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81/R/CS/246 Effects of Subsoiling & Deep Pk - S. Barley

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81/R/CS/246

EFFECTS OF SUBSOILING & DEEP PK

Object: To study the effects of thorough subsoil disturbance and the incorporation of P & K into the subsoil on soil and crop parameters and on yield of s. barley - Gt. Field I.

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The second year, s. barley.

For previous year see 80/R/CS/246.

Whole plot dimensions: 4.27 x 17.7.

Design: 2 replicates of 28 plots, fully randomised.

Treatments: All combinations of:-

1. PK SUB Extra PK and subsoil treatment (applied autumn/winter 1979/80 only):

- - -	None, mouldboard ploughed (duplicated)
- - S	Subsoiled
P - S	P to subsoil
- K S	K to subsoil
P K S	PK to subsoil
P K T	PK to topsoil, mouldboard ploughed

2. N Nitrogen fertiliser (kg N) to seedbed (cumulative to 1980):

0
40
80
120

NOTES: (1) Rates of P and K were 1000 kg P_2O_5 , as superphosphate, 500 kg K_2O , as muriate of potash.

(2) Subsoiling was done with the Wye double-digger which turns a furrow with a conventional plough share, to a depth of 23 cm, and at the same time rotary cultivates the bottom of the adjacent furrow to a further depth of 15 cm. When applying P and K this was distributed ahead of the rotary cultivator.

(3) The topsoil PK dressing was equally divided before and after ploughing.

(4) All treatments were mouldboard ploughed for 1981.

Basal applications: Manures: (0:20:20) at 310 kg, combine drilled.

Weedkillers: Glyphosate at 1.5 l in 250 l. Dicamba with mecoprop and MCPA (as 'Banlene Plus' at 5.0 l) in 250 l applied with the tridemorph

Fungicides: Tridemorph at 0.53 l. Prochloraz at 0.4 l in 250 l applied with maneb at 1.2 kg and zineb at 0.13 kg.

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

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Cultivations, etc.: - Glyphosate applied: 26 Sept, 1980. Ploughed: 28 Nov.
 Spring-tine cultivated: 7 Apr, 1981. Test N applied, rotary harrowed,
 seed sown: 10 Apr. Weedkillers, and tridemorph applied: 30 May.
 Prochloraz, maneb and zineb applied: 1 July. Combine harvested:
 1 Sept.

GRAIN TONNES/HECTARE

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

	N	0	40	80	120	MEAN
PK SUB						
- - -		2.29	3.89	4.97	6.21	4.34
- - S		2.07	3.33	5.23	5.98	4.15
P - S		3.02	3.02	5.37	6.80	4.55
- K S		2.40	4.27	5.40	6.30	4.59
P K S		2.85	4.57	5.60	5.89	4.73
P K T		3.61	4.22	5.41	6.41	4.91
MEAN		2.65	3.88	5.28	6.26	4.52

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

TABLE	PK SUB	N	PK SUB	
			N	
SED	0.334		0.668	MIN REP
	0.289	0.252	0.578	MAX-MIN
			0.472	MAX REP

PK SUB

MAX REP - - -

MAX-MIN - - - V ANY OF REMAINDER

MIN REP ANY OF REMAINDER

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

STRATUM	DF	SE	CV%
WP	32	0.668	14.8

GRAIN MEAN DM% 84.5

STRAW TONNES/HECTARE

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

	N	0	40	80	120	MEAN
PK SUB						
- - -		1.10	2.02	2.56	3.93	2.40
- - S		1.00	1.70	2.78	4.12	2.40
P - S		1.23	1.24	2.91	4.16	2.39
- K S		0.98	2.44	2.85	3.85	2.53
P K S		1.46	2.28	2.94	3.88	2.64
P K T		1.60	1.84	3.07	4.43	2.74
MEAN		1.21	1.94	2.81	4.04	2.50

STRAW MEAN DM% 90.6 PLOT AREA HARVESTED 0.00217