

87/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 46th year, clover.

For previous years see 'Details' 1967 & 1973, 74-80/W/RN/4 and 83-86/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, second 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. NPERCUT | Nitrogen (kg N) per cut, as 'Nitram': |
| 0 | |
| 100 | |

87/W/RN/4

To Series B, fourth 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. NPERCUT Nitrogen (kg N) per cut, as 'Nitram':
 - 0
 - 100

NOTE: Series B became very weedy and yields were not taken.

Basal applications:

Series A and B: Manures: K20 at 150 kg as muriate of potash.
Weedkillers: Benazolin, 2,4-DB and MCPA (as 'Legumex Extra' at 7 l) in 200 l.

Cultivations, etc.: - Basal K and treatment N applied: 3 Apr, 1987.
Weedkillers applied: 27 May. Cut: 18 June (Series A): 23 June (Series B). Treatment N applied: 26 June. Cut: 19 Aug (Series A only).

87/W/RN/4 WHITE CLOVER SERIES A

1ST CUT (18/6/87) DRY MATTER TONNES/HECTARE

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

OM RESID	FYM	SEWAGE	SEW COM	VEG COM	Mean
OM RATE					
25	3.48	3.80	3.71	3.63	3.65
50	3.72	3.46	3.52	3.58	3.57
Mean	3.60	3.63	3.62	3.60	3.61
NPERCUT	0	100	Mean		
OM RATE					
25	3.67	3.63	3.65		
50	3.63	3.51	3.57		
Mean	3.65	3.57	3.61		
NPERCUT	0	100	Mean		
OM RESID					
FYM	3.65	3.54	3.60		
SEWAGE	3.66	3.60	3.63		
SEW COM	3.62	3.62	3.62		
VEG COM	3.67	3.53	3.60		
Mean	3.65	3.57	3.61		
OM RATE	NPERCUT	0	100		
25	OM RESID				
	FYM	3.47	3.48		
	SEWAGE	3.73	3.87		
	SEW COM	3.72	3.70		
	VEG COM	3.76	3.50		
50	FYM	3.83	3.60		
	SEWAGE	3.58	3.34		
	SEW COM	3.51	3.54		
	VEG COM	3.59	3.57		
NONE	NPERCUT	0	100	Mean	
		3.70	3.48	3.59	

Grand mean 3.61

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

Table	OM RESID	OM RATE	NPERCUT	OM RESID
s.e.d.	0.171	0.121	0.096	OM RATE
				0.241
Table	OM RESID	OM RATE	OM RESID	NONENPER
s.e.d.	NPERCUT	NPERCUT	OM RATE	
			NPERCUT	
	0.218	0.154	0.308	0.192
Except when comparing means with the same level(s) of				
	OM RESID			
	0.192			
	OM RATE	0.135		
	OM RESID.OM RATE		0.271	

87/W/RN/4 WHITE CLOVER SERIES A

1ST CUT (18/6/87) DRY MATTER TONNES/HECTARE

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	28	0.341	9.5
BLOCK.WP.SP	31	0.383	10.6

1ST CUT MEAN DM% 11.1

PLOT AREA HARVESTED 0.00053

87/W/RN/4 WHITE CLOVER SERIES A

2ND CUT (19/8/87) DRY MATTER TONNES/HECTARE

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

OM RESID	FYM	SEWAGE	SEW COM	VEG COM	Mean
OM RATE					
25	3.24	2.95	3.23	3.15	3.14
50	3.35	3.23	3.17	3.15	3.23
Mean	3.30	3.09	3.20	3.15	3.18
NPERCUT	0	100	Mean		
OM RATE					
25	3.07	3.21	3.14		
50	3.21	3.24	3.23		
Mean	3.14	3.23	3.18		
NPERCUT	0	100	Mean		
OM RESID					
FYM	3.20	3.40	3.30		
SEWAGE	3.04	3.14	3.09		
SEW COM	3.17	3.23	3.20		
VEG COM	3.17	3.14	3.15		
Mean	3.14	3.23	3.18		
OM RATE	NPERCUT	0	100		
25	OM RESID				
	FYM	3.14	3.34		
	SEWAGE	2.81	3.08		
	SEW COM	3.14	3.32		
	VEG COM	3.20	3.11		
50	FYM	3.25	3.45		
	SEWAGE	3.26	3.21		
	SEW COM	3.20	3.13		
	VEG COM	3.13	3.17		
NONE	NPERCUT	0	100	Mean	
		3.09	3.33	3.21	

Grand mean 3.19

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

Table	OM RESID	OM RATE	NPERCUT	OM RESID
s.e.d.	0.140	0.099	0.079	OM RATE
				0.198
Table	OM RESID	OM RATE	OM RESID	NONENPER
	NPERCUT	NPERCUT	OM RATE	
			NPERCUT	
s.e.d.	0.179	0.127	0.253	0.158
Except when comparing means with the same level(s) of				
	OM RESID			
	0.158			
	OM RATE	0.112		
	OM RESID.OM RATE		0.224	

87/W/RN/4 WHITE CLOVER SERIES A

2ND CUT (19/8/87) DRY MATTER TONNES/HECTARE

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	28	0.280	8.8
BLOCK.WP.SP	31	0.316	9.9

2ND CUT MEAN DM% 12.3

PLOT AREA HARVESTED 0.00052

87/W/RN/4 WHITE CLOVER SERIES A

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

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

OM RESID	FYM	SEWAGE	SEW COM	VEG COM	Mean
OM RATE					
25	6.72	6.75	6.94	6.78	6.80
50	7.07	6.69	6.69	6.73	6.80
Mean	6.89	6.72	6.82	6.76	6.80
NPERCUT	0	100	Mean		
OM RATE					
25	6.75	6.85	6.80		
50	6.84	6.75	6.80		
Mean	6.79	6.80	6.80		
NPERCUT	0	100	Mean		
OM RESID					
FYM	6.85	6.94	6.89		
SEWAGE	6.69	6.75	6.72		
SEW COM	6.79	6.84	6.82		
VEG COM	6.84	6.67	6.76		
Mean	6.79	6.80	6.80		
OM RATE	NPERCUT	0	100		
25	OM RESID				
	FYM	6.61	6.82		
	SEWAGE	6.55	6.94		
	SEW COM	6.86	7.02		
	VEG COM	6.96	6.60		
50	FYM	7.09	7.05		
	SEWAGE	6.84	6.55		
	SEW COM	6.71	6.67		
	VEG COM	6.72	6.75		
NONE	NPERCUT	0	100	Mean	
		6.78	6.81	6.79	

Grand mean 6.80

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

Table	OM RESID	OM RATE	NPERCUT	OM RESID
s.e.d.	0.260	0.184	0.127	OM RATE
				0.367
Table	OM RESID	OM RATE	OM RESID	NONENPER
s.e.d.	NPERCUT	NPERCUT	OM RATE	
			NPERCUT	
	0.315	0.223	0.446	0.253
Except when comparing means with the same level(s) of				
	OM RESID			
	0.253			
	OM RATE	0.179		
	OM RESID.OM RATE		0.358	

87/W/RN/4 WHITE CLOVER SERIES A

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	28	0.519	7.6
BLOCK.WP.SP	31	0.507	7.5

TOTAL OF 2 CUTS MEAN DM% 11.7