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82/R/M/6 Soil Fumigation, Mycorrhiza and P - Mixed 6

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82/R/M/6

MIXED 6

SOIL FUMIGATION, MYCORRHIZA AND P

Object: To study the effects on s. wheat and s. barley of applications of mycorrhizal inoculum, methyl bromide and phosphate fertilizer - Delharding.

Sponsors: J.G. Buwalda, D.P. Stribley, P.B. Tinker.

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

Whole plot dimensions: 3.0 x 4.4.

Treatments: All combinations of:-

Whole plots

- | | |
|-------------|--|
| 1. CROP | Crops: |
| S BARLEY | |
| S WHEAT | |
| 2. STERILNT | Soil sterilant: |
| NONE | None |
| METH BR | Methyl bromide at 900 kg |
| 3. P | Rates of phosphate fertilizer (kg P), as superphosphate: |
| 0 | |
| 60 | |

Sub plots

- | | |
|-------------|-----------------------|
| 4. INOCULUM | Mycorrhizal inoculum: |
| NONE | None |
| G MOSSE | Glomus mosseae |

NOTE: 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 applied to the seed furrows at 3.5 t per ha. Uninoculated plots received soil and roots at the same rate from pots growing uninfected leeks.

Basal applications: Manures: N at 125 kg as 'Nitro-Chalk' and K at 50 kg as muriate of potash. Weedkiller: Mecoprop, bromoxynil and ioxynil (as 'Brittox' at 2.8 l) in 280 l applied with the fungicide. Fungicide: Tridemorph at 0.53 kg.

Seed: S. wheat: Timmo, with no seed dressing, sown at 350 seeds per m².
S. barley: Triumph, with no seed dressing, sown at 350 seeds per m².

Cultivations, etc.: Rotary cultivated: 27 July, 1981. N, P and K applied: 9 Mar, 1982. Seed sown: 16 Apr. Weedkiller with the fungicide applied: 21 May. Harvested by hand: 1 Sept. Previous crops: Fallow 1980 and 1981.

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NOTE: Plots were sampled five times during the season to assess mycorrhizal infection of roots and three times to measure P content of the leaves.

GRAIN TONNES/HECTARE

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

STERILNT CROP	NONE	METH BR	MEAN
S BARLEY	3.24	3.63	3.44
S WHEAT	4.66	2.74	3.70
MEAN	3.95	3.18	3.57
P CROP	0	60	MEAN
S BARLEY	2.63	4.24	3.44
S WHEAT	2.94	4.45	3.70
MEAN	2.79	4.35	3.57
P STERILNT	0	60	MEAN
NONE	3.03	4.87	3.95
METH BR	2.55	3.82	3.18
MEAN	2.79	4.35	3.57
INOCULUM CROP	NONE	G MOSSE	MEAN
S BARLEY	3.03	3.84	3.44
S WHEAT	3.41	3.98	3.70
MEAN	3.22	3.91	3.57
INOCULUM STERILNT	NONE	G MOSSE	MEAN
NONE	3.67	4.23	3.95
METH BR	2.77	3.60	3.18
MEAN	3.22	3.91	3.57
INOCULUM P	NONE	G MOSSE	MEAN
0	2.39	3.18	2.79
60	4.05	4.64	4.35
MEAN	3.22	3.91	3.57
CROP	P	0	60
S BARLEY	STERILNT		
	NONE	2.28	4.20
	METH BR	2.98	4.29
S WHEAT	NONE	3.77	5.54
	METH BR	2.12	3.36

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GRAIN TONNES/HECTARE

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

	INOCULUM	NONE	G MOSSE
CROP	STERILNT		
S BARLEY	NONE	2.91	3.58
	METH BR	3.16	4.11
S WHEAT	NONE	4.44	4.88
	METH BR	2.39	3.08

	INOCULUM	NONE	G MOSSE
CROP	P		
S BARLEY	0	2.21	3.05
	60	3.85	4.64
S WHEAT	0	2.57	3.32
	60	4.26	4.64

	INOCULUM	NONE	G MOSSE
STERILNT	P		
NONE	0	2.67	3.38
	60	4.67	5.07
METH BR	0	2.11	2.99
	60	3.44	4.21

		INOCULUM	NONE	G MOSSE
CROP	STERILNT	P		
S BARLEY	NONE	0	1.93	2.64
		60	3.89	4.52
	METH BR	0	2.50	3.46
		60	3.82	4.76
S WHEAT	NONE	0	3.42	4.13
		60	5.45	5.63
	METH BR	0	1.72	2.51
		60	3.06	3.65

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

TABLE	CROP	STERILNT	P	INOCULUM
SED	0.059	0.059	0.059	0.059

TABLE	CROP STERILNT	CROP P	STERILNT P	CROP INOCULUM
SED	0.083	0.083	0.083	0.083
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: CROP				0.083

TABLE	STERILNT INOCULUM	P INOCULUM	CROP STERILNT P	CROP STERILNT INOCULUM
SED	0.083	0.083	0.118	0.117
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: STERILNT	0.083			
P		0.083		
CROP. STERILNT				0.117

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GRAIN TONNES/HECTARE

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

TABLE	CROP P INOCULUM	STERILNT P INOCULUM	CROP STERILNT P INOCULUM
SED	0.117	0.117	0.166
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
CROP.P	0.117		
STERILNT.P		0.117	
CROP.STERILNT.P			0.166

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

STRATUM	DF	SE	CV%
BLOCK.WP	14	0.144	4.0
BLOCK.WP.SP	16	0.203	5.7

SUB PLOT AREA HARVESTED 0.00020