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# Yields of the Field Experiments 1986

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## 86/R/CS/319 Nitrophosphates - S. Barley

### Rothamsted Research

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86/R/CS/319

NITROPHOSPHATES

Object: To study the residual effects of different amounts of water soluble phosphate in nitrophosphate fertilizers on growth and P uptake of s. barley following potatoes - Highfield V.

Sponsor: K.H.G. Copestake.

Design: 3 randomised blocks of 13 plots.

The second year, s. barley.

For previous year see 85/R/P/5.

Whole plot dimensions: 3.0 x 21.0.

Treatments: All combinations of:-

1. P SOL            Phosphate water solubility (%):  
    59            Compound fertilizer (16.4 : 14.2 : 17.5) with 59% of the P2O5 water soluble  
    73            Compound fertilizer (15.9 : 16.2 : 15.3) with 73% of the P2O5 water soluble  
    95            Compound fertilizer (15.0 : 15.0 : 15.0) with 95% of the P2O5 water soluble

2. P RATE(85)    Rate of phosphate (kg P2O5) applied in 1985:

    50  
    100  
    150  
    200

plus one extra treatment:

    EXTRA

    NONE            No phosphate fertilizer

NOTE: The compound fertilizers used to apply the phosphate treatments in 1985 supplied differing amounts of the total 231 kg N and 242 kg K2O required on all plots. Additional amounts of N (as 'Nitrotop' 33.5% N) and K2O (as muriate of potash 60% K2O) were applied as needed to achieve this total. Combinations of P SOL 59 with P RATE 150 and 200 each received a total of 247 kg K2O in error.

Basal applications: Manures: 'Nitrotop' (33.5% N) at 360 kg. Muriate of potash at 120 kg. Weedkillers: Clopyralid at 0.05 kg, bromoxynil octanoate at 0.24 kg and mecoprop at 2.1 kg applied with the fungicide in 200 l. Fungicide: Tridemorph at 0.52 kg.

Seed: Klaxon, sown at 160 kg.

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Cultivations, etc.:- Heavy spring-tine cultivated twice: 12 Nov, 1985.  
 N and K applied, spring-tine cultivated, rotary harrowed, seed sown:  
 30 Apr, 1986. Weedkillers with fungicide applied: 2 June. Combine  
 harvested: 6 Sept.

NOTE: Emergence and stem counts were made. Green crop and sheaf samples  
 were taken for fresh and dry weight measurements. Components of  
 yield were measured. P contents of crop and soil were determined  
 after harvest.

GRAIN TONNES/HECTARE

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

| P RATE(85) | 50   | 100  | 150  | 200  | MEAN |
|------------|------|------|------|------|------|
| P SOL      |      |      |      |      |      |
| 59         | 7.70 | 8.00 | 7.46 | 7.24 | 7.60 |
| 73         | 7.18 | 7.19 | 7.18 | 7.72 | 7.32 |
| 95         | 6.57 | 7.02 | 7.11 | 7.60 | 7.07 |
| MEAN       | 7.15 | 7.40 | 7.25 | 7.52 | 7.33 |
| NONE       | 6.60 |      |      |      |      |
| GRAND MEAN | 7.27 |      |      |      |      |

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

| TABLE | P SOL | P RATE(85) | P SOL<br>P RATE(85)<br>& NONE |
|-------|-------|------------|-------------------------------|
| ----- | ----- | -----      | -----                         |
| SED   | 0.205 | 0.237      | 0.411                         |

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

| STRATUM             | DF      | SE    | CV% |
|---------------------|---------|-------|-----|
| BLOCK.WP            | 24      | 0.503 | 6.9 |
| GRAIN MEAN DM%      | 84.6    |       |     |
| PLOT AREA HARVESTED | 0.00224 |       |     |