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Yields of the Field Experiments 1976

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76/W/RN/12 Organic Manuring - W. Oats, Barley

Rothamsted Research

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76/W/RN/12

ORGANIC MANURING

Object: To study, from crop yields and soil analyses, the cumulative effects of a range of types of organic matter - Woburn, Stackyard B.

Sponsor: G.E.G. Mattingly.

The 12th year, winter oats, barley.

For previous years see 66/C/31(t), 67/C/24(t), 68/C/18(t), 69/W/RN/12(t), 70/W/RN/12(t), 71/W/RN/12(t), 72/W/RN/12(t) and 73-75/W/RN/12.

Design for each crop: 2 blocks of 8 plots split into 8.

Whole plot dimensions: 8.53 x 30.5.

Treatments: From 1966 to 1971 the experiment had a preliminary period designed to build up organic matter, derived from different sources. A rotation of potatoes, wheat, sugar beet and barley was started on two blocks in 1972 and the remaining two blocks in 1973. Organic manures were last applied in 1971, the leys were ploughed in autumn-1971 and 1972 before starting the rotation. The experiment now tests all combinations of:-

Whole plots

1. MANURE Organic manures and fertilisers in the preliminary period:

FYM	Farmyard manure
STRAW	Straw
PEAT	Peat
GREENMNR	Green manures
FERT-FYM	Fertilisers equivalent to FYM
FERT-STR	Fertilisers equivalent to straw
CLOVRLEY	Grass/lover ley, no N
GRASSLEY	Grass ley with N for each cut

Sub plots

2. N 75 N 76 Fertiliser nitrogen (kg N) (residues of treatments to barley-1975 on winter oats, fresh dressings 1976 to barley):

W. OATS	BARLEY	Winter oats	Barley
(0)	0	(0)	0
(25)	25	(25)	25
(50)	50	(50)	50
(75)	75	(75)	75
(100)	100	(100)	100
(125)	125	(125)	125
(150)	150	(150)	150
(175)	175	(175)	175

No fresh nitrogen was applied to winter oats 1976. The crop was cut green on 30 June.

76/W/RN/12

Standard applications:

Winter oats: Manures: (0:20:20) at 300 kg, combine drilled. Weedkillers:
 Glyphosate at 1.7 kg in 340 l. Ioxynil at 0.63 kg plus mecoprop at
 1.9 kg in 280 l.

Barley: Manures: (0:20:20) at 290 kg combine drilled. Weedkiller:
 Ioxynil at 0.53 kg plus mecoprop at 1.6 kg in 280 l.

Seed: Winter oats: Peniarth, sown at 200 kg.

Barley: Julia, dressed with ethirimol, sown at 160 kg.

Cultivations, etc.:-

Winter oats: Glyphosate applied: 5 Oct, 1975. Ploughed: 24 Oct.

Spring-tine cultivated with crumbler attached: 25 Oct. Seed

sown: 27 Oct. Ioxynil plus mecoprop applied: 20 Apr, 1976.

Harvested green: 30 June.

Barley: Ploughed in sugar beet tops: 24 Nov, 1975. Spring-tine

cultivated: 2 Mar, 1976. N applied: 4 Mar. Seed sown: 8 Mar.

Weedkiller applied: 28 Apr. Combine harvested: 27 July.

NOTE: Soil samples were taken from the blocks in barley for chemical
 analyses and physical measurements.

WINTER OATS

GREEN CROP DRY MATTER TONNES/HECTARE

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

N 75	(0)	(25)	(50)	(75)	(100)	(125)	(150)	(175)	MEAN
MANURE									
FYM	2.10	2.06	1.80	2.21	2.29	3.06	2.56	3.29	2.42
STRAW	1.93	2.12	2.50	2.39	2.31	2.39	2.79	2.48	2.36
PEAT	1.58	1.56	1.78	1.67	2.16	2.36	2.42	1.97	1.94
GREENMNR	1.93	1.47	2.09	1.88	2.34	2.16	1.86	2.34	2.01
FERT FYM	1.67	1.41	1.30	1.38	1.81	1.69	1.63	2.23	1.64
FERT STR	1.18	1.51	1.72	1.98	1.85	1.55	1.79	2.00	1.70
CLOVRLEY	2.56	2.51	2.38	2.57	2.90	3.00	2.97	4.23	2.89
GRASSLEY	3.14	2.15	2.62	2.97	2.89	4.96	5.45	4.27	3.55
MEAN	2.01	1.85	2.02	2.13	2.32	2.65	2.68	2.85	2.31

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

TABLE	MANURE	N 75	MANURE N 75
SED	0.524	0.166	0.684
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
MANURE			0.470

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

STRATUM	DF	SE	CV%
BLOCK.WP	7	0.524	22.7
BLOCK.WP.SP	56	0.470	20.3

GREENCROP MEAN DM% 47.6

SUB PLOT AREA HARVESTED 0.00056

76/W/RN/12

BARLEY

GRAIN TONNES/HECTARE

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

N 76	0	25	50	75	100	125	150	175	MEAN
MANURE									
FYM	2.79	3.51	3.06	3.78	3.46	3.14	2.99	3.19	3.24
STRAW	2.65	3.82	4.29	3.79	3.89	3.67	4.22	3.82	3.77
PEAT	2.35	3.03	3.58	3.58	3.78	3.04	2.81	3.14	3.17
GREENMNR	2.06	3.19	2.72	2.42	2.65	3.33	2.75	3.69	2.85
FERT FYM	1.56	2.24	2.34	2.61	3.06	1.83	2.44	2.71	2.35
FERT STR	2.44	3.35	3.16	3.88	3.79	3.83	3.42	3.22	3.39
CLOVRLEY	3.12	4.22	4.19	4.29	3.61	4.01	3.78	3.54	3.85
GRASSLEY	3.15	3.65	3.07	3.39	4.23	3.42	2.98	3.39	3.41
MEAN	2.52	3.38	3.30	3.47	3.56	3.28	3.17	3.34	3.25

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

TABLE	MANURE	N 76	MANURE N 76
SED	0.652	0.107	0.711
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
MANURE			0.302

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

STRATUM	DF	SE	CV%
BLOCK.WP	7	0.652	20.1
BLOCK.WP.SP	56	0.302	9.3

GRAIN MEAN DM% 88.1

STRAW TONNES/HECTARE

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

N 76	0	25	50	75	100	125	150	175	MEAN
MANURE									
FYM	1.68	2.27	2.81	2.85	2.45	2.53	2.61	2.43	2.45
STRAW	1.61	2.17	2.90	2.53	2.68	2.78	2.99	2.89	2.57
PEAT	1.25	1.82	1.74	2.52	2.74	2.14	2.07	1.93	2.03
GREENMNR	1.37	2.18	1.30	1.98	2.52	2.41	2.32	2.58	2.08
FERT FYM	0.91	1.39	1.93	1.84	2.26	1.75	2.30	2.06	1.81
FERT STR	1.34	1.98	2.21	2.41	2.88	2.57	2.17	2.33	2.24
CLOVRLEY	1.85	2.66	2.60	2.90	2.77	2.90	2.92	2.84	2.68
GRASSLEY	1.93	2.62	2.37	3.29	3.08	2.69	2.82	2.63	2.68
MEAN	1.49	2.14	2.23	2.54	2.67	2.47	2.52	2.46	2.32

STRAW MEAN DM% 92.0

SUB PLOT AREA HARVESTED 0.00173