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82/R/CS/246 Effects of Subsoiling and Deep Pk - S. Barley

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82/R/CS/246

EFFECTS OF SUBSOILING AND DEEP PK

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

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The third year, s. barley.

For previous years see 80-81/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 fertilizer (kg N) to seedbed (cumulative to 1980 and 1981):

0
40
80
120

- NOTES: (1) Rates of P and K were 1000 kg P₂O₅, as superphosphate, 500 kg K₂O, 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 and 1982.

Basal applications: Manures: (0:20:20) at 310 kg, combine drilled.
Weedkillers: Dicamba with mecoprop and MCPA (as 'Banlene Plus' at 5.0 l) in 250 l applied with the tridemorph. Fungicide: Tridemorph at 0.53 kg.

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

Cultivations, etc.: - Ploughed: 4 Jan, 1982. Spring-tine cultivated: 30 Mar. Test N applied: 5 Apr. Rotary harrowed, seed sown: 13 Apr. Weedkillers and fungicide applied: 21 May. Combine harvested: 16 Aug.

82/R/CS/246

GRAIN TONNES/HECTARE

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

	N	0	40	80	120	MEAN
PK SUB						
- - -		2.96	4.39	5.61	6.67	4.91
- - S		3.18	4.39	6.16	6.58	5.08
P - S		3.39	3.78	5.84	6.78	4.95
- K S		2.36	5.04	5.75	6.60	4.94
P K S		3.88	5.27	6.04	6.62	5.45
P K T		4.16	4.91	6.00	6.49	5.39
MEAN		3.27	4.60	5.86	6.63	5.09

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

TABLE	PK SUB	N	PK SUB	
			N	

SED	0.353		0.707	MIN REP
	0.306	0.267	0.612	MAX-MIN
			0.500	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	0.707	13.9

GRAIN MEAN DM% 81.6

STRAW TONNES/HECTARE

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

	N	0	40	80	120	MEAN
PK SUB						
- - -		1.07	1.86	2.59	4.54	2.52
- - S		1.33	1.84	3.13	4.22	2.63
P - S		1.21	1.58	2.90	4.02	2.43
- K S		0.96	2.40	3.33	4.69	2.84
P K S		1.58	2.87	4.13	4.40	3.25
P K T		1.31	2.12	3.86	5.18	3.12
MEAN		1.22	2.08	3.22	4.51	2.76

STRAW MEAN DM% 82.6

PLOT AREA HARVESTED 0.00217