ROTHAMSTED RESEARCH

Yields of the Field Experiments 1972

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72/W/CS/103 Simazine Rates and Soil Types - S. Beans

Rothamsted Research

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72/W/CS/103

SIMAZINE RATES AND SOIL TYPES

Object: To study the effects of simazine and other weedkillers on weed control and yield in beans grown on heavy and light soils containing different amounts of organic matter - Woburn, Warren Field II, White Horse, Great Hill Bottom I.

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The first year, spring beans.

Design: Warren Field II, White Horse: 4 blocks of 15 plots.
Great Hill Bottom I: 3 blocks of 15 plots.

Whole plot dimensions:-
Warren Field II, White Horse: 4.26 x 12.2. Area harvested: 0.00390.
Great Hill Bottom I: 4.26 x 9.14. Area harvested: 0.00293.

Treatments: No weed control (O), mechanical cultivation (M), chlorpropham with diuron, applied the day after sowing (DCE) together with All combinations of:-

1. Weedkiller (W): Simazine (S), simazine with trietazine in proportions 1:7 (ST).
2. Rates of weedkiller: 50% below normal rate for soil type (1), normal rate (2), 50% above normal rate (3).
3. Times of application: Early, day after sowing (E), late, up to 14 days after sowing (L).

Rates and times used on each field:-
Warren Field II (heavy soil, much organic matter).
Chlorpropham with diuron ('New Residuren' at 5.6 l in 450 l) simazine and simazine with trietazine at 0.56, 1.12, 1.68 kg in 450 l.
Early = day after sowing, Late = 10 days after sowing.
White Horse (light soil, much organic matter).
Chlorpropham with diuron ('New Residuren' at 4.2 l in 450 l), simazine and simazine with trietazine at 0.42, 0.84, 1.26 kg in 450 l.
Early = day after sowing, Late = 10 days after sowing.
Great Hill Bottom I (light soil, little organic matter).
Chlorpropham with diuron ('New Residuren' at 4.2 l in 450 l), simazine and simazine with trietazine at 0.42, 0.84, 1.26 kg in 450 l.
Early = day after sowing, Late = 37 days after sowing.

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Basal applications: All fields: 400 kg (0:14:28). Insecticide: Phorate at 1.1 kg.
White Horse: 7.5 tonnes magnesian limestone.
Warren Field II and White Horse: Weedkiller: Paraquat at 0.56 kg ion in 280 l.

Seed: Maris Bead sown at 220 kg.

Cultivations, etc.:
Warren Field II: Paraquat applied: 9 Sept, 1971. Deep-tine cultivated three times: 4 - 5 Nov, 5 - 15 Nov, 15 - 16 Nov. PK placed, seed drilled: 20 Mar, 1972. E plots sprayed: 21 Mar. L plots sprayed: 30 Mar. M plots harrowed: 9 May. M plots mechanically hoed three times: 9 May, 15 May, 31 May, Insecticide applied: 13 June. Combine harvested: 21 Sept. Previous crops: Winter wheat 1970, spring beans 1971.
White Horse: Magnesian limestone applied: 4 Sept, 1971. Paraquat applied: 9 Sept. Ploughed: 13 Oct. Deep-tine cultivated: 10 Nov. PK placed, seed drilled: 20 Mar, 1972. E plots sprayed: 21 Mar. L plots sprayed: 30 Mar. M plots harrowed: 9 May. M plots mechanically hoed twice: 10 May, 31 May. Volunteer potatoes pulled: 31 May - 5 June. Insecticide applied: 6 June. Combine harvested: 3 Oct. Previous crops: Potatoes 1970, winter wheat 1971.
Great Hill Bottom I: Ploughed: 5 Nov, 1971. PK placed, seed drilled: 20 Mar, 1972. E plots sprayed: 21 Mar. L plots sprayed: 26 Apr. M plots harrowed: 9 May. M plots mechanically hoed twice: 10 May, 31 May. Insecticide applied: 13 June. Combine harvested: 29 Sept. Previous crops: Winter wheat 1970, barley 1971.

NOTE: Soil samples were taken in spring to determine organic matter content at depths 0 - 7.6 cm and 7.6 - 15.0 cm to determine the movement of the active ingredient of the weedkillers down the soil profile.

Standard errors per plot. Grain, tonnes/hectare.
Warren Field II (R): 0.299 or 13.2% (42 d.f.)
White Horse (R): 0.410 or 13.5% (41 d.f.)
Great Hill Bottom I (W): 0.413 or 13.8% (27 d.f.)

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TABLES OF MEANS

GRAIN: TONNES/HECTARE

WARREN FIELD II (W)

	RATE			TIME		
	1	2	3	E	L	Mean
W						
S	2.30	2.51	2.23	2.19	2.51	2.35
ST	2.26	2.30	2.26	2.24	2.31	2.27
		RATE				
		1		2.17	2.39	2.28
		2		2.28	2.53	2.41
		3		2.18	2.31	2.25
Mean				2.21	2.41	2.31

EXTRA		
0	M	DCE
1.91	2.12	2.25

Grand mean: 2.27

STANDARD ERRORS OF DIFFERENCES

W	RATE	TIME	EXTRA	W RATE	W TIME	RATE TIME
0.086	0.106	0.086	0.212	0.150	0.122	0.150

Mean D.M. %: 74.6

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GRAIN: TONNES/HECTARE

WHITE HORSE (W)

	RATE 1	RATE 2	RATE 3	TIME E	TIME L	Mean
W						
S	3.06	2.96	3.16	3.13	2.98	3.06
ST	2.90	3.14	2.98	2.98	3.03	3.01
		RATE				
		1		2.92	3.04	2.98
		2		3.07	3.04	3.05
		3		3.19	2.95	3.07
Mean				3.06	3.01	3.03

EXTRA O	EXTRA M	EXTRA DCE
3.43	2.69	3.06

Grand mean: 3.04

STANDARD ERRORS OF DIFFERENCES

W	RATE	TIME	EXTRA	W RATE	W TIME	RATE TIME
0.118	0.145	0.118	0.290	0.205	0.236	0.290

Mean D.M. %: 81.3

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GRAIN: TONNES/HECTARE

GREAT HILL BOTTOM I (W)

	RATE 1	RATE 2	RATE 3	TIME E	TIME L	Mean
W						
S	2.88	3.34	2.97	3.01	3.12	3.06
ST	2.86	3.04	2.72	3.07	2.67	2.87
		RATE				
		1		2.92	2.82	2.87
		2		3.23	3.15	3.19
		3		2.98	2.71	2.84
Mean				3.04	2.89	2.97

EXTRA 0	EXTRA M	EXTRA DCE
2.98	3.11	3.05

Grand mean: 2.98

STANDARD ERRORS OF DIFFERENCES

W	RATE	TIME	EXTRA	W RATE	W TIME	RATE TIME
0.138	0.169	0.138	0.337	0.238	0.275	0.337

Mean D.M. %: 82.2

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