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Yields of the Field Experiments 1975

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75/ R/BN/7 - Barnfield - Beans, Ryegrass

Rothamsted Research

Rothamsted Research (1976) 75/ R/BN/7 - Barnfield - Beans, Ryegrass ; Yields Of The Field Experiments 1975, pp 39 - 41 - DOI: <https://doi.org/10.23637/ERADOC-1-141>

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BARNFIELD

Object: The experiment was designed to study the effects of organic and inorganic manures on continuous roots. It has been progressively modified to study effects on other crops.

The ninth year of beans on Sections 1 and 2. The first year of Italian ryegrass on the rest of the experiment except for the discard of Strip 4, sown to wheat for take-all studies.

For previous years see 'Details' 1967, 68/A/5(t), 69/R/BN/7, 70/R/BN/7(t), 71/R/BN/7(t), 72/R/BN/7(t) and 73-74/R/BN/7.

Plot dimensions:

Beans: Section 1 (half plots): 5.33 x 55.9. (Strips 1 and 8: 4.27 x 55.9).
Ryegrass: 10.67 x 55.9.

Treatments to ryegrass: All combinations of:-

Whole plots: 1. Fertilisers and organic manures:

	MANURE
D N	DN
D N P K	DNEK
N F K (Na) Mg	NPKMC
N P	NP
N P K	NEK
N F (Na) Mg	NPMC
N	N
N K (Na) Mg	NKMC

N: 75 kg N per cut (since 1975 only) as 'Nitro-Chalk'.

P: 35 kg P as single superphosphate (triple superphosphate in 1974).

K: 225 kg K as sulphate of potash.

(Na): 90 kg Na as sodium chloride until 1973.

Mg: 90 kg Mg as kieserite every fourth year since 1974 (sulphate of magnesia until 1973).

D: Farmyard manure at 35 tonnes.

Half plots: 2. Previous cropping in 1973 (fallow 1974):

	PREVCROP(73)
Potatoes	POTATOES
Sugar beet	SUGRBEET

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Sixteenth plots: 3. Nitrogen fertiliser in 1973 as 'Nitro-Chalk' cumulative to previous years (kg N):	N(73)
None	0
72	72
144	144
216	216

and partial combinations (excluding treatment NK (Na) Mg) with previous treatments:

4. Residues of forms of N (each supplying 96 kg N):	NFORMRES
Nitrate of soda	NS
Sulphate of ammonia	SA
Sulphate of ammonia + castor meal	SA/CM
Castor meal	CM

Castor meal last applied 1961, others until 1959.

NOTE: Yields were not taken from the ryegrass.

Treatments to beans: All combinations of:-

Whole plots: 1. Fertilisers and organic manures:	MANURE
D	D
D P K	DPK
P K (Na) Mg	PKM3
P	P
F K	FK
P (Na) Mg	PMG
None	NONE

Rates and forms as for ryegrass

2. Previous crop in 1974 (after continuous beans 1967-1973):	PREVCROP(74)
Beans	BEANS
Fallow	FALLOW

Standard applications:

Spring beans: Insecticide: Demeton-s-methyl at 0.25 kg in 450 l.
 Ryegrass: Manures: N at 75 kg. Weedkiller: MCPA ('Phenoxyline Plus' at 5.6 l in 220 l).

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Seed: Beans, Maris Bead, sown at 220 kg.
Ryegrass, Italian ryegrass sown at 25 kg.

Cultivations, etc.: - P, K, Mg and FYM applied: 5-10 Feb, 1975. Ploughed:
Strips 1 and 2: 11-24 Feb, remainder: 1 Mar.

Spring beans: Spring-tine cultivated: 29 Apr. Spring-tine cultivated
twice and power harrowed: 30 Apr. Seed sown and spring-tine
cultivated: 1 May. Tractor-hoed: 27 May and 25 June. Insecticide
applied: 9 July. Combine harvested: 29 Aug.

Fallow: Spring-tine cultivated: 10 June. Rotary cultivated: 23 June.
Deep-tine cultivated: 30 June.

Ryegrass: Spring-tine cultivated twice: 5 May. N applied: 6 May.
Power harrowed (excluding strips 1 and 2): 9 May. Spring-tine
cultivated: 12 May. Seed sown: 15 May. Weedkiller applied:
30 June. Topped: 28 July, 19 Aug (strips 1 and 2 only) and
24 Oct.

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BEANS

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

PREVCROP(74)	BEANS	FALLOW	MEAN
MANURE			
D	0.49	0.41	0.45
DPK	0.99	0.75	0.87
PKMG	0.43	0.38	0.41
P	0.27	0.30	0.29
PK	0.31	0.25	0.28
PMG	0.44	0.37	0.40
NONE	0.16	0.23	0.19
MEAN	0.44	0.38	0.41

GRAIN MEAN DM% 87.3

PLOT AREA HARVESTED 0.00585