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84/R/CS/216 and 84/W/CS/216 Effects of Subsoiling and Deep P K - S. Barley

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84/R/CS/216 and 84/W/CS/216

EFFECTS OF SUBSOILING & DEEP PK

Object: To study the effects of subsoiling and of incorporating a large dressing of PK in the subsoil on yields and nutrient uptakes of a sequence of crops - Rothamsted (R) Delharding and Woburn (W) Road Piece.

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The seventh year, s. barley.

For previous years see 78-83/R&W/CS/216.

Design: 3 randomised blocks of 6 plots.

Whole plot dimensions: 4.27 x 13.7.

Treatments:

TREATMNT	Machines and incorporation of extra P and K into the subsoil:
000 00	Not subsoiled, no P or K
FO0 FO	Farm standard, unwinged, subsoiler, no P or K, autumn 1977 & autumn 1979
N00 NO	N.C.A.E. winged subsoiler, no P or K, autumn 1977 & autumn 1979
NPK NO	N.C.A.E. winged subsoiler, P and K applied autumn 1977, subsoiled only autumn 1979
W00 00	Wye double digger, no P or K, autumn 1977 only
WPK 00	Wye double digger, P and K applied, autumn 1977 only

- NOTES: (1) The rates of P and K were 1930 kg P_2O_5 , as triple superphosphate and 460 kg K_2O as muriate of potash.
- (2) In autumn 1977 the Farm standard, unwinged, subsoiler was set to work at a depth of 38 cm at intervals of 50 cm Delharding (R) and at a depth of 50 cm at intervals of 70 cm Road Piece (W). In autumn 1979 it was set to work at a depth of 56 cm at intervals of 76 cm Delharding (R) and 142 cm Road Piece (W).
- (3) In autumn 1977 the N.C.A.E. winged subsoiler had a single tine set to work at a depth of 40 cm at intervals of 60 cm on plots not given P and K and at alternate depths of 30 cm and 40 cm spaced 30 cm apart on plots given P and K; fertilizer was applied behind the subsoiling points. In autumn 1979 the winged subsoiler had three tines, the centre tine preceding the others, all set to work at a depth of 40 cm spaced 40 cm apart.
- (4) The Wye double digger turned a furrow with a conventional plough to a depth of 23 cm and at the same time rotary cultivated the bottom of the furrow to a further depth of 15 cm. When applying P & K this was distributed ahead of the rotary cultivator.

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Basal applications:-

Delharding (R): Manures: (20:10:10) at 560 kg. Weedkillers: Paraquat at 0.50 kg in 250 l. 3, 6-dichloropicolinic acid 0.07 kg with bromoxynil octanoate at 0.34 kg and mecoprop at 2.5 kg in 250 l applied with the fungicide. Fungicide: Tridemorph at 0.52 kg.

Road Piece (W): Manures: (20:10:10) at 760 kg. Weedkillers: Glyphosate at 1.4 kg in 250 l. Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 3.5 l) in 250 l applied with the fungicide. Fungicide: Ethirimol at 0.35 kg.

Seed: Both sites: Triumph, dressed with triadimenol plus fuberidazole, sown at 160 kg.

Cultivations, etc.:-

Delharding(R): Paraquat applied: 26 Aug, 1983. Ploughed: 10 Oct. NPK applied: 16 Mar, 1984. Spring-tine cultivated twice, seed sown: 19 Mar. 3, 6-dichloropicolinic acid, bromoxynil octanoate, mecoprop and fungicide applied: 23 May. Combine harvested: 17 Aug.

Road Piece (W): Glyphosate applied: 29 Sept, 1983. Ploughed: 15 Nov. NPK applied, spring-tine cultivated, spring-tine cultivated with crumbler attached, seed sown: 9 Mar, 1984. 'Brittox' and fungicide applied: 15 May. Combine harvested: 15 Aug.

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GRAIN TONNES/HECTARE

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

TREATMNT	000 00	F00 F0	N00 NO	NPK NO	W00 00	WPK 00	MEAN
	5.75	6.36	6.39	6.65	6.21	7.02	6.40

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

TABLE	TREATMNT
-----	-----
SED	0.723

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

STRATUM	DF	SE	CV%
BLOCK.WP	10	0.885	13.8

GRAIN MEAN DM% 83.8

PLOT AREA HARVESTED 0.00260

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GRAIN TONNES/HECTARE

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

TREATMNT	000 00	F00 F0	N00 NO	NPK NO	W00 00	WPK 00	MEAN
	6.95	7.48	7.39	7.61	6.86	7.27	7.26

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

TABLE	TREATMNT
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SED	0.403

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

STRATUM	DF	SE	CV%
BLOCK.WP	10	0.493	6.8

GRAIN MEAN DM% 86.3

PLOT AREA HARVESTED 0.00251