ROTHAMSTED RESEARCH

Yields of the Field Experiments 1979

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79/R/BE/6 N and Pathogen Control - Beans

Rothamsted Research

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79/R/BE/6

SPRING BEANS

N AND PATHOGEN CONTROL

Object: To study the effect of enhanced pathogen control on the proportion of nitrogen in the crop derived from the soil, from fertiliser and from nitrogen-fixation. The study was aided by using 15 N-labelled fertilisers and spring barley as a crop which did not fix nitrogen - Little Hoos.

Sponsors: J.M. Day, R.J. Roughley, J.F. Witty.

Design: 4 randomised blocks of 12 plots.

Whole plot dimensions: Beans: 3.25 x 4.57, barley 2.13 x 4.57.

Treatments: All combinations of:-

1. PATHCONT — Pathogen control:

   STANDARD — Standard, pirimicarb foliar spray only
   ENHANCED — Aldicarb at 10 kg to seedbed plus pirimicarb foliar spray

2. BEANS N — Nitrogen fertiliser (kg N) to beans:

   0
   50
   100
   150

plus four extra treatments sown to spring barley and given rates of nitrogen fertiliser (kg N):

BARLEY N

0
50
100
150

Standard applications: Barley: Manures: (0:20:20) at 310 kg, combine drilled.
Beans: Insecticide: Pirimicarb at 0.14 kg in 340 l.

Seed: Barley: Porthos, sown at 160 kg.
Beans: Minden, sown at 260 kg.

Cultivations, etc.:- Ploughed: 13 Dec, 1978. Heavy spring-tine cultivated: 21 Apr, 1979. Aldicarb applied, rotary harrowed: 1 May. Barley sown: 3 May. Beans sown: 9 May. Insecticide applied: 12 July. Barley hand harvested: 7 Sept. Beans hand harvested: 24 Sept. Previous cropping: Wheat 1977 and 1978.

NOTES: (1) Content of 15N was assessed in whole plants shortly before harvest.
(2) Nitrogen percentages of grain were measured.

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79/R/BE/6

BEANS

GRAIN TONNES/HECTARE

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

BEANS N / PATHCONT	0	50	100	150	MEAN
STANDARD	4.05	4.10	4.25	4.13	4.13
ENHANCED	5.33	5.38	5.86	5.75	5.58
MEAN	4.69	4.74	5.05	4.94	4.86

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

TABLE	PATHCONT	BEANS N	PATHCONT BEANS N
SED	0.131	0.185	0.261

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

STRATUM	DF	SE	CV%
BLOCK.WP	21	0.369	7.6

GRAIN MEAN DM% 83.2

PLOT AREA HARVESTED 0.00074

BARLEY

GRAIN TONNES/HECTARE

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

BARLEY N	0	50	100	150	MEAN
	3.48	4.00	4.93	4.72	4.28

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

TABLE	BARLEY N
SED	0.297

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

STRATUM	DF	SE	CV%
BLOCK.WP	9	0.420	9.8

GRAIN MEAN DM% 94.0

PLOT AREA HARVESTED 0.00049

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