

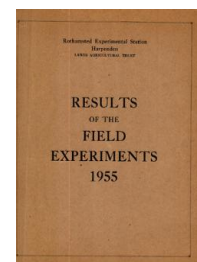
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# Yields of the Field Experiments 1955

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## Classical Experiments

### Rothamsted Research

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55/A/1.1

WHEAT - BROADBALK 1955

The 112th year

For history, details of treatments etc. see "Results of the Field Experiments" 1939-47, Vol. I, Section A/1.

Commencing in autumn 1954 a scheme of chalking was introduced as follows:- the half of section V nearest the drain received a single application of 5 tons of calcium carbonate per acre as ground chalk for this year only. On all plots receiving either ammonium sulphate or castor meal an annual compensating dressing of ground chalk will be applied at the following rates: 100 lb of calcium carbonate for each 14 lb of N applied as ammonium sulphate; 50 lb of calcium carbonate for each 14 lb of N applied as castor meal. In autumn 1954 this compensating dressing was given at double rate; henceforward it will be given at single rate on the stubble.

No compensating dressing is given to the section under fallow or to plots 17 and 18 in their 'no nitrogen' years.

In 1955 Section I was harvested in two separate sub-sections IA and IB. Starting in 1956 IA (nearest the wilderness) will carry wheat without fallow; IB will continue in the following cycle.

Cultivations, etc.:

Cropped sections. Ground chalk applied to lower half of Section V: Sept 28-Oct 21, 1954. Dung applied, ploughed all plots: Oct 1. Ground chalk applied to ammonium sulphate and castor meal plots: Oct 20. Autumn fertilizers applied: Nov 5. Seed drilled at 3 bushels per acre: Dec 6. Spring fertilizers applied: May 16, 1955. Second dressing of nitrate of soda applied to plot 16: June 1. Harvested: Aug 19. Variety: Squareheads Master 13/4.

Fallow section. Ploughed: Oct 1, 1954, April 21 and July 25, 1955.

55/A/1.2

Summary of Results

Section Years after fallow	Grain (at 85% dry matter): cwt per acre						Mean
	IV	VA	VB	II	IA	IB	
	1	Unlimed 2	Limed 2	3	4	4	
2A	36.5	27.6	30.9	25.8	23.1	17.2	28.0
2B	36.7	31.7	25.3	21.3	18.8	25.7	27.6
3	19.7	11.1	10.4	11.2	9.5	10.7	13.1
5	20.9	8.0	9.9	12.7	16.5	11.4	13.9
6	28.2	12.9	13.1	16.4	15.1	14.5	18.2
7	31.5	19.4	17.5	19.5	18.8	20.5	22.4
8	33.3	29.4	26.1	23.8	22.2	26.0	27.5
9	25.3	19.3	17.0	18.9	8.9	15.6	19.1
10	17.1	10.6	19.1	15.0	15.2	17.0	15.8
11	23.1	19.9	20.6	17.0	19.4	17.6	19.7
12	26.9	16.9	19.7	20.9	18.7	19.3	21.3
13	28.3	19.0	15.0	20.9	19.0	20.3	21.5
14	25.7	20.7	12.9	18.9	18.9	18.2	20.0
15	24.0	12.6	9.5	16.2	17.8	14.5	16.7
16	29.1	27.4	21.2	25.3	25.2	24.0	25.8
17	18.0	11.2	10.0	10.1	6.7	5.7	11.4
18	29.0	16.0	16.4	22.6	21.1	22.6	22.4
19	23.5	15.6	11.7	14.5	14.8	15.4	16.7
20	-	-	-	17.4	15.7	18.1	17.3

Mean dry matter % as threshed: 84.8

55/A/1.3

Section Years after fallow	Straw (at 85% dry matter): cwt per acre						Mean
	IV	VA	VB	II	IA	IB	
	1	Unlimed 2	Limed 2	3	4	4	
2A	52.6	43.0	40.3	40.4	39.3	30.8	42.4
2B	52.1	45.8	43.8	45.5	40.5	41.8	46.1
3	24.7	15.2	17.8	17.9	22.4	18.9	19.7
5	34.6	13.4	14.8	25.5	40.7	21.4	25.3
6	44.1	18.5	21.3	27.2	34.5	26.9	30.1
7	49.2	33.9	30.4	34.8	31.9	32.3	37.2
8	55.0	44.8	42.5	41.7	39.1	38.6	45.0
9	41.0	26.5	27.0	28.0	27.2	29.7	31.2
10	25.2	19.7	28.4	21.0	22.9	22.7	23.3
11	34.3	32.2	28.6	26.2	32.2	25.7	29.8
12	40.8	29.2	26.9	30.2	36.0	28.6	32.5
13	47.8	31.6	26.9	33.0	31.8	34.0	35.9
14	40.9	28.0	22.8	27.3	31.8	26.8	30.5
15	43.9	19.7	17.9	26.9	33.8	30.4	30.1
16	46.0	40.5	35.8	37.0	39.1	35.6	39.6
17	27.8	13.3	16.2	13.7	14.6	11.3	17.3
18	43.8	28.4	32.3	36.3	39.8	35.1	36.7
19	36.8	27.4	26.6	22.7	26.8	24.3	28.0
20	-	-	-	23.7	28.4	29.9	26.9

Mean dry matter % as threshed: 85.2

55/A/2.1

BARLEY - HOOSFIELD 1955

The 104th year

For history, details of treatments, etc., see "Results of the Field Experiments" 1939-47, Vol. I, Section A/2.

In the autumn of 1954 a system of chalking was started as follows:- strips 3 and 4, including plots 50 and 5A, receive a dressing of 5 tons of calcium carbonate per acre as ground chalk in 1954-55 only. Plots receiving ammonium sulphate or castor meal have a compensating dressing of ground chalk at the following rates: 100 lb calcium carbonate for each 14 lb of N applied as ammonium sulphate; 50 lb calcium carbonate for each 14 lb of N given as castor meal. The compensating dressings, at five times the annual rate, are given once every five years commencing 1955.

Cultivations, etc.: Ploughed: Sept 27, 1954. Part of ground chalk applied to strips 3 and 4: Nov 6-18. Dung applied: Nov 15. Ploughed: Dec 27. Remainder of ground chalk applied to strips 3 and 4, and compensating dressing applied to series A and C: Mar 17, 1955. Fertilizers applied: Apr 5. Seed drilled at 3 bushels per acre: Apr 7. Sprayed with 8 lb D.N.C. (active substance) in 80 gallons per acre: May 24. Cut and discarded areas of plots in series N, AA, AAS, C and plots 5A and 50, leaving 16 rows per plot: July 25. Harvested: Aug 18. Variety: Plumage Archer.

55/A/2.2

Summary of Results

Plot	Grain (at 85% dry matter): cwt per acre	Straw (at 85% dry matter): cwt per acre
1 O	4.4	4.5
2 O	9.1	7.6
3 O	4.2	4.8
4 O	7.3	6.9
5 O	4.0	4.8
1 A	7.0	7.9
2 A	21.5	19.4
3 A	8.4	10.1
4 A	16.0	15.0
5 A	19.0	19.9
1 AA	9.9	10.2
2 AA	25.0	23.8
3 AA	7.6	8.5
4 AA	22.4	22.6
1 AAS	10.5	10.6
2 AAS	25.0	22.6
3 AAS	15.6	16.9
4 AAS	26.7	24.3
1 C	15.2	14.5
2 C	20.1	18.1
3 C	11.8	10.5
4 C	17.7	16.0
7 - 1	10.1	9.2
7 - 2	27.7	25.4
6 - 1	4.6	5.0
6 - 2	8.0	7.5
1 N	10.6	11.1
2 N	17.1	14.5
Mean dry matter %:	84.9	84.3

55/A/3

WHEAT AFTER FALLOW - HOOSFIELD 1955

Without manure 1851 and since

For history, details of treatments etc. see "Results of the Field Experiments" 1939-47 Vol.I, Section A/3.

Cultivations, etc.:

Cropped plots. Ploughed: Sept 25, 1954. Seed drilled at 3 bushels per acre: Dec 7. Harvested: Aug 20, 1955. Variety: Squareheads Master 13/4.

Fallowed plots. Ploughed: Sept 25, 1954 and Sept 28, 1955.

Summary of Results

Mean yields: cwt per acre

Plot	B3	B4	B1	
No. of years of fallow	1	1	3	Mean
Grain	9.4	10.2	11.2	10.3
Straw	12.9	12.3	15.3	13.5

Mean dry matter % as threshed, Grain: 85.3  
Straw: 86.2

SPRING WHEAT - AGDELL 1955

For history, details of treatments etc., see "Results of the Field Experiments" 1939-47 Vol.I, Section A/4, and 1954, page 54/A/3. In 1955 spring wheat was grown with uniform treatment, manured with nitrogen only. Yields were not recorded. Detailed sampling both of crops and soils was carried out.

Cultivations, etc.:

Ploughed: Nov 4, 1954. Seed drilled at 2 bushels per acre: Apr 4, 1955. Basal dressing of nitrochalk, 4 cwt per acre applied: Apr 5. Sprayed with MCPA at 2½ pts. in 18 gallons per acre: May 23. Combine harvested: Sept 2. Variety: Koga II.

55/A/4.1

MANGOLDS AND SUGAR BEET - BARNFIELD 1955

The 80th and 10th years

For history, details of treatments etc., see "Results of the Field Experiments 1939-47" Vol. 1, Section A/5.

Because of a serious infestation of couch grass (Agropyron repens) it was decided to apply trichloroacetic acid to the following plots: all the O series, 1N. In 1955 half of each plot was sprayed at half the standard rate. No damage to the crops was noted, and the halves were not harvested separately.

Cultivations, etc.: Dung applied: Dec 30, 1954. Ploughed: Jan 3, 1955. Certain plots sprayed with trichloroacetic acid, sodium salt: at 20 lb. in 40 gallons per acre: Apr 9. Fertilizers applied: Apr 22. Seed drilled, Mangolds - 9 lb; Sugar beet - 16 lb per acre. Calcium chloride applied to 4NB only: June 2. Sprayed with miscible D.D.T. 3 pints per acre: June 11. Singling started: July 19. Top dressings applied; nitrate of soda - July 20, sulphate of ammonia - July 22. Lifting started: Mangolds, - Nov 13, Sugar beet - Nov 16. Varieties Mangolds - Yellow Globe, Sugar beet - Klein E.

Erratum to "Results of the Field Experiments" 1951, p. 51/A/4.2.

Sugar Beet: Tops. Cross Dressing - O. Yields for strips 4-8 should read "1.65, 1.49, 1.57, 1.63, 1.79", NOT "6.61, ..., 7.14"



Summary of Results

Strip	Cross Dressing				
	O	N	A	AC	C
Mangolds, Roots: tons per acre					
1	3.55	11.93	10.20	7.44	10.34
2	5.04	9.95	7.98	7.95	10.26
4	1.75	(a) 7.34 (b) 7.29*	5.38	7.95	8.04
5	1.03	6.01	2.50	3.99	6.07
6	1.01	4.30	4.67	7.98	8.72
7	0.89	7.22	6.97	8.18	9.38
8	0.44	2.22	2.47	4.32	4.05
9	5.66				
Mangolds, Leaves: tons per acre					
1	1.47	3.64	3.27	3.00	2.69
2	1.71	3.00	3.10	3.42	2.20
4	0.94	(a) 3.40 (b) 3.13*	2.05	2.86	2.00
5	0.74	3.44	1.81	2.03	2.25
6	0.81	2.81	1.88	2.54	1.81
7	0.72	3.96	2.49	3.69	2.54
8	0.60	1.66	2.34	2.91	2.64
9	3.42				
Mangolds, Plant Number: thousands per acre					
1	19.8	23.2	21.4	16.2	22.0
2	22.2	21.5	19.8	17.6	21.4
4	22.8	(a) 24.7 (b) 23.5*	19.0	17.8	21.3
5	22.6	24.1	20.3	16.8	22.0
6	22.1	22.6	21.5	19.2	22.5
7	21.3	23.1	21.5	18.9	21.9
8	21.0	21.2	20.2	20.9	23.0
9	22.5				

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

55/A/4.3

Strip	Cross Dressing				
	O	N	A	AC	C
Sugar Beet, Roots (washed): tons per acre					
1	2.67	7.83	7.96	6.78	8.46
2	3.03	4.78	3.02	2.86	6.92
4	1.32	(b) 4.67*	3.33	6.56	6.59
5	1.31	3.55	2.82	4.37	6.07
6	1.27	3.10	3.29	6.14	6.66
7	1.04	4.46	4.24	6.61	5.14
8	0.90	3.04	2.58	4.76	4.04
9	2.94				
Sugar Beet, Tops: tons per acre					
1	2.39	9.28	8.94	5.96	4.93
2	3.32	7.03	4.54	3.91	5.42
4	1.15	(b) 5.67*	4.40	5.52	4.69
5	1.06	6.94	3.61	6.30	5.52
6	1.27	4.93	4.25	6.55	5.42
7	1.05	6.74	4.20	8.40	4.25
8	0.93	4.54	3.27	6.74	5.52
9	3.52				
Sugar Beet, Plant Number: thousands per acre					
1	19.6	22.3	21.5	19.6	21.9
2	22.4	22.8	23.0	17.5	22.0
4	23.1	(b) 21.4*	22.1	20.8	20.5
5	23.9	24.3	22.4	22.0	23.4
6	23.1	23.1	21.4	20.8	23.5
7	24.2	23.5	23.4	21.5	22.8
8	22.8	24.2	24.2	22.8	24.0
9	23.2				
Sugar Beet, Sugar Percentage					
1	16.1	14.9	15.3	16.0	16.2
2	15.5	13.9	14.0	14.1	15.8
4	15.8	(b) 14.3*	14.8	15.7	16.2
5	16.0	14.2	15.5	15.6	16.4
6	15.4	14.6	15.3	15.7	16.1
7	15.9	15.6	16.0	15.6	16.1
8	15.3	14.9	15.9	14.9	15.5
9	15.4				

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

HAY - THE PARK GRASS PLOTS 1955

The 100th year

For history, details of treatments etc. see "Results of the Field Experiments 1939-47" Vol.I, Section A/6.

Cultivations, etc.: Mineral fertilizers applied: Dec 27, 1954.  
 Nitrogenous fertilizers applied: 1st dressing - Mar 16, 1955,  
 2nd dressing - May 7. Cut: 1st - June 28, 2nd - Sept 16.

Summary of Results

Yield of Hay: cwt per acre

Plot	Not limed			Limed		
	1st Crop	2nd Crop	Total	1st Crop	2nd Crop	Total
1	1.8	1.8	3.6	22.0	2.6	24.6
2	15.1	2.2	17.3	20.0	3.0	23.0
3	11.0	1.2	12.2	18.8	2.5	21.3
4-1	21.8	2.0	23.8	23.6	3.8	27.4
4-2	3.1	1.2	4.3	28.7	3.4	32.1
5-1	11.3	1.8	13.1			
5-2	26.6	5.6	32.2			
6	33.6	6.4	40.0			
7	33.1	3.9	37.0	52.6	7.5	60.1
8	28.1	2.1	30.2	28.7	3.1	31.8
9	18.0	8.5	26.5	54.1	6.4	60.5
10	10.2	8.2	18.4	39.1	3.1	42.2
11-1	9.0	19.5	28.5	54.1	7.8	61.9
11-2	20.3	18.2	38.5	62.4	13.4	75.8
12	16.7	2.5	19.2			
13	41.8	6.4	48.2	38.7	8.2	46.9
14	45.3	5.8	51.1	48.8	6.5	55.3
15	25.8	4.5	30.3	35.8	6.1	41.9
16	35.7	6.2	41.9	39.8	7.6	47.4
17	21.0	4.4	25.4	25.6	5.0	30.6
18	16.8	4.4	21.2	31.5 <sup>*</sup>	3.9 <sup>*</sup>	35.4 <sup>*</sup>
				31.7 <sup>+</sup>	5.0 <sup>+</sup>	36.7 <sup>+</sup>
19	29.9	3.1	33.0	30.0 <sup>*</sup>	2.9 <sup>*</sup>	32.9 <sup>*</sup>
				34.6 <sup>+</sup>	3.6 <sup>+</sup>	38.2 <sup>+</sup>
20	38.5	4.0	42.5	39.1 <sup>*</sup>	3.1 <sup>*</sup>	42.2 <sup>*</sup>
				35.7 <sup>+</sup>	4.2 <sup>+</sup>	39.9 <sup>+</sup>

\*Heavy liming

+Light liming

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

55/A/6

BARLEY - EXHAUSTION LAND HOOSFIELD 1955

For history, details of treatments etc., see "Results of the Field Experiments 1952", section A/6.

Cultivations, etc.: Ploughed: Sept 28, 1954. 1st dressing of ground chalk applied to acid areas: Dec 31. Ploughed: Jan 10, 1955. 2nd dressing of ground chalk applied: Mar 18. Nitrochalk applied at  $3\frac{1}{2}$  cwt per acre: Mar 21. Seed drilled at 3 bushels per acre: Mar 22. Sprayed with M.C.P.A. at  $2\frac{1}{2}$  pints in 40 gallons per acre: Mar 31. Parts of certain plots infested with wild oats (*Avena fatua*) cut and discarded: July 28. Harvested: Aug 15. Variety: Plumage Archer.

Note: Wild oats were pulled by hand during August from the harvested areas.

Summary of Results

Manuring to Potatoes 1876-1901*	Yields: cwt per acre	
	Grain	Straw <sup>+</sup>
1 Unmanured	9.5	12.5
2 Unmanured after 6 years dung	12.4	16.6
3 Dung	27.1	28.5
4 Dung	25.3	27.0
5 Ammonium salts	11.8	14.1
6 Nitrate of soda	8.0	11.4
7 Ammonium salts and complete minerals	24.6	27.3
8 Nitrate of soda and complete minerals	22.8	24.9
9 Superphosphate	20.9	22.5
10 Complete minerals	23.9	26.7

\*For certain changes see history.

<sup>+</sup>At 85% dry matter

Mean dry matter % as threshed, Grain: 85.4  
Straw: 85.6

55/A/7

WHEAT - WOBURN STACKYARD 1955

For history, details of treatments etc., see "Results of the Field Experiments" 1939-47, Vol. I, Section A/7.

In 1955 dressings of calcium carbonate were applied ranging from 20 to 50 cwt per acre according to the acidity of the plots, which were bare fallowed.

Cultivations, etc.: Ploughed: Nov 2, 1954. First dressing of ground chalk applied: Feb 15, 1955. Second dressing of ground chalk applied: Mar 8. Ploughed: Mar 17. Third dressing of ground chalk applied: Apr 16. Ploughed: May 6; Aug 2; Sept 26.

55/A/8

BARLEY - WOBURN STACKYARD 1955

For history, details of treatments etc., see "Results of the Field Experiments" 1939-47, Vol. I, Section A/7 and 1953 Section A/8. In 1955 dressings of calcium carbonate were applied ranging from 20 to 50 cwt per acre according to the acidity of the plots.

Cultivations, etc.: Ploughed: Nov 3, 1954. First dressing of chalk applied: Feb 15, 1955. Second dressing of chalk applied: Mar 8. Ploughed: Mar 18. Third dressing of chalk applied: Apr 6. Seed drilled at 3 bushels per acre: Apr 7. 'Nitrochalk' applied: Apr 12. Sprayed with MCPA amine at 2½ pints per acre in low volume: May 22. Harvested: Aug 24. Variety: Plumage Archer.

Summary of Results

Plot	'Nitrochalk' dressing: cwt per acre	Grain: cwt per acre	Straw: cwt per acre
1	2	5.6	7.1
3	4	8.0	10.7
7	6	8.4	12.1
6	2	12.2	11.5
9	4	18.7	19.2
4	6	11.9	15.0
11b (3)	2	11.7	12.7
11b (1)	4	19.8	22.4
11b (2)	6	22.4	25.9
10b	2	6.1	7.1
11a	4	9.8	11.9
10a	6	4.4	7.8
5	2	6.9	8.1
8	4	9.6	11.3
2	6	5.6	7.9