2 | 39.1 | 76.7 | 83.3 | 52.4 | 84.4 | 83.3 | 52.9 | 87.9 | 90.8 | 81.0 | 85.7 |
| | 68.3 | 73.5 | 35.6 | 68.5 | 85.5 | 52.4 | 84.4 | 85.5 | 49.5 | 84.7 | 89.0 | 77.6 | 83.3 |
| 6 | 38.0 | 90.7 | 50.5 | 65.6 | 95.2 | 68.2 | 68.5 | 95.2 | 74.6 | 84.7 | 89.0 | 80.4 | 91.8 |
| | 35.2 | 79.5 | 53.8 | 66.3 | 89.8 | 70.1 | 66.3 | 89.8 | 78.3 | 78.4 | 93.2 | 85.6 | 83.3 |
| 7 | 48.3 | 76.0 | 63.8 | 66.3 | 89.8 | 64.7 | 66.3 | 89.8 | 87.5 | 80.0 | 90.7 | 87.1 | 90.5 |
| | 35.1 | 72.8 | 57.4 | 63.2 | 85.7 | 71.7 | 63.2 | 85.7 | 65.9 | 82.9 | 89.0 | 83.4 | 90.2 |
| 8 | 41.0 | 49.3 | 21.9 | 69.4 | 65.1 | 41.1 | 43.0 | 65.1 | 33.0 | 77.2 | 87.8 | 80.9 | 87.8 |
| | 65.5 | 51.7 | 12.8 | 87.7 | 66.1 | 26.5 | 31.6 | 66.1 | 30.1 | 75.0 | 75.0 | 69.8 | 80.1 |
| 9 | 57.4 | — | — | 83.2 | — | — | — | — | — | 83.4 | 75.6 | 66.3 | 75.9 |
| | 47.1 | — | — | 64.6 | — | — | — | — | — | 71.7 | — | — | — |

HAY—THE PARK GRASS PLOTS

| Plot. | Manuring (amounts stated are per acre). | 1931. | | | | | | Plot. | |
|-------|---|------------------------|------------|-----------|----------------------|-----------|----------|----------|------|
| | | Yield of Hay per acre. | | | Dry Matter per acre. | | | | |
| | | 1st Crop. | 2nd* Crop. | Total. | 1st Crop. | 2nd Crop. | Total. | | |
| 1 | Single dressing (206 lb.) Sulphate of Ammonia (= 43 lb. N.); (with Dung also 8 years 1856-63) | not limed | cwt. 22.5 | cwt. 12.3 | cwt. 34.8 | lb. 2138 | lb. 1103 | lb. 3241 | 1 |
| 2 | Unmanured (after Dung 8 years, 1856-63) | limed .. | 19.8 | 8.8 | 28.6 | 1886 | 789 | 2675 | 2 |
| 3 | Unmanured | not limed | 16.0 | 6.2 | 22.2 | 1501 | 559 | 2060 | 3 |
| 4-1 | Superphosphate of Lime (3½ cwt.) | limed .. | 18.1 | 6.7 | 24.8 | 1690 | 601 | 2291 | 3 |
| 4-2 | Superphosphate of Lime (3½ cwt.) and double dressing (412 lb.) Sulphate of Ammonia (= 86 lb. N.) | not limed | 12.1 | 6.1 | 18.2 | 1094 | 544 | 1638 | 4-1 |
| 5-1 | (N. half) Unmanured following double dressing Amm. salts (= 86 lb. N.) 1856-97 | limed .. | 14.5 | 5.4 | 19.9 | 1314 | 488 | 1802 | 4-2 |
| 5-2 | (S. half) Superphosphate (3½ cwt.) Sulphate of Potash (500 lb.); following double dressing Amm. salts (= 86 lb. N.) 1856-97 | not limed | 25.3 | 9.2 | 34.5 | 2442 | 820 | 3262 | 5-1 |
| 6 | Complete Mineral Manure as Plot 7; following double dressing Amm. salts (= 86 lb. N.) 1856-68 | limed .. | 20.9 | 4.0 | 24.9 | 1982 | 357 | 2339 | 5-2 |
| 7 | Complete Mineral Manure: Super. (3½ cwt.); Sulphate of Potash (500 lb.); Sulphate of Soda (100 lb.); Sulphate of Magnesia (100 lb.) | not limed | 20.3 | 8.9 | 29.2 | 1897 | 794 | 2691 | 6 |
| 8 | Mineral Manure without Potash | limed | 33.2 | 9.9 | 43.1 | 3250 | 890 | 4140 | 7 |
| 9 | Complete Mineral Manure and double dressing (412 lb.) Sulphate of Ammonia (= 86 lb. N.) | not limed | 21.1 | 10.8 | 31.9 | 2113 | 968 | 3081 | 8 |
| 10 | Mineral Manure (without Potash) and double dressing Amm. salts (= 86 lb. N.) | limed .. | 24.3 | 11.6 | 35.9 | 2326 | 1040 | 3366 | 9 |
| 11-1 | Complete Mineral Manure and treble dressing (618 lb.) Sulphate of Ammonia (129 lb. N.) | not limed | 28.3 | 15.0 | 43.3 | 2776 | 1343 | 4119 | 10 |
| 11-2 | As Plot 11-1 and Silicate of Soda | limed .. | 31.6 | 13.2 | 44.8 | 2946 | 1185 | 4131 | 11-1 |
| 12 | Unmanured | not limed | 36.2 | 13.8 | 50.0 | 3310 | 1232 | 4542 | 11-2 |
| 13 | Dung (14 tons) in 1905, and every fourth year since (omitted 1917), Fish Guano (6 cwt.) in 1907 and every fourth year since | limed .. | 23.6 | 10.5 | 34.1 | 2308 | 943 | 3251 | 12 |
| 14 | Complete Mineral Manure and double dressing (550 lb.) Nitrate of Soda (= 86 lb. N.) | not limed | 21.5 | 10.6 | 32.1 | 2085 | 951 | 3036 | 13 |
| 15 | Complete Mineral Manure as Plot 7; following double dressing Nitrate of Soda (= 86 lb. N., 1858-75) | limed .. | 55.9 | 25.9 | 81.8 | 5320 | 2319 | 7639 | 14 |
| 16 | Complete Mineral Manure and Single Dressing (275 lb.) Nitrate of Soda (= 43 lb. N.) | not limed | 63.1 | 22.9 | 86.0 | 5992 | 2052 | 8044 | 15 |
| 17 | Single dressing (275 lb.) Nitrate of Soda (= 43 lb. N.) | limed .. | 38.6 | 15.8 | 52.4 | 3594 | 1414 | 5008 | 16 |
| 18 | Mineral Manure (without Super.), and double dressing Sulphate of Amm. (= 86 lb. N.), 1905 and since; following Minerals and Amm. salts supplying the constituents of 1 ton of Hay, 1865-1904 | not limed | 40.7 | 15.8 | 56.5 | 4110 | 1412 | 5522 | 17 |
| 19 | Farmyard Dung (14 tons) in 1905 and every fourth year since (omitted in 1917), following Nitrate of Soda (= 43 lb. N.) and Minerals, 1872-1904 | limed .. | 49.7 | 27.6 | 77.3 | 5849 | 2474 | 8323 | 18 |
| 20 | Farmyard Dung (14 tons) in 1905 and every fourth year since (omitted in 1917); each intervening year Plot 20 receives Sulphate of Potash (100 lb.); Superphosphate (200 lb.) and 1½ cwt. Nitrate of Soda (= 26 lb. N.); following Nitrate of Potash and Superphosphate, 1872-1904 | not limed | 65.1 | 22.0 | 87.1 | 5917 | 1972 | 7889 | 19 |
| | | limed | 54.4 | 32.4 | 86.8 | 4798 | 2900 | 7698 | 20 |
| | | not limed | 67.7 | 27.3 | 95.0 | 5884 | 2444 | 8328 | |
| | | limed | 17.0 | 6.6 | 23.6 | 1592 | 590 | 2182 | |
| | | not limed | 51.9 | 21.9 | 73.8 | 4928 | 1966 | 6894 | |
| | | limed .. | 50.9 | 18.8 | 69.7 | 4751 | 1680 | 6431 | |
| | | not limed | 56.3 | 23.3 | 79.6 | 5396 | 2088 | 7484 | |
| | | limed (sun) | 51.1 | 18.8 | 69.9 | 4961 | 1682 | 6643 | |
| | | limd (shade) | 37.5 | 12.1 | 49.6 | 3376 | 1081 | 4457 | |
| | | not limed | 32.3 | 14.1 | 46.4 | 3056 | 1263 | 4319 | |
| | | limed .. | 31.6 | 9.5 | 41.1 | 2989 | 848 | 3837 | |
| | | not limed | 41.7 | 13.0 | 54.7 | 3798 | 1163 | 4961 | |
| | | limed | 33.4 | 10.8 | 44.2 | 3133 | 965 | 4098 | |
| | | not limed | 24.4 | 8.3 | 32.7 | 1749 | 741 | 2490 | |
| | | limed .. | 25.6 | 7.1 | 32.7 | 2376 | 638 | 3014 | |
| | | not limed | 35.4 | 23.5 | 58.9 | 3465 | 2106 | 5571 | |
| | | limed | 49.4 | 17.2 | 66.6 | 4541 | 1540 | 6081 | |
| | | not limed | 37.3 | 15.9 | 53.2 | 3434 | 1429 | 4863 | |
| | | limed | 26.8 | 17.4 | 44.2 | 2530 | 1562 | 4092 | |
| | | not limed | 23.6 | 12.1 | 35.7 | 2194 | 1082 | 3276 | |
| | | limed | 25.0 | 15.8 | 40.8 | 2292 | 1412 | 3704 | |
| | | not limed | 41.6 | 17.1 | 58.7 | 4015 | 1529 | 5544 | |
| | | limed | 39.1 | 14.7 | 53.8 | 3698 | 1319 | 5017 | |
| | | not limed | 37.8 | 18.0 | 55.8 | 3627 | 1618 | 5245 | |

Ground Lime was applied to the southern portion (limed) of the plots at the rate of 2,000 lb. to the acre in the Winters of 1903-4, 1907-8, 1915-16, 1923-24, 1927-28, and at the rate of 2,500 lb. to the acre in the Winter of 1920-21, except where otherwise stated.

Up to 1914 the Limed and Unlimed plot results were not separately given in the Annual Report, but the mean of the two was given. From 1915 onwards the separate figures are given.

* The second crop was carted green; the figures given are estimated hay yields, calculated from the dry matter.

PARK GRASS PLOTS
BOTANICAL COMPOSITION PER CENT.
1926 (1st Crop)

| Plot | Manuring. | Liming | Grami- neæ | Legumi- nosæ | Other Orders | " Other Orders " consist largely of |
|---------|--|---------------|-----------------|-----------------|-----------------|--|
| 3 | Unmanured. | Limed | 61.7 | 7.8 | 30.5 | <i>Plantago lanceolata</i> |
| | | Unlimed | 49.6 | 6.1 | 44.3 | <i>Plantago lanceolata</i> |
| 7 | Complete Mineral Manure. | Limed | 81.5 | 4.8 | 13.7 | <i>Heracleum sphondylium</i> |
| | | Unlimed | 73.3 | 6.2 | 20.5 | <i>Achillea millefolium</i> <i>Rumex acetosa</i> |
| 9 | Complete Mineral Manure and double Amm. Salts. | Limed | 98.7 | 0.1 | 1.2 | <i>Rumex acetosa</i> |
| | | Unlimed | 99.6 | — | 0.4 | <i>Heracleum sphondylium</i> |
| 14 | Complete Mineral Manure and double Nitrate of Soda. | Limed (sun) | 95.0 | 0.6 | 4.4 | <i>Taraxacum vulgare</i> <i>Anthriscus sylvestris</i> <i>Rumex acetosa</i> |
| | | Limed (Shade) | 94.8 | 1.8 | 3.4 | <i>Anthriscus sylvestris</i> |
| | | Unlimed | 97.9 | 0.1 | 2.0 | <i>Anthriscus sylvestris</i> <i>Rumex acetosa</i> |
| | | | | | | |
| 15 | As plot 7 following double Nitrate of Soda, 1858-75. | Limed | } Not analysed. | | | — |
| Unlimed | | — | | | | |
| 17 | Single Nitrate of Soda. | Limed | | | | — |
| | | Unlimed | | | | — |
| 18 | Mineral Manure (without Super) and double Sulphate Amm. 1905 and since | L. 6,788 lb. | 93.8 | 0.1 | 6.1 | <i>Rumex acetosa</i> |
| | | L. 3,951 lb. | 89.5 | 0.1 | 10.4 | <i>Rumex acetosa</i> |
| 19 | Farmyard Dung in 1905 and every fourth year since (omitted 1917). | Unlimed | 77.8 | — | 22.2 | <i>Rumex acetosa</i> |
| | | L. 3,150 lb. | 90.4 | 1.2 | 8.4 | <i>Rumex acetosa</i> <i>Ranunculus spp.</i> |
| | | L. 570 lb. | 84.1 | 1.6 | 14.3 | <i>Rumex acetosa</i> <i>Ranunculus spp.</i> |
| | | Unlimed | 84.8 | 2.5 | 12.7 | <i>Rumex acetosa</i> <i>Ranunculus spp.</i> |
| 20 | Farmyard Dung in 1905 and every fourth year since (omitted in 1917) each intervening year Sulphate of potash, Super., and Nitrate of Soda. | L. 2,772 lb. | 87.6 | 3.5 | 8.9 | <i>Ranunculus spp.</i> <i>Rumex acetosa</i> <i>Taraxacum vulgare</i> |
| | | L. 570 lb. | 90.6 | 1.2 | 8.2 | <i>Ranunculus spp.</i> <i>Rumex acetosa</i> <i>Taraxacum vulgare</i> |
| | | Unlimed | 87.7 | 3.8 | 8.5 | <i>Ranunculus spp.</i> <i>Rumex acetosa</i> |

**PARK GRASS PLOTS
BOTANICAL COMPOSITION PER CENT.
1927 (1st Crop)**

| Plot | Manuring | Liming | Grami- neæ | Legumi- nosæ | Other Orders | " Other orders " consist largely of |
|------|--|---------------|---------------|-----------------|-----------------|---|
| 3 | Unmanured. | Limed | 62.4 | 4.4 | 33.2 | <i>Plantago lanceolata</i> |
| | | Unlimed | 71.3 | 2.4 | 26.3 | — |
| 7 | Complete Mineral Manure. | Limed | 62.7 | 25.3 | 12.0 | — |
| | | Unlimed | 69.4 | 9.7 | 20.9 | — |
| 9 | Complete Mineral Manure and double Amm. Salts. | Limed | 99.1 | 0.3 | 0.6 | — |
| | | Unlimed | 99.3 | — | 0.7 | <i>Heracleum sphondylium</i> |
| 14 | Complete Mineral Manure and Double Nitrate of Soda. | Limed (sun) | 96.2 | 1.6 | 2.2 | — |
| | | Limed (shade) | | | | |
| | | Unlimed | 97.4 | 1.0 | 1.6 | <i>Taraxacum vulgare</i> |
| 15 | As plot 7 following double Nitrate of Soda, 1858-75. | Limed | 58.3 | 28.7 | 13.0 | <i>Plantago lanceolata</i> |
| | | | | | | <i>Achillea millefolium</i> |
| | | Unlimed | 74.9 | 5.9 | 19.2 | <i>Achillea millefolium</i> |
| | | | | | | <i>Plantago lanceolata</i> |
| 17 | Single Nitrate of Soda. | Limed | 82.4 | 1.3 | 16.3 | <i>Plantago lanceolata</i> |
| | | Unlimed | 76.0 | 0.1 | 23.9 | <i>Plantago lanceolata</i> |
| 18 | Mineral Manure (without Super.) and double Sulphate Amm. 1905 and since. | L. 6,788 lb. | 97.7 | 0.1 | 2.2 | <i>Heracleum sphondylium</i> |
| | | | | | | <i>Rumex acetosa</i> |
| | | L. 3,951 lb. | 97.0 | — | 3.0 | <i>Achillea millefolium</i> |
| | | | | | | <i>Rumex acetosa</i> |
| | | Unlimed | 98.2 | — | 1.8 | <i>Rumex acetosa</i> |
| 19 | Farmyard Dung in 1905 and every fourth year since (omitted 1917). | L. 3,150 lb. | 87.9 | 3.0 | 9.1 | <i>Heracleum sphondylium</i> |
| | | | | | | <i>Ranunculus spp.</i> |
| | | L. 570 lb. | 88.0 | 2.1 | 9.9 | <i>Ranunculus spp.</i> |
| | | | | | | <i>Rumex acetosa</i> |
| | | Unlimed | 90.3 | 1.3 | 8.4 | <i>Rumex acetosa</i> |
| 20 | Farmyard Dung in 1905 and every fourth year since (omitted in 1917) each intervening year Sulphate of Potash, Super., and Nitrate of Soda. | L. 2,772 lb. | 88.8 | 3.5 | 7.7 | <i>Centaurea nigra</i> |
| | | | | | | <i>Taraxacum vulgare</i> |
| | | L. 570 lb. | 94.3 | 0.6 | 5.1 | <i>Centaurea nigra</i> |
| | | | | | | <i>Conopodium denudatum</i> |
| | | Unlimed | 93.2 | 1.8 | 5.0 | <i>Rumex acetosa</i> |

WHEAT—BROADBALK FIELD, 1931

| Plot. | Manurial Treatment (amounts stated are per acre). | Dressed Grain, bushels per acre (in some cases estimated from half or quarter-bushel) | | | | | Total Grain, cwt. per acre. | | | | | 74-year Average 1862-1925 (prior to fallow). Total Grain, cwt. |
|-------|---|---|------|------|------|------|-----------------------------|------|------|---------|--|--|
| | | | | | | | | | | | | |
| | | II | III | IV | V | | II | III | IV | V | | |
| 2A | Farmyard Manure (14 tons) | 14.0 | 18.4 | 22.1 | 18.9 | 9.6 | 11.9 | 14.7 | 12.8 | 16.3** | | |
| 2B | Farmyard Manure (14 tons) | 13.5 | 20.1 | 23.4 | 22.2 | 9.3 | 13.0 | 15.2 | 14.3 | 19.4 | | |
| 3 | Unmanured since 1839 | 5.9 | 5.7 | 4.3 | 10.8 | 4.2 | 3.7 | 3.0 | 7.0 | 6.7 | | |
| 5 | Complete Mineral Manure §§ | 7.6 | 3.7 | 8.5 | 10.3 | 5.4 | 2.6 | 5.9 | 7.4 | 7.8 | | |
| 6 | As 5, and 206 lb. Sulphate of Ammonia | 13.2 | 17.8 | 18.6 | 14.2 | 8.0 | 10.4 | 10.8 | 9.1 | 12.5 | | |
| 7 | As 5, and 412 lb. Sulphate of Ammonia | 14.0 | 27.0 | 20.2 | 14.5 | 9.4 | 17.5 | 13.3 | 9.5 | 17.6 | | |
| 8 | As 5, and 618 lb. Sulphate of Ammonia | 15.0 | 20.5 | 19.1 | 14.6 | 10.2 | 14.1 | 13.4 | 11.0 | 20.1 | | |
| 9 | As 5, and 275 lb. Nitrate of Soda | 14.9 | 21.4 | 20.3 | 16.4 | 9.6 | 13.4 | 12.5 | 10.3 | 13.9†† | | |
| 10 | 412 lb. Sulphate of Ammonia | 20.8 | 28.7 | 26.0 | 24.3 | 12.6 | 17.0 | 16.1 | 15.2 | 10.9 | | |
| 11 | As 10, and Superphosphate (3½ cwt.) | 23.8 | 31.2 | 29.8 | 25.8 | 14.8 | 18.8 | 18.1 | 16.0 | 12.3 | | |
| 12 | As 10, and Super. (3½ cwt.) and Sulph. Soda (366 lb.) | 21.4 | 30.2 | 33.0 | 19.6 | 13.5 | 18.3 | 20.3 | 12.8 | 15.7 | | |
| 13 | As 10, and Super. (3½ cwt.) and Sulph. Potash (200 lb.) | 15.7 | 21.8 | 24.5 | 13.9 | 9.8 | 14.2 | 15.3 | 9.4 | 17.0 | | |
| 14 | As 10, and Super. (3½ cwt.) and Sulph. Magnesia (280 lb.) | 14.3 | 31.2 | 29.9 | 13.2 | 9.8 | 19.1 | 18.6 | 9.1 | 15.5 | | |
| 15 | As 5, and 412 lb. Sulphate of Ammonia all applied in Autumn | 19.6 | 25.1 | 17.1 | 19.7 | 11.6 | 15.0 | 11.8 | 11.9 | 16.1 | | |
| 16 | As 5, and 550 lb. Nitrate of Soda | 16.3 | 23.0 | 22.8 | 15.8 | 10.9 | 14.9 | 14.5 | 10.7 | 17.8†† | | |
| 17 | Minerals alone as 5 or 412 lb. Sulphate of Ammonia | M 9.7 | 9.0 | 9.3 | 3.7 | 6.0 | 5.5 | 5.7 | 2.4 | M 8.1 | | |
| 18 | alone in alternate years | A 20.0 | 26.2 | 19.2 | 12.1 | 12.8 | 16.7 | 12.7 | 8.6 | A 16.1* | | |
| 19 | Rape Cake (1,889 lb.) | 20.4 | 23.3 | 23.9 | 14.9 | 12.8 | 14.8 | 15.5 | 9.6 | 12.6† | | |
| 20 | As 7, without Super. | 14.5 | — | — | — | 8.7 | — | — | — | 10.3§ | | |

For notes see p. 126.

WHEAT—BROADBALK FIELD, 1931

| Plot. | Manurial Treatment (amounts stated are per acre). | Bushel Weight in lb. (in some cases estimated from half or quarter-bushel) | | | | | Total Straw†, cwt. per acre. | | | | | 74-year Average 1852-1925 (prior to fallow). Total Straw, cwt. |
|-------|---|--|------|------|------|------|------------------------------|------|------|--------|----|--|
| | | V | | | | | V | | | | | |
| | | II | III | IV | V | VI | II | III | IV | V | VI | |
| 2A | Farmyard Manure (14 tons) | 58.0 | 59.8 | 60.0 | 59.8 | 37.1 | 45.2 | 46.0 | 47.1 | 32.1** | | |
| 2B | Farmyard Manure (14 tons) | 58.5 | 60.8 | 60.5 | 60.8 | 43.3 | 40.5 | 42.4 | 44.9 | 34.2 | | |
| 3 | Unmanured since 1839 | 59.0 | 59.5 | 62.0 | 60.5 | 10.4 | 7.8 | 6.2 | 12.3 | 9.8 | | |
| 5 | Complete Mineral Manure §§ | 58.5 | 62.0 | 59.8 | 60.5 | 14.2 | 5.2 | 10.9 | 15.6 | 11.5 | | |
| 6 | As 5, and 206 lb. Sulphate of Ammonia | 58.2 | 59.5 | 59.5 | 60.5 | 22.3 | 22.5 | 23.5 | 22.0 | 20.3 | | |
| 7 | As 5, and 412 lb. Sulphate of Ammonia | 58.5 | 60.0 | 59.9 | 59.5 | 33.7 | 47.7 | 46.2 | 49.2 | 32.1 | | |
| 8 | As 5, and 618 lb. Sulphate of Ammonia | 58.5 | 58.4 | 58.2 | 58.0 | 50.6 | 57.7 | 57.1 | 59.5 | 39.8 | | |
| 9 | As 5, and 275 lb. Nitrate of Soda | 58.8 | 60.2 | 60.0 | 60.0 | 28.3 | 34.8 | 33.6 | 37.3 | 24.6†† | | |
| 10 | 412 lb. Sulphate of Ammonia | 59.2 | 59.8 | 59.8 | 59.8 | 29.2 | 37.4 | 37.8 | 39.1 | 17.8 | | |
| 11 | As 10, and Superphosphate (3½ cwt.) | 59.5 | 59.7 | 59.8 | 59.5 | 31.8 | 40.5 | 40.5 | 39.6 | 21.4 | | |
| 12 | As 10, and Super. (3½ cwt.) and Sulph. Soda (366 lb.) | 58.9 | 59.8 | 59.7 | 59.2 | 35.2 | 41.5 | 45.5 | 42.8 | 26.8 | | |
| 13 | As 10, and Super. (3½ cwt.) and Sulph. Potash (200 lb.) | 59.5 | 60.8 | 59.5 | 58.8 | 35.7 | 40.8 | 47.5 | 49.5 | 30.6 | | |
| 14 | As 10, and Super. (3½ cwt.) and Sulph. Magnesia (280 lb.) | 60.2 | 59.8 | 60.2 | 58.8 | 31.8 | 41.8 | 45.9 | 43.1 | 26.8 | | |
| 15 | As 5, and 412 lb. Sulphate of Ammonia all applied in Autumn | 59.9 | 60.8 | 61.5 | 60.8 | 28.7 | 30.3 | 31.6 | 29.3 | 28.2 | | |
| 16 | As 5, and 550 lb. Nitrate of Soda | 60.5 | 60.9 | 60.4 | 58.2 | 45.3 | 51.3 | 51.9 | 51.2 | 35.2†† | | |
| 17 | Minerals alone as 5 or 412 lb. Sulphate of Ammonia | M60.5 | 60.5 | 60.5 | 63.0 | 13.0 | 11.0 | 13.6 | 10.9 | M12.3 | | |
| 18 | alone in alternate years | A60.8 | 60.9 | 61.0 | 60.0 | 36.6 | 41.3 | 41.0 | 44.8 | A28.1* | | |
| 19 | Rape Cake (1,889 lb.) | 60.8 | 59.8 | 60.9 | 60.0 | 27.7 | 33.2 | 39.4 | 30.5 | 22.0† | | |
| 20 | As 7, without Super | 58.0 | — | — | — | 27.5 | — | — | — | 18.6§ | | |

† Includes straw, cavings, and chaff. *A = Ammonia series, M = Mineral series.
 ** 26 years only, 1900-1925. †† 41 years only, 1885-1925. ‡ 33 years only, 1893-1925. § 18 years only, 1906-1925 (no crop in 1912 and 1914).
 §§ Complete Mineral Manure : 3½ cwt. Super., 200 lb. Sulph. Potash, 100 lb. Sulph. Soda, 100 lb. Sulph. Magnesia.
 Sulphate of Ammonia is applied as to one-third in Autumn and two-thirds in Spring, except for Plot 15. Nitrate of Soda is all given in Spring, there being two applications at an interval of a month on Plot 16.
 In 1926 and 1927 the crop was confined to the lower (eastern) part of the field (IV and V) the upper part (I, II and III) being completely fallowed for 2 years. This was the first complete fallow on this area since the experiment began in 1843. In October, 1927, the upper or western part (I and II) was sown with wheat, and again in 1928, while in 1929 the whole field was sown, and harvested in 1930 in five separate portions. In 1931 Section I was fallowed.

BARLEY—HOOS FIELD, 1930

Corrected results to replace Table on p. 124 of 1930 Report.

As in 1929 the rows were widely spaced to facilitate weed control. In 1930, however, the field was sown longitudinally with a row spacing of 18 inches, instead of the 24 inch spacing adopted in 1929. The two varieties were sown by the half-drill strip method, and to equalise the area certain rows at the sides of each plot were not included in the weighed produce. In computing the yields per acre the whole area harvested experimentally was unfortunately taken as being the area occupied by each variety separately; the yields per acre published in the 1930 Report were therefore half what they should have been.

| Plot | Manuring (Amounts stated are per acre) | Total Grain per acre | | 76 Years' Average 1852-1928 Dressed Grain per acre. | Total Straw per acre. | | 76 Years Average 1852-1928 Total Straw per acre. |
|------|--|-------------------------|------------------|--|--------------------------|------------------|---|
| | | Plumage Archer | Spratt Archer | | Plumage Archer | Spratt Archer | |
| | | cwt. | cwt. | | bush. | cwt. | |
| 1O | Unmanured | 0.7 | 0.7 | 13.4 | 1.9 | 1.6 | 7.8 |
| 2O | Superphosphate only (3½ cwt.) .. | 9.8 | 9.1 | 19.0 | 8.2 | 7.6 | 9.8 |
| 3O | Alkali Salts only (200 lb. Sulphate of Potash; 100 lb. Sulphate of Soda; 100 lb. Sulphate of Magnesia) | 3.6 | 3.0 | 14.3 | 5.6 | 4.3 | 8.7 |
| 4O | Complete Minerals; as 3O with Superphosphate (3½ cwt.) .. | 7.2 | 9.5 | 19.0 | 6.7 | 8.1 | 11.2 |
| 5O | Potash (200 lb.) and Superphosphate (3½ cwt.) | 8.4 | 8.3 | 15.5 | 8.3 | 9.2 | 9.4 |
| 1A | Ammonium Salts only (206 lb. Sulphate of Ammonia) | 2.9 | 4.1 | 23.7 | 4.3 | 6.6 | 13.7 |
| 2A | Superphosphate and Amm. Salts .. | 18.0 | 18.9 | 35.8 | 17.7 | 16.8 | 20.4 |
| 3A | Alkali Salts and Amm. Salts .. | 7.8 | 5.3 | 25.8 | 11.1 | 8.2 | 16.0 |
| 4A | Complete Minerals and Amm. Salts | 14.8 | 17.7 | 39.3 | 16.9 | 17.3 | 23.6 |
| 5A | Potash, Super. and Amm. Salts .. | 13.3 | 12.1 | 33.8 | 19.4 | 17.3 | 21.7 |
| 1AA | Nitrate of Soda only (275 lb.) .. | 4.7 | 4.8 | 24.3* | 8.6 | 8.3 | 15.4* |
| 2AA | Superphosphate and Nitrate of Soda | 18.1 | 19.0 | 38.8* | 18.6 | 18.8 | 23.1* |
| 3AA | Alkali Salts and Nitrate of Soda .. | 8.0 | 8.0 | 24.5* | 11.0 | 10.9 | 16.6* |
| 4AA | Complete Minerals and Nitrate of Soda | 17.0 | 17.4 | 37.7* | 18.7 | 16.9 | 23.6* |
| 1AAS | As Plot 1AA and Silicate of Soda (400 lb.) | 6.9 | 11.0 | 30.2* | 7.6 | 13.4 | 18.2* |
| 2AAS | As Plot 2AA and Silicate of Soda (400 lb.) | 20.5 | 21.4 | 39.7* | 21.1 | 22.4 | 23.9* |
| 3AAS | As Plot 3AA and Silicate of Soda (400 lb.) | 12.8 | 13.5 | 31.2* | 14.3 | 14.2 | 19.9* |
| 4AAS | As Plot 4AA and Silicate of Soda (400 lb.) | 19.2 | 21.0 | 39.9* | 20.7 | 20.8 | 25.4* |
| 1C | Rape Cake only (1,000 lb.) .. | 11.9 | 12.5 | 35.5 | 13.3 | 12.9 | 20.6 |
| 2C | Superphosphate and Rape Cake .. | 18.0 | 18.1 | 38.1 | 21.3 | 19.8 | 22.0 |
| 3C | Alkali Salts and Rape Cake .. | 14.6 | 16.4 | 33.7 | 19.1 | 18.6 | 20.4 |
| 4C | Complete Minerals and Rape Cake | 16.6 | 17.8 | 37.5 | 19.9 | 20.2 | 22.6 |
| 7-1 | Unmanured (after dung (14 tons) for 20 years (1852-71) .. | 7.9 | 9.8 | 22.5† | 8.8 | 10.1 | 13.5† |
| 7-2 | Farmyard Manure (14 tons) .. | 15.3 | 16.3 | 44.6 | 18.2 | 19.9 | 28.1 |
| 6-1 | Unmanured since 1852 | 3.3 | 1.9 | 14.7 | 5.4 | 4.6 | 8.6 |
| 6-2 | Ashes from Laboratory furnace .. | 4.6 | 5.7 | 15.7 | 5.4 | 6.6 | 9.3 |
| 1N | Nitrate of Soda only (275 lb.) .. | 4.2 | 3.4 | 28.7§ | 5.2 | 4.8 | 17.8§ |
| 2N | Nitrate of Soda only (275 lb.) .. | 13.5 | 10.3 | 31.7§§ | 17.5 | 14.4 | 20.0§§ |

|| 1 cwt = 2.15 bushels. 1912, all plots were fallowed.
 † Total straw includes straw, cavings and chaff.
 * 60 years, 1868-1928. † 56 years, 1872-1928. § 75 years, 1853-1928. §§ 69 years, 1859-1928.

BARLEY—HOOS FIELD, 1931

| Plot. | Manuring. (Amounts stated are per acre). | Dressed Grain, (in some cases estimated from half or quarter bushel). | | Total Grain, cwt. per acre. | | 76 Years' Average, 1852-1928 Dressed Grain per acre bush. | | Bushel Weight in lb. (in some cases estimated from half or quarter bushel). | | Total Straw, cwt. per acre. | | 76 Years' Average, 1852-1928 Total Straw per acre cwt. † |
|-------|--|---|----------------|-----------------------------|----------------|---|----------------|---|----------------|-----------------------------|----------------|--|
| | | Plumage Archer. | Spratt Archer. | Plumage Archer. | Spratt Archer. | Plumage Archer. | Spratt Archer. | Plumage Archer. | Spratt Archer. | Plumage Archer. | Spratt Archer. | |
| 10 | Unmanured | 12.6 | 17.4 | 6.0 | 8.2 | 13.4 | 51.5 | 10.6 | 13.0 | 7.8 | | |
| 20 | Superphosphate only (3½ cwt.) | 16.4 | 16.4 | 7.9 | 7.9 | 19.0 | 52.5 | 11.5 | 17.9 | 9.8 | | |
| 30 | Alkali Salts only (200 lb. Sulphate of Potash; 100 lb. Sulphate of Soda; 100 lb. Sulphate of Magnesia) | 8.8 | 16.8 | 4.3 | 8.2 | 14.3 | 54.0 | 9.6 | 13.1 | 8.7 | | |
| 40 | Complete Minerals; as 30 with Superphosphate (3½ cwt.) | 22.8 | 25.6 | 11.0 | 12.4 | 19.0 | 53.0 | 14.7 | 18.7 | 11.2 | | |
| 50 | Potash (200 lb.) and Superphosphate (3½ cwt.) | 14.1 | 21.4 | 7.2 | 10.7 | 15.5 | 55.0 | 11.0 | 13.0 | 9.4 | | |
| 1A | Ammonium Salts only (206 lb. Sulphate of Ammonia) | 8.9 | 12.9 | 5.8 | 7.6 | 23.7 | 54.0 | 12.7 | 14.4 | 13.7 | | |
| 2A | Superphosphate and Amm. Salts | 25.7 | 31.0 | 13.8 | 16.4 | 35.8 | 53.2 | 19.0 | 17.5 | 20.4 | | |
| 3A | Alkali Salts and Amm. Salts | 3.6†† | 13.3 | 2.4 | 7.9 | 25.8 | 54.0 | 15.4 | 13.9 | 16.0 | | |
| 4A | Complete Minerals and Amm. Salts | 27.3 | 37.6 | 14.6 | 20.0 | 39.3 | 54.5 | 19.2 | 19.1 | 23.6 | | |
| 5A | Potash, Super. and Amm. Salts | 26.1 | 30.3 | 12.8 | 14.9 | 33.8 | 53.5 | 19.0 | 21.3 | 21.7 | | |
| **1AA | Nitrate of Soda only (275 lb.) | 11.2 | 22.1 | 6.5 | 12.2 | 24.3* | 54.5 | 18.2 | 16.3 | 15.4* | | |
| 1AAS | As 1AA and Silicate of Soda (400 lb.) | | | | | 30.2* | | | | 18.2* | | |
| **2AA | Superphosphate and Nitrate of Soda | 28.0 | 36.1 | 14.6 | 19.0 | 38.8* | 53.2 | 19.0 | 18.7 | 23.1* | | |
| 2AAS | As 2AA and Silicate of Soda (400 lb.) | | | | | 39.7* | | | | 23.9* | | |
| **3AA | Alkali Salts and Nitrate of Soda | 7.7 | 20.6 | 4.7 | 11.6 | 24.5* | 53.5 | 15.9 | 15.4 | 16.6* | | |
| 3AAS | As 3AA and Silicate of Soda (400 lb.) | | | | | 31.2* | | | | 19.9* | | |
| **4AA | Complete Minerals and Nitrate of Soda | 29.7 | 38.3 | 16.0 | 20.5 | 37.7* | 54.1 | 16.4 | 21.0 | 23.6* | | |
| 4AAS | As 4AA and Silicate of Soda (400 lb.) | | | | | 39.9* | | | | 25.4* | | |
| 1C | Rape Cake only (1,000 lb.) | 25.3 | 34.3 | 13.8 | 18.2 | 35.5 | 55.0 | 17.8 | 19.7 | 20.6 | | |
| 2C | Superphosphate and Rape Cake | 32.3 | 41.8 | 17.1 | 22.4 | 38.1 | 54.0 | 23.9 | 21.8 | 22.0 | | |
| 3C | Alkali Salts and Rape Cake | 15.8 | 30.0 | 8.9 | 16.2 | 33.7 | 54.5 | 13.0 | 18.3 | 20.4 | | |
| 4C | Complete Minerals and Rape Cake | 31.0 | 37.3 | 16.7 | 20.5 | 37.5 | 55.2 | 18.3 | 21.4 | 22.6 | | |
| 7-1 | Unmanured after dung (14 tons) for 20 years (1859-71) | 29.8 | 35.2 | 14.5 | 16.8 | 23.5† | 53.2 | 21.4 | 23.3 | 13.5† | | |
| 7-2 | Farmyard Manure (14 tons) | 31.9 | 41.6 | 17.6 | 23.4 | 44.6 | 54.2 | 26.8 | 32.6 | 28.1 | | |
| 6-1 | Unmanured since 1852 | 11.6†† | 15.8 | 5.8 | 7.6 | 14.7 | — | 9.9 | 11.6 | 8.6 | | |
| 6-2 | Ashes from Laboratory furnace | 9.3 | 15.9 | 4.7 | 7.7 | 15.7 | 53.0 | 8.8 | 12.3 | 9.3 | | |
| 1N | Nitrate of Soda only (275 lb.) | 13.7†† | 16.8 | 6.8 | 8.5 | 28.7§§ | — | 11.3 | 13.9 | 17.8§ | | |
| 2N | Nitrate of Soda only (275 lb.) | 22.9 | 28.7 | 11.1 | 13.8 | 31.7§§§ | 53.0 | 17.7 | 22.0 | 20.0§§§ | | |

|| 1 cwt. 2.15 bushels. 1912, all plots were followed. † Total straw includes straw, cavines and chaff. * Sixty years, 1868-1928. ‡ 56 years, 1872-1928. § 75 years, 1853-1928. §§ 69 years, 1859-1928. ** Produce from the pairs of these plots bulked together. †† Estimated. In 1931 the same procedure of sowing in widely spaced drills (18 inches apart) was adopted as in 1930. The two varieties were again sown by the half-drill strip method, the whole of the area of each variety being included in the weighed produce.