



Winter Wheat

GROWING FOR THE MARKET



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Growing for the Market



Photo Credit: Fraser Bain



SORTING THE WHEAT FROM THE CHAFF

The 2017/2018 Winter Wheat Recommended List consists of no fewer than 41 varieties, including 11 new additions. How do we start to make sense of so much data, on so many varieties?

Not every variety will suit every market, region, soil type or rotational position, so how do we find those varieties that will give us the best returns in our own particular situation?



Ed Flatman - Limagrains UK's Senior Wheat Breeder

MARKET CHOICE

Initial decisions should always be based on the requirements of the market. The best prices are usually paid for parcels with the lowest haulage costs, so local homes are always important, whether they are feed mills, flour mills, export facilities or bioethanol plants.

but also wafers, batters, breakfast cereals and many more. Requirements are different in each sector so don't be surprised if some approved varieties are favoured by some buyers, whereas others are less favoured or bought at a discount.

MILLING

Check that varieties meet the needs of your buyer - not all flour millers accept or pay the same price for all of the Group 1 wheats. Most millers have preferred lists and some varieties may be excluded. The same is true of the Group 3 'biscuit' wheats. End uses are very diverse; biscuits and cakes of course

DISTILLING AND EXPORT

Growers in the North and those close to ports should pay particular attention to specific recommendations for distilling, *ukp* and *uks* export markets. Recommendation is no guarantee of demand, so again, a conversation with your key buyers is advisable.

So, what are the other considerations?

TRIED & TESTED

When choosing between suitable varieties, 'experience' is a very reliable guide. Don't be too quick to drop tried and tested varieties, in favour of new and untested varieties that may promise but not deliver a yield benefit in your situation. There are very good reasons why varieties such as Crusoe, Evolution and Revelation command good market shares, year after year. They have proved themselves over many very different seasons. Crusoe is a widely accepted milling wheat with the best protein levels as well as excellent resistance to yellow rust and *Septoria tritici*. Evolution has proved its resilience in stressful seasons, so it's no surprise that it performs well as a second wheat and in late drilled situations. Revelation is a great all-rounder, with good market outlets and proven security. 'Experience' allows you to get the very best out of older varieties, whilst it can take time to reach the promised potential of newer introductions.

YIELD

Although yield is highly important, we feel it should never be the first consideration. The majority of varieties have yields that fall within a small range, and we should bear in mind that these yields are achieved with a very high input regime, that is very atypical of farm practice.

DISEASE RESISTANCE

Our next consideration has to be disease resistance. We have had some very high disease pressure years recently with crops succumbing to yellow rust, *Septoria tritici*, or both! Look closely at the AHDB ratings, especially to these two key diseases. If the rating is low, good yields are still obtainable but timings and choice of fungicide will be critical. Input costs will be much harder to contain and the margin for error very slim if pressure is high. Varieties with good ratings will be better able to cope with delays

in fungicide application and may allow for some savings on product choice. In most cases, resistant varieties respond well to fungicide inputs, so be wary of reducing dose rates or skipping some applications altogether. Limagrains have a well-deserved reputation for introducing varieties like; LG Motown and LG Sundance, with robust disease resistance and are pleased to see many of our older varieties maintaining good ratings in these difficult times.

REGION & ROTATION

What about regional and rotational considerations? The new Recommended List does have a few regional recommendations. This suggests that some varieties are not equally suited to every area of the UK. We would suggest that varieties with a UK recommendation, are likely to be better adapted to a wider range of situations and would perhaps be more consistent in differing seasons. Always look closely at the data for your region, as well as traits such as midge resistance, maturity and sprouting resistance, which are vital in some regions. OWBM is a particular concern with only 13 of the 41 recommended varieties having resistance!

Rotational constraints are of course important. Some varieties such as Revelation and Claire are well suited to early drilling with their stiff straw and slow spring apical development. At the other end of the spectrum, Evolution performs especially well when later sown and is very helpful in blackgrass situations. Good second wheats are always at a premium and there is some data to help with your choice but again, 'experience' is your best guide. Choose a variety with a well proven reputation as a second wheat. Varieties like; Crusoe, Evolution and LG Sundance would fit the bill perfectly.

This 2017 Limagrains Winter Wheat Guide is very complementary to the Recommended List and gives you the benefit of our more in-depth knowledge of Limagrains varieties, based on years of observation and trials aimed at helping you to get the most out of them.

...and if you are still unsure about what to grow, our breeders and technical team are always pleased to help!

What are my Marketing Options?

KEY TO MARKETS



NABIM GROUP 1

These are the varieties that in baking tests and after full-scale commercial evaluation, have proved to offer bakers the performance that they require from a bread-making wheat. Different millers and bakers have varying specifications to suit their particular processes, hence the different preferences of millers for certain varieties. Growers should check before planting that their variety is suited to their chosen end-market.

LG VARIETY	AHDB	VARIETY DETAILS	MARKETS
		<ul style="list-style-type: none"> Since 2012, Crusoe has been the favourite of many millers Crusoe has good quality crumb structure and superb baking performance Crusoe has inherently high protein content, meaning that the milling specification is more likely to be achieved 	

NABIM GROUP 2

Group 2 varieties all show some bread-making potential but will not be suited in all grists. It is likely that as higher yielding varieties, they will attract smaller premiums than the Group 1's, and buyers will be more selective about which varieties they choose. Other market opportunities, such as export are also variety specific and should be checked before sowing.

NABIM GROUP 3

These varieties have proved themselves suitable for use in a range of biscuit, cake and other soft milling flours. Group 3's usually have lower protein and an extensible but not elastic gluten. The demand in this sector remains strong, despite a reduction in plantings in recent years. Group 3 wheats can also have a number of other variety specific end-market opportunities. These should be checked before planting.

LG VARIETY	AHDB	VARIETY DETAILS	MARKETS
		<ul style="list-style-type: none"> Over 3 years of nabim testing, Britannia gave a sound performance and fully meets the Group 3 specification Britannia has the high gluten extensibility required of wheats in this sector Britannia has <i>uks</i> export approval, widening growers market options 	
		<ul style="list-style-type: none"> Although slightly softer milling than Claire, Zulu consistently meets the Group 3 biscuit wheat requirements Zulu has <i>uks</i> export approval, making it attractive to growers near to ports Zulu is rated as 'medium' for distilling, increasing market opportunities for northern growers 	
		<ul style="list-style-type: none"> Claire continues to be the benchmark biscuit wheat and is still many millers' favourite variety in this Group Claire has good gluten characteristics, bright white flour and high dough extensibility Although over 17 years old, Claire still commands a significant share of the Group 3 wheat area With additional approval (<i>uks</i>) for export and distilling, Claire is still the complete Group 3 	

NABIM GROUP 4 - SOFT FEED

Although these varieties are soft milling, their poorer gluten extensibility dictates that they will only occasionally be bought by millers, and even then generally at a lower premium than the Group 3 wheats. Other variety specific premium markets options, such as export and distilling therefore become very important to growers of these wheats.

LG VARIETY	AHDB	VARIETY DETAILS	MARKETS
		<ul style="list-style-type: none"> LG Sundance is a nabim Group 4 soft feed variety, offering additional distilling market opportunities LG Sundance is rated as 'medium' for distilling by the Scotch Whisky Research Institute (SWRI) 	
		<ul style="list-style-type: none"> LG Motown is a nabim Group 4 feed variety, with the additional benefit of distilling market opportunities LG Motown is rated as 'medium' for distilling by the Scotch Whisky Research Institute (SWRI) 	
		<ul style="list-style-type: none"> Myriad has <i>uks</i> approval for export and is rated as 'medium' by SWRI for distilling A distilling approval is almost a prerequisite for northern feed wheat growers Its distilling approval, supported by excellent agronomic traits, make Myriad a popular variety in the North of England and Scotland 	
		<ul style="list-style-type: none"> Another variety with multiple premium market outlets Revelation has <i>uks</i> approval for export and SWRI approval for distilling Despite late maturity, its other beneficial traits and market options make Revelation popular across the UK Although only a soft Group 4, some millers will buy Revelation at a small premium, for use in biscuit flours 	
		<ul style="list-style-type: none"> Horatio is rated as 'medium' for distilling by SWRI Horatio has a <i>uks</i> approval for blended soft wheat export markets Horatio is well adapted for use as an early drilled wheat, offering early sowers a wide range of markets for their crop 	
		<ul style="list-style-type: none"> After 10 years, Alchemy is no longer on the AHDB Recommended List but it is still widely grown Alchemy has a <i>uks</i> approval for use in blended soft wheat export markets, so should still be suitable for export in many cases Alchemy is rated as 'medium' for distilling, again assuring its popularity in the North 	

NABIM GROUP 4 - HARD FEED

These wheats are not suitable for biscuit making or distilling. Currently there are no Group 4 hard wheats with *ukp* approval for export. Consequently, the only possible small premiums available are for blending in some bread-making grists, or for export to markets that do not specify UKP approved varieties. As a result, most wheats from this sector do go into the feed market.

LG VARIETY	AHDB	VARIETY DETAILS	MARKETS
		<ul style="list-style-type: none"> With no premium opportunities; high yield, low cost of production, flexibility and consistency, become more important and desirable Evolution has demonstrated its ability to deliver on all four counts, making it a popular variety, in many situations 	

RECOMMENDED
AHDB
LG Winter
Wheat Guide

	GERMAN (B) WHEAT	NABIM GROUP 1	NABIM GROUP 3			NABIM GROUP 4 - SOFT						NABIM GROUP 4 - HARD	
	EDGAR WINTER WHEAT	CRUSOE WINTER WHEAT	BRITANNIA WINTER WHEAT	Zulu WINTER WHEAT	CLAIRE	LG SUNDANCE WINTER WHEAT	Le moiroun WINTER WHEAT	MYRIAD WINTER WHEAT	Revelation Soft Winter Wheat	HORATIO WINTER WHEAT	ALCHEMY WINTER WHEAT	evolution ² WINTER WHEAT	
YIELD	UK Treated Yield	*(100)	97	102	99	96	104	103	99	98	99	98	102
	AHDB East Treated Yield	-	97	102	99	96	103	103	99	99	99	97	102
	AHDB West Treated Yield	-	98	101	98	96	104	102	98	97	97	98	101
	AHDB North Treated Yield	-	93	102	102	((97))	(102)	(104)	103	100	101	99	104
	Untreated Yield (% treated control)	*(90)	77	74	76	70	90	89	70	81	71	81	80
	Suitability as First Cereal*	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓
	Suitability as Second Cereal*	✓✓✓	✓✓	✓✓✓	✓✓	✓✓	✓✓✓	✓✓	✓✓	✓✓	✓✓	✓✓✓	✓✓✓
YIELD COMMENT	High yielding with bread-making potential	Very consistent, high yielding variety across differing seasons	High yielding, fully Recommended UK Group 3	High yielding and consistent Group 3	Reliable old favourite. Suitable for sowing from early Sept onwards	Very high untreated yields, suitability in 1st and 2nd wheat situations	High yielding, suitable for later drilling and northern areas	High yielding, good potential in the north and Scotland	High yielding, offers performance security in high disease pressure seasons	High yielding throughout the rotation. Performs well early sown	Consistent performance over many sites and seasons	High yielding over years, regions and rotations	
MARKET OPTIONS	Endosperm Texture	*Hard	Hard	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Hard	
	UK Bread-Making	*(Y)	Y	-	-	-	-	-	-	-	-	-	
	UK Biscuit / Cake	-	-	Y	Y	Y	-	-	-	-	-	-	
	UK Distilling / SRUC Rating	-	-	-	(Y)	(Y) Medium	(Y) Medium	(Y)	(Y) Medium	Y	(Y) Medium	(Y) Medium	
	ukp Bread for Export	*(Y)	Y	-	-	-	-	-	-	-	-	-	
	uks Soft Wheat for Export	-	-	Y	Y	Y	-	-	(Y)	(Y)	(Y)	-	
GRAIN QUALITY	Protein Content (%)	*(12.0)	12.5	11.6	11.3	11.5	11.0	11.0	11.1	11.2	11.4	11.2	10.8
	Hagberg Falling Number (secs)	*(242)	262	228	233	260	179	217	238	246	246	244	195
	Specific Weight (kg/hl)	*(77.5)	77.3	76.3	75.6	76.0	74.5	75.3	76.4	75.9	75.6	77.5	74.2
MARKET / QUALITY COMMENT	Quality suits specific millers requirements	Genetically high in protein. Highest protein content on RL	Good grain for biscuit, biofuel, export and animal feed use	Well suited to all Group 3 markets	Benchmark variety. Suited to a range of domestic and export markets	Excellent feed variety, with 'medium' rating for distilling	Offers additional distilling market opportunities over standard feeds	For all soft feed wheat markets, namely distilling and export	Good grain for a wide range of market outlets	Multiple market options; distilling, biofuel, export and animal feed	Accepted in all major domestic & export markets	For feed and biofuel use	
AGRONOMIC FEATURES	Optimum Sowing Date* ◇	*Mid	Mid	Mid / Late	Mid / Late	Early / Late	Mid / Late	Mid / Late	Mid / Late	Early / Mid	Early / Late	Early / Mid	Mid / Late
	Latest Safe Sowing Date*	*(Mid Feb)	End Jan	(Mid Feb)	(End Feb)	End Feb	(End Jan)	(Mid Feb)	Mid Feb	End Jan	End Feb	Mid Feb	(Mid Feb)
	Tillering Potential*	*High	Moderate	Moderate/High	Moderate	High	Moderate/High	Moderate/High	Moderate	Moderate	High	High	Moderate
	Speed of Spring Apical Development*	*Fast/Medium	Medium/Fast	Medium/Fast	Medium/Fast	Slow	Slow/Medium	Medium/Fast	Medium	Slow/Medium	Medium/Fast	Slow/Medium	Medium/Fast
	Resistance to Lodging without PGR	*7	7	6	6	(6)	7	6	6	7	7	7	7
	Resistance to Lodging with PGR	*8	8	6	7	8	7	7	7	8	8	8	7
	Height without PGR (cm)	*101	81	88	89	87	87	84	89	86	89	90	91
	Ripening (Days +/- JB Diego, > 0 = Later)	*(+2)	0	+1	+1	0	+1	-1	+1	+3	(+1)	+2	+2
	Resistance to Sprouting	*Good	(Good) 6	(Good) (6)	(Good) 6	(Medium) (5)	-	-	(Good) (6)	(Medium) 5	(Medium) (5)	(Medium) 5	(Medium) 5
	CTU Tolerant / Susceptible ‡	*Susceptible	Susceptible	(Tolerant)	Tolerant	Tolerant	(Tolerant)	(Tolerant)	*(Tolerant)	*(Susceptible)	Tolerant	Tolerant	*(Tolerant)
	Mildew	*(8)	7	5	7	(5)	6	8	6	6	7	(8)	6
	Yellow Rust	*(6)	9	4	5	5	9	9	4	9	-	7	8
	Brown Rust	*(7)	3	6	4	5	6	7	5	8	6	4	8
	<i>Septoria nodorum</i>	-	6	(5)	(6)	(5)	(6)	(6)	(5)	(6)	(5)	5	(6)
	<i>Septoria tritici</i>	*(7)	6.7	5.3	5.7	5.3	7.3	5.8	5.5	6.4	5.0	6.0	5.5
	Eyespot	*(7)	4	3	4	5	(3)	(3)	5	8 @	5	6	5
	<i>Fusarium</i> Ear Blight	*(8)	6	6	6	6	6	6	6	7	6	7	6
	Orange Wheat Blossom Midge	*No	No	No	Resistant	No	Resistant	Resistant	Resistant	No	Resistant	No	No
AGRONOMY / DISEASE COMMENT	Tall, good lodging score. Very good disease resistance	Short, stiff straw and good all-round disease resistance	Good for <i>Septoria tritici</i> & brown rust. Needs targeted PGRs	High mildew resistance. OWBM & SBCMV resistant. Responds well to PGR	Long drilling window and early maturity. Monitor for yellow rust	Highest <i>Septoria tritici</i> rating on RL. Strong yellow rust & OWBM resistance	Strong disease resistance & OWBM. Earlier maturity for northern growers	Good agronomics and OWBM resistance	Excellent agronomic package with best available disease resistance profile	Flexible for drilling date. Earlier maturing, ideal for north and Scotland	Good agronomic package, offering flexible sowing date	Good standing & good disease profile, especially yellow & brown rust	
PEDIGREE	Pedigree	Drifter x NIC97-3061B	Cordiale x Gulliver	Robigus x Cassius	(CEB 99080 x Claire) x Robigus	Wasp x Flame	(Hereford x Viscount) x Cassius	(Bantam x Huntress) x Denman	NSL00-0742 x Nijinsky	(Alchemy x Claire) x Shepherd	Alchemy x Oakley	Claire x (Consort x Woodstock)	Smuggler x (Robigus x SJ5558)

() = Limited Data, (()) = Very limited data. * = Limagrain data. All other data AHDB RL 2017/18 unless stated otherwise. Alchemy data is from AHDB 2016/17. ‡ = check manufacturers recommendations before applying CTU to any variety, ◇ - Early = before mid Sept; Mid = mid Sept to mid Oct; Late = mid Oct onwards.

** Variety not on the AHDB Recommended List (historical Limagrain data), ^ = no longer on the AHDB Recommended List. Y = suited to that market, (Y) = may be suited. @ = believed to carry the Pch Rendezvous resistance gene to Eyespot but has not been verified in RL tests.



LG SUNDANCE



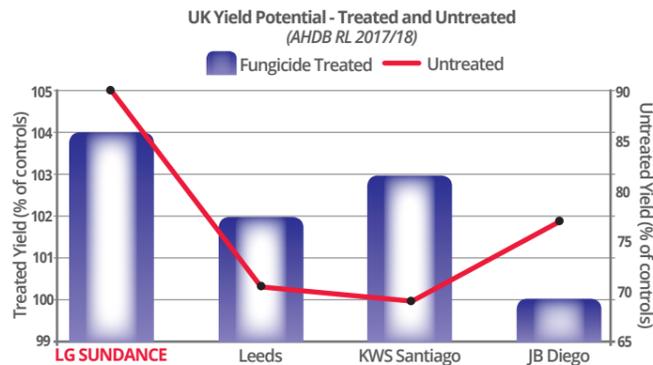
LG Sundance is a very high yielding soft feed wheat, also suited to the distilling market. It has the best available resistance to *Septoria tritici* on the AHDB RL and demonstrates excellent second wheat performance.

“ LG Sundance has a very good disease resistance profile, with a strong 7.3' rating for the yield robbing disease; *Septoria tritici*, an attribute considered of great importance in many regions of the UK. ”

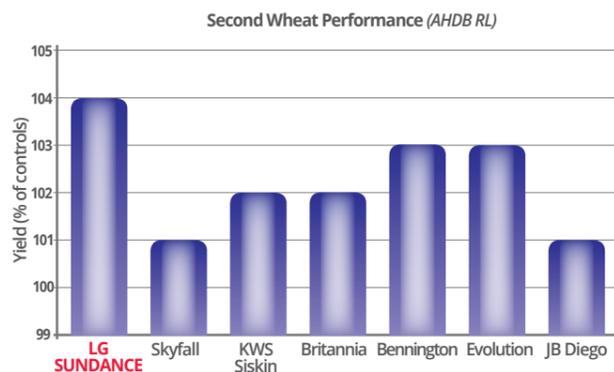
Breeder's Comment

LG Sundance has shown very high yield potential in both fungicide treated and untreated trials.

The variety has shown good consistency of yield over both regional and seasonal databases.



LG Sundance has shown good yield potential when grown in a second wheat situation, in both official and external trials. LG Sundance appears to have inherited very good genetics from its parentage for this very testing situation on-farm.



LG Sundance is a taller strawed variety, similar to Leeds, and has a maturity rating similar to KWS Santiago.

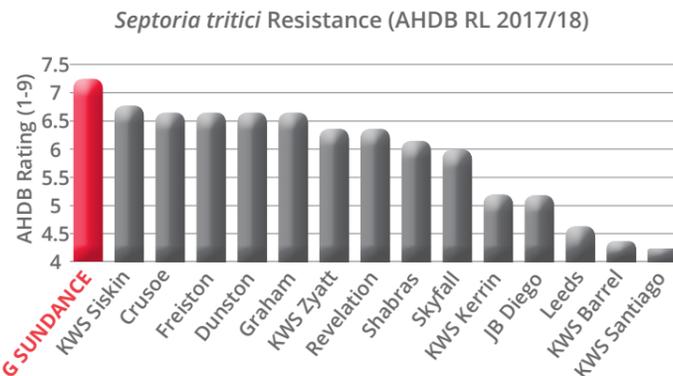
LG Sundance has grain attributes similar to other leading feed varieties on the AHDB Recommended List 2017/18.

LG Sundance offers additional distilling market opportunities over standard feed wheat varieties; a valuable proposition in today's marketplace.

Table comparing LG SUNDANCE with Leeds, KWS Santiago, and JB Diego across various attributes including Lodging, Height, Ripening, Disease Resistance, and Grain Quality.

LG Sundance has a very good disease resistance profile with excellent resistance to yellow rust and the highest rating for *Septoria tritici* available on the AHDB Recommended List 2017/18.

LG Sundance demonstrates that high yield potential, as well as excellent *Septoria tritici* ratings, can be achieved by breeders using modern breeding technologies.



Photos showing variety differences in Septoria tritici resistance ratings Limagrain UK Untreated Trials, Woolpit, Suffolk, July 2016



LG Sundance also carries resistance for OWBM, an important trait appreciated by growers due to increasing restrictions on insecticide products.

LG Sundance is a high tillering variety with a prostrate growth habit and slower ear primordia development in the spring. These are recognised characteristics for the earlier drilling situation, however further trials have been established in 2017 to determine optimum drilling date. Until the results from these trials are available, we recommend a drilling date of mid-September onwards.

LG Sundance is also on the Scottish Recommended List 2017



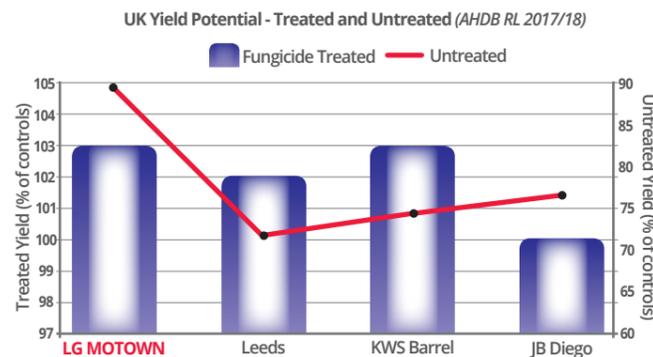
LG MOTOWN

“ LG Motown has a very good disease resistance profile, plus OWBM resistance and early maturity – all genetic traits of great value to most wheat growers. ”

Breeder's Comment

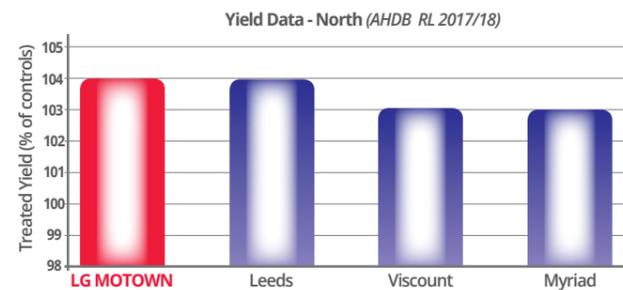
LG Motown is a very high yielding soft feed winter wheat, which also meets the requirements of the distilling market. It is on both AHDB & Scottish Recommended Lists 2017/18.

LG Motown has shown very high yield potential in both fungicide treated and untreated trials and shows good consistency of yield in both regional and seasonal databases.



LG Motown has an exceptional disease resistance profile with good resistance to mildew and brown rust and very good resistance for the most threatening diseases in the UK; yellow rust and *Septoria tritici*.

Table comparing LG MOTOWN with Leeds, Revelation, and JB Diego across various attributes including Lodging, Height, Ripening, Disease Resistance, and Grain Quality.

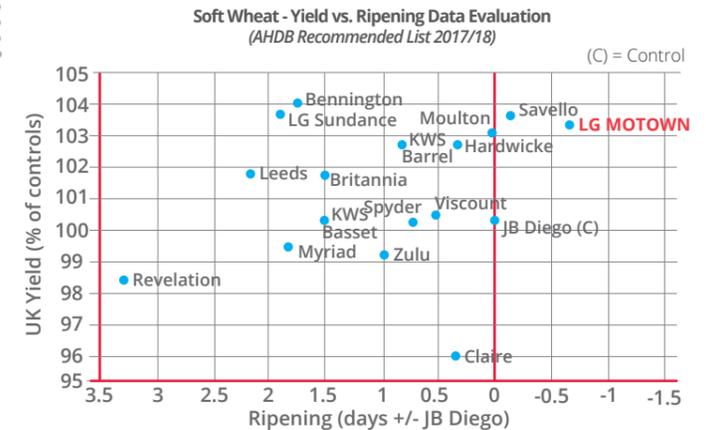


LG Motown is a high yielding variety with good agronomic characteristics, particularly suited to the North.

LG Motown has been compared with the variety, Revelation. Although not suited to early drilling, LG Motown has the additional benefits of OWBM and earlier maturity.

LG Motown offers agronomic characteristics of good tillering and a more prostrate winter habit, identified with quicker spring growth.

LG Motown combines early ripening with high yield, making it highly suitable for northern growers, and southern growers contemplating WOSR plantings.



LG Motown is a shorter strawed variety than Leeds or Revelation and has a similar standing rating as many of the commercial feed wheats when treated with PGR.

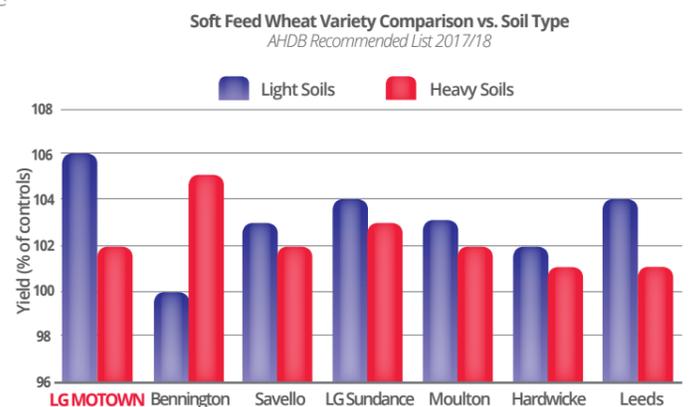
The variety carries resistance for OWBM, an important trait recognised by growers due to increasing restrictions on insecticide products.

Limited trials suggest the variety should not be placed in the early drilling scenario and Limagrain recommend that Revelation or Claire should be the varieties of choice for this situation. A drilling date of mid-September onwards should be considered for LG Motown.

The variety has shown good second wheat potential in AHDB RL trials. Limited data suggests good performance in the later drilling slot.

LG Motown offers additional distilling market opportunities over standard feed wheat varieties, a valuable proposition in today's market place, especially for growers in the North. LG Motown has similar grain attributes to other leading commercial soft feed varieties on the AHDB Recommended List 2017/18.

LG Motown has shown very good yield performance across differing soil types, but its performance on light soils is comparable with the best varieties available, possibly due to its earlier maturity and better specific weight characteristics.





Since introduction in 2012, Crusoe has set the benchmark for the milling wheat sector offering an outstanding combination of very high yields, exceptional quality and excellent agronomic characteristics.

“ Crusoe has the best combination of yellow rust and Septoria tritici resistance in the group one sector. ”
Breeder's Comment



Zulu is a high yielding soft biscuit wheat variety, with good grain quality suited to a range of market options. Zulu is a robust variety, well adapted throughout all regions.

“ Zulu has key traits to meet the different requirements of growers across the country. Earlier maturity for the North and Orange Wheat Blossom Midge resistance for the South. ”
Breeder's Comment



Revelation is a high yielding feed variety, offering security as well as flexibility of crop management and workload, making it a premium 'low risk' wheat variety in the current volatile climate and grain markets.

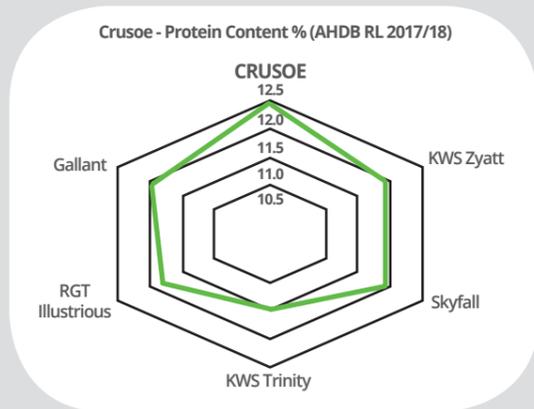
“ Revelation offers growers the highest disease resistance combination score out of all varieties on the AHDB Recommended List 2017/18. ”
Breeder's Comment



Evolution is a hard endosperm feed wheat that consistently produces high yields, combined with excellent disease resistance and a good agronomic profile. Bred by Sejet and marketed by Limagrain UK.

“ Evolution performs well in late drilling situations, essential to growers adopting a delayed sowing strategy for the control of blackgrass. ”
Breeder's Comment

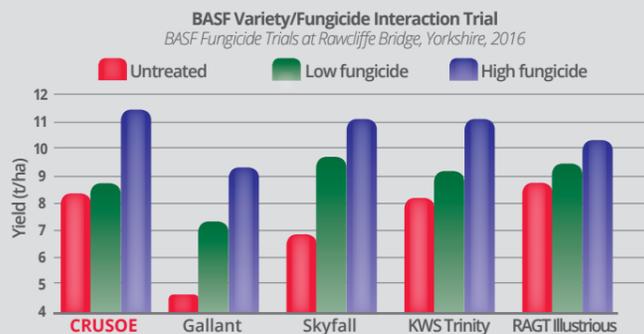
Crusoe offers the highest protein content available on the AHDB Recommended List 2017/18, a significant 0.6% higher than other Group one varieties.



Crusoe has an attractive disease resistance package; mildew (7), yellow rust (9) and Septoria tritici (6.7). Brown rust (3) will need to be monitored and treated appropriately.

Crusoe has very good grain characteristics similar to the other nabim Group one varieties.

The graph below shows the yields for Crusoe with two differing fungicide programmes (see following Treatments Table for details).



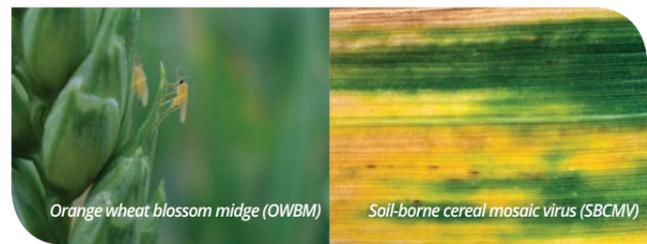
TREATMENTS Rates (l/ha)	T0 25.03.16	T1 21.04.16	T2 22.05.16	T3 14.06.16
Untreated	UT	UT	UT	UT
Low	UT	Firefly+Bravo, 1.35+1	Ignite+Bravo, 1.125+1	UT
High	Fielder+Cortez 0.85+0.5	Adelexar+Bravo, 1+1	Librax+Bravo, 1.5+1	Proline, 0.54

The graph shows that in the high disease pressure season of 2016, all varieties responded to the high input fungicide programme. Crusoe shows yield potential similar or better than the other varieties within the nabim Group 1 sector.

Zulu is the only biscuit variety on the AHDB RL offering a full range of market outlets - similar to Claire, with the distilling option making it an attractive choice for growers in the north.

	ZULU	KWSBARREL	BRITANNIA	KWSBASSET
UK biscuit, cake-making	Y	Y	Y	Y
UK distilling	(Y)	-	-	-
UKS (Soft wheat for export)	Y	Y	Y	Y
Soft feed wheat	Y	Y	Y	Y

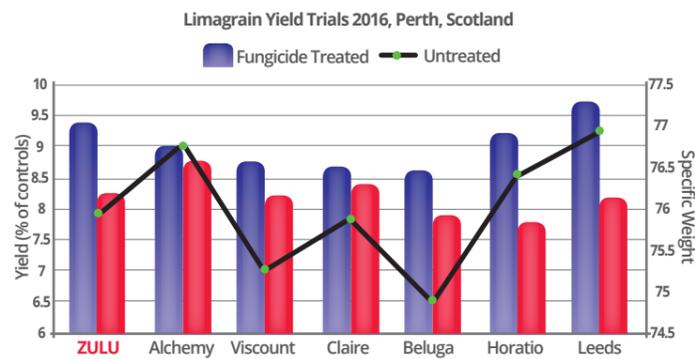
Zulu carries resistance to both OWBM (Orange Wheat Blossom Midge) and SBCMV (Soil-borne cereal mosaic virus).



Zulu has good agronomic attributes with characteristics of high tillering, prostrate growth habit and rapid spring development, suggesting suitability for an earlier drilling date across Northern regions.

Limagrain has data to propose Zulu is earlier to mature than the AHDB RL suggests. This useful trait has been noted by both the trade and growers, especially in the northern areas of the UK.

Zulu has a lower vernalisation requirement meaning the variety is suitable for drilling as late as the end of February, offering grower's flexibility of the drilling period.



Zulu's agronomic characters make it ideal for growing in the Northern part of the UK. It also performs consistently well in the UK over differing seasons, soil types, drilling dates & rotational positions.

Revelation has a high untreated yield; a consequence of having the best disease resistance profile of all varieties on the 2017/18 AHDB RL. 2016 highlighted the importance of genetic disease resistance for maintaining farm performance.

	REVELATION	Skyfall	KWS Sskin	KWS Kerrin	Bennington
Mildew	6	6	9	7	7
Yellow rust	9	6	9	7	7
Brown rust	8	9	5	7	7
Septoria tritici	6.4	6.0	6.8	5.2	6.2
Eyespot	8@	6@	4	(5)	(5)
Fusarium ear blight	7	7	6	6	6
Disease Score (Total)	44.4	40.0	39.8	37.2	38.2

Revelation gives growers the flexibility of drilling early, as the variety is suitable for this drilling slot, having a high rating for both lodging and Eyespot resistance, giving it a far more robust and suitable profile than many of its competitors.

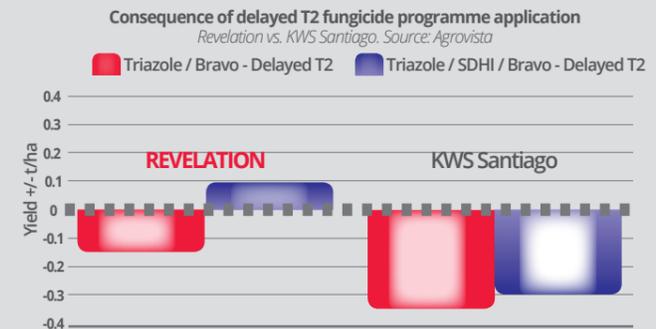
Revelation is a later maturing variety.

Revelation's grain quality is still comparable to, if not better than the newer varieties, offering growers several outlet opportunities with the variety showing good distilling performance and suitability for export, biofuel and animal feed markets.

	REVELATION	Savello	Hardwicke	KWS Barrel	Bennington
UK distilling	Y	(Y)	(Y)	-	-
UKS Soft wheat for export	(Y)	-	-	Y	Y
Hagberg falling no.	246	216	195	212	240
Specific weight (kg/hl)	75.9	74.3	75.5	76.4	76.7

Inherent varietal disease resistance gives growers the opportunity to secure maximum yield potential. This can be especially useful when fungicide programmes have been delayed, due to erratic weather conditions, often seen in the UK.

The chart (below) shows that when T2 fungicide programme applications are delayed, a disease resistant variety, such as Revelation, incurs minimal yield loss, when compared to a disease-prone variety, such as KWS Santiago, which clearly suffers significant yield penalties.

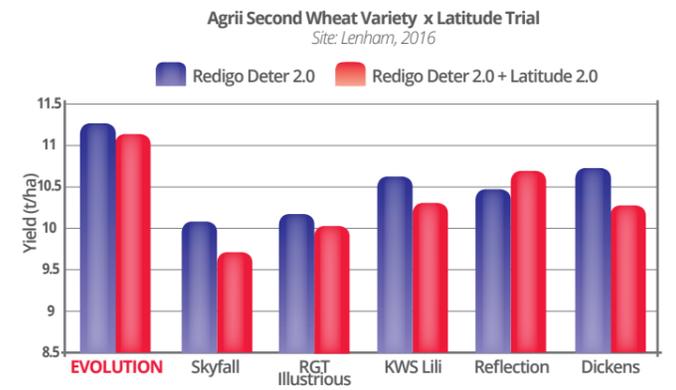


Evolution's consistency of performance over seasons, regions, soil type, rotation and drilling date, offers growers flexibility in their cropping and drilling decisions.

	EVOLUTION	KWS SANTIAGO	REFLECTION	JB DIEGO
Mildew	6	5	6	6
Yellow rust	8	6	3	5
Brown rust	8	5	9	6
Septoria tritici	5.5	4.3	5.4	5.2
Eyespot	5	4	5	5
Fusarium ear blight	6	6	6	6

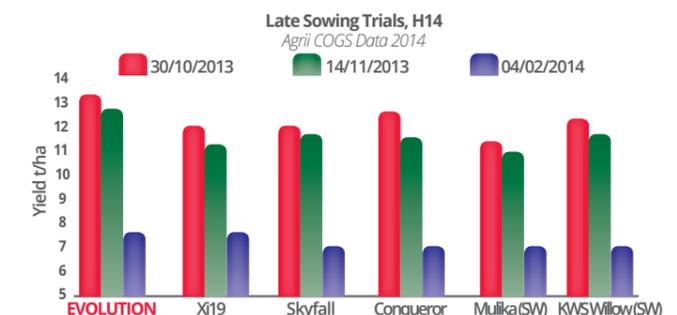
Evolution has very good resistance to all the major foliar diseases.

Evolution has shown exceptional yield performance in second and continuous wheat positions, as indicated in the chart below.



Evolution's good performance in the late drilling situation is relevant to growers adopting a later sowing strategy for the control of Blackgrass. The variety has also performed very well in independent Agrii trials studying yield performance in a Blackgrass situation.

The graph below illustrates the performance of Evolution at three later drilling dates, showing that Evolution performs very well against other commercial varieties, which are used in this situation.





Limagrain UK is part of Group Limagrain; a fast growing international agricultural co-operative, specialising in both agricultural and horticultural seeds, and in cereal products. As the fourth largest plant breeder and seeds company in the world, it employs nearly 10,000 people and has a turnover close to 2.6 billion euros.

As a company owned by farmers, Limagrain has particular governance strongly linked to farming. As in agriculture, having a long-term vision has been the key to Limagrain's drive to innovate, and to create varieties that meet the expectations of farmers and growers, agri-food industrialists and consumers, leading to Limagrain's strong position in farming worldwide.

NEW AHDB RL CANDIDATE



LG GENERATION

Pedigree: (Horatio x Oakley) x Avatar

Nabim Group 4 soft feed wheat with distilling and export potential. Very good specific weight, combined with the added benefit of Orange Wheat Blossom Midge (OWBM) resistance.



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Limagrain UK Ltd Registered No: 1305690. Registered Office: Rothwell, Market Rasen, Lincolnshire. All data is from AHDB Recommended Lists database, except where marked* which indicates Limagrain trials data or otherwise indicated. See cereals.ahdb.org.uk/ for full dataset. On the 1-9 scales, high figures indicate that the variety shows the character to a high degree. () = Limited Data.

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