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83/R/CS/216 and 83/W/CS/216 Effects of Subsoiling and Deep P K - S. Barley

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83/R/CS/216 and 83/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 sixth year, s. barley.

For previous years see 78-82/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
FOO FO	Farm standard, unwinged, subsoiler, no P or K, autumn 1977 & autumn 1979
NOO 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
WOO 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 P₂O₅, as triple superphosphate and 460 kg K₂O 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.

83/R/CS/216 and 83/W/CS/216

Basal applications:-

Delharding (R): Manures: Ground chalk at 5.0 t. (20:10:10) at 560 kg. N at 70 kg as 'Nitro-Chalk'. Weedkillers: Dicamba with mecoprop and MCPA (as 'Herrisol' at 5.0 l) in 250 l.

Road Piece (W): Manures: (20:10:10) at 590 kg. N at 60 kg as 'Nitro-Chalk'. Weedkillers: Dicamba with mecoprop and MCPA (as 'Herrisol' at 5.0 l) in 250 l.

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

Cultivations, etc.:-

Delharding(R): Ploughed: 14 Sept, 1982. Chalk applied: 16 Sept. Spring-tine cultivated: 14 Mar, 1983. NPK applied: 15 Mar. Rotary harrowed: 17 Mar. Seed sown: 18 Mar. Weedkillers applied: 25 May. N applied: 26 May. Combine harvested: 8 Aug.

Road Piece (W): Discd: 24 Aug, 1982. Ploughed: 6 Oct. Spring-tine cultivated: 7 Mar, 1983. NPK applied: 8 Mar. Spring-tine cultivated with crumbler attached, seed sown: 9 Mar. Weedkillers applied: 26 May. N applied: 3 June. Combine harvested: 6 Aug.

83/R/CS/216 DELHARDING (R)

GRAIN TONNES/HECTARE

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

TREATMNT	000 00	FOO FO	N00 NO	NPK NO	W00 00	WPK 00	MEAN
	4.41	5.29	4.71	4.70	4.32	5.25	4.78

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

TABLE	TREATMNT
-----	-----
SED	0.423

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

STRATUM	DF	SE	CV%
BLOCK.WP	10	0.518	10.8

GRAIN MEAN DM% 84.8

PLOT AREA HARVESTED 0.00260

83/W/CS/216 ROAD PIECE (W)

GRAIN TONNES/HECTARE

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

TREATMNT	000 00	FOO FO	N00 NO	NPK NO	W00 00	WPK 00	MEAN
	2.80	3.04	2.73	3.19	2.97	2.68	2.90

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

TABLE	TREATMNT
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SED	0.363

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

STRATUM	DF	SE	CV%
BLOCK.WP	10	0.445	15.3

GRAIN MEAN DM% 84.3

PLOT AREA HARVESTED 0.00251