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80/W/RN/16 Effects of Deep Pk

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80/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 seventh year, s. barley.

For previous years see 74-79/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):

P B B	W. wheat, sugar beet, s. barley, potatoes
W B B	Sugar beet, s. barley, potatoes, w. wheat
S B B	S. barley, potatoes, w. wheat, sugar beet
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: All Series: Magnesian limestone at 2.5 t; (20:10:10) at 540 kg, combine drilled. Weedkillers: Mecoprop, bromoxynil and ioxynil ('Brittox' 3.5 l in 280 l). Fungicide: Tridemorph ('Beacon' 0.7 l in 280 l).

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

80/W/RN/16

Cultivations, etc.:— Magnesian limestone applied: 31 Oct, 1979. Ploughed: 2 Nov. Spring-tine cultivated with crumbler attached, seed sown: 29 Feb, 1980. Weedkiller applied: 25 Apr. Fungicide applied: 13 May. Harvested by hand: 7 Aug.

NOTE: N, P, K, Na, Ca and Mg contents of grain were measured.

GRAIN TONNES/HECTARE

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

PK SUB	- - -	- - S	P K T	P K S	MEAN
PREVCROP					
P B B	5.99	6.59	5.78	6.34	6.18
W B B	5.43	5.97	5.31	5.90	5.65
S B B	5.67	6.27	5.45	6.40	5.95
B B B	5.13	5.57	5.69	5.96	5.59
MEAN	5.55	6.10	5.56	6.15	5.84

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

TABLE	PK SUB	PREVCROP* PK SUB
SED	0.173	0.346

* ONLY WHEN COMPARING MEANS WITH SAME LEVELS OF PREVCROP

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.186	3.2
BLOCK.WP.SP	24	0.423	7.2

GRAIN MEAN DM% 80.7

STRAW TONNES/HECTARE

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

PK SUB	- - -	- - S	P K T	P K S	MEAN
PREVCROP					
P B B	4.36	4.40	4.07	4.58	4.35
W B B	3.90	4.25	3.54	4.35	4.01
S B B	4.27	4.19	4.03	4.19	4.17
B B B	3.87	3.81	4.65	4.28	4.15
MEAN	4.10	4.16	4.07	4.35	4.17

STRAW MEAN DM% 58.8

SUB PLOT AREA HARVESTED 0.00065