ROTHAMSTED RESEARCH

Yields of the Field Experiments 1981

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81/W/RN/16 Effects of Deep Pk - S. Barley

Rothamsted Research

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81/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.

Sponsor: J. McEwen.

The eighth year, s. barley.

For previous years see 74-80/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 cropping (1974-1977) (all in barley 1978, 1979 & 1980):

P B B B	W. wheat, sugar beet, s. barley, potatoes
W B B B	Sugar beet, s. barley, potatoes, w. wheat
S B B B	S. barley, potatoes, w. wheat, sugar beet
B B B B	Potatoes, w. wheat, sugar beet, s. 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 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.

Basal applications: Manures: (20:10:10) at 540 kg. Weedkillers: Patches of perennial grass weeds were treated with glyphosate (concentration 0.07 l in 10 l of water) by knapsack sprayer. Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 3.5 l) with the fungicide in 280 l. Fungicide: Ethirimol (as 'Milgo E' at 0.7 l).

Seed: Georgie, dressed with ethirimol, sown at 160 kg.

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Cultivations, etc.:- Glyphosate applied: 17 Sept, 1980. Ploughed: 21 Nov. NPK applied: 20 Feb, 1981. Spring-tine cultivated with crumbler attached, seed sown: 27 Feb. 'Brittox' with the fungicide applied: 6 May. Hand harvested: 29 Aug.

GRAIN TONNES/HECTARE

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

PK SUB / PREVCROP	- - -	- - S	P K T	P K S	MEAN
P B B B	3.96	4.06	4.01	3.92	3.99
W B B B	4.24	4.24	3.84	4.40	4.18
S B B B	2.97	2.42	3.23	3.08	2.92
B B B B	3.75	3.67	4.60	3.73	3.94
MEAN	3.73	3.60	3.92	3.78	3.76

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

TABLE	PK SUB	PREVCROP* PK SUB
SED	0.163	0.327

* ONLY WHEN COMPARING MEANS WITH SAME LEVELS OF PREVCROP

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.141	3.8
BLOCK.WP.SP	24	0.400	10.6

GRAIN MEAN DM% 85.3

STRAW TONNES/HECTARE

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

PK SUB / PREVCROP	- - -	- - S	P K T	P K S	MEAN
P B B B	3.12	3.28	3.07	3.43	3.23
W B B B	3.29	3.41	2.77	3.32	3.20
S B B B	2.40	2.54	2.81	2.69	2.61
B B B B	2.79	3.00	3.38	3.14	3.08
MEAN	2.90	3.06	3.01	3.15	3.03

STRAW MEAN DM% 86.4

SUB PLOT AREA HARVESTED 0.00063

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