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## Yields of the Field Experiments 1982

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### 82/R/CS/216 and 82/W/CS/216 Effects of Subsoiling & Deep Pk - S. Barley

#### Rothamsted Research

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82/R/CS/216 and 82/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 fifth year, s. barley.

For previous years see 78-81/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  $P_2O_5$ , 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.

Basal applications:-

Delharding (R): Manures: (20:10:10) at 560 kg. Weedkillers: Glyphosate at 1.4 kg in 250 l, dicamba with mecoprop and MCPA (as 'Poly-Farmon' at 5.0 l) in 250 l applied with the fungicide. Fungicide: Tridemorph at 0.53 kg.

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Road Piece (W): Manures: (20:10:10) at 590 kg. Weedkillers: Dicamba with mecoprop and MCPA (as 'Poly-Farmon' at 4.9 l) in 280 l.

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

Cultivations, etc.:-

Delharding (R): Glyphosate applied: 3 Nov, 1981. Ploughed: 27 Nov. Spring-tine cultivated: 3 Apr, 1982. NPK applied, seed sown: 5 Apr. 'Poly-Farmon' and fungicide applied: 18 May. Combine harvested: 13 Aug.

Road Piece (W): Ploughed: 13 Nov, 1981. NPK applied, heavy spring-tine cultivated: 25 Mar, 1982. Spring-tine cultivated with crumbler attached: 26 Mar. Seed sown: 27 Mar. 'Poly-Farmon' applied: 11 May. Combine harvested: 10 Aug.

82/R/CS/216 DELHARDING (R)

GRAIN TONNES/HECTARE

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

TREATMNT	000 00	F00 F0	N00 NO	NPK NO	W00 00	WPK 00	MEAN
	5.02	5.17	5.02	4.71	4.66	6.54	5.19

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

TABLE	TREATMNT
-----	-----
SED	0.568

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

STRATUM	DF	SE	CV%
BLOCK.WP	10	0.695	13.4

GRAIN MEAN DM% 84.3

PLOT AREA HARVESTED 0.00234

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

GRAIN TONNES/HECTARE

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

TREATMNT	000 00	F00 F0	N00 NO	NPK NO	W00 00	WPK 00	MEAN
	5.60	6.18	5.98	5.53	5.41	5.89	5.77

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

TABLE	TREATMNT
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SED	0.327

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

STRATUM	DF	SE	CV%
BLOCK.WP	10	0.401	7.0

GRAIN MEAN DM% 87.3

PLOT AREA HARVESTED 0.00251