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Yields of the Field Experiments 1957

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Classical Experiments

Rothamsted Research

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57/A/1.1

WHEAT - BROADBALK 1957

The 114th year

For history, treatments, etc., see "Details of the Classical and Long Term Experiments" 1956.

Cultivations, etc.:

Cropped sections. Ground chalk applied: Sept 29, 1956. Dung applied: Oct 4. Ploughed: Sept 28 - Oct 8. Autumn fertilizers applied: Oct 29 - Nov 6. Seed drilled at $2\frac{3}{4}$ bushels per acre: Nov 7 - 12. Spring fertilizers applied: Apr 29 - 30, 1957. Second dressing of nitrate of soda applied to plot 16: May 16. Section 1A under continuous wheat sprayed with MCPA at 3 pints in 80 gallons per acre: May 7. Combine harvested: Aug 27 - 30. Variety: Squareheads Master 13/4.

Fallow section. (II). Ploughed: Sept 28 - Oct 8, 1956, Apr 3 - 5, 1957 and June 25 - 26.

In 1957 the plots were combine harvested for the first time, a single cut being made down the centre of each plot for the full length. The yields of the remainder of each plot (also taken by the combine) were recorded, but the yields presented in this report are from the central strip only. After combining, as much straw as could be picked up from this strip was weighed.

Broadbalk Wilderness. N.

Cultivations, etc.: Shrubs grubbed out: Jan 1 - 5, 1957. Part mown: Apr 24, May 24, June 6, July 1, July 24, Aug 15, Sept 23.

Summary of Results

Grain (at 85% dry matter): cwt per acre

Section Years after fallow	IB	III	IV	VA	VB	IA	Mean
	1	2	3	Unlimed 4	Limed 4	6	
2A	22.1	18.7	18.0	15.7	17.3	18.1	18.3
2B	23.0	20.1	19.6	17.4	18.4	16.0	19.5
3	14.0	9.4	11.2	10.6	9.8	9.7	10.7
5	16.8	8.1	2.5	10.6	10.6	10.1	8.6
6	19.4	14.4	8.0	13.2	13.9	13.3	13.1
7	24.5	21.6	16.8	14.1	18.4	14.6	18.8
8	36.8	18.3	23.1	19.0	7.1	17.2	20.6
9	28.0	18.8	16.4	14.6	14.6	13.9	18.0
10	22.6	15.3	13.4	15.2	16.2	16.2	16.0
11	24.2	21.0	16.9	11.1	15.3	20.2	18.2
12	19.9	20.0	16.4	11.6	15.7	24.9	17.6
13	29.2	19.5	12.3	10.9	18.7	15.9	17.4
14	25.2	18.4	12.2	13.4	14.9	22.7	16.8
15	24.3	13.7	9.4	12.0	18.2	14.9	14.5
16	27.6	25.6	26.6	23.0	21.3	19.9	24.8
17	15.6	9.2	7.5	8.6	9.9	8.1	9.6
18	20.7	16.2	19.3	19.3	21.0	13.1	18.5
19	20.7	14.8	9.4	13.5	17.9	15.4	14.5
20	26.0	-	-	-	-	14.8	22.4

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57/A/1.2

Straw (at 85% dry matter): cwt per acre

Section Years after fallow	IB	III	IV	VA	VB	IA	Mean
	1	2	3	Unlimed 4	Limed 4	6	
2A	38.4	25.5	28.9	30.5	27.0	9.4	28.0
2B	39.6	37.1	36.7	28.0	26.0	20.2	33.5
3	19.4	10.4	13.0	13.1	10.8	10.4	12.7
5	26.4	11.7	14.8	15.7	13.7	12.5	15.4
6	30.3	18.2	16.3	15.6	20.0	15.2	19.0
7	29.8	25.2	17.2	18.0	19.5	10.4	21.0
8	33.7	23.0	28.6	27.9	16.7	27.4	26.0
9	28.5	19.4	17.8	15.1	15.0	13.9	18.7
10	22.4	17.2	13.4	17.0	17.7	13.4	16.7
11	17.8	23.0	17.1	11.7	22.3	15.3	18.6
12	26.8	21.5	18.7	17.4	18.7	21.2	20.5
13	32.8	21.9	14.2	15.4	26.6	14.8	20.7
14	20.3	20.2	13.3	17.0	17.3	27.4	18.0
15	35.5	20.5	14.5	19.0	26.8	11.4	21.0
16	32.6	24.1	23.3	17.6	22.7	17.5	23.5
17	18.6	12.0	11.9	13.1	15.3	9.5	13.3
18	27.2	17.2	22.6	24.3	11.6	3.9	19.3
19	31.5	22.2	16.3	10.9	26.5	22.1	21.0
20	30.5	-	-	-	-	13.5	25.0

Mean dry matter % as harvested: Grain 81.8
Straw 88.9

Note: On plots 2A and 2B the yields shown are from the whole of each plot (20 rows).

57/A/2

BARLEY - HOOSFIELD 1957

The 106th year

For history, treatments etc., see "Details of the Classical and Long Term Experiments" 1956.

Cultivations, etc.: Ploughed: Oct 13 - 20, 1956. Dung applied, all plots ploughed: Jan 18, 1957. Fertilizers applied: Apr 4 - 5. Seed drilled at $2\frac{3}{4}$ bushels per acre: Apr 6. Sprayed with MCPA at 2 pints in 40 gallons per acre: May 29. Harvested: Aug 29 - 30. Variety: Plumage Archer.

Summary of Results

Plot	Grain (at 85% dry matter): cwt per acre	Straw (at 85% dry matter): cwt per acre
1 0	6.4	3.5
2 0	9.4	4.1
3 0	5.6	3.6
4 0	9.6	5.3
5 0	8.0	4.4
1 A	7.3	5.0
2 A	9.4	5.7
3 A	10.0	8.6
4 A	14.4	9.0
5 A	12.9	10.3
1 AA	9.6	6.1
2 AA	14.8	9.0
3 AA	9.4	7.8
4 AA	16.1	10.2
1 AAS	10.9	10.6
2 AAS	18.4	7.8
3 AAS	15.2	10.9
4 AAS	17.0	11.5
1 C	12.6	9.0
2 C	13.8	7.7
3 C	12.6	9.0
4 C	13.7	7.6
7 - 1	10.0	5.9
7 - 2	25.8	16.8
6 - 1	5.0	3.9
6 - 2	6.2	4.3
1 N	9.3	7.4
2 N	9.5	8.7
Mean dry matter % as threshed:	82.8	81.7

57/A/3

WHEAT AFTER FALLOW - HOOSFIELD 1957

Without manure 1851 and since

For history, treatments, etc. see "Details of the Classical and Long Term Experiments" 1956. In 1957 the original plots were reduced in size to 0.0337 acres to provide additional land for the study of Wheat Bulb Fly.

Cultivations, etc.:

Cropped plots. Ploughed: Sept 26, 1956. Seed sown at 3 bushels per acre: Oct 27. Combine harvested: Aug 26, 1957. Variety: Squareheads Master 13/4.

Fallowed plots. Ploughed: Sept 26, 1956.

Summary of Results

Grain (at 85% dry matter): cwt per acre

Plot No. of years of fallow	B ₁	B ₄	B ₂	Mean
	1	1	3	
	11.6	11.2	14.1	12.3

Mean dry matter % as harvested: 82.7

POTATOES - AGDELL 1957

For history, treatments, etc. see "Details of the Classical and Long Term Experiments" 1956. In 1957 a crop of potatoes was grown, manured with sulphate of ammonia only.

Area harvested: Plots 1 - 4, 0.0922 acres; 5 and 6, 0.0764 acres.

Basal dressing: 5 cwt sulphate of ammonia per acre.

Cultivations, etc.: Ploughed: Oct 15, 1956. Sulphate of ammonia applied: Apr 25, 1957. Ridged, potatoes machine planted: Apr 30. Earthed up: July 9. Sprayed with copper fungicide, 5 lb in 40 gallons per acre: July 31, Aug 21 and Sept 3. Sprayed with sulphuric acid, 20% BOV at 100 gallons per acre: Oct 3 and repeated on part area Oct 7. Lifted: Oct 16 - 22. Variety: Ulster Supreme.

Summary of Results

Manure to turnips 1948 Plot rotation	None since 1848		Mineral manure		Complete mineral & nitrogenous manure		Mean
	5 Fallow	6 Clover	3 Fallow	4 Clover	1 Fallow	2 Clover	
Total tubers: tons per acre	4.41	2.95	14.39	8.56	15.50	14.14	9.99
Percentage Werc (1½" riddle)	91.3	70.4	95.3	91.7	93.6	91.8	89.0

57/A/4.1

MANGOLDS AND SUGAR BEET - BARNFIELD

The 82nd and 12th years

For history, treatments etc., see "Details of the Classical and Long Term Experiments" 1956.

A maintenance chalk dressing was applied to Series A, AC and C, at 6 cwt, 9 cwt and 3 cwt per acre respectively, under the new liming scheme introduced in spring 1956.

In July, 4 rows of mangolds and 4 of sugar beet on each plot were thinned, and the remainder removed by thistle bar. Plot 4 N(a) was left with 4 rows of mangolds only.

Cultivations, etc.: Ground chalk applied: Nov 30, 1956. Dung applied: Nov 28 - Dec 1. Ploughed: Dec 1 - 5. Fertilizers applied: May 10 - 14, 1957. Sugar beet drilled at 16 - 20 lb per acre; mangolds drilled at 8 lb per acre: May 17. Sprayed the uncropped west side of plots 1N and 10 only before emergence with 2 gallons Pentachlorophenol (PCP) in 40 gallons of water per acre: May 30. Singled: July 9 - 16. Removed discarded rows by thistle bar: July 10. Top dressings applied to reduced plot areas: July 16 - 18. Lifted: Oct 26 - Nov 7. Varieties: Mangolds - Yellow Globe, sugar beet - Klein E.

Cultivations to discarded areas after July 10:-

Thistle bar: July 11, July 25, July 29, Sept 17.

57/A/4.2

Summary of Results

Strip	Cross Dressing				
	O	N	A	AC	C
Mangolds, roots: tons per acre					
1	20.35	31.29	31.46	29.41	25.65
2	20.52	30.78	29.07	33.17	28.04
4	7.02	(a) 18.47* (b) 24.45*	22.57	27.70	21.37
5	5.73	19.32	10.77	13.17	13.34
6	6.03	16.41	13.85	23.77	14.02
7	7.54	16.24	21.54	26.33	26.67
8	3.38	13.34	12.65	13.51	13.17
9	21.88				
Mangolds, leaves: tons per acre					
1	5.45	7.84	8.84	9.67	8.45
2	6.03	8.30	7.89	9.53	7.89
4	2.12	(a) 6.62* (b) 7.82*	9.18	11.24	9.11
5	2.00	5.64	6.45	7.52	6.55
6	2.17	4.25	4.69	8.67	5.69
7	1.98	4.93	6.42	8.99	8.11
8	1.47	4.79	5.18	4.91	4.86
9	7.01				
Mangolds, plant number: thousands per acre					
1	16.1	19.3	18.5	17.8	17.0
2	17.0	19.2	18.1	18.8	17.8
4	18.0	(a) 17.4* (b) 18.9*	18.5	15.5	15.5
5	17.0	19.9	19.1	19.3	19.5
6	18.5	16.6	12.8	15.8	13.2
7	19.1	19.9	18.3	18.6	20.2
8	16.1	20.2	18.2	14.0	16.8
9	20.4				

*No nitrate of soda. Nitrogen applied as calcium and potassium nitrates.

57/A/4.3

Strip	Cross Dressing				
	0	N	A	AC	C
Sugar beet, roots (washed): tons per acre					
1	8.13	11.10	11.39	11.87	12.10
2	7.56	10.64*	11.64	13.73	11.11
4	3.96	(b) 9.35*	10.20	11.42	10.42
5	3.16	8.48	7.27	7.43	7.95
6	3.87	7.28	8.92	10.03	7.79
7	3.40	6.50	9.62	9.49	8.81
8	2.78	6.80	6.72	7.97	6.94
9	7.94				

Sugar beet, tops: tons per acre					
1	7.89	10.89	13.36	13.97	13.80
2	7.77	15.12*	12.80	15.17	13.60
4	3.27	(b) 10.09*	9.38	15.09	13.63
5	2.56	10.06	10.11	12.48	11.55
6	2.42	7.99	9.13	12.87	9.13
7	2.69	8.89	9.70	14.70	11.92
8	2.39	9.45	8.96	13.46	10.01
9	8.23				

Sugar beet, plant number: thousands per acre					
1	18.1	19.0	19.6	20.1	18.8
2	19.2	20.4*	20.8	19.1	18.7
4	24.5	(b) 21.0*	21.7	18.0	18.9
5	23.6	23.0	21.3	19.6	19.8
6	25.1	21.3	21.9	18.2	18.2
7	24.9	22.4	22.3	19.4	20.5
8	22.5	22.7	22.4	20.0	19.7
9	23.1				

Sugar beet, sugar percentage					
1	17.9	16.6	16.7	15.5	16.2
2	17.7	16.0*	16.5	15.7	17.0
4	18.5	(b) 16.8*	17.2	15.3	16.7
5	18.1	16.4	17.1	15.9	15.7
6	18.2	16.8	17.2	16.3	16.4
7	18.9	17.1	17.0	15.0	17.0
8	18.4	16.7	17.2	15.9	16.4
9	17.4				

*No nitrate of soda. Nitrogen applied as calcium and potassium nitrates.

57/A/5

HAY - THE PARK GRASS PLOTS 1957

For history, treatments etc. see "Details of the Classical and Long Term Experiments" 1956.

Cultivations, etc.: Mineral fertilizers applied: Jan 3, 1957. Dung applied to appropriate plots: Jan 10. Nitrogenous fertilizers applied: 1st dressing - Mar 29, 2nd dressing - Apr 25. Cut twice: June 18 and Sept 24.

Summary of Results

Yield of Hay: cwt per acre

Plot	Not limed			Limed		
	1st Crop	2nd Crop	Total	1st Crop	2nd Crop	Total
1	6.2	6.6	12.8	18.9	9.2	28.1
2	7.9	5.1	13.0	13.8	9.6	23.4
3	5.7	5.6	11.3	12.5	6.8	19.3
4-1	15.1	12.8	27.9	19.2	9.1	28.3
4-2	16.8	12.8	29.6	25.2	17.1	42.3
5-1	5.6	6.1	11.7			
5-2	19.0	18.8	37.8			
6	31.1	24.2	55.3			
7	28.4	22.5	50.9	46.1	25.8	71.9
8	19.2	19.0	38.2	17.8	13.8	31.6
9	41.1	13.1	54.2	46.2	17.5	63.7
10	21.0	14.1	35.1	32.0	16.2	48.2
11-1	42.2	37.5	79.7	44.1	26.5	70.6
11-2	49.1	33.5	82.6	56.2	42.2	98.4
12	9.4	13.6	23.0			
13	35.9	26.0	61.9	34.1	31.0	65.1
14	53.9	31.4	85.3	49.4	15.1	64.5
15	22.5	18.1	40.6	50.2	23.4	73.6
16	37.8	21.5	59.3	54.5	23.9	78.4
17	25.6	11.0	36.6	27.6*	12.2*	39.8*
18	8.5	10.6	19.1	19.2*	12.9*	32.1*
				17.4*	15.4*	32.8*
19	33.4	22.5	55.9	42.2*	24.4*	66.6*
				39.4*	26.0*	65.4*
20	36.3	25.6	61.9	36.7*	25.8*	62.5*
				43.4*	26.5*	69.9*

* Heavy liming
+ Light liming

Note: The second crop was carted green; hay yields were estimated from the dry matter.

Mean dry matter % as weighed: 1st crop 83.9; 2nd crop 34.3

57/A/6

BARLEY - EXHAUSTION LAND HOOSFIELD 1957

For history, treatments etc., see "Details of the Classical and Long Term Experiments" 1956.

In 1957 the eastern halves of all strips - plots 1, 3, 5, 7, 9 - were cropped separately under a modified scheme of multiple cropping to test levels of P and K manuring. The yields from these plots will be given in the 1958 report.

On the western halves - plots 2, 4, 6, 8, 10 - the land was bare-fallowed except for a 90 link length on each plot which was sown to barley.

Cultivations, etc.:

Cropped section. Ploughed: Sept 26 - 27, 1956. Seed drilled at $2\frac{3}{4}$ bushels per acre: Mar 21, 1957. Harvested: Aug 21. Variety: Plumage Archer.

Fallowed section. Ploughed: Sept 26 - 27, 1956, June 26, 1957 and Aug 21. Sprayed with TCA at 20 lb in 80 gallons per acre: May 4 and again on June 7.

Note. The grain was damaged by mice during storage, particularly that from plot 2.

Summary of Results

Manuring to potatoes 1876 - 1901*	Yields (at 85% dry matter): cwt per acre	
	Grain	Straw
2 Unmanured after dung 1876 - 81	8.7	7.3
4 Dung	20.0	9.4
6 Nitrate of soda	17.5	6.8
8 Nitrate of soda and complete minerals	17.6	10.2
10 Complete minerals	25.6	14.3
Mean dry matter % as threshed:	83.4	83.8

*For certain changes see history.

57/A/7

CLOVER - ROTHAMSTED GARDEN 1957

The 104th year

For history, etc. see "Details of the Classical and Long Term Experiments" 1956.

Cultivations, etc.: Muriate of potash applied: Nov 26, 1956.
Resowed all blank patches: Apr 8, 1957. Dusted with DDT: May 28.
Resowed all blank patches: Aug 3. Cut 3 times: June 24, Aug 2, Nov 16.

Summary of Results

Dry matter: cwt per acre

Muriate of potash: cwt per acre	Cuts			Total
	1st	2nd	3rd	
None	11.9	9.7	6.2	27.8
2	29.7	13.7	8.3	51.7

57/A/8

WHEAT AND BARLEY - WOBURN STACKYARD 1957

For history, treatments, etc., for both experiments see "Details of the Classical and Long Term Experiments" 1956.

The land was bare fallowed in 1957. Ground chalk was applied to certain areas at 7.5 and 15 cwt CaCO_3 per acre.

Cultivations, etc.:

Wheat and Barley

Ploughed three times: Nov 20, 1956, Apr 16, 1957, July 29. Ground chalk applied: Aug 8.