



KWS UK

2024 Variety Guide

SEEDING
THE FUTURE
SINCE 1856



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Introduction

The KWS Variety Guide is a catalogue of cereals, oilseeds, hybrid rye, peas, maize and sugar beet.

Our guide is created to provide growers and professional advisers with the information needed to guide variety choice based on market suitability, regional performances and the practical aspects of variety management that determine how a variety performs on-farm.

You will also find all the latest data and information on our popular recommended varieties such as KWS Dawsum and KWS Extase. We are also excited to share our new candidate varieties of winter wheat, spring wheat, winter barley, hybrid barley, oilseed rape and oats, all of which are currently in the candidate stage for full recommendation in Autumn 2024.

Included in our guide is lots of information to help you make specific choices, including end-user requirements of the various market groups and other factors that can influence performance, such as drilling date, and what makes a good 'late driller'. Our Sowing For Peak Performance initiative also includes information to help you get the best performance out of crops on-farm.

With our new initiative Productivity² we recognise the importance of production, yield and gross margin in farming. We explain our commitment to producing KWS super varieties that are needed to build a sustainable and resilient food supply chain for the future.



Dominic Spurrier
Commercial Lead UK Cereals

All figures in the guide are sourced from the AHDB 2024/25 Recommended List, unless otherwise indicated.

Our worldwide currency is **trust**



KWS sows the future

KWS is a personal and trustworthy partner that delivers the very best seeds. We bring our expertise and passion forward into the entire farming value chain and beyond. This applies equally for contacts with our partners in the breeding sector and for our business and trade partners in agriculture.

www.kws-uk.com

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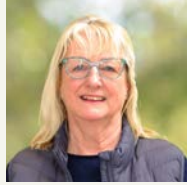
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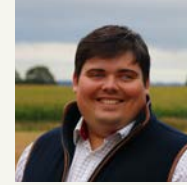
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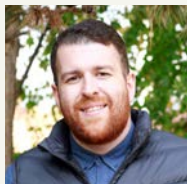
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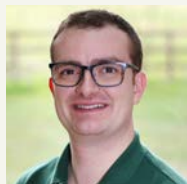
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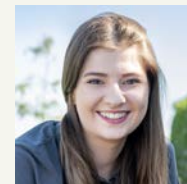
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SOWING4PEAK PERFORMANCE

The future of crop production genetics, today.

It's time for action!

The methods we have used to produce crops in the past will not take us to where we need to be in the future without substantial changes.

At KWS, we've always been passionate about genetics and the vital role seeds play in the production equation. We're proud of what we have achieved to date and appreciate the key role our genetics can play in responding to the demands of the future.

Working with businesses across the agri-supply chain, we've identified five critical needs that growers must address to keep their business profitable and environmentally sustainable in the years ahead. Each of these carries a commitment from KWS to ensure our genetics address them as far as possible.

5 key requirements for profitable and sustainable UK crops and how SPP can help now and in the future:

1. Maximise production/profitability from available resources.
2. Achieve effective crop management with reduced windows of opportunity.
3. Achieve optimum crop health without a high level of agronomic interventions.
4. Reduce amount of all inputs used and associated costs.
5. Get greater productivity from soils long-term.



KWS product development sites

We have two product development sites in the UK, one in the north of the country and one in the east.

'PDF East' is located in Fowlmere, Cambridgeshire, just 2 miles from our office, and 'PDF North' is located in East Heslerton, North Yorkshire.

PDF East is where we showcase the key varieties within our wheat, barley, oilseed rape, rye, oats, peas, cover crop and sugar beet portfolios. It is also home to multiple agronomy trials, including our winter wheat versus spring wheat drilling date trials and some quality wheat work. The site is now in its 15th year of rotation.

At PDF North, we demonstrate our key wheat, barley, hybrid rye and oilseed rape varieties in large blocks over four fields, rotating annually. The purpose of this site is to give growers an early look at our cereal varieties to help them plan their next varietal choices.

Both sites are unique in their regions, which means they are worth a visit! We hold open days from the end of May, so if you would like to see either site, please do get in touch.



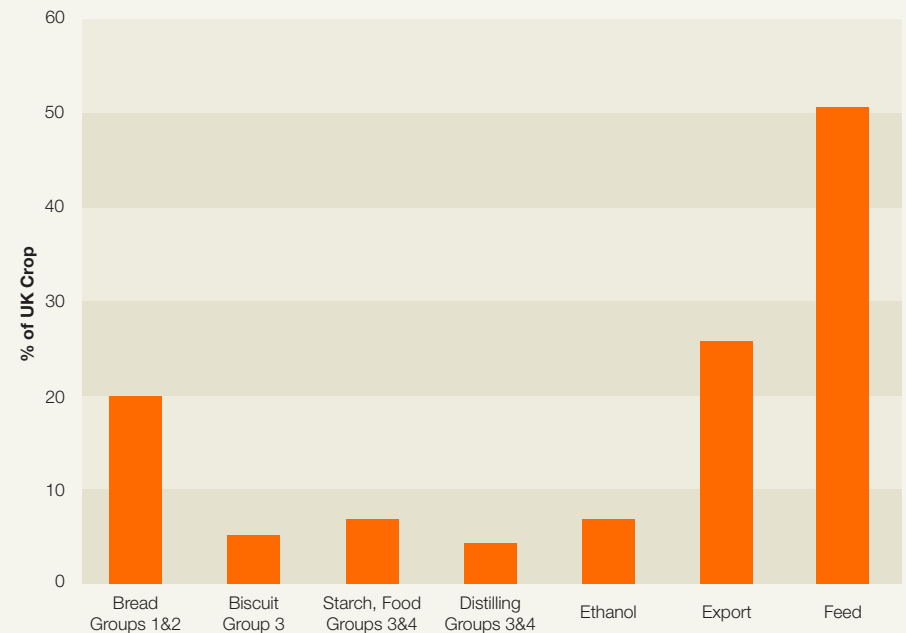
WHEAT

Winter Wheat

Wheat demand

Each year in the UK, flour millers use some 5 million tonnes of wheat to produce over 4 million tonnes of flour, with approximately 60% used for bread making. Pre-packed flour, as seen on supermarket shelves, constitutes approximately 4% of the market. Approximately 5.5% of the total flour produced is exported annually. Other users of flour include the biscuit and cake industries, starch manufacturers and food ingredient companies (Data source: UK Flour Millers). Export and feed then make up the balance of the UK wheat crop destination.

UK Wheat Demand



Data source: 5 Year average DEFRA Statistics and UK Flour Millers

Building resilience and profit into rotations

Grain markets in 2024 and beyond are likely to remain volatile. For growers, choosing the correct variety for your individual situation has never been more important. At KWS, we focus on providing your farm with as much genetic diversity from our wheat programmes so that you can choose the best combinations of yield, grain quality and field performance to maximise gross margins from this most profitable part of your rotation.



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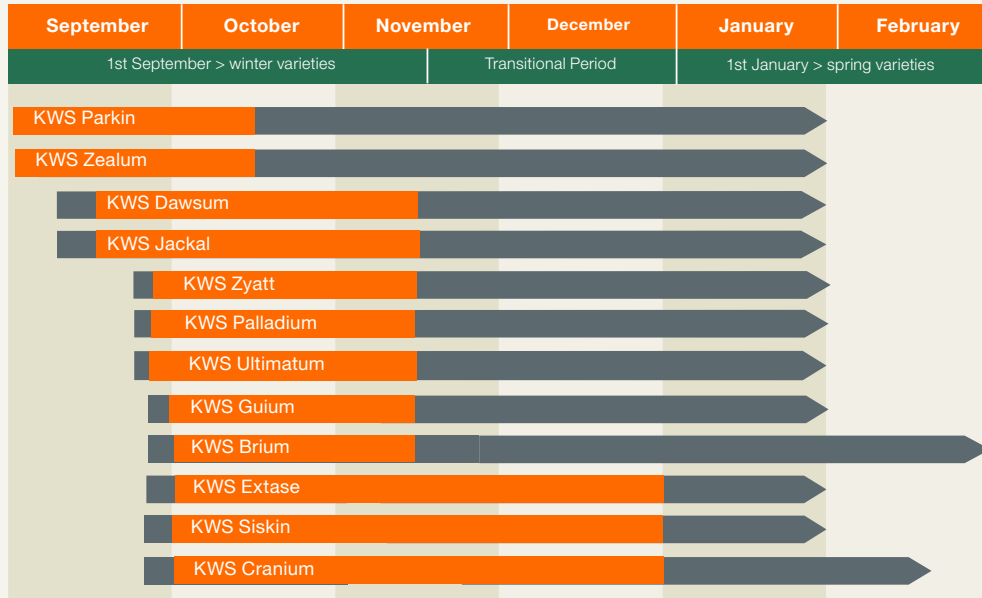
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© Ben Adams

Wheat optimum drilling times



When planning your cropping strategy, pick varieties that will provide the best performance based on your unique farm circumstances.

Our varieties will perform well up until the official latest safe sowing date. However, from our experience, the optimum sowing windows are marked in orange and this is when you can expect them to perform best.

Key wheat disease considerations

Arguably, the most important yield-robbing diseases in winter wheat are *Septoria* and yellow rust. With chemistry starting to drop out of the picture, genetic resistance is becoming a key element in profitable wheat production in the UK. Here we bring you up to date on the latest thinking during this transition period as wheat genetics are increasingly considered, by some as tank-mix partners in their season management.

Septoria tritici

Septoria is the most destructive disease in UK wheat. In extreme cases, it has been shown to decrease yield by up to 50%. Current resistances are based mostly around plant breeders stacking partial resistant genes, which have cumulative small effects with increased durability, as opposed to using major genes. With the loss of Chlorothalonil™, many growers are focusing more than ever on highly resistant varieties such as KWS Extase.



Last growing season, once again the weather put applications under pressure. An open autumn was followed by a wet March and April in 2023, which increased the risks of lodging as well as stretching fungicide application windows. As a result, resistance genetics were under extreme pressure and at harvest there was a generally poor response to fungicides. Whilst it is impossible to predict how the *Septoria* population will evolve, growers are advised to consult the Recommended List and study disease resistance ratings that reflect recent pathogen populations.




Source: AHDB

Varieties such as KWS Extase and KWS Palladium with resistances well above 6.0 offer opportunities to reduce fungicide costs, especially in lower risk seasons and later drillings. More importantly, they help deliver effective disease control in high-pressure seasons, when critical fungicide timings may slip.



If you want to learn more about how varieties can contribute to the successful control of *Septoria*, use this QR code to view our video showing the work KWS are involved in. It also explains how chemistry and genetics can work together to best control this disease.



Yellow rust

Yellow rust is one of the most important wheat diseases in the east, although in recent years, infection has become common across all regions of the UK.

Yield losses of 40-50% often occur in untreated susceptible wheat varieties. In early-sown crops, there is an increased risk due to exposure to a green bridge from the previous crop and the mild winter weather followed by a humid microclimate. Late-sown crops are also more at risk as the plants are smaller throughout the year. While many growers have relied on well-timed, structured fungicide programmes to control the disease, the potential loss of epoxiconazole- and tebuconazole-based chemistry in the next few years means that genetics may be required to do more of the 'heavy lifting' in yellow rust control.

In the past, yellow rust ratings on the RL have been based on a 5 year average dataset of adult plant resistance, providing protection from stem extension onwards, although timing is variety specific. Yellow rust races are dynamic with pathogen

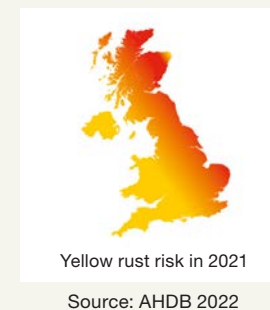
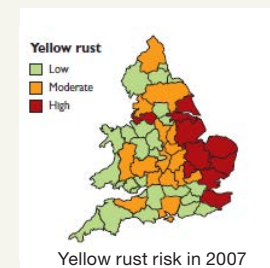
race variations, causing a constant threat. Young plant resistance is effective at all growth stages – some varieties are susceptible at the young plant stage but develop a degree of plant resistance. Each year, the Cereals Pathogen Virulence Survey (UKCVPS) selects a number of yellow rust strains to best represent the diversity of the population. These are used to test whether varieties are resistant or susceptible to yellow rust at the young plant stage. This data is a useful addition to the 2024/25 RL.

KWS support all these activities as we provide more information for farmers, helping them make the right variety choices for their individual growing situation and plan their crop management accordingly. We are also excited that some of our newest additions to our wheat portfolio, such as KWS Zealum and KWS Cranium, not only add yellow rust resilience with OWBM resistance, but also add high yield potential with seedling yellow rust resistance to the wheat market.

	UK untreated yield (%) controls	Adult yellow rust resistance (RL rating)	Young plant yellow rust resistance (=resistant, s=susceptible)
KWS Dawsum	91	9	r
Mayflower	91	9	r
LG Beowulf	91	9	-
KWS Ultimatum	90	9	r
KWS Palladium	90	9	r
LG Typhoon	89	9	r
Blackstone	87	9	-
KWS Zealum	84	9	r
Costello	83	9	r
KWS Cranium	79	9	r

- = Undetermined

Data source: AHDB Recommended List Winter Wheat 2024/25



Group 1

Wheat varieties within this sector are those used by millers for bread making and give year-on-year consistent milling and baking performance. They will achieve a premium if they meet specified quality requirements of 13% protein, 250s Hagberg Falling Number and 76kg/hl specific weight. Premiums for lower specification Group 1s (so-called low protein low HFN contracts) may be available – it's always best to check with your local market on their precise requirements.

SPECIFICATION		UK FLOUR MILLERS
	Group 1 Specs	UKP Specs
Protein	13%	11.0% - 13.0%
HFN	250	250
Specific weight (kg/hl)	76.0	76.0
Max. moisture content (%)	15%	14%
Max. admix	2%	2%
W	-	Min. 170
P/L	-	Max. 0.9

Group 1 varieties

KWS ZYATT				AHDB RECOMMENDED
Details				
Group	Year Listed	UK Treated Yield	Parentage	
1	2017	99%	Hereford x KWS Quartz	
Comments				
<p>KWS Zyatt is the highest yielding Group 1 on the Recommended List. Commercial experience in the mill and bakery has shown the variety delivers excellent protein functionality, making it suitable for use in a wide range of bread applications. A specific weight of 78.3 kg/hl, a HFN of 248 seconds and a milling specification protein of 12.5%, combined with its group-leading yield across all regions and soil types and its UKP export-approved status, make it the leading Group 1 wheat.</p> <p>On-farm, KWS Zyatt yields are 1-2% ahead of the next best Group 1 wheat, and in the second wheat slot, KWS Zyatt yields 3% ahead of newcomer SY Cheer and 4% ahead of Crusoe. It is a stiff-strawed variety with Pch1 resistance to eyespot and a good <i>Septoria tritici</i> rating of 6.3.</p>				

KWS Zyatt – use your loaf

In today's challenging times, finding the best local market and the right variety to fulfil are both crucial for growers looking to maximise their farm's potential. To achieve this, those close to a flour mill or port should have KWS Zyatt earmarked as one of their top varieties to consider growing this autumn. Since being added to the AHDB Recommended List in 2017, KWS Zyatt has earned a reputation as a consistent performer in the Group 1 sector.

Moreover, KWS Zyatt's excellent physical grain package is supported by its tried and tested results from the UK baking industry, where it has been shown to deliver a wide range of good quality end-use products.

Yields are 1-2% ahead of the next best Group 1 milling wheat and in the AHDB east and west regions, where over 80% of Group 1 plantings are found, it delivers consistently high yields.

But there's more to KWS Zyatt than just milling performance. For those looking for a wheat that performs well in the second wheat slot or one with a well understood and manageable disease package, then Zyatt will be a good option.

KWS Zyatt is stiff-strawed and has solid eyespot resistance, appearing to be one of those varieties that is a naturally good second cereal. Its grain quality is strong, so its seed rates can be pushed without compromising grain quality.

"KWS Zyatt has impressed us with its consistently good baking performance and versatility across a range of applications."

Shaun Taylor
Technical Director of
Hovis Bakeries



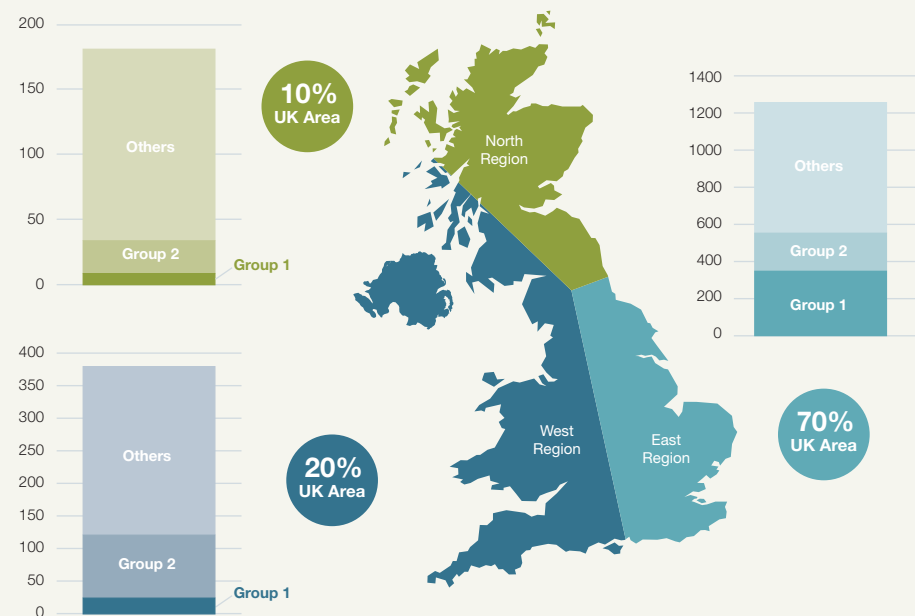
Group 2

Varieties in Group 2 are routinely used for bread making, but may have other bakery applications too. As a result, they could have specific end-use characteristics which are not suited to all grists. Consequently, these varieties are likely to attract varying market prices. Lower protein Group 2 wheats are also widely used by millers but will attract variable premiums, so it's always best to check with your local market on their precise requirements.

SPECIFICATION		
	Group 2 Specs	UKP Specs
Protein	12.5%	11.0% - 13.0%
HFN	250	250
Specific weight (kg/hl)	76.0	76.0
Max. moisture content (%)	15%	14%
Max. admix	2%	2%
W	-	Min. 170
P/L	-	Max. 0.9



'000 hectares planted - Harvest 2024



Group 2 varieties

KWS EXTASE			
Details			
Group	Year Listed	UK Treated Yield	Parentage
2	2019	101%	Boisseau x Solheio
Comments			
<p>Arguably the most exciting variety to come on to the Recommended List since the turn of the century, KWS Extase is the best example of the new generation of wheats that combine market value, high yield and outstanding disease resistance.</p> <p>A specific weight of 79.1 kg/hl, a HFN of 283 seconds – one of the highest scores for both characteristics of any recommended bread making wheat – and a milling specification protein of 12.3% make it the outstanding choice in this market group. It was also the first of this series of Group 2 varieties to be supported by a buy-back contract for full milling specification through to lower protein flours by a national miller.</p> <p>Its exceptional untreated yield of 93% of treated controls is still ahead of all other varieties on the current RL. It owes much to its unprecedented resistance to <i>Septoria tritici</i>. For this resistance, KWS Extase has a score of 7.4 and was the first UK variety to be awarded a score over 8.0 when it was first recommended. It also boasts a 7 for mildew and yellow rust, and 6 for brown rust.</p> <p>KWS Extase is a French-bred quality wheat that is performing well across northern Europe. It brings new genetics to the UK, but just as with Skyfall, it fits well with the conditions we have. With stiff, strong straw and as one of the earliest maturing varieties on the RL, it will appeal strongly to those in the east and those looking for complementary varieties to spread the harvest workload. This maturity and good wet-weather disease resistance will also support its appeal to those in the west and north.</p> <p>KWS Extase's speed of movement through stem extension is faster than average and closer to that of varieties such as Gallant, so growers will want to prioritise it ahead of others when planning spring fertiliser schedules.</p> <p>Care must be taken in planning sowing to make the biggest advantage of earliness. Sowing later maturity crops before earlier ones can nullify an advantage. We suggest sowing KWS Extase before KWS Siskin. Early maturity is a key characteristic for any milling type, ensuring that grain quality is preserved, especially in a catchy harvest.</p> <p>Since 20th May 2020, you can no longer apply Chlorothalonil™, which puts a hole in <i>Septoria</i> control for many growers. Increasingly good genetics are being realised on-farm as a key part of the solution, with KWS Extase being the variety of choice for many. KWS recommend a spray programme tailored to the situation and season with at least two modes of action in each tank-mix at the two main timings. Growers are urged to protect genetics, so preserving KWS Extase as a key variety on-farm today and in the future.</p>			



The grower's experience

“ On paper, KWS Extase looked like an exciting new addition to the 2019/20 RL, and having drilled it in autumn 2018, its performance did not disappoint. This harvest yielded well, ranging from 11.9 - 12.6 t/ha with an excellent sample of great looking wheat. What's more, we sold loads into our local miller at full Group 2 specification. With the disease pressures ahead, KWS Extase is certainly a key variety we will be drilling this season and beyond.

It was spotlessly clean - the cleanest variety I've seen - although you still get a decent return from what you invest in it. I could tell it was a different variety when it emerged - we'd put it in a heavy bit of dirt and expected large losses. But, in the spring it flew out of the blocks. It's a very vigorous variety, and drilled at the end of Sept, early Oct, I'd say no more than 350 seeds/m² is about right - around 25 seeds/m² less than you'd want for KWS Siskin.”

Andrew Robinson
Toddington Farms,
Bedfordshire



The miller's experience

“ Since issuing the buy-back contracts in 2019, we've been pleased with the response from growers who have made commitments going forward. We've seen some good results in the mill and are pleased to be able to offer growers ample opportunities to make a quality premium, even at a low protein. Our contracts are for either full spec 13% with fallbacks down to 12% or min 11.5% protein with fallbacks to 11%.”

George Mason
Senior Grain Buyer
at Heygates Milling

CROSS CROP CORNER



Your monthly cross crop news!

New for 2024! The KWS Technical team are excited to announce a new cross crop e-newsletter distributed every month.

Nine e-newsletters through the year containing relevant information on KWS varieties across cereals, oilseed rape, maize and sugar beet, putting you in direct contact with our KWS team for any enquiries you may have.



Want to sign up?

Scan the QR code and start receiving our cross crop updates monthly.

KWS PALLADIUM



Details

Group	Year Listed	UK Treated Yield	Parentage
2	2022	100%	KWS Zyatt x KWS Trinity

Comments

KWS Palladium is an exciting Group 2 that's becoming a firm favourite of UK millers and bakers alike. It is a super clean variety with one of the highest untreated yields on the market today, thanks to its scores for *Septoria* (7.3), mildew (8), yellow rust (9) and eyespot (6). Importantly, its *Septoria* resistance has a different genetic basis than other commercialised Group 2 varieties.

This early-to-mature variety (-1) is short and stiff with great resistance to sprouting, giving growers security at harvest. In addition, KWS Palladium has good yield potential across all the regions and performs well in both the first (100%) and second wheat (99%) slots.

Suited to earlier drilling than KWS Extase, both KWS Palladium and KWS Extase make good on-farm partners for growers targeting the Group 2 market sector or adding quality grain to the feed heap.

KWS Palladium has delivered excellent baking performance in our private trials over a number of seasons. **It's for this reason that the variety has been selected by Warburton's as a variety on their contracts for harvest 2024.**



	Harvest 2017		Harvest 2018 <i>Excellent baking year</i>		Harvest 2018 <i>(continued)</i>		Harvest 2019 <i>Low protein baking year</i>	
	KWS Zyatt	KWS Palladium	KWS Zyatt	KWS Palladium	KWS Zyatt	KWS Palladium	KWS Zyatt	KWS Palladium
Miller A								
	Control GP 1	-	Control GP 1	A*	Control GP 1	Control GP 1	Good	
Miller B	Control GP 1	1/2	Control GP 1	1/2	Control GP 1	Control GP 1	2	
Miller C	Control GP 1	-	Control GP 1	2/1	Control GP 1	Control GP 1	2/4	
Miller D	Control GP 1	2/4	Control GP 1	1	Control GP 1	Control GP 1	-	
Miller E	Control GP 1	-	Control GP 1	1/2	Control GP 1	Control GP 1	2/4	



KWS ULTIMATUM



Details

Group	Year Listed	UK Treated Yield	Parentage
2	2023	101%	KWS Zyatt x Costello

Comments

New in 2023, KWS Ultimatum is a truly all-round wheat variety that ticks all the boxes on-farm no matter the region you are growing in. In the north, KWS Ultimatum delivers the highest yields of all Group 2 wheats on the current RL, with a yield potential in this region akin to higher yielding feed types, being ahead of varieties like Champion and Gleam.

In the east and west, KWS Ultimatum's excellent yield potential and good disease resistances, including good resistance to Fusarium (6), will give growers access to premium market opportunities thanks to its UKFM Group 2 rating and UKP approval.

KWS SISKIN

Details

Group	Year Listed	UK Treated Yield	Parentage
2	2016	99%	KWS Sterling x Timaru

Comments

KWS Siskin is one of the most adapted varieties for use in modern farming. With an ultra-wide sowing window, it is the ideal variety for enabling competitive winter cropping and countering black-grass. An impressively strong disease profile and a grain that is widely accepted by end-users at all protein levels, KWS Siskin is a versatile variety that fits a range of situations and fills many requirements.

A consistent performer across the seasons, it is popular as a quality wheat and as a feed. A specific weight of 77.5 kg/hl, a HFN of 297 seconds and a milling specification protein of 12.4% make it an attractive variety for domestic and export markets where the UKP brand is recognised.

Data source: ADHB RL dataset from 2023/24 RL

Group 3

This Group contains soft varieties for biscuit, cake and other flours where the main requirement is for soft milling characteristics. Group 3 wheats are unique to the UK, having inherently lower protein with good extraction rates and good extensibility but not-too-elastic gluten. At the right specification, UK Group 3s ensure that the nation's biscuits are not too chewy, stay the right shape during baking and that the right number of biscuits are produced for each packet. These varieties are uniquely grown in the UK environment and are desired by continental millers for use in biscuit and flatbread production. Hence many Group 3 wheats have the UKS brand for export.

SPECIFICATION



	Group 3 Specs	UKS Specs
Protein	11.5%	10.5% - 11.5%
HFN	220	220
Specific weight (kg/hl)	74.0	75.0
Max. moisture content (%)	15%	14%
Max. admix	2%	2%
W	-	70 - 120
P/L	-	Max. 0.55

In addition, thanks to the lower protein and higher starch ratio of these softer milling types, many Group 3s also have opportunities in the wheat distilling sector.



KWS BRIUM			
Details			
Group	Year Listed	UK Treated Yield	Parentage
3	2022	100%	KWS Solo x KWS Basset
Comments			
<p>The variety performs across the rotation, delivering good yields when later sown as a 1st wheat, as a 2nd wheat and in the east and north.</p> <p>KWS Brium is an attractive Group 3 winter wheat for many end-users. With its great quality grain, high input and high output status, KWS Brium has good potential for both distillers and professional biscuit producers alike. With good, high yielding performance in the UK, KWS Brium may be the perfect choice for your farm, especially in the north and south.</p>			

KWS GUIUM		Comments
Details		
Group	3	<p>KWS Guium is the perfect wheat to schedule on-farm this year. Suited to being drilled from October onwards, KWS Guium is later maturing which enables the spreading of the workload at harvest. The excellent sprouting resistance also adds flexibility during this time.</p> <p>With good yellow rust resistance and OWBM, the variety performs well in the east. A robust fungicide programme is recommended to get the best out of it.</p> <p>KWS Guium is one of the few varieties not to be based on Cougar, and as such, it is a useful addition on-farm to increase genetic diversity in the wheat rotation.</p>
Year Listed	2022	
Treated Yield	101%	
Parentage	KWS Rowan x Tempo	

Data source: ADHB RL dataset from 2023/24 RL



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Winter Wheat Recommended List 2024/25, Groups 1, 2 & 3

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	KWS Zylatt	SY Cheer	Skyfall	Cruseo	RGT Illustrious	KWS Exase	KWS Ultimatum	KWS Palladium	Mayflower	Bannford	RGT Wilkinson	KWS Brium	RGT Flashid	Almara	LG Illuminate	LG Astronomer
End-use group	UKFM Group 1					UKFM Group 2				UKFM Group 3						
Scope of recommendation	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	E	N	UK	UK
Variety status	NEW					C				NEW		*		NEW		*
Fungicide-treated grain yield (% treated control)																
United Kingdom (11.0 t/ha)	99	97	96	95	95	101	101	100	97	106	100	100	99	99	98	98
East region (10.9 t/ha)	98	97	96	95	95	101	101	99	97	105	101	100	100	98	98	98
West region (11.2 t/ha)	99	98	96	96	96	102	101	101	97	107	99	99	98	99	99	98
North region (11.3 t/ha)	97	[98]	95	94	94	99	101	99	96	[105]	99	100	98	[102]	100	97
Untreated grain yield (% treated control)																
United Kingdom (11.0 t/ha)	71	84	66	75	82	93	90	90	91	92	83	80	78	87	83	85
Disease resistance																
Mildew (1-9)	7	[8]	6	7	6	7	7	8	7	[6]	7	7	3	[6]	5	4
Yellow rust (1-9)	3	7	3	8	7	7	9	9	9	7	7	9	8	8	7	8
Yellow rust (young plant)	s	-	s	s	s	s	r	r	r	-	s	s	r	-	r	r
Brown rust (1-9)	7	6	9	3	5	6	6	5	6	6	5	5	5	6	6	7
Septoria tritici (1-9)	6.3	6.0	5.8	6.3	5.9	7.4	6.5	7.3	8.9	6.7	5.5	5.7	6.1	6.0	5.6	5.9
Eyespot (1-9)	6@	4	6@	5	6@	4	6	6	5@	6@	6@	5	5	4	5	5
Fusarium ear blight (1-9)	6	[7]	7	7	6	6	6	6	6	[5]	6	6	7	[6]	6	6
Orange wheat blossom midge	-	-	R	-	-	-	-	-	-	-	-	-	R	R	R	R
Agronomic features																
Resistance to lodging without PGR (1-9)	8	8	8	7	8	7	6	8	6	7	8	8	8	6	7	7
Resistance to lodging with PGR (1-9)	8	7	7	8	9	8	7	8	7	7	8	7	8	7	7	9
Lodging without PGR (%)	1	1	1	2	1	3	6	2	6	3	1	2	2	6	3	2
Lodging with PGR (%)	1	3	3	2	0	2	4	2	4	4	1	4	2	3	3	0
Straw length without PGR (cm)	86	91	87	84	91	92	87	85	90	90	84	93	87	86	85	90
Straw length with PGR (cm)	76	82	78	77	81	86	77	78	83	83	78	85	80	79	77	80
Ripening (days +/- Skyfall)	0	+1	+0	+1	+1	-1	+1	-1	-0	+1	+2	+2	+3	+1	+1	+2
Resistance to sprouting (1-9)	6	-	5	6	6	6	[6]	[6]	[6]	-	[5]	[6]	[6]	-	[6]	[7]
Main market options (The specific attributes of varieties are different, so, whenever possible, varieties should not be mixed in store)																
UK bread-making	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	-	-	-	-
UK biscuit, cake-making	-	-	-	-	-	-	-	-	-	Y	Y	Y	Y	Y	Y	Y
UK distilling	-	-	-	-	-	-	-	-	-	[M]	[M]	[M]	[M]	[M]	[M]	[M]
ukp bread wheat for export	Y	-	-	Y	-	Y	[M]	-	Y	-	-	-	-	-	-	-
uks soft wheat for export	-	-	-	-	-	-	-	-	-	[M]	[M]	-	-	[M]	Y	-

	KWS Z/eit	SY Cheer	Skyfall	Crusee	RGT Illustrious	KWS Extase	KWS Ultimatum	KWS Palladium	Mayflower	Bamford	RGT Wilkinson	KWS Bitum	RGT Rashid	Almara	LG Illuminate	LG Astronomer
End-use group	UKFM Group 1					UKFM Group 2				UKFM Group 3						
Grain quality																
Endosperm texture	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Soft	Soft	Soft	Soft	Soft	Soft	Soft
Protein content (%)	11.7	11.8	11.8	12.3	11.8	11.5	11.3	11.4	11.6	10.9	11.1	11.0	10.8	11.1	11.3	11.4
Protein content (%) – milling spec	12.5	13.0	12.9	13.2	12.5	12.3	12.2	12.2	12.5	11.6	12.1	11.8	12.0	12.2	12.4	12.5
Hagberg Falling Number	248	299	265	265	258	283	271	305	294	239	248	260	221	186	251	232
Specific weight (kg/hl)	78.3	79.5	79.1	78.3	78.0	79.1	79.6	77.6	79.1	78.5	75.4	78.0	77.1	77.6	77.0	78.1
Chopin Alveograph W	-	[275]	266	243	-	203	189	[186]	207	103	105	[78]	[76]	98	88	-
Chopin Alveograph P/L	-	[1.6]	1.0	0.6	-	0.7	0.7	[0.6]	0.8	0.5	0.4	[0.3]	[0.3]	0.3	0.3	-
Annual treated yield (% control)																
2019 (11.6 t/ha)	96	-	95	97	94	100	-	100	98	-	-	99	99	-	100	99
2020 (10.4 t/ha)	97	-	95	94	96	99	[102]	[100]	[96]	-	[101]	[102]	[100]	-	100	98
2021 (11.0 t/ha)	99	97	97	95	93	101	100	98	95	104	98	98	98	100	97	97
2022 (11.7 t/ha)	100	98	96	94	96	102	101	100	97	106	101	100	98	99	98	97
2023 (10.9 t/ha)	99	96	98	96	96	101	101	100	97	106	99	99	99	99	97	97
Rotational position																
First cereal (11.3 t/ha)	98	97	96	96	95	101	101	100	97	105	100	100	99	99	98	98
Second and more (10.2 t/ha)	98	95	97	94	93	101	101	99	98	106	100	100	99	98	98	97
Sowing date (most trials were sown in October)																
Early sown (before 25 Sept) (11.4 t/ha)	[100]	[[97]]	96	[98]	[99]	101	[[103]]	[[99]]	101	[104]	[100]	100	[[98]]	[[100]]	101	99
Late sown (after 1 Nov) (9.5 t/ha)	97	[[100]]	97	94	93	101	[101]	98	94	[[105]]	[102]	101	103	[[96]]	97	97
Latest safe-sowing date	End Jan	[[End Jan]]	End Feb	End Jan	End Jan	End Jan	[End Jan]	End Jan	End Jan	[[End Jan]]	[End Jan]	End Feb	End Jan	[[End Jan]]	Mid Feb	End Jan
Soil type (about 50% of trials are on medium soils)																
Light soils (10.7 t/ha)	97	[96]	96	93	94	101	101	99	96	[105]	100	99	99	[102]	100	98
Heavy soils (11.4 t/ha)	99	97	96	96	96	101	101	99	97	106	100	99	99	98	98	98
Breeder/UK contact																
Breeder	KWS	SCP	RAGT	Lim	R2n	Mom	KWS	KWS	ElsW	ElsW	R2n	KWS	RAGT	KWS	LimEur	LimEur
UK contact	KWS	Syn	RAGT	Lim	RAGT	KWS	KWS	KWS	Els	Els	RAGT	KWS	RAGT	Sen	Lim	Lim
Status in RL system																
Year first listed	17	24	14	12	16	19	23	22	22	24	23	22	22	24	21	21
RL status	-	P1	-	-	-	-	P2	-	-	P1	P2	*	-	P1	*	-

KWS Grower's Guides

Our grower's guides are intended to give growers and advisers the latest information to get the most out of their KWS crop this growing season.

They aim to provide sufficient technical information, covering aspects such as varietal characteristics, regional performance and crop management strategies.

Getting started with KWS Cereal varieties is easy...



You can find guides for the following variety guides on our website:

- KWS Palladium
- KWS Dawsum
- KWS Tardis
- KWS Extase
- KWS Parkin
- KWS Cranium



To download our grower's guides,
please scan the QR code.



Soft Group 4



These are feed varieties that may or may not have additional soft end-use opportunities. Some have tested positive for distilling, whilst others may be suitable for soft milling applications on the continental market. It is always worth checking with your local merchant to fully understand the specification your end-user customer requires.

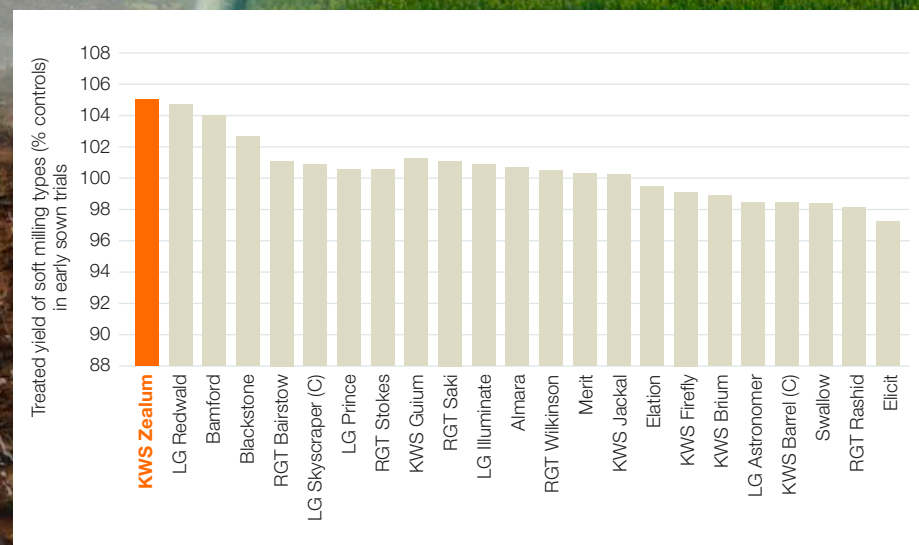
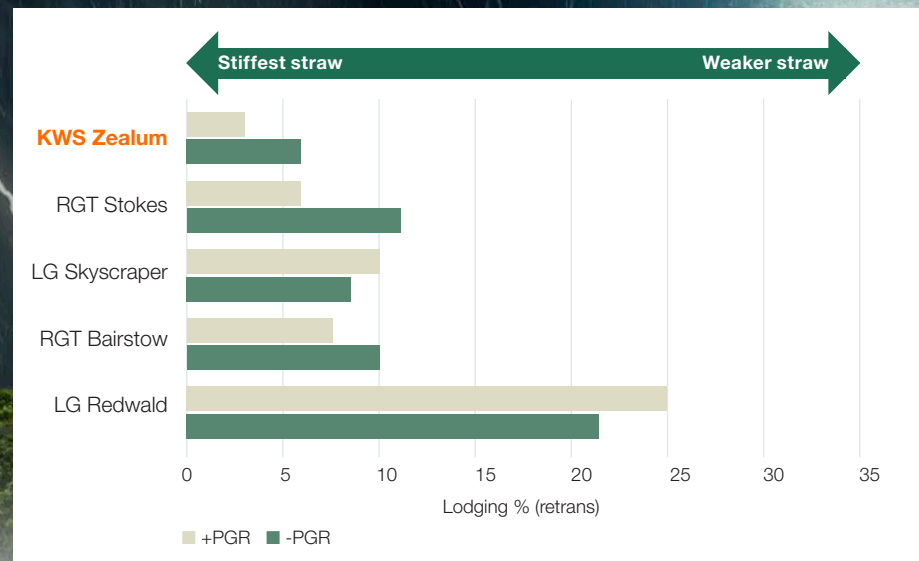
Soft Group 4 Varieties

KWS ZEALUM		Comments
Details		
Group	4 Soft	<p>KWS Zealum is a super stiff, super versatile soft Group 4 wheat that has a genuinely resilient combination of characteristics, delivering performance in a range of challenging growing conditions and locations. With just under 40% of the soft Group 4 market sown in the AHDB north, KWS Zealum brings all of the key characteristics needed for a northern wheat to perform on-farm: It is fully approved for distilling, giving access to the 400,000T market, delivers the very best performance in very early and early sown trials along with a good disease package including a 7 for mildew and [6] for resistance to sprouting.</p> <p>In short, it is a first choice variety for growers from Yorkshire through to Scotland. But the advantages don't stop in the north, the majority of soft Group 4s are sown in the east and west, serving the UK's bioethanol and soft milling homes. KWS Zealum's good package is of benefit to growers here too.</p> <p>It has good resistance to sprouting coupled with excellent resistance to Fusarium (7) and the best yellow rust resistance (9) complimented by OWBM resistance too. Furthermore, thanks to its stiff straw. It's a useful wheat on heavier land or more fertile soils. So if you are looking for a wheat which performs in the most challenging of conditions, take a closer look at KWS Zealum for your farm this autumn.</p>
Year Listed	2023	
UK Treated Yield	102%	
Parentage	KWS Basset x Reflection	



What makes KWS Zealum the wheat variety for you?

KWS Zealum is stiff-strawed, both with and without PGR, adding security right through to harvest. It is an ideal soft feed variety for the north thanks to its excellent suitability to early drilling.



	LG Redwald	Blackstone	KWS Zealum	RGT Bairstow	LG Skyscraper	RGT Stokes	Swallow
End-use group	Soft Group 4						
Scope of recommendation	E&W	UK	N	UK	UK	N&W	N
Variety status		NEW			C		*
Fungicide-treated grain yield (% treated control)							
United Kingdom (11.0 t/ha)	106	103	102	102	102	101	96
East region (10.9 t/ha)	105	103	103	102	103	100	96
West region (11.2 t/ha)	107	101	102	103	101	103	96
North region (11.3 t/ha)	104	[103]	102	102	101	103	100
Untreated grain yield (% treated control)							
United Kingdom (11.0 t/ha)	89	87	84	84	83	83	76
Disease resistance							
Mildew (1-9)	5	[7]	7	6	7	6	6
Yellow rust (1-9)	7	9	9	8	7	7	7
Yellow rust (young plant)	s	-	r	r	s	r	r
Brown rust (1-9)	7	6	5	6	5	5	5
Septoria tritici (1-9)	6.5	6.2	6.1	5.9	4.9	6.0	5.1
Eyespot (1-9)	4	5	5	4	5	4	4
Fusarium ear blight (1-9)	6	[8]	7	6	6	6	6
Orange wheat blossom midge	R	R	R	R	R	-	R
Agronomic features							
Resistance to lodging without PGR (1-9)	5	8	6	6	6	5	8
Resistance to lodging with PGR (1-9)	5	7	7	6	6	7	9
Lodging without PGR (%)	22	2	6	10	8	12	1
Lodging with PGR (%)	25	3	3	7	10	6	0
Straw length without PGR (cm)	95	92	90	92	93	92	80
Straw length with PGR (cm)	88	85	82	82	84	81	74
Ripening (days +/- Skyfall)	+2	+2	+2	+2	0	+3	+1
Resistance to sprouting (1-9)	[6]	-	[6]	[6]	6	[6]	[5]
Main market options (The specific attributes of varieties are different, so, whenever possible, varieties should not be mixed in store)							
UK bread-making	-	-	-	-	-	-	-
UK biscuit, cake-making	-	-	-	-	-	-	-
UK distilling	[Y]	[Y]	[Y]	Y	[Y]	Y	Y
ukp bread wheat for export	-	-	-	-	-	-	-
uks soft wheat for export	-	-	-	-	-	-	-

	LG Redwald	Blackstone	KWS Zealum	RGT Bairstow	LG Skyscraper	RGT Stokes	Swallow
End-use group	Soft Group 4						
Grain quality							
Endosperm texture	Soft	Soft	Soft	Soft	Soft	Soft	Soft
Protein content (%)	10.7	10.9	10.7	10.8	11.0	10.9	10.9
Protein content (%) – milling spec	11.4	11.7	11.8	11.7	12.0	11.9	11.8
Hagberg Falling Number	147	299	202	224	204	240	255
Specific weight (kg/hl)	75.2	78.2	76.8	76.6	77.1	76.2	76.6
Chopin Alveograph W	-	124	[74]	[54]	-	[65]	-
Chopin Alveograph P/L	-	0.5	[0.3]	[0.3]	-	[0.3]	-
Annual treated yield (% control)							
2019 (11.6 t/ha)	-	-	-	103	103	103	98
2020 (10.4 t/ha)	[105]	-	[103]	[103]	102	[101]	101
2021 (11.0 t/ha)	106	102	101	101	101	102	97
2022 (11.7 t/ha)	106	103	102	102	102	101	98
2023 (10.9 t/ha)	105	102	102	102	100	101	94
Rotational position							
First cereal (11.3 t/ha)	106	103	102	102	102	101	97
Second and more (10.2 t/ha)	106	102	104	103	103	101	98
Sowing date (most trials were sown in October)							
Early sown (before 25 Sept) (11.4 t/ha)	[104]	[103]	105	101	102	101	99
Late sown (after 1 Nov) (9.5 t/ha)	[104]	[[105]]	[[104]]	104	102	99	97
Latest safe-sowing date	[Mid Feb]	[[Mid Feb]]	[End Jan]	End Feb	End Jan	End Jan	End Feb
Soil type (about 50% of trials are on medium soils)							
Light soils (10.7 t/ha)	105	[102]	[101]	103	102	102	100
Heavy soils (11.4 t/ha)	105	102	103	103	102	101	96
Breeder/UK contact							
Breeder	LimEur	ElsW	KWS	RAGT	LimEur	RAGT	BA
UK contact	Lim	Els	KWS	RAGT	Lim	RAGT	Sen
Status in RL system							
Year first listed	23	24	23	22	19	22	21
RL status	P2	P1	P2	-	-	-	*

PRODUCTIVITY² SQUARED

Field to future

KWS is committed to using its expertise to develop the super-varieties needed to build the sustainable, secure and resilient food supply chain we all need.



Productivity² looks to take KWS varieties to even higher levels of production potential in the future.

Yield and profit-potential are fundamental to farmers' economic success, resilience, competitiveness and ability to meet the demands of a growing population, while ensuring environmental sustainability.

While focusing on increased disease resistance, physical resilience and lower input requirement in our varieties over recent years, we have never lost sight of the importance of yield and profit-potential to growers.

With the rising costs involved in crop production, a new emphasis on the importance of food security and the ongoing pursuit of business sustainability, yield is very much king once more.



Productivity² is a statement indicating KWS's recognition of the critical importance of production, yield and gross margin in the future.



We're committed to creating advanced crop varieties with higher yields, essential for a sustainable and resilient food supply chain.


We aim to collaborate with the food industry and various organisations to create quantum improvement in efficiency across all areas.



Our focus is on using genetics to elevate productivity to new heights.

Hard Group 4

Group 4 wheats are grown mainly as feed wheats, but some may be used by millers in general-purpose grists if they achieve contractual standards. Hence it's always a good idea to choose varieties with a robust grain package for protein, HFN and specific weight. It is also worth checking with your local merchant to fully understand the specification your end-user customer requires. Growers should take care to avoid mixing hard and soft types in store.

KWS DAWSUM			
			
Details			
Group	Year Listed	UK Treated Yield	Parentage
4 Hard	2022	103%	KWS Kerrin x Costello
Comments			
<ul style="list-style-type: none"> Exceptional specific weight (79.9 kg/hl). Very high yield potential across all regions of the UK. Super flexible on-farm with a wide sowing window. <p>Awesome Dawsum! The bankable barn filler – a hard feed type that offers great yields with exceptional specific weight (79.9 kg/hl). It's a really clean, nice plant type with one of the widest sowing windows available.</p> <p>New in 2022 from KWS is a hard Group 4 wheat that offers growers the ultimate flexibility on-farm, delivering fantastic yields right across the rotation if you are drilling early (106%), mainstream (103%) or late sown slots (103%). These benefits, combined with the excellent disease package mean this variety delivers an excellent untreated yield (91%) and includes 6.3 for <i>Septoria</i> and 9 for yellow rust. Add in the exceptionally marketable grain and super stiff straw – significantly stiffer than leading feeds like Champion and SY Insitor – and you have a truly D-awsome variety that will earn itself a place on every farm this season!</p>			



Awesome KWS Dawsum

A truly **special combination** of yield, grain quality and disease resistance



“ Northumberland grower Jim Lang harvested his first crop of KWS Dawsum in Berwick-Upon-Tweed during 2022, achieving the farm's top yield of 12t/ha with a specific weight of 83kg/hl. So well did it perform that he has increased the area for 2023 harvest by 50%.

“A key factor in the decision to grow the high-yielding Group 4 hard feed is its suitability for earlier drilling, a vital consideration in an area where the weather can turn harsh very quickly in the autumn” he says. “KWS Dawsum is a variety with all the qualities I look for in a winter wheat and one which I think it will be around for many years.”

Jim Lang
Grower, Berwick-upon-Tweed

KWS CRANIUM



Details

Group	Year Listed	UK Treated Yield	Parentage
4 Hard	2021	102%	KWS Crispin x KWS Kielder

Comments

KWS Cranium is a hard Group 4 wheat that offers farmers the ultimate tool in risk management thanks to its ability to perform well in all of the major situations that significantly impact yield. Suited to the mainstream sowing slots, KWS Cranium really excels in late drilling, where it performs at its best, yielding 104% controls. Add good performance in the first and second wheat slots, and you have a variety that is really flexible for many farming situations. The variety has a good disease package with good resistance to *Septoria tritici* (5.8) which gains in value in later drillings, and decent brown rust and mildew resistance too. Critically, KWS Cranium adds seedling and adult yellow rust resistance 9 to the hard Group 4 sector. This, in combination with its high yields, OWBM resistance and substantially stiffer straw than even the best varieties on the RL, makes KWS Cranium a 'no-brainer' choice for your farm. As a later maturing type (+3), KWS Cranium can help spread the workload at harvest. The variety delivers a reliable grain package with good HFN (286) and a specific weight (75.8kg/hl).

“ Last season, KWS Cranium was among the last of the winter wheats to go in. Being drilled on 9th October on heavy land, we like to establish our winter wheat by mid-October. In our experience, it is quick out of the blocks but not a quick finisher, so you have to be patient. The variety's vigorous growth habit helps it to outcompete black-grass and keep numbers to a minimum, although each year we employ a team to hand-rogue the whole farm to ensure that our fields remain clear of this yield-sapping weed.

We have been very pleased with the consistency, reliability and performance of KWS Cranium and plan to drill the same area this autumn.”

Mike Porter
Porter Farms (Walpole) Ltd, East Suffolk



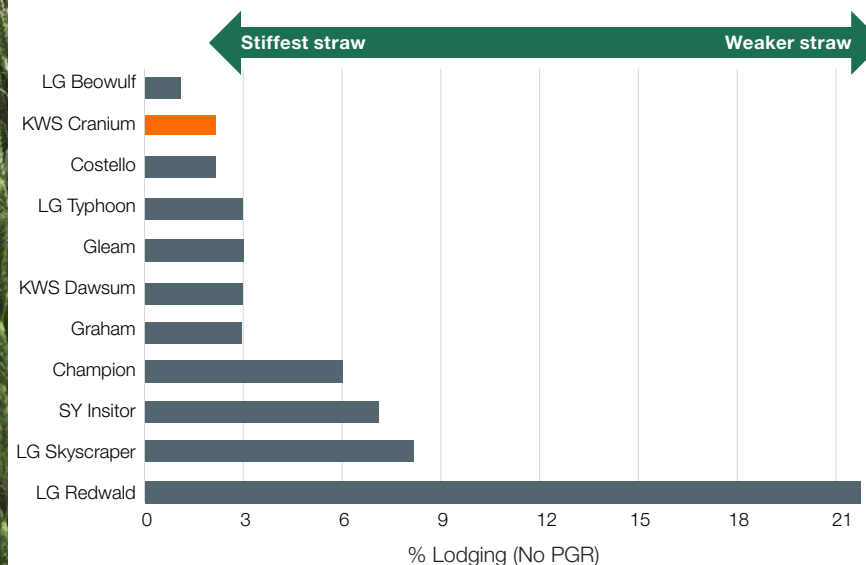
© Mike Porter - Drilling KWS Cranium, October 2022



KWS Cranium - the thinking farmer's wheat!

What makes KWS Cranium the right wheat variety for you?

KWS Cranium is incredibly stiff-strawed compared to leading feed varieties, making it a firm favourite for heavy land or on more fertile soils.



Data Source: 2024/25 AHDB Winter Wheat

	LG Beowulf	Champion	SY Inisitor	Oxford	KWS Dawson	Gleam	Graham	KWS Cranium	LG Typhoon	RGT Wolverine	Costello
End-use group	Hard Group 4										
Scope of recommendation	UK	UK	UK	E&W	UK	UK	UK	UK	UK	Sp	UK
Variety status	NEW										C
Fungicide-treated grain yield (% treated control)											
United Kingdom (11.0 t/ha)	106	106	104	104	103	103	102	102	100	99	98
East region (10.9 t/ha)	106	106	104	104	103	103	101	102	100	99	99
West region (11.2 t/ha)	106	106	105	104	104	103	104	100	100	100	98
North region (11.3 t/ha)	[107]	103	105	101	105	103	102	102	101	99	99
Untreated grain yield (% treated control)											
United Kingdom (11.0 t/ha)	91	90	79	88	91	80	89	79	89	72	83
Disease resistance											
Mildew (1-9)	[6]	7	7	5	8	6	6	5	7	6	8
Yellow rust (1-9)	9	8	4	8	9	5	7	9	9	4	9
Yellow rust (young plant)	-	r	s	r	r	s	s	r	r	s	r
Brown rust (1-9)	5	5	6	6	7	6	5	4	6	7	5
Septoria tritici (1-9)	6.7	7.9	6.4	6.6	6.3	5.7	6.6	5.8	7.2	6.0	5.8
Eyespot (1-9)	6	4	5	5	5	5	4	5	5	6	5
Fusarium ear blight (1-9)	[6]	6	7	6	7	6	6	7	6	6	7
Orange wheat blossom midge	R	R	R	R	-	R	-	R	R	-	-
Agronomic features											
Resistance to lodging without PGR (1-9)	8	6	6	7	7	7	7	8	7	7	7
Resistance to lodging with PGR (1-9)	8	6	7	7	7	7	8	8	7	7	8
Lodging without PGR (%)	1	6	7	3	3	3	3	2	3	3	2
Lodging with PGR (%)	2	7	4	3	3	4	2	2	3	3	2
Straw length without PGR (cm)	90	89	95	86	85	89	91	90	88	88	85
Straw length with PGR (cm)	81	82	84	79	77	78	81	81	79	79	76
Ripening (days +/- Skyfall)	+2	0	+1	+2	+1	0	-1	+3	+2	+2	+2
Resistance to sprouting (1-9)	-	[6]	5	[6]	[6]	6	6	[6]	[5]	[6]	6
Main market options (The specific attributes of varieties are different, so, whenever possible, varieties should not be mixed in store)											
UK bread-making	-	-	-	-	-	-	-	-	-	-	-
UK biscuit, cake-making	-	-	-	-	-	-	-	-	-	-	-
UK distilling	-	-	-	-	-	-	-	-	-	-	-
ukp bread wheat for export	-	-	-	-	-	-	-	-	-	-	-
uks soft wheat for export	-	-	-	-	-	-	-	-	-	-	-

	LG Beowulf	Champion	SY Inisitor	Oxford	KWS Dawson	Gleam	Graham	KWS Cranium	LG Typhoon	RGT Wolverine	Costello
End-use group	Hard Group 4										
Grain quality											
Endosperm texture	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard
Protein content (%)	11.1	11.0	10.5	11.2	10.8	10.9	11.0	10.9	10.8	10.7	11.4
Protein content (%) – milling spec	12.3	11.9	11.2	12.2	11.7	11.5	11.8	11.7	11.8	11.4	12.3
Hagberg Falling Number	253	235	261	202	299	215	271	286	164	271	321
Specific weight (kg/hl)	78.3	75.4	78.6	76.1	79.9	76.9	77.7	75.8	77.1	76.3	81.1
Chopin Alveograph W	-	-	-	-	-	-	-	-	-	-	-
Chopin Alveograph P/L	-	-	-	-	-	-	-	-	-	-	-
Annual treated yield (% control)											
2019 (11.6 t/ha)	-	104	105	-	104	102	102	101	102	101	98
2020 (10.4 t/ha)	-	[105]	103	[104]	[105]	103	102	103	[101]	101	99
2021 (11.0 t/ha)	107	105	105	102	103	104	103	99	100	95	99
2022 (11.7 t/ha)	105	105	105	102	103	103	103	102	99	101	98
2023 (10.9 t/ha)	106	106	106	105	104	104	102	102	101	100	98
Rotational position											
First cereal (11.3 t/ha)	106	105	104	104	104	103	102	101	100	100	99
Second and more (10.2 t/ha)	106	107	105	104	104	102	101	102	102	98	97
Sowing date (most trials were sown in October)											
Early sown (before 25 Sept) (11.4 t/ha)	[105]	107	[107]	104	106	103	101	[101]	103	100	99
Late sown (after 1 Nov) (9.5 t/ha)	[[108]]	106	102	[105]	103	102	99	104	100	99	100
Latest safe-sowing date	[[End Jan]]	Mid Feb	End Jan	[End Jan]	End Jan	Mid Feb	End Jan	Mid Feb	End Jan	End Jan	End Jan
Soil type (about 50% of trials are on medium soils)											
Light soils (10.7 t/ha)	[105]	105	106	102	105	103	102	103	101	97	99
Heavy soils (11.4 t/ha)	106	106	104	105	103	103	102	101	100	100	98
Breeder/UK contact											
Breeder	LimEur	DSV	SyP	DSV	KWS	SyP	SyP	KWS	LimEur	R2n	KWS
UK contact	Lim	DSV	Syn	DSV	KWS	Syn	Syn	KWS	Lim	RAGT	Sen
Status in RL system											
Year first listed	24	22	20	23	22	18	16	21	22	21	15
RL status	P1	-	-	P2	-	-	-	-	-	-	-

KWS PARKIN

Details

Group	Year Listed	UK Treated Yield	Parentage
4 Hard	Not added to RL	102%	Reflection x Costello

Comments

KWS Parkin may be overlooked by some due to it not featuring on the Recommended List. However, this small and mighty variety could offer growers something truly unique this autumn.

With the wet weather in both autumn 2019 and 2020 still at the front of many minds, a variety suited to early drilling could be top of many UK farmers' wish lists. For those looking to get off the mark quickly, KWS Parkin is the ideal choice. It can be drilled across a range of soil types, although its best yield performance may come from heavier soils. From our own trials, we've seen that it is highly suitable for both first and second wheat positions.

To get the best out of KWS Parkin, growers should consider drilling this variety before 25th September. In AHDB and KWS trials, it was in this relatively early slot that the true yield potential of KWS Parkin was realised when it significantly outperformed other well-known barn fillers.

KWS Parkin's other stand-out feature is its height. At 78.6cm, it's an impressive 15cm shorter than the tallest variety on the RL - and super stiff too. Since the demise of Grafton and Cordiale, over the last 5-10 years or so we've really seen a gap in the market for this type of variety. Today, farmers are looking for agronomic tools like KWS Parkin that are short and stiff. This enables PGR applications to be simplified, introducing flexibility into spray windows, allowing them to be safely widened to when workloads or weather conditions permit. It's the obvious choice for growers in the east and Yorkshire on more fertile soils as well as those that use manures and digestate.



All data taken from **2020 varieties not added to the Recommended list**

Harvest 2024 Winter Wheat Candidates

We have an incredibly strong pipeline with a broad range of varieties in NL1 and NL2 and no less than 12 cereal varieties currently on the candidate list for possible RL inclusion at the end of 2024. You can find out more about some of our newcomers over the next few pages.

Potential Group 1's

KWS VIBE (KWS W443)

AHDB
CANDIDATE

NEW

Details

Group	Year Listed	UK Treated Yield
Potential Group 1	Candidate	to complete NL

Comments

KWS Vibe is an exciting addition to the Harvest 2024 ADHB Candidate List for Winter Wheats. And for good reason, it is a potential Group 1 wheat that has one of the best combinations of yield, disease resistance and grain quality, offering real change and excellent gross margin potential for professional milling wheat growers in all regions of the UK.

KWS Vibe is currently in its final year of testing with The UK Flour Millers, but to date has achieved Group 1 ratings over 2 contrasting seasons thanks to its higher proteins and gluten quality than current Group 1 controls. Couple this with higher HFN and specific weights than Skyfall and KWS Zyatt and you have an exciting wheat for the future. KWS Vibe's slow development but ability to tiller, along with a score of 8 for eyespot resistance, makes it the ideal wheat to start drilling early, a key requirement for growers further north. It is a short stiff plant type - with 0% lodging even in the challenging year of 2023, backed with an impressive set of disease resistance scores. All of this, with yields ahead of Skyfall and Crusoe, make KWS Vibe one of the most profitable wheats you could grow this season.

Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)



KWS BESTE (KW 2226-19) AHDB CANDIDATE **NEW**

Details		
Group Potential Group 1	Year Listed Candidate	UK Treated Yield to complete NL

Comments

If you are looking for opportunities to add value to your wheat rotation, and relish the challenge of growing a unique type of wheat, then take a closer look at KWS Beste as a great option to sow through the late autumn this season.

KWS Beste is a new wheat candidate for AHDB harvest 2024. It comes to you from KWS's quality-led German breeding programme as a potential Group 1 milling wheat that can be easily grown under UK conditions. Here in the UK, German wheats are routinely imported by domestic millers to add strength into everyday bread products. Thanks to its UK adaptability, KWS Beste offers millers the opportunity to source this unique protein from local homes close to the mill.

For growers KWS Beste produces excellent grain quality including high proteins (regularly over 13%), HFN and specific weights and yields ahead of Crusoe and RGT Illustrious. The variety is not suited to early drilling due to its vigorous growth habit. It is a taller-strawed wheat with moderate resistance to lodging; hence a robust PGR programme is recommended to maximise yields and gross margins.

Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)

Potential Group 2's

KWS NEWBIE (KWS W442) AHDB CANDIDATE **NEW**

Details		
Group Potential Group 2	Year Listed Candidate	UK Treated Yield 103%

Comments

The new kid on the block for drilling 2024 is KWS Newbie – an all round wheat that ticks all the boxes on-farm for the northern grower.

It is a potential Group 2 wheat with good grain characteristics including a very high HFN (321) and excellent specific weight (78.4kg/hl). However KWS Newbie is more of an all-rounder, having fantastic yield potential, especially in the north – at 105% of controls. The variety out-competes many northern feed favourites such as LG Skyscraper (101%), Gleam (103%) and Swallow (97%).

A fast-developing plant type, growers are advised to sow from the end of September onwards (depending on region, see page 4) to ensure this high tillering variety delivers its full yield potential. At 84.7cm height without PGR, KWS Newbie is some 7cm shorter-strawed than KWS Extase, but with the same earliness (-1 days compared to Skyfall) you have come to expect from KWS's popular Group 2 stable.

Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)

KWS ARNIE (KWS W441) AHDB CANDIDATE **NEW**

Details		Comments
Group	Potential Group 2	Weighing-in on the AHDB Candidate List for Harvest 2024 is KWS Arnie – the all-round wheat for growers looking for a strong variety to add some muscle to their grain heap this autumn.
Year Listed	Candidate	A potential UKFM Group 2, KWS Arnie elevates the yield potential of this market sector offering UK yields 3% above those of KWS Extase, with exceptional performances in the main wheat growing regions for the AHDB east (105%) and west ([106%]). But the advantages of this variety don't stop at yield. KWS Arnie has an impressive set of disease resistance scores which include a 7.1 for <i>Septoria</i> along with better yellow rust (8) and eyespot (6) than its KWS Extase stablemate.
UK Treated Yield	105%	It's Arnie's sturdy plant type that will really appeal to many UK growers. It's a fast developer in the autumn with the ability to tiller strongly, leading to a good plant stand as crops head through the spring. In addition, KWS Arnie has super stiff straw, with 0% lodging recorded with and without PGR over the past 2 contrasting seasons. And to complete harvest security, at a -1 maturity (days compared to Skyfall), KWS Arnie will be one of the first wheats on-farm fit for harvest.
		So if you are looking to bolster your wheat production in autumn 2024, look no further than KWS Arnie – serious muscle for the job!

Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)

IT'S THE GUV'NOR.



KWS EQUIPE (KM 2110)		AHDB CANDIDATE	NEW
Details		Comments	
Group	Potential Group 2	Hot on the heels of KWS Extase, from our French breeding programme comes, KWS Equipe. It has all the great attributes growers love about Extase but with better grain, higher yields, improved untreated yield - all in an earlier-to-harvest package.	
Year Listed	Candidate	KWS Equipe is a high yielding wheat that performs especially well in the west thanks to its excellent disease package including a 7.1 for <i>Septoria</i> .	
UK Treated Yield	102%	<p>With untreated yields at 95% treated controls, KWS Equipe is a very resilient wheat which takes untreated yields to the next level. 2% ahead of the gold standard we've come to expect from KWS Extase.</p> <p>We would recommend that, like KWS Extase, growers do not drill KWS Equipe until the 1st week in October to maximise yield potential.</p> <p>So if you like how KWS Extase performed on your farm and are looking for a consistent performer no matter a dry or more challenging season, then take a closer look at KWS Equipe – like KWS Extase but better!</p>	

Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)

Potential Group 3's

KWS FLUTE (KWS W447)		AHDB CANDIDATE	NEW
Details		Comments	
Group	Potential Group 3	Introducing KWS Flute, the new early-sown specialist from KWS for growers looking to harness soft wheat contracts at harvest 2025.	
Year Listed	Candidate	KWS Flute brings all the resilient characteristics needed for northern growers looking to harness soft contracts in their regions – be it biscuit, distilling, export as UKS or feed. The variety has a good all-round disease resistance for this challenging region, including a 7 for mildew, and excellent eyespot (7).	
UK Treated Yield	104%	<p>Couple these characteristics with good specific weight (78.3kg/hl) and early maturity (-1 days compared with Skyfall) and you have a resilient plant type which is ideal for growers both in the first and second wheat slots. OWBM resistance and yield consistency over contrasting seasons complete this attractive package.</p> <p>KWS Flute – music to the ears of soft wheat growers!</p>	

Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)

KWS SOLITAIRE (KWS W440)		AHDB CANDIDATE	NEW
Details		Comments	
Group	Potential Group 3	New for drilling in autumn 2024, KWS brings you one of the most complete agronomic packages available for the soft winter wheat market. The true jewel in the crown, KWS Solitaire brings high yield and gross margin opportunities for growers with access to all soft wheat markets from biscuit to distilling to export and feed.	
Year Listed	Candidate	Outstanding yields are achieved no matter the site nor the season – with best performances to date seen in the west where, at ([108%] controls), it out-yields newcomer Bamford. In addition, KWS Solitaire has very high untreated yield (92% of treated controls) thanks to its excellent set of disease characteristics including 7 for mildew, 8 for yellow rust, 6.6 for <i>Septoria</i> and 7 for eyespot.	
UK Treated Yield	105%	<p>But the advantages of KWS Solitaire don't stop just at gross margin potential; a high tillering variety, with good straw and early maturity, it's a wheat that offers flexibility on-farm and can be sown from mid-September right through to the end of January. It also offers the prospect of a safe and early harvest at a -1 maturity. This is significantly ahead of all commercialised Group 3 and soft 4 varieties on the 2024 RL.</p> <p>KWS Solitaire – make your fields sparkle with magic this autumn!</p>	

Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)

KWS SOLITAIRE

The foundation for an excellent result

Potential Group 4's

KWS VICARAGE (KWS W436)		AHDB CANDIDATE	NEW
Details		Comments	
Group	Potential Soft Group 4	New for soft wheat growers in the north this season is KWS Vicarage, a soft Group 4 wheat with the potential to serve the distilling market, no matter the growing season.	
Year Listed	Candidate	KWS Vicarage is a good performer in the north, where in AHDB trials it achieves its best potential of 104% controls. It is a variety that performs just as well in a drought year (102% in 2022) as it does in a colder, wetter season (102% in 2023). It's a high tillering plant type with short and stiff straw, suitable maturity and a good disease package. KWS Vicarage has a good untreated yield score (88% treated controls) backed by excellent resistance to mildew (8), yellow rust 99) and a solid score for <i>Septoria</i> (5.9). In addition, the eyespot score of 8, coupled with a good specific weight (77.3kg/hl) will be attractive to those who want a variety to deliver in the second wheat slot.	
UK Treated Yield	102%	KWS Vicarage also comes complete with resistance to OWBM.	

Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)

KWS SCOPE (KWS W432)		AHDB CANDIDATE	NEW
Details		Comments	
Group	Potential Hard Group 4	KWS Scope brings new genetics to UK growers. It's a cross that has the German-bred wheat Informer as one of its parents. Informer was a very successful European wheat which was tall but clean and had bread making potential. KWS Scope is a shorter, earlier Graham type wheat that is in trial in the UK and across Germany and Scandinavia.	
Year Listed	Candidate	In terms of yield potential, KWS Scope has delivered excellent yields, especially in 2023 when it was one of the highest-yielding wheat lines in NL2 trials (107% controls). Its best performances to date have been observed in the AHDB west (107% controls) and north (106% controls) regions. A medium-high tillering variety, KWS Scope is a short (89.5cm without PGR) and stiff (0% lodging with PGR) variety which has a similar maturity to the nation's favourite, KWS Dawsum. Disease ratings are positive across the board with good 7s for mildew and yellow rust and a 6.1 for <i>Septoria</i> . The variety also comes with the benefits of OWBM resistance.	
UK Treated Yield	105%		

Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)

KWS MONGOOSE (KWS W450)		AHDB CANDIDATE	NEW
Details		Comments	
Group	Potential Hard Group 4	Introducing KWS Mongoose – the new hard feed wheat that every grower will be looking to sow in 2024. And for good reason, KWS Mongoose is the wheat to beat at harvest. It's a super short, very stiff type that is really early to mature, offering growers real harvest security even when the weather is subject to change.	
Year Listed	Candidate	Like its stablemate KWS Dawsum, Mongoose can be sown early in September through to the end of January. But that's where the similarities in the field end. Right from the word go, KWS Mongoose is different; unlike other yield-beating hard feeds, KWS Mongoose isn't big on biomass after establishment but really motors in the spring to deliver massive yields (UK 106% controls), ahead of hard feed favourites like Champion, KWS Dawsum and Graham.	
UK Treated Yield	106%	KWS Mongoose also offers growers a great disease package including an 8 for yellow rust, 7 for mildew, 7 for eyespot and 5.9 for <i>Septoria</i> . The variety also has the benefits of being OWBM resistant which will make it attractive to many eastern region growers.	
		So for growers looking for an easy-to-manage variety this season, take a closer look at KWS Mongoose – the agile wheat for the UK's wheat growing heartlands.	

Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)

JUST CHILL...

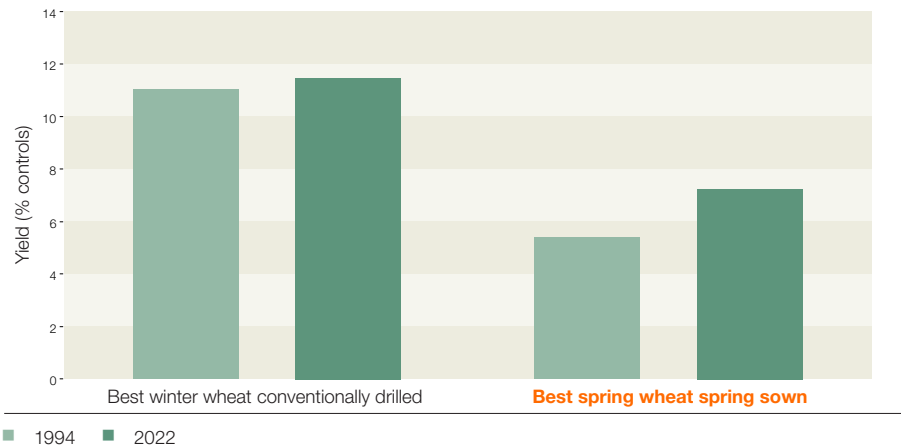


Spring Wheat

Introducing the new era in spring wheats

Today, on the back of significant plant breeding progression, spring wheat is coming back on the agenda for many UK growers, thanks to its rotational benefits. New varieties are robust, flexible and profitable, with yields and physical grain qualities matching many of its late-sown winter wheat rivals.

Relative yield increases in winter and spring wheat over the last 20+ years



What can KWS offer growers?

KWS UK is one of the few plant breeding companies with a dedicated spring wheat breeding programme that delivers products specifically for the UK farmer. So if you are looking to spring wheats to serve a quality market, to help your rotations with a view to buying time to get soils back to better structures, to help rescue weed burdens, or to simplify your crop management, then take a closer look at what the KWS spring wheat portfolio can offer.

Today's varieties provide:

- Faster establishment
- Leafier plants with fewer tillers
- High vigour
- Better drought resistance
- Improved disease packages
- Lower lodging risks
- Strong grain fill
- Improved yields
- A range of types to suit different end markets



Learn more about our portfolio by scanning the QR code

Group 1

KWS HARSUM



Details

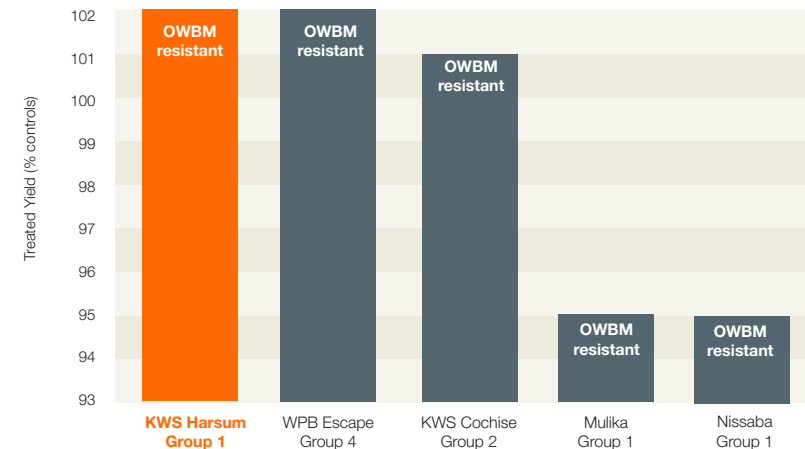
Group	Year Listed	UK Treated Yield	Parentage
Group 1	2023	102%	KWS Sywell x KWS Scirocco

Comments

New to growers in spring 2023 is KWS Harsum, the highest-yielding Group 1 bread making wheat on the 2024/25 RL. Following on from the successful yield increase growers have experienced using new generation spring wheat from KWS such as KWS Ladum, KWS Harsum continues the breeding progress by introducing midge resistance to a top quality, top yielding variety. Confirmed as a Group 1 wheat by the UK Flour Millers in December 2022, KWS Harsum produces similar grain to the established variety Mulika, but with the added benefit of good gluten quality and baking performance, consistent across a range of challenging seasons.

In the field, KWS Harsum has a good solid disease profile, with the advantage of OWBM resistance. A similar plant type to KWS Cochise, it's a short and stiff-strawed variety that ripens a day after Mulika. So if you want to take your spring wheat yields to the next level, take a closer look at KWS Harsum to find out how this new variety can add value to your rotation this season.

What makes KWS Harsum the spring wheat variety for you?



KWS LADUM AHDB RECOMMENDED

Details			
Group	Year Listed	UK Treated Yield	Parentage
Group 1	2022	101%	KWS Sywell x KWS Talland

Comments

KWS Ladum is a spring variety to get excited about this season! It's the first of the next generation spring wheat varieties for the UK market that brings top milling and baking quality with highly productive yield levels, a massive 6% ahead of the market leader Mulika when spring sown. With fantastic grain quality including high proteins (13.5%), Hagberg (333) and specific weight (78.1 kg/hl), it's a variety that is fully approved by the UK Flour Millers as the highest Group 1 quality.

But the advantages of KWS Ladum don't stop there. It has a good all-round disease package including [7] for mildew, 7 for yellow rust, 6 for brown rust and a good [6] for *Septoria*, as well as being short, stiff-strawed and early to harvest -1.

If you want to increase your spring wheat yields, look at the benefits of KWS Ladum and discover how this innovative variety can contribute positively to your farm's crop rotation this season.

KWS Ladum. It's a Group 1 but not as we know it!

KWS LADUM baking results



KWS Ladum



Mulika

Group 2

KWS ALICIUM AHDB RECOMMENDED

Details			
Group	Year Listed	UK Treated Yield	Parentage
Group 2	2023	105%	KWS 13-21 x Astrid

Comments

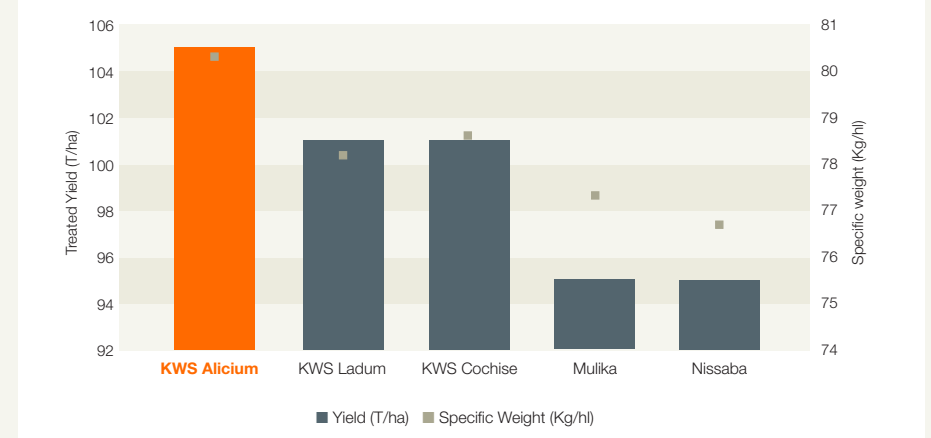
KWS Alicium brings exciting new genetics to UK growers for the first time this spring. With high quality German wheat in its parentage, KWS Alicium offers something new on-farm and in the mill.


It produces the best combination of grain characteristics on the current RL, with high protein (13.3%), excellent HFN (342) and outstanding specific weight (80.2kg/hl). In baking evaluations, the millers noted that the variety produces good, strong gluten quality making it a useful addition to many grists in the bakery.


In the field, KWS Alicium has exceptionally high yield performance, at 105% of controls, producing yields on a par with commercialised feed spring varieties. It also boasts an excellent disease package, including [8] for mildew and 7 for *Septoria* resistance. This is further complemented with OWBM resistance. KWS Alicium is a taller variety at 84cm height, but stiff-strawed. It offers growers the benefits of an early harvest, always an advantage when managing workloads at this busy time.

So if you are looking for something different this spring, take a closer look at the benefits KWS Alicium can bring to your bread making part of the rotation this season.


What makes KWS Alicium the spring wheat variety for you?





KWS LIGHTUM			
			
Details			
Group	Year Listed	UK Treated Yield	Parentage
Group 2	2023	101%	(KWS Mullins x KT Proteo) x KWS Willow
Comments			
<p>A high-performing spring wheat, KWS Lightum brings a different plant type to the spring wheat sector this season, thanks to its parentage, which includes some Argentinean wheat genetics. Rated a Group 2 milling wheat by the UK Flour millers, the variety has good grain characteristics, including high protein (13.6%) with a good HFN and specific weight, coupled with good baking performance over its past season of evaluations. On-farm, KWS Lightum has a good disease package, including [8] for mildew, good combination of resistance to the rusts and good solid <i>Septoria</i> resistance (7). In addition, like many of the new KWS spring wheat lines for 2024, OWBM resistance comes as standard. It is a medium-short variety with stiff straw.</p>			

KWS COCHISE			
			
Details			
Group	Year Listed	UK Treated Yield	Parentage
Group 2	2017	101%	Ashby x Lapis
Comments			
<p>KWS Cochise is a high-yielding spring bread making wheat on the 2024/25 Recommended List. It performs well when spring-sown, yielding 6% ahead of Mulika. It can also be late autumn-sown, where it yields 5% ahead of Mulika (<i>KWS own trials</i>). A high performing spring wheat, KWS Cochise has good grain quality including an outstanding specific weight of 78.6 kg/hl and a good protein content to serve milling contracts (13.6%).</p> <p>In the field, the variety is tall but stiff strawed with a good solid disease profile including the added benefits of OWBM resistance and resistance to Soil Borne Wheat Mosaic Virus.</p>			

Group 4

KWS FIXUM			
			
Details			
Group	Year Listed	UK Treated Yield	Parentage
Group 4	2022	106%	KWS Cochise x KWS Westfield
Comments			
<p>KWS Fixum is an exceptionally high-yielding spring wheat that resets the yield bar for spring wheats with a yield of 106% of treated control. During its testing over recent very different spring seasons, KWS Fixum has delivered consistently high yields no matter what the weather under which it has been grown. This exciting package also comprises good grain quality, including a strong specific weight (77.6kg/ hl) and a good disease profile with [8] for mildew, 7 for brown rust resistance, 6 for yellow rust and [6] for <i>Septoria</i>. Add all of that together and you have a really attractive package to add tonnes of grain to the feed wheat heap.</p>			

Harvest 2024 Spring Wheat Candidates

WPB LYNX		
 		
Details		
Group	Year Listed	UK Treated Yield
Potential Group 2	Candidate	108%
Comments		
<p>New for growers in spring 2025 is WPB Lynx, an ultra-high yielding wheat with good potential for Group 2 milling and baking. In National List trials, WPB Lynx has achieved some of the highest yields when sown in the spring (108% controls). It has also shown considerable resilience and has performed very well over the contrasting seasons of Harvest 2022 and 2023, achieving 109% and 107% of controls, respectively.</p> <p>In the field, WPB Lynx has an excellent disease package including the best resistance to mildew (9) and brown rust (9) along with excellent <i>Septoria</i> (8) and yellow rust (7). These scores make this a useful variety on-farm giving peace of mind to growers to widen spray windows when the weather dictates the sprayer. A shorter, stiff, early-maturing variety, backed by strong grain characteristics, this is an attractive package for spring wheat growers across the UK.</p>		

Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)

KWS BEZIQUE



Group	Year Listed	UK Treated Yield
Potential Group 2	Candidate	to complete NL

Comments

An AHDB candidate for the harvest 2024, KWS Beziqve offers growers potential Group 2 quality in an easy-to-grow package. With very high yields, KWS Beziqve has an excellent all-round disease package which delivers good resistance to the key diseases such as *Septoria* and yellow rust. A shorter-strawed spring wheat, KWS Beziqve is a later maturing type to help spread workloads at harvest.

Currently under evaluation by the UK flour millers, KWS Beziqve has shown good grain characteristics combined with excellent water absorption, on a par with Group 1 variety KWS Ladum. Overall bake performance has been in-line with spring wheat Group 2s to date.

Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)

KWS JORDUM



Group	Year Listed	UK Treated Yield
Potential Group 2	Candidate	104%

Comments

KWS Jordum is a high-yielding potential Group 2 breadmaking wheat for the UK market. The variety, currently under evaluation by the UK Flour Millers, has one of the best grain packages for a spring wheat on the market today. Good protein (13.1%) is backed with a high HFN of 324 and outstanding specific weights of 81.5kg/hl – breaking the barrier of 80kg/hl in trials over the past 2 seasons.

These grain benefits are backed by an excellent agronomic package including tall but stiff straw and early maturity at a -1 compared with Mulika. The benefits of the longer straw of KWS Jordum was observed in the harvest 2022 season, when Jordum achieved yields of [106%] controls compared with Group 2 stalwart KWS Cochise at [98%]. These very usable characteristics on-farm are backed up with a strong set of disease scores including 6 for *Septoria*, 7 for yellow rust and OWBM resistance.

Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)



Spring Wheat Recommended List 2024

	KWS Harsum	KWS Ladum	Mulika	Nissaba	KWS Alcium	WPB Mylo	KWS Lightum	KWS Cochise	SEM19-3003SW1	KWS Fixum	WPB Escape
End-use group	UKFM Group 1				UKFM Group 2				Hard Group 4		
Scope of recommendation	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK
Variety status	C				NEW				C	NEW	*
UK yield as % control (spring sowing)											
Fungicide-treated (7.1 t/ha)	102	101	95	95	105	103	101	101	107	106	102
Disease resistance											
Mildew (1-9)	[7]	[7]	6	[5]	[8]	[8]	[8]	8	[8]	[8]	8
Yellow rust (1-9)	7	7	6	5	7	9	6	4	7	6	8
Brown rust (1-9)	5	6	8	9	6	8	6	8	7	7	5
Septoria tritici (1-9)	6	[6]	6	[6]	7	[7]	7	6	[6]	[6]	[6]
Orange wheat blossom midge	R	-	R	R	R	-	R	R	-	-	-
Agronomic features (spring sowing)											
Lodging with PGR (%)	[2]	[1]	[4]	[2]	[3]	[1]	[0]	[2]	[19]	[0]	[1]
Straw length without PGR (cm)	78	75	78	76	84	74	78	77	79	78	72
Ripening (days +/- Mulika)	+1	-1	0	+2	-1	+1	0	0	-1	+1	+1
Grain quality (spring sowing)											
Endosperm texture	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard
Protein content (%)	13.0	13.5	14.0	13.8	13.3	13.3	13.6	13.6	13.0	13.0	13.0
Hagberg Falling Number	329	333	332	310	342	297	325	259	330	237	270
Specific weight (kg/hl)	78.5	78.1	77.3	76.7	80.2	77.2	78.3	78.6	80.4	77.6	76.3
Annual treated yield (% control, spring sowing)											
2019 (7.0 t/ha)	-	103	93	92	-	-	-	105	-	108	104
2020 (6.4 t/ha)	[102]	[98]	[94]	[96]	[101]	-	[100]	[101]	-	[108]	[103]
2021 (7.6 t/ha)	105	103	96	96	106	104	106	100	105	106	[103]
2022 (7.3 t/ha)	99	101	98	92	105	101	100	98	109	105	101
2023 (7.1 t/ha)	[100]	[99]	[96]	[97]	[107]	[105]	[97]	[100]	[108]	[101]	[99]
Breeder/UK contact											
Breeder	KWS	KWS	BA	BA	KWS-Gmbh	WPB	KWS	KWS	SE	KWS	WPB
UK contact	KWS	KWS	Sen	BA	KWS	LSPB	KWS	KWS	Cope	KWS	LSPB
Status in RL system											
Year first listed	23	22	11	22	23	24	23	17	24	22	21
RL status	P2	-	-	-	P2	P1	P2	-	P1	-	*

CONVENTIONAL BARLEY

Flexibility for your rotation

Barley remains one of the most important parts of many growers' rotations, be it a winter feed type to provide an early entry into OSR and a home-grown source of grain and straw on livestock farms, or a spring malting type to meet the precise needs of the brewing and distilling markets in the UK and across Europe. Our breeding programmes at KWS continue to focus on delivering high yield, with the best grain quality and field performance characteristics on the market today.



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Winter Barley

Winter barley warrants greater consideration

Winter barley remains an important part of many UK growers' rotations. Better weather at the start of drilling initially encouraged more growers to drill winter barley in autumn 2023. However, the wet autumn hampered progress and establishment so that just 355,000 hectares are expected to reach harvest in 2024. Many see the benefits of using winter barley to increase crop diversity, while others argue that it can be a more profitable option than second wheat. This is due to its higher yield potential and lower input requirements. What's more, our new product KWS Feeris also offers growers the traditional benefits of winter barley, but with added peace of mind in this post-neonicotinoid era, thanks to its built-in BYDV tolerance (page 68).

Reasons to grow winter barley

- It is often the first crop to be harvested, helping to spread the summer workload and make way for cultivations. For many, there is no better entry for oilseed rape.
- Given the same fertiliser regime as wheat (170-220 kg N/ha), it delivers similar yields and often does better in the second cereal situation.
- Variable costs are roughly 75% of wheat.
- Fungicide timings are typically a week earlier than wheat, helping to spread the sprayer workload and reduce the pressure on wheat application timings.
- Investment in breeding is bringing better disease and virus resistance. In 2018 KWS introduced Amistar, a BYDV tolerant six-row variety.
- Investment in breeding is also delivering varieties with better yield potential. The leading two-row varieties offer yields comparable with those achieved by the best six-rows.



Two-Row Feed

KWS TARDIS			
Details			
Group	Year Listed	UK Treated Yield	Parentage
Two-Row Feed	2021	103%	11-12 x KWS Orwell



Comments

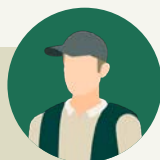
A firm favourite amongst winter barley growers, KWS Tardis is an easy to grow 2-row winter feed barley that has a strong set of features making it attractive to growers, regardless of location. It's one of the UK's highest yielding 2-row winter feed barleys, with a performance that rivals many of the 6-row hybrid and conventional types. It is especially strong in the east (104%), and thanks to its super stiff straw, performs well on heavy land where it delivers its best yields of 106% controls.

But it doesn't stop there. KWS Tardis also has an excellent disease package, boasting a score of 6 for *Rhynchosporium* and 6 for net blotch. Not only that but it has one of the best untreated yields available (85% treated controls). It's also early to mature (0) and delivers marketable grain with a very good specific weight (70.1 kg/hl) and low screenings.

In short, KWS Tardis has it all – yields, stem stiffness, grain quality, performance across the rotation and a good disease package.

KWS Tardis: why plant anything else?

Grower's Testimonial



“ We started including winter barley into our rotation again in 2021, after a few years of not growing it. We went back to barley to spread harvest and get our rape in early. We previously grew KWS Cassia as a seed crop, but KWS Tardis looked like an ideal replacement to Cassia for us. In my experience with KWS Tardis, I have found it very vigorous, and it's very clean disease wise. It stands well and we've had zero brackling. It yielded well in 2022, and in 2023, we had a record breaker 16ha field of Tardis – dry weight of 11.2t/ha and masses of straw, we were over the moon! Lots of straw is important for us as we can sell it within the local equestrian and livestock market.

This year, despite the continual wet weather conditions, our crop of KWS Tardis looks to be coping, it's on some sandy land this time around so it's lucky!”

Adrian Jones, Clawdd Coch Farm, Powys/Shropshire border

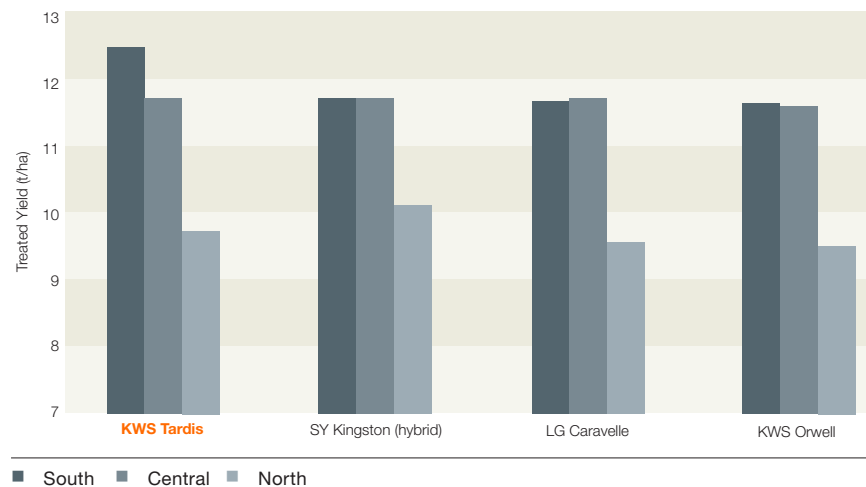


KWS Tardis - big on yield and quality!




What makes KWS Tardis the feed barley for you?

A stiff-strawed variety, KWS Tardis has excellent yield potential coupled with excellent grain characteristics.




Data source: Scottish Agronomy Winter Barley Trials, Harvest 2023



KWS ORWELL			
<div style="text-align: right;">  </div>			
Details			
Group	Year Listed	UK Treated Yield	Parentage
Two-Row Feed	2016	100%	KWS Tower x KWS Salsa
Comments			
<p>Launched in the UK eight years ago, KWS Orwell has earned itself a reputation as one of the nation's favourite winter feed barleys, and for good reason too: KWS Orwell is super consistent, no matter the site nor the season. It continues to deliver good yields and is totally dependable in all weathers.</p> <p>It is a short and stiff winter barley, with good all-round disease resistance scores. KWS Orwell is a package that will be attractive to those on mixed farms and on more fertile soils. Good physical grain quality and low screenings complete the package.</p>			



KWS HAWKING			
<div style="text-align: right;">  </div>			
Details			
Group	Year Listed	UK Treated Yield	Parentage
Two-Row Feed	2020	100%	(11-12 x California) x KWS Tower
Comments			
<p>KWS Hawking has found favour on-farm as a low-risk variety with no major weaknesses and is the ideal choice for farmers looking for the same short and stiff straw that they've come to rely on from KWS Orwell, with a step up in yield.</p> <p>A good all-round disease package is bolstered by resistance to BaYMV. KWS Hawking is an early maturing type; in KWS trials over the last contrasting seasons, ear emergence of KWS Hawking has routinely been ahead of its stablemates in May.</p>			

KWS Hawking is no longer recommended. All data is taken from the 2023/24 Recommended List



KWS CASSIA			
<div style="text-align: right;">  </div>			
Details			
Group	Year Listed	UK Treated Yield	Parentage
Two-Row Feed	2010	97%	((Eden x Carat) x Saffron)
Comments			
<p>An ever-popular, bold grained variety with great specific weight, KWS Cassia is still grown across large swathes of the UK winter barley area. KWS Cassia is free-tillering and easy to grow.</p> <p>Over the years, many growers have seen the benefits of the variety's ability to hold onto green leaf right through the grain-fill period and provide good solid yields of marketable grain. 14 years on, it's still depended upon to deliver grain for home feeding and the domestic feed market.</p>			

KWS Cassia is no longer recommended. All data is taken from the 2023/24 Recommended List

Up and coming two-row winter barleys

KWS HERACLIS			
<div style="text-align: right;">   </div>			
Details			
Group	Year Listed	UK Treated Yield	Parentage
Two-Row Feed	-	105%	(KWS Tardis x Paloma)
Comments			
<p>New to the 2-row feed winter barley sector from the KWS stable is KWS Heraclis, a great yielding barley with the same good combination of untreated yield, field performance and grain quality that you've come to expect as standard from KWS. Suited for all regions of the UK, KWS Heraclis offers a secure field package thanks to its super-stiff straw. Even in the challenging harvest 2023 season, KWS Heraclis achieved zero lodging both with and without PGR, in trials across the country. It also had one of the lowest scores for brackling in NL trials.</p> <p>In terms of yield potential, KWS Heraclis performs well across the UK, with its best yields in the east and north. It has no disease weaknesses resulting in better untreated yields than many commercialised varieties, a step ahead of KWS Tardis. Early maturity and a good specific weight round off a great package that is set to become a true farm favourite in years to come.</p>			

Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)

KWS VALENCIS			
<div style="text-align: right;">   </div>			
Details			
Group	Year Listed	UK Treated Yield	Parentage
Two-Row Feed	-	105%	(KWS Tardis x KWS Caribou)
Comments			
<p>Easy to grow, with excellent disease and straw characters, KWS Valencis delivers the high standard of performance you would come to expect from a KWS feed winter barley. Very high yields are on offer across the UK, whilst retaining the 2-row advantage of grain that is bold and bright with good specific weight.</p> <p>A new variety, currently in Recommended List Trials for Harvest 2024, KWS Valencis delivers its performance in the east, where it yields to a similar level to some 6-row hybrids. This yield potential is maintained thanks to its super stiff straw with 0% lodging both with and without PGR, which keeps the variety standing through to harvest, even in the most challenging of conditions. A strong untreated yield ([92%]) comes as standard. Early maturity and good specific weight completes the package.</p>			

Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)

	LG Caravelle	LG Capitol	Lightning	Bolivia	KWS Tardis	Bolton	Bordeaux	LG Mountain	LG Dazzle	KWS Orwell	Valerie
End-use group	Two-row feed										
Scope of recommendation	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK
Variety status		NEW			C		*				
Fungicide-treated grain yield (% treated control)											
United Kingdom (9.8 t/ha)	106	106	103	103	103	103	102	101	101	100	99
East region (9.5 t/ha)	107	107	104	104	104	105	104	102	103	99	99
West region (9.7 t/ha)	105	[103]	102	102	101	101	100	102	99	100	97
North region (10.5 t/ha)	104	[105]	103	103	103	101	102	101	101	99	100
Untreated grain yield (% treated control)											
United Kingdom (9.8 t/ha)	90	89	90	88	85	86	82	84	88	83	74
Disease resistance											
Mildew (1-9)	7	6	6	8	5	6	6	6	5	3	7
Brown rust (1-9)	7	7	8	8	6	7	6	7	8	7	4
Rhynchosporium (1-9)	6	6	6	6	6	5	4	5	7	6	6
Net blotch (1-9)	6	5	6	6	6	5	5	4	5	5	5
BaYMV1 & BaMMV	R	R	R	R	R	R	R	R	R	R	R
BaYMV2	-	-	-	-	-	-	-	-	-	-	R
Agronomic features											
Resistance to lodging without PGR (1-9)	[8]	[7]	6	[8]	8	8	8	7	7	8	8
Resistance to lodging with PGR (1-9)	7	7	6	8	8	8	8	7	7	8	8
Lodging without PGR (%)	[2]	[3]	15	[2]	1	1	1	5	4	2	2
Lodging with PGR (%)	2	2	5	1	0	1	1	3	3	1	1
Straw length without PGR (cm)	93	[94]	95	93	97	95	95	94	95	96	95
Straw length with PGR (cm)	86	85	89	90	86	84	85	85	86	87	87
Brackling (%)	8	11	13	15	6	8	9	27	7	8	8
Ripening (days +/- KWS Orwell)	0	0	-1	0	0	0	0	-1	+1	0	-1

	LG Caravelle	LG Capitol	Lightning	Bolivia	KWS Tardis	Bolton	Bordeaux	LG Mountain	LG Dazzle	KWS Orwell	Valerie
End-use group	Two-row feed										
Main market options											
MBC malting approval for brewing use	-	-	-	-	-	-	-	-	-	-	-
Grain quality											
Specific weight (kg/hl)	71.4	69.9	68.8	69.9	70.1	69.3	70.5	70.7	68.9	68.9	70.6
Screenings (% through 2.25 mm)	1.7	1.9	1.9	1.3	1.7	1.6	1.3	1.9	2.0	1.7	0.8
Screenings (% through 2.5 mm)	4.5	5.2	5.4	3.3	5.2	4.8	3.7	5.7	5.9	5.4	2.1
Nitrogen content (%)	-	-	-	-	-	-	-	-	-	-	-
Malting quality											
Hot water extract (l deg/kg)	-	-	-	-	-	-	-	-	-	-	-
Annual treated yield (% control)											
2019 (10.4 t/ha)	-	-	103	-	103	102	103	102	101	99	-
2020 (9.3 t/ha)	107	-	104	104	103	104	102	104	102	101	99
2021 (9.8 t/ha)	104	105	102	101	103	101	100	98	100	99	98
2022 (10.0 t/ha)	106	106	104	105	101	103	103	102	100	100	100
2023 (10.1 t/ha)	104	105	104	102	103	101	102	101	101	99	100
Soil type (about 50% of trials are medium soils)											
Light soils (9.7 t/ha)	103	[104]	103	104	102	103	102	102	102	99	100
Heavy soils (9.4 t/ha)	106	[109]	103	103	106	104	104	101	102	100	[100]
Breeder/UK contact											
Breeder	LimEur	Lim	Ack	NS	KWS	Ack	NS	LimEur	Lim	KWS	Bre
UK contact	Lim	Lim	ElsAck	Agr	KWS	ElsAck	Sen	Lim	Lim	KWS	Sen
Status in RL system											
Year first listed	23	24	22	23	21	21	21	19	22	16	19
RL status	P2	P1	-	P2	-	-	*	-	-	-	-



BYDV

Barley Yellow Dwarf Virus (BYDV) is distributed worldwide and infects most cereals and grasses. It is transmitted persistently by more than 20 aphid species. Symptoms were first observed in 1951 on barley in California and were later characterised in oat and wheat. It has since been identified worldwide.

Barley Yellow Dwarf symptoms include stunting and leaf discolouration, though it is often misdiagnosed because they resemble plant nutrient deficiencies. The stunted plants often appear in circular patches or as randomly scattered plants within a field. Leaf discolouration varies from shades of yellow to red or purple. High light intensity and cool temperatures (15 to 18°C) have been found to favour expression of BYDV symptoms.



Symptom expression is generally dependent on the time of infection. Seedling infection may be lethal or cause a distinct yellowing of older leaves. Plots with post-seedling infections have a yellowed or reddened flag leaf. Disease symptoms usually appear in late spring at stem extension as a result of autumn infection and yield losses of up to 63% have been observed. Spring infections have delayed symptoms which are usually less severe, though yield losses of up to 41% have been recorded.

The most important aphid vectors in the UK are the bird-cherry oat aphid (*Rhopalosiphum padi*) and the grain aphid (*Sitobion avenae*). Aphids acquire BYDV by feeding on infected plants and transmit the virus in subsequent feedings. The virus survives in perennial grasses and is spread by aphids to and within crops. The virus is persistent, meaning once infected, aphids remain infected for the rest of their life.

The scale of the problem in UK Agriculture today

Traditionally, high-risk BYDV regions of the UK are coastal areas of the south, south east and south west. However, when autumn-early winters are mild, almost any part of the UK can suffer damaging infections.

2019 was the first season where barley was drilled without seed treatments to control BYDV. Rain during key drilling timings will have delayed or inhibited planting, reducing the risk of BYDV during that growing season. We may see high-pressure seasons in the future if growers push to drill as early as possible.

What can plant breeding offer?

Genetic tolerance or resistance to BYDV offers growers a risk reduction tool for aphid prone areas as well as opportunities to continue traditional sowing timings, and will be an essential element of an effective IPM strategy. Since 2022, growers may be able to claim Sustainable Farming Incentive (SFI) payments when using BYDV tolerant and resistant varieties to reduce insecticide inputs and boost biodiversity.

Tolerance

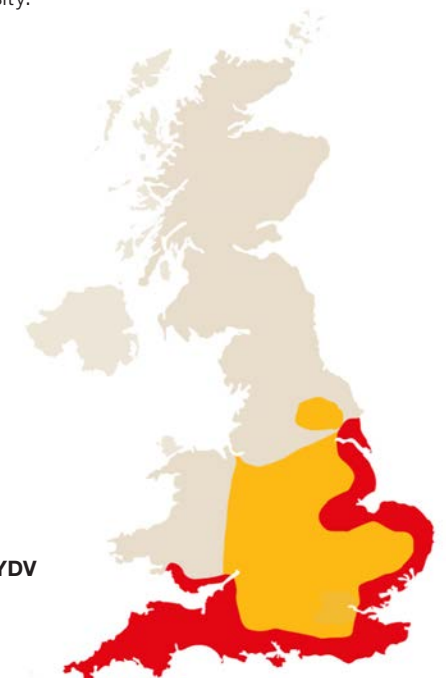
- Best characterised gene in barley is ryd2.
- Infected plants show little or no symptoms.
- No yield loss in crop in low-mid infection.
- Virus still present in crop.
- KWS Feeris offers genetic tolerance to BYDV.

Resistance

- A resistant crop can not be infected – there is no yield loss.
- Resistance can be against the aphid vector or the virus.
- No commercialised barley in the UK market has full resistance to date.

Map showing high and medium risk areas for BYDV

- High
- Medium



Six-Row BYDV Tolerant

KWS FEERIS			
 			
Details			
Group	Year Listed	UK Treated Yield	Parentage
Six-Row Feed BYDV Tolerance	2022	102%	Amistar x KWS Kosmos

Comments

KWS Feeris is a conventional 6-row feed barley that brings BYDV tolerance to the UK market in a good barley package. Like other 6-row barleys, KWS Feeris has excellent yield potential (102%) and really stands out in the BYDV hotspot of the west where it achieves its highest yield potential.

The variety has a good all-round disease package, including impressive 6s for *Rhynchosporium* and net blotch, coupled with all-important BaYMV resistance and BYDV tolerance. It is a reasonably tall variety, which will aid black-grass control, but it is stiff-strawed which will benefit growers on heavier land. KWS Feeris has a similar maturity to KWS Orwell and at harvest will deliver heaps of quality grain with a specific weight of 69.2kg/hl and very low screenings (1.4% through 2.25mm sieve).

In short, KWS Feeris is a great variety in its own right, but coupled with the added benefit of BYDV tolerance, it makes it the only solution for those looking to grow barley in high BYDV hotspots or those looking to push drilling as early as possible.

So, for growers looking to reduce inputs and produce a more sustainable winter barley crop this season, KWS Feeris is the only barley they need to put in the drill.

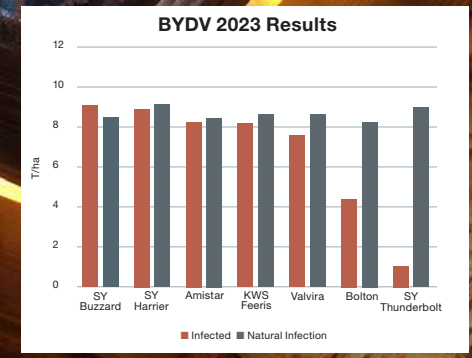
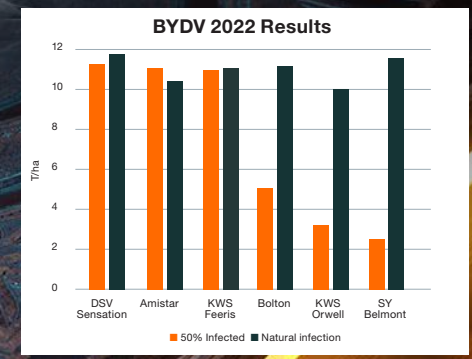
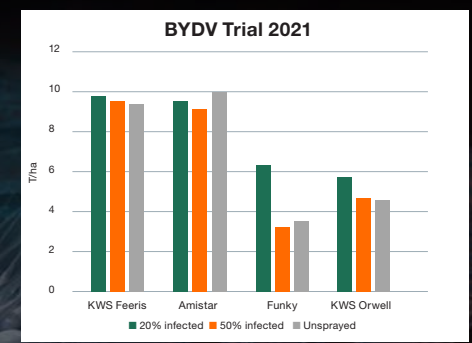
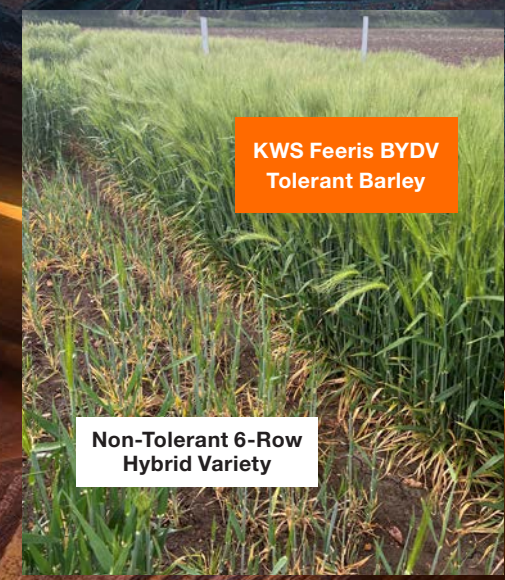
“ The fall out of autumn 2020 brought home just how missed products like Deter are and how important alternative solutions are going forward. The problem in 2021 was that while growers were able to get crops in early, the weather came in and really delayed spraying. It just highlights how much of a struggle it can be in the autumn if you do want to get crops in the ground early and then can't get on with pyrethroids. In bad spots, infection can be devastating, with up to 30-40% yield losses seen. From an IPM point of view, KWS Feeris means we can be less reliant on pyrethroids too – which will ultimately help to protect their longevity – and in all crops, I think there will be a bigger emphasis on genetics over the coming years. Genetics is going to help when chemistry no longer can.”

Phillip Simons
Partner at Prime Agriculture

How effective is KWS Feeris in BYDV situations?

KWS Feeris and Amistar are BYDV-tolerant winter barley varieties available from KWS. Both contain the YD2 gene offering season-long protection even under high pressure situations. This genetic insurance will, in most situations, offer opportunities to reduce insecticide applications whilst maintaining yields.

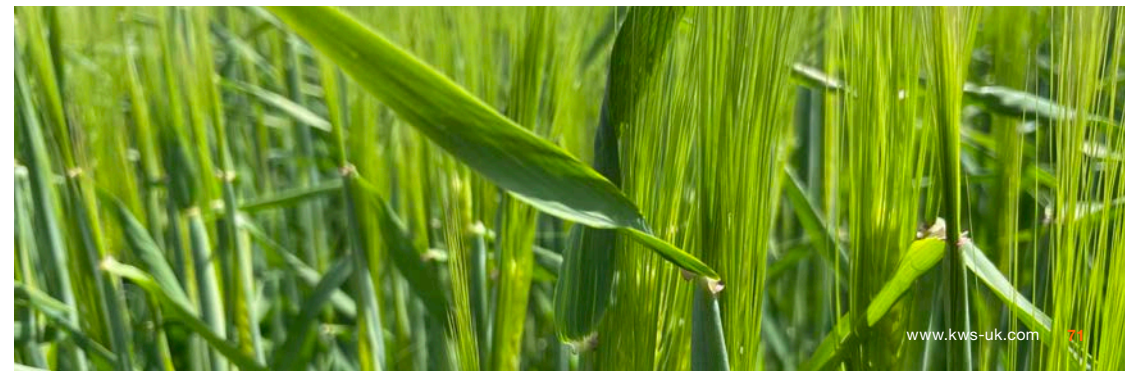
At our product development field in Fowlmere we infect a selection of tolerant and non tolerant winter barley varieties with aphids carrying BYDV (PAV strain) to see the effect that a high infection can have on the plots.



	SY Thunderbolt#	SY Kingsbarn#	SY Kingston#	SY Canyon#	Belfry#	SY Nephin#	Bazooka#	SY Buzzard#	KWS Feeris
End-use group	Six-row feed								
Scope of recommendation	UK	UK	UK	UK	UK	UK	UK	Sp	Sp
Variety status	*	C						NEW	C
Fungicide-treated grain yield (% treated control)									
United Kingdom (9.8 t/ha)	107	107	107	106	105	104	104	103	102
East region (9.5 t/ha)	106	106	106	105	105	105	104	104	102
West region (9.7 t/ha)	108	107	108	106	104	102	104	[101]	102
North region (10.5 t/ha)	107	107	106	106	105	105	106	[102]	100
Untreated grain yield (% treated control)									
United Kingdom (9.8 t/ha)	88	83	87	91	87	92	83	82	84
Disease resistance									
Mildew (1-9)	7	7	7	7	6	6	5	6	5
Brown rust (1-9)	6	5	6	6	6	7	5	6	6
Rhynchosporium (1-9)	7	7	7	6	7	7	7	6	6
Net blotch (1-9)	6	5	6	6	5	6	5	7	6
BaYMV1 & BaMMV	R	R	R	R	R	R	R	R	R
BaYMV2	-	-	-	-	-	-	-	-	-
Agronomic features									
Resistance to lodging without PGR (1-9)	5	6	6	6	7	[6]	6	[8]	8
Resistance to lodging with PGR (1-9)	6	7	5	6	8	7	6	7	7
Lodging without PGR (%)	25	15	18	13	5	[10]	11	[1]	2
Lodging with PGR (%)	8	4	11	6	1	3	5	2	3
Straw length without PGR (cm)	115	116	120	119	113	113	120	[115]	102
Straw length with PGR (cm)	107	106	109	109	104	104	111	107	97
Brackling (%)	18	16	19	11	11	23	14	10	12
Ripening (days +/- KWS Orwell)	-1	0	-1	-1	0	0	0	-1	0
Main market options									
MBC malting approval for brewing use	-	-	-	-	-	-	-	-	-

SP= KWS Feeris has a specific recommendation for BYDV tolerance

	SY Thunderbolt#	SY Kingsbarn#	SY Kingston#	SY Canyon#	Belfry#	SY Nephin#	Bazooka#	SY Buzzard#	KWS Feeris
End-use group	Six-row feed								
Grain quality									
Specific weight (kg/hl)	70.2	70.2	70.1	71.1	68.8	70.7	69.9	69.0	69.2
Screenings (% through 2.25 mm)	2.0	1.5	2.7	1.9	2.7	3.5	2.6	3.2	1.4
Screenings (% through 2.5 mm)	7.2	5.5	9.0	6.2	9.3	12.2	8.3	13.1	5.6
Nitrogen content (%)	-	-	-	-	-	-	-	-	1.74
Malting quality									
Hot water extract (l deg/kg)	-	-	-	-	-	-	-	-	295.9
Annual treated yield (% control)									
2019 (10.4 t/ha)	107	106	105	105	104	-	104	-	102
2020 (9.3 t/ha)	106	106	108	105	105	104	105	-	102
2021 (9.8 t/ha)	107	106	105	106	103	105	105	103	102
2022 (10.0 t/ha)	108	108	108	107	105	105	105	102	103
2023 (10.1 t/ha)	107	109	107	106	106	104	105	102	100
Soil type (about 50% of trials are medium soils)									
Light soils (9.7 t/ha)	106	107	106	107	104	105	106	[101]	101
Heavy soils (9.4 t/ha)	105	103	101	102	102	102	103	[100]	102
Breeder/UK contact									
Breeder	SyP	SyP	SyP	SyP	SyP	SyP	SyP	SCP	KWS
UK contact	Syn	Syn	Syn	Syn	Syn	Syn	Syn	Syn	KWS
Status in RL system									
Year first listed	21	19	21	22	16	23	16	24	22
RL status	*	-	-	-	-	P2	-	P1	-



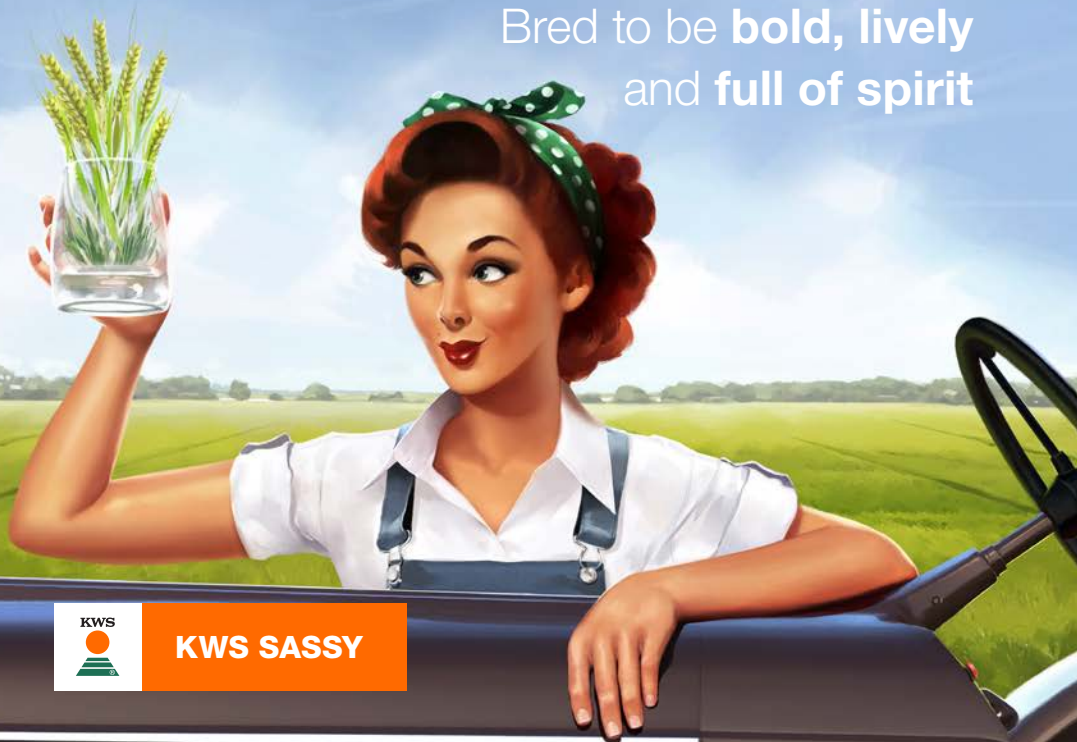
Spring Barley

Two-Row Malting

KWS SASSY		Comments
Details		
Group	Two-Row Distilling	<p>KWS Sassy is a non-GN producing spring malting barley that has been tried and tested by the UK distilling industry. It is fully approved by the MBC for malting and distilling and continues to deliver the highest specific weights (68.9 kg/hl) and the lowest screenings of any currently listed spring distilling barley – all key attributes for the maltster and grower alike. What's more, over the seasons it has consistently delivered for growers, especially those in the north, where it delivers some of its better yields (96% controls). A taller type, KWS Sassy has a decent straw and strong agronomic package, including good resistance to <i>Rhynchosporium</i> (6) and mildew (8). At a +1 maturity, it is a similar maturing variety to many other commercialised distilling types.</p>
Year Listed	2016	
Treated Yield	95%	
Parentage	Concerto x Publican	



Bred to be **bold, lively**
and **full of spirit**



Up and coming spring barleys

KWS ENDURIS		Comments
Details		
Group	Two-Row, Potential Brewing and Distilling	<p>KWS Enduris is an exciting new addition to the AHDB Candidate List for spring barley in 2024. It combines good potential in both the brewing and distilling sectors, in a true farmer-friendly variety that will help growers maximise their returns on their spring barley crop. First and foremost, KWS Enduris has excellent potential to serve the UK and European malting, brewing and distilling markets, thanks to its very high spirit yield, excellent hot water extract and top grain credentials including excellent specific weight. It is currently under evaluation by the MBC to determine its full potential in both the whisky and beer sectors.</p>
Year Listed	-	
Treated Yield	102%	
Parentage	(KWS 17/2222 x KWS Willis)	



Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)



	Skyway	Firefox	Laureate	LG Diablo	RGT Planet	KWS Sassy	SY Signet	Diviner	SY Tannymson
End-use group	Approved						Provisional		
Scope of recommendation	UK	UK	UK	UK	UK	UK	UK	UK	UK
Variety status	C	C	C	C	C				
Fungicide-treated grain yield (% treated control)									
United Kingdom (7.8 t/ha)	102	101	101	99	97	95	102	102	102
East region (7.9 t/ha)	103	101	101	99	97	93	103	101	102
West region (7.4 t/ha)	103	102	102	98	96	96	100	101	101
North region (8.2 t/ha)	101	102	100	100	97	96	103	103	102
Untreated grain yield (% treated control)									
United Kingdom (7.8 t/ha)	91	90	92	88	87	86	91	90	88
Disease resistance									
Mildew (1-9)	8	8	9	8	8	8	[8]	[9]	[8]
Brown rust (1-9)	4	4	5	5	4	5	5	5	4
Rhynchosporium (1-9)	7	6	7	6	6	6	5	4	5
Agronomic features									
Resistance to lodging without PGR (1-9)	7	7	6	7	7	6	[7]	[7]	[7]
Straw length without PGR (cm)	77	72	72	73	75	80	73	68	72
Ripening (days +/- RGT Planet)	0	0	+1	+3	0	+1	+2	+1	+2
Resistance to brackling (1-9)	8	8	8	8	8	6	8	8	7
Main market options									
MBC malting approval for brewing use	F	-	F	F	F	Nt	P	Nt	P
MBC malting approval for malt distilling use	-	F	F	F	Nt	F	-	P	P
Grain quality									
Specific weight (kg/hl)	69.3	67.0	67.2	67.7	68.7	68.9	67.2	67.5	66.5
Screenings (% through 2.25 mm)	0.9	1.4	1.3	1.4	1.2	1.0	1.5	1.7	1.4
Screenings (% through 2.5 mm)	2.3	3.6	3.2	3.5	3.3	2.4	3.5	4.5	3.2
Nitrogen content (%)	1.52	1.49	1.49	1.50	1.52	-	1.46	1.48	1.44
Malting quality									
Hot water extract (l deg/kg)	313.3	313.3	313.4	313.4	312.7	-	314.2	314.1	315.5
Predicted spirit yield (laa/t)	-	433.4	433.5	435.0	[434.0]	-	[431.5]	435.8	436.8

	Skyway	Firefox	Laureate	LG Diablo	RGT Planet	KWS Sassy	SY Signet	Diviner	SY Tannymson
End-use group	Approved						Provisional		
Annual treated yield (% control)									
2019 (8.0 t/ha)	103	101	100	99	98	95	-	-	-
2020 (7.7 t/ha)	103	100	100	100	97	95	102	102	103
2021 (8.0 t/ha)	101	103	101	99	95	94	103	102	103
2022 (7.9 t/ha)	102	101	101	99	97	96	102	102	102
2023 (7.5 t/ha)	102	102	102	99	96	94	103	101	99
Breeder/UK contact									
Breeder	NS	Ack	SyP	LimEur	RAGT	KWS	SyP	Sec	SyP
UK contact	Agr	ElsAck	Syn	Lim	RAGT	KWS	Syn	Agr	Syn
Status in RL system									
Year first listed	21	20	16	18	15	16	23	23	23
RL status	-	-	-	-	-	-	P2	P2	P2



HYBRID BARLEY

An evolutionary next step in the KWS portfolio

KWS have already successfully hybridised sugar beet, maize, rye and OSR, bringing many benefits to growers. We are really excited to be launching our first hybrid barley, INYS, into the UK market this year.



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Time for a
Game Changer.
The next level of barley is hybrid.

#NextLevel

We took a closer look at your needs and created a game changer. Hybrid barley is your way to higher yield, greater resilience and enhanced grassweed suppression.

NEW FOR
2024

Hybrid barley: strengthening our offering!

Launching hybrid barley is a huge milestone for us. Alongside our conventional portfolio, it strengthens our offering to winter barley growers. Hybrid barley offers growers many benefits including higher yield and more resilience. Hybrid barley has a different plant architecture compared to conventional barley; it has an aggressive rooting system and more biomass above ground.



The rooting system enables the crop to scavenge deeper for moisture and nutrients during the growing season, while also providing the plant with better anchorage to cope with the higher yield potential. The greater biomass above ground helps to smother out grassweeds in the spring.

Our first variety to launch is Inys, which has shown to be a step up in yield compared to the current market leading hybrid barley, with 109% of controls. It also has a superb untreated yield at 93% of controls, built from its excellent all round disease profile. Agronomically, Inys also stacks up with very low lodging, and 10% lower brackling compared to the current market leading variety.

In the coming years, we look forward to launching more varieties into the UK market with the strong pipeline of varieties we have coming through. Hybrid barley really is a game changer!



Introducing our first hybrid barley

INYS		
Details		AHDB CANDIDATE NEW
Group	Year Listed	UK Treated Yield Parentage
Hybrid Six-Row Feed	-	109%
Comments		
<p>Currently on the candidate list, Inys is the first 6 row hybrid from KWS. Inys was the highest yielding barley in both its NL1 and NL2 trialling years. Its yield is very strong in the West ([114%]), with high yields in the East (109%) and North ([106%]) too. Coupled with a high untreated yield of ([93%]), Inys is a step up in yield from all current hybrid barley varieties.</p> <p>Inys has a good all round disease profile with a 7 for Mildew and 6s for Rynchosporium, Net Blotch and Brown Rust. It's early to mature ([-1] days+/- KWS Orwell) making it an ideal entry for oilseed rape and delivers a good specific weight of 69.6kg/hl. It has shown no lodging on the 2 year NL report 2023 and low levels of brackling (7%) compared to other hybrids.</p>		

Data source: ADHB Candidate List for Harvest 2024 and 2 Year NL dataset (H2022 and 2023)

Rory's top reasons for growing hybrid barley

What does hybrid barley offer?

“ Hybrid barley is popular with growers in the UK for delivering high yields of good quality feed barley.

Hybrid barley offers several advantages for growers. Apart from very high yield potential, here are my top reasons for growing hybrid barley:



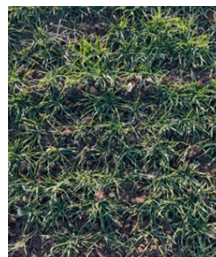
- 1. Yield Stability:** Due to the way they are produced, hybrids typically provide excellent long term yield stability.
- 2. Late Drilling:** Hybrids perform better in a later barley drilling window (mid/late Oct). This aids in the creation of a stale seed bed for weed control and allows for greater flexibility if weather conditions don't allow for drilling earlier in the season.
- 3. Larger Rooting System:** Hybrids have a deeper rooting system with larger root surface area allowing for access to more water and nutrients at depth, as well as better root anchorage.
- 4. Grassweed Suppression:** The larger rooting system below ground allows for a larger above-ground biomass which gives the benefit of suppressing grassweeds.
- 5. Early Maturity:** Hybrids make an ideal entry for winter oilseed rape. Early maturity also helps with harvest workloads, storage logistics and early grain movement off farm.
- 6. Good Straw Yield:** Hybrids offer opportunities for extra income or to supply bedding for on-farm livestock.

INYS vs. SY Kingsbarn

The images below show Inys and SY Kingsbarn in our split field trial near Saffron Walden. Both varieties were drilled on the same day at the same seed rate.



Canopy Cover - 71.33%
INYS



Canopy Cover - 29.91%
SY Kingsbarn

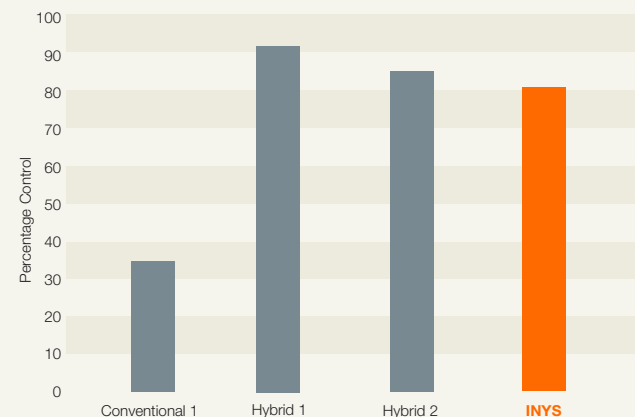
Hybrid Barley Black-grass Suppression

Over a number of seasons, Agrii's trials have shown hybrid barley to be superior to conventional barley when it comes to suppressing black-grass. In the spring, after the first nitrogen dose, hybrid vigour kicks in and the hybrids will grow at a faster rate than conventionals.

This hybrid vigour effect provides a larger, taller plant which out-competes grassweeds, helping to minimise the tillering capacity, reducing the number of ears from grassweeds and thus reducing the weed seed return to the soil surface. They have also struggled to pick out individual differences between hybrid barley varieties.

Black-grass control with hybrid barley

Black-grass competition trials at Agrii's Stow Longa site have consistently shown the benefits of hybrid barley over two row types in terms of black-grass competition.



Data source: Agrii Winter Barley Crop Competition Trial, Stow Longa

OILSEED RAPE

The valuable break crop

KWS UK has long been at the cutting edge of the oilseed rape crop in the UK. In recent years, we have been well known for our line varieties. In today's difficult climate for establishing this valuable break crop, we have moved our emphasis to a fully hybrid focus, enabling us to introduce the valuable traits that farmers today need in a more timely manner.



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Breeding resilience into our new hybrid varieties

“ Breeding new and robust varieties is critical to meeting the needs of farmers trying to produce OSR sustainably. At KWS, we have always bred OSR with high gross output and excellent oil content, but increasingly we are looking for varieties with robust disease resistance, excellent standing and superb vigour. We also want varieties that have excellent tolerance of Verticillium stem stripe and continue to explore other areas that would help farmers to produce oilseed rape in a sustainable and economically viable way to meet the challenges of the future.”

Breeding new and robust varieties is critical to meeting the needs of farmers.

Pei-Chen Wu
Assistant Breeder



Key factors for successful establishment of oilseed rape

“ In recent years, one of the key factors in establishing a successful oilseed rape crop has been the time of drilling; the earlier crops have been drilled, the better the survival and establishment have been. Soil moisture at drilling is also critically important to ensure even establishment.

Varieties differ in their ability to withstand later drilling. Usually, hybrid varieties are better suited to later drilling. Other key attributes a variety needs to be suitable for early drilling are:

Soil moisture at drilling is critically important to ensure even establishment.

- Strong disease resistance profile (light leaf spot, stem canker and Verticillium stem stripe) as the crop will be in the ground for a longer period of time.
- Stiff straw.
- Autumn and spring vigour.”

Kate Cobbold
Hybrid Crops Product Manager



Successful establishment of oilseed rape

The five key steps to successful oilseed rape

To encourage the best establishment of oilseed rape, follow the guidelines below:

- 1 Appropriate cultivation;** aim to create a good seed bed, manage volunteer cereals and minimise moisture loss.
- 2 Drill into sufficient soil moisture;** for quick and even establishment.
- 3 Ensure good seed to soil contact;** rolling the field post drilling can help.
- 4 Use an appropriate seed rate;** drilling too high a seed rate can result in problems late in the season.
- 5 Select a variety with good autumn vigour;** also consider what other attributes you will need from a variety.

Use our myKWS seed rate calculator to plan your seed requirements and establishment goals.



Scan the QR code and sign up to myKWS to use

Calculate your sowing strength and the required seed quantities

The seed rate should be between 40 and 60 seeds / m² - suggested seed rate 50 seeds / m² for standard oilseed rape drilling.

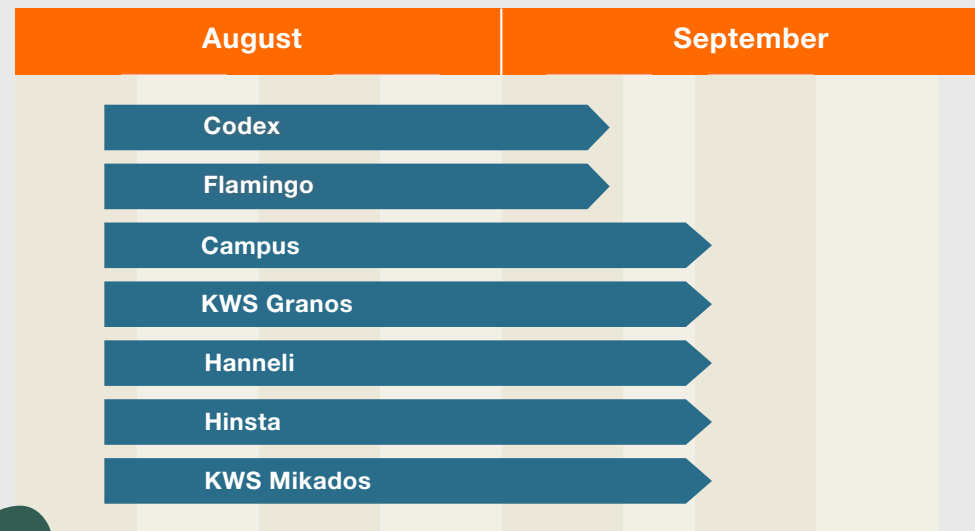
Desired Seed Rate
 Seeds/m²

Thousand-grain weight (TGW)
 g

Germination
 %

CALCULATE

OSR optimum drilling times



Good establishment of your oilseed rape crop is key, and varieties differ in their suitability for early or late drilling.

Important factors include getting good seed to soil contact and sufficient moisture levels.

This optimum drilling chart is designed to help you select your variety to get the best performance from our oilseed rape portfolio.

Verticillium Stem Stripe

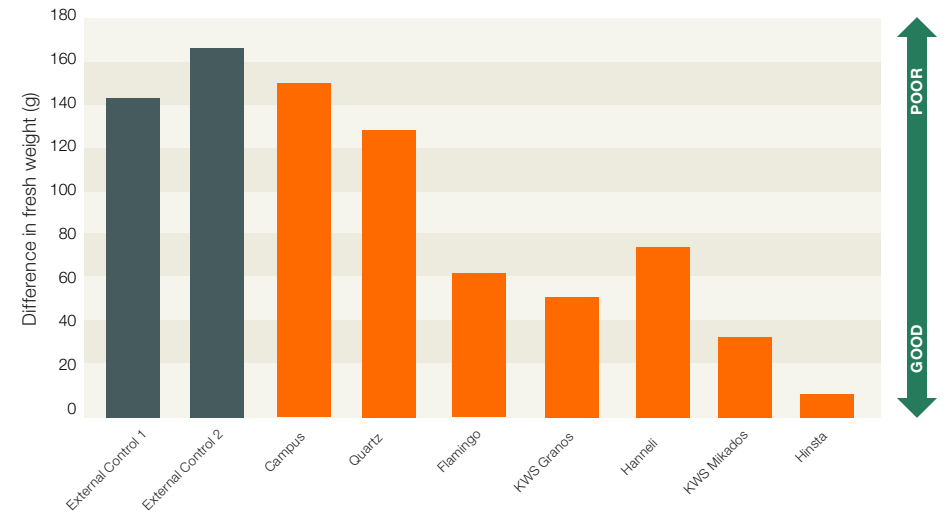
“Verticillium stem stripe is a persistent soil borne pathogen that can cause losses of over 30% in oilseed rape. Higher yield losses are associated with high temperatures and drought stress before harvest. As we see more extreme weather events, Verticillium could become more problematic. As there are no chemicals registered to control the disease, varietal resistance is a vital tool to protect the yield of an oilseed rape crop. New on the Recommended List this year is information on varietal resistance to the disease. At KWS we screen our early material for susceptibility to Verticillium stem stripe. The disease causes reduction in fresh weight, therefore, the more resistant varieties have little or no reduction in fresh weight between inoculated and uninoculated, as seen in the graph opposite.”

Varietal resistance is a vital tool to protect the yield of an oilseed rape crop.

Rory Hannam
Technical Manager Hybrid Crops UK



Difference in fresh weight lost between inoculated treatment vs uninoculated treatment 59 days post inoculation



Data source: ADAS trial for KWS UK

Characteristic	Campus	Flamingo
Autumn vigour	8	7
Spring vigour	6	8
Verticillium stem stripe	5	5

Data source: KWS breeder assessment

Characteristic	Campus	Flamingo
Light leaf spot	6	7
Stem canker	6	4
Stem stiffness	8	8
Flowering time	6	6
Maturity	5	5

Data source: AHDB Recommended List trials



CAMPUS		
Details		Comments
Details	No longer on RL	Extremely consistent variety, still popular on-farm – reflecting both its strong autumn vigour and the consistent on-farm performance. Good tolerance to Verticillium stem stripe and twin 6s for LLS and stem canker.
Year Listed	2015	
Treated GO	101%	

FLAMINGO		
Details		Comments
Details	No longer on RL	Flamingo is a high gross output variety with good autumn vigour. It has very good resistance to LLS with a 7 rating. Stem canker needs attention with a rating of 4. It has good spring vigour and has exhibited good recovery in severe CSFB larval situations. It has good tolerance to Verticillium stem stripe.
Year Listed	2017	
Treated GO	102%	

CODEX		
Details		Comments
Details	NL variety	Codex is a variety with a very reliable output and good standing ability. It is rated a 6 for LLS and has an outstanding 9 rating for resistance to stem canker. Codex is marketed under the KWS oilseed establishment partnership scheme.
Year Listed	2019	
Treated GO	101%	

HANNELI		
Details		Comments
Details	NL Variety	Hanneli is a high gross output variety with very strong autumn and spring vigour. It is a short-strawed variety with good resistance to lodging and standing ability. It has medium flowering and maturity and has the PoSh gene. Hanneli has an excellent disease package with a 7 for LLS and an 8 for stem canker (RLM7). It also has very good tolerance to Verticillium stem stripe and TuYV.
Year Listed	2021	
Treated GO	102%	

KWS GRANOS		
Details		Comments
Details	NL variety	KWS Granos is a high gross output variety with an oil content of 45.5%. It has a very vigorous autumn growth and excellent standing. It has medium flowering and maturity and has the PoSh gene. In terms of disease resistance, KWS Granos has a strong package with good resistance to LLS (7) and TuYV. In our KWS Verticillium pot test, KWS Granos had an outstanding performance, better than all the current standards. Stem canker resistance is medium rated at a 5.
Year Listed	2021	
Treated GO	105%	

Up and coming oilseed rape varieties

KWS MIKADOS		
Details		Comments
Details	RL E/W candidate	KWS Mikados is a very high gross output variety, it is a candidate for the E/W region. It has very stiff straw and pod shatter resistance, ensuring a safe harvest. KWS Mikados has an excellent disease package as well as resistance to TuYV. Trials have shown that KWS Mikados has outstanding tolerance to Verticillium stem stripe.
Year Listed	Not yet National Listed	



The variety is not National Listed and that the data does not constitute an offer of sale

HINSTA		
Details		Comments
Details	RL E/W candidate	Hinsta is a very high gross output variety with excellent oil content. It has stiff straw and pod shatter resistance, ensuring a safe harvest. Hinsta has a great all-round disease package and resistance to TuYV. In trials, Hinsta has shown very strong tolerance to Verticillium stem stripe.
Year Listed	Not yet National Listed	



The variety is not National Listed and that the data does not constitute an offer of sale



Winter Oilseed Rape Recommended List 2024/25, UK

RECOMMENDED

	LG Armada	LG Academic	LG Adeline	Turing	Dolphin	LG Auckland	Attica	Murray	Vegas	Ambassador	LG Wäagner	Aurelia	LG Aviron	LG Adonis	PT303	Dart	Tennyson	
Hybrid																		
Variety type	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid
Scope of recommendation	UK	UK	UK	UK	E/W	E/W	UK	E/W	UK	E/W	N	UK	UK	E/W	UK	E/W	E/W	
Variety status	NEW	NEW	NEW		NEW				C		C	*	*	*	*	*	*	
Gross output, yield adjusted for oil content (% treated control)																		
United Kingdom (5.1 t/ha)	107	106	106	106	105	105	105	105	104	104	103	103	102	101	101	99	96	
East/West region (5.0 t/ha)	106	106	106	106	106	105	105	105	104	104	102	103	102	101	101	100	97	
North region (6.0 t/ha)	107	107	108	105	[102]	103	104	102	102	101	108	102	103	100	100	92	93	
Seed yield (% treated control)																		
United Kingdom (4.8 t/ha)	106	106	106	107	103	104	105	105	104	104	103	103	103	100	100	99	96	
East/West region (4.7 t/ha)	106	106	106	107	103	105	105	106	104	104	102	103	103	100	100	100	97	
North region (5.5 t/ha)	107	107	109	107	[100]	102	104	103	102	102	108	103	104	99	100	92	94	
Untreated yield (% untreated control) – UK																		
Gross output (5.3 t/ha)	-	-	-	103	-	105	102	105	106	103	[106]	104	105	102	100	96	94	
Seed yield (4.9 t/ha)	-	-	-	104	-	104	102	105	105	103	[106]	104	107	101	100	96	94	
Disease resistance																		
Light leaf spot (1–9)	7	7	7	7	6	7	7	7	7	7	7	7	7	7	7	7	7	
Stem canker (1–9)	6	6	6	4	7	5	5	8	9	6	5	5	6	6	6	5	7	
Verticillium	-	-	-	1	[MR]	[1]	[S]	[MR]	[1]	S	[S]	[1]	[S]	[MR]	-	[1]	[MR]	
TuYV	R	R	R	-	R	R	-	-	R	R	R	R	R	R	R	R	R	
Agronomic features																		
Resistance to lodging (1–9)	[8.0]	[7.9]	[8.0]	[7.9]	[8.0]	[7.8]	[7.9]	[8.0]	[7.9]	[8.0]	[8.0]	[7.9]	[7.8]	[7.9]	[7.9]	[7.9]	[7.8]	
Stem stiffness (1–9)	8	8	8	8	9	7	8	9	8	8	8	7	7	8	[8]	8	8	
Shortness of stem (1–9)	5	5	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	
Plant height (cm)	152	152	150	142	143	148	148	148	143	146	142	143	147	140	157	143	143	
Earliness of flowering (1–9)	5	7	7	8	7	7	7	7	7	7	7	8	7	5	7	6	6	
Earliness of maturity (1–9)	5	5	5	5	4	5	5	5	5	6	5	5	6	5	5	5	5	
Pod shatter resistance	R	R	R	-	-	R	R	-	-	R	R	R	R	-	-	-	-	
Seed quality (at 9% moisture)																		
Oil content, fungicide-treated (%)	45.5	45.2	44.9	44.4	46.6	45.5	45.3	44.5	45.4	44.7	45.0	44.8	44.4	46.1	45.7	45.2	44.8	
Glucosinolate (µmol/g)	12.6	14.1	14.7	10.4	13.0	12.2	12.0	11.1	11.0	10.9	11.7	10.2	11.2	9.7	8.0	10.0	11.1	
Annual treated gross output, yield adjusted for oil content (% control) – UK																		
2020 (5.6 t/ha)	-	-	-	105	-	103	106	102	102	103	106	103	104	100	101	97	96	
2021 (5.2 t/ha)	107	106	109	107	103	104	105	105	104	102	104	103	101	102	102	96	95	
2022 (5.8 t/ha)	107	107	106	106	104	104	104	103	103	102	105	102	103	101	100	97	95	
2023 (5.4 t/ha)	107	107	107	105	105	105	104	104	103	102	105	102	102	101	-	94	93	
Treatment benefit at co-located sites (% treated control, 5.5 t/ha) – UK																		
Treated gross output	-	-	-	105	-	106	103	100	102	102	[108]	103	104	100	99	95	95	
Untreated gross output	-	-	-	99	-	101	98	100	102	99	[102]	100	101	98	96	92	90	
Breeder/UK contact																		
Breeder	LimEur	LimEur	LimEur	NPZ	DSV	LimEur	LimEur	NPZ	NPZ	LimEur	LimEur	LimEur	LimEur	LimEur	PlonOS	DSV	SyP	
UK contact	Lim	Lim	Lim	LSPB	DSV	Lim	Lim	LSPB	LSPB	Lim	Lim	Lim	Lim	Lim	Cor	DSV	Els	
Status in RL system																		
Year first listed	24	24	24	23	24	22	23	23	23	20	23	20	21	22	22	22	22	
RL status	P1	P1	P1	P2	P1	-	P2	P2	P2	-	P2	-	*	*	*	*	*	



Winter Oilseed Rape Recommended List 2024/25, UK

RECOMMENDED

	Pi Pinnacle	Tom	Annika	Acacia	Aspire	Amarone	Matrix CL	Beatrix CL	Miraculic CL	LG Constructor CL	Crocodile	Crome					
Conventional open-pollinated													Herbicide tolerant			Clubroot resistant	
Variety type	Conv	Conv	Conv	Conv	Conv	Conv	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid					
Scope of recommendation	UK	UK	E/W	UK	N	N	UK Sp	N Sp	N Sp	UK Sp	E/W Sp	UK Sp					
Variety status	NEW					C			NEW	*							
Gross output, yield adjusted for oil content (% treated control)																	
United Kingdom (5.1 t/ha)	102	102	99	98	96	95	96	96	95	92	98	96					
East/West region (5.0 t/ha)	103	101	99	98	96	94	97	96	95	93	99	96					
North region (6.0 t/ha)	101	102	98	99	98	100	94	92	96	89	95	96					
Seed yield (% treated control)																	
United Kingdom (4.8 t/ha)	104	101	99	98	96	96	96	94	94	93	99	95					
East/West region (4.7 t/ha)	104	101	99	98	95	95	96	95	94	94	99	95					
North region (5.5 t/ha)	102	102	98	99	98	100	94	92	96	90	96	95					
Untreated yield (% untreated control) – UK																	
Gross output (5.3 t/ha)	-	103	96	98	96	99	95	95	-	87	98	94					
Seed yield (4.9 t/ha)	-	102	96	99	96	100	94	94	-	88	99	93					
Disease resistance																	
Light leaf spot (1–9)	7	7	7	6	7	7	6	5	5	5	6	6					
Stem canker (1–9)	4	5	5	5	5	4	7	6	7	4	3	3					
Verticillium	[1]	[1]	[MR]	[1]	[1]	[S]	[1]	1	[1]	[S]	[1]	[MR]					
TuYV	-	-	R	-	R	R	R	R	R	R	-	-					
Agronomic features																	
Resistance to lodging (1–9)	[8.0]	[7.9]	[8.0]	[8.0]	[7.9]	[8.0]	[7.7]	[7.9]	[7.9]	[7.9]	[7.9]	[7.9]					
Stem stiffness (1–9)	9	9	9	8	8	8	7	8	8	8	[8]	8					
Shortness of stem (1–9)	6	6	6	7	7	7	5	6	5	6	6	6					
Plant height (cm)	148	140	142	138	134	136	151	145	151	142	141	139					
Earliness of flowering (1–9)	5	7	6	6	7	7	6	7	7	6	6	7					
Earliness of maturity (1–9)	5	5	4	5	5	5	6	5	6	6	6	5					
Pod shatter resistance	-	-	-	-	-	-	R	R	R	R	-	-					
Seed quality (at 9% moisture)																	
Oil content, fungicide-treated (%)	44.4	45.2	44.9	44.9	45.2	44.7	45.6	45.8	45.6	44.1	44.8	45.8					
Glucosinolate (µmol/g)	13.0	11.6	11.6	8.1	9.9	11.9	14.2	15.3	15.2	15.8	12.8	10.8					
Annual treated gross output, yield adjusted for oil content (% control) – UK																	
2020 (5.6 t/ha)	-	[102]	97	98	95	97	96	[94]	-	93	96	96					
2021 (5.2 t/ha)	103	102	99	100	97	98	94	93	96	90	98	97					
2022 (5.8 t/ha)	102	101	100	99	97	98	96	96	96	93	99	95					
2023 (5.4 t/ha)	101	103	97	98	99	97	95	93	95	88	95	97					
Treatment benefit at co-located sites (% treated control, 5.5 t/ha) – UK																	
Treated gross output	-	102	99	98	96	99	97	98	-	89	96	94					
Untreated gross output	-	98	92	94	92	95	91	91	-	84	94	90					
Breeder/UK contact																	
Breeder	Pick	CBI	LimEur	LimEur	LimEur	LimEur	DSV	DSV	DSV	LimEur	DSV	NPZ					
UK contact	Gsd	FrontAg	Lim	Lim	Lim	Lim	DSV	DSV	DSV	Lim	DSV	LSPB					
Status in RL system																	
Year first listed	24	23	22	20	19	22	22	23	24	22	20	19					
RL status	P1	P2	-	-	-	-	-	P2	P1	*	-	-					

HYBRID RYE

The versatile resilient crop

A favoured crop on-farm due to its agronomic benefits. These include high efficiency, reduced CO² due to a low nitrogen requirement, excellent resistance to drought and multiple end use opportunities.

All KWS varieties have PollenPlus genetics which significantly reduces ergot contamination.



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Hybrid rye: the cereal with much to offer

KWS Group is the leading breeder of hybrid rye, with a long term hybrid breeding programme established in the mid-1980s. We offer varieties for wholecrop (as silage, or AD/biogas feedstock) or grain production (for feed grain, flour and distilling). KWS believes this highly productive cereal offers new perspectives for farmers and end-users alike.

Thanks to its adaptability, hybrid rye has the potential to slot into most farming rotations.

Hybrid rye can be integrated into crop rotation systems effectively. Its flexibility allows farmers to rotate it with other crops, which helps in preventing soil depletion, managing pests and diseases, and improving overall soil health.

Hybrid rye has excellent straw yields making it ideal for livestock farmers who need their own straw or could offer an alternative income stream by selling the straw. The UK has a variety of markets, from grain for animal feed to more niche grain markets including distilling and rye bread flour.

Over recent years rye has become popular in being grown for whole crop to go into AD plants. Its large above ground biomass and a larger ear compared to conventional varieties means that hybrid rye has the perfect plant architecture for this market.

Hybrid rye has an aggressive, deep rooting system, making it suitable for light land that is drought prone but still yields well on heavier land. This rooting system not only helps with water uptake in difficult seasons but also nutrient scavenging. Rye typically has a nitrogen requirement of 120-150Kg per hectare which offers a big financial saving throughout the season and may be beneficial to those growers who are looking at reducing their carbon footprint.

Rye requires a robust PGR program due to its tall height. Its main disease threats come from brown rust and sometimes mildew. Always consult your agronomist, but rye is likely to have a lower fungicide cost than other cereal crops.



To view our current portfolio,
scan the QR code or visit
www.kws-uk.com



© Benjamin Addy

Hybrid rye – for laying hen diets

Hybrid rye is ideal for extending laying duration, shell quality and welfare, and can help the industry lower its carbon footprint.



Key advantages for monogastric feed – laying hens:

- Rye can be fed as coarse meal, or in broken form; It is high in dietary fibre which promotes gizzard health.
- Litter dry matter (DM%) is raised using broken rye; [versus intact rye kernels] compared to a wheat-based diet (control).
- Rye can boost laying intensity and egg weight; demonstrated in feeding trials using up to 20% rye compared to a wheat-based diet (control).
- Optimise feed costs; Rye is a low input high output cereal, requiring less nitrogen and pesticides, and offers a lower production cost.
- High straw yields; Straw provision acts as a novel stimuli & increases animal welfare.

Data source(s): University of Veterinary Medicine Hannover, Germany. 2020 & UWM Olsztyn Poultry Department Lab and Research Unit, Poland 2020

Hybrid rye successfully fed to laying hens in year long study.



“ I farm 104,000 free range laying hens. I was keen to look at feeding rye to my hens in conjunction with Harbro. They home mix and do the nutrition for me.

Over the year we started feeding rye at 5% and increased it to 25%. We fed 8,000 birds on this rye inclusion and had 8,000 birds on a normal ration. Each group performed remarkably similarly in terms of egg numbers, egg quality and litter.

The positives of feeding rye were definitely financial, the key challenge was storing an extra ingredient.”

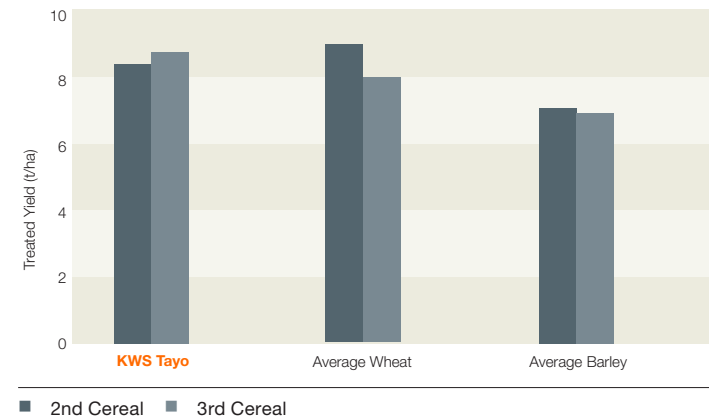
Jonathan Stokes
C Stokes & Son



KWS Tayo - the most popular rye grown in the UK!

What makes KWS Tayo the hybrid rye for you?

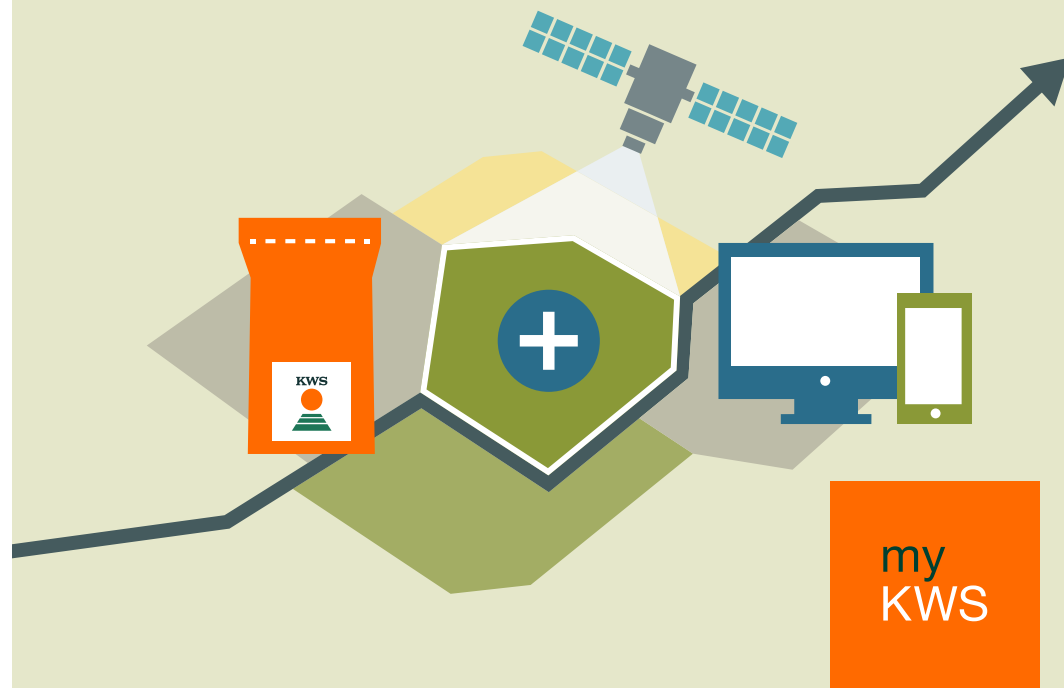
KWS Tayo is currently the market leading variety and our own internal trials have shown KWS Tayo yields well in a 2nd or even 3rd cereal slot compared to wheat or barley.



Data source: KWS own trials, PDF East, Thriplow 2023

Winter Rye Descriptive List 2024/25

	KWS Igor	KWS Iayo	KWS Gilmor	Astranos	SU Baresi	KWS Inspirator	SU Perspectiv	SU Karlsson	KWS Serafino	SU Performer	SU Arvid	SU Bendix	Possidon
Variety type	Hybrid												
Variety status		NEW	NEW			NEW	NEW	NEW			C		
Grain yield (as % treated control)													
Fungicide-treated (10.2 t/ha)	104	104	104	104	103	103	102	102	100	100	100	97	95
Number of trials	14	19	8	8	19	8	8	8	19	19	19	18	18
Disease resistance													
Brown rust (1-9)	3	7	[2]	[3]	4	[7]	[4]	[7]	7	4	5	5	3
Agronomic features													
Lodging (%)	[20]	[7]	[1]	[8]	[13]	[16]	[14]	[5]	[11]	[33]	[41]	[15]	[1]
Straw length (cm)	129	131	[131]	[130]	131	[129]	[131]	[135]	132	132	137	134	132
Ripening (days +/- SU Performer)	0	+1	0	0	0	0	0	0	0	0	0	0	-1
Grain quality													
Protein content (%)	8.8	9.0	8.9	9.6	8.6	8.6	8.9	9.2	8.9	9.0	8.9	9.5	9.7
Hagberg Falling Number	236	248	251	181	222	265	234	230	256	218	183	194	165
Specific weight (kg/hl)	75.7	76.3	77.2	77.0	77.4	75.1	77.3	77.9	76.5	77.1	76.2	76.9	75.6
Breeder/UK contact													
Breeder	KWS-Gmbh	KWS-Gmbh	KWS-Gmbh	NS	Hybro	KWS-Gmbh	Hybro	Hybro	KWS-Gmbh	Hybro	Hybro	Hybro	NS
UK contact	KWS	KWS	KWS	Sen	SU	KWS	SU	SU	KWS	SU	SU	SU	Dalt
Status in DL system													
Year first listed	23	22	24	24	22	24	24	24	21	17	21	22	21
DL status	P2	-	P1	P1	-	P1	P1	P1	-	-	-	-	-



myKWS: Service for your seeds

High-quality seeds are the foundation of successful farming. However, to unleash the full potential of your seeds, area-specific crop management and holistic decision-making are just as important.

With myKWS, we can now expand our services. The combination of high-quality seeds + regional advice + digital service enables us to provide a firm foundation for important decisions and future paths to successful farming.



More than 50,000 farmers are using myKWS already.

Join in and take advantage of these new opportunities at: www.kws-uk.com/mykws or scan the QR code to create your account now!



OATS

The versatile crop on the rise

Demand for oats and oat-based food products has seen a big increase in recent years, as consumers become more health aware. Partner this with the ongoing investment in the processing capacity of oats and demand for this crop is likely to increase in the coming years.



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Oats - health for us and sustainable for fields

Demand for UK-grown oats continues to increase year-on-year. Whole grains play an important part in a healthy and balanced diet.

The UK government guidelines advise that adults should have 30g of dietary fibre a day as this is associated with a lower risk of heart disease, stroke, type 2 diabetes and bowel cancer. However, many adults in the UK only eat around 60% of this requirement, so most of us need to increase our intake.


The nutritional benefits of oats are clear. They are a well-balanced source of carbohydrates and fibre whilst also having a good level of protein, vitamins and minerals. These gut-health benefits also makes oats an excellent inclusion in animal feed rations. The balanced composition makes them less likely to cause digestive upsets in cattle, which means they can be fed in larger amounts than many other cereal grains.

In the field, oats offer growers a useful addition to the rotation. They can act as a semi-break from wheat and barley; their phytosanitary affect supressing infection cycles of disease such as eyespot. In addition, they have good weed suppression activity, have a good network of roots to boost their ability to scavenge nutrients, tolerate cold better than many other spring crops and require less nitrogen and chemistry to delivery a highly marketable crop.

KWS work with well-known European breeders such as Wiersum Plant Breeding (WPB) as well as having our own dedicated breeding programme with a significant trials network across the UK.







Spring Oats - Husked

WPB ISABEL		
Details	Comments	
Type	Husked	<p>WPB Isabel is the first choice spring oat for UK millers due to its superior agronomic package. From the Wiersum breeding programme that also bred the variety WPB Elyann, WPB Isabel will appeal to growers that are looking for a high-yielding spring oat, with a proven track record of excellent grain quality.</p>
Year Listed	2020	
Treated Yield	101%	
Parentage	LW 03W038-06 x Husky	



Up and coming spring oats

WPB MIMIC		 
Details	Comments	
Type	Husked	<p>New to growers from the Wiersum breeding programme is WPB Mimic, a husked spring oat with good yield potential and an attractive grain package for end users. Whilst still undergoing evaluations by the UK Oat Millers, initial findings show that WPB Mimic has an excellent kernel content and very high specific weight.</p>
Year Listed	AHDB Candidate	
Treated Yield	103%	
Parentage	(LW07W013-11G X CANYON) X WPB 10W999-05	<p>In the field, WPB Mimic offers growers a taller strawed variety that has good resistance to lodging and such will be easier to manage than other commercialised varieties. It has performed well in trials, on a par with the highest yielding fully recommended variety on the 2024 Spring Oat RL.</p>

KWS VIBRANT		 
Details	Comments	
Type	Husked	<p>New to growers from the KWS oat breeding programme is KWS Vibrant, an exciting candidate for the AHDB Harvest 2024 list. The variety has excellent yields with its best yields seen in the hot and dry spring and summer conditions in 2022. In the field, KWS Vibrant has a good untreated yield, backed by an excellent score for mildew.</p>
Year Listed	AHDB Candidate	
Treated Yield	103%	
Parentage	Canyon x PS4.1	<p>The variety is a shorter plant type which has very stiff straw. Couple this with the early harvest date and you have a variety that will offer security right the way through to harvest. Whilst still undergoing evaluations by the UK Oat Millers, initial findings show that KWS Vibrant has an excellent kernel content and specific weight on a par with other varieties that have found popularity on-farm.</p>

Spring Oats Recommended List 2024, Husked Varieties

	Merlin	Asterion	WPB Isabel	Canyon	Lion	Conway	RIGHT Vaughan
Variety type	Husked						
Scope of recommendation	UK	UK	UK	UK	UK	UK	UK
Variety status		NEW	C	C			
UK yield (% treated control)							
Fungicide-treated (7.3 t/ha)	103	102	101	101	97	97	96
Untreated (% of treated control, 7.3 t/ha)	99	97	88	97	82	89	93
Disease resistance							
Mildew (1–9)	8	8	5	8	3	6	8
Crown rust (1–9)	[4]	[6]	5	4	[6]	4	[4]
Agronomic features							
Resistance to lodging without PGR (1–9)	8	[7]	7	7	7	7	[7]
Straw length without PGR (cm)	106	[110]	111	111	105	103	108
Ripening (days +/- WPB Isabel)	-2	0	0	-2	-1	-1	-2
Grain quality							
Kernel content (%)	71.7	73.2	73.3	71.6	75.1	71.7	73.0
Specific weight (kg/hl)	50.7	51.3	52.9	50.9	51.2	49.1	51.7
Screenings (% through 2.0 mm)	1.9	2.6	2.3	2.9	2.7	2.6	2.7
Screenings (% through 1.8 mm)	-	-	-	-	-	-	-
Annual treated yield (% control)							
2019 (7.3 t/ha)	[108]	-	[101]	[101]	[99]	[94]	[96]
2020 (6.2 t/ha)	[100]	[99]	[102]	[103]	[94]	[101]	[102]
2021 (7.8 t/ha)	[103]	[103]	[102]	[101]	[97]	[99]	[95]
2022 (7.9 t/ha)	[103]	[101]	[100]	[101]	[99]	[96]	[97]
2023 (7.4 t/ha)	[102]	[103]	[103]	[98]	[99]	[94]	[93]
Breeder/UK contact							
Breeder	Selg	Nord	Wier	Nord	Nord	IBERS	R2n
UK contact	Cope	SU	KWS	SU	SU	Sen	RAGT
Status in RL system							
Year first listed	22	24	20	11	22	14	23
RL status	-	P1	-	-	-	-	P2

Optimise your crop rotation!

The myKWS Crop Manager tool makes it possible to experiment digitally with different crop rotations. The economic and agronomic evaluations support you in planning suitable crop rotations for your fields.

Rotation Pattern 1



Rotation Pattern 2



Agronomic evaluation

- ⚠️
- ⏸️
- ✓

Rotation pattern comparison

	Rotation Pattern 1	Rotation Pattern 2
⚠️	✗	✓
⏸️	✓	✗
✓	✓	✓
⚠️	⚠️	⏸️

Future planning

New crop integration

Crisis situation



1. Helpful when making relevant decisions in a variety of situations.
2. Easy and direct comparison of crop rotations.
3. Agronomic evaluation of crops and rotation patterns to minimise risks.



PEAS



The economical break crop

Peas are an ideal crop to have in the farm rotation, offering growers an excellent break crop. They require low inputs and fix nitrogen in the soil, all while offering farmers an economical break when supporting the wider crop rotation.



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Peas

In recent years, there has been a steady demand in the UK for green and yellow peas, as health-conscious consumers look for alternative ways to source protein and essential nutrients in their diet. This allows growers to capitalise on the emerging market for plant-based foods.

There are 3 main types of combinable peas grown in the UK:

1. Green peas (also known as large blue) are the most popular dried pea type grown in the UK for canning (for use in soups and stews) and the snack market. They are regularly micronised (roasted, cracked and rolled) for pet foods.
2. Yellow peas (also known as whites) are grown for splitting, whole processing and milling processes. Whilst relatively small in terms of UK growing area, they are the most widely produced pulse in the world.
3. Marrowfat peas are used in canning (mushy peas), snack foods and as ingredients in foodstuffs. This is a premium-led market.

KWS have been in the seed business for many years, and more recently we have used our R&D resources to turn the spotlight on protein crops with a new approach. Not only do we have dedicated pea breeding programmes to provide suitable products for UK farmers, but we're also looking for novel markets such as milk and yoghurt alternatives based on pea proteins.



UK Agent	Yield as % of Control	Agronomic characters			Resistance to			Seed characters			No. Years in matrix	Year first listed
		Earliness of maturity (1-9)	Straw length (cm)	Standing ability at harvest (1-9)	Pea wilt (Race 1)	Downy mildew (1-9)	Powdery mildew *	Thousand seed weight (g) (@15%mc)	Protein content (% dry)			
Yellow												
Concerto	LSPB	115	6	77	7	R	7	[S]	351	21.4	3	24
Batist	Sen	113	6	85	7	R	6	[S]	304	21.6	3	24
Kameleon	Sen	112	6	74	7	R	5	[S]	304	21.8	5	20
Orchestra	LSPB	110	6	77	7	R	4	[S]	316	22.2	5	20
KWS Flam	KWS	110	6	87	7	R	5	[S]	254	21.5	3	24
Manager	KWS	107	6	81	7	R	6	[MR]	283	22.4	5	18
Glam	Sen	105	3	84	7	R	5	[S]	256	22.4	4	23
Rivoli	Sen	100	5	78	7	[S]	8	[S]	283	22.1	5	22
LG Ajax	LUK	100	6	73	7	R	7	[HR]	265	22.5	4	23
Pink												
Flamingo	CSG	78	4	84	6	R	7	-	261	23.4	3	24
Green												
Carrington	LSPB	111	5	84	7	R	8	[S]	253	21.4	5	22
KWS Gotham	KWS	107	3	84	6	-	5	[S]	292	22.5	4	23
Mikka	IARA	106	5	86	7	R	7	[S]	300	22.5	5	21
Greenway	IARA	106	5	85	7	R	7	[S]	303	22.1	5	21
Butterfly	LSPB	106	7	80	7	R	6	[S]	291	21.3	4	23
Stroma	LSPB	105	6	80	7	R	5	[S]	324	21.4	5	21
Bluetime	LSPB	104	3	87	7	R	8	[S]	286	21.5	5	18
Karioka	Sen	103	6	84	7	R	7	[S]	259	22.2	5	18
Kiravi	Sen	103	4	81	7	R	6	[S]	278	22.0	4	23
Kactus	Sen	102	5	76	7	R	7	[S]	289	21.9	5	20
Shazam	Sen	101	4	87	7	R	6	[S]	261	22.2	3	24
LG Aviator	LUK	98	4	75	7	R	7	[HR]	284	22.0	4	20
Reacher	IARA	97	6	74	5	R	7	[HR]	270	21.1	3	24
Daytona	Agrii	95	7	76	7	R	6	[S]	271	21.8	4	10
Mankato	KWS	93	4	81	7	R	6	[S]	255	21.9	4	19
Prophet	LUK	92	4	74	7	R	7	[S]	301	21.4	3	07
Maple												
Mantara	LUK	96	6	63	6	R	9	[S]	242	23.5	3	10
Rose	Dalt	90	8	77	7	S	9	[S]	258	23.9	3	03
Marrowfat												
Vision	Ei	100	5	75	7	R	7	-	357	22.3	3	24
Takayama	LSPB	96	5	85	6	R	6	[S]	350	22.5	4	23
Akooma	LSPB	95	5	80	6	R	5	[S]	407	22.7	5	21
Octavia	IARA	86	3	76	8	R	3	[S]	400	23.2	5	20
Sakura	Dalt	82	5	77	7	R	4	[S]	382	22.9	5	08

(1-9) A high rating indicates that the variety shows the character to a high degree. All varieties are semi-leafless. Downy mildew: Varietal resistance may vary in different regions as race structure of the disease changes. Pea wilt (Fusarium oxysporum f. sp. pisi) (race 1) R = Resistant; S = Susceptible. *Powdery mildew Trials & Breeders information - HR = High resistance, MR = Moderate resistance, S = Susceptible. © PGRO 2023 27.11.2023

Bats above the competition



KWS GOTHAM



New in 2023, KWS Gotham offers growers easy crop management combined with excellent opportunities to serve the UK green pea market. It boasts the best combination of yield (107%) and protein content compared to other green peas on the 2024 PGRO DL, exactly what growers and processors alike are looking for.

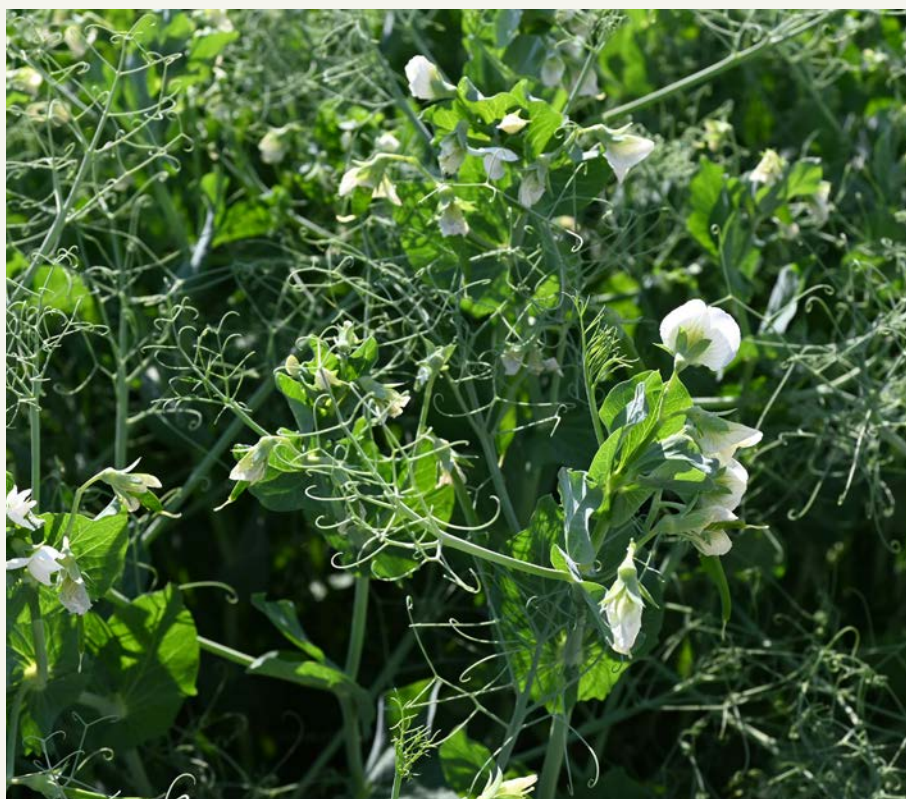
Agronomically it is a strong contender including resistance to pea wilt, and it has stiff straw and good standability through to harvest. An excellent thousand seed weight (292g) rounds off this impressive package.

Green Pea



MANKATO		
Details		Comments
Year Listed	2019	Mankato is a green pea with medium height and good standing to ensure a safe harvest. It is liked by end-users for its good colour retention, which helps growers attract a high premium for reducing bleaching when being sold. It offers a high protein of 21.9% dried and has a good all-round disease package, including resistance to pea wilt.
Treated Yield	93%	

Data source: PGRO Descriptive List 2024



Yellow Pea



KWS FLAM		
Details		Comments
Year Listed	2024	A new addition to the 2024 PGRO Descriptive List, KWS Flam is a high-yielding yellow pea that has good potential for both the animal feed and human consumption markets. KWS Flam offers growers easy crop management, boasting an excellent yield (110%) combined with all the characters for a safe harvest such as earlier maturity (6) and standing ability through to harvest (7). Agronomically it is a strong contender, with a good all-round disease resistance, having stiff straw and good standability through to harvest. Good thousand seed weight (254g) and protein content (21.5%) rounds off this impressive package.
Treated Yield	110%	

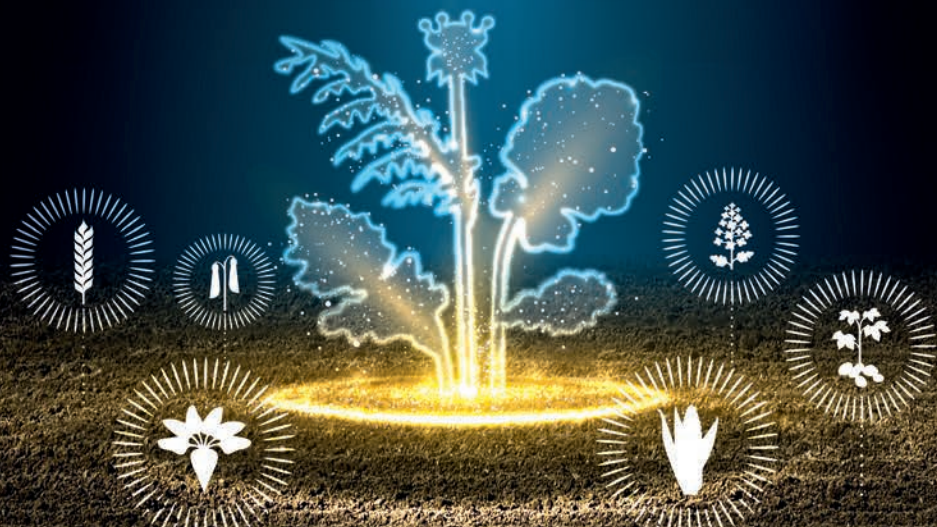
Data source: PGRO Descriptive List 2024

MANAGER		
Details		Comments
Year Listed	2018	Manager is a high-yielding yellow pea that performs nationally over a range of soil types. It offers excellent downy mildew resistance and is resistant to pea wilt. It has a stiff straw, allowing for a safe harvest. Its large seed size is favoured by end-users for splitting and protein extrusion also.
Treated Yield	107%	

Data source: PGRO Descriptive List 2024



COVER CROPS



KWS Fit4NEXT - cover crop mixtures for vitality

Sustainable. Diverse. Tailor-made. KWS FIT4NEXT offers cover crop mixtures that suit your farm. Keep your crop rotation and soil FIT, bind CO² and build up humus.



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What is KWS Fit4NEXT?

KWS Fit4NEXT is the new range of cover crop mixtures from KWS. Our goal is to offer you the opportunity to supplement your crop rotation with site-adapted and high performing varieties that will enhance the sustainability of your rotation, helping you work towards meeting your environmental targets.

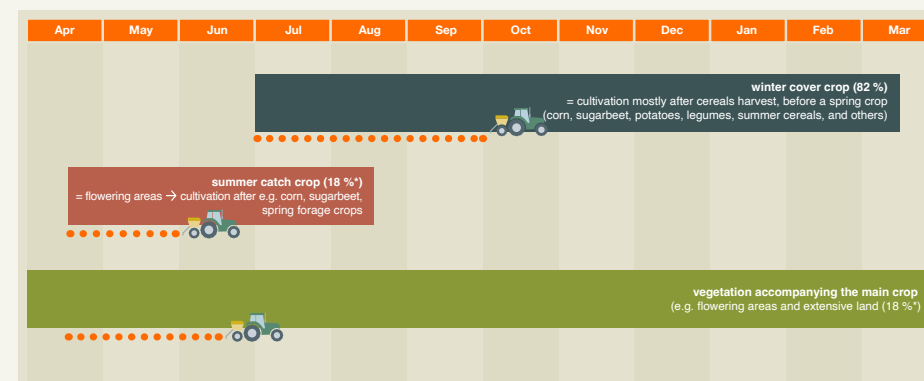
Our dedicated breeding programmes are constantly trialling combinations of components to integrate the right species into mixtures, based on characteristics of plant development timings, rooting structures and biomass growth, to name a few. In addition to cruciferous plants such as winter turnips, false flax and white and brown mustard, our activities also focus on phacelia, oil radish and buckwheat.

Good reasons to choose cover crops:

- Soil cover to prevent erosion and evaporation.
- CO² and nutrient binding from the atmosphere.
- Nutrient binding to protect leaching into ground waters.
- Weed suppression and interruption of green bridges.
- Promotion of soil health including soil structure, thanks to rooting.
- Reduction in nematodes using resistant varieties.
- Humus formation.
- Providing nutrients back into the soil.
- Increasing biodiversity on your farm.



Possible position in the crop rotation



MAIZE

Specialising in maize hybrids

Our maize portfolio consists of ultra-early, early/maincrop and biogas varieties. Take a look at some of our key offerings and learn more about our Maize360 experience and open days in 2024.



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Visit our site!

KWS Open Days

KWS has a long tradition of opening its Gloucestershire-based Maize Demonstration Site during September, where we welcome growers and merchants to tour the variety plots.

What you can see:

- KWS Population Wheel and the effects of plant density
- The UK's leading maize varieties
- New outstanding varieties for the future
- Breeding demonstration



Get in touch now to book your visit!

Just scan the QR code



Seed2FEED

Optimise your homegrown feed with **Boost Hybrids**



Seed2FEED empowers livestock farmers to optimise their homegrown feed in an **economical** and **sustainable** way.



Want to find out more?
Scan the QR code

myKWS MAIZE



With you throughout the year...

myKWS MAIZE is our quarterly newsletter, helping you choose the right variety and keeping you up to date on topical issues from seedbed preparation to harvesting tips.

For a digital copy, sign up for myKWS at www.kws-uk.com and select the maize option.



To receive our **myKWS MAIZE** newsletter by post, scan the QR code and sign up now!



SUGAR BEET

The best choice for the UK

With the increasing need for resilience in the arable rotation, we're pleased to share the choices provided by KWS UK for your sugar beet crop in 2025.



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To download our
latest **Sugar Beet
Variety Guide**, please
scan the QR code
above.

CR+.

A revolution in Cercospora management.

The new level of effective Cercospora control with CR+.

Cercospora puts sugar beet in a tough environment.

Cercospora Leaf Spot is one of the most destructive leaf diseases in sugar beet and can reduce crop yield by as much as 50%.

How do CR+ varieties help to control Cercospora?

With CR+, the Cercospora leaf spots appear later and the disease progression is slowed down compared to other varieties.

As a result, the thresholds are reached later and spraying intervals might be longer.



KWS Solution:

Genetics for improved Cercospora control and a potential fungicide saving.

Cercospora Protection

- Disease progression slowed down.
- Later appearance of the spots.
- Reduced disease severity.
- Potential saving in fungicides.

➔ **Productive canopy**



Yield Performance

- High yields in presence and absence of the disease.
- Stable and high sugar content.
- High yield stability.
- Healthy, less stressed beet.

➔ **Productive fields**

CONVISO[®]
SMART

I'VE GOT THE POWER

to save time with
a single application



Push the button for more efficient weed control in sugar beet.

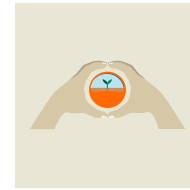
With only one application you need less time to manage weeds in your sugar beet and have more time for other crops. Get the power with CONVISO[®] SMART sugar beet seeds from KWS and CONVISO[®] ONE herbicide from Bayer.

www.kws.com

SEEDING
THE FUTURE
SINCE 1856



CONVISO[®] is a registered trademark of Bayer.



KWS Beet Seed Service

Your partner if you need to re-sow.

The Beet Seed Service is available to all growers of KWS varieties with EPD-treated seed.

The decision to re-sow sugar beet is a last resort and not one to be taken lightly. A wide range of issues can cause an uneconomic plant to stand within the establishing crop, such as frost, wind blow and pest damage.

To complement our offer of EPD-treated seed for UK growers, we are offering the KWS Beet Seed Service, giving you peace of mind if re-sowing is necessary.

The Principle of the Beet Seed Service

Should you need to re-sow your beet crop, we will offer the replacement seed at 50% of the initial sale price.

For example, if you were to spend £200 per unit on KWS EPD-treated seed and needed to re-sow, the seed cost for re-sowing would be £100 per unit.



To register for the Beet Seed Service scan the QR Code or visit www.beetseedservice-uk.com

Replacement seed offered to growers through KWS Beet Seed Service must be re-sown in the year it is provided.

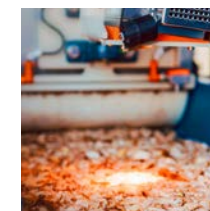
Terms and conditions apply. Please visit www.kws-uk.com for full details.



SOLUTIONS



PERFORMANCE



INNOVATION

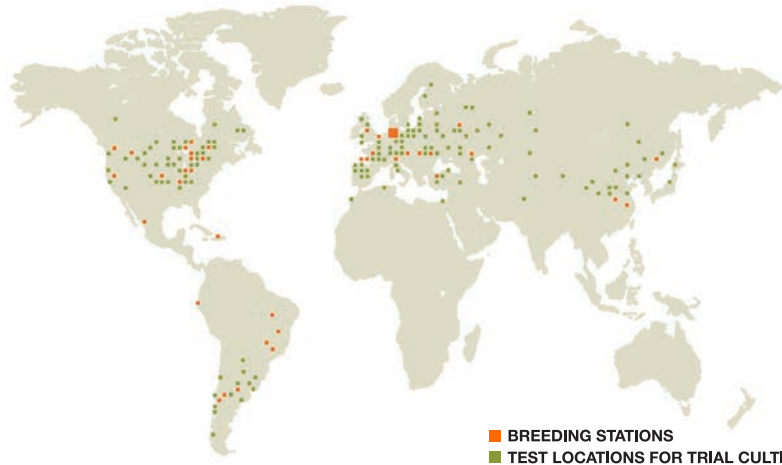


QUALITY

KWS GROUP

Serving farmers for **over 165 years**

KWS is one of the world's leading seed suppliers offering innovative solutions to farmers in 70 countries. Focusing on grower's challenges and responding with innovative tools, technology and hybrid performance, KWS provides seed with high-performing genetics supporting today's progressive farmers and producers.



KWS seeds the future

Our high-yield seeds and extensive knowledge make us a trusted partner of farmers – for generations. In this way, we contribute to solutions for the nutrition of a steadily growing world population. KWS invests almost 20% of its net sales on research. Our portfolio includes 11 from the 13 most cultivated crops worldwide.



Follow us on social media and share your stories!



@KWSUKLtd



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@kwsukltd

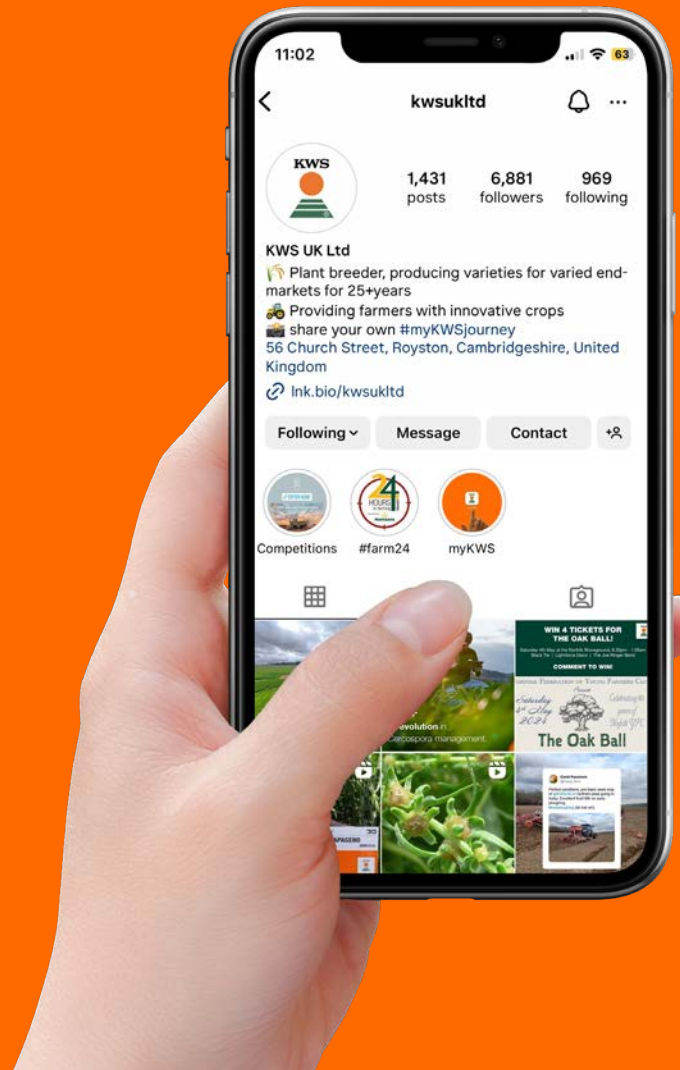


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Stay updated with the latest news, events, and competitions.
Be part of the KWS community.



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