

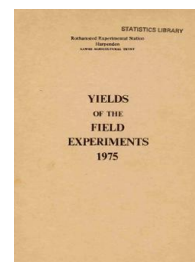
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## Yields of the Field Experiments 1975

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### 75/ W/RN/16 - Effects of Deep Pk - Wheat, Sugar Beet, Barley, Potatoes

#### Rothamsted Research

Rothamsted Research (1976) 75/ W/RN/16 - *Effects of Deep Pk - Wheat, Sugar Beet, Barley, Potatoes* ; Yields Of The Field Experiments 1975, pp 126 - 131 - **DOI:**  
**<https://doi.org/10.23637/ERADOC-1-141>**

75/W/RN/16

# EFFECTS OF DRESSING PK

Object: To study the effects of subsoiling, and of incorporating a large dressing of PK in either the subsoil or topsoil, on yields of a rotation of crops - Woburn East Furlong.

Sponsor: J. McEwen.

The second year, winter wheat, sugar beet, spring barley, potatoes.

For previous year see 74/W/RN/16.

Design: 4 series of 3 randomised blocks of 4 plots.

Whole plot dimensions: 4.27 x 2.59.

Treatments: Extra PK and subsoil treatment (applied autumn 1973): PK SUB

| Extra PK             | Subsoil (25-50 cm) treatment |         |
|----------------------|------------------------------|---------|
| None                 | None                         | - -     |
| None                 | Subsoiled                    | - SUB   |
| To topsoil (0-25 cm) | None                         | PKTOP - |
| To subsoil           | Subsoiled                    | - PKSUB |

- NOTES: (1) The rates of P and K were 1930 kg P<sub>2</sub>O<sub>5</sub>, as superphosphate and 460 kg K<sub>2</sub>O as muriate of potash. These quantities, applied to subsoil, were chosen to equalize available P and K in top and subsoil.
- (2) Subsoiling was done by spade, after removing the topsoil which was then replaced. PK to subsoil was worked in by forking.
- (3) PK to topsoil was applied half before ploughing in autumn half soon after on the plough furrow.

## Standard applications:

- Series I: Sugar beet: Manures: Magnesian limestone at 5 tonnes. (0:14:28) at 750 kg. N at 160 kg as 'Nitro-Chalk'. Insecticide: Pirimicarb ('Aphox' at 0.28 kg in 340 l).
- Series II: Barley: Manures: (20:14:14) at 380 kg combine drilled. Weedkiller: Ioxynil at 0.63 kg plus mecoprop at 1.9 kg in 340 l.
- Series III: Potatoes: Manures: (13:13:20) at 1860 kg. Weedkiller: Linuron at 1.0 kg plus paraquat at 0.42 kg ion in 340 l. Insecticide: Pirimicarb ('Aphox' at 0.28 kg in 340 l).
- Series IV: Winter wheat: Manures: (0:20:20) at 290 kg combine drilled. N at 100 kg as 'Nitro-Chalk'. Weedkiller: Ioxynil at 0.63 kg plus mecoprop at 1.9 kg in 340 l. Fungicide: Carbendazim at 0.22 kg plus tridemorph at 0.26 kg in 170 l.

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Seed: Sugar beet: Klein E, sown at 5.6 kg.  
Barley: Julia, dressed with ethirimol, sown at 160 kg.  
Potatoes: Pentland Crown.  
Winter wheat: Cappelle, sown at 200 kg.

Cultivations, etc.:-

Series I: Sugar beet: Magnesian limestone applied: 7 Nov, 1974.  
Ploughed: 29 Nov. PK applied: 22 Apr, 1975. Spring-tine cultivated, N applied: 25 Apr. Spring-tine cultivated with crumbler, seed sown: 29 Apr. Hand weeded three times: 22 May, 13 June, 21 June. Singled by hand: 29 May. Insecticide applied twice: 5 June, 20 June. Hand lifted: 12 Nov.  
Series II: Barley: Ploughed: 29 Nov, 1974. Spring-tine cultivated: 25 Feb, 1975. Seed sown: 28 Feb. Rolled: 26 Apr. Weedkiller applied: 22 May. Hand harvested: 12 Aug.  
Series III: Potatoes: Ploughed: 29 Nov, 1974. NPK applied: 21 Apr, 1975. Spring-tine cultivated: 25 Apr. Rotary harrowed, potatoes planted: 1 May. Weedkiller applied: 22 May. Insecticide applied: 20 June. Hand lifted: 22 Oct.  
Series IV: Winter wheat: Deep-tine cultivated: 6 Nov, 1974. Spring-tine cultivated: 7 Nov. Seed sown: 8 Nov. N applied: 18 Apr, 1975. Weedkiller applied: 22 May. Fungicide applied: 20 June. Hand harvested: 7 Aug.

NOTE: Samples of wheat and barley grain, potato tubers and sugar beet roots and tops were taken for analysis of N, P, K, Na, Ca and Mg.

POTATOES

TOTAL TUBERS TONNES/HECTARE

\*\*\* TABLES OF MEANS \*\*\*

|        |      |       |         |         |      |
|--------|------|-------|---------|---------|------|
| PK SUB | - -  | - SUB | PKTOP - | - PKSUB | MEAN |
|        | 33.8 | 36.4  | 32.7    | 41.4    | 36.1 |

\*\*\*\*\* STANDARD ERRORS OF DIFFERENCES OF MEANS \*\*\*\*\*

|       |        |
|-------|--------|
| TABLE | PK SUB |
| ----- | -----  |
| SED   | 3.39   |

\*\*\*\*\* STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION \*\*\*\*\*

|          |    |      |      |
|----------|----|------|------|
| STRATUM  | DF | SE   | CV%  |
| BLOCK.WP | 6  | 4.76 | 13.2 |

PLOT AREA HARVESTED 0.00043

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SUGAR BEET

ROOTS WASHED TONNES/HECTARE

\*\*\* TABLES OF MEANS \*\*\*

|        |      |       |         |         |      |
|--------|------|-------|---------|---------|------|
| PK SUB | - -  | - SUB | PKTOP - | - PKSUB | MEAN |
|        | 14.5 | 17.1  | 15.2    | 17.3    | 16.0 |

\*\*\*\*\* STANDARD ERRORS OF DIFFERENCES OF MEANS \*\*\*\*\*

|       |        |
|-------|--------|
| TABLE | PK SUB |
| ----- | -----  |
| SED   | 1.00   |

\*\*\*\*\* STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION \*\*\*\*\*

|          |    |      |     |
|----------|----|------|-----|
| STRATUM  | DF | SE   | CV% |
| BLOCK.WP | 6  | 1.22 | 7.6 |

SUGAR PERCENTAGE

\*\*\* TABLES OF MEANS \*\*\*

|        |      |       |         |         |      |
|--------|------|-------|---------|---------|------|
| PK SUB | - -  | - SUB | PKTOP - | - PKSUB | MEAN |
|        | 15.6 | 15.5  | 15.5    | 15.7    | 15.6 |

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SUGAR BEET

TOTAL SUGAR TONNES/HECTARE

\*\*\* TABLES OF MEANS \*\*\*

|        |      |       |         |         |      |
|--------|------|-------|---------|---------|------|
| PK SUB | - -  | - SUB | PKTOP - | - PKSUB | MEAN |
|        | 2.26 | 2.66  | 2.36    | 2.72    | 2.50 |

\*\*\*\*\* STANDARD ERRORS OF DIFFERENCES OF MEANS \*\*\*\*\*

|       |        |
|-------|--------|
| TABLE | PK SUB |
| ----- | -----  |
| SED   | 0.180  |

\*\*\*\*\* STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION \*\*\*\*\*

|          |    |       |     |
|----------|----|-------|-----|
| STRATUM  | DF | SE    | CV% |
| BLOCK.WP | 6  | 0.220 | 8.8 |

TOPS TONNES/HECTARE

\*\*\* TABLES OF MEANS \*\*\*

|        |      |       |         |         |      |
|--------|------|-------|---------|---------|------|
| PK SUB | - -  | - SUB | PKTOP - | - PKSUB | MEAN |
|        | 10.0 | 12.4  | 9.6     | 11.4    | 10.9 |

\*\*\*\*\* STANDARD ERRORS OF DIFFERENCES OF MEANS \*\*\*\*\*

|       |        |
|-------|--------|
| TABLE | PK SUB |
| ----- | -----  |
| SED   | 0.75   |

\*\*\*\*\* STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION \*\*\*\*\*

|          |    |      |     |
|----------|----|------|-----|
| STRATUM  | DF | SE   | CV% |
| BLOCK.WP | 6  | 0.92 | 8.5 |

PLOT AREA HARVESTED 0.00049

75/W/RN/16

BARLEY

GRAIN TONNES/HECTARE

\*\*\* TABLES OF MEANS \*\*\*

|        |      |       |         |         |      |
|--------|------|-------|---------|---------|------|
| PK SUB | - -  | - SUP | PKTOP - | - PKSUB | MEAN |
|        | 2.30 | 3.79  | 1.90    | 4.69    | 3.17 |

\*\*\*\*\* STANDARD ERRORS OF DIFFERENCES OF MEANS \*\*\*\*\*

|       |        |
|-------|--------|
| TABLE | PK SUB |
| ----- | -----  |
| SED   | 0.240  |

\*\*\*\*\* STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION \*\*\*\*\*

|          |    |       |     |
|----------|----|-------|-----|
| STRATUM  | DF | SE    | CV% |
| BLOCK.WP | 6  | 0.293 | 9.3 |

GRAIN MEAN DM% 88.0

STRAW TONNES/HECTARE

\*\*\* TABLES OF MEANS \*\*\*

|        |      |       |         |         |      |
|--------|------|-------|---------|---------|------|
| PK SUB | - -  | - SUB | PKTOP - | - PKSUB | MEAN |
|        | 3.54 | 4.40  | 3.30    | 5.29    | 4.13 |

STRAW MEAN DM% 82.3

PLOT AREA HARVESTED 0.00030

75/W/RN/16

WINTER WHEAT

GRAIN TONNES/HECTARE

\*\*\* TABLES OF MEANS \*\*\*

|        |      |       |         |         |      |
|--------|------|-------|---------|---------|------|
| PK SUB | - -  | - SUB | PKTOP - | - PKSUB | MEAN |
|        | 4.23 | 5.65  | 4.31    | 5.49    | 4.92 |

\*\*\*\*\* STANDARD ERRORS OF DIFFERENCES OF MEANS \*\*\*\*\*

|       |        |
|-------|--------|
| TABLE | PK SUB |
| ----- | -----  |
| SED   | 0.333  |

\*\*\*\*\* STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION \*\*\*\*\*

|          |    |       |     |
|----------|----|-------|-----|
| STRATUM  | DF | SE    | CV% |
| BLOCK.WP | 6  | 0.408 | 8.3 |

GRAIN MEAN DM% 87.3

STRAW TONNES/HECTARE

\*\*\* TABLES OF MEANS \*\*\*

|        |      |       |         |         |      |
|--------|------|-------|---------|---------|------|
| PK SUB | - -  | - SUB | PKTOP - | - PKSUB | MEAN |
|        | 7.28 | 8.39  | 6.61    | 8.72    | 7.75 |

STRAW MEAN DM% 64.8

PLOT AREA HARVESTED 0.00030