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79/W/RN/16 Effects of Deep P K - Barley

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79/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 barley - Woburn Butt Furlong.

Sponsor: J. McEwen.

The sixth year, spring barley.

For previous years see 74-78/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):

P B	Wheat, sugar beet, barley, potatoes
W B	Sugar beet, barley, potatoes, wheat
S B	Barley, potatoes, wheat, sugar beet
B B	Potatoes, wheat, sugar beet, barley

Plots

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

	Extra PK	Subsoil (25-50 cm) treatment
- -	None	None
- SUB	None	Subsoiled
PKTOP -	To topsoil (0-25 cm)	None
- PKSUB	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: (20:14:14) at 450 kg combine drilled. Weedkillers: Glyphosate at 1.7 kg in 280 l, Mecoprop, bromoxynil and ioxynil ('Brittox' 3.5 kg in 250 l).

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

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Cultivations, etc.:— Glyphosate applied: 14 Sept, 1978. Ploughed: 17 Nov.
Spring-tine cultivated, with crumbler attached, twice: 16 Apr, 1979,
20 Apr. Seed sown: 23 Apr. 'Brittox' applied: 1 June. Combine harvested:
28 Aug.

NOTE: Samples of grain were analysed for contents of N, P, K, Na, Ca and Mg.

GRAIN TONNES/HECTARE

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

PK SUB PREVCROP	- -	- SUB	PKTOP -	- PKSUB	MEAN
P B	4.17	4.98	4.24	4.74	4.53
W B	3.04	3.34	3.07	3.44	3.22
S B	4.67	5.01	4.35	5.28	4.83
B B	2.82	3.21	2.80	3.11	2.99
MEAN	3.68	4.13	3.62	4.14	3.89

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

TABLE	PK SUB	PREVCROP* PK SUB
SED	0.150	0.300

* ONLY WHEN COMPARING MEANS WITH SAME LEVELS OF PREVCROP

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.278	7.1
BLOCK.WP.SP	24	0.368	9.5

GRAIN MEAN DM% 81.8

STRAW TONNES/HECTARE

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

PK SUB PREVCROP	- -	- SUB	PKTOP -	- PKSUB	MEAN
P B	3.33	4.45	3.82	4.21	3.95
W B	3.48	3.58	3.25	3.87	3.55
S B	4.68	4.76	4.01	5.06	4.63
B B	2.95	3.35	2.86	3.23	3.10
MEAN	3.61	4.04	3.49	4.09	3.81

STRAW MEAN DM% 79.1

SUB PLOT AREA HARVESTED 0.00065