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

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83/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 23rd year, w. barley.

For previous years see 'Details' 1967 and 1973 and 74-82/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: 24 Sept, 1982
 ROTA DIG Cultivated by rotary digger: 9 Sept
 DEEPTINE Deep-tine cultivated: 8 Sept

2. SUBSOIL Subsoiling in autumn 1982:
 NONE None
 CNVTIAL Conventional vertical tine on 6 Sept
 PARAPLOW 'Paraplowed' on 6 Sept

Sub plots

3. WEEDKLLR(75) Hormone weedkiller to cereals in the previous rotation, last applied to barley 1975 (basal hormone weedkiller to s. wheat 1977, s. barley 1978 to 1980 and w. barley 1981 to 1983):

 NONE
 HORMONE

4. WEEDKLLR(81) Paraquat weedkiller to preceding cereal stubbles last applied for w. barley 1981:

 NONE
 PARAQUAT

NOTE: The combinations of 3 and 4 are tested on half plots: WEEDKLLR(75) NONE, WEEDKLLR(81) NONE and WEEDKLLR(75) HORMONE, WEEDKLLR(81) PARAQUAT on one block, remaining combinations on the other.

83/R/RN/8

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 and 1983 but differing in subsoiling in autumn 1982:

NONE None
 CNVTIAL Conventional vertical tine on 6 Sept, 1982
 PARAPLOW 'Paraplowed' on 6 Sept

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, combine drilled. 'Nitro-Chalk' at 250 kg followed by 500 kg. Weedkillers: Paraquat at 0.70 kg ion in 250 l followed by 0.84 kg ion in 500 l. Isoproturon at 2.1 kg with dicamba, mecoprop and MCPA (as 'Poly-Farmon CMPP' at 4.2 l) in 250 l applied with the prochloraz. Fungicides: Prochloraz at 0.40 kg. Carbendazim at 0.15 kg with maneb at 1.6 kg and tridemorph at 0.38 kg in 250 l.

Seed: Igri, dressed ethirimol, sown at 160 kg.

Cultivations, etc.:- Paraquat applied: 23 Aug, 1982. Disced: 1 Sept. Paraquat applied: 15 Oct. Spring-tine cultivated: 29 Oct. Seed sown: 30 Oct. Isoproturon, 'Poly-Farmon CMPP' and prochloraz applied: 4 Feb, 1983. First N applied: 14 Mar. Second N applied: 14 Apr. Carbendazim with maneb and tridemorph applied: 8 June. Combine harvested: 26 July.

EXTRA PLOTS

GRAIN TONNES/HECTARE

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

WEEDKLLR(75)	NONE	HORMONE	MEAN
EXTRA DD			
NONE	7.22	7.26	7.24
CNVNTIAL	7.72	7.69	7.71
PARAPLOW	7.35	7.70	7.52
MEAN	7.43	7.55	7.49

GRAIN MEAN DM% 86.5

SUB PLOT AREA HARVESTED 0.00347

83/R/RN/8

OMITTING EXTRA PLOTS

GRAIN TONNES/HECTARE

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

SUBSOIL	NONE	CNVNTIAL	PARAPLOW	MEAN
CULTIVTN				
PLOUGH	7.26	7.25	7.37	7.29
ROTA DIG	7.44	7.43	7.38	7.42
DEEPTINE	7.65	7.61	7.75	7.67
MEAN	7.45	7.43	7.50	7.46
WEEDKLLR(75)	NONE	HORMONE	MEAN	
CULTIVTN				
PLOUGH	7.47	7.12	7.29	
ROTA DIG	7.42	7.42	7.42	
DEEPTINE	7.62	7.71	7.67	
MEAN	7.50	7.42	7.46	
WEEDKLLR(75)	NONE	HORMONE	MEAN	
SUBSOIL				
NONE	7.55	7.35	7.45	
CNVNTIAL	7.47	7.38	7.43	
PARAPLOW	7.49	7.51	7.50	
MEAN	7.50	7.42	7.46	
WEEDKLLR(81)	NONE	PARAQUAT	MEAN	
CULTIVTN				
PLOUGH	7.26	7.33	7.29	
ROTA DIG	7.34	7.49	7.42	
DEEPTINE	7.72	7.62	7.67	
MEAN	7.44	7.48	7.46	
WEEDKLLR(81)	NONE	PARAQUAT	MEAN	
SUBSOIL				
NONE	7.39	7.51	7.45	
CNVNTIAL	7.47	7.39	7.43	
PARAPLOW	7.46	7.54	7.50	
MEAN	7.44	7.48	7.46	
WEEDKLLR(81)	NONE	PARAQUAT	MEAN	
WEEDKLLR(75)				
NONE	7.59	7.42	7.50	
HORMONE	7.30	7.54	7.42	
MEAN	7.44	7.48	7.46	

83/R/RN/8

OMITTING EXTRA PLOTS

GRAIN TONNES/HECTARE

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

TABLE	CULTIVTN	SUBSOIL	WEEDKLLR(75)	WEEDKLLR(81)
SED	0.147	0.147	0.040	0.040

TABLE	CULTIVTN SUBSOIL	CULTIVTN WEEDKLLR(75)	SUBSOIL WEEDKLLR(75)	CULTIVTN WEEDKLLR(81)
SED	0.254	0.155	0.155	0.155
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
	CULTIVTN	0.070		0.070
	SUBSOIL		0.070	

TABLE	SUBSOIL WEEDKLLR(81)
SED	0.155
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:	
	SUBSOIL 0.070

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

STRATUM	DF	SE	CV%
BLOCK.WP	8	0.254	3.4
BLOCK.WP.SP	8	0.121	1.6

GRAIN MEAN DM% 87.1

SUB PLOT AREA HARVESTED 0.00347