

Thank you for using eradoc, a platform to publish electronic copies of the Rothamsted Documents. Your requested document has been scanned from original documents. If you find this document is not readable, or you suspect there are some problems, please let us know and we will correct that.



ROTHAMSTED  
RESEARCH

## Yields of the Field Experiments 1977

[Full Table of Content](#)



### 77/W/RN/16 Effects of Deep P K - Wheat, Sugar Beet, Barley, Potatoes

#### Rothamsted Research

Rothamsted Research (1978) *77/W/RN/16 Effects of Deep P K - Wheat, Sugar Beet, Barley, Potatoes* ; Yields Of The Field Experiments 1977, pp 97 - 100 - DOI:

<https://doi.org/10.23637/ERADOC-1-29>

77/W/RN/16

EFFECTS OF DEEP PK

Object: To study the residual 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 Butt Furlong.

Sponsor: J. McEwen.

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

For previous years see 74-76/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
- SUB	None	Subsoiled
PKTOP -	To topsoil (0-25 cm)	None
- PKSUB	To subsoil	Subsoiled

- NOTES: (1) The rates of P and K were 1930 kg P205, as superphosphate and 460 kg K20 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 II: Winter wheat: Manures: (0:20:20) at 290 kg combine drilled. N at 100 kg as 'Nitro-Chalk'.

Series III: Sugar beet: Manures: Magnesian limestone at 5 tonnes. (0:14:28) at 750 kg. N at 170 kg as 'Nitro-Chalk'.

Series IV: Barley: Manures: (20:14:14) at 380 kg combine drilled. Weedkillers: Ioxynil at 0.63 kg plus mecoprop at 1.9 kg in 340 l.

Series I: Potatoes: Manures: (13:13:20) at 1860 kg. Weedkillers: Linuron at 1.1 kg plus paraquat at 0.42 kg ion in 340 l.

Seed: Winter wheat: Cappelle, sown at 210 kg.

Sugar beet: Klein E, sown at 5.6 kg.

Barley: Julia, dressed with ethirimol, sown at 160 kg.

Potatoes: Pentland Crown.

Cultivations, etc.:-

Series II: Winter wheat: Ploughed, spring-tine cultivated with crumbler attached, seed sown: 9 Nov, 1976. N applied: 12 Apr, 1977. Hand weeded twice: 31 May, 4 June. Hand harvested: 30 Aug.

Series III: Sugar beet: Magnesian limestone applied: 6 Sept, 1976. Ploughed: 9 Nov. PK and N applied: 13 Apr, 1977. Spring-tine cultivated with crumbler attached, seed sown: 15 Apr. Hand weeded: 31 May. Singled: 4 June. Hand lifted: 11 Nov.

Series IV: Barley: Ploughed: 23 Nov, 1976. Spring-tine cultivated with crumbler attached: 8 Mar, 1977. Seed sown: 9 Mar. Weedkillers applied: 18 May. Hand harvested: 23 Aug.

77/W/RN/16

Series I: Potatoes: Ploughed: 9 Nov, 1976. NPK applied: 5 Apr, 1977.  
 Rotary cultivated: 14 Apr. Potatoes planted: 15 Apr. Weedkillers  
 applied: 11 May. Hand lifted: 10 Oct.

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.

WINTER WHEAT

GRAIN TONNES/HECTARE

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

PK SUB	- -	- SUB	PKTOP -	- PKSUB	MEAN
	4.03	4.51	3.52	4.95	4.25

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

TABLE	PK SUB
-----	-----
SED	0.367

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.450	10.6

GRAIN MEAN DM% 83.1

STRAW TONNES/HECTARE

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

PK SUB	- -	- SUB	PKTOP -	- PKSUB	MEAN
	6.36	6.51	5.94	6.73	6.38

STRAW MEAN DM% 65.9

PLOT AREA HARVESTED 0.00033

SUGAR BEET

ROOTS (WASHED) TONNES/HECTARE

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

PK SUB	- -	- SUB	PKTOP -	- PKSUB	MEAN
	35.8	42.0	38.2	41.8	39.4

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

TABLE	PK SUB
-----	-----
SED	3.30

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	4.04	10.3

77/W/RN/16

SUGAR BEET

SUGAR PERCENTAGE

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

PK SUB	- -	- SUB	PKTOP -	- PKSUB	MEAN
	16.9	17.0	16.8	16.7	16.8

TOTAL SUGAR TONNES/HECTARE

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

PK SUB	- -	- SUB	PKTOP -	- PKSUB	MEAN
	6.03	7.13	6.42	7.01	6.65

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

TABLE	PK SUB
-----	-----
SED	0.691

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.847	12.7

TOPS TONNES/HECTARE

PK SUB	- -	- SUB	PKTOP -	- PKSUB	MEAN
	25.8	32.1	25.4	30.8	28.5

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

TABLE	PK SUB
-----	-----
SED	3.41

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	4.18	14.6

PLOT AREA HARVESTED 0.00041



77/W/RN/16

BARLEY

GRAIN TONNES/HECTARE

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

PK SUB	- -	- SUB	PKTOP -	- PKSUB	MEAN
	2.90	3.53	3.20	4.34	3.49

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

TABLE	PK SUB
-----	-----
SED	0.338

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.414	11.9
GRAIN MEAN DM%	78.9		

STRAW TONNES/HECTARE

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

PK SUB	- -	- SUB	PKTOP -	- PKSUB	MEAN
	4.08	3.69	4.17	4.10	4.01

STRAW MEAN DM% 67.1

PLOT AREA HARVESTED 0.00033

POTATOES

TOTAL TUBERS TONNES/HECTARE

PK SUB	- -	- SUB	PKTOP -	- PKSUB	MEAN
	37.8	40.7	45.7	43.1	41.8

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

TABLE	PK SUB
-----	-----
SED	2.17

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	2.65	6.3
PLOT AREA HARVESTED	0.00043		