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# Yields of the Field Experiments 1982

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

### Rothamsted Research

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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 m<sup>2</sup>.  
S. barley: Triumph, with no seed dressing, sown at 350 seeds per m<sup>2</sup>.

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
P CROP	0	60	
S BARLEY	STERILNT		
	NONE	2.28	4.20
	METH BR	2.98	4.29
S WHEAT	STERILNT		
	NONE	3.77	5.54
	METH BR	2.12	3.36

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GRAIN TONNES/HECTARE

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

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

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

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

CROP	STERILNT	INOCULUM	NONE	G MOSSE
S BARLEY	NONE	P		
		0	1.93	2.64
S WHEAT	NONE	60	3.89	4.52
		0	2.50	3.46
METH BR	NONE	60	3.82	4.76
		0	3.42	4.13
METH BR	NONE	60	5.45	5.63
		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	CROP	STERILNT	CROP
	STERILNT	P	P	INOCULUM
SED	0.083	0.083	0.083	0.083
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
	CROP			0.083

TABLE	STERILNT	P	CROP	CROP
	INOCULUM	INOCULUM	STERILNT	STERILNT
			P	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