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84/R/RN/8 Cultivation/WEEDKILLER - W. Barley

Rothamsted Research

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84/R/RN/8

CULTIVATION/WEEDKILLER

Object: To study the long-term effects of weedkillers and different methods of primary cultivation on a sequence of crops - Great Harpenden I.

Sponsors: R. Moffitt, J.A. Currie.

The 24th year, w. barley.

For previous years see 'Details' 1967 and 1973 and 74-83/R/RN/8.

Design: 2 randomised blocks of 12 plots split into 2.

Whole plot dimensions: 12.8 x 12.2.

Treatments: All combinations of:-

Whole plots

- | | |
|-------------|--------------------------------------|
| 1. CULTIVTN | Primary cultivations annually: |
| PLOUGH | Ploughed: 13 Sept, 1983 |
| ROTA DIG | Cultivated by rotary digger: 14 Sept |
| DEEPTINE | Deep-tine cultivated: 5 Sept |

- | | |
|----------------|-------------------------------|
| 2. SUBSOIL(82) | Subsoiling in September 1982: |
|----------------|-------------------------------|

NONE	None
CNVNTIAL	Conventional vertical tine
PARAPLOW	'Paraplow'

Sub plots

- | | |
|-----------------|--|
| 3. WEEDKLLR(75) | Hormone weedkiller to cereals in the previous rotation, last applied to s. barley 1975 (basal hormone weedkiller to s. wheat 1977, s. barley 1978 to 1980 and w. barley 1981 to 1984): |
|-----------------|--|

NONE
HORMONE

- | | |
|-----------------|---|
| 4. WEEDKLLR(80) | Paraquat weedkiller to preceding cereal stubbles last applied for w. barley in autumn 1980: |
|-----------------|---|

NONE
PARAQUAT

NOTE: The combinations of 3 and 4 are tested on half plots: WEEDKLLR(75) NONE, WEEDKLLR(80) NONE and WEEDKLLR(75) HORMONE, WEEDKLLR(80) PARAQUAT on one block, remaining combinations on the other.

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EXTRA (DD) plus three extra whole plot treatments all with sub plot test 3 above; all given paraquat to preceding cereal stubble, direct drilled 1981, 1982, 1983 and 1984 but differing in subsoiling in September 1982:

NONE None
CNVTIAL Conventional vertical tine
PARAPLOW 'Paraplow'

NOTES: (1) The conventional vertical tine sub soiler had tines 76 cm apart and worked at a depth of about 50 cm.
(2) The 'Paraplow' had rigid tines set at a 45° angle. The tip of each tine was in line with the attachment of an adjacent tine. The tines were 51 cm apart and worked at a depth of about 38 cm.

Basal applications: Manures: (5:14:30) at 340 kg. 'Nitro-Chalk' at 630 kg. Weedkillers: Paraquat at 0.6 kg ion in 250 l. Methabenzthiazuron at 2.4 kg in 250 l. Mecoprop at 2.0 l and cyanazine at 0.30 l in 250 l applied with the fungicides. Fungicides: Prochloraz at 0.40 kg and carbendazim at 0.15 kg.

Seed: Igri, sown at 160 kg.

Cultivations, etc.: Disc direct drilled plots: 15 Sept, 1983. NPK applied: 28 Sept. Paraquat applied: 29 Sept. Seed sown: 30 Sept. Methabenzthiazuron applied: 1 Oct. N applied: 22 Mar, 1984. Mecoprop and cyanazine applied with the fungicides: 12 Apr. Combine harvested: 25 July.

GRAIN TONNES/HECTARE

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

SUBSOIL(82) CULTIVTN	NONE	CNVNTIAL	PARAPLOW	MEAN
PLOUGH	8.91	8.18	8.28	8.46
ROTA DIG	8.61	8.62	8.77	8.67
DEEPTINE	8.99	8.68	8.77	8.81
MEAN	8.84	8.49	8.61	8.64

WEEDKLLR(75) CULTIVTN	NONE	HORMONE	MEAN
PLOUGH	8.50	8.41	8.46
ROTA DIG	8.72	8.62	8.67
DEEPTINE	8.88	8.74	8.81
MEAN	8.70	8.59	8.64

WEEDKLLR(75) SUBSOIL(82)	NONE	HORMONE	MEAN
NONE	9.10	8.57	8.84
CNVNTIAL	8.59	8.39	8.49
PARAPLOW	8.41	8.81	8.61
MEAN	8.70	8.59	8.64

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GRAIN TONNES/HECTARE

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

WEEDKLLR(80)	NONE	PARAQUAT	MEAN
CULTIVTN			
PLOUGH	8.50	8.42	8.46
ROTA DIG	8.54	8.80	8.67
DEEPTINE	8.75	8.88	8.81
MEAN	8.59	8.70	8.64

WEEDKLLR(80)	NONE	PARAQUAT	MEAN
SUBSOIL(82)			
NONE	8.52	9.15	8.84
CNVTIAL	8.62	8.36	8.49
PARAPLOW	8.64	8.57	8.61
MEAN	8.59	8.70	8.64

WEEDKLLR(80)	NONE	PARAQUAT	MEAN
WEEDKLLR(75)			
NONE	8.67	8.73	8.70
HORMONE	8.52	8.66	8.59
MEAN	8.59	8.70	8.64

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

TABLE	CULTIVTN	SUBSOIL(82)	WEEDKLLR(75)	WEEDKLLR(80)
SED	0.185	0.185	0.128	0.128

TABLE	CULTIVTN SUBSOIL(82)	CULTIVTN WEEDKLLR(75)	SUBSOIL(82) WEEDKLLR(75)	CULTIVTN WEEDKLLR(80)
SED	0.321	0.243	0.243	0.243
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
CULTIVTN		0.222		0.222
SUBSOIL(82)			0.222	

TABLE	SUBSOIL(82) WEEDKLLR(80)
SED	0.243
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:	
SUBSOIL(82)	0.222

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

STRATUM	DF	SE	CV%
BLOCK.WP	8	0.321	3.7
BLOCK.WP.SP	8	0.385	4.5

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GRAIN TONNES/HECTARE

EXTRA PLOTS

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

WEEDKLLR(75)	NONE	HORMONE	MEAN
EXTRA DD			
NONE	8.42	8.58	8.50
CNVNTIAL	9.23	8.50	8.86
PARAPLOW	8.95	8.35	8.65
MEAN	8.87	8.47	8.67

GRAIN MEAN DM% 85.3

SUB PLOT AREA HARVESTED 0.00347