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

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86/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 seventh year, s. barley.

For previous years see 80-85/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 'Nitram' (cumulative to previous years):
 - 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 to 1986.

Basal applications: Manures: (0:24:24) at 260 kg. Weedkillers: Clopyralid at 0.07 kg and bromoxynil octanoate at 0.34 kg with mecoprop at 2.5 kg 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: 15 Nov, 1985. Spring-tine cultivated, N treatments applied, PK applied, spring-tine cultivated again: 18 Mar, 1986. Seed sown: 21 Mar. Weedkillers and fungicide applied: 16 May. Combine harvested: 29 Aug.

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GRAIN TONNES/HECTARE

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

	N	0	40	80	120	MEAN
PK SUB						
- - -		2.60	4.40	6.20	7.34	5.13
- - S		2.71	4.52	6.72	7.48	5.36
P - S		2.90	3.91	6.31	7.69	5.20
- K S		2.34	4.82	6.28	7.34	5.20
P K S		2.93	5.13	6.89	7.68	5.66
P K T		3.29	4.77	6.67	7.94	5.67
MEAN		2.77	4.57	6.47	7.55	5.34

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

TABLE	PK SUB	N	PK SUB N	
SED	0.297		0.594	MIN REP
	0.257	0.225	0.515	MAX-MIN
			0.420	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	0.594	11.1

GRAIN MEAN DM% 78.6

PLOT AREA HARVESTED 0.00217