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

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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 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.

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	- - -	- - S	P K T	P K S	MEAN
PREVCROP					
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
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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	- - -	- - S	P K T	P K S	MEAN
PREVCROP					
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