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# Yields of the Field Experiments 1983

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## 83/W/RN/16 Effects of Deep P K - S. Barley

### Rothamsted Research

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83/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 and nutrient uptakes of s. barley - Woburn Butt Furlong.

Sponsors: J. McEwen, A.E. Johnston.

The tenth year, s. barley.

For previous years see 74-82/W/RN/16.

Design: 4 series of 3 randomised blocks of 4 plots with PREVCROP on series.

Whole plot dimensions: 4.27 x 2.59.

Treatments: All combinations of:-

Series

1. PREVCROP Previous crop in 1982, all s. barley 1978 to 1981:

FALLOW  
OATS  
BARLEY

Plots

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

	Extra PK	Subsoil (25-50 cm) treatment
- - -	None	None
- - S	None	Subsoiled
P K T	To topsoil (0-25 cm)	None
P K S	To subsoil	Subsoiled

- 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.
- (4) Each series followed the rotation w. wheat, sugar beet, s. barley, potatoes until 1977. Cropping since 1978 was as above, one series in s. barley 1982 was fallow in 1983.

Basal applications:

S. barley: Manures: (20:10:10) at 590 kg. N at 80 kg as 'Nitro-Chalk'.  
Weedkillers: Dicamba with mecoprop and MCPA (as 'Herrisol' at 4.9 l) in 280 l. Fungicide: Tridemorph at 0.53 kg in 280 l.

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Seed: S. barley: Triumph, dressed with ethirimol, sown at 160 kg.

Cultivations, etc.:-

S. barley: Ploughed: 5 Oct, 1982. NPK applied: 8 Mar, 1983. Spring-tine cultivated with crumbler attached, seed sown: 9 Mar. Weedkillers applied: 23 May. N applied: 1 June. Fungicide applied: 17 June. Harvested by hand: 12 Aug.  
Fallow: Ploughed: 5 Oct, 1982. Spring-tine cultivated with crumbler attached: 9 Mar, 1983. Rotary cultivated: 22 June, 3 Aug.

GRAIN TONNES/HECTARE

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

PK SUB PREVCROP	- - -	- - S	P K T	P K S	MEAN
FALLOW	5.78	5.50	6.09	6.10	5.87
OATS	4.92	4.05	4.26	4.88	4.53
BARLEY	4.09	4.23	4.73	4.22	4.32
MEAN	4.93	4.60	5.03	5.06	4.90

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

TABLE	PK SUB	PREVCROP* PK SUB
SED	0.279	0.482

\*WITHIN THE SAME LEVEL OF PREVCROP ONLY

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

STRATUM	DF	SE	CV%
SERIES.BLOCK	6	0.415	8.5
SERIES.BLOCK.WP	18	0.591	12.0

GRAIN MEAN DM% 87.4

STRAW TONNES/HECTARE

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

PK SUB PREVCROP	- - -	- - S	P K T	P K S	MEAN
FALLOW	4.49	4.06	4.50	4.40	4.37
OATS	3.41	2.79	3.31	3.45	3.24
BARLEY	2.82	3.11	3.41	3.16	3.12
MEAN	3.57	3.32	3.74	3.67	3.58

STRAW MEAN DM% 86.6

PLOT AREA HARVESTED 0.00063