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85/R/BE/11 Control of Rust - S. Beans

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85/R/BE/11

SPRING BEANS

CONTROL OF RUST

Object: To study the effects of fungicides on the control of rust (*Uromyces viciae-fabae*) and on the yield of unirrigated and irrigated s. beans - Long Hoos VI/VII I.

Sponsors: J. McEwen, D.P. Yeoman.

Design: 2 randomised blocks of 2 plots split into 12.

Whole plot dimensions: 2.03 x 2.13.

Treatments: All combinations of:-

Whole plots

1. IRRIGATN	Irrigation:
0	None
I	Irrigated (33 mm)

Sub plots

2. C S FUNG	Fungicide to control chocolate spot but not rust:
NONE	None
BENOMYL	Benomyl at 0.56 kg in 220 l on 1 July, 1985, 31 July
3. RUSTFUNG	Fungicides to control rust:
MAN+MANC	Maneb at 0.8 kg + mancozeb at 0.8 kg in 340 l
PROPICON	Propiconazole at 0.12 kg in 340 l
4. RFNGTIME	Times of applying fungicides to control rust:
DOUBLE	1 July, 1985, 31 July
QUADRUP	1 July, 15 July, 31 July, 12 Aug

plus two extra sub plot treatments:

EXTRA

NONE	No fungicides (duplicated)
BENOMYL	Benomyl at 0.56 kg in 220 l on 1 July, 31 July (duplicated)

NOTE: Irrigation was applied to lessen a post-flowering soil-moisture deficit from 50 mm to 25 mm. This was necessary on only one occasion, on 18 July, when 33 mm was applied.

Basal applications: Manures: Chalk at 2.9 t. Muriate of potash at 520 kg. Weedkillers: Glyphosate at 1.4 kg in 220 l; trietazine at 1.2 kg with simazine at 0.17 kg and paraquat at 0.40 kg ion in 220 l. Insecticides: Deltamethrin at 0.0075 kg in 220 l on two occasions; pirimicarb at 0.14 kg in 220 l on two occasions.

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Seed: Minden, sown at 220 kg.

Cultivations, etc.: - Chalk applied: 11 Sept, 1984. K applied: 25 Sept. Glyphosate applied: 26 Sept. Ploughed: 15 Oct. Spring-tine cultivated, seed sown: 13 Mar, 1985. Trietazine, simazine and paraquat applied: 19 Mar. Deltamethrin applied: 2 May, 23 May. Pirimicarb applied: 20 June, 17 July. Harvested by hand: 18 Sept. Previous crops: Potatoes 1983, s. barley 1984.

NOTE: Plant counts were made after establishment. The incidence of chocolate spot and rust were assessed from early July until maturity. Components of yield were measured at maturity.

GRAIN TONNES/HECTARE

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

C S FUNG	NONE	BENOMYL	MEAN
IRRIGATN			
0	5.80	5.46	5.63
I	5.95	6.11	6.03
MEAN	5.87	5.78	5.83
RUSTFUNG	MAN+MANC	PROPICON	MEAN
IRRIGATN			
0	6.03	5.24	5.63
I	5.89	6.16	6.03
MEAN	5.96	5.70	5.83
RUSTFUNG	MAN+MANC	PROPICON	MEAN
C S FUNG			
NONE	6.00	5.75	5.87
BENOMYL	5.92	5.65	5.78
MEAN	5.96	5.70	5.83
RFNGTIME	DOUBLE	QUADRP	MEAN
IRRIGATN			
0	5.28	5.99	5.63
I	6.02	6.03	6.03
MEAN	5.65	6.01	5.83
RFNGTIME	DOUBLE	QUADRP	MEAN
C S FUNG			
NONE	5.57	6.18	5.87
BENOMYL	5.73	5.84	5.78
MEAN	5.65	6.01	5.83

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GRAIN TONNES/HECTARE

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

RFNGTIME	DOUBLE	QUADRUP	MEAN		
RUSTFUNG					
MAN+MANC	5.77	6.15	5.96		
PROPICON	5.53	5.87	5.70		
MEAN	5.65	6.01	5.83		
C S FUNG	NONE		BENOMYL		
RUSTFUNG	MAN+MANC	PROPICON	MAN+MANC	PROPICON	
IRRIGATN					
0	6.11	5.50	5.94	4.98	
I	5.89	6.00	5.89	6.33	
C S FUNG	NONE		BENOMYL		
RFNGTIME	DOUBLE	QUADRUP	DOUBLE	QUADRUP	
IRRIGATN					
0	5.47	6.14	5.08	5.84	
I	5.68	6.22	6.37	5.85	
RUSTFUNG	MAN+MANC		PROPICON		
RFNGTIME	DOUBLE	QUADRUP	DOUBLE	QUADRUP	
IRRIGATN					
0	5.85	6.20	4.70	5.78	
I	5.68	6.10	6.36	5.97	
RUSTFUNG	MAN+MANC		PROPICON		
RFNGTIME	DOUBLE	QUADRUP	DOUBLE	QUADRUP	
C S FUNG					
NONE	5.56	6.44	5.58	5.92	
BENOMYL	5.97	5.86	5.48	5.83	
IRRIGATN	RUSTFUNG	MAN+MANC	PROPICON		
	RFNGTIME	DOUBLE	QUADRUP	DOUBLE	QUADRUP
0	C S FUNG				
	NONE	5.65	6.57	5.28	5.71
	BENOMYL	6.06	5.83	4.11	5.84
I	NONE	5.48	6.31	5.88	6.12
	BENOMYL	5.89	5.89	6.85	5.81
IRRIGATN	0	I	MEAN		
EXTRA					
NONE	4.74	5.10	4.92		
BENOMYL	5.00	5.22	5.11		
MEAN	4.87	5.16	5.02		
GRAND MEAN	5.56				

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GRAIN TONNES/HECTARE

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

TABLE	EXTRA	C S FUNG	RUSTFUNG	RFNGTIME
SED	0.265	0.188	0.188	0.188
TABLE	IRRIGATN* C S FUNG	IRRIGATN* RUSTFUNG	C S FUNG RUSTFUNG	IRRIGATN* RFNGTIME
SED	0.265	0.265	0.265	0.265
TABLE	C S FUNG RFNGTIME	RUSTFUNG RFNGTIME	IRRIGATN* EXTRA	IRRIGATN* C S FUNG RUSTFUNG
SED	0.265	0.265	0.375	0.375
TABLE	IRRIGATN* C S FUNG RFNGTIME	IRRIGATN* RUSTFUNG RFNGTIME	C S FUNG RUSTFUNG RFNGTIME	IRRIGATN* C S FUNG RUSTFUNG RFNGTIME
SED	0.377	0.375	0.375	0.531

* WITHIN THE SAME LEVEL OF IRRIGATN ONLY

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	26	0.531	9.5

GRAIN MEAN DM% 90.7

PLOT AREA HARVESTED 0.00015