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Yields of the Field Experiments 1993

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93/R/BN/7 Barnfield - Ley

Rothamsted Research

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93/R/BN/7

BARNFIELD

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

Sections 1 and 2 the tenth year of grass/clover. The 19th year of grass on the rest of the experiment.

For previous years see 'Details' 1967 and 1973 and 74-92/R/BN/7.

Plot dimensions: 10.7 x 55.9.

Treatments to grass: All combinations of:-

Whole plots

1. **MANURE** Fertilizers and organic manures:

D	D
DPK	D P K
PKMG	P K (Na) Mg
P	P
PK	P K
PMG	P (Na) Mg
0	0

- P: 35 kg P as triple superphosphate in 1974 and since 1987, single superphosphate in other years
- 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 (until 1975).

Quarter plots

2. **N PERCUT** Nitrogen fertilizer in 1993 (kg N per cut) as 34.5% N, cumulative to previous dressings, and residues of forms of N previously each supplying 96 kg N per annum:
- | | |
|-----|--|
| 75 | 75, previously nitrate of soda, section 3 |
| 100 | 100, previously sulphate of ammonia, section 4 |
| 125 | 125, previously sulphate of ammonia + castor meal, section 5 |
| 150 | 150, previously castor meal, section 6 |

Castor meal last applied 1961, nitrate of soda and sulphate of ammonia until 1959.

Plus one plot **MANURE** KMG 100

93/R/BN/7

Treatments to grass/clover, sections 1 and 2 (not given nitrogen fertilizer):

MANURE Fertilizers and organic manures as for grass above, excluding KMG.

NOTES: (1) P, K and D treatments were applied to Sections 1 and 2 until 1980. None were applied subsequently until the resumption of P and K treatments, only, from 1985.
 (2) Yields were not taken from section 2.

Experimental diary:

All sections:

09-Feb-93 : T : P applied.
 11-Mar-93 : B : Flat rolled.
 26-Mar-93 : T : K applied.
 02-Jun-93 : B : First sample cut.
 03-Jun-93 : B : Herbage removed from sample cut, cut and removed from remainder of plot.
 15-Nov-93 : B : Second sample cut.
 16-Nov-93 : B : Herbage removed from sample cut, cut and removed from remainder of plot.

Grass (Sections 3, 4, 5 and 6 only):

24-Mar-93 : T : N applied.
 09-Jun-93 : T : N applied.

NOTE: Herbage samples were taken for chemical analysis.

GRASS

1ST CUT (2/6/93) DRY MATTER TONNES/HECTARE

***** Tables of means *****

N PERCUT MANURE	75	100	125	150	Mean
D	6.67	6.96	7.18	7.24	7.01
DPK	6.85	6.80	5.61	6.71	6.49
PKMG	5.92	5.93	6.46	6.21	6.13
P	3.57	2.67	2.36	4.84	3.36
PK	5.82	6.21	6.58	6.19	6.20
PMG	4.08	2.43	2.26	2.68	2.86
0	4.42	3.35	3.05	2.82	3.41
Mean	5.33	4.91	4.79	5.24	5.07

MANURE KMG 100 6.22

Grand mean 5.11

1ST CUT MEAN DM% 21.5

93/R/BN/7

GRASS

2ND CUT (15/11/93) DRY MATTER TONNES/HECTARE

***** Tables of means *****

N PERCUT MANURE	75	100	125	150	Mean
D	3.48	4.68	5.93	4.71	4.70
DPK	3.94	4.92	4.26	4.63	4.44
PKMG	2.40	4.04	5.63	4.87	4.24
P	2.79	2.13	3.03	4.08	3.01
PK	3.15	3.97	5.14	3.71	3.99
PMG	2.44	1.87	2.90	3.50	2.68
0	1.76	2.17	3.28	3.73	2.73
Mean	2.85	3.40	4.31	4.18	3.68

MANURE KMG 100 3.75

Grand mean 3.69

2ND CUT MEAN DM% 30.5

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

***** Tables of means *****

N PERCUT MANURE	75	100	125	150	Mean
D	10.15	11.64	13.12	11.95	11.71
DPK	10.79	11.72	9.87	11.34	10.93
PKMG	8.32	9.97	12.09	11.08	10.36
P	6.36	4.79	5.39	8.92	6.37
PK	8.96	10.18	11.72	9.90	10.19
PMG	6.53	4.30	5.15	6.18	5.54
0	6.18	5.52	6.33	6.55	6.14
Mean	8.18	8.30	9.09	9.42	8.75

MANURE KMG 100 9.97

Grand mean 8.79

TOTAL OF 2 CUTS MEAN DM% 26.0

PLOT AREA HARVESTED 0.00155

93/R/BM/7

GRASS/CLOVER

1ST CUT (2/6/93) DRY MATTER TONNES/HECTARE

***** Tables of means *****

MANURE	D	DPK	PKMG	P	PK	PMG	0	Mean
	2.57	2.29	2.29	2.05	1.73	1.98	2.93	2.26

1ST CUT MEAN DM% 16.8

2ND CUT (15/11/93) DRY MATTER TONNES/HECTARE

***** Tables of means *****

MANURE	D	DPK	PKMG	P	PK	PMG	0	Mean
	3.29	2.80	1.59	2.14	1.68	1.47	1.61	2.08

2ND CUT MEAN DM% 23.1

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

***** Tables of means *****

MANURE	D	DPK	PKMG	P	PK	PMG	0	Mean
	5.87	5.09	3.87	4.19	3.41	3.45	4.54	4.35

TOTAL OF 2 CUTS MEAN DM% 19.9

PLOT AREA HARVESTED 0.00155