

## Broadbalk Wheat Experiment plan and cropping 1926-1967

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**Date:** October 2017, revised May 2021 with addition of cropping details.

**Description:** Experiment plan for the Broadbalk Wheat Experiment, 1926-1967, with details of fertilizer and manure treatments (not to scale). Also cropping details 1926-1967.

- **Page 1:** Cover page
- **Pages 2-3:** Broadbalk Wheat Experiment plan 1926-1967, showing plot layout and treatment codes, with full details of fertilizer and manure treatments applied.
- **Pages 4-5:** Broadbalk Wheat Experiment cropping details 1926-1967, showing wheat cultivars, wheat/fallow rotations and the different sections.

**Site:** R/BK/1. Broadbalk field, Rothamsted Experimental Farm, Rothamsted Research, West Common, Harpenden, Hertfordshire, AL5 2JQ, UK. Latitude 51.80946, Longitude -0.37301

### Related Resources:

- Johnston, A.E. & Garner, H.V. (1969) *The Broadbalk Wheat Experiment 2. Historical Introduction*. Rothamsted Report for 1968, part 2, pp12-25. [10.23637/ERADOC-1-34916](https://doi.org/10.23637/ERADOC-1-34916)
- Rothamsted Experimental Station (1970) *Details of the Classical and Long-Term Experiments up to 1967*, Rothamsted Experimental Station, Lawes Agricultural Trust, Harpenden UK, 128pp [10.23637/ERADOC-1-192](https://doi.org/10.23637/ERADOC-1-192)
- Glendining M.J & Poulton, P. R. (2021) *Broadbalk Wheat Experiment plan and cropping 1852-1925*. *Electronic Rothamsted Archive, Rothamsted Research*. [10.23637/rbk1-sup-1534342858-02](https://doi.org/10.23637/rbk1-sup-1534342858-02)

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# BROADBALK PLAN 1926-1967



<b>Broadbalk Wilderness, started 1882</b>																			
Wooded										Mown					Stubbed				

Strip (Plot)

20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	3	2		
<b>Section IA 1956-67</b> , continuous wheat, last fallow 1951																	b	a	
<b>Section I 1926-1955</b>																			
Fallow one year in five from 1931																			
<b>Section IB 1956-67</b> , fallow one year in five from 1956																	-	FYM	
N2	-	N2	N2	N2*	N2	N2	N2	N2	N2	N2	N1*	N3	N2	N1	-	-	-		
K	-	PK	PK	PK	PK	P	PK	P	P	-	PK	PK	PK	PK	PK	-	-		
Na	-	Na	Na	Na	Na	-	-	Na*	-	-	Na	Na	Na	Na	Na	-	-		
Mg	-	Mg	Mg	Mg	Mg	Mg*	-	-	-	-	Mg	Mg	Mg	Mg	Mg	-	-		
-	-	(A)	(A)	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<b>Section II</b>																			
Fallow one year in five from 1932																			
<b>Section III</b>																			
Fallow one year in five from 1935																			
<b>Section IV</b>																			
Fallow one year in five from 1934																			
<b>Section VA 1963-67</b> , no weedkillers, fallow one year in five from 1963																			
<b>Section V 1926-1962</b>																			
Fallow one year in five, 1933-58																			
<b>Section VB 1963-67</b> , continuous wheat, last fallow 1958																			

Section

IA

IB

II

III

IV

VA

VB

Drainage ditch																			
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## Fertilizer and organic manure treatments 1926-1967

### Strip Treatments applied each year (since 1852)

- 2a FYM since 1885 (called 2.1 1968 onwards)
- 2b FYM (called 2.2 1968 onwards)
- 3 No fertilizer or manure
- 5 PKNaMg
- 6 N1 PKNaMg
- 7 N2 PKNaMg
- 8 N3 PKNaMg
- 9 N1\* PKNaMg since 1894; 9A and 9B received different treatments 1852-93
- 10 N2
- 11 N2 P
- 12 N2 P Na\*
- 13 N2 PK
- 14 N2 P Mg\*
- 15 N2 PKNaMg (timing of N application different to other plots, see below)
- 16 N4 PKNaMg 1852-64; unmanured 1865-83; N2\*PKNaMg since 1884
- (A) Plots 17 and 18 treatments alternate each year:
  - 17 N2 applied in even years; PKNaMg applied in odd years
  - 18 N2 applied in odd years; PKNaMg applied in even years
- 19 C: rape cake 1879-1940; castor bean meal since 1941  
N1.5 P and rape cake 1852-78
- 20 N2 KNaMg since 1906, previously no manure or fertilizer

### Annual treatment per hectare:

FYM: Farmyard manure at 35t

C: Rape cake 1926-1940, supplying approx. 96kgN (N2).

Castor bean meal 1941-1967, supplying approx. 96 kgN (N2)

P: 35 kgP as superphosphate

K: 90 kgK as potassium sulphate

Na: 16 kgNa as sodium sulphate

Na\* 57 kgNa as sodium sulphate

Mg: 11 kgMg as magnesium sulphate

Mg\* 31 kgMg as magnesium sulphate

### Nitrogen: Annual treatment per hectare

N1: 48 kgN as ammonium sulphate

N1.5 72 kgN as ammonium sulphate

N2: 96 kgN as ammonium sulphate

N3: 144 kgN as ammonium sulphate

N4: 192 kgN as ammonium sulphate

N1\*: 48 kgN as sodium nitrate

N2\*: 96 kgN as sodium nitrate

### Timing of Nitrogen applications:

Ammonium sulphate:

1852-72 All applied in autumn

1873-77 All applied in autumn, except plot 15 in spring

1878-83 All applied in spring, except plot 15 in autumn

1884-1967 24 kgN applied in autumn, remainder in spring (except plot 15 all in autumn)

Sodium nitrate (N\*):

1867-1967 All applied in spring, as one application, except N2 (plot 16) applied as two equal amounts since 1899, applied from six days to six weeks apart

## Broadbalk Cropping 1926 - 1967

Old section number <sup>a</sup>

	Harvest	Old Section Number						
Winter Wheat Cultivar	Year	I	II	III	IV	V		
Red Standard	1926	F	F	F	W	W		
Red Standard	1927	F	F	F	W	W		
Red Standard	1928	W	W	F	F	F		
Squarehead's Master	1929	W	W	F	F	F		
Red Standard	1930	W	W	W	W	W		
Red Standard	1931	F	W	W	W	W		
Red Standard	1932	W	F	W	W	W		
Red Standard	1933	W	W	W	W	F		
Red Standard	1934	W	W	W	F	W		
Red Standard	1935	W	W	F	W	W		
Red Standard	1936	F	W	W	W	W		
Red Standard	1937	W	F	W	W	W		
Red Standard	1938	W	W	W	W	F		
Red Standard	1939	W	W	W	F	W		
Squarehead's Master	1940	W	W	F	W	W		
Squarehead's Master	1941	F	W	W	W	W		
Stand up	1942	W	F	W	W	W		
Squarehead's Master	1943	W	W	W	W	F		
Red Standard	1944	W	W	W	F	W		
Red Standard	1945	W	W	F	W	W		
Squarehead's Master	1946	F	W	W	W	W		
Squarehead's Master	1947	W	F	W	W	W		
Squarehead's Master	1948	W	W	W	W	F		
Squarehead's Master	1949	W	W	W	F	W		
Squarehead's Master	1950	W	W	F	W	W		
Squarehead's Master	1951	F	W	W	W	W		
Squarehead's Master	1952	W	F	W	W	W		
Squarehead's Master	1953	W	W	W	W	F		
Squarehead's Master	1954	W	W	W	F	W		
Section number:		IA	IB	II	III	IV	VA	VB
Squarehead's Master	1955	W	W	W	F	W	W	W
Squarehead's Master	1956	W	F	W	W	W	W	W
Squarehead's Master	1957	W	W	F	W	W	W	W
Squarehead's Master	1958	W	W	W	W	W	F	F
Squarehead's Master	1959	W	W	W	W	F	W	W
Squarehead's Master	1960	W	W	W	F	W	W	W
Squarehead's Master	1961	W	F	W	W	W	W	W
Squarehead's Master	1962	W	W	F	W	W	W	W
Squarehead's Master	1963	W	W	W	W	W	F	W
Squarehead's Master	1964	W	W	W	W	F	W	W
Squarehead's Master	1965	W	W	W	F	W	W	W
Squarehead's Master	1966	W	F	W	W	W	W	W
Squarehead's Master	1967	W	W	F	W	W	W	W

1968 onwards, becomes new section number:

0    1    2    3    4    5    6    7    8    9

W=winter wheat, F=fallow (no crop)

Harvest year refers to the year in which the crop was harvested.

<sup>a</sup> **1926:** Experiment divided into five sections (I-V) to allow sequential fallowing to control weeds.

**1955:** Section I divided into IA and IB. IB received herbicides and was no longer fallowed,

section IB continued the 5 year cycle of wheat and fallow.

Section V divided into VA and VB. VB received a single application of lime, VA did not.

**1963:** Section VB no longer fallowed, and received herbicides as required;  
section VA continued with the 5 year wheat and fallow cycle.

**1968:** Divided to make 10 'New' sections, 0-9

**Seed:** New seed was bought each year up to 1963. From 1963 saved seed from the previous Broadbalk crop (bulked from several plots and well mixed) was sown.