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85/R/CS/246 Effects of Subsoiling and Deep P K - S. Barley

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85/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 - Great Field I.

Sponsors: J. McEwen, A.E. Johnston, D.P. Yeoman.

The sixth year, s. barley.

For previous years see 80-84/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) as 'Nitro-Chalk' (27.5% N) (cumulative to previous years):
 - 0
 - 40
 - 80
 - 120

- NOTES: (1) Rates of P and K were 1000 kg P205, as superphosphate, 500 kg K2O, as muriate of potash.
- (2) Subsoiling was done with 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 to 1985.

Basal applications: Manures: (0:24:24) at 260 kg. Weedkillers: Clopyralid at 0.05 kg and bromoxynil octanoate at 0.24 kg with mecoprop (as 'CMPP' at 3.0 l) applied with the fungicide in 200 l. Fungicide: Tridemorph at 0.52 kg.

Seed: Triumph, dressed triadimenol and fuberidazole sown at 160 kg.

Cultivations, etc.: - Ploughed: 13 Nov, 1984. PK applied, spring-tine cultivated, N treatments applied, spring-tine cultivated again, seed sown: 19 Mar, 1985. Weedkillers and fungicide applied: 10 May. Combine harvested: 22 Aug.

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GRAIN TONNES/HECTARE

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

	N	0	40	80	120	MEAN
PK SUB						
- - -		3.72	5.74	7.64	7.38	6.12
- - S		3.41	6.35	7.54	8.26	6.39
P - S		4.16	5.19	7.59	7.95	6.22
- K S		3.49	5.69	7.35	7.97	6.12
P K S		4.39	6.22	7.60	8.13	6.58
P K T		4.56	6.05	7.44	7.96	6.50
MEAN		3.92	5.86	7.54	7.86	6.29

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

TABLE	PK SUB	N	PK SUB	
			N	
SED	0.283		0.567	MIN REP
	0.245	0.214	0.491	MAX-MIN
			0.401	MAX REP

PKSUB
 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	0.567	9.0

GRAIN MEAN DM% 81.3

STRAW TONNES/HECTARE

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

	N	0	40	80	120	MEAN
PK SUB						
- - -		1.38	2.80	4.07	5.06	3.33
- - S		1.10	2.85	4.01	5.20	3.29
P - S		1.67	2.51	4.44	5.26	3.47
- K S		1.13	2.93	4.20	4.51	3.19
P K S		1.74	2.94	4.57	5.80	3.76
P K T		1.63	3.25	4.28	5.57	3.68
MEAN		1.43	2.87	4.23	5.21	3.44

STRAW MEAN DM% 82.1

PLOT AREA HARVESTED 0.00217