ROTHAMSTED RESEARCH

Yields of the Field Experiments 1982

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82/R/CS/254 Soil Fumigation, Mycorrhiza and P - W. Barley

Rothamsted Research

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82/R/CS/254

SOIL FUMIGATION, MYCORRHIZA AND P

Object: To study the residual effects on w. barley of applications of mycorrhizal inoculum, methyl bromide and rates of phosphate fertilizer to s. wheat in 1980 - Delharding.

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The third year, w. barley.

For previous year see 81/R/CS/254.

Design: 3 randomised blocks of 8 plots split into 2.

Whole plot dimensions: 2.2 x 4.4.

Treatments: All combinations of:-

Whole plots

1. STERILNT(80) Soil sterilant in 1980:

NONE	None
METH BR	Methyl bromide at 940 kg

2. P(80) Rates of phosphate fertilizer (kg P), as superphosphate in 1980:

0
15
30
60

Sub plots

3. INOCULUM(81) Mycorrhizal inoculum in 1981:

NONE	None
G MOSSE	Glomus mosseae

NOTES: (1) Treatments were applied to s. wheat in 1980.
(2) Inoculum was prepared by growing leeks in pots of soil infected with the mycorrhiza. After 20 weeks growth, soil and roots in the pots were chopped and broadcast over the plots at 3.5 t. Uninoculated plots received soil and roots at the same rate from pots growing uninfected leeks.
(3) Total above-ground dry matter was measured in June, grain yields were not taken.

Basal applications: Manures: N at 28 kg, K_2O at 18 kg as (25:0:16). N at 30 kg and a further application at 100 kg as 'Nitro-Chalk'. Weedkiller: Chlortoluron at 5.6 l in 280 l applied with the fungicide. Fungicide: Tridemorph at 0.53 kg.

Seed: Igri, with no seed dressing, direct drilled at 160 kg.

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Cultivations, etc.:- First N applied: 21 Sept, 1981. NK applied, seed sown: 14 Oct. Weedkiller with fungicide applied: 27 Oct. Second N applied: 2 Mar, 1982. Harvested by hand: 15 June.

NOTES: (1) Plots were sampled three times during the season to assess mycorrhizal infection of roots and once to measure P content of the leaves.
(2) Grain yields were not taken, crop was harvested green on 15 June.

TOTAL DRY MATTER TONNES/HECTARE

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

INOCULUM(81) / STERILNT(80)	NONE	G MOSSE	MEAN
NONE	6.64	6.87	6.75
METH BR	6.69	6.80	6.75
MEAN	6.67	6.84	6.75

P(80) / STERILNT(80)	0	15	30	60	MEAN
NONE	5.04	6.99	7.44	7.55	6.75
METH BR	5.33	6.18	7.43	8.05	6.75
MEAN	5.19	6.59	7.43	7.80	6.75

P(80) / INOCULUM(81)	0	15	30	60	MEAN
NONE	5.01	6.46	7.55	7.64	6.67
G MOSSE	5.36	6.71	7.32	7.96	6.84
MEAN	5.19	6.59	7.43	7.80	6.75

STERILNT(80)	INOCULUM(81) / P(80)	NONE	G MOSSE
NONE	0	4.72	5.35
	15	6.93	7.05
	30	7.57	7.31
	60	7.34	7.75
METH BR	0	5.30	5.36
	15	6.00	6.37
	30	7.53	7.33
	60	7.93	8.16

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TOTAL DRY MATTER TONNES/HECTARE

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

TABLE	STERILNT(80)	P(80) INOCULUM(81)	STERILNT(80) P(80)
SED	0.154	0.218	0.172	0.308

TABLE	STERILNT(80) INOCULUM(81)	P(80) INOCULUM(81)	STERILNT(80) P(80) INOCULUM(81)
SED	0.231	0.326	0.462

EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:

STERILNT(80)	0.243		
P		0.344	
STERILNT(80).P			0.486

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

STRATUM	DF	SE	CV%
BLOCK.WP	14	0.377	5.6
BLOCK.WP.SP	16	0.595	8.8

SUB PLOT AREA HARVESTED 0.00010

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