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Yields of the Field Experiments 2020

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20/W/RN/12 Organic Manuring (Stackyard B, Woburn Farm)

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20/W/RN/12 ORGANIC MANURING (Stackyard B, Woburn Farm)

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

The 56th year, Winter Beans.

For previous years see 'Details' 1973 and Yield Books for 74-19/W/RN/12.

Design: 4 blocks of 8 plots

Whole plot dimensions: 8.0 m × 29.5 m (8.0 m × 26.5 m on Block III).

Treatments: From 1966 to 1971 the experiment had a preliminary period designed to build up organic matter from different sources. An arable rotation was started on two blocks on 1972 and the remaining two blocks in 1973. After a period of testing the residues, 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. A second test phase began when leys on the first pair of blocks were ploughed for the 1st test crop in 1987 and on the second pair for the 1st test crop in 1988. From 1988 two blocks, and 1989 the other two, to 1994, plots were split into 6 sub-plots to test five levels of nitrogen and nil. From 1995 to 1997 residual effects of that nitrogen were measured. In 1998 to 2000 yields were taken from whole plots only. In 2001 plots were split into half-plots to test two rates of N.

For 2003 the experiment was modified to test further inputs of organic matter. An arable rotation (winter rye, spring barley, winter beans, winter wheat, forage maize) was started on seven plots within each block; the eighth was sown to a grass/clover ley.

Whole plots

1. **Treatment** (Not necessarily applied each year):

1966-1971/2	1979/82-1986/7	Since 2003
Fd	Fd	F
Ln	Lc6	F
St	St	St
Gm	Lc8	CC
Pt	Lc8	Co
Fs	Fs	Dg10
Dg	Dg	Dg25
Lc	Lc6	Lc

F: no organic amendment. St: chopped straw at 7.5 t/ha. CC: cover crop prior to spring sown crops. Co: compost at 40 t/ha. Dg10: FYM at 10 t/ha. Dg25: FYM at 25 t/ha. Dg: FYM at 50 t/ha. Fd: fertilizers equivalent to FYM. Fs: fertilizers equivalent to straw (+P). Lc/Lc6/Lc8: grass/clover leys. Ln: grass ley + N. Gm: green manure. Pt: peat.

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Since 2003, all treatments, except Dg25, have also received PKS fertilizers:

20 kg P/ha, 83 kg K/ha, 36 kg S/ha

In addition, in 2003 F and CC treatments received 120 kg N/ha, St received 90 kg N/ha. Dg10 received 60 kg N/ha. No N was applied to Dg25, Co or Lc treatments.

Nitrogen

In 2008 all plots, except Lc (permanent grass/clover), split into 6 to test rates of N. For crops receiving nitrogen rates rotate as follows:

N5 > N4 > N3 > N2 > N1 > N0 > N5 etc.

For 2015 Winter beans – No Nitrogen Applied

For 2016 Winter wheat rates were 0, 50, 100, 150, 200 & 250 kg N/ha as Nitro-Chalk (27% N)

For 2017 Forage maize rates were 0, 50, 100, 150, 200 & 250 kg N/ha as Nitro-Chalk (27% N)

For 2018 Winter rye rates were 0, 30, 60, 90, 120 & 150 kg N/ha as Nitro-chalk (27% N)

For 2019 Spring barley rates were 0, 35, 70, 105, 140 & 175 kg N/ha as Nitro-chalk (27% N)

Experimental Diary

Date		Application	Rate	Units
24/09/2019	a	Topped; JD6620 Topper 9	-	-
30/09/2019	f	Applied FYM; Plots 008, 014, 018, 028; By Hand	10	t/ha
01/10/2019	f	Applied FYM; Plots 005, 011, 023, 026; By Hand	25	t/ha
01/10/2019	f	Applied compost; Plots 007, 012, 021, 027; By Hand	40	t/ha
02/10/2019	f	Applied straw; Plots 003, 015, 017, 031; By Hand	7.5	t/ha
03/10/2019	a	Ploughing; Direction thrown: E; JD6620 with Dowdeswell 100 Series Five Furrow Plough	-	-
03/10/2019	a	Topped straw that has been spread on Plots 003, 015, 017, 031 to try and make it easier to plough in; JD6620 with Topper 9	-	-

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10/10/2019	a	Power harrow; JD6620 with Kuhn Powerharrow 3m	-	-
17/10/2019	a	Rolled; JD6620 with Flexicoil Cambridge Roll	-	-
22/10/2019	s	Drilled winter beans, var: Tundra; JD6620 with Accord Tyne Drill	-	-
05/11/2019	a	Topped grass plot paths; ISTH4335 with Kilworth Topper	-	-
25/03/2020	p	Sprayed Troy 480; Winter Beans; MF6150 with Knight Sprayer	3	l/ha
15/04/2020	p	Sprayed Hallmark with Zeon Technology; Winter Beans; MF6150 with Knight Sprayer	75	ml/ha
15/04/2020	p	Sprayed Laser; Winter Beans; MF6150 with Knight Sprayer	1	l/ha
15/04/2020	p	Sprayed Sprinter; Winter Beans; MF6150 with Knight Sprayer	2	l/ha
17/04/2020	f	Applied potassium sulphate; Winter Beans; JD6620 with Cascade Spreader	200	kg/ha
17/04/2020	f	Applied triple superphosphate; Winter Beans; JD6620 with Cascade Spreader	97.5	kg/ha
01/06/2020	a	Crop failure. Winter bean crop failed and was not harvested	-	-
30/06/2020	a	Grass Plots 1st Cut 2020; JD6620 with Wilder Grass Box	-	-
02/07/2020	a	Mowed Grass Trails; JD6620 with Mower-Unifarm	-	-
02/07/2020	a	Row up grass. Grass plots; JD6620 with Tedder	-	-
03/07/2020	a	Baling Grass. Grass plots; JD6620 with Claas Baler	-	-

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Yields

WINTER BEANS – Crop failed, No yields available.

GRASS/CLOVER

DRY MATTER TONNES/HECTARE
***** Table of means *****

Year	1st Cut	2nd Cut	Total
2003	-	-	-
2004	1.82	-	1.82
2005	1.86	0.13	1.99
2006	4.07	-	4.07
2007	3.12	1.36	4.48
2008	5.72	1.65	7.37
2009	4.77	-	4.77
2010	4.41	-	4.41
2011	1.46	0.39	1.85
2012	4.11	0.64	4.75
2013	4.65	0.60	5.24
2014	4.09	0.91	5.01
2015	*	0.36	-
2016	3.97	0.56	4.54
2017	2.17	1.48	3.65
2018	2.98	0.93	3.91
2019	2.34	0.39	2.73
2020	1.01	-	-

Cut dry matter t/ha (30 JUNE 2020). No second cut was taken.

Note: Herbage samples were taken for chemical analyses and archiving.

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