Technical Variety Guide

A NEW hard milling feed wheat bred in the UK by the UK's largest independent cereal breeder

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Garibaldi Winter Wheat

The following information is provided to help growers optimise the performance of Garibaldi winter wheat. It has been gathered over many years' experience and may sometimes be seen to be controversial - but is intended to help growers achieve Garibaldi's high yield potential on their farm.

The importance of Pedigree:

Leeds x Evolution.

These parents were chosen for their consistent yields and disease resistance profiles. Garibaldi does not exploit the major genes used in many high-risk feed varieties - instead it has resistance based upon minor genes. Garibaldi offers growers genetic diversity in the hard milling wheat sector.

UK National List:

Garibaldi (AWC 14 AFP1/2959) was added to the UK National List in January 2021.

Yield Potential:

Changes in the Recommended List controls means it is never easy to carry out an over year comparison. Table 1 shows the official data from 2019 and 2020 collected for the variety to be added to the UK National List. This confirms the high yield potential of Garibaldi over 25 sites.

Consistency:

This is a key attribute of a good variety, and although Garibaldi has only been in official trials for two years, it has been in F1 Seed Ltd trials for a total of four years. In treated trials over this period, Garibaldi has produced consistently high yields and has been at the top of F1 Seed Ltd trials, even when there were significant disease race changes. At present there has been a migration by growers to varieties with high levels of disease resistance but many of the resistances being deployed present high risks of variety breakdown.

Table 1: National List VCU yield data

Variety	Treated Yield % controls	Untreated Yield % controls *
Skyfall	97	97
KWS Barrel	100	93
KWS Siskin	100	106
Elation	101	99
Gleam	103	105
Garibaldi	**104**	**103**
No of trials	25	10

** Untreated yields do not reflect current race changes*

Table 2: F1 Seed Ltd, treated yield trials

Variety	2017	2018	2019	2020	Mean
Skyfall	96	98	91	99	96
KWS Santiago	107	101	106		(105)
Siskin		104	104	98	(102)
Elation			98	102	(100)
Barrel			102	104	(103)
Gleam				98	(98)
Garibaldi	**113**	**106**	**105**	**108**	**108**
No of trials	2	2	2	2	8

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Untreated yield trials:

F1 Seed Ltd also carried out *untreated* trials over a four-year period. Though growers rarely grow varieties without fungicides, there is a strong rationale to evaluate varieties under such a regime in order to quantify the risk associated with each variety.

Table 3: F1 Seed Ltd, untreated yield trials

Variety	2018	2019	2020	Mean
Skyfall	97	99	78	91
KWS Santiago	101	97		(99)
Siskin	104	101	108	(104)
Elation		104	109	(107)
Barrel		100	101	(101)
Gleam			105	(105)
Garibaldi	**112**	**108**	**123**	**114**
No of trials				3

Place in the Rotation:

Garibaldi is not suited to *early sowing* (defined as September in the south and late August – mid September in the north). There are very few varieties suited for these challenging sowing dates as disease pressure and lodging threats increase significantly.

Later sowing:

In these trials Garibaldi was compared with varieties which are often selected for this sowing slot. These results lend weight to the opinion that Garibaldihas a high degree of flexibility in its sowing date and, though a true winter wheat, the vernalisation requirement is not high.

Table 4: Late sown winter wheat trial (Nov)

Variety	Yield 2019	Yield 2020	Mean 2019-2020
Elation	104	110	107
Skyfall	102	100	101
Mulika	94	88	91
Garibaldi	**106**	**119**	**113**

Growing wheat in the current economic climate:

High grain yield is still the main driver for variety selection on farm. Though much is said about lower input varieties, the reality is that to secure high yields growers need to harness the array of agronomic inputs targeted towards each individual variety. The yields in AHDB and National List trials are a reflection of very high fungicide inputs (>£250 per Ha) as the quest is to measure yield potential. Detailed husbandry reports using targeted inputs will be made available to Garibaldi growers.

The Value of greater diversity

It is best to plan that even the most resistant varieties will break down to disease in a relatively short period. In the current financial climate, with wheat prices higher than for a few years, growers should seek out maximum yield potential and invest accordingly.

Fungicides:

Fungicides have three main purposes:

1. **To combat disease present in the crop.**
2. **To protect the crop from further infections.**
3. **To enhance photosynthesis through sustaining green leaf area duration - essentially keeping the 'photosynthesis factory' open for longer.**

Reducing rates or stretching the period between spray treatments will be counter-productive, allowing fungi to re-infect and reducing the plant growth regulatory (photosynthesis) period.

The current situation with yellow rust in particular is very challenging and new populations of *Septoria tritici* will result in lower ratings for many new varieties. Garibaldi does not rely for its resistance on major genes - indeed it has moderate/good resistance to *Septoria tritici* but this may be more resilient than new varieties looking to be commercialised in the next few years.

To date Garibaldi has been shown to be susceptible to yellow rust at the seedling/ juvenile stage but in both 2020 and 2021 adult plant resistance took over just after growth stage 31 and was not a major issue.

Garibaldi has very high yield potential and this should be protected using targeted and robust fungicide treatments. Promising new products for control of Septoria should be partnered at T2 with robust azole chemistry.

With Garibaldi it is important to invest in good prophylactic fungicide programmes which will be rewarded with high grain output, better grain quality and enhanced profitability. The variety should be grown with a three-spray robust rate regime at T1, T2 and T3. For early sown crops (late September) higher levels of disease are likely to be seen at the T0 stage and it would be appropriate to clean this up prior to the main treatment stages.

Disease and pest resistance:

Current high yielding feed wheats are coming under high levels of scrutiny as dramatic yellow rust race changes have taken place. Yellow rust will become a more significant threat as traditional azole chemistry is being removed from the market. Garibaldi has been subject to high pressure situations during its selection and evaluation process, and to date has shown to have good adult plant resistance (APR). Garibaldi does not depend upon the major genes common in many hard milling feed wheats.

Table 5: Disease ratings from National List trials

	Mildew	Yellow rust	Brown rust	*Septoria tritici*	WOBM
Skyfall	6	5*	8	6	Positive
KWS Barrel	7	9	5	4	Positive
KWS Siskin	8	9	5	7	Negative
Elation	7	9	6	4	Negative
Gleam	6	7*	6	6	Positive
Garibaldi	**6**	**8**	**7**	**5**	**Positive****

Source: APHA/ NIAB VCU Report 2019/20
*Note: * Rating before new races were taken into account – refer to AHDB Recommended list 2021/22*
*** Garibaldi is resistant to wheat orange blossom midge.*

Garibaldi
WINTER WHEAT

The importance of high ear fertility

Plant Growth Regulators (PGRs):

PGRs should be used with Garibaldi to both stiffen and shorten the straw, but they are not needed to encourage tillering as it has good tiller production. The best PGR is the use of delayed nitrogen applications as this will inhibit the extension of the first internode, though many growers will shy away from this strategy because of concerns over the potential for low rainfall, and this is understandable.

PGRs should ideally be applied according to developmental stage with the key timing for CCC based products at the glume lemma stage. There is no evidence to suggest that Garibaldi will differ (other than timing) in its response to PGRs and it is suggested that a 2/3rd rate of a CCC based product at the glume primordia stage followed by a follow up of 1/3rd rate at first node (Zadoks 31) should mitigate any lodging threat.

The additional use of Moddus is likely to be beneficial in very high yield potential situations or within crops which are too thick. Applications of products based upon 2-chloroethylphosphonic acid + mepiquat chloride based products should not be necessary. If these products are used, growers are urged to avoid windows of application when large diurnal temperature changes occur (e.g. warm days but cold nights).

Grain end use markets:

Garibaldi is a high output feed variety producing hard milling grain suited for a range of animal feed end markets. Grain quality will meet current grain specifications.

Table 6: Specific weight (kg/hl)

Variety	2018	2019	2020	2018-20
KWS Siskin	76.7		77.4	(77.1)
Skyfall	79.6	79.0	80.3	79.6
KWS Santiago	74.2	76.7		(75.5)
Elation		77.3	78.9	(78.1)
Garibaldi	**76.1**	**76.6**	**78.7**	**77.1**
No of trials	2	2	2	6

Garibaldi
WINTER WHEAT

A very high yield potential hard milling feed wheat with high ear fertility and good flowering biology which has produced consistently high yields over a range of years, environments and sowing dates.

For seed enquiries or more information please e-mail info@anguswheatconsultants.com or visit www.anguswheatconsultants.com

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