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

Rothamsted Research

Rothamsted Research (1979) *78/W/RN/16 Effects of Deep P K - Barley* ; Yields Of The Field Experiments 1978, pp 111 - 112 - DOI: <https://doi.org/10.23637/ERADOC-1-30>

78/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 fifth year, spring barley.

For previous years see 74-77/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):
POTATOES	Wheat, sugar beet, barley, potatoes
WHEAT	Sugar beet, barley, potatoes, wheat
S BEET	Barley, potatoes, wheat, sugar beet
BARLEY	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 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.

Standard applications:

Manures: PREVCROP WHEAT series only: Magnesian limestone at 5 tonnes. All series: (20:14:14) at 450 kg combine drilled. Weedkillers: Mecoprop, bromoxynil and ioxynil ('Brittox' at 2.5 kg in 340 l).

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

78/W/RN/16

Cultivations, etc.:— Magnesian limestone applied: 24 Oct, 1977. Ploughed:
21 Nov. Spring-tine cultivated with crumbler attached, seed sown:
9 Mar, 1978. Weedkiller applied: 15 May. Hand harvested: 16 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
POTATOES	5.75	7.06	6.82	7.43	6.77
WHEAT	4.68	4.78	4.97	5.82	5.06
S BEET	6.62	7.11	6.56	7.38	6.92
BARLEY	4.07	3.65	4.12	4.42	4.07
MEAN	5.28	5.65	5.62	6.26	5.70

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

TABLE	PK SUB	PREVCROP* PK SUB
SED	0.239	0.478

* ONLY WHEN COMPARING MEANS WITH SAME LEVELS OF PREVCROP

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.348	6.1
BLOCK.WP.SP	24	0.585	10.3

GRAIN MEAN DM% 82.9

STRAW TONNES/HECTARE

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

PK SUB PREVCROP	- -	- SUB	PKTOP -	- PKSUB	MEAN
POTATOES	4.34	5.31	4.72	5.49	4.96
WHEAT	3.94	3.98	3.56	4.59	4.02
S BEET	4.71	5.80	4.47	5.51	5.12
BARLEY	3.23	3.11	3.26	3.79	3.35
MEAN	4.06	4.55	4.00	4.85	4.36

STRAW MEAN DM% 63.7

SUB PLOT AREA HARVESTED 0.00065