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Yields of the Field Experiments 1988

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88/W/RN/4 Market Garden - Clover

Rothamsted Research

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88/W/RN/4

MARKET GARDEN

Object: The experiment compared the effects of fertilizers and organic manures applied annually in the period 1942 to 1967, on market garden crops. Residual effects of the organic manures were studied in arable crops from 1968 to 1973. From 1974 until 1982 the site was maintained in grass without yields. A new sequence of cropping started in 1983 to study further the residual effects of the organic manures, particularly the availability of metals from sewage sludge - Woburn Lansome I.

Sponsor: S.P. McGrath.

The 47th year, clover.

For previous years see 'Details' 1967 & 1973, 74-80/W/RN/4 and 83-87/W/RN/4.

Design: 2 series each of 4 blocks of 10 plots split, systematically, into 2.

Whole plot dimensions: 8.15 x 5.18.

Treatments:

To Series A, first year white clover after two-year white clover, all combinations of:-

Whole plots

1. **OM RESID** Residues of organic manures:

FYM	Farmyard manure until 1967
SEWAGE	Sewage sludge until 1961
SEW COM	Sewage sludge, composted with straw, until 1961
VEG COM	Vegetable compost until 1962, then farmyard manure until 1967

2. **OM RATE** Rates of organic manures (t per crop):

25	
50	
EXTRA	plus one extra treatment (duplicated):
NONE	No organic manures

Sub plots

3. **N RESID** Nitrogen (kg N) per cut in previous years:

0	
100	

88/W/RN/4

To Series B, first year white clover after four-year white clover,
all combinations of:-

Whole plots

1. **OM RESID** Residues of organic manures:
 - FYM Farmyard manure to whole plots until 1964, to half plots until 1967. Untreated half plots received a balancing dressing in 1974
 - SEWAGE Sewage sludge until 1961
 - SEW COM Sewage sludge, composted with straw, until 1961
 - VEG COM Vegetable compost until 1962, then farmyard manure until 1965

2. **OM RATE** Rates of organic manures (t per crop):
 - 25
 - 50

 - EXTRA** plus one extra treatment (duplicated):

 - PEAT Peat at 31 t per crop to half plots 1965 to 1967. Untreated half plots received a balancing dressing in 1974.

Sub plots

3. **N RESID** Nitrogen (kg N) per cut in previous years:
 - 0
 - 100

NOTE: The crop failed to establish from the spring sowing and was therefore resown in July.

Basal applications:

Series A and B: Manures: K2O at 156 kg as muriate of potash.
Weedkillers: Glyphosate at 1.0 kg in 220 l. Benazolin, 2,4-DB and MCPA (as 'Legumex Extra' at 7.0 l) in 220 l.

Seed: Blanca at 17 kg, resown at 22 kg.

Cultivations, etc.:- Ploughed: 11 Feb, 1988. Heavy spring-tine cultivated: 6 Apr. Basal K applied: 25 Apr. Rotary cultivated with crumbler attached, seed sown: 26 Apr. Glyphosate applied: 22 June. Ploughed: 7 July. Spike harrowed with crumbler attached, rolled, spike harrowed with crumbler attached, seed sown, rolled: 15 July. Benazolin, 2,4-DB and MCPA applied: 16 Aug. Cut: 7 Dec.

88/W/RN/4 WHITE CLOVER SERIES A

1ST AND ONLY CUT (7/12/88) DRY MATTER TONNES/HECTARE

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

OM RESID	FYM	SEWAGE	SEW COM	VEG COM	Mean
OM RATE					
25	0.74	0.60	0.44	0.85	0.66
50	0.58	0.37	0.41	0.59	0.49
Mean	0.66	0.49	0.43	0.72	0.57
N RESID					
0		100	Mean		
OM RATE					
25	0.50	0.82	0.66		
50	0.34	0.64	0.49		
Mean	0.42	0.73	0.57		
N RESID					
0		100	Mean		
OM RESID					
FYM	0.45	0.86	0.66		
SEWAGE	0.36	0.61	0.49		
SEW COM	0.36	0.49	0.43		
VEG COM	0.50	0.95	0.72		
Mean	0.42	0.73	0.57		
N RESID					
0		100	Mean		
OM RATE					
25	FYM	0.44	1.03		
	SEWAGE	0.55	0.65		
	SEW COM	0.40	0.49		
	VEG COM	0.60	1.11		
50	FYM	0.47	0.69		
	SEWAGE	0.18	0.56		
	SEW COM	0.33	0.50		
	VEG COM	0.39	0.79		
NONE N RESID					
0		100	Mean		
		0.48	0.92		0.70

Grand mean 0.60

*** Standard errors of differences of means ***

OM RESID	OM RATE	N RESID	OM RESID
OM RATE			OM RATE
0.125	0.088	0.070	0.176
OM RESID	OM RATE	OM RESID	NONENRES
N RESID	N RESID	OM RATE	N RESID
0.159	0.112	0.225	0.140
Except when comparing means with the same level(s) of			
OM RESID	0.140		
OM RATE		0.099	
OM RESID.OM RATE			0.197

88/W/RN/4 WHITE CLOVER SERIES A

1ST AND ONLY CUT (7/12/88) DRY MATTER TONNES /HECTARE

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	28	0.249	41.6
BLOCK.WP.SP	31	0.279	46.6

1ST CUT MEAN DM% 18.1

PLOT AREA HARVESTED 0.00052

88/W/RN/4 WHITE CLOVER SERIES B

1ST AND ONLY CUT (7/12/88) DRY MATTER TONNES/HECTARE

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

OM RESID	FYM	SEWAGE	SEW COM	VEG COM	Mean
OM RATE					
25	1.02	1.21	0.79	0.93	0.99
50	1.73	0.58	0.74	0.70	0.94
Mean	1.38	0.89	0.76	0.81	0.96
N RESID	0	100	Mean		
OM RATE					
25	0.83	1.14	0.99		
50	0.97	0.91	0.94		
Mean	0.90	1.02	0.96		
N RESID	0	100	Mean		
OM RESID					
FYM	1.43	1.32	1.38		
SEWAGE	0.92	0.87	0.89		
SEW COM	0.67	0.86	0.76		
VEG COM	0.59	1.04	0.81		
Mean	0.90	1.02	0.96		
OM RATE	N RESID	0	100		
25	FYM	0.75	1.29		
	SEWAGE	1.31	1.10		
	SEW COM	0.57	1.00		
	VEG COM	0.69	1.17		
50	FYM	2.11	1.35		
	SEWAGE	0.52	0.64		
	SEW COM	0.77	0.71		
	VEG COM	0.48	0.92		
PEAT	N RESID	0	100	Mean	
		0.53	0.90	0.72	

Grand mean 0.91

*** Standard errors of differences of means ***

OM RESID	OM RATE	N RESID	OM RESID
OM RATE			OM RATE
0.283	0.200	0.168	0.401
OM RESID	OM RATE	OM RESID	PEATNRES
N RESID	N RESID	OM RATE	N RESID
0.370	0.262	0.523	0.337
Except when comparing means with the same level(s) of			
OM RESID	0.337		
OM RATE		0.238	
OM RESID.OM RATE			0.476

88/W/RN/4 WHITE CLOVER SERIES B

1ST AND ONLY CUT (7/12/88) DRY MATTER TONNES/HECTARE

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	28	0.566	62.0
BLOCK.WP.SP	31	0.673	73.7

1ST CUT MEAN DM% 26.6

PLOT AREA HARVESTED 0.00052