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# Yields of the Field Experiments 1985

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## 85/W/RN/12 Organic Manuring - W. Rye, S. Oats, Ley

### Rothamsted Research

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85/W/RN/12

ORGANIC MANURING

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

Sponsor: A.E. Johnston.

The 21st year, s. oats, w. rye, ley.

For previous years see 'Details' 1973 and 74-84/W/RN/12.

Design for s. oats and w. rye: 2 blocks of 4 plots  
4th, 5th, 6th and 7th year leys: 2 blocks of 2 plots.

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. An arable rotation was started on two blocks in 1972 and the remaining two blocks in 1973. After a period of testing the residues built up, a further period of accumulation was started; on two blocks (which included ley sown in 1979) in 1981 and on the other two (which included ley sown in 1980) in 1982. In addition to leys the first pair included w. rye in 1985 and the second pair s. oats.

S. oats and w. rye tested:

MANURE	Organic manures and fertilizers in 1985, cumulative to 1984, 1983 and 1982 (both crops) and to 1981 (w. rye only) and to those applied in the preliminary period:
FYM	Farmyard manure at 50 tonnes
STRAW	Straw at 7.5 tonnes plus P205 at 140 kg, K20 at 140 kg, MgO at 50 kg
FERT-FYM	P205 at 280 kg, K20 at 560 kg, MgO at 100 kg
FERT-STR	P205 at 140 kg, K20 at 280 kg, MgO at 50 kg

All leys are clover/grass (LC) without N. 4th and 5th year leys tested:

PREV LEY	Previous ley:
LC(LC)	Clover/grass ley in preliminary period
LC(LN)	Grass ley with N in preliminary period

6th and 7th year leys tested:

PREV MAN	Previous manure:
LC(GM)	Green manures in preliminary period
LC(PT)	Peat in preliminary period

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Standard applications:

- W. oats/s. oats: Manures: N at 50 kg as 'Nitro-Chalk' (27.5% N).  
Weedkillers: Mecoprop at 1.2 kg with bromoxynil at 0.3 kg and  
ioxynil at 0.3 kg in 250 l.
- W. rye: Manures: N at 30 kg as 'Nitro-Chalk' (27.5% N). Weedkillers:  
Mecoprop at 1.2 kg with bromoxynil at 0.3 kg and ioxynil at 0.3 kg  
in 250 l.
- Leys, 4th, 5th, 6th and 7th years: Manures: P205 at 140 kg, K20 at  
280 kg as (0:18:36). MgO at 50 kg as kieserite.

- Seed: W. oats: Panema, sown at 180 kg.  
S. oats: Trafalgar, sown at 200 kg.  
W. rye: Animo, sown at 220 kg.

NOTE: S. oats were sown in place of the w. oats that failed because of  
bird damage.

Cultivations, etc.:-

- W. oats/s. oats: Sugar beet tops spread over arable plots, PK and Mg  
applied to FERT-FYM, treatment FYM and STRAW applied, ploughed, PK  
and Mg applied to STRAW, Mg applied to FERT-FYM and FERT-STR:  
5 Nov, 1984. Rotary harrowed, w. oats sown: 12 Nov. Spring-tine  
cultivated: 18 Mar, 1985. Power harrowed, s. oats sown: 20 Mar.  
N applied: 24 Apr. Weedkillers applied: 16 May. Combine  
harvested: 27 Aug.
- W. rye: Half PK and Mg applied to FERT-FYM plots, treatment FYM  
applied: 20 Sept, 1984. Ploughed FYM plots only: 21 Sept.  
Treatment STRAW applied, FERT-FYM, FERT-STR and STRAW ploughed:  
3 Oct. PK applied to STRAW plots: 15 Oct. PK and Mg applied.  
FERT-STR and half PK and Mg applied to FERT-FYM, Mg applied to  
STRAW: 16 Oct. Rotary harrowed, seed sown: 24 Oct. N applied:  
24 Apr, 1985. Weedkillers applied: 16 May. Combine harvested:  
2 Sept.
- 4th, 5th, 6th and 7th year leys: PK and Mg applied to 4th and 6th  
years: 5 Nov, 1984, 5th and 7th years: 9 Nov. Chain harrowed:  
12 Apr, 1985. Cut: 2 July, 11 Nov.

SPRING OATS

GRAIN TONNES/HECTARE

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

MANURE	FYM	STRAW	FERT-FYM	FERT-STR	MEAN
	4.96	4.74	4.15	4.65	4.62

GRAIN MEAN DM% 81.7

STRAW TONNES/HECTARE

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

MANURE	FYM	STRAW	FERT-FYM	FERT-STR	MEAN
	4.05	3.80	3.55	3.89	3.82

STRAW MEAN DM% 86.3 PLOT AREA HARVESTED 0.00796

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RYE

GRAIN TONNES/HECTARE

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

MANURE	FYM	STRAW	FERT-FYM	FERT-STR	MEAN
	5.80	4.70	4.64	4.25	4.85

GRAIN MEAN DM% 82.7

STRAW TONNES/HECTARE

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

MANURE	FYM	STRAW	FERT-FYM	FERT-STR	MEAN
	6.13	4.37	4.21	3.97	4.67

STRAW MEAN DM% 89.3

PLOT AREA HARVESTED 0.00796

4TH YEAR LEY

DRY MATTER TONNES/HECTARE

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

	1ST CUT (2/7/85)	2ND CUT (11/11/85)	TOTAL OF 2 CUTS
PREV LEY			
LC(LC)	5.44	2.00	7.44
LC(LN)	6.06	2.00	8.06
MEAN	5.75	2.00	7.75
MEAN DM%	27.6	19.9	23.7

5TH YEAR LEY

DRY MATTER TONNES/HECTARE

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

	1ST CUT (2/7/85)	2ND CUT (11/11/85)	TOTAL OF 2 CUTS
PREV LEY			
LC(LC)	6.33	3.08	9.41
LC(LN)	5.96	3.07	9.03
MEAN	6.14	3.08	9.22
MEAN DM%	24.1	22.6	23.4



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6TH YEAR LEY

DRY MATTER TONNES/HECTARE

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

	1ST CUT (2/7/85)	2ND CUT (11/11/85)	TOTAL OF 2 CUTS
PREV MAN			
LC(GM)	4.30	2.10	6.40
LC(PT)	4.77	2.03	6.80
MEAN	4.54	2.06	6.60
MEAN DM%	26.8	20.7	23.7

7TH YEAR LEY

DRY MATTER TONNES/HECTARE

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

	1ST CUT (2/7/85)	2ND CUT (11/11/85)	TOTAL OF 2 CUTS
PREV MAN			
LC(GM)	6.91	2.34	9.25
LC(PT)	5.39	1.79	7.18
MEAN	6.15	2.07	8.21
MEAN DM%	29.5	25.6	27.6