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Yields of the Field Experiments 1984

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84/W/RN/16 Effects of Deep P K - S. Barley, S. Oats

Rothamsted Research

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84/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 and s. oats.

For previous years see 74-83/W/RN/16.

Design: 4 series (for crops) each of 3 randomised blocks of 4 plots.

Whole plot dimensions: 4.27 x 2.59.

Treatments:

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 P₂O₅, as superphosphate and 460 kg K₂O 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) One series was fallow in 1984.

Basal applications:

All series: Weedkiller: Glyphosate at 1.4 kg in 250 l.
Series II and IV: S. barley: Manures: (20:10:10) at 750 kg.
Weedkillers: Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 3.5 l) in 280 l. Fungicide: Tridemorph at 0.52 kg in 250 l.
Series III: S. oats: Manures: (20:10:10) at 750 kg. Weedkillers: Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 3.5 l) in 280 l.

Seed: S. barley: Triumph, dressed with triadimenol and fuberidazole, sown at 160 kg.
S. oats: Trafalgar, sown at 200 kg.

Cultivations, etc.:-

Series I: Fallow: Glyphosate applied: 7 Sept, 1983. Ploughed: 20 Oct. Spring-tine cultivated: 14 Mar, 1984. Spring-tine cultivated with crumbler attached: 16 Mar, 16 May. Rotary cultivated: 25 July.
Series II and IV: S. barley: Glyphosate applied: 7 Sept, 1983. Ploughed: 20 Oct. NPK applied: 14 Mar, 1984. Spring-tine cultivated, spring-tine cultivated with crumbler attached, seed

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sown: 16 Mar. 'Brittox' applied: 16 May. Fungicide applied:
15 June. Harvested by hand: 13 Aug.

Series III: S. oats after s. barley: Glyphosate applied: 7 Sept, 1983.
Ploughed: 20 Oct. NPK applied: 14 Mar, 1984. Spring-tine
cultivated, spring-tine cultivated with crumbler attached, seed
sown: 16 Mar. 'Brittox' applied: 16 May. Harvested by hand:
13 Aug.

SERIES II BARLEY AFTER FALLOW

GRAIN TONNES/HECTARE

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

PK SUB	- - -	- - S	P K T	P K S	MEAN
	4.32	4.47	4.35	4.62	4.44

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

TABLE	PK SUB
-----	-----
SED	0.131

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.161	3.6

GRAIN MEAN DM% 84.7

STRAW TONNES/HECTARE

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

PK SUB	- - -	- - S	P K T	P K S	MEAN
	3.45	3.61	3.48	3.46	3.50

STRAW MEAN DM% 86.4

SUB PLOT AREA HARVESTED 0.00071

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SERIES IV BARLEY AFTER BARLEY

GRAIN TONNES/HECTARE

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

PK SUB	- - -	- - S	P K T	P K S	MEAN
	4.60	4.48	4.37	4.62	4.52

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

TABLE	PK SUB
-----	-----
SED	0.288

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.353	7.8

GRAIN MEAN DM% 84.1

STRAW TONNES/HECTARE

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

PK SUB	- - -	- - S	P K T	P K S	MEAN
	4.16	4.05	4.01	4.09	4.08

STRAW MEAN DM% 85.1

SUB PLOT AREA HARVESTED 0.00071

84/W/RN/16

SERIES III OATS

GRAIN TONNES/HECTARE

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

PK SUB	- - -	- - S	P K T	P K S	MEAN
	3.22	3.08	3.44	3.24	3.25

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

TABLE	PK SUB
-----	-----
SED	0.278

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.340	10.5

GRAIN MEAN DM% 83.4

STRAW TONNES/HECTARE

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

PK SUB	- - -	- - S	P K T	P K S	MEAN
	3.03	3.04	2.57	3.18	2.96

STRAW MEAN DM% 79.2

SUB PLOT AREA HARVESTED 0.00071