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85/R/WW/6 Electrostatic Sprayers and Weed Control - W. Wheat

Rothamsted Research

Rothamsted Research (1986) *85/R/WW/6 Electrostatic Sprayers and Weed Control - W. Wheat ; Yields Of The Field Experiments 1985*, pp 217 - 220 - DOI:

<https://doi.org/10.23637/ERADOC-1-19>

85/R/WW/6

WINTER WHEAT

ELECTROSTATIC SPRAYERS AND WEED CONTROL

Object: To compare the weed control obtained with electrostatic and standard hydraulic sprayers in wheat following oats and wheat following potatoes - Rothamsted Summerdells I (after oats) and Great Harpenden I (after potatoes).

Sponsors: G.R. Cayley, D.C. Griffiths, B.J. Pye, P. Etheridge, G.C. Scott, R.E. Goodchild.

Design: 4 randomised blocks of 12 plots.

Whole plot dimensions: 3.0 x 15.0.

Treatments:

TREATMNT	Sprayers, weedkillers and times of application:
NONE	None
	Electrostatic sprayer, 'Tecnomat', applying chlorsulfuron plus metsulfuron methyl:
EST E	Early on 17 Oct, 1984 (Summerdells), 31 Oct (Great Harpenden)
EST L	Late on 13 Dec (Summerdells), 21 Dec (Great Harpenden)
EST L+I	Late plus isoproturon (duplicated)
	Electrostatic sprayer, 'Jumbo', applying chlorsulfuron plus metsulfuron methyl:
ESJ E	Early on above dates
ESJ L	Late on above dates
ESJ L+I	Late plus isoproturon (duplicated)
	Conventional, hydraulic sprayer, applying chlorsulfuron plus metsulfuron methyl:
H E	Early on above dates
H L	Late on above dates
H L+I	Late plus isoproturon

- NOTES: (1) On one plot on the site after potatoes which should have received ESJ L the treatment was omitted in error. An estimated value was used in the analysis
- (2) Chlorsulfuron was applied at 0.015 kg and metsulfuron methyl at 0.005 kg.
- (3) Isoproturon was applied at 2.5 kg.
- (4) The 'Tecnomat' electrostatic sprayer has vertically mounted, inductively charged rotary atomisers and spray was applied in 12.0 l.
- (5) The 'Jumbo' electrostatic sprayer has spinning cone nozzles, spray was charged at 30 kv and was applied in 9.0 l.
- (6) The hydraulic sprayer applied sprays in 200 l.

85/R/WW/6

Standard applications:

Summerdells I: Manures: 'Nitro-Chalk' (27.5% N) at 720 kg.
Weedkiller: Paraquat at 0.60 kg ion in 500 l. Fungicides:
Propiconazole at 0.25 kg in 200 l. Propiconazole at 0.12 kg with
carbendazim and maneb (as 'Septal' at 2.5 kg) in 200 l.
Insecticide: Pirimicarb at 0.14 kg in 200 l.
Great Harpenden I: Manures: 'Nitro-Chalk' (27.5% N) at 540 kg.
Fungicides: Captafol at 0.96 kg with fenpropimorph at 0.75 kg and
carbendazim at 0.15 kg in 200 l.

Seed: Avalon, sown at 170 kg (both fields).

Cultivations, etc.:-

Summerdells I: Disced: 14 Aug, 1984. Paraquat applied, heavy spring-
tine cultivated: 19 Sept. Rotary harrowed, seed sown: 26 Sept. N
applied: 15 Apr, 1985. Propiconazole alone applied: 3 June.
Propiconazole with carbendazim and maneb applied: 2 July.
Insecticide applied: 10 July. Combine harvested: 30 Aug.
Previous crops: S. barley 1983, w. oats 1984.
Great Harpenden I: Heavy spring-tine cultivated: 12 Oct, 1984. Rotary
harrowed, seed sown: 13 Oct. N applied: 15 Apr, 1985. Fungicides
applied: 28 June. Combine harvested: 29 Aug. Previous crops:
W. beans 1983, potatoes 1984.

NOTE: Weed counts were made throughout the season.

85/R/WW/6 SUMMERDELLS I

WINTER WHEAT (AFTER OATS)

GRAIN TONNES/HECTARE

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

TREATMNT	
NONE	5.27
EST E	8.02
EST L	7.58
EST L+I	9.22
ESJ E	8.04
ESJ L	7.89
ESJ L+I	8.93
H E	8.98
H L	7.66
H L+I	9.83
MEAN	8.19

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

TABLE	TREATMNT	
SED	0.451	MIN REP
	0.391	MAX-MIN
	0.319	MAX REP

	TREATMNT
MAX REP	EST L+I AND ESJ L+I
MAX-MIN	EST L+I OR ESJ L+I V ANY OF REMAINDER
MIN REP	ANY OF REMAINDER

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

STRATUM	DF	SE	CV%
BLOCK.WP	35	0.638	7.8

GRAIN MEAN DM% 84.1

PLOT AREA HARVESTED 0.00306

85/R/WW/6 GREAT HARPENDEN I

WINTER WHEAT (AFTER POTATOES)

GRAIN TONNES/HECTARE

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

TREATMNT	
NONE	6.15
EST E	7.35
EST L	8.35
EST L+I	8.29
ESJ E	7.72
ESJ L	7.94
ESJ L+I	8.38
H E	7.52
H L	8.62
H L+I	8.84
MEAN	7.96

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

TABLE	TREATMNT
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SED	0.378 MIN REP
	0.327 MAX-MIN
	0.267 MAX REP

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

STRATUM	DF	SE	CV%
BLOCK.WP	34	0.534	6.7
GRAIN MEAN DM%	81.7		
PLOT AREA HARVESTED	0.00306		