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## Report 1921-22 With the Supplement to the Guide to the Experimental Plots Containing the Yields per Acre Etc.



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### Table of Results - Later Experiments

#### Rothamsted Research

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### ROTATION PLOTS.

Little Hoos Field, 1921 and 1922.

Arranged to test the RESIDUAL VALUE of VARIOUS MANURES in year of application and one, two, and three years after.  
Produce per acre.

| Plot. | Manure per Acre from 1919 onwards.             | Year of Dressing. | 1921 (18th Season), Barley. |                  |                       |  |                 | 1922 (19th Season), Barley. |                       |  |            |             |             |              |
|-------|--|-------------------|-----------------------------|------------------|-----------------------|--|-----------------|-----------------------------|-----------------------|--|------------|-------------|-------------|--------------|
|       |  |                   | Dressed Grain.              |                  | Total Straw per Acre. | Proportion of Total Grain to 100 of Total Straw. | Dressed Grain.  |                             | Total Straw per Acre. | Proportion of Total Grain to 100 of Total Straw. |            |             |             |              |
|       |  |                   | Yield per Acre.             | Weight per Bush. |                       |  | Yield per Acre. | Weight per Bush.            |                       |  |            |             |             |              |
| A 1   | Control  | —                 | Bush. 19.6                  | lb. 57.1         | 88                    | 640  | 10.0            | 107.7                       | Bush. 20.9            | lb. 51.6   | 63         | 820         | 10.6        | 96.1         |
| A 2   | ...  | 1920              | 39.4                        | 58.8             | 76                    | 1512   | 19.9            | 107.4                       | [38.4]                | 52.9   | 94         | 1404        | [19.2]      | [98.9]       |
| A 3   | Ordinary Dung, 16 tons                         | 1921              | <b>37.7</b>                 | <b>58.9</b>      | <b>57</b>             | <b>1388</b>                                      | <b>18.5</b>     | <b>110.0</b>                | 35.7                  | 53.0   | 82         | 1284        | 16.5        | 106.5        |
| A 4   | ...  | 1922              | 25.9                        | 58.0             | 67                    | 844  | 13.5            | 103.8                       | <b>38.2</b>           | <b>52.7</b>                                      | <b>90</b>  | <b>1372</b> | <b>17.8</b> | <b>105.9</b> |
| A 5   | ...  | 1915              | 31.2                        | 57.4             | 85                    | 1020   | 16.6            | 101.2                       | 32.9                  | 53.1   | 75         | 1232        | 15.3        | 106.7        |
| B 1   | Cake fed dung, 16 tons                         | 1920              | 42.5                        | 58.2             | 95                    | 1804   | 21.3            | 107.7                       | 38.1                  | 52.7   | 84         | 1384        | 18.8        | 99.6         |
| B 2   | Control ...                                    | —                 | 18.8                        | 56.6             | 71                    | 688  | 10.4            | 97.3                        | 26.9                  | 52.8   | 76         | 1001        | 13.1        | 101.6        |
| B 3   | ...  | 1921              | <b>40.4</b>                 | <b>58.6</b>      | <b>66</b>             | <b>1628</b>                                      | <b>20.0</b>     | <b>108.9</b>                | [39.7]                | 52.8   | 97         | 1484        | [20.2]      | [97.0]       |
| B 4   | Cake fed dung, 16 tons                         | 1922              | 32.2                        | 57.4             | 93                    | 1236   | 16.3            | 106.2                       | [44.2]                | <b>53.2</b>                                      | <b>109</b> | <b>1660</b> | [22.5]      | [97.5]       |
| B 5   | ...  | 1915              | 30.9                        | 57.8             | 72                    | 1196   | 15.7            | 105.8                       | 35.7                  | 53.0   | 86         | 1364        | 17.3        | 102.0        |
| C 1   | Shoddy; Superphosphate; Sulphate of Potash ... | 1920              | 22.0                        | 56.0             | 118                   | 940  | 12.1            | 99.9                        | 16.6                  | 51.9   | 95         | 696         | 9.9         | 86.8         |
| C 2   | ...  | 1921              | <b>30.8</b>                 | <b>56.3</b>      | <b>166</b>            | <b>1276</b>                                      | <b>16.0</b>     | <b>106.0</b>                | 19.2                  | 52.5   | 79         | 816         | 11.2        | 87.0         |
| C 3   | Control ...                                    | —                 | 19.7                        | 56.0             | 113                   | 880  | 11.2            | 96.9                        | 22.8                  | 52.5   | 72         | 918         | 11.8        | 96.1         |
| C 4   | ...  | 1922              | 21.1                        | 56.0             | 117                   | 1164   | 13.8            | 84.1                        | <b>39.9</b>           | <b>52.5</b>                                      | <b>75</b>  | <b>1448</b> | <b>18.4</b> | <b>105.3</b> |
| C 5   | Shoddy; Superphosphate; Sulphate of Potash ... | 1919              | 23.2                        | 56.4             | 102                   | 1068   | 13.2            | 95.4                        | 28.4                  | 52.9   | 86         | 1132        | 14.5        | 97.6         |

|   |   |   |      |             |             |            |             |             |              |             |             |            |             |             |              |
|---|---|---|------|-------------|-------------|------------|-------------|-------------|--------------|-------------|-------------|------------|-------------|-------------|--------------|
| D | 1 | Guano; Sulphate of Ammonia; Sulphate of Potash      | 1920 | 28.4        | 56.0        | 118        | 1252        | 15.4        | 99.3         | 17.9        | 52.5        | 80         | 732         | 10.7        | 85.0         |
|   | 2 |   | 1921 | <b>27.9</b> | <b>55.7</b> | <b>188</b> | <b>1348</b> | <b>17.1</b> | <b>90.8</b>  | 21.0        | 52.6        | 71         | 924         | 12.1        | 86.9         |
|   | 3 |   | 1922 | 18.7        | 56.3        | 112        | 888         | 11.6        | 89.9         | <b>35.6</b> | <b>53.0</b> | <b>113</b> | <b>1408</b> | <b>19.0</b> | <b>93.9</b>  |
|   | 4 |   | —    | 14.7        | 54.5        | 122        | 772         | 9.9         | 83.5         | 17.9        | 51.8        | 87         | 788         | 12.2        | 74.5         |
|   | 5 |   | 1919 | 19.1        | 54.9        | 131        | 992         | 12.6        | 83.7         | 18.4        | 52.1        | 84         | 824         | 11.9        | 78.0         |
| E | 1 | Rape Dust; Superphosphate; Sulphate of Potash       | 1920 | 25.5        | 55.8        | 111        | 1092        | 13.4        | 102.5        | 19.4        | 50.6        | 83         | 872         | 11.0        | 86.6         |
|   | 2 |   | 1921 | <b>36.1</b> | <b>54.7</b> | <b>152</b> | <b>1524</b> | <b>17.3</b> | <b>109.8</b> | 25.5        | 53.6        | 70         | 1068        | 13.8        | 93.1         |
|   | 3 |   | 1922 | 13.1        | 56.0        | 123        | 588         | 7.8         | 97.6         | <b>34.8</b> | <b>52.6</b> | <b>85</b>  | <b>1328</b> | <b>17.0</b> | <b>100.8</b> |
|   | 4 |   | 1919 | 15.4        | 55.8        | 127        | 688         | 9.4         | 93.3         | 16.5        | 50.9        | 75         | 764         | 10.2        | 79.9         |
|   | 5 |   | —    | 21.4        | 55.9        | 134        | 872         | 11.9        | 99.8         | 19.7        | 53.1        | 63         | 824         | 11.8        | 84.2         |
| F | 1 | Control   | —    | 10.3        | 52.3        | 84         | 476         | 7.1         | 78.1         | 20.3        | 52.3        | 87         | 1048        | 13.1        | 77.8         |
|   | 2 |   | 1920 | 22.1        | 55.5        | 94         | 896         | 11.9        | 98.5         | 23.6        | 52.6        | 73         | 960         | 12.1        | 96.9         |
|   | 3 |   | 1921 | <b>33.5</b> | <b>55.9</b> | <b>177</b> | <b>1480</b> | <b>17.8</b> | <b>102.9</b> | 23.4        | 53.8        | 68         | 992         | 12.8        | 92.5         |
|   | 4 |   | 1922 | 17.6        | 53.0        | 115        | 808         | 10.5        | 89.5         | <b>37.8</b> | <b>52.5</b> | <b>97</b>  | <b>1616</b> | <b>19.7</b> | <b>94.5</b>  |
|   | 5 |   | 1919 | 16.4        | 55.5        | 122        | 896         | 11.7        | 78.7         | 19.6        | 52.0        | 70         | 892         | 12.0        | 81.3         |
| G | 1 | Bone Meal; Sulphate of Ammonia; Sulphate of Potash  | 1920 | 20.4        | 53.7        | 115        | 844         | 11.6        | 93.5         | 22.6        | 53.7        | 96         | 1076        | 14.3        | 81.9         |
|   | 2 |   | 1921 | <b>24.1</b> | <b>54.6</b> | <b>123</b> | <b>1208</b> | <b>14.1</b> | <b>90.8</b>  | 28.0        | 52.8        | 76         | 1228        | 15.1        | 91.7         |
|   | 3 |   | —    | 22.9        | 54.9        | 93         | 1068        | 13.9        | 86.4         | 29.2        | 52.8        | 69         | 1292        | 15.3        | 93.9         |
|   | 4 |   | 1922 | 22.8        | 54.5        | 91         | 1004        | 12.6        | 94.1         | <b>36.2</b> | <b>53.8</b> | <b>103</b> | <b>1696</b> | <b>20.6</b> | <b>88.6</b>  |
|   | 5 |   | 1919 | 20.8        | 53.8        | 100        | 944         | 13.2        | 82.3         | 25.5        | 52.3        | 79         | 1208        | 14.6        | 86.3         |
| H | 1 | Basic Slag; Sulphate of Ammonia; Sulphate of Potash | 1920 | 30.8        | 56.8        | 88         | 1184        | 14.8        | 111.2        | 28.1        | 52.7        | 87         | 1148        | 14.4        | 97.1         |
|   | 2 |   | 1921 | <b>34.1</b> | <b>55.8</b> | <b>150</b> | <b>1672</b> | <b>20.1</b> | <b>91.0</b>  | 29.5        | 53.2        | 82         | 1292        | 15.6        | 94.4         |
|   | 3 |   | 1922 | 24.6        | 56.5        | 91         | 1040        | 13.9        | 94.9         | <b>40.3</b> | <b>53.2</b> | <b>100</b> | <b>1844</b> | <b>22.0</b> | <b>90.8</b>  |
|   | 4 |   | 1919 | 30.3        | 55.9        | 88         | 1236        | 15.2        | 104.5        | 30.4        | 53.8        | 64         | 1252        | 15.1        | 100.7        |
|   | 5 |   | —    | 27.8        | 55.4        | 106        | 1304        | 16.3        | 90.3         | 20.8        | 53.4        | 82         | 1020        | 12.5        | 85.6         |

NOTES.—Since 1919 the manure for each plot (except of series A and B) has been rationed at 40 lb. Nitrogen, 100 lb. Calcium Phosphate, and 50 lb. Potash per acre. Each plot has been supplied with as much of its particular manure (shoddy, guano, &c.) as possible without exceeding the receipt in any of the three rationed ingredients. Any deficit in either of these three has then been made good by adding the necessary quantity of Sulphate of Ammonia, Superphosphate, or Sulphate of Potash. Figures in italics denote unmanured plots. The yields on the plots to which the manure was applied in a given year are printed in heavy type. Figures in square brackets are estimated yields.



### STRAW EXPERIMENT, 1921. Potatoes (Arran Chief). Sawpit Field.

| Manure per Acre.                               | Yield per Acre. |           |           |
|--|-----------------|-----------|-----------|
|  | 1st Plot        | 2nd Plot  | 3rd Plot  |
| 8 tons Rotted Straw Manure—Single Nitrogen ... | Tons 2.30       | Tons 2.18 | Tons 1.96 |
| 16 " " " " " " " " ...                         | 2.48            | 2.63      | 2.16      |
| 32 " " " " " " " " ...                         | 1.73            | 2.39      | 2.29      |
| 2 cwt. Sulphate of Ammonia ... ..              | 1.20            | 1.48      | 1.13      |
| 4 " " " " " " " " ...                          | 1.66            | 1.57      | 1.48      |
| 8 " " " " " " " " ...                          | 1.52            | 1.71      | 1.38      |
| 16 " " " " " " " " ...                         | 1.41            | 1.55      | 1.27      |
| 8 tons Rotted Straw Manure—Double Nitrogen ... | 2.09            | 2.20      | 1.86      |
| 16 " " " " " " " " ...                         | 3.32            | 2.59      | 2.50      |
| 32 " " " " " " " " ...                         | 2.16            | 2.68      | 2.04      |
| Control—No Manure ... ..                       | 1.39            | 1.61      | 1.41      |
| " " " " " " " " ...                            | 1.52            | 1.45      | 1.39      |

Single Nitrogen represents 1 cwt. Sulphate of Ammonia added to 1 ton of straw.  
Double Nitrogen represents 2 cwt. Sulphate of Ammonia added to 1 ton of straw.

### RESIDUAL VALUE OF SLUDGE, 1921. Long Hoos Field.

| Treatment of Plots in 1920.<br>Manure per Acre.           | Dressed Grain.        |           |                        |           | Offal Grain per Acre.<br>lb. |           | Straw per Acre. |           |                   |           | Proportion of Total Grain to 100 of Total Straw. |           |
|---|-----------------------|-----------|------------------------|-----------|------------------------------|-----------|-----------------|-----------|-------------------|-----------|--|-----------|
|   | Yield per Acre. Bush. |           | Weight per Bushel. lb. |           |                              |           | Straw. lb.      |           | Total Straw. cwt. |           |  |           |
|   | 1st Plot.             | 2nd Plot. | 1st Plot.              | 2nd Plot. | 1st Plot.                    | 2nd Plot. | 1st Plot.       | 2nd Plot. | 1st Plot.         | 2nd Plot. | 1st Plot.  | 2nd Plot. |
| <b>1921, Wheat (Red Standard) after Potatoes (1920).*</b> |                       |           |                        |           |                              |           |                 |           |                   |           |  |           |
| Activated Sewage Sludge, 13.3 tons                        | 29.8                  | 27.9      | 64.0                   | 64.1      | 371                          | 406       | 2925            | 2624      | 32.7              | 30.8      | 62.2   | 63.6      |
| Farmyard Dung 15 tons ...                                 | 34.8                  | 31.6      | 64.0                   | 64.1      | 296                          | 371       | 2461            | 2600      | 30.3              | 29.7      | 74.5   | 72.0      |
| Control ... ..  | 26.0                  | 26.9      | 63.3                   | 63.0      | 342                          | 325       | 2299            | 1997      | 26.2              | 26.6      | 67.6   | 67.7      |
| <b>1921, Wheat (Red Standard) after Barley (1920).†</b>   |                       |           |                        |           |                              |           |                 |           |                   |           |  |           |
| Sulph. of Ammonia 1.45 cwt. ...                           | 24.1                  |           | 63.0                   |           | 387                          |           | 2738            |           | 31.1              |           | 54.6   |           |
| Activated Sewage Sludge, 2.7 tons                         | 30.1                  |           | 63.0                   |           | 351                          |           | 2857            |           | 31.4              |           | 64.1   |           |
| Control ... ..  | 27.2                  |           | 62.5                   |           | 405                          |           | 2738            |           | 29.4              |           | 63.9   |           |
| Control ... ..  | 27.4                  |           | 63.0                   |           | 435                          |           | 2333            |           | 30.3              |           | 63.7   |           |

\* In 1920 this set received a basal dressing of 6 cwt. Super. and 1 cwt. Nitrate of Ammonia per acre. No manure was given in 1921.

† In 1921 this set was manured as farm, viz., 1 cwt. Sulphate of Ammonia and 1 cwt. Superphosphate per acre.

**TOP DRESSING EXPERIMENTS.**

| Treatment of Plots and Quantities per Acre.   | Dressed Grain           |      |      |                       |      |      |      |      |      | Offal Grain per Acre. |       |       |      |      |      | Straw per Acre. |      |      |      |      |      | Proportion of Total Grain to 100 of Total Straw. |      |      |      |      |      |     |     |
|---|-------------------------|------|------|-----------------------|------|------|------|------|------|-----------------------|-------|-------|------|------|------|-----------------|------|------|------|------|------|--|------|------|------|------|------|-----|-----|
|   | Yield per Acre Bushels. |      |      | Weight per Bushel lb. |      |      | Plot |      |      | Plot                  |       |       | Plot |      |      | Plot            |      |      | Plot |      |      | Plot   |      |      | Plot |      |      |     |     |
|   | Plot                    | Plot | Plot | Plot                  | Plot | Plot | Plot | Plot | Plot | Plot                  | Plot  | Plot  | Plot | Plot | Plot | Plot            | Plot | Plot | Plot | Plot | Plot | Plot   | Plot | Plot | Plot | Plot | Plot |     |     |
|   | 1                       | 2    | 3    | 1                     | 2    | 3    | 1    | 2    | 3    | 1                     | 2     | 3     | 1    | 2    | 3    | 1               | 2    | 3    | 1    | 2    | 3    | 1  | 2    | 3    | 1    | 2    | 3    |     |     |
| <b>Oats (Grey Winter)*</b>  |                         |      |      |                       |      |      |      |      |      |                       |       |       |      |      |      |                 |      |      |      |      |      |  |      |      |      |      |      |     |     |
| <b>Great Knott Field, 1921.</b>   |                         |      |      |                       |      |      |      |      |      |                       |       |       |      |      |      |                 |      |      |      |      |      |  |      |      |      |      |      |     |     |
| Super. 1½ cwt. ...  | 52.1                    | 57.4 | 54.7 | 44.1                  | 43.0 | 43.6 | 42.0 | 49.0 | 46.0 | 19.00                 | 26.00 | 25.40 | 31.8 | 37.5 | 40.2 | 76              | 71   | 63   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| Super. 1½ cwt.; Sul./Amm. 1½ cwt., applied March 4 ...  | 45.0                    | 43.6 | 44.2 | 43.3                  | 45.0 | 43.0 | 38.0 | 48.5 | 38.0 | 20.20                 | 19.20 | 26.20 | 31.6 | 35.5 | 37.9 | 66              | 61   | 54   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| Super. 1½ cwt.; Mur./Amm. 1.44 lb., applied March 4 ...                                       | 48.4                    | 57.3 | 44.0 | 44.0                  | 44.0 | 44.6 | 43.5 | 59.0 | 48.5 | 22.80                 | 29.80 | 24.80 | 37.1 | 47.0 | 36.4 | 62              | 59   | 60   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| No Manure ...   | 47.1                    | 48.6 | 47.9 | 43.6                  | 44.0 | 43.5 | 41.0 | 47.5 | 42.0 | 20.60                 | 23.40 | 22.00 | 31.1 | 36.1 | 33.4 | 71              | 65   | 67   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| <b>Wheat (Red Standard).</b>  |                         |      |      |                       |      |      |      |      |      |                       |       |       |      |      |      |                 |      |      |      |      |      |  |      |      |      |      |      |     |     |
| <b>Great Harpenden Field, 1921.</b>   |                         |      |      |                       |      |      |      |      |      |                       |       |       |      |      |      |                 |      |      |      |      |      |  |      |      |      |      |      |     |     |
| Super. 200 lb.; Sul./Amm. 100 lb., applied March 2-3 ...                                      | 19.4                    | 16.9 | —    | 62.5                  | 62.5 | —    | 56.5 | 43.0 | —    | 23.50                 | 16.60 | —     | 30.0 | 22.9 | —    | 53              | 58   | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| Super. 200 lb.; Sul./Amm. 200 lb., applied March 2-3 ...                                      | 20.3                    | 15.4 | —    | 62.5                  | 62.5 | —    | 54.0 | 44.3 | —    | 20.60                 | 19.00 | —     | 27.1 | 25.6 | —    | 60              | 49   | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| Super. 200 lb.; Sul./Amm. 100 lb., applied March 2-3 and Sul./Amm. 100 lb., applied May 2 ... | 21.3                    | 13.8 | —    | 62.5                  | 62.5 | —    | 49.5 | 35.0 | —    | 20.80                 | 14.50 | —     | 27.2 | 20.7 | —    | 60              | 52   | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| Super. 200 lb.; Mur./Amm. 86 lb., applied March 2-3 ...                                       | 17.7                    | 15.7 | —    | 62.0                  | 62.0 | —    | 43.0 | 37.0 | —    | 19.60                 | 17.00 | —     | 24.4 | 22.8 | —    | 56              | 53   | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| Super. 200 lb.; N./Soda 140 lb., applied March 2-3 ...  | 15.2                    | 16.9 | —    | 62.5                  | 62.0 | —    | 35.5 | 41.5 | —    | 17.50                 | 19.80 | —     | 21.4 | 24.0 | —    | 54              | 55   | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| Super. 200 lb.; Sul./Amm. 100 lb., applied May 2 ...  | 23.1                    | 16.1 | —    | 62.3                  | 62.0 | —    | 50.0 | 38.5 | —    | 26.60                 | 18.00 | —     | 30.4 | 21.9 | —    | 57              | 56   | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| Super. 200 lb.; Sul./Amm. 200 lb., applied May 2 ...  | 23.8                    | 17.4 | —    | 62.5                  | 62.5 | —    | 50.0 | 48.5 | —    | 26.20                 | 19.00 | —     | 30.6 | 22.6 | —    | 58              | 62   | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| Super. 200 lb.; Mur./Amm. 86 lb., applied May 2 ...   | 17.5                    | 18.2 | 23.6 | 62.0                  | 62.0 | 63.0 | 33.8 | 40.5 | 46.5 | 17.00                 | 17.10 | 25.00 | 21.3 | 22.6 | 27.8 | 60              | 61   | 63   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| Super. 200 lb.; Sul./Amm. 100 lb., applied April 4 ...  | 17.1                    | —    | —    | 62.5                  | —    | —    | 36.5 | —    | —    | 17.80                 | —     | —     | 24.0 | —    | —    | 53              | —    | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| No Manure ...   | 13.5                    | 17.6 | —    | 63.5                  | 61.5 | —    | 37.5 | 36.8 | —    | 13.20                 | 18.80 | —     | 17.6 | 22.2 | —    | 63              | 58   | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| Super. 200 lb. ...  | 19.0                    | 12.2 | 22.0 | 62.5                  | 62.5 | 62.5 | 41.5 | 38.5 | 52.5 | 18.30                 | 12.60 | 25.40 | 22.7 | 17.1 | 28.1 | 63              | 60   | 60   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| Super. 200 lb. ...  | —                       | 16.6 | —    | —                     | 61.0 | —    | —    | 36.0 | —    | —                     | 18.40 | —     | —    | 22.6 | —    | —               | 54   | —    | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| <b>Wheat (Red Standard)†</b>  |                         |      |      |                       |      |      |      |      |      |                       |       |       |      |      |      |                 |      |      |      |      |      |  |      |      |      |      |      |     |     |
| <b>Foster's Field, 1922.</b>  |                         |      |      |                       |      |      |      |      |      |                       |       |       |      |      |      |                 |      |      |      |      |      |  |      |      |      |      |      |     |     |
| 1 cwt. Sul./Amm. applied March 18 ...   | 14.4                    | 18.4 | 18.5 | 59.5                  | 60.0 | 60.0 | 42.5 | 39.1 | 40.0 | 14.25                 | 16.50 | 16.50 | 17.0 | 19.2 | 19.9 | 67              | 70   | 68   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| 1 cwt. Sul./Amm., applied April 20 ...  | 18.3                    | 21.3 | 15.8 | 59.5                  | 60.3 | 60.0 | 39.4 | 39.4 | 35.3 | 17.50                 | 18.50 | 14.75 | 21.2 | 23.0 | 17.6 | 62              | 65   | 66   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| 1 cwt. Sul./Amm., applied May 18 ...  | 17.2                    | 21.9 | 16.4 | 60.0                  | 60.5 | 60.3 | 37.2 | 40.9 | 40.6 | 16.25                 | 17.50 | 14.25 | 19.4 | 21.4 | 17.9 | 65              | 72   | 70   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| 93 lb. Mur./Amm., applied March 18 ...  | 17.8                    | 19.6 | 16.4 | 60.0                  | 60.3 | 60.5 | 36.2 | 40.0 | 30.0 | 15.50                 | 18.75 | 13.75 | 19.2 | 22.8 | 18.0 | 66              | 62   | 64   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| 186 lb. Mur./Amm., applied March 18 ...   | 19.7                    | 21.2 | 20.2 | 59.5                  | 60.0 | 60.3 | 35.0 | 40.9 | 36.2 | 17.00                 | 16.50 | 18.00 | 21.0 | 20.8 | 21.7 | 65              | 72   | 65   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| 2 cwt. Sul./Amm., applied March 18 ...  | 20.0                    | 20.8 | 18.3 | 60.3                  | 60.0 | 60.0 | 43.8 | 50.3 | 36.9 | 18.00                 | 19.50 | 17.25 | 22.5 | 25.2 | 22.1 | 65              | 62   | 59   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| 2 cwt. Sul./Amm., applied April 20 ...  | 20.1                    | 18.4 | 13.2 | 60.8                  | 60.0 | 55.5 | 39.4 | 52.5 | 36.9 | 17.00                 | 17.75 | 14.75 | 21.4 | 24.3 | 19.0 | 67              | 60   | 52   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| 2 cwt. Sul./Amm., applied May 18 ...  | 19.4                    | 17.9 | 17.2 | 60.0                  | 60.5 | 60.0 | 42.5 | 50.6 | 44.1 | 17.00                 | 16.75 | 15.25 | 21.2 | 23.0 | 20.1 | 67              | 62   | 65   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| Basal Manuring only ...   | 13.4                    | 15.0 | 11.9 | 59.8                  | 60.0 | 60.0 | 32.8 | 39.1 | 29.7 | 12.50                 | 13.25 | 12.25 | 15.2 | 17.4 | 14.7 | 67              | 66   | 61   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| No Manure ...   | 12.9                    | 16.7 | 13.2 | 60.0                  | 60.3 | 59.5 | 37.8 | 32.8 | 33.1 | 13.25                 | 15.25 | 13.50 | 15.6 | 18.5 | 16.5 | 66              | 64   | 60   | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| <b>Barley (Plumage Archer).</b>   |                         |      |      |                       |      |      |      |      |      |                       |       |       |      |      |      |                 |      |      |      |      |      |  |      |      |      |      |      |     |     |
| <b>Long Hoos, 1922.</b>   |                         |      |      |                       |      |      |      |      |      |                       |       |       |      |      |      |                 |      |      |      |      |      |  |      |      |      |      |      |     |     |
| 2 cwt. Super.; 1 cwt. Sul./Amm., applied May 9 ...  | 34.5                    | 30.1 | —    | 51.3                  | 51.8 | —    | 28.1 | 23.8 | —    | 16.50                 | 13.25 | —     | 22.5 | 18.0 | —    | 81              | 89   | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... | ... |
| 2 cwt. Super.; 2 cwt. Sul./Amm., applied May 9 ...  | 31.2                    | 35.3 | —    | 51.8                  | 51.6 | —    | 36.9 | 28.7 | —    | 16.00                 | 17.75 | —     | 21.4 | 23.0 | —    | 83              | 82   | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| 2 cwt. Super.; 98 lb. Mur./Amm., applied May 9 ...  | 27.7                    | 30.4 | —    | 51.0                  | 51.3 | —    | 25.6 | 26.3 | —    | 14.75                 | 15.00 | —     | 18.5 | 23.0 | —    | 77              | 82   | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| 2 cwt. Super.; 1 cwt. Mur./Amm., applied May 9 ...  | 25.7                    | 32.3 | —    | 52.0                  | 54.3 | —    | 25.0 | 35.0 | —    | 11.75                 | 15.75 | —     | 21.0 | 22.5 | —    | 83              | 86   | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| 2 cwt. Super.; 51½ lb. Urea, applied May 9 ...  | 32.1                    | 34.7 | —    | 51.8                  | 52.3 | —    | 28.7 | 35.6 | —    | 15.75                 | 16.75 | —     | 16.3 | 17.2 | —    | 77              | 83   | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| 2 cwt. Super. ...   | 23.8                    | 26.6 | —    | 51.0                  | 52.3 | —    | 18.4 | 20.0 | —    | 11.75                 | 12.50 | —     | 16.5 | 17.2 | —    | 77              | 83   | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |
| No Manure ...   | 23.6                    | 31.2 | —    | 52.0                  | 51.3 | —    | 20.0 | 24.4 | —    | 11.00                 | 16.50 | —     | 16.5 | 22.1 | —    | 77              | 75   | —    | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ...  | ... |     |

\* A luxuriant crop of mustard was ploughed in previous to the sowing of the Oats; hence the high yields on these plots.  
† All plots (except the unmanured), received a basal dressing of 2 cwt. Super.; 1 cwt. S./Pot. per Acre.



Top Dressing Experiments—*contd.*

Root Crops. Great Harpenden Field, 1922.

| Manuring per Acre.  | Yield per Acre.    |                    |
|---|--------------------|--------------------|
|   | 1st Plot.<br>Tons. | 2nd Plot.<br>Tons. |
| <b>Potatoes (Kerr's Pink).</b>  |                    |                    |
| <b>Dunged Series: 15 tons Farmyard Dung per Acre—</b>   |                    |                    |
| Super. 4 cwt., Sul./Pot. 1½ cwt. ... ..   | 6·73               | 5·41               |
| Super. 4 cwt., Sul./Pot. 1½ cwt., Sul./Amm. 3 cwt.<br>(half as Top Dressing) ... ..           | 7·92               | 9·17               |
| Super. 4 cwt., Sul./Pot. 1½ cwt., Sul./Amm. 1½ cwt. ...                                       | 7·91               | 8·06               |
| Super. 4 cwt., Sul./Pot. 1½ cwt., Sul. Amm. 4½ cwt.   |                    |                    |
| Super. 4 cwt., Sul./Pot. 1½ cwt., Sul./Amm. 3 cwt. ...  | 10·54              | 9·62               |
| (1½ cwt. as Top Dressing) ... ..  | 10·08              | 9·37               |
| Super. 4 cwt., Sul./Pot. 1½ cwt., Mur./Amm. 290 lb.   | 10·66              | 10·74              |
| <b>Undunged Series:</b>   |                    |                    |
| Super. 6 cwt., Sul./Pot. 2 cwt. ... ..  | 6·10               | 4·90               |
| Super. 6 cwt., Sul./Pot. 2 cwt., Sul./Amm. 3 cwt. (half<br>as Top Dressing) ... ..            | 7·99               | 7·89               |
| Super. 6 cwt., Sul./Pot. 2 cwt., Sul./Amm. 1½ cwt. ...  | 6·98               | 7·75               |
| Super. 6 cwt., Sul./Pot. 2 cwt., Sul./Amm. 4½ cwt.<br>(1½ cwt. as Top Dressing) ... ..        | 9·60               | 8·36               |
| Super. 6 cwt., Sul./Pot. 2 cwt., Sul./Amm. 3 cwt. ...   | 8·72               | 9·22               |
| Super. 6 cwt., Sul./Pot. 2 cwt., Mur./Amm. 290 lb. ...  | 9·21               | 8·50               |
| <b>Swedes (Hurst's Monarch).</b>  |                    |                    |
| 589 lb. Slag,* 1 cwt. Sul./Pot. ... ..  | { R <b>25·13</b>   | <b>28·24</b>       |
|   | { L 3·04           | 4·29               |
| 589 lb. Slag,* 1 cwt. Sul./Pot., 2 cwt. Sul./Amm.<br>(as Top Dressing) ... ..                 | { R <b>27·48</b>   | <b>30·65</b>       |
|   | { L 3·82           | 4·87               |
| 589 lb. Slag,* 1 cwt. Sul./Pot., 10 tons Farmyard<br>Dung ... ..                              | { R <b>28·75</b>   | <b>32·37</b>       |
|   | { L 4·22           | 4·12               |
| 589 lb. Slag,* 1 cwt. Sul./Pot., 10 tons Farmyard<br>Dung, 2 cwt. Sul./Amm. (as Top Dressing) | { R <b>32·61</b>   | <b>32·43</b>       |
|   | { L 4·60           | 4·71               |

\* Equivalent to 5 cwt. Super. R = Roots. L = Leaves.

### SLAG EXPERIMENTS

(Details of the Slags used are given on p. 97.)

| No. of Plot.                           | Treatment of Plot and Quantities per Acre.                         | 1921                 |          |                          |          | 1922                 |          |                          |          |
|--|--|----------------------|----------|--------------------------|----------|----------------------|----------|--------------------------|----------|
|  |  | Yield per Acre. cwt. |          | Dry Matter per Acre. lb. |          | Yield per Acre. cwt. |          | Dry Matter per Acre. lb. |          |
|  |  | Series A             | Series B | Series A                 | Series B | Series A             | Series B | Series A                 | Series B |
| Hay. Great Field, 1921 and 1922        |  |                      |          |                          |          |                      |          |                          |          |
| 1                                      | High Grade Slag No. 12, 1170 lb.                                   | 23·6                 | 24·9     | 1981                     | 2108     | 17·9                 | 16·8     | 1154                     | 1130     |
| 2                                      | Open Hearth Slag No. 13, 1925 lb. (High Soluble)                   | 20·1                 | 27·8     | 1669                     | 2262     | 13·2                 | 20·0     | 876                      | 1353     |
| 3                                      | Open Hearth Slag No. 14, 1930 lb. (Low Soluble)                    | 25·5                 | 27·5     | 2024                     | 2304     | 15·8                 | 26·4     | 1064                     | 1653     |
| 4                                      | Gafsa Phosphate, 750 lb.   | 25·7                 | 25·1     | 2016                     | 2149     | 19·1                 | 26·0     | 1268                     | 1677     |
| 6                                      | No Manure  | 23·6                 | 29·2     | 1984                     | 2323     | 16·3                 | 23·9     | 1140                     | 1583     |
| Hay. Little Knott Field, 1921 and 1922 |  |                      |          |                          |          |                      |          |                          |          |
| 1                                      | High Grade, High Soluble Slag No. 15, 536 lb.                      | 13·9                 |          | 1342                     |          | 14·3                 |          | 1139                     |          |
| 3                                      | Low Grade, High Soluble Slag No. 16, 1113 lb.                      | 16·8                 |          | 1602                     |          | 17·1                 |          | 1378                     |          |
| 4                                      | High Grade Slag No. 17, 522 lb.                                    | 17·1                 |          | 1650                     |          | 15·2                 |          | 1198                     |          |
| 6                                      | High Soluble Slag No. 18, 1113 lb.                                 | 15·7                 |          | 1508                     |          | 15·0                 |          | 1117                     |          |
| 7                                      | Low Soluble Slag No. 19, 1104 lb.                                  | 14·5                 |          | 1386                     |          | 14·8                 |          | 1184                     |          |
| 2                                      | Control. No Manure   | 15·7                 |          | 1509                     |          | 16·8                 |          | 1308                     |          |
| 5                                      | Control. No Manure   | 16·1                 |          | 1542                     |          | 15·4                 |          | 1233                     |          |
| Hay. Little Knott Field, 1922          |  |                      |          |                          |          |                      |          |                          |          |
| 1                                      | High Grade, High Soluble Slag No. 15, 536 lb.                      | 13·5                 |          | 1047                     |          | 12·9                 |          | 1067                     |          |
| 3                                      | Low Grade, High Soluble Slag No. 16, 1113 lb.                      | 12·8                 |          | 1005                     |          | 13·2                 |          | 1020                     |          |
| 4                                      | High Grade Slag No. 17, 522 lb.                                    | 13·1                 |          | 1070                     |          | 13·2                 |          | 1086                     |          |
| 6                                      | High Soluble Slag No. 18, 1113 lb.                                 | 13·8                 |          | 1083                     |          | 22·6                 |          | 1867                     |          |
| 7                                      | Low Soluble Slag No. 19, 1104 lb.                                  | 20·9                 |          | 1645                     |          |                      |          |                          |          |
| 2                                      | Control. No Manure   |                      |          |                          |          | 13·2                 |          | 1086                     |          |
| 5                                      | Control. No Manure   |                      |          |                          |          | 13·8                 |          | 1083                     |          |
| 8                                      | Gafsa Phosphate, 422 lb.   |                      |          |                          |          | 22·6                 |          | 1867                     |          |
| 9                                      | Nauru Phosphate, 280 lb.   |                      |          |                          |          | 20·9                 |          | 1645                     |          |
| Hay. Great Field, 1922                 |  |                      |          |                          |          |                      |          |                          |          |
| HL.1                                   | High Soluble, Low Grade Slag No. 1, 872 lb.                        | 16·7                 |          | 1113                     |          |                      |          |                          |          |
| 9                                      | High Soluble, Low Grade Slag No. 1, 872 lb.                        | 29·1                 |          | 1741                     |          |                      |          |                          |          |
| 3                                      | Low Soluble, Low Grade Slag No. 2, 872 lb.                         | 17·7                 |          | 1197                     |          |                      |          |                          |          |
| 6                                      | Low Soluble, Low Grade Slag No. 2, 1225 lb.                        | 23·0                 |          | 1600                     |          |                      |          |                          |          |
| 4                                      | Gafsa Phosphate, 347 lb.   | 20·4                 |          | 1399                     |          |                      |          |                          |          |
| 7                                      | Gafsa Phosphate 174 lb, Low Soluble, Low Grade Slag No. 2, 612 lb. | 22·3                 |          | 1499                     |          |                      |          |                          |          |
| 2                                      | Control. No Manure   | 17·0                 |          | 1119                     |          |                      |          |                          |          |
| 5                                      | " " "  | 22·7                 |          | 1524                     |          |                      |          |                          |          |
| 8                                      | " " "  | 22·6                 |          | 1534                     |          |                      |          |                          |          |
| Hay. Great Field, 1922                 |  |                      |          |                          |          |                      |          |                          |          |
| 1C                                     | High Soluble Slag No. 1, 872 lb.                                   | 16·5                 |          | 1095                     |          |                      |          |                          |          |
| 2C                                     | Low Soluble Slag No. 2, 1225 lb.                                   | 18·7                 |          | 1301                     |          |                      |          |                          |          |
| 3C                                     | Gafsa Phosphate, 347 lb.   | 18·8                 |          | 1284                     |          |                      |          |                          |          |
| 4C                                     | Tunisian Phosphate, 336 lb.  | 16·0                 |          | 1086                     |          |                      |          |                          |          |
| 5C                                     | Florida Phosphate, 292 lb.   | 15·8                 |          | 1042                     |          |                      |          |                          |          |
| 7C                                     | Nauru Phosphate, 263 lb.   | 15·2                 |          | 1020                     |          |                      |          |                          |          |
| 7D                                     | " " " " "  | 15·5                 |          | 985                      |          |                      |          |                          |          |
| 8C                                     | Nauru Phosphate Low Grade Slag No. 8, 411 lb.                      | 15·4                 |          | 1012                     |          |                      |          |                          |          |
| 8D                                     | " " " " "  | 20·0                 |          | 1287                     |          |                      |          |                          |          |
| C                                      | Control. No Manure   | 10·9                 |          | 730                      |          |                      |          |                          |          |
| D                                      | " " " " "  | 15·7                 |          | 1013                     |          |                      |          |                          |          |

**Slag Experiments—contd.**  
**Clover. West Barnfield, 1921 and 1922.**

| No. of Plot. | Treatment of Plots and Quantities per Acre.     | 1921            |           |                      |          | 1922            |           |                      |          |
|--------------|---|-----------------|-----------|----------------------|----------|-----------------|-----------|----------------------|----------|
|              |   | Yield per Acre. |           | Dry Matter per Acre. |          | Yield per Acre. |           | Dry Matter per Acre. |          |
|              |   | Series A        | Series B  | Series A             | Series B | Series A        | Series B  | Series A             | Series B |
| 1            | High Grade Slag No. 12, 1170 lb.                | cwt. 40.8       | cwt. 40.4 | lb. 3521             | lb. 3567 | cwt. 10.5       | cwt. 16.1 | lb. 941              | lb. 1418 |
| 2            | Open Hearth, High Soluble Slag No. 13, 1925 lb. | 43.0            | 38.7      | 3629                 | 3470     | 18.5            | 13.7      | 1644                 | 1183     |
| 3            | Open Hearth, Low Soluble Slag No. 14, 1930 lb.  | 42.4            | 40.4      | 3720                 | 3567     | 18.6            | 15.6      | 1679                 | 1374     |
| 4            | Gafsa Phosphate, 750 lb.                        | 41.7            | 39.4      | 3654                 | 3502     | 17.6            | 18.3      | 1604                 | 1681     |
| C            | No Manure                                       | 43.6            | 39.4      | 3812                 | 3593     | 16.3            | 18.3      | 1486                 | 1630     |
| C            | "   | 40.8            | 40.8      | 3563                 | 3563     | 17.1            | 17.1      | 1490                 | 1490     |

**Barley (Plumage Archer). Long Hoos Field, 1922.**

| Treatment of Plots.                      | Dressed Grain.             |             |             |                          |             |             | Offal Grain per Acre. |             |             |              |             |             | Straw per Acre. |             | Proportion of Total Grain to Total Straw. |             |     |
|--|----------------------------|-------------|-------------|--------------------------|-------------|-------------|-----------------------|-------------|-------------|--------------|-------------|-------------|-----------------|-------------|---|-------------|-----|
|  | Yield per Acre in Bushels. |             |             | Weight per Bushel in lb. |             |             | per Acre.             |             |             | lb.          |             |             | Total Straw.    |             |   |             |     |
|  | Slag No. 20.               | Slag No. 2. | Slag No. 1. | Slag No. 20.             | Slag No. 2. | Slag No. 1. | Slag No. 20.          | Slag No. 2. | Slag No. 1. | Slag No. 20. | Slag No. 2. | Slag No. 1. | Slag No. 20.    | Slag No. 2. |   | Slag No. 1. |     |
| Basal Manuring, Slag, full quantity      | 36.0                       | 26.0        | 28.7        | 51.3                     | 51.4        | 51.8        | 197                   | 162         | 231         | 1375         | 1175        | 1250        | 18.5            | 16.9        | 19.3                                      | 99          | 80  |
|  | 35.1                       | 31.7        | 25.5        | 52.8                     | 52.0        | 51.0        | 200                   | 172         | 213         | 1375         | 1238        | 1238        | 19.3            | 18.0        | 19.1                                      | 95          | 71  |
|  | 29.9                       | 25.5        | 32.5        | 51.9                     | 51.8        | 51.5        | 194                   | 169         | 241         | 1238         | 1113        | 1438        | 18.5            | 16.9        | 20.3                                      | 84          | 84  |
|  | 26.2                       | 36.4        | 29.2        | 51.3                     | 51.4        | 51.3        | 163                   | 181         | 200         | *875         | 1500        | 1275        | *11.7           | 19.6        | 18.3                                      | *115        | 93  |
| Basal Manuring, Gafsa Phosphate, 174 lb. | 34.8                       | 25.2        | 27.5        | 51.6                     | 52.3        | 52.0        | 231                   | 162         | 209         | 1488         | 1088        | 1213        | 19.6            | 16.5        | 18.2                                      | 92          | 80  |
|  | 25.7                       | 33.7        | 34.1        | 52.0                     | 52.0        | 51.5        | 178                   | 178         | 203         | 1063         | 1363        | 1388        | 15.8            | 18.3        | 18.9                                      | 85          | 94  |
|  | 30.1                       | 24.7        | 27.0        | 51.8                     | 50.8        | 51.1        | 188                   | 203         | 228         | 1363         | 1100        | 1263        | 19.2            | 15.9        | 18.8                                      | 81          | 82  |
|  | No Manure                  | ...         | ...         | ...                      | ...         | ...         | ...                   | ...         | ...         | ...          | ...         | ...         | ...             | ...         | ...                                       | ...         | ... |

Basal Manuring is 1 cwt. Sulphate of Potash; 1 cwt. Sulphate of Ammonia and 436 lb. Slag No. 1 per acre. Full Quantity Slag represents 636 lb. Slag No. 20, 602 lb. Slag No. 2. \*There was a high wind blowing when this plot was threshed, hence the low figure for the yield of straw.



Slag Experiments—*contd.*

Swedes (Hurst's Monarch) Produce per Acre.  
Great Harpenden Field, 1922.

| Manuring per Acre.  | Roots.       |             |             | Leaves.      |             |             |
|---|--------------|-------------|-------------|--------------|-------------|-------------|
|   | Slag No. 20. | Slag No. 2. | Slag No. 1. | Slag No. 20. | Slag No. 2. | Slag No. 1. |
|   | Tons.        | Tons.       | Tons.       | Tons.        | Tons.       | Tons.       |
| Sulphate Ammonia 2 cwt., Sulphate Potash 1 cwt., Slag full quantity ...                           | 25·92        | 27·92       | 30·40       | 4·89         | 3·82        | 4·16        |
| Sulphate Ammonia 2 cwt., Sulphate Potash 1 cwt., Slag full quantity ...                           | 32·08        | 30·31       | 30·40       | 4·01         | 5·04        | 4·20        |
| Sulphate Ammonia 2 cwt., Sulphate Potash 1 cwt., Slag half quantity, Gafsa Phosphate, 175 lb. ... | 27·19        | 28·04       | 31·88       | 4·18         | 3·53        | 4·10        |
| Sulphate Ammonia 2 cwt., Sulphate Potash 1 cwt., Slag half quantity, Gafsa Phosphate, 175 lb. ... | 28·21        | 29·78       | 28·82       | 4·28         | 4·16        | 4·27        |
| Sulphate Ammonia 2 cwt., Sulphate Potash 1 cwt., No. 7 Nauru Phosphate, 262½ lb. ...              | 30·96        | 26·43       | 26·50       | 4·49         | 4·00        | 3·98        |
| Sulphate Ammonia 2 cwt., Sulphate Potash 1 cwt., No. 3 Gafsa Phosphate, 350 lb. ...               | 27·83        | 31·12       | 28·46       | 3·95         | 4·58        | 4·66        |
| Sulphate Ammonia 2 cwt., Sulphate Potash 1 cwt. ...   | 27·21        | 31·45       | 25·74       | 4·16         | 5·02        | 3·99        |
| No Manure ...   | 25·67        | 27·23       | 22·70       | 3·54         | 3·67        | 3·19        |

NOTE.—“Full Quantity” Slag is No. 20, 1275 lb. per Acre.  
No. 2, 1225 „ „  
No. 1, 875 „ „

Description of Slags Used.

| No. | Type.                          | Total Phosphate as Ca <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> | Solubility % |
|-----|--------------------------------|--|--------------|
| 1   | Open Hearth, L.G., H.S. ...    | 25·0   | 90·4         |
| 2   | „ „ L.G., L.S. ...             | 18·0   | 35·7         |
| 8   | Phosphate, Slag Mixture ...    | 53·1   | 25·5         |
| 12  | Talbot Process, H.G., H.S. ... | 37·3   | 80·7         |
| 13  | Open Hearth, L.G., H.S. ...    | 22·7   | 91·5         |
| 14  | „ „ L.G., L.S. ...             | 22·6   | 29·0         |
| 15  | Talbot Process, H.G., H.S. ... | 40·0   | 72·5         |
| 16  | Open Hearth, L.G., H.S. ...    | 21·3   | 88·3         |
| 17  | Bessemer, H.G., H.S. ...       | 42·5   | 77·2         |
| 18  | Open Hearth, L.G., H.S. ...    | 20·8   | 67·0         |
| 19  | „ „ L.G., L.S. ...             | 20·2   | 21·0         |
| 20  | „ „ L.G., H.S. ...             | 17·2   | 78·8         |

L.G. = Low Grade. L.S. = Low Soluble.  
H.G. = High Grade. H.S. = High Soluble.

### POTASH EXPERIMENTS.

| Manuring per Acre.                    | Dry Matter per Acre. |          |          | Yield per acre. |           |           |
|---------------------------------------|----------------------|----------|----------|-----------------|-----------|-----------|
|                                       | 1st Plot             | 2nd Plot | 3rd Plot | 1st Plot        | 2nd Plot  | 3rd Plot  |
| <b>Clover. West Barn Field, 1922.</b> |                      |          |          |                 |           |           |
| Control ... ..                        | lb. 1369             | lb. 1273 | lb. 1507 | cwt. 15·2       | cwt. 15·7 | cwt. 18·6 |
| Sulphate of Potash, 210 lb. ... ..    | 1533                 | 1929     | 2123     | 18·6            | 25·0      | 26·4      |
| Cement Works' Dust, 511 lb. ... ..    | 1381                 | 1710     | 1729     | 17·5            | 21·8      | 21·4      |

| <b>Potatoes (Arran Chief). Sawpit Field, 1921.</b>  |  |  |  |       |       |       |
|---|--|--|--|-------|-------|-------|
| With Dung, 12 tons per Acre.  |  |  |  |       |       |       |
|   |  |  |  | Tons. | Tons. | Tons. |
| 3 cwt. Super., 1½ cwt. Sulphate Ammonia, 470 lb. Sylvénite ...  |  |  |  | 3·57  | *3·15 | 3·71  |
| 3 cwt. Super., 1½ cwt. Sulphate Ammonia, ... ..   |  |  |  | 3·55  | *3·18 | 3·72  |
| 3 cwt. Super., 1½ cwt. Sulphate Ammonia, 1½ cwt. Sulphate Potash                                      |  |  |  | 3·67  | 4·27  | 3·88  |
| 3 cwt. Super., 1½ cwt. Sulphate Ammonia, 1½ cwt. Sulphate Potash,<br>95 lb. Sulphate Magnesium ... .. |  |  |  | *3·07 | 3·92  | 3·87  |
| No Manure. Control ... ..   |  |  |  | *2·28 | 3·48  | 3·18  |
| 3 cwt. Super., 1½ cwt. Sul. Amm., 1½ cwt. Muriate Potash ... ..                                       |  |  |  | *2·31 | 4·24  | 3·97  |
| 3 cwt. Super., 1½ cwt. Sul. Amm., 1½ cwt. Muriate Potash, 84 lb. Sul.<br>Magnesium ... ..             |  |  |  | *2·43 | 3·90  | 4·15  |

| Without Dung.  |  |  |  |      |      |      |
|--|--|--|--|------|------|------|
| 4 cwt. Super., 2 cwt. Sul. Amm., 625 lb. Sylvénite ... ..                                |  |  |  | 3·49 | 4·04 | 3·11 |
| 4 cwt. Super., 2 cwt. Sul. Amm. ... ..   |  |  |  | 1·43 | 1·48 | 1·15 |
| 4 cwt. Super., 2 cwt. Sul. Amm., 2 cwt. Sul. Potash ... ..                               |  |  |  | 3·48 | 4·28 | 3·52 |
| 4 cwt. Super., 2 cwt. Sul. Amm., 2 cwt. Sul. Pot., 127 lb. Sul. Mag.                     |  |  |  | 3·85 | 4·26 | 3·25 |
| No Manure. Control ... ..  |  |  |  | 1·24 | 1·72 | 1·65 |
| 4 cwt. Super., 2 cwt. Sul. Amm., 2 cwt. Muriate Potash ... ..                            |  |  |  | 4·15 | 4·20 | 4·00 |
| 4 cwt. Super., 2 cwt. Sul. Amm., 2 cwt. Muriate Potash, 111 lb. Sul.<br>Magnesium ... .. |  |  |  | 4·27 | 3·95 | 3·63 |

| <b>Potatoes (Arran Chief). Sawpit Field, 1921.</b>              |  |  |  |       |      |      |
|---|--|--|--|-------|------|------|
| 4 cwt. Super., 2 cwt. Sulphate Ammonia, 232 lb. Sul. Potash ... |  |  |  | 3·00  | 2·46 | 2·82 |
| 4 cwt. Super., 2 cwt. Sulphate Ammonia ... ..                   |  |  |  | 1·16  | 0·98 | 0·89 |
| 4 cwt. Super., 2 cwt. Sulphate Ammonia, 5·4 cwt. Sylvénite ...  |  |  |  | *1·93 | 3·36 | 3·04 |
| Control. No Manure. ... ..                                      |  |  |  | *0·73 | 1·10 | 1·16 |

| <b>Potatoes (Kerr's Pink). Great Harpenden Field, 1922.</b>       |  |  |  |      |      |      |
|---|--|--|--|------|------|------|
| With Dung 15 tons per Acre.                                       |  |  |  |      |      |      |
| Basal Manuring (= Super. 4 cwt., Sul. Amm. 1·5 cwt. per Acre) ... |  |  |  | 8·78 | 7·72 | 7·60 |
| Sulphate Potash 183 lb. + Basal Manuring ... ..                   |  |  |  | 9·49 | 9·72 | 9·45 |
| Muriate Potash 148 lb. + Basal Manuring ... ..                    |  |  |  | 9·22 | 9·60 | 8·82 |
| Muriate Potash 148 lb. + Salt 497 lb. + Basal Manuring ... ..     |  |  |  | 9·84 | 9·49 | 9·14 |

| Without Dung.  |  |  |  |      |      |      |
|--|--|--|--|------|------|------|
| Basal (= Super. 6 cwt., Sulphate Ammonia 2 cwt. per Acre) ...  |  |  |  | 2·11 | 2·75 | 2·57 |
| Sulphate Potash 244 lb. + Basal ... ..                         |  |  |  | 7·88 | 8·96 | 8·06 |
| Muriate Potash 197 lb. + Basal ... ..                          |  |  |  | 8·62 | 8·73 | 7·62 |
| Muriate Potash 197 lb. + Salt 662 lb. + Basal ... ..           |  |  |  | 8·45 | 8·27 | 8·43 |
| Muriate Potash 197 lb. Sulphate Magnesium, 344 lb. + Basal ... |  |  |  | 8·68 | 8·90 | 7·62 |
| Muriate Potash 197 lb. Salt 662 lb. + Basal ... ..             |  |  |  | 8·66 | 8·02 | 7·51 |
| No Manure ... ..   |  |  |  | 3·23 | 2·87 | 2·83 |
| Sulphate Potash 244 lb. Sulphate Magnesium 344 lb. + Basal ... |  |  |  | 9·25 | 8·79 | 7·11 |
| Cement Works' Dust 614 lb. + Basal ... ..                      |  |  |  | 7·47 | 6·66 | 6·38 |
| Sylvénite 541 lb. + Basal ... ..                               |  |  |  | 8·38 | 7·92 | 6·90 |

\* On these plots the bouts were badly broken down due to extra hoeing on account of the growth of Wheatbind.

### Mangolds (Prizewinner Yellow Globe). Great Harpenden Field, 1922.

Produce per Acre.

| Manuring per Acre.  | Roots.         |                | Leaves.        |                |
|---|----------------|----------------|----------------|----------------|
|   | 1st Plot Tons. | 2nd Plot Tons. | 1st Plot Tons. | 2nd Plot Tons. |
| No. 9 Slag 4 cwt., Sulphate Ammonia 2 cwt., Sulphate Potash 2 cwt. ... .. | 17·64          | 14·12          | 5·57           | 5·13           |
| No. 9 Slag 4 cwt., Sulphate Ammonia 2 cwt. ... ..                         | 10·45          | 11·61          | 4·73           | 4·94           |
| No. 9 Slag 4 cwt., Sulphate Ammonia 2 cwt., Cement Works' Dust ... ..     | 18·75          | 18·25          | 5·61           | 5·96           |
| No Manure ... ..  | 10·88          |                | 4·25           |                |



POTATOES.

Relative Effects of Sulphates and Chlorides on different varieties.

Great Harpenden Field, 1922.

| Variety.         | Dunged Series.                 |                                |                                |                           |               |            | Undunged Series.               |                                |                               |                           |               |            |
|------------------|--------------------------------|--------------------------------|--------------------------------|---------------------------|---------------|------------|--------------------------------|--------------------------------|-------------------------------|---------------------------|---------------|------------|
|                  | Actual Weight of Potatoes.     |                                |                                | Average Weight per Plant. |               |            | Actual Weight of Potatoes.     |                                |                               | Average Weight per Plant. |               |            |
|                  | Sulphate Row.                  | Chloride Row.                  | Basal Row.                     | Sulphate Row.             | Chloride Row. | Basal Row. | Sulphate Row.                  | Chloride Row.                  | Basal Row.                    | Sulphate Row.             | Chloride Row. | Basal Row. |
|                  | lb.                            | lb.                            | lb.                            | lb.                       | lb.           | lb.        | lb.                            | lb.                            | lb.                           | lb.                       | lb.           | lb.        |
| Ajax ...         | 16                             | 12 <sup>3</sup> / <sub>4</sub> | 19 <sup>3</sup> / <sub>4</sub> | 3'20                      | 2'55          | 2'82       | 13 <sup>1</sup> / <sub>2</sub> | 17 <sup>3</sup> / <sub>4</sub> | 4                             | 2'25                      | 2'54          | 1'00       |
|                  | 24                             | 21 <sup>1</sup> / <sub>2</sub> | 12 <sup>1</sup> / <sub>4</sub> | 4'00                      | 3'04          | 1'75       | 17 <sup>1</sup> / <sub>4</sub> | 18                             | 4 <sup>1</sup> / <sub>2</sub> | 2'46                      | 3'00          | 0'64       |
|                  | 27                             | 16 <sup>3</sup> / <sub>8</sub> | 33                             | 3'86                      | 4'13          | 4'71       | 7 <sup>1</sup> / <sub>4</sub>  | 23                             | 4                             | 2'42                      | 3'29          | 0'67       |
| Arran Comrade    | 15 <sup>3</sup> / <sub>4</sub> | 11 <sup>3</sup> / <sub>4</sub> | 7 <sup>1</sup> / <sub>2</sub>  | 2'25                      | 1'96          | 2'42       | 11 <sup>1</sup> / <sub>4</sub> | 8 <sup>3</sup> / <sub>4</sub>  | 3 <sup>1</sup> / <sub>2</sub> | 2'25                      | 1'46          | 0'65       |
|                  | 10 <sup>1</sup> / <sub>4</sub> | 10 <sup>3</sup> / <sub>4</sub> | 13                             | 2'56                      | 2'15          | 2'17       | 11 <sup>1</sup> / <sub>4</sub> | 11 <sup>1</sup> / <sub>4</sub> | 1 <sup>1</sup> / <sub>2</sub> | 1'88                      | 2'25          | 0'30       |
|                  | 15 <sup>1</sup> / <sub>2</sub> | 10 <sup>1</sup> / <sub>2</sub> | 13                             | 2'58                      | 2'10          | 2'17       | 15                             | 18                             | 1 <sup>3</sup> / <sub>4</sub> | 2'14                      | 2'57          | 0'29       |
| British Queen    | 19 <sup>1</sup> / <sub>4</sub> | 19                             | 19 <sup>1</sup> / <sub>4</sub> | 3'21                      | 2'71          | 2'75       | 10 <sup>1</sup> / <sub>4</sub> | 13 <sup>3</sup> / <sub>4</sub> | 7 <sup>3</sup> / <sub>4</sub> | 1'46                      | 1'96          | 1'11       |
|                  | 19 <sup>3</sup> / <sub>4</sub> | 18 <sup>3</sup> / <sub>4</sub> | 19 <sup>1</sup> / <sub>4</sub> | 2'82                      | 2'68          | 2'75       | 16 <sup>3</sup> / <sub>8</sub> | 11 <sup>1</sup> / <sub>2</sub> | 8 <sup>1</sup> / <sub>4</sub> | 2'36                      | 1'92          | 1'18       |
|                  | 26 <sup>3</sup> / <sub>4</sub> | 25                             | 23 <sup>1</sup> / <sub>4</sub> | 3'82                      | 4'17          | 3'32       | 11 <sup>3</sup> / <sub>4</sub> | 15 <sup>3</sup> / <sub>4</sub> | 3 <sup>3</sup> / <sub>4</sub> | 1'96                      | 2'63          | 0'75       |
| Duke of York ... | 7 <sup>3</sup> / <sub>4</sub>  | 11                             | 11 <sup>1</sup> / <sub>4</sub> | 1'11                      | 1'57          | 1'61       | 9                              | 8                              | 1                             | 1'80                      | 1'60          | 0'33       |
|                  | 8 <sup>3</sup> / <sub>4</sub>  | 14                             | 14                             | 1'25                      | 2'00          | 2'00       | 9 <sup>1</sup> / <sub>4</sub>  | 6 <sup>1</sup> / <sub>2</sub>  | 2 <sup>1</sup> / <sub>2</sub> | 1'54                      | 0'93          | 0'63       |
|                  | 13 <sup>1</sup> / <sub>2</sub> | 10 <sup>1</sup> / <sub>2</sub> | 14 <sup>3</sup> / <sub>4</sub> | 2'25                      | 1'75          | 2'46       | 6 <sup>1</sup> / <sub>4</sub>  | 10 <sup>1</sup> / <sub>4</sub> | 1 <sup>1</sup> / <sub>4</sub> | 1'04                      | 1'46          | 0'42       |
| Epicure ...      | 16 <sup>1</sup> / <sub>2</sub> | 14 <sup>3</sup> / <sub>4</sub> | 10                             | 2'36                      | 2'11          | 1'43       | 12 <sup>1</sup> / <sub>4</sub> | 9 <sup>3</sup> / <sub>4</sub>  | 1 <sup>3</sup> / <sub>4</sub> | 2'04                      | 1'63          | 0'35       |
|                  | 11 <sup>1</sup> / <sub>2</sub> | 13 <sup>1</sup> / <sub>2</sub> | 13 <sup>1</sup> / <sub>2</sub> | 1'64                      | 1'93          | 2'25       | 13 <sup>1</sup> / <sub>2</sub> | 13 <sup>3</sup> / <sub>4</sub> | 3 <sup>3</sup> / <sub>4</sub> | 1'93                      | 1'96          | 0'54       |
|                  | 16                             | 18 <sup>1</sup> / <sub>2</sub> | 19 <sup>1</sup> / <sub>2</sub> | 2'29                      | 2'64          | 2'79       | 11 <sup>1</sup> / <sub>4</sub> | 12 <sup>1</sup> / <sub>4</sub> | 1                             | 1'68                      | 1'79          | 0'25       |
| Great Scott ...  | 13 <sup>1</sup> / <sub>2</sub> | 19 <sup>1</sup> / <sub>2</sub> | 21 <sup>1</sup> / <sub>2</sub> | 3'38                      | 2'79          | 3'07       | 21 <sup>1</sup> / <sub>2</sub> | 17 <sup>1</sup> / <sub>4</sub> | 4 <sup>1</sup> / <sub>2</sub> | 3'07                      | 2'46          | 0'75       |
|                  | 21 <sup>1</sup> / <sub>2</sub> | 24 <sup>1</sup> / <sub>4</sub> | 19 <sup>1</sup> / <sub>2</sub> | 3'07                      | 3'54          | 3'25       | 11 <sup>3</sup> / <sub>4</sub> | 12 <sup>3</sup> / <sub>4</sub> | 1 <sup>1</sup> / <sub>4</sub> | 1'96                      | 2'13          | 0'42       |
|                  | 27 <sup>1</sup> / <sub>4</sub> | 29                             | 24 <sup>1</sup> / <sub>2</sub> | 3'89                      | 4'14          | 3'50       | 14 <sup>1</sup> / <sub>4</sub> | 13 <sup>1</sup> / <sub>4</sub> | 1                             | 2'38                      | 2'65          | 0'50       |
| Iron Duke ...    | 24                             | 20                             | 21                             | 3'43                      | 3'33          | 3'50       | 16 <sup>3</sup> / <sub>4</sub> | 19 <sup>1</sup> / <sub>4</sub> | 4 <sup>3</sup> / <sub>4</sub> | 2'79                      | 2'75          | 0'68       |
|                  | 21                             | 18 <sup>1</sup> / <sub>2</sub> | 16 <sup>1</sup> / <sub>4</sub> | 3'00                      | 3'08          | 2'32       | 10 <sup>3</sup> / <sub>4</sub> | 20 <sup>1</sup> / <sub>4</sub> | 4                             | 1'79                      | 2'89          | 1'00       |
|                  | 23 <sup>3</sup> / <sub>4</sub> | 23 <sup>1</sup> / <sub>4</sub> | 23                             | 3'96                      | 3'32          | 3'29       | 20                             | 13                             | 4 <sup>1</sup> / <sub>2</sub> | 2'86                      | 3'25          | 0'64       |
| K. of K. ...     | 26                             | 23 <sup>3</sup> / <sub>4</sub> | 20 <sup>1</sup> / <sub>4</sub> | 3'71                      | 3'39          | 2'89       | 21 <sup>1</sup> / <sub>2</sub> | 18 <sup>1</sup> / <sub>2</sub> | 7 <sup>1</sup> / <sub>4</sub> | 3'07                      | 3'08          | 1'04       |
|                  | 28 <sup>1</sup> / <sub>2</sub> | 27 <sup>3</sup> / <sub>4</sub> | 21                             | 4'07                      | 4'63          | 4'20       | —                              | —                              | —                             | —                         | —             | —          |
|                  | 29 <sup>1</sup> / <sub>2</sub> | 29 <sup>1</sup> / <sub>2</sub> | 30 <sup>1</sup> / <sub>4</sub> | 4'21                      | 4'21          | 4'32       | 19 <sup>1</sup> / <sub>4</sub> | 15 <sup>1</sup> / <sub>2</sub> | 5 <sup>3</sup> / <sub>4</sub> | 2'75                      | 3'10          | 0'82       |
| Kerr's Pink ...  | 18 <sup>1</sup> / <sub>4</sub> | 20 <sup>3</sup> / <sub>4</sub> | 12                             | 3'04                      | 2'96          | 2'00       | 18 <sup>3</sup> / <sub>4</sub> | 20 <sup>3</sup> / <sub>4</sub> | 6 <sup>1</sup> / <sub>2</sub> | 2'68                      | 2'96          | 0'93       |
|                  | 25                             | 22 <sup>1</sup> / <sub>4</sub> | 15                             | 3'57                      | 3'18          | 3'00       | 11 <sup>1</sup> / <sub>2</sub> | 19 <sup>1</sup> / <sub>2</sub> | 3 <sup>1</sup> / <sub>4</sub> | 1'92                      | 3'90          | 0'46       |
|                  | 26 <sup>3</sup> / <sub>4</sub> | 30 <sup>1</sup> / <sub>4</sub> | 15 <sup>1</sup> / <sub>2</sub> | 3'82                      | 4'32          | 3'88       | 24 <sup>1</sup> / <sub>4</sub> | 22                             | 5                             | 3'46                      | 3'14          | 0'71       |
| Nithsdale ...    | 18                             | 14 <sup>1</sup> / <sub>4</sub> | 30 <sup>3</sup> / <sub>4</sub> | 2'57                      | 2'04          | 1'96       | 9                              | 9 <sup>1</sup> / <sub>2</sub>  | 1 <sup>1</sup> / <sub>4</sub> | 1'29                      | 1'58          | 0'42       |
|                  | 15 <sup>1</sup> / <sub>2</sub> | 20 <sup>1</sup> / <sub>2</sub> | 20                             | 2'21                      | 2'93          | 2'86       | 12                             | 15                             | 1                             | 2'00                      | 2'14          | 0'33       |
|                  | 21 <sup>1</sup> / <sub>2</sub> | 26                             | 14 <sup>1</sup> / <sub>4</sub> | 3'58                      | 3'71          | 3'56       | 14 <sup>1</sup> / <sub>4</sub> | 14 <sup>1</sup> / <sub>2</sub> | 2 <sup>1</sup> / <sub>2</sub> | 2'04                      | 2'07          | 0'63       |
| Tin Perfection   | 20 <sup>3</sup> / <sub>4</sub> | 17                             | 12 <sup>3</sup> / <sub>4</sub> | 3'46                      | 2'83          | 2'55       | 20                             | 19 <sup>1</sup> / <sub>2</sub> | 7 <sup>1</sup> / <sub>2</sub> | 2'86                      | 2'79          | 1'07       |
|                  | 21 <sup>3</sup> / <sub>4</sub> | 20 <sup>3</sup> / <sub>4</sub> | 23 <sup>3</sup> / <sub>4</sub> | 3'11                      | 2'96          | 3'39       | 18 <sup>3</sup> / <sub>4</sub> | 17 <sup>3</sup> / <sub>4</sub> | 8 <sup>3</sup> / <sub>4</sub> | 2'68                      | 2'54          | 1'21       |
|                  | 17 <sup>1</sup> / <sub>2</sub> | 19 <sup>1</sup> / <sub>4</sub> | 23 <sup>1</sup> / <sub>2</sub> | 2'50                      | 3'21          | 3'36       | 21 <sup>3</sup> / <sub>4</sub> | 17                             | 7                             | 3'11                      | 2'83          | 1'00       |
| Up-to-Date ...   | 25 <sup>3</sup> / <sub>4</sub> | 23 <sup>3</sup> / <sub>4</sub> | 25 <sup>1</sup> / <sub>4</sub> | 4'29                      | 3'39          | 4'21       | 26 <sup>3</sup> / <sub>4</sub> | 20 <sup>1</sup> / <sub>4</sub> | 9 <sup>1</sup> / <sub>4</sub> | 3'82                      | 2'89          | 1'32       |
|                  | 20 <sup>1</sup> / <sub>2</sub> | 25 <sup>3</sup> / <sub>4</sub> | 25 <sup>1</sup> / <sub>2</sub> | 2'93                      | 3'68          | 3'64       | 20 <sup>1</sup> / <sub>2</sub> | 14 <sup>1</sup> / <sub>4</sub> | 8 <sup>1</sup> / <sub>4</sub> | 2'93                      | 2'38          | 1'18       |
|                  | 29 <sup>3</sup> / <sub>4</sub> | 28 <sup>1</sup> / <sub>2</sub> | 28 <sup>3</sup> / <sub>4</sub> | 4'25                      | 4'07          | 4'11       | 21 <sup>3</sup> / <sub>4</sub> | 21                             | 11                            | 3'11                      | 3'00          | 1'83       |

NOTE.—7 Plants were set in each Row.

Manures were:—Dunged Series: Basal Row: Super. 4 cwt.; Sulphate of Ammonia 1<sup>1</sup>/<sub>2</sub> cwt.;  
 Dung 15 tons per Acre.  
 Sulphate Row: Basal Manuring; Sulphate of Potash 184 lb. per Acre.  
 Chloride Row: Basal Manuring; Muriate of Potash 147 lb. per Acre.  
 Undunged Series: Basal Row: Super. 6 cwt.; Sulphate of Ammonia 2 cwt. per Acre.  
 Sulphate Row: Basal Manuring; Sulphate of Potash 244 lb. per Acre.  
 Chloride Row: Basal Manuring; Muriate of Potash 197 lb. per Acre.



Potatoes. Great Harpenden Field, 1922.  
Comparison of Varieties.

|   | Ajax. | Arran Comrade. | British Queen. | Duke of York. | Epicure. | Great Scott. | Iron Duke. | K. of K. | Kerr's Pink. | Nithsdale. | Tin Perfection. | Up-to-Date |
|---|-------|----------------|----------------|---------------|----------|--------------|------------|----------|--------------|------------|-----------------|------------|
|   | lb.   | lb.            | lb.            | lb.           | lb.      | lb.          | lb.        | lb.      | lb.          | lb.        | lb.             | lb.        |
| Average weight of Potatoes lifted per row | 16.21 | 10.54          | 16.08          | 8.86          | 11.88    | 16.58        | 16.89      | 21.62    | 17.63        | 13.49      | 17.49           | 21.47      |
| Average weight per plant ...              | 2.70  | 1.90           | 2.43           | 1.50          | 1.81     | 2.79         | 2.67       | 3.28     | 2.73         | 2.23       | 2.62            | 3.17       |

Comparison of Manurial Treatment.

|   | Dunged Series. |               |            | Undunged Series. |               |            |
|---|----------------|---------------|------------|------------------|---------------|------------|
|   | Sulphate Row.  | Chloride Row. | Basal Row. | Sulphate Row.    | Chloride Row. | Basal Row. |
|   | lb.            | lb.           | lb.        | lb.              | lb.           | lb.        |
| Average weight of Potatoes lifted per row | 20.12          | 19.82         | 18.62      | 15.17            | 15.41         | 4.40       |
| Average weight per plant ...              | 3.08           | 3.03          | 2.94       | 2.36             | 2.37          | 0.80       |

PROFESSOR BLACKMAN'S  
ELECTRO CULTURE EXPERIMENTS.

Clover. Great Knott Field, 1921.

| Plots.          |     |     |     |     |     |     |     |     |     | Yield per Acre |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|
| Electro-Culture | ... | ... | ... | ... | ... | ... | ... | ... | ... | cwt.           |
| Control         | ... | ... | ... | ... | ... | ... | ... | ... | ... | 42.0           |
|                 |     |     |     |     |     |     |     |     |     | 41.2           |

Cereal Crops.

| Plots. | Dressed Grain.  |                  | Offal Grain per Acre. | Straw per Acre. |              | Proportion of Total Grain to 100 of Total Straw. |
|--------|-----------------|------------------|-----------------------|-----------------|--------------|--|
|        | Yield per Acre. | Weight per Bush. |                       | Straw.          | Total Straw. |  |
|        | Bushels.        | lb.              | lb.                   | lb.             | cwt.         |  |

Oats (Grey Winter). Foster's Field, 1921.

|                 |     |     |      |      |     |      |      |       |
|-----------------|-----|-----|------|------|-----|------|------|-------|
| Electro-Culture | ... | ... | 40.7 | 43.4 | 241 | 1543 | 19.3 | 93.0  |
| Control I.      | ... | ... | 33.1 | 42.0 | 298 | 1220 | 14.9 | 101.4 |
| Control II.     | ... | ... | 31.6 | 42.2 | 234 | 1102 | 14.6 | 96.0  |

Wheat (Red Standard). Foster's Field, 1922.

|                     |     |     |      |      |     |      |      |      |
|---------------------|-----|-----|------|------|-----|------|------|------|
| Electro-Culture     | ... | ... | 15.4 | 61.4 | 234 | 1229 | 15.8 | 66.9 |
| Control, North East | ... | ... | 16.5 | 60.6 | 249 | 1272 | 15.5 | 72.1 |
| Control, South East | ... | ... | 17.2 | 61.8 | 231 | 1196 | 14.2 | 81.5 |

Barley (Plumage Archer). Great Knott Field, 1922.

|                 |     |     |      |      |     |      |      |      |
|-----------------|-----|-----|------|------|-----|------|------|------|
| Electro-Culture | ... | ... | 34.1 | 49.1 | 273 | 1808 | 22.2 | 78.2 |
| Control         | ... | ... | 32.4 | 48.6 | 244 | 1840 | 22.3 | 72.8 |

### BORON EXPERIMENT

Barley (Plumage Archer). Little Hoos, 1922.

| Treatment of Plots.            | Dressed Grain.           |          |          |                        |          |          | Offal Grain per Acre. |          |          | Straw per Acre. |          |          |                   |          |          | Proportion of Total Grain to 100 of Total Straw. |          |          |
|--------------------------------|--------------------------|----------|----------|------------------------|----------|----------|-----------------------|----------|----------|-----------------|----------|----------|-------------------|----------|----------|--|----------|----------|
|                                | Yield per Acre. Bushels. |          |          | Weight per Bushel. lb. |          |          |                       |          |          | Straw. lb.      |          |          | Total Straw. cwt. |          |          |  |          |          |
|                                | Series 1                 | Series 2 | Series 3 | Series 1               | Series 2 | Series 3 | Series 1              | Series 2 | Series 3 | Series 1        | Series 2 | Series 3 | Series 1          | Series 2 | Series 3 | Series 1   | Series 2 | Series 3 |
| Boric Acid 20 lb. per acre ... | 37.9                     | 40.8     | 30.8     | 51.1                   | 51.8     | 52.0     | 191                   | 138      | 84       | 2025            | 1875     | 1850     | 24.6              | 23.2     | 22.1     | 77.4   | 86.5     | 68.2     |
| Boric Acid 8 lb. per acre ...  | 36.5                     | 40.0     | 41.3     | 51.5                   | 52.0     | 52.0     | 169                   | 113      | 150      | 1825            | 1800     | 1850     | 23.4              | 22.8     | 23.0     | 78.1   | 86.0     | 89.2     |
| Control ...                    | 34.9                     | 40.8     | 38.6     | 50.9                   | 52.4     | 52.5     | 156                   | 134      | 119      | 1725            | 1775     | 1850     | 21.4              | 22.5     | 23.4     | 80.5   | 89.9     | 81.7     |

All plots received a basal dressing of Superphosphate 3 cwt.; Sulphate of Potash 1 cwt.; Sulphate of Ammonia 1½ cwt.

### EXPERIMENTS WITH NITROGENOUS MANURES

Potatoes (Arran Chief). Sawpit Field, 1921.

| Manure per Acre.   | Yield per Acre. |           |           |
|--|-----------------|-----------|-----------|
|  | 1st Plot.       | 2nd Plot. | 3rd Plot. |
|  | Tons.           | Tons.     | Tons.     |
| 4 cwt. Super., 1 cwt. Sulphate Potash, 2 cwt. Sulphate Ammonia | 2.27            | 2.24      | 2.43      |
| 4 cwt. Super., 1 cwt. Sulphate Potash ... ..                   | 1.84            | 2.13      | 1.99      |
| 4 cwt. Super., 1 cwt. Sulphate Potash, 193 lb. Muriate Ammonia | 2.18            | 2.67      | 2.61      |
| Control ... ..   | 1.33            | 1.41      | 1.49      |
| 4 cwt. Super., 1 cwt. Sulphate Potash, 102 lb. Urea ... ..     | *1.72           | 2.69      | 2.57      |

\* The bouts on this plot were badly broken down due to extra hoeing on account of growth of Wheatbind.

Barley (Plumage Archer). Stackyard Field, 1921.

| Manures per Acre.                | Dressed Grain.           |        |        |                        |        |        | Offal Grain per Acre. |        |        | Straw per Acre. |        |        |                   |        |        | Proportion of Total Grain to 100 of Total Straw. |        |        |
|----------------------------------|--------------------------|--------|--------|------------------------|--------|--------|-----------------------|--------|--------|-----------------|--------|--------|-------------------|--------|--------|--|--------|--------|
|                                  | Yield per Acre. Bushels. |        |        | Weight per Bushel. lb. |        |        |                       |        |        | Straw. lb.      |        |        | Total Straw. cwt. |        |        |  |        |        |
|                                  | Plot 1                   | Plot 2 | Plot 3 | Plot 1                 | Plot 2 | Plot 3 | Plot 1                | Plot 2 | Plot 3 | Plot 1          | Plot 2 | Plot 3 | Plot 1            | Plot 2 | Plot 3 | Plot 1   | Plot 2 | Plot 3 |
| 1½ cwt. Super., 145 lb. M./Amm.  | 40.4                     | 34.8   | —      | 54.7                   | 55.5   | —      | 197                   | 135    | —      | 2000            | 2000   | —      | 23.5              | 25.9   | —      | 91   | 71     | —      |
| 1½ cwt. Super....                | 27.2                     | 27.1   | 24.1   | 56.0                   | 55.5   | 55.0   | 153                   | 103    | 109    | 1325            | 1475   | 1350   | 17.1              | 18.4   | 17.2   | 88   | 78     | 75     |
| 1½ cwt. Super., 1½ cwt. S./Amm.  | 38.3                     | 36.5   | 30.2   | 55.7                   | 55.2   | 54.2   | 144                   | 175    | 194    | 1900            | 2050   | 1825   | 23.6              | 24.9   | 22.1   | 87   | 79     | 74     |
| 1½ cwt. Super., 76½ lb. Urea ... | 38.2                     | 34.6   | 29.2   | 55.0                   | 54.5   | 54.2   | 150                   | 150    | 169    | 2000            | 2025   | 1775   | 24.2              | 24.7   | 21.3   | 83   | 74     | 73     |
| No Manure ...                    | 27.5                     | 24.7   | —      | 55.0                   | 54.5   | —      | 103                   | 97     | —      | 1400            | 1450   | —      | 17.3              | 17.9   | —      | 83   | 72     | —      |

### MALTING BARLEY EXPERIMENT.

Plumage Archer. Long Hoos Field, 1922.

| Manures per Acre.  | Dressed Grain.  |                    | Offal Grain per Acre. | Straw per Acre |             | Proportion of Total Grain to 100 of Total Straw. |
|--|-----------------|--------------------|-----------------------|----------------|-------------|--|
|  | Yield per Acre. | Weight per Bushel. |                       | Straw.         | Total Straw |  |
|  | Bushels         | lb.                | lb.                   | lb.            | cwt.        |  |
| Super. 3 cwt., Sul./Pot. 1½ cwt., Sul./Amm. 1 cwt. ... ..  | 36·0            | 50·8               | 163                   | 1213           | 17·1        | 104  |
| Super. 3 cwt., Sul./Pot. 1½ cwt., Mur./Amm. 93 lb. ... ..  | 35·7            | 51·0               | 169                   | 1388           | 18·5        | 96   |
| Super. 3 cwt., Sul./Pot. 1½ cwt. ...                       | 31·0            | 50·8               | 188                   | 1263           | 17·0        | 93   |
| Super. 3 cwt., Sul./Amm. 1 cwt. ...                        | 30·0            | 50·3               | 175                   | 975            | 14·1        | 107  |
| Super. 3 cwt., Sul./Amm. 1 cwt., Mur./Pot. 1½ cwt.* ... .. | 34·8            | 50·0               | 206                   | not            | reco-       | ded.   |
| Sul./Amm. 1 cwt., Sul./Pot. 1½ cwt.                        | 36·8            | 50·3               | 191                   | 1438           | 19·9        | 92   |
| No Manure ... ..   | 28·6            | 50·5               | 184                   | 1125           | 15·5        | 94   |

\*Muriate of Potash applied on April 3rd. Other Manures on March 24th.

### MISCELLANEOUS EXPERIMENTS.

Clover. Hoos Field, 1921 and 1922.

(Formerly Barley after Alsike).

| Plot. | Manures per Acre.                                      | Yield per Acre. |       |
|-------|--|-----------------|-------|
|       |  | 1921.           | 1922. |
|       |  | cwt.            | cwt.  |
| 1     | Slag 8 cwt., Lime 10 cwt. ... ..                       | 45·3            | 17·4  |
| 2     | Farmyard Manure 14 tons, Super. 5 cwt., Lime 10 cwt.   | 53·8            | 17·9  |
| 3     | Lime 10 cwt. ... ..                                    | 35·9            | 17·6  |
| 4     | Super. 5 cwt., Lime 10 cwt., Sulph. Potash 1½ cwt. ... | 40·6            | 19·6  |
| 5     | Super. 5 cwt., Lime 10 cwt. ... ..                     | 45·3            | 13·0  |
| 6     | Lime 10 cwt. ... ..                                    | 41·1            | 13·0  |
| 7     | Farmyard Manure 14 tons, Lime 10 cwt. ... ..           | 54·5            | 16·7  |
| 8     | Slag 8 cwt. ... ..                                     | 42·9            | 11·4  |
| 9     | Farmyard Manure 14 tons, Super. 5 cwt. ... ..          | 50·5            | 17·2  |
| 10    | <i>Control</i> ... ..                                  | 36·8            | 14·1  |
| 11    | Super. 5 cwt., Sulph. Potash 1½ cwt. ... ..            | 45·1            | 20·3  |
| 12    | Super. 5 cwt. ... ..                                   | 49·1            | 14·3  |
| 13    | <i>Control</i> ... ..                                  | 36·6            | 9·4   |
| 14    | Farmyard Manure 14 tons ... ..                         | 46·2            | 10·7  |
| 15    | Horse Dung 14 tons, Lime 10 cwt. ... ..                | 35·3            | 6·7   |
| 16    | <i>Control</i> ... ..                                  | 35·5            | 7·1   |
| 17    | Horse Dung 14 tons ... ..                              | 54·9            | 11·6  |
| 18    | Super. 5 cwt. ... ..                                   | 39·7            | 6·3   |
| 19    | Cattle Dung 14 tons, Lime 10 cwt. ... ..               | 50·5            | 13·0  |
| 20    | <i>Control</i> ... ..                                  | 33·3            | 3·6   |
| 21    | Cattle Dung 14 tons ... ..                             | 41·5            | 5·8   |

Manures applied and Clover sown in 1920.



Barley. Hoos Field. Leguminous Strips, 1921, 1922.

| Description of Plot. | Manurial Treatment            | 1921.           |                    |                       |                 |                       |  | 1922.           |                    |                       |                 |                       |  |
|----------------------|-------------------------------|-----------------|--------------------|-----------------------|-----------------|-----------------------|--|-----------------|--------------------|-----------------------|-----------------|-----------------------|--|
|                      |                               | Dressed Grain.  |                    | Offal Grain per Acre. | Straw per Acre. | Total Straw per Acre. | Proportion of Total Grain to 100 of Total Straw. | Dressed Grain.  |                    | Offal Grain per Acre. | Straw per Acre. | Total Straw per Acre. | Proportion of Total Grain to 100 of Total Straw. |
|                      |                               | Yield per Acre. | Weight per Bushel. |                       |                 |                       |  | Yield per Acre. | Weight per Bushel. |                       |                 |                       |  |
|                      |                               | Bush.           | lb.                | lb.                   | lb.             | cwt.                  | Bush.  | lb.             | lb.                | lb.                   | cwt.            |                       |  |
| After Lucerne ...    | Sulphate Amm. 1½ cwt. ...     | 14.8            | 56.5               | 134                   | 688             | 10.2                  | 85.5   | 27.2            | 51.4               | 188                   | 1921            | 22.7                  | 62.3   |
|                      | S. Amm. 1½ cwt. Super. 3 cwt. | 37.8            | 57.3               | 154                   | 1310            | 18.0                  | 115.4  | 41.2            | 52.0               | 161                   | 1884            | 22.2                  | 92.6   |
| After Red Clover     | Sulphate Amm. 1½ cwt. ...     | 12.1            | 56.4               | 122                   | 555             | 8.4                   | 85.2   | 25.2            | 50.6               | 134                   | 1556            | 18.1                  | 69.3   |
|                      | S. Amm. 1½ cwt. Super. 3 cwt. | 31.1            | 57.4               | 134                   | 1037            | 15.7                  | 109.0  | 35.4            | 51.5               | 109                   | 1579            | 18.0                  | 96.0   |
| After Alsike ...     | Sulphate Amm. 1½ cwt. ...     | 11.0            | 56.3               | 100                   | 557             | 8.3                   | 77.6   | 25.9            | 50.9               | 125                   | 1481            | 17.2                  | 74.8   |
|                      | S. Amm. 1½ cwt. Super. 3 cwt. | 28.7            | 57.8               | 137                   | 871             | 15.2                  | 105.4  | 33.6            | 52.0               | 92                    | 1421            | 16.5                  | 99.6   |

Leguminous crops ploughed in November, 1911.

