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85/R/CS/299 Crops and Rhizoctonia - Potatoes

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85/R/CS/299

CROPS AND RHIZOCTONIA

Object: To study the effects of cropping and inoculation with Rhizoctonia isolates on subsequent infection and on yield of a sequence of crops - Meadow.

Sponsors: G.A. Hide, P.J. Read.

The third year, potatoes.

For previous year see 84/R/CS/299.

Design: 2 randomised blocks of 2 whole plots split into 4 sub plots split into 4 sub sub plots.

Whole plot dimensions: 3.0 x 43.0.

Treatments: All combinations of:-

Whole plots

1. PREVCROP (84) Crops in 1984:

W WHEAT
W BARLEY

Sub plots

2. PREVCROP (83) Crops in 1983:

FALLOW B	Fallow, cultivations as for s. barley
FALLOW P	Fallow, cultivations as for potatoes
POTATOES	Potatoes
S BARLEY	S. barley

Sub sub plots

3. INOC(83) Inoculum in 1983, applied during seedbed cultivations:

NONE	None
RHIZ C W	Rhizoctonia cerealis from wheat
RHIZ S B	Rhizoctonia solani from barley
RHIZ S P	Rhizoctonia solani from potatoes

Basal applications: Manures: Chalk at 5.0 t. (10:10:15+4.5Mg) at 1960 kg. Weedkillers: Linuron at 1.3 kg with paraquat at 0.50 kg ion in 500 l. Fungicides: Mancozeb at 1.4 kg in 200 l on four occasions, applied with the insecticide on the second and third occasion. Fentin hydroxide at 0.28 kg in 200 l. Insecticide: Pirimicarb at 0.14 kg on two occasions. Desiccant: Diquat at 0.80 kg ion in 200 l.

Seed: Desiree.

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Cultivations, etc.:- Chalk applied: 2 Oct, 1984. Ploughed: 18 Dec.
 NPK Mg applied: 3 Apr, 1985. Rotary harrowed, potatoes planted:
 9 Apr. Weedkillers applied: 16 May. Mancozeb applied: 20 June,
 6 Aug. Mancozeb with pirimicarb applied: 3 July, 23 July. Fentin
 hydroxide applied: 21 Aug. Haulm mechanically destroyed: 6 Sept.
 Desiccant applied: 9 Sept. Lifted: 16 Oct.

NOTE: Plants were sampled in mid-June for measurements of leaf area,
 weight of haulm, roots and tubers and assessment of diseases on
 stem bases.

POTATOES

TOTAL TUBERS TONNES/HECTARE

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

PREVCROP (83)	FALLOW B	FALLOW P	POTATOES	S BARLEY	MEAN
PREVCROP (84)					
W WHEAT	57.4	58.1	57.1	56.5	57.3
W BARLEY	58.2	58.4	58.6	61.4	59.2
MEAN	57.8	58.3	57.9	58.9	58.2
INOC(83)	NONE	RHIZ C W	RHIZ S B	RHIZ S P	MEAN
PREVCROP (84)					
W WHEAT	56.7	58.3	55.0	59.1	57.3
W BARLEY	59.7	59.2	58.5	59.2	59.2
MEAN	58.2	58.8	56.8	59.2	58.2
INOC(83)	NONE	RHIZ C W	RHIZ S B	RHIZ S P	MEAN
PREVCROP (83)					
FALLOW B	56.5	58.0	56.9	59.7	57.8
FALLOW P	58.3	58.3	58.1	58.4	58.3
POTATOES	59.2	58.8	55.5	58.1	57.9
S BARLEY	58.7	59.9	56.7	60.5	58.9
MEAN	58.2	58.8	56.8	59.2	58.2
INOC(83)		NONE	RHIZ C W	RHIZ S B	RHIZ S P
PREVCROP (84)	PREVCROP (83)				
W WHEAT	FALLOW B	56.9	57.1	55.5	60.0
	FALLOW P	58.1	58.4	57.3	58.7
	POTATOES	56.2	59.6	53.5	59.2
	S BARLEY	55.4	58.0	53.8	58.5
W BARLEY	FALLOW B	56.2	58.9	58.3	59.4
	FALLOW P	58.5	58.3	58.8	58.0
	POTATOES	62.1	58.0	57.4	57.0
	S BARLEY	62.0	61.8	59.5	62.4

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

TABLE	PREVCROP(83)	INOC(83)	PREVCROP(84)* PREVCROP(83)
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SED	0.94	1.55	1.33
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TABLE	PREVCROP(84)* INOC(83)	PREVCROP(83) INOC(83)	PREVCROP(84)* PREVCROP(83) INOC(83)
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SED	2.19	2.84	4.02
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EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:

PREVCROP(83)	3.10		
PREVCROP(84).PREVCROP(83)			4.38

* WITHIN THE SAME LEVEL OF PREVCROP(84) ONLY

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	6	1.33	2.3
BLOCK.WP.SP.SSP	24	4.38	7.5

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POTATOES

PERCENTAGE WARE 4.44CM (1.75 INCH) RIDDLE

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

PREVCROP (83)	FALLOW B	FALLOW P	POTATOES	S BARLEY	MEAN
PREVCROP (84)					
W WHEAT	83.5	85.3	77.7	85.1	82.9
W BARLEY	84.8	85.6	82.5	86.1	84.7
MEAN	84.1	85.5	80.1	85.6	83.8
INOC(83)	NONE	RHIZ C W	RHIZ S B	RHIZ S P	MEAN
PREVCROP (84)					
W WHEAT	81.5	84.3	81.9	83.9	82.9
W BARLEY	84.8	84.9	84.5	84.8	84.7
MEAN	83.1	84.6	83.2	84.3	83.8
INOC(83)	NONE	RHIZ C W	RHIZ S B	RHIZ S P	MEAN
PREVCROP (83)					
FALLOW B	84.3	83.7	83.0	85.4	84.1
FALLOW P	84.9	84.7	86.4	86.0	85.5
POTATOES	77.6	83.7	78.9	80.4	80.1
S BARLEY	85.8	86.4	84.5	85.6	85.6
MEAN	83.1	84.6	83.2	84.3	83.8
PREVCROP (84)	INOC(83)	NONE	RHIZ C W	RHIZ S B	RHIZ S P
W WHEAT	PREVCROP (83)				
	FALLOW B	83.2	82.4	83.1	85.2
	FALLOW P	84.1	85.6	85.5	86.1
	POTATOES	74.3	82.7	75.5	78.6
	S BARLEY	84.4	86.7	83.5	85.6
W BARLEY	FALLOW B	85.5	85.1	82.9	85.5
	FALLOW P	85.6	83.9	87.2	85.8
	POTATOES	80.9	84.7	82.3	82.3
	S BARLEY	87.2	86.0	85.5	85.5

SUB PLOT AREA HARVESTED 0.00132