Broadbalk wheat experiment cropping 1843-2021

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Description: Cropping details for the Broadbalk wheat experiment, 1843-2021, with details of cultivars, crops and rotations.

- **Page 1-2:** Cover pages
- **Pages 3:** Broadbalk experiment cropping 1843-1925, showing wheat cultivars, cropping and the various strip divisions.
- **Pages 4-5:** Broadbalk experiment cropping 1926-1967, showing wheat cultivars, cropping and the different sections
- **Pages 6-7:** Broadbalk experiment cropping 1968-2021, showing wheat cultivars, crop rotations and the different sections. 1st wheat in the rotations is clearly indicated.

Site: R/BK/1. Broadbalk field, Rothamsted Experimental Farm, Rothamsted Research, West Common, Harpenden, Hertfordshire, AL5 2JQ, UK. Geographic location: 51.80946 -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. https://doi.org/10.23637/ERADOC-1-34916
- Rothamsted Research (2018) *Broadbalk experiment fertilizer and manure treatments, 1852-2021,* https://doi.org/10.23637/rbk1-FertTreats
- Glendining, M. J. and Poulton, P. R. (2018) *Broadbalk wheat experiment plan 1852-1925* https://doi.org/10.23637/rbk1-sup-1534342858-01
- Rothamsted Research (2017) Broadbalk wheat experiment plan 1926-1967. Electronic Rothamsted Archive, Rothamsted Research. https://doi.org/10.23637/rbk1-plan1926-67-01
- Rothamsted Research (2009) Broadbalk experiment plan 1996-2017. Electronic Rothamsted Archive, Rothamsted Research. https://doi.org/10.23637/rbk1-plan1996-2017-01
- Rothamsted Research (2018) Broadbalk experiment plan revised 2018. Electronic Rothamsted Archive, Rothamsted Research. https://doi.org/10.23637/rbk1-today2018-01

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Broadbalk Cropping 1843-1925

See 1852-1925 plan for more details:			10.23637/rbk1-sup-1534342858-01
Wheat Cultivar	**Year(s)**	**Cropping**	**Strip divisions**
Old Red Lammas	1844	W	Strips were not divided
Old Red Lammas	1845	W	Strips were not divided except 5 into 5a and 5b
Old Red Lammas	1846-1848	W,W	**1846-1851**: Most strips divided into two field-length halves, North (a) and South (b) some receiving DIFFERENT fertilizer treatments
Old Red Cluster	1849-1851	W,W	
In 1852 the fertilizer treatments in most strips became established			
Old Red Cluster	1852	W,W	**1852-1893:** Most strips divided into two field-length halves, North (a) and South (b) receiving the SAME fertilizer treatments
Red Rostock	1853-1881	W,W	
Red Club	1882-1893	W,W	
1889, 1890: Each half was divided into West (T, Top) and East (B, Bottom), making four sub-plots. Wider row spacings were used in half of the plot to allow inter-row cultivation to control weeds.			
Red Club	1889	W,W	The T half was sown in 9 wide rows to allow inter-row cultivation. The B half was sown in the usual 18 rows at normal spacing.
Red Club	1890	W,W	The B half was sown in 9 wide rows to allow inter-row cultivation. The T half was sown in the usual 18 rows at normal spacing.
1894-1900: The a and b (North and South) halves were combined into one strip in 1894**.** Most strips were then divided West and East into Top (T, West) and Bottom (B, East) halves receiving the same fertilizer treatments**.** In 1894 **paths** were added between strips, making the cropped area smaller			
Red Club	1894-1899	W,W	
Squarehead's Master	1900	W,W	
Squarehead's Master	1901	W,W,W	The top half of the strip was harvested in two equal parts TT and TM. TM received N as bicarbonate of ammonia, instead of the usual ammonium sulphate, applied in spring. The B half was harvested as usual. Strips 6-8,10-14 and 18 only.
Squarehead's Master	1902	W	Strips were not divided, except strip 2 (a and b)
Squarehead's Master	1903	W	Strips were not divided, except strip 2 (a and b)
Squarehead's Master	1904	W,F	Most strips were divided into two, one half in wheat, the other half bare fallowed to control weeds
Giant Red	1905	F,W	control weeds (cropped in 1904), the other in wheat (bare
Squarehead's Master	1906-1909	W	**1906-1911:** Strips were not divided, except for strip 2 (a and b), and strip 11 in 1906 only (a and b)
Browick Red	1910	W	
Little Joss	1911	W	
1912-1925: All strips again divided into Top (T) and Bottom (B).			
Little Joss	1912	(W),W	B only harvested as there was very little crop on T due to weed infestation
Squarehead's Master	1913	W,W	Both T and B cropped as usual
Squarehead's Master	1914	F,W	T was bare fallowed, B was cropped
Squarehead's Master	1915	W,F	T was cropped, B was bare fallowed
Squarehead's Master	1916	W,W	Both T and B cropped as usual
Red Standard	1917-1925	W,W	Both T and B cropped as usual

Winter wheat (W) grown every year, except for occasional fallowing (no crop), shown as F. Year refers to the year in which the crop was harvested. Winter wheat was sown the previous autumn. The first crop was sown in autumn 1843 and harvested in summer 1844. Fertilizer and manures were applied to the different treatment strips, which ran the whole length of the field

Broadbalk Cropping 1926 - 1967

See 1926-1967 plan for more details: 10.23637/rbk1-plan1926-67-01

Old section number

Cultivar	Year	I	II	III	IV	V
Red	1926	**F**	**F**	**F**	W	W
Standard	1927	**F**	**F**	**F**	W	W
"	1928	W	W	**F**	**F**	**F**
S. Master*	1929	W	W	**F**	**F**	**F**
Red	1930	W	W	W	W	W
Standard	1931	**F**	W	W	W	W
"	1932	W	**F**	W	W	W
"	1933	W	W	W	W	**F**
"	1934	W	W	W	**F**	W
"	1935	W	W	**F**	W	W
"	1936	**F**	W	W	W	W
"	1937	W	**F**	W	W	W
"	1938	W	W	W	W	**F**
"	1939	W	W	W	**F**	W
S. Master*	1940	W	W	**F**	W	W
"	1941	**F**	W	W	W	W
Stand up	1942	W	**F**	W	W	W
S. Master*	1943	W	W	W	W	**F**
Red	1944	W	W	W	**F**	W
Standard	1945	W	W	**F**	W	W
S. Master*	1946	**F**	W	W	W	W
"	1947	W	**F**	W	W	W
"	1948	W	W	W	W	**F**
"	1949	W	W	W	**F**	W
"	1950	W	W	**F**	W	W
"	1951	**F**	W	W	W	W
"	1952	W	**F**	W	W	W
"	1953	W	W	W	W	**F**
"	1954	W	W	W	**F**	W

Section number:		IA	IB	II	III	IV	VA	VB
S. Master*	1955	W	W	W	**F**	W	W	W
"	1956	W	**F**	W	W	W	W	W
"	1957	W	W	**F**	W	W	W	W
"	1958	W	W	W	W	W	**F**	**F**
"	1959	W	W	W	W	**F**	W	W
"	1960	W	W	W	**F**	W	W	W
"	1961	W	**F**	W	W	W	W	W
"	1962	W	W	**F**	W	W	W	W
"	1963	W	W	W	W	W	**F**	W
"	1964	W	W	W	W	**F**	W	W
"	1965	W	W	W	**F**	W	W	W
"	1966	W	**F**	W	W	W	W	W
"	1967	W	W	**F**	W	W	W	W

1968 onwards, becomes new section number:

0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

Note: *Squarehead's Master W=winter wheat, F=fallow (no crop)
Year refers to the year in which the crop was harvested.

1955: Section I divided into IA and IB. IB recived 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.

Broadbalk Cropping 1968-2021

1st wheat

See 2018 plan for more details: 10.23637/rbk1-today2018-01

Section		0"	1	2	3	4	5	6**	7	8*	9
Wheat cultivar	Year										
Cappelle Desprez	1968	W	W	BE	W	W	W	F	P	W	W
Cappelle Desprez	1969	W	W	W	W	P	F	W	BE	W	W
Cappelle Desprez	1970	W	W	P	F	BE	W	W	W	W	W
Cappelle Desprez	1971	W	W	BE	W	W	W	F	P	W	W
Cappelle Desprez	1972	W	W	W	W	P	F	W	BE	F	W
Cappelle Desprez	1973	W	W	P	F	BE	W	W	W	W	W
Cappelle Desprez	1974	W	W	BE	W	W	W	F	P	W	W
Cappelle Desprez	1975	W	W	W	W	P	F	W	BE	W	W
Cappelle Desprez	1976	W	W	P	F	BE	W	W	W	W	W
Cappelle Desprez	1977	W	W	BE	W	W	W	F	P	W	W
Cappelle Desprez	1978	W	W	W	W	P	F	W	BE	W	W
Flanders	1979	W	W	F	F	P	W	W	W	W	W
Flanders	1980	W	W	P	W	W	W	W	F	W	W
Flanders	1981	W	W	W	W	F	W	W	P	F	W
Flanders	1982	W	W	F	W	P	W	W	W	W	W
Flanders	1983	W	W	P	W	W	W	W	F	W	W
Flanders	1984	W	W	W	W	F	W	W	P	W	W
Brimstone	1985	W	W	W	W	P	F	W	W	W	W
Brimstone	1986	W	W	W	F	W	P	W	W	W	W
B & SHM*	1987	W	W	F	P	W	W	W*	W	W	W
B & SHM*	1988	W	W	P	W*	W	W	W*	F	F	W*
B & SHM*	1989	W	W	W*	W	F	W	W*	P	W	W*
B & SHM*	1990	W	W	W	W	P	F	W*	W*	W	W*
Apollo	1991	W	W	W	F	W	P	W	W	W	W
Apollo	1992	W	W	F	P	W	W	W	W	W	W
Apollo	1993	W	W	P	W	W	W	W	F	W	W
Apollo	1994	W	W	W	W	F	W	W	P	F	W
Apollo	1995	W	W	W	W	P	F	W	W	W	W
Hereward	1996	W	W	W	O	W	P	W	W	W	W
Hereward	1997	W	W	O	M	W	W	W	W	W	W
Hereward	1998	W	W	M	W	W	W	W	O	W	W
Hereward	1999	W	W	W	W	O	W	W	M	W	W
Hereward	2000	W	W	W	W	M	O	W	W	W	W
Hereward	2001	W	W	W	O	W	M	W	W	F	W
Hereward	2002	W	W	O	M	W	W	W	W	W	W
Hereward	2003	F	W	M	W	W	W	W	O	W	W
Hereward	2004	F	W	W	W	O	W	W	M	W	W
Hereward	2005	W	W	W	W	M	O	W	W	W	W
Hereward	2006	W	W	W	O	W	M	W	W	W	W
Hereward	2007	W	W	O	M	W	W	W	W	W	W
Hereward	2008	W	W	M	W	W	W	W	O	F	W
Hereward	2009	W	W	W	W	O	W	W	M	W	W
Hereward	2010	W	W	W	W	M	O	W	W	W	W
Hereward	2011	W	W	W	O	W	M	W	W	W	W
Hereward	2012	W	W	O	M	W	W	W	W	W	W
Crusoe[a]	2013	W	W	M	W	W	W	W	O	W	W

Crusoe	2014	W	W	W	W	O	W	W	M	W	W
Mulika[b]	2015	W	W	W	W	M	O	W	W	F	W
Crusoe	2016	W	W	W	O	W	M	W	W	F	W
Crusoe	2017	W	W	O	M	W	W	W	W	W	W
Crusoe	2018	W	W	W	W	O	W	W	WB	W	W
Zyatt	2019	W	W	WB	W	W	O	W	W	W	W
Tybalt[c]	2020	W	W	W	O	WB	W	W	W	W	W
Zyatt	2021	W	W	W	W	W	WB	W	O	W	W

Year is the year in which the crop was harvested
W=winter wheat, P=potatoes, BE=spring beans, F=fallow, O=winter oats, M=forage maize, WB=winter beans
"straw incorporated since autumn 1986 *no herbicides **no spring or summer fungicides since 1985
Section 0 fallowed in 2003 and 2004 in an attempt to control *Equisetum* and test various herbicides
B & SHM* comparison of modern variety Brimstone and old variety Squareheads Masters
Brimstone in all other sections 1985-1990
[a] variety changed to Crusoe in 2013, but sown very late, due to a wet autumn and winter.
[b] spring wheat variety Mulika sown 2015, as wet autumn and winter prevented sowing of winter wheat
[c] spring wheat variety Tybalt sown 2020, as wet autumn and winter prevented sowing of winter wheat
Winter wheat varieties selected primarily for their yield potential, also their suitability for breadmaking

Continuous wheat: Sections 0, 1, 6, 8 and 9
Section 0 has straw incorporated since 1986
Section 8 has no herbicides, so yields are restricted by weeds. It is fallowed frequently.
Section 6 was in a wheat/wheat/fallow rotation until 1980 and has restricted fungicide use.

Rotational wheat: Sections 2, 3, 4, 5 and 7 (and 6 until 1980)
These Sections grow wheat in rotation with other arable crops (potatoes, maize, oats, beans & fallow).
Between 1968 and 1980 sections 3, 5 and 6 had a three year rotation of wheat/wheat/fallow.
Section 6 then became continuous wheat.
Between 1968 and 1978 sections 2, 4 and 7 had a three year rotation of wheat/potato/beans.
In 1979 this changed to a three year rotation of fallow/potato/wheat until 1984.
From around 1985 all sections changed to a five year rotation of wheat/wheat/wheat/fallow/potato
until around 1996, then wheat/wheat/wheat/oats/maize until 2017.
In 2018 the rotation changed to wheat/wheat/oats/wheat/winter beans. Note there are two first wheats

To select 1st wheat yields, eg Section 7, 1970, in the Data Extraction Tool select Yr-of-wheat = 1
To select 2nd wheat yields, eg Section 7, 1986, in the Data Extraction Tool select Yr-of-wheat = 2
To select 3rd wheat yields, eg Section 7, 1987, in the Data Extraction Tool select Yr-of-wheat = 3