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84/R/WW/13 Electrostatic Application of Post-emergence Weedkiller - W. Wheat

Rothamsted Research

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84/R/WW/13

WINTER WHEAT

ELECTROSTATIC APPLICATION OF POST-EMERGENCE WEEDKILLER

Object: To study the effects of post-emergence weedkiller applied by charged rotary atomisers on weed survival and on the yield of winter wheat - Claycroft.

Sponsor: G.R. Cayley, P. Etheridge, D.C. Griffiths, B.J. Pye, G.C. Scott.

Design: 4 randomised blocks of 7 plots.

Whole plot dimensions: 3.0 x 10.0.

Treatments: All combinations of:-

1. SPRAYER Spraying machines:

HYDRAUL	Conventional hydraulic sprayer in 200 l
ELECT J	'Jumbo' electrostatic in 8 l
ELECT M	'Micronex' electrostatic in 9.3 l
2. ISOPRATE Rates of isoproturon applied 1 Mar, 1984:

1.05	Half standard rate
2.10	Standard rate

plus one extra treatment:

EXTRA

NONE No weedkiller

NOTE: The 'Jumbo' electrostatic sprayer has electrostatically charged spinning cone nozzles, the 'Micronex' is a commercial prototype with electrostatically charged spinning disc nozzles.

Basal applications: Manures: 'Nitro-Chalk' on two occasions, at 130 kg on the first and at 750 kg on the second. Weedkiller: Paraquat at 0.42 kg ion in 250 l. Fungicides: Prochloraz at 0.40 kg and carbendazim at 0.15 kg in 250 l. Maneb at 1.6 kg and zineb at 0.17 kg with prochloraz at 0.4 kg in 500 l. Insecticide: Pirimicarb at 0.14 kg in 200 l.

Seed: Avalon, sown at 170 kg.

Cultivations, etc.:- Heavy spring-tine cultivated: 12 Sept, 1983. Weedkiller applied: 20 Sept. First N applied: 26 Sept. Heavy spring-tine cultivated, rotary harrowed, seed sown: 27 Sept. Second N applied: 9 Apr, 1984. Prochloraz and carbendazim applied: 25 Apr. Maneb, zineb and prochloraz applied: 14 June. Insecticide applied: 27 June. Combine harvested: 22 Aug. Previous crops: S. beans 1982, s. wheat 1983.

NOTE: Crop and weed samples were taken immediately after spraying to assess weedkiller deposits. Weeds were assessed in April.

84/R/WW/13

GRAIN TONNES/HECTARE

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

	SPRAYER	HYDRAUL	ELECT J	ELECT M	MEAN
ISOPRATE					
	1.05	10.15	9.54	8.78	9.49
	2.10	10.75	10.26	10.58	10.53
MEAN		10.45	9.90	9.68	10.01
NONE	8.51				
GRAND MEAN		9.79			

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

TABLE	ISOPRATE	SPRAYER	ISOPRATE SPRAYER
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SED	0.209	0.256	0.362

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

STRATUM	DF	SE	CV%
BLOCK.WP	18	0.512	5.2

GRAIN MEAN DM% 86.6

PLOT AREA HARVESTED 0.00234