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Results of the Classical and Other Long-term Experiments - 2017

Full Table of Content

17/W/RN/3 Ley/ARABLE (Stackyard D, Woburn Farm)

Rothamsted Research

Rothamsted Research (2018) *17/W/RN/3 Ley/ARABLE (Stackyard D, Woburn Farm) ;* Results Of The Classical And Other Long-Term Experiments - 2017, pp 31 - 44 **- DOI: https://doi.org/10.23637/ERADOC-1-251**

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17/W/RN/3 LEY/ARABLE (Stackyard D, Woburn Farm)

Object: To compare the effects on soil fertility of rotations with or without leys – Woburn, Stackyard D.

Sponsors: A. J. Macdonald

The 80th year, leys, winter beans, winter wheat, winter rye

For previous years see 'Details' 1967 & 1973 and Yield Books for 74-16/W/RN/3.

Design: 5 series of 8 plots, split for treatments other than rotations.

Whole plot dimensions: 8.53 m x 40.7 m

Treatments: All phases of four five-course rotations were originally present:

ROTATION

LEY	Clover/grass ley:	L, L, L, P, W
CLO	All legume ley:	SA, SA, SA, P, W until 1971 then CL, CL, CL, P, WINTER
A	Arable with roots:	P, R, C, P, W until 1971 then P, B, B, P, WINTER
A H	Arable with hay:	P, R, H, P, W until 1971 then P, B, H, P, WINTER

P = potatoes, R = winter rye, C = carrots, W= winter wheat, B = spring barley, H = hay, L = clover/grass ley, SA = sainfoin ley, CL = red clover ley.

Rotations themselves followed different cycles:
On four plots in each block the rotations were repeated.
On four plots in each block arable rotations alternated every five years with ley rotations.
From 1976 all the rotations were changed on all phases except for the first and second test crops in 1976:

LN 3	(Previous LEY) LN1, LN2, LN3, W, R
LC 3	(Previous CLO) LC1, LC2, LC3, W, R
AF	(Previous A) F, F, BE, W, R
AB	(Previous A H) B, B, BE, W, R

From 1988 rotations AF and AB are replaced by AM and ABe respectively.
Phased in at the beginning of each treatment crop sequence.

AM	R, BE, M, W, R
ABe	R, M, BE, W, R

LN1 to LN3 = three-year grass ley with N, 1st year to 3rd year,
LC= clover/grass ley, no N, BE = beans (spring oats until 1980), F = fallow,
M = forage maize

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Plots hitherto in alternating rotations were changed to test eight-year leys and two test crops:

LLN LLN1, LLN2, LLN3, LLN4, LLN5, LLN6, LLN7, LLN8, W, R
LLC LLC1, LLC2, LLC3, LLC4, LLC5, LLC6, LLC7, LLC8, W, R

LLN1 to LLN8 = eight year grass leys with nitrogen, first year to eighth year, similarly for LLC – clover/grass ley, no nitrogen

The new scheme started by sowing these new leys in spring 1976 on four phases and in spring 1977 on the fifth phase (2nd test crop in 1976).

In 1992 winter rye (R) replaced spring barley (B) as the second test crop. Yields are taken from the leys, arable treatment crops and the test crops.

From 2007 plots previously in the 1st cycle of testing eight-year leys followed by two arable test crops (i.e. those plots which were changed to eight-year ley treatments in 1976 or 1977) changed to a three-year arable rotation followed by two arable test crops. Plots were "phased in" but joined the relevant point in the rotation. From 2008 the second cycle 8-yr grass and grass/clover leys changed to 3-yr grass or grass/clover leys respectively. They were phased in between 2008 and 2012.

LLN/AO (Previously 1st cycle, 8-yr grass ley) R, BE, O, W, R
LLC/ABe (Previously 1st cycle, 8-yr grass/clover ley) R, O, BE, W, R
LLC/LC3 (Previously 2nd cycle, 8-yr grass ley) Lc 1, Lc 2, Lc 3, W, R

LLN/LN3 (Previously 2nd cycle, 8-yr grass/clover ley) Ln 1, Ln 2, Ln 3, W, R

From 2009 W oats (O) replaced forage maize (M) in the AM and ABe rotations on block III and were phased in on blocks V, IV, II and I in subsequent years. The AM treatment was re-named AM/AO.

Treatments to first test crop winter wheat, all combinations of:

Whole plots:

1. **ROTATION** Rotations before wheat:

LLN 8

LN 3

LLC 8

LC 3

LLC/LC3 not yet in phase

LLN/LN3 not yet in phase

LLN/AO not yet in phase

LLC/ABe not yet in phase

AM/AO

ABe

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1/ 2 plots:

2. **NSPLIT (FYM res)** Farmyard manure residues, last applied 1960s:
Split N v single N dressing to wheat, tested 2001-5

Nsplit (noFYM)

Nsingle (FYM)

1/8 plots:

3. **N** Nitrogen fertilizer as split dressings in spring 2017 (kg N) as 34.5% N:

0	0	
80	40 + 40	) to be applied
160	40 + 120	) late-February/early-March
240	40+ 200	) and mid-April

Treatments to second test crop winter rye, all combinations of:

Whole plots:

1. **ROTATION** Rotations before first test crop:
LLN8

LN 3

LLC 8

LC 3

LLC/LC3 not yet in phase

LLN/LN3 not yet in phase

LLN/AO not yet in phase

LLC/ABe not yet in phase

AM/AO

ABe

1/ 2 plots:

2. **NSPLIT (FYM res)** Farmyard manure residues, last applied 1960s:
N split to wheat (no FYM)

N single to wheat (FYM)

1/8 plots:

3. **N** Nitrogen fertilizer in spring 2017 (kg N) as 34.5%:
0
50
100
150

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Treatments to leys:

FYM RES Farmyard manure residues:

NONE
FYM 38 t on each occasion, last applied 1960s.

NOTE: Corrective K dressings (kg K_2O ha^{-1}) as muriate of potash, applied where necessary to first test crop winter wheat and long-term leys in the wheat block, applied 2016 (see date below).

Continuous rotations	No FYM	FYM Res
Before wheat	Half plots	Half plots
ABe/Be	100	10
AO/O	110	60
LLn/AO	20	20
LLn/ABe	0	0

None to other plots.

Experimental Diary

Date		Application	Rate	Units
ALL				
26/09/2016	a	Ploughed - thrown north west - to finish	-	-
27/09/2016	a	Ploughed - Finished	-	-
20/04/2017	a	Cut paths	-	-
19/06/2017	a	Cut paths	-	-
11/08/2017	a	Topped Surrounds and paths	-	-
29/09/2017	a	Topped Trial Site	-	-
Grass ley and clover/grass leys (first year leys)				
14/09/2016	f	Applied SOP (50% K2O, 45% SO3)	140.00	kg/ha
14/09/2016	f	Applied Nitram (34.5% N) Fertiliser	145.00	kg/ha
14/09/2016	f	Applied TSP	213.00	kg/ha
26/10/2016	s	Drilled Grass and Clover mix - plots 3, 4, 7, 8	30.00	kg/ha
26/10/2016	s	Drilled Grass only - plots 11, 12, 13, 14	30.00	kg/ha

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06/04/2017	f	Applied Nitram (34.5% N) Fertiliser to plots: 11, 12, 13, 14	217.00	kg/ha
07/04/2017	f	Applied MOP to plots: 11, 12, 13, 14	167.00	kg/ha
27/06/2017	a	Cut grass plots for yield (1st cut)	-	-
06/07/2017	a	Mowed all remaining grass on plots	-	-
10/07/2017	a	Baled and removed all remaining grass	-	-
17/11/2017	a	Cut grass plots for yield (2nd Cut)	-	-

Grass ley and clover/grass leys (2nd and 3rd year leys)

14/09/2016	f	Applied SOP (50% K2O, 45% SO3)	140.00	kg/ha
14/09/2016	f	Applied TSP	213.00	kg/ha
06/04/2017	f	Applied Nitram (34.5% N) Fertiliser to plots 25, 26, 31, 32, 57, 58, 61, 62.	217.00	kg/ha
07/04/2017	f	Applied MOP to plots 25, 26, 31, 32, 57, 58, 61, 62.	167.00	kg/ha
27/06/2017	a	Cut grass plots for yield (1st Cut)	-	-
06/07/2017	a	Mowed all remaining grass on plots	-	-
10/07/2017	a	Baled and removed all remaining grass	-	-
17/11/2017	a	Cut grass plots for yield (2nd Cut)	-	-

W Beans

14/09/2016	f	Applied TSP Fertilizer to all arable plots.	127.00	kg/ha
28/10/2016	s	Drilled Beans - Wizard - plots 19, 20, 27, 28, 49, 50, 53, 54	35.00	seeds/m^2
31/10/2016	p	Sprayed Nivana in 200 lt/ha	4.00	lt/ha
06/04/2017	p	Sprayed Troy 480	3.00	lt/ha
07/04/2017	f	Applied SOP (50% K2O, 45% SO3) - to all arable plots	150.00	kg/ha
02/05/2017	p	Sprayed Sprinter in 200 lt/ha water volume	2.00	lt/ha
02/05/2017	p	Sprayed Hallmark in 200 lt/ha water volume	75.00	ml/ha
02/05/2017	p	Sprayed San 703 in 200 lt/ha water volume	2.00	lt/ha
15/08/2017	a	Harvested	-	-

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W Wheat

06/09/2016	p	Sprayed Samurai	4.00	lt/ha
06/09/2016	p	Sprayed Firebrand	1.00	lt/ha
14/09/2016	f	Applied TSP Fertilizer to all arable plots.	127.00	kg/ha
19/09/2016	f	Applied MOP Fertiliser - to plots 68. By hand.	10.00	kg/ha
19/09/2016	f	Applied MOP Fertiliser - to plots 71, 72. By hand.	20.00	kg/ha
19/09/2016	f	Applied MOP Fertiliser - to plots 74. By hand.	60.00	kg/ha
19/09/2016	f	Applied MOP Fertiliser - to plots 67. By hand.	100.00	kg/ha
19/09/2016	f	Applied MOP Fertiliser - to plots 73. By hand.	110.00	kg/ha
27/10/2016	s	Drilled Wheat - Crusoe - trt Redigo Pro + Deter - Block 5.	400.00	seeds/m^2
17/03/2017	f	Applied Nitro-chalk - Block 5 - Block 5 excluding plots 653, 663, 672, 682, 692, 702, 713, 721, 732, 744, 751, 763, 771, 782, 791, 803	148.00	kg/ha
07/04/2017	f	Applied SOP (50% K2O, 45% SO3) - to all arable plots	150.00	kg/ha
24/04/2017	f	Applied Nitro-chalk (27.0% N) Block 5 - plots 651, 662, 674, 684, 693, 701, 714, 722, 733, 743, 754, 761, 774, 781, 793, 804	148.00	kg/ha
24/04/2017	f	Applied Nitro-chalk (27.0% N) Block 5 - plots 654, 661, 671, 683, 691, 703, 712, 723, 734, 741, 752, 764, 773, 784, 794, 801	444.00	kg/ha
24/04/2017	f	Applied Nitro-chalk (27.0% N) Block 5 - plots 652, 664, 673, 681, 694, 704, 711, 724, 731, 742, 753, 762, 772, 783, 792, 802	741.00	kg/ha
28/04/2017	p	Sprayed Sprinter	2.00	lt/ha
28/04/2017	p	Sprayed Keystone	0.80	lt/ha
28/04/2017	p	Sprayed Balear 720	0.70	lt/ha
22/05/2017	p	Sprayed Sprinter in 200 lt/ha water volume	2.00	lt/ha

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22/05/2017	p	Sprayed Simba SX in 200 lt/ha water volume	30.00	g/ha
22/05/2017	p	Sprayed Hatchet Xtra in 200 lt/ha water volume	0.50	lt/ha
22/05/2017	p	Sprayed Aviator Xpro in 200 lt/ha water volume	0.56	lt/ha
22/05/2017	p	Sprayed Keystone in 200 lt/ha water volume	0.23	lt/ha
22/05/2017	p	Sprayed Cello in 200 lt/ha water volume	0.17	lt/ha
25/03/2017	p	Sprayed Chex	0.25	lt/ha
25/03/2017	p	Sprayed Palio	0.27	lt/ha
25/03/2017	p	Sprayed Eximus	2.00	lt/ha
25/03/2017	p	Sprayed Cogent	1.00	lt/ha
06/04/2017	p	Sprayed Sprinter in 200 lt/ha water volume	2.00	lt/ha
06/04/2017	p	Sprayed Cortez in 200 lt/ha water volume	0.50	lt/ha
06/04/2017	p	Sprayed Chlormequat in 200 lt/ha water volume	2.00	lt/ha
06/04/2017	p	Sprayed Bravo 500 in 200 lt/ha water volume	1.00	lt/ha
15/08/2017	a	Harvested	-	-

W Rye

14/09/2016	f	Applied TSP Fertilizer to all arable plots.	127.00	kg/ha
20/09/2016	f	Applied Chalk to block 3	5.00	t/ha
27/10/2016	s	Drilled Rye - Mephisto trt Kinto - Block 3 - plots 1, 2, 5, 6, 9, 10, 15, 16	350.00	seeds/m^2
25/03/2017	p	Sprayed Chex	0.25	lt/ha
25/03/2017	p	Sprayed Palio	0.27	lt/ha
25/03/2017	p	Sprayed Eximus	2.00	lt/ha
25/03/2017	p	Sprayed Cogent	1.00	lt/ha
06/04/2017	p	Sprayed Sprinter in 200 lt/ha water volume	2.00	lt/ha
06/04/2017	p	Sprayed Cortez in 200 lt/ha water volume	0.50	lt/ha
06/04/2017	p	Sprayed Chlormequat in 200 lt/ha water volume	2.00	lt/ha

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06/04/2017	p	Sprayed Bravo 500 in 200 lt/ha water volume	1.00	lt/ha
06/04/2017	f	Applied Nitram (34.5% N) Fertiliser - to plots 1, 2, 5, 6, 9, 10, 15, 16	290.00	kg/ha
07/04/2017	f	Applied SOP (50% K2O, 45% SO3) - to all arable plots	150.00	kg/ha
21/04/2017	f	Applied Nitrochalk (27% N) - Block 3 - plots 332, 342, 353, 363, 372, 383, 392, 403, 412, 424, 434, 441, 452, 461, 472, 483	185.00	kg/ha
21/04/2017	f	Applied Nitrochalk (27% N) - Block 3 - plots 331, 343, 351, 361, 373, 384, 394, 401, 414, 422, 432, 444, 453, 462, 471, 484	370.00	kg/ha
21/04/2017	f	Applied Nitrochalk (27% N) - Block 3 - plots 334, 341, 354, 364, 374, 381, 393, 404, 411, 423, 431, 443, 454, 463, 474, 482	556.00	kg/ha
02/05/2017	p	Sprayed Sprinter in 200 lt/ha water volume	2.00	lt/ha
02/05/2017	p	Sprayed Keystone in 200 lt/ha water volume	0.80	lt/ha
24/05/2017	p	Sprayed Sprinter in 200 lt/ha water volume	2.00	lt/ha
24/05/2017	p	Sprayed Cello in 200 lt/ha water volume	0.75	lt/ha
15/08/2017	a	Harvested	-	-

W Oats

14/09/2016	f	Applied TSP Fertilizer to all arable plots.	127.00	kg/ha
27/10/2016	s	Drilled Oats - Mascani trt Beret Gold - plots 17, 18, 21, 22, 51, 52, 63, 64	350.00	seeds/m^2
06/04/2017	f	Applied Nitram (34.5% N) Fertiliser - plots 17, 18, 21, 22, 51, 52, 63, 64	290.00	kg/ha
07/04/2017	f	Applied SOP (50% K2O, 45% SO3) - to all arable plots	150.00	kg/ha
22/05/2017	p	Sprayed Sprinter in 200 lt/ha water volume	2.00	lt/ha
22/05/2017	p	Sprayed Refin Max in 200 lt/ha water volume	75.00	g/ha
22/05/2017	p	Sprayed Cello in 200 lt/ha water volume	1.00	lt/ha
22/05/2017	p	Sprayed Hurler in 200 lt/ha water volume	0.75	lt/ha

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15/08/2017	a	Harvested	-	-

NOTE: Herbage and grain samples were taken for chemical analyses.

Yields

LEYS

1ST CUT (27 JUN 2017) DRY MATTER TONNES/HECTARE

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

FYM_RES

LEY	NONE	FYM	MEAN
LC1	3.41	2.31	2.86
LC2	2.72	2.29	2.50
LC3	5.10	5.49	5.29
LN1	2.55	4.49	3.52
LN2	3.83	5.85	4.84
LN3	4.64	4.08	4.36
(LLC/LC)LC1	5.38	5.51	5.45
(LLC/LC)LC2	2.25	2.80	2.52
(LLC/LC)LC3	4.90	4.85	4.87
(LLN/LN)LN1	8.56	7.03	7.80
(LLN/LN)LN2	4.23	3.55	3.89
(LLN/LN)LN3	4.49	5.00	4.74
MEAN	4.34	4.44	0.39

1ST CUT MEAN DM% 0.30

2ND CUT (17 NOV 2017) DRY MATTER TONNES/HECTARE

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

FYM_RES

LEY	NONE	FYM	MEAN
LC1	0.35	0.68	0.51
LC2	0.76	0.67	0.71
LC3	1.18	1.99	1.58
LN1	0.74	1.10	0.92
LN2	0.95	1.02	0.98
LN3	4.15	1.40	2.77
(LLC/LC)LC1	1.06	1.72	1.39
(LLC/LC)LC2	0.45	0.34	0.39

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(LLC/LC)LC3	2.20	2.93	2.56
(LLN/LN)LN1	2.84	2.28	2.56
(LLN/LN)LN2	0.95	0.91	0.93
(LLN/LN)LN3	1.24	1.16	1.20
MEAN	1.40	1.35	1.38
2ND CUT MEAN DM%	22.80		

Total of 2 CUTS DRY MATTER TONNES/HECTARE

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

FYM_RES			
LEY	NONE	FYM	MEAN
LC1	3.76	2.99	3.37
LC2	3.48	2.95	3.22
LC3	6.28	7.48	6.88
LN1	3.28	5.59	4.44
LN2	4.77	6.86	5.82
LN3	8.79	5.48	7.13
(LLC/LC)LC1	6.44	7.22	6.83
(LLC/LC)LC2	2.69	3.14	2.91
(LLC/LC)LC3	7.10	7.77	7.44
(LLN/LN)LN1	11.40	9.32	10.36
(LLN/LN)LN2	5.18	4.47	4.82
(LLN/LN)LN3	5.73	6.15	5.94
MEAN	5.74	5.79	5.76
2ND CUT MEAN DM%	33.10		

Note: Since 2014 grass-only leys have not been receiving N after the first cut and in some years K has not been applied after the first cut on both grass-only and grass-clover leys.

ARABLE TREATMENT CROPS

WINTER BEANS

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Results of the Classical and other Long-term Experiments 2017

GRAIN (85% DRY MATTER) TONNES/HECTARE

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

FYMRES ROTATION	NONE	FYM	Mean
(AO)Be	0.34	1.01	0.68
(LLn/AO)Be	0.75	1.26	1.01
(LLc/ABe)Be	2.31	1.20	1.76
(ABe)Be	1.78	2.19	1.99
Mean	1.30	1.42	1.36

Grain mean DM%	85.3
Plot area harvested	0.00393

RYE (EXTRA)

GRAIN (85% DRY MATTER) TONNES/HECTARE

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

FYMRES ROTATION	NONE	FYM	Mean
(AO)Be	5.91	5.18	5.54
(LLn/AO)Be	5.62	5.28	5.45
(LLc/ABe)Be	5.07	5.84	5.46
(ABe)Be	6.33	5.76	6.05
Mean	5.73	5.52	5.62

Grain mean DM%	86.1
Plot area harvested	0.00393

WINTER WHEAT

Grain tonnes/hectare

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

FYMRES	none	FYM	Mean
ROTATION			
(AO)W	5.95	5.33	5.64
(ABe)W	4.82	4.45	4.63
(LLn/AO)W	5.24	4.80	5.02
(LLc/ABe)W	6.24	7.37	6.80
(LN)W	4.70	5.26	4.98
(LLN/Ln)W	5.74	5.93	5.84
(LC)W	7.54	6.36	6.95
(LLc/Lc)W	7.35	6.88	7.11
Mean	5.95	5.80	5.87

N	0	80	160	240	Mean
ROTATION					
(AO)W	2.63	5.18	7.08	7.67	5.64
(ABe)W	3.00	5.20	5.03	5.30	4.63
(LLn/AO)W	2.77	6.46	6.83	4.02	5.02
(LLc/ABe)W	5.89	7.77	7.48	6.08	6.8
(LN)W	4.28	5.29	6.00	4.35	4.98
(LLN/Ln)W	3.33	6.61	6.38	7.03	5.84
(LC)W	5.71	8.07	7.71	6.30	6.95
(LLc/Lc)W	5.89	7.40	7.31	7.85	7.11
Mean	4.19	6.50	6.73	6.07	5.87

N	0	80	160	240	Mean
FYMRES					
none	4.06	6.50	7.12	6.10	5.95
FYM	4.31	6.49	6.34	6.04	5.80
Mean	4.19	6.50	6.73	6.07	5.87

	N	0	80	160	240
ROTATION	FYMRES				
(AO)W	none	2.71	5.6	7.77	7.71
	FYM	2.55	4.75	6.39	7.62
(ABe)W	none	2.42	4.63	7.17	5.04
	FYM	3.57	5.77	2.89	5.55
(LLn/AO)W	none	2.59	6.79	6.64	4.95
	FYM	2.96	6.13	7.01	3.09
(LLc/ABe)W	none	6.09	7.98	5.68	5.20
	FYM	5.69	7.55	9.29	6.96
(LN)W	none	3.75	5.05	6.39	3.61
	FYM	4.81	5.53	5.61	5.08
(LLN/Ln)W	none	3.47	6.42	6.72	6.35

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	FYM	3.19	6.79	6.04	7.71
(LC)W	none	5.81	7.58	8.97	7.80
	FYM	5.62	8.56	6.46	4.79
(LLc/Lc)W	none	5.67	7.92	7.62	8.18
	FYM	6.11	6.87	7.00	7.53
Grain mean DM%	86.9				
Plot area harvested	0.00183				

WINTER RYE

Grain tonnes/hectare

Tables of means

FYMRES	none	FYM	Mean
ROTATION			
(AO)R	5.16	6.06	5.61
(ABe)R	6.07	7.01	6.54
(LLn/AO)R	5.76	6.49	6.13
(LLc/ABe)R	6.81	6.96	6.89
(Ln)R	7.16	6.59	6.87
(LLn/Ln)R	6.15	6.99	6.57
(Lc)R	6.61	6.88	6.74
(LLc/Lc)R	7.00	7.11	7.06
Mean	6.34	6.76	6.55

N	0	50	100	150	Mean
ROTATION					
(AO)R	2.84	5.07	7.18	7.36	5.61
(ABe)R	3.61	6.64	7.68	8.24	6.54
(LLn/AO)R	3.37	6.64	7.41	7.08	6.13
(LLc/ABe)R	4.57	6.72	7.88	8.39	6.89
(Ln)R	5.17	6.97	7.22	8.14	6.87
(LLn/Ln)R	4.75	7.02	7.30	7.22	6.57
(Lc)R	5.48	6.25	7.47	7.78	6.74
(LLc/Lc)R	5.19	7.39	8.34	7.31	7.06
Mean	4.37	6.59	7.56	7.69	6.55

N	0	50	100	150	Mean
FYMRES					
none	4.22	6.49	7.45	7.2	6.34
FYM	4.52	6.69	7.67	8.17	6.76
Mean	4.37	6.59	7.56	7.69	6.55

N	0	50	100	150

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Results of the Classical and other Long-term Experiments 2017

ROTATION	FYMRES				
(AO)R	none	2.38	4.65	7.25	6.37
	FYM	3.30	5.50	7.11	8.35
(ABe)R	none	3.25	6.46	6.87	7.72
	FYM	3.97	6.82	8.49	8.76
(LLn/AO)R	none	2.97	6.37	7.33	6.38
	FYM	3.78	6.91	7.49	7.78
(LLc/ABe)R	none	3.73	6.83	8.48	8.21
	FYM	5.40	6.62	7.27	8.57
(Ln)R	none	6.32	7.15	7.17	8.02
	FYM	4.02	6.79	7.27	8.27
(LLn/Ln)R	none	4.41	7.05	6.34	6.78
	FYM	5.08	6.98	8.26	7.65
(Lc)R	none	5.55	6.04	7.81	7.02
	FYM	5.41	6.45	7.12	8.54
(LLc/Lc)R	none	5.16	7.34	8.37	7.14
	FYM	5.23	7.43	8.31	7.48

Grain mean DM%	86.73
Plot area harvested	0.00183

WINTER OATS

GRAIN (85% DRY MATTER) TONNES/HECTARE

Tables of means

FYMRES	NONE	FYM	Mean
ROTATION			
ABe	1.02	1.15	1.09
AO	3.81	3.36	3.59
LLc/ABe	1.59	1.54	1.56
LLn/AO	2.41	2.78	2.59
Mean	2.21	2.21	2.21

Grain mean DM%	80.9
Plot area harvested	0.00393

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