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79/R/BE/12 Comparison of Sprayers - Beans

Rothamsted Research

Rothamsted Research (1980) *79/R/BE/12 Comparison of Sprayers - Beans* ; Yields Of The Field Experiments 1979, pp 339 - 340 - DOI: <https://doi.org/10.23637/ERADOC-1-45>

79/R/BE/12

SPRING BEANS

COMPARISON OF SPRAYERS

Object: To study the performance of an electrostatic spraying system on distribution of spray material and on yield of beans - Summerdells II.

Sponsors: A.J. Arnold, F.T. Phillips, P. Etheridge.

Design: 3 randomised blocks of 6 plots.

Whole plot dimensions: 2.67 x 9.14.

Treatments:

SPRAYER	Sprayer used to apply permethrin:
NONE	None
E D T 2	Electrostatic sprayer, spraying direct-charged particles, using tap water and 2 atomisers
E D D 2	Electrostatic sprayer, spraying direct-charged particles, using distilled water and 2 atomisers
E D T 1	Electrostatic sprayer, spraying direct-charged particles, using tap water and 1 atomiser
E O T 2	Electrostatic sprayer, spraying uncharged particles, using tap water and 2 atomisers
F U T	Standard farm sprayer, spraying uncharged particles, using tap water

- NOTES: (1) Electrostatic sprayer applied permethrin at 0.016 kg in 15.5 l.
(2) Farm sprayer applied permethrin at 0.016 kg in 340 l.
(3) Permethrin was applied as a water-based spray.
(4) Sprays were applied on 18 June, 1979.
(5) Because of machine failure one replicate of treatment 'E O T 1' was not applied. An Estimated value was used in the analysis.
(6) Because of field errors two of the replicates of E O T 2 were in one block and two of the replicates of NONE in another, since there were marked differences between rows of plots, adjustments have been made by covariance, and the original blocking has been ignored.

Basal applications: Manures: Chalk at 7.5 t, FYM at 35 t. Weedkiller: Simazine at 0.84 kg in 220 l. Insecticide: Pirimicarb at 0.14 kg in 220 l. Desiccant: Diquat at 0.59 kg ion with 'Agral' (a wetting agent) at 0.28 kg in 220 l.

Seed: Minden, sown at 220 kg.

Cultivations, etc.: Chalk applied: 26 Oct, 1978. FYM applied: 14 Nov. Ploughed: 23 Nov. Heavy spring-tine cultivated: 19 Apr, 1979. Rotary harrowed: 20 Apr. Seed sown: 21 Apr. Weedkiller applied: 15 May. Basal insecticide applied: 27 July. Desiccant applied: 24 Sept. Combine harvested: 4 Oct. Previous cropping: Barley 1977 & 1978.

NOTE: Observations were made of charged and uncharged drops on both the upper and lower leaf surfaces, and gross deposition of chemical was assessed. Sitona notch counts were made after treatment sprays.

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GRAIN TONNES/HECTARE

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

SPRAYER	NONE	E D T 2	E D D 2	E D T 1	E O T 2	F U T	MEAN
	0.81	1.25	1.15	0.70	0.58	2.11	1.10

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

TABLE	SPRAYER
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SED	0.227

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

STRATUM	DF	SE	CV%
BLOCK.WP	9	0.247	22.4

GRAIN MEAN DM% 63.8

PLOT AREA HARVESTED 0.00244