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AUTUMN SEED

2024

A comprehensive guide to varieties
including data on yield and disease risks
with drilling and rotation considerations

Winter OSR

Winter Wheat

Winter Barley

Winter Oats

Winter Rye

Winter Beans

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3D Thinking Events

Want to see your variety options for harvest 2025 in the field?

Come along to your local 3D Thinking open day at one of our 17 regional demonstration sites.

1 3D Barra

24th July, 2024

Muirton of Barra, Oldmeldrum,
Aberdeenshire, AB51 0DZ

2 3D Coldstream

26th June, 2024

Coldstream Mains, Coldstream,
Berwickshire, TD12 4ES

3 3D Stokesley

2nd July, 2024

M H Petch Ltd, Winley Hall Farm,
Stokesley Road, Great Ayton,
North Yorkshire, TS9 6QA

4 3D Topcliffe

5th July, 2024

Oak Tree Farm, Topcliffe,
Thirsk, YO7 3SD

5 3D Haywold

21st June, 2024

JSR Farms Ltd, Freshlands,
Huggate, East Yorkshire,
YO25 9EW

6 3D Halsall

25th June, 2024

Millhouse Farm, 98 New Street,
Halsall, L39 8RS

7 3D Bleasby

28th June, 2024

J G Dring & Son Ltd, Bleasby
House, Legsby, Market Rasen,
LN8 3QN

8 3D Ruddington

18th June, 2024

Wells Agriculture, Barn Farm,
Flawforth Lane, Ruddington,
Nottingham, NG11 6NG

9 3D Holbeach

19th June, 2024

The trials site is located on a farm
track off the A17 Washway Road
between Fosdyke and Holbeach.
Please use What3Words reference
/// [toolbar.sprinkler.disco](https://www.what3words.com/toolbar.sprinkler.disco)
to navigate to site entrance.

10 3D Acton Burnell

20th June, 2024

Home Farm, Acton Burnell,
Shrewsbury, Shropshire, SY5 7PG

11 3D Honingham

6th June, 2024

Honingham Thorpe Farm,
Honingham Thorpe Business
Park, Norwich Road, Colton,
Honingham, NR9 5BU

12 3D Walsham

19th & 20th June, 2024

Riding Farm, Bury St Edmunds,
IP31 3BX

13 3D Shuttleworth

11th June, 2024

Kingshill Farm, Biggleswade,
Bedfordshire, SG18 9DS

14 3D Essex

4th June, 2024

Boyton Hall Farm House, A1060,
Roxwell, Chelmsford, CM1 4LN

15 3D Herefordshire

3rd July, 2024

Monkhall Farm, Callow, Hereford,
Herefordshire, HR2 8DA

16 3D Amesbury

18th June, 2024

Ratfyn Farm, Amesbury,
Salisbury, SP4 7EB

17 3D Kent

13th June, 2024

David Potter Farms, Collington
Farm, Badlesmere, Faversham,
Kent, ME13 0NY



3Dthinking IN ACTION
DISCOVERY, DEVELOPMENT AND DEMONSTRATION

In this issue:

frontier



Conquering clubroot

A new OSR variety with resistance to common clubroot strains brings yield and disease improvements



A place for everything...

... and everything in the right place. Our drilling recommendations table helps you to position varieties in your rotation.



The B team bring their A game

Bamford and LG Beowulf: Find out about the brand new biscuit and best in class feed wheat; the two hottest varieties for harvest 2025



Firm foundations

The role of seed treatments: learn how small investments in your crops' foundations can yield big dividends

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Don't miss our sister publication, the Kings Environmental Land Management and Specialist Crops Catalogue



Turn to Kings for conservation, game cover, green cover and forage crops
www.kingscrops.co.uk

Winter Oilseed Rape

2024/25 Varieties

AHDB approved and Frontier preferred varieties

Considerations for 2024

Geographical region

The location of the farm is an important factor as different disease pressures will influence certain criteria that the variety will need to display. For example, light leaf spot pressure is far more of a consideration in the north and Scotland. Varieties such as LG Adeline or Tom would therefore be more suitable. The severity of insect pressure, most notably cabbage stem flea beetle, also varies by region and will have an impact on variety choice and sowing date.

Soil type

Different varieties will suit different situations and heavy or light soils can influence factors such as establishment or vigour, so crops need to be chosen accordingly. Soil-borne challenges, like the clubroot pathogen, will also be a key factor in selecting the right variety. Crocodile CR, a variety resistant to common strains of clubroot, offers a high yielding option for sites affected by this disease. See page 8 for more information on managing clubroot within the rotation.

Rotation

Short OSR rotations can result in higher pressure from cabbage stem flea beetle as well as trash-borne diseases such as stem canker and soil-borne diseases such as verticillium wilt. Consideration should be given to rotation length and disease resistance scores when making variety choices. For example, LG Wagner offers excellent resistance to light leaf spot, whilst Murray has shown strong tolerance in verticillium trials.

Timing schedules

Early vigour and speed of development will influence decisions on drilling date and therefore help to manage the workload at the busiest time of year. Maturity windows can also be chosen to ensure that the optimum OSR harvest doesn't clash with other crops that might be on farm. Varieties that suit later drilling tend to be hybrids, with Murray performing particularly well at later drilling dates. Conventional varieties like Flamingo also have excellent vigour, and could therefore be an option for later drilling.

Agronomy input

With chemistry restrictions making weed control difficult, different input options might need to be considered; for example, the use of Clearfield technology where brassica weeds are problematic. The increase in use of post-emergence herbicides can work particularly well with Clearfield systems and variety options continue to improve. Matrix CL provides similar yields to many market leading varieties, with the added benefit of good broadleaf weed control from the imazamox herbicide.

End market

OSR has a more limited market than that of cereals; however, there are still options to consider, such as growing a specialist oil profile like high erucic acid rape (HEAR) to attract a premium. For more information on Frontier's exclusive HEAR contract and the premiums available, see page 9. End consumers are increasingly focused on promoting sustainable farming practices as part of the OSR rotation and a range of premium contracts are available each year through Frontier's Natural Capital Marketplace which reward growers for specific actions.

Genetic traits and characteristics

The selection of our preferred oilseed rape varieties is increasingly based on the presence of desirable seed genetic traits and characteristics. An established trait such as the RLM7 gene for stem canker resistance is now present in many varieties. More recently, we have seen the introduction of genetic resistance to turnip yellows virus (TuYV), and RLMS, a new major gene for stem canker resistance.

To make clear which varieties carry these different genetic benefits, we have introduced an easy to follow range of symbols on the variety profiles that follow.



TuYV resistant

Genetic resistance to the Turnip Yellows Virus



RLM7

Has the RLM7 major gene for stem canker resistance



RLMS

Has the new major gene RLMS for improved stem canker resistance



Pod shatter resistance

Exhibits a high level of pod shatter resistance, to avoid yield losses in bad weather



Clubroot resistance

Genetic resistance to one or more of the major strains of clubroot found in UK soils



Flexible driller

Suited to a very wide drilling window, allowing for flexibility in sowing date



Early harvest

An early maturing variety likely to offer a significantly earlier harvest date



Frontier recommends

This variety has been picked out as particularly notable, either for overall performance or a specific feature

Double low

Double low refers to the level of glucosinolates and erucic acid within the oilseed, forming an oil profile that provides opportunities for specific markets. The majority of UK rapeseed oil is known as 'double low' and is used in the largest quantity by Cargill for various outlets such as frying, margarines and cosmetics.

NEW

LG Adeline Limagrain

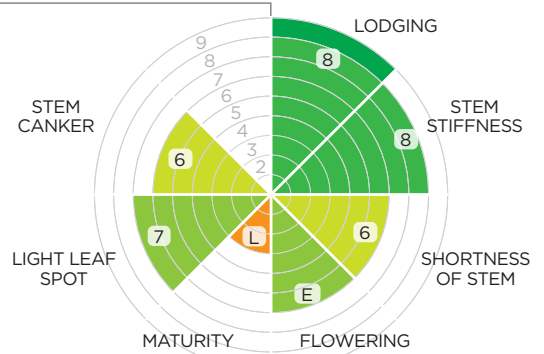


Gross output as a percentage of controls (AHDB RL 2024):
 UK: 106% East/West: 106% North: 108% Oil content: 44.9%

One of the highest yielding varieties on the 2024 Recommended List, LG Adeline has exceptional gross output in the East/West region and the outright highest gross output for the North region, 6% ahead of Aurelia and 7% ahead of Ambassador. Good resistance to both stem canker and light leaf spot as well as genetic resistance to TuYV and pod shatter make this variety suitable for all regions.

The 7th Generation of Limagrain's fully loaded hybrids continue to deliver for growers. LG Adeline is a natural step on from older varieties such as LG Antigua, Aurelia, and Ambassador.

Hybrid



Murray LSPB

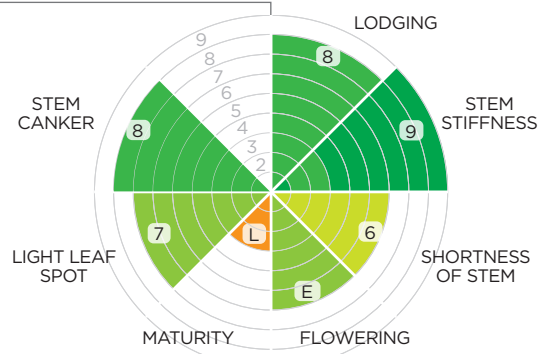


Gross output as a percentage of controls (AHDB RL 2024):
 UK: 105% East/West: 105% North: 102% Oil content: 44.5%

Murray offers a winning combination of outstanding East/West yield and excellent disease resistance, most notably through the new major gene for resistance to stem canker, known as RLMS. Backed up by a good light leaf spot score and very high tolerance to verticillium stem stripe, Murray has one of the most complete disease resistance packages available.

Growers looking for a fast-track to the latest stem canker resistance genetics should jump at the chance to build Murray into their rotation.

Hybrid



LG Wagner Limagrain

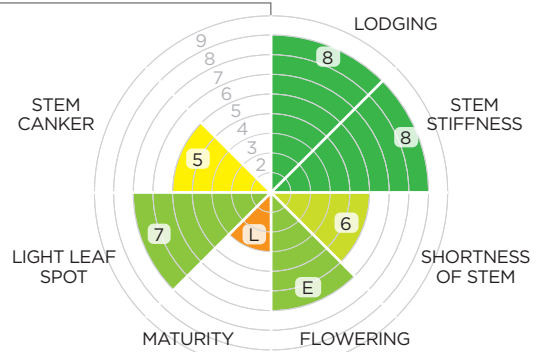


Gross output as a percentage of controls (AHDB RL 2024):
 UK: 103% East/West: 102% North: 108% Oil content: 45.0%

LG Wagner remains one of the highest yielding options for the North region, which covers northern England and Scotland, only beaten by LG Adeline. Limagrain have identified LG Wagner as having the strongest resistance to light leaf spot in their trials, particularly once this damaging disease reaches the stem.

One of the best options for northern and Scottish growers, a clear 6% ahead of Aurelia for yield and with outstanding light leaf spot resistance.

Hybrid

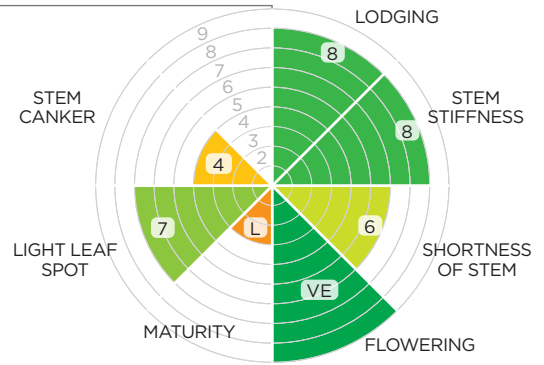


Hybrid

Turing LSPB

Gross output as a percentage of controls (AHDB RL 2024):
 UK: 106% East/West: 106% North: 105% Oil content: 44.4%

Turing has shown consistently excellent yield performance across the past three seasons and in all regions of the UK. Vigorous in both autumn and spring, and with excellent resistance to light leaf spot and good tolerance to verticillium stem stripe.



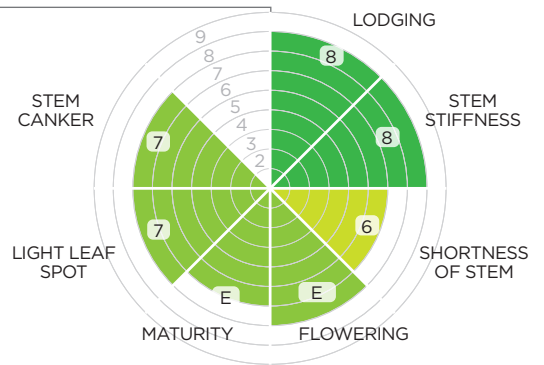
Hybrid

LG Antigua Limagrain



Gross output as a percentage of controls (AHDB RL 2024):
 UK: 101% East/West: 101% North: 101% Oil content: 45.2%

LG Antigua combines a comprehensive package of genetic traits including TuYV resistance, pod shatter resistance, and "N-Flex" - the ability to maximise yield in situations with suboptimal nitrogen availability. It is also one of the few hybrid varieties with early harvest maturity.



Hybrid

Matrix CL DSV

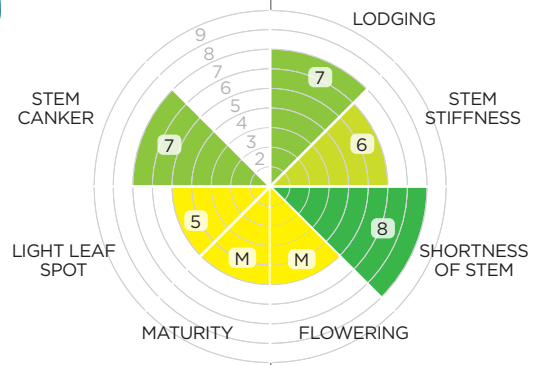


Gross output as a percentage of controls (AHDB RL 2024):
 UK: 96% East/West: 97% North: 94% Oil content: 45.6%

Matrix CL is the top yielding Clearfield variety and the first to team Clearfield herbicide tolerance with other important genetic traits, including TuYV resistance and pod shatter resistance. This package of genetics has reduced the yield gap traditionally associated with Clearfield varieties, putting Matrix CL within touching distance of the leading hybrids.



Matrix CL has taken Clearfield genetics to another level and should be the first choice variety for growers looking to manage cruciferous weeds or volunteers within their rotation.



Conventional

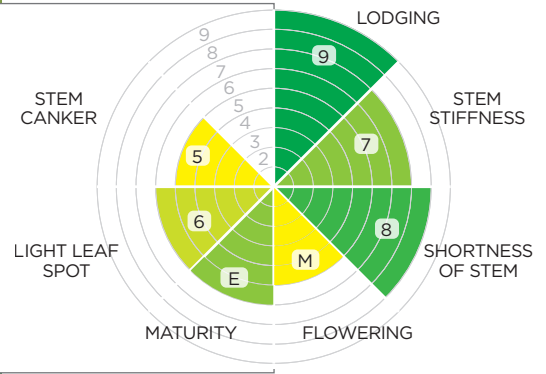
Tom Cluser

Gross output as a percentage of controls (AHDB RL 2024):
 UK: 102% East/West: 101% North: 102% Oil content: 45.2%

The joint highest yielding conventional variety on the 2024 Recommended List for UK gross output and the outright highest in the North, Tom offers improvements to yield and disease resistance over current market leader Acacia, and a significant step on from older varieties such as Campus.



The number one choice for conventional OSR growers, Tom offers improved yield and disease resistance over older varieties.

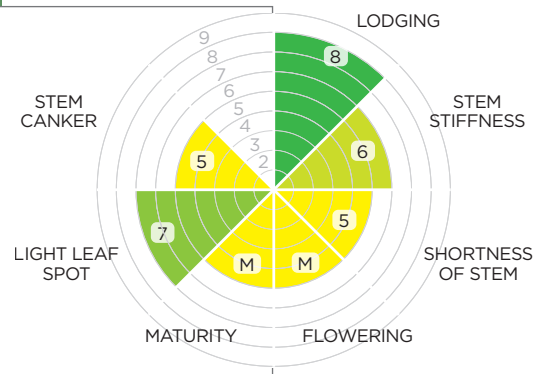


Conventional

Acacia Limagrain

Gross output as a percentage of controls (AHDB RL 2024):
 UK: 98% East/West: 98% North: 99% Oil content: 44.9%

The most widely grown conventional variety today, Acacia remains a sound option across all regions of the UK. This variety has a high oil content and superb standing strength due to its short and stiff straw. Good autumn and spring vigour should help with establishment challenges.

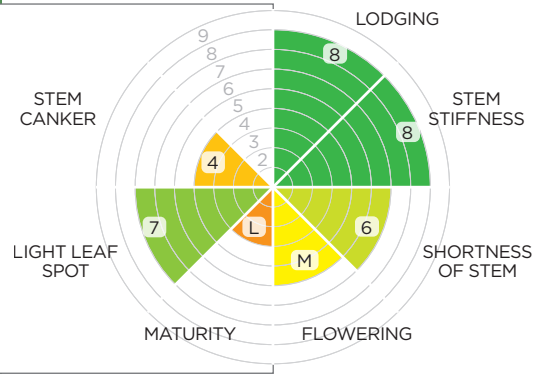


Conventional

Flamingo KWS

Oil content: 46.1%

Flamingo is a well-established farm favourite variety with a history of consistent yields and strong vigour. In addition to being a standout performer in Frontier trials, there has been evidence of Flamingo coping well with pest pressures due to vigorous autumn establishment and early spring re-growth.



Managing clubroot in your oilseed rape rotation

Clubroot is one of the most serious threats to oilseed rape performance and can, in severe cases, make it unviable to grow OSR in infected soils. With a recent run of warmer autumns and a move by many growers towards earlier drilling, both of which increase the risk of clubroot, it is not surprising that we are seeing more examples of infection across the UK.

5 steps to managing clubroot

1 Lengthen your OSR rotation

Keep as long a gap between OSR crops as possible. The longer the break, the lower the level of clubroot within the soils will be. A minimum of 5 years is advised.

2 Manage your soils

Clubroot thrives in low pH soils, so regular soil testing and applications of lime to bring soils up to pH7 can help to reduce infection. SOYL, our precision farming division, can provide soil testing, nutrient maps and variable rate lime application maps to help manage soil pH. High soil moisture can also increase clubroot pressure, so avoid drilling areas prone to waterlogging.

3 Don't drill too early

Clubroot activity is higher in warmer soils, so early drilling maximises exposure to the pathogen. Delay drilling into the second half of August or September, to lower the risk of infection.

4 Be aware of other hosts

OSR is not the only host of the clubroot pathogen, so be aware of other potential carriers of infection. Weeds, other brassicas, and some cover crop components such as mustard should be avoided in areas of clubroot pressure.

5 Grow a variety with clubroot resistance

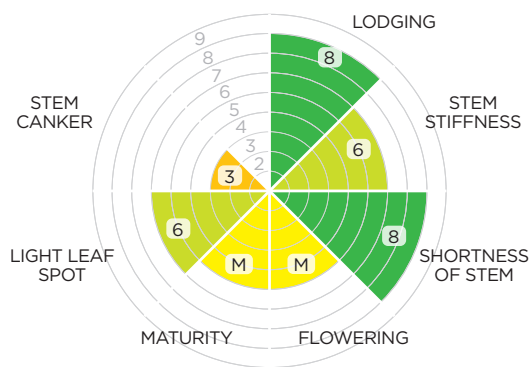
Several AHDB recommended varieties have genetic resistance to common strains of clubroot. Varieties such as Crocodile can be sown in land with low levels of clubroot pressure. However, genetic resistance is not a miracle cure, and should be used in combination with the other management practices outlined here.

Crocodile DSV



Gross output as a percentage of controls (AHDB RL 2024):
UK: 98% East/West: 99% North: 95% Oil content: 44.8%

For the fifth year in a row, Crocodile remains the highest yielding Recommended List "CR" variety - known to carry genes for resistance to common strains of clubroot. With presence of this soilborne disease increasing in recent seasons, growers looking to manage clubroot within their rotation should look no further than this consistent performer.



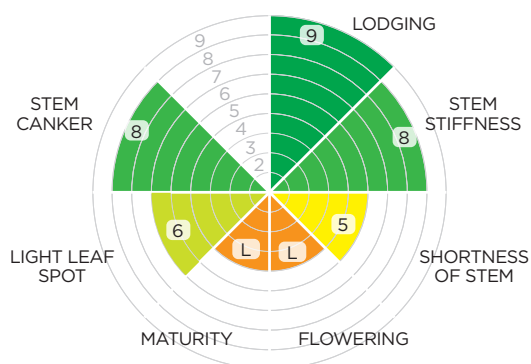
Hybrid

Crusoe LSPB



Gross output as a percentage of controls (AHDB RL 2024):
UK: 105% East/West: 107% North: 103% Oil content: 44.7%

AHDB Candidate for 2025 A landmark change for clubroot resistance, Crusoe bring gross output up in line with leading double-low hybrid varieties. With good resistance to light leaf spot and stem canker, Crusoe also has genetic resistance to TuYV, making it a solid choice for all regions.



Hybrid



With limited availability for autumn 2024, Crusoe is sure to be snapped up by growers looking for the next generation of varieties to use in the battle against clubroot.

High erucic acid rape

Variety choice for the Frontier HEAR contract

High erucic acid rape (HEAR) can offer growers significant premiums over double-low varieties. For harvest 2025, the Frontier HEAR contract offers a premium of £225 per tonne over double-low oilseed.

Varieties of HEAR oilseed rape are grown in exactly the same way as other varieties of double-low rapeseed; there are no special management considerations or additional inputs required.

Growers planning for harvest 2025 can find information on the two key HEAR varieties below:

Ramses ID Grain



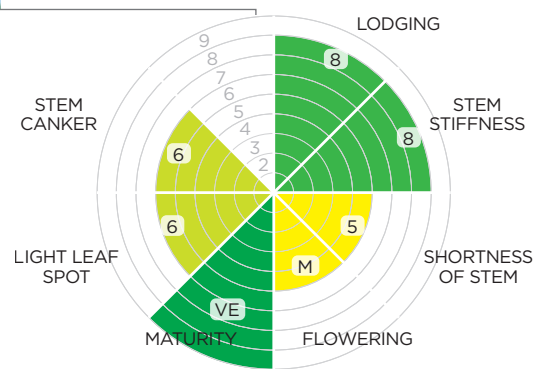
Gross output four year average 2019-2022 (Frontier trials):
UK: 105%

The top yielding HEAR variety in Frontier trials, Ramses offers a significant improvement over older HEAR varieties. Ramses is a large biomass plant type with excellent autumn and spring vigour which has helped to minimise losses to pest damage in recent seasons. An early harvest maturity will help to spread workload.



The most popular variety for growers on the Frontier HEAR contract in recent seasons, Ramses continues to perform year-after-year.

Hybrid



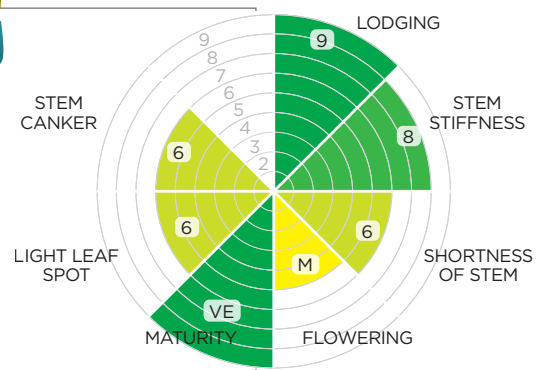
Rhodes ID Grain



Gross output four year average 2019-2022 (Frontier trials):
UK: 102%

Rhodes is narrowly behind Ramses for yield and provides a useful improvement in light leaf spot resistance and stem stiffness, making it an attractive option for growers in northern England and Scotland. Like Ramses, it also has genetic resistance to pod shatter, giving peace of mind during high winds or heavy precipitation in the run up to harvest.

Hybrid



Find out more about our HEAR varieties, as well as information on the Frontier HEAR contract, by visiting www.frontierag.co.uk/HEAR

Seedbed preparation, drilling, and establishment

Greater pressure on oilseed rape establishment means it is essential to pay close attention to seed rates, cultivation and creating a good seedbed.

Seedbed preparation

Irrespective of the cultivation system, there are a few key factors to consider during seedbed preparation. Soil that is free from compaction allows unrestricted tap root development and good seed-to-soil contact will improve germination consistency and promote early vigour. Consistent drilling depth ensures seed is planted into moisture and has sufficient soil cover to keep it safe from pre-emergence herbicides.

Previous crop residue management is also important, with exact requirements dependent on the material left after the previous crop. Turning damp residues on the soil surface can dry out slug eggs and reduce later pressure. Removing weeds and volunteers growing after harvest also removes their food source.

Moisture conservation should be the primary consideration for all establishment decision making. Adequate consolidation after drilling is also of great importance, improving tilth and seed-to-soil contact, whilst physically impeding slug mobility. Cambridge rolls follow surface contours well and can be particularly useful after direct or strip-till drills, whereas flat rolls can ride on high spots and mounds of trash, leading to uneven consolidation.

Drilling

Earlier drillings established in good conditions with adequate moisture suit slower developing varieties, avoiding the over-large canopies that are more prone to winter damage. Later in the drilling period, hybrids that grow away quickly are key to ensuring a robust crop that can withstand pest pressures.



Set sowing rates according to seed number/m² rather than by weight. Target 30-40 plants/m² after winter, working seed rates back to take into account likely in-field losses. For hybrid varieties this equates to drilling 50 seeds/m², which is the suggested drilling rate from most breeders. Conventional varieties will vary more due to conditions and date, although 80-110 seeds/m² is a sensible aim. Lower seed rates are possible in good conditions, but could leave you slightly more exposed if pigeon or cabbage stem flea beetle pressure is high.

Pest control

Growers must make every effort to establish crops that grow quickly through the vulnerable early stages. Drilling in dry conditions will slow emergence and increase the risk of flea beetle damage. To reduce the chances of an early crop write-off, alleviate potential stress factors as far as possible. Foliar insecticides are available to help manage early insect pressure, including cabbage stem flea beetle, rape winter stem weevil and turnip sawfly larvae. Use full rates of the more active pyrethroids, such as lambda-cyhalothrin, and ensure good coverage. Monitor the effectiveness of any insecticide application and avoid repeat spraying if resistance gives poor control of the target pest. Results are unlikely to improve and it may have a negative effect on beneficial insect populations.



OSR seed rates will vary based on various criteria. As a starting point, it is suggested hybrid varieties are drilled at 50 seeds/m² and conventional varieties at 100 seeds/m².

To adjust these, the following considerations need to be made: drilling date, soil type, seedbed quality, moisture, pest pressure, and drill accuracy. These will all influence the establishment percentage and can be used to adjust rates both above and below the average given previously.

Companion Crops

Companion cropping within oilseed rape has become a popular method of mitigating the damage caused by cabbage stem flea beetle (CSFB). Using the right species of companion crop, either before or at planting, offers protection against CSFB while encouraging crop establishment. We use four species in our companion crop mixes:

Berseem Clover	Fenugreek	Buckwheat	Tataricum Buckwheat
<p>Why? Provides valuable crop nutrition benefits</p> <p>How?</p> <ul style="list-style-type: none"> As a legume species, it will start fixing nitrogen within nine weeks of planting It decomposes quickly in the spring, releasing nutrients to the crop. 	<p>Why? Disguises the OSR crop from CSFB</p> <p>How?</p> <ul style="list-style-type: none"> It produces a distinctive scent that masks the plant volatiles that CSFB use to identify oilseed rape. 	<p>Why? Attracts beneficial insects and offers crop nutrition benefits</p> <p>How?</p> <ul style="list-style-type: none"> Provides pollen and nectar that attracts insects such as parasitic wasps that feed on CSFB larvae It is killed off by frost and, as it decomposes, mobilises phosphate in the soil. 	<p>Why? Provides a canopy to shelter emerging oilseed rape plants</p> <p>How?</p> <ul style="list-style-type: none"> Flowering later than standard buckwheat, it produces more biomass to create a denser canopy.

Our range of oilseed rape companion crops has been developed to provide the best combined benefits of all four species.

Mixture Name	Berseem Clover	Fenugreek	Buckwheat	Tataricum Buckwheat	Pack Size
K12 Companion Crop Mix 1 (SFI-IPM3)	✓	✓	✓		3ha
K16 Companion Crop Mix 2 (SFI-IPM3)	✓	✓			3ha
K18 Companion Crop Mix 3 (SFI-IPM3)	✓		✓		3ha
K86 Companion Crop Mix 4 (SFI-IPM3)	✓	✓		✓	3ha
K91 Companion Crop Mix 5 (SFI-IPM3)	✓		✓	✓	3ha
K113 Companion Crop Mix 6 (SFI-IPM3)		✓	✓	✓	2ha
K127 Companion Crop Mix 7 (SFI-IPM3)		✓	✓		1ha

We do not advocate mixing companion crop seed with oilseed rape seed, as differing seed sizes can lead to separation and seed rate inaccuracies. Straight species are also available.

With the inclusion of companion cropping as an option within the Sustainable Farming Incentive (SFI), the scope for expanding companion cropping into other crops has increased significantly. Living mulch crops, which are medium-term cover crops that grow alongside a cash crop, are one option to meet the SFI criteria while providing valuable benefits to the soil and crop.

K107 Living Mulch Blend (SFI-IPM3)

A ready-to-go living mulch mix suitable for sowing ahead of or alongside a range of combinable crops

Contains: yellow trefoil, white clover, subterranean clover and small-leaved white clover.


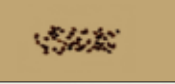
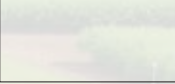

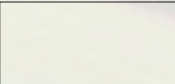
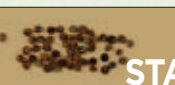
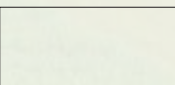

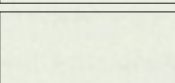
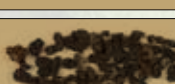
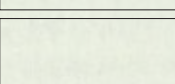
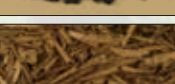
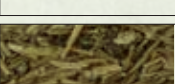
5kg/ha 25kg bags



Living Mulch Overhead

The Frontier Standard



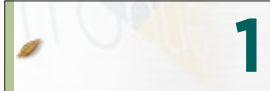




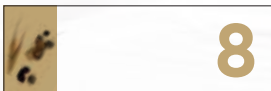



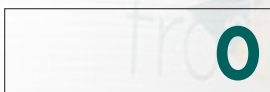

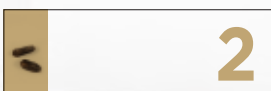
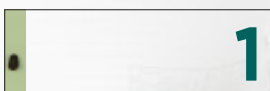
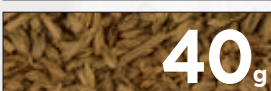

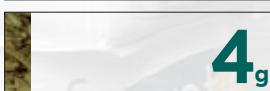
We work to far exceed the minimum standards for seed marketing, providing industry leading quality

Number of impurities tolerated per 500g bag	Minimum standard	Marketing standard Frontier aims to achieve
	Seeds of other plants ▶	 0.3%
Wild oats ▶	0	0
Docks ▶	 25	 0
Wild radish ▶	 50	 0
Cleavers ▶	 NO STANDARD	 0
Charlock ▶	 NO STANDARD	 0
Fragments of sclerotia ▶	 50	 0
Inert material ▶	 10_g	 5_g
Purity ▶	98%	99%
Germination ▶	85%	90%

All Frontier processed seed currently undergoes erucic acid testing before sale.
 We test both on farm and during production prior to chemical treatment.
 At the time of publication, all samples tested have been well below the required standard.

The Frontier Standard

We work to far exceed the minimum standards for seed marketing, providing industry leading quality

Number of impurities tolerated per 2kg bag	Minimum standard	C2 Higher Voluntary Standard	Marketing standard Frontier aims to achieve
Seeds of other cereals ▶	 28	 6	 1
Seeds of other species ▶	 28	 4	 1
Maximum species total ▶	 40	 8	 1
Wild oats ▶	 2	 0	 0
Ergot pieces ▶	 12	 2	 1
Inert material ▶	 40 _g	 20 _g	 4 _g
Purity ▶	98%	99%	99.8%
Germination ▶	85%	85%	95% Target
Loose smut ▶	0.2%	0.2%	0.00% (Control via seed treatment)

Whilst no specific quality standard exists for black-grass, we understand that growers will be anxious to know their seed is free of black-grass contamination.

We are confident that Frontier seed meets the highest standards. Having processed over 100,000t of cereal seed in the past two years, we have identified no black-grass seeds in any official samples.

Winter Wheat 2024/25 Varieties

AHDB approved and Frontier preferred varieties

For further variety data see pages 21-23.

Wheat markets and variety choices are extremely important and we encourage growers to review their individual situation. Grain markets for harvest 2025 are likely to remain volatile, with knock on effects for domestic demand as well as export opportunities. Having a clear target market, linked to expected local demand, should be central to variety decision making. To aid marketability, growers may need to consider a range of bread, biscuit and soft export grades, selecting varieties that combine high yields with human consumption characteristics.

Drilling Recommendations

Early September	LG Beowulf, Bamford, KWS Colosseum, ★ KWS Parkin , ★ Grafton
Mid-September	★ LG Beowulf , ★ Bamford , KWS Dawsum, KWS Colosseum, Gleam, Blackstone, ★ KWS Parkin , ★ LG Typhoon , ★ KWS Palladium , Mayflower, Crusoe, RGT Illustrious
Early part of main drilling window	LG Beowulf, Bamford, SY Insitor, KWS Dawsum, KWS Colosseum, Gleam, Blackstone, LG Skyscraper, Graham, KWS Cranium, KWS Parkin, KWS Extase, LG Typhoon, KWS Palladium, KWS Zyatt, SY Cheer, Mayflower, Skyfall, Crusoe, RGT Illustrious
Late part of main drilling window	LG Beowulf, Bamford, Champion, SY Insitor, KWS Dawsum, KWS Colosseum, Gleam, Blackstone, LG Skyscraper, Graham, KWS Cranium, KWS Extase, LG Typhoon, KWS Palladium, KWS Zyatt, SY Cheer, Mayflower, Skyfall, Crusoe, RGT Illustrious
Late drilling	LG Beowulf, ★ Champion , Blackstone, ★ KWS Cranium , SY Insitor, LG Skyscraper, ★ KWS Extase , ★ Skyfall
Light land	★ SY Insitor , ★ Champion , ★ KWS Dawsum , LG Skyscraper, KWS Extase, Graham
Heavy land	★ LG Beowulf , ★ Bamford , ★ Champion , KWS Dawsum, KWS Parkin, KWS Zyatt, Crusoe, RGT Illustrious
Second and continuous wheat	★ Champion , ★ Bamford , LG Beowulf, SY Insitor, KWS Dawsum, LG Skyscraper, LG Typhoon, KWS Zyatt, Mayflower, Skyfall
High disease resistance (yellow rust and Septoria tritici, 1-9)	KWS Extase (YR 7, ST 7.4), Bamford (YR 7, ST 6.7), KWS Dawsum (YR 9, ST 6.3), LG Beowulf (YR 9, ST 6.7), Mayflower (YR 9, ST 8.9), KWS Palladium (YR 9, ST 7.3), Champion (YR 8, ST 7.9), LG Typhoon (YR 9, ST 7.2)

★ *These varieties are particularly well suited to this drilling situation*

Considerations for 2024

The factors affecting drilling dates are varied and certain aspects become more important depending on the geographic region. These factors include:

Soil conditions

- Aim for good seed-to-soil contact to ensure rapid seed germination and good conditions for residual herbicides to work effectively.

Grass-weed control

- Very much linked to black-grass emergence. In some seasons, for example of low dormancy and moist soils, delaying drilling will allow early glyphosate treatments, but in dry autumns with high dormancy this approach does not work.

Acreage to drill

- Spreading the workload is important, but there will be compromises for crop emergence, weed and pest control if drilling in non-ideal conditions.

Acreage to spray/harvest

- A spread of drilling dates combined with varieties of differing development speeds and maturities will spread the spring/summer workload as they reach key growth stages a few days apart.

Geographical region

- The colder the field aspect and the further north, the earlier crops can safely be drilled with lower risk of running into early pest problems. Early September drilling is much more feasible in the north, while late drillings can be slow to emerge and, in cold winters, crops will stop growing sooner, with a potential knock-on effect and late harvest.
- In East Anglia and parts of Lincolnshire, the opportunity to drill throughout winter is possible and harvest date will not be significantly later.
- In Scotland, the harvest date of the previous crop will have an influence, with the opportunity for stale seedbeds very narrow compared to southern England.

Disease and pest risk

- One of the most significant threats to winter wheat crops is the transmission of barley yellow dwarf virus, either through root-to-root contact in the soil, or via infected aphids. Earlier drilled crops are at much higher risk and may require several insecticide sprays or the use of a variety with genetic resistance.
- Risk of disease in highly susceptible varieties will only increase if drilled early. Mid-September plantings have considerably higher levels of Septoria and yellow rust than those drilled in October.
- Frontier trials illustrate how the more resistant varieties withstand Septoria and rust pressure while achieving relatively high yields; for example, KWS Extase, Bamford, KWS Dawsum, LG Beowulf, and Champion.
- Under higher Septoria pressure, the more susceptible varieties will be more costly to grow and the risk of losing yield increases where sprays are delayed.
- Second wheat should not be drilled early. In high, take-all risk situations, even Latitude-treated seed should be left until the start of October at the earliest.
- For late drilled crops, wheat bulb fly may be an issue so use of the seed treatment Signal is advised.

Very early drilling

- Ideally, varieties drilled in early September should be slow developing, disease resistant and have good resistance to lodging. KWS Parkin, Grafton, and LG Beowulf are key varieties at this time.

20th September to early October (main drilling window)

- Most varieties can be drilled during this period. If drilling a range of varieties, prioritise drilling of those with slower autumn development, stiffer straw, or high disease resistance.

Late drilling

- Attributes should include fast early development and good tillering capacity to ensure good ground cover going into winter, for example LG Beowulf, Blackstone, KWS Extase, and Skyfall. Champion and KWS Cranium are outstanding performers when late drilled.
- In recent seasons, some varieties have proven themselves as capable performers from ultra-late drilling dates. Blackstone (end of February) and Skyfall (early March) are two of the best examples.
- As we move towards the end of the normal autumn sowing window, growers should consider switching to “alternative wheats”, those capable of being drilled in the late autumn or spring. Spring wheat variety KWS Ladum would be a good option.

Second wheat

- Most varieties perform much as they would in the first wheat slot. Ideally, varieties should have good resistance to eye spot, but this is not always reflected in final yield.
- Varieties that appear to be less suited include Crusoe, Costello, and Graham.
- Varieties that perform better as second wheats compared to their performance as a first wheat include; Skyfall, Mayflower, Bamford, Champion, KWS Cranium, and LG Typhoon.
- Quality wheats such as Zyatt, Crusoe, RGT Illustrious and Skyfall are often drilled in this slot, as the reduced yield potential can help maintain grain protein content.

Genetic traits and characteristics

To make clear which varieties carry these different genetic benefits, we have introduced an easy to follow range of symbols on the variety profiles that follow.



Pch1

This variety has the major Pch1 gene which provides superior resistance to eye spot, ideal for second cereal situations



OWBM resistant

This variety has genetic resistance to damage and yield loss from Orange Wheat Blossom Midge



Second cereal

Particularly well suited to being sown as a second or continuous cereal



Flexible driller

Suited to a very wide drilling window, allowing for flexibility in sowing date



Early driller

Suited to being drilled earlier than the main drilling window



Late driller

Suited to being drilled later than the main drilling window



Frontier recommends

This variety has been picked out as particularly notable, either for overall performance or a specific feature

KWS Zyatt

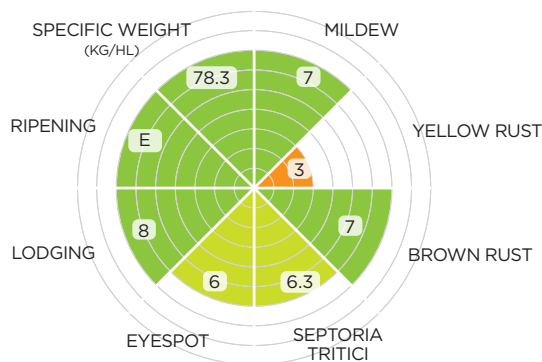
Group 1

KWS Quartz x Hereford

Yield as a percentage of controls (AHDB RL 2024):

UK: 99% East: 98% West: 99% North: 97%

The highest yielding Group 1 variety with a wide range of baking uses and a good specific weight. The Pch1 gene for eye spot resistance makes KWS Zyatt an attractive second wheat option. Stiff strawed and early maturing, KWS Zyatt should perform well throughout the United Kingdom.



SY Cheer

Group 1 Provisional

Syngenta KWS Trinity x Expert

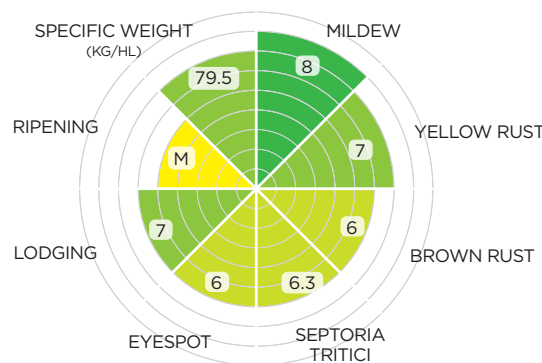
Yield as a percentage of controls (AHDB RL 2024):

UK: 97% East: 97% West: 98% North: 98%

SY Cheer is the first new provisional Group 1 bread making variety to be added to the Recommended List since 2017. A welcome addition to an ageing group, SY Cheer brings improvements in disease resistance and grain quality. These improvements are most clear when looking at untreated yields, where SY Cheer has a 13% advantage over KWS Zyatt and an 18% advantage over Skyfall.



Sure to pick up interest from growers of bread making wheats, SY Cheer offers some useful improvements over the older Group 1 varieties.



Skyfall

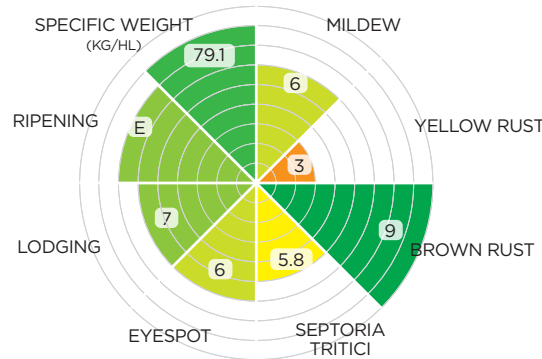
Group 1

RAGT C1418 x Hurricane

Yield as a percentage of controls (AHDB RL 2024):

UK: 96% East: 96% West: 96% North: 95%

Well established bread making wheat with reliable yields. The only Group 1 variety with orange wheat blossom midge resistance. A rapid developer when drilled early. Skyfall carries the Pch1 gene for eye spot resistance. Some evidence of a sprouting risk means Skyfall should be harvested early. A proven performer from very late drilling dates, Skyfall offers one of the widest sowing windows and can be drilled as late as the end of February.



Crusoe

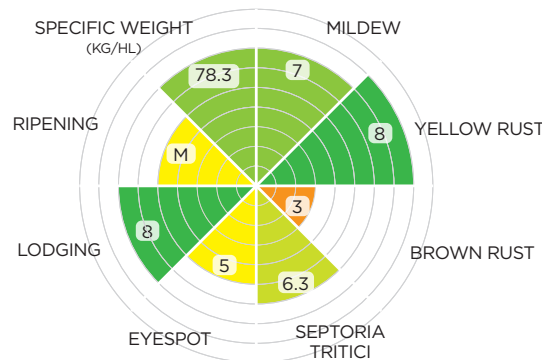
Group 1

Limagrain Cordiale x Gulliver

Yield as a percentage of controls (AHDB RL 2024):

UK: 95% East: 95% West: 96% North: 94%

The most widely grown bread making variety for Harvest 2023, Crusoe is widely considered to be the most reliable milling wheat for hitting protein requirements. Crusoe can be drilled earlier than Zyatt and Skyfall and has generally good disease resistance, apart from brown rust where it is particularly poor.



RGT Illustrious

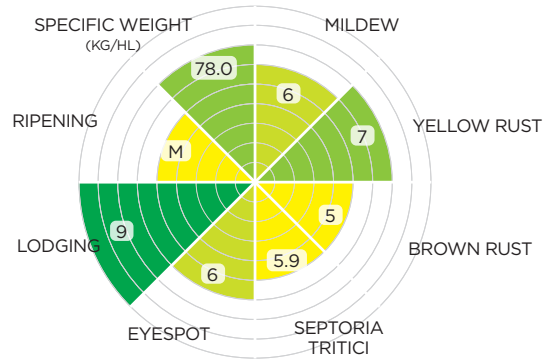
Group 1

RAGT *Qplus x Battalion*

Yield as a percentage of controls (AHDB RL 2024):

UK: 95% East: 95% West: 96% North: 94%

Excellent milling and baking performance make RGT Illustrious a favourite for end users. With taller straw and a slightly later maturity setting it apart from the other Group 1 quality wheats, RGT Illustrious also has a solid disease resistance package with no real weaknesses. Illustrious is suited to early drilling and performs well in the West.



KWS Extase

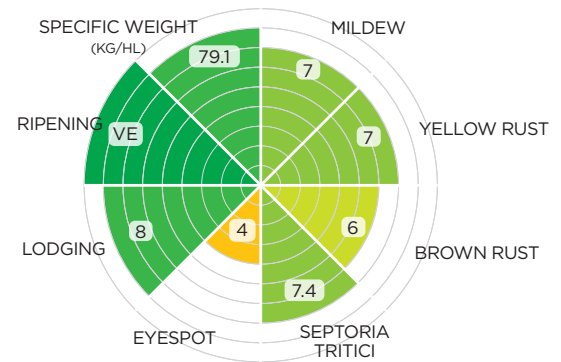
Group 2

KWS *Boisseau x Solheio*

Yield as a percentage of controls (AHDB RL 2024):

UK: 101% East: 101% West: 102% North: 99%

KWS Extase is now firmly established as a farm-favourite variety. Excellent grain quality is supported by good resistance to the three key wheat diseases of Septoria tritici and yellow and brown rust. With tall straw and a very vigorous growth habit, Extase is well-suited to later drilling. A susceptibility to eye spot should be considered when planning to use Extase as a second cereal.



KWS Palladium

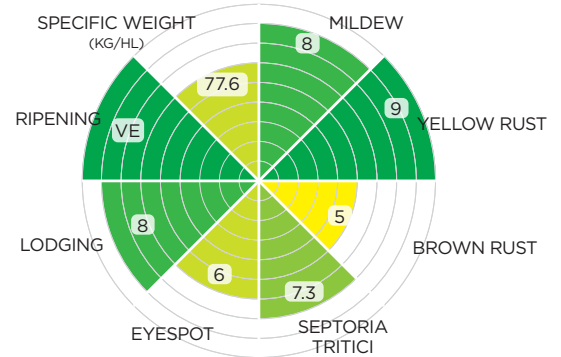
Group 2

KWS *KWS Zyatt x KWS Trinity*

Yield as a percentage of controls (AHDB RL 2024):

UK: 100% East: 99% West: 101% North: 99%

KWS Palladium has excellent scores for mildew, yellow rust, and Septoria tritici resistance and is seen by many as a cleaner alternative to KWS Extase. Shorter and stiffer straw make Palladium a better option for early drilling. Provided growers can achieve the protein required, there are milling contracts and premiums available for KWS Palladium.



Mayflower

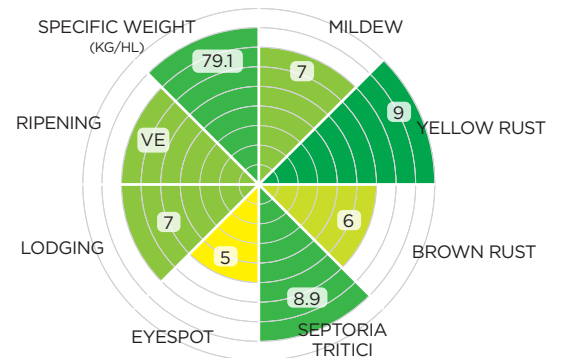
Group 2

Elsoms *Armada x Ascott*

Yield as a percentage of controls (AHDB RL 2024):

UK: 97% East: 97% West: 97% North: 96%

Mayflower could lay claim to the title of “cleanest milling wheat” due to its excellent disease resistance ratings, including an outstanding 8.9 for Septoria tritici. Mayflower’s grain quality is another stand out feature, though yields lag behind other Group 2 varieties. A tall strawed variety which requires a robust PGR programme.





Bamford

Group 3

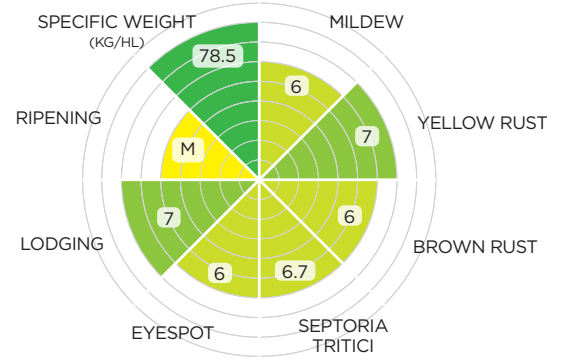
Elsoms *Moulton x EW129*

Yield as a percentage of controls (AHDB RL 2024):
UK: 106% East: 105% West: 107% North: 105%

Bamford has not only outclassed the existing biscuit varieties, 6% higher yielding than the next best Group 3, but has matched the yield of the highest output feed wheats. Good all-round disease resistance and agronomics made this the highest yielding variety in Frontier untreated trials for harvest 2023. Suited to a wide drilling window, including early sowing.



The mixture of outright yield and potential for an end-market premium make Bamford an attractive option throughout the UK.



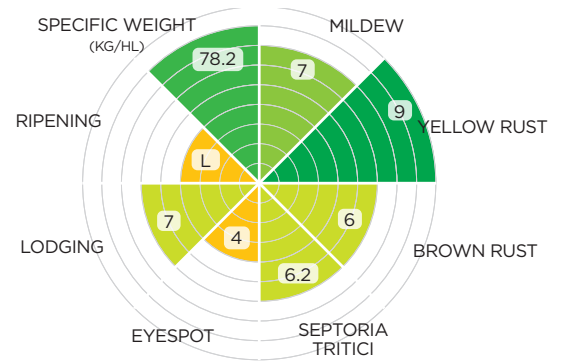
Blackstone

Group 4 Soft

Elsoms *Panacea x Tempo*

Yield as a percentage of controls (AHDB RL 2024):
UK: 103% East: 103% West: 101% North: 103%

A soft feed wheat with high yield in the north and east, Blackstone looks a sensible step on from older soft feeds such as LG Skyscraper. Good all-round disease resistance and the best grain quality of any soft wheat sets Blackstone further apart from the crowd. The stand out feature is Blackstone's ultra wide sowing window, allowing for drilling into March should conditions require.



KWS Colosseum

Group 4 Soft

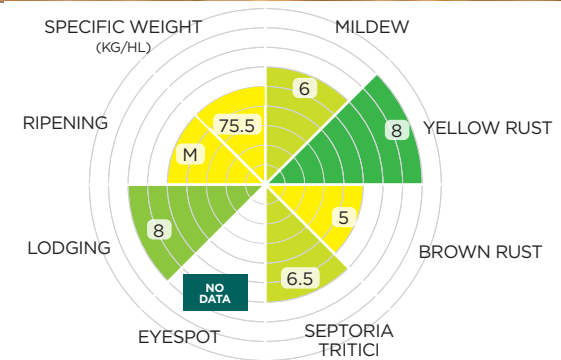
KWS *Cougar x Beluga*

Yield as a percentage of controls (AHDB RL 2024): UK: 104%

Double YEN Gold Medal Winner. Suitable for earlier drilling with stiff straw and a good Septoria Tritici resistance, KWS Colosseum has shown yields comparable with leading varieties such as LG Skyscraper and Gleam. Colosseum's growth habit is slow to move but vigorous once it does, ending with a similar maturity to KWS Dawson.



KWS Colosseum outperformed all other Recommended List varieties across our 5-site average in 2020 and provided the foundation for two YEN gold medal winning crops in 2020 and 2021, with yields of over 15T/Ha



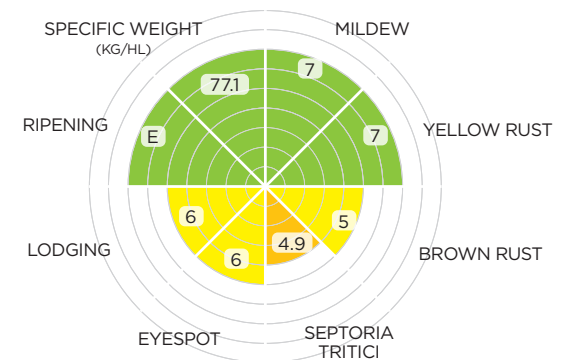
LG Skyscraper

Group 4 Soft

Limagrain (*Cassius x NAWW 29*) x KWS *Santiago*

Yield as a percentage of controls (AHDB RL 2024):
UK: 102% East: 103% West: 101% North: 101%

LG Skyscraper remains one of the most widely grown soft feed wheat options, particularly in the north of England and Scotland. A consistent performer across the different regions, soil types, and rotational positions, LG Skyscraper is a quick developing variety with tall straw that responds well to PGRs.





LG Beowulf

Group 4 Hard

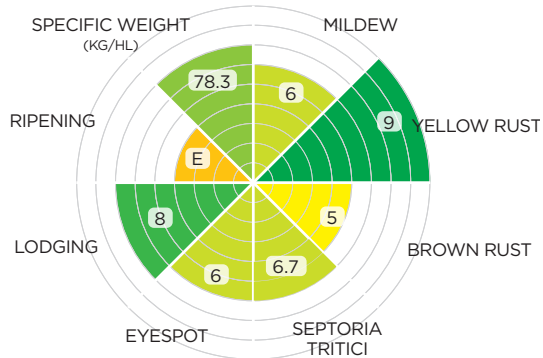
Limagrain *Gleam x Costello*

Yield as a percentage of controls (AHDB RL 2024):
 UK: 106% East: 106% West: 106% North: 107%

LG Beowulf is the highest yielding variety on the 2024 Recommended List, achieving 106% UK yield in both AHDB and Frontier trials. LG Beowulf contains the best features of two very well regarded parent varieties with the grain quality, yellow rust resistance, and straw strength of Costello, teamed with the yield potential and consistency of Gleam. Suited to all regions, scenarios, and soil types, and with a wide sowing window.



LG Beowulf will be the most sought after variety for sowing this autumn, and with good reason. It has all the features of a farm-favourite variety for several years to come.



Champion

Group 4 Hard

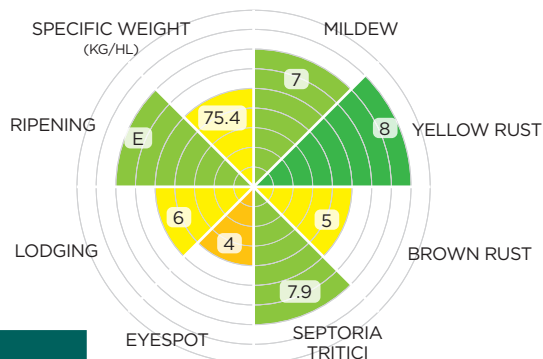
DSV *DSV20122 x Reflection*

Yield as a percentage of controls (AHDB RL 2024):
 UK: 106% East: 106% West: 106% North: 103%

Aptly named, Champion stormed to the top of the 2022 Recommended List with yield performance head and shoulders above the rest of the field. This yield comes without any compromise in disease resistance or harvest date - Champion has excellent resistance to both yellow rust and Septoria tritici, and a maturity similar to Gleam. A vigorous variety, Champion excels when late drilled but should not be drilled early.



Three years on, Champion is still one of the highest yielding varieties available and with an outstanding disease resistance package that shows no signs of ageing.



KWS Dawsum

Group 4 Hard

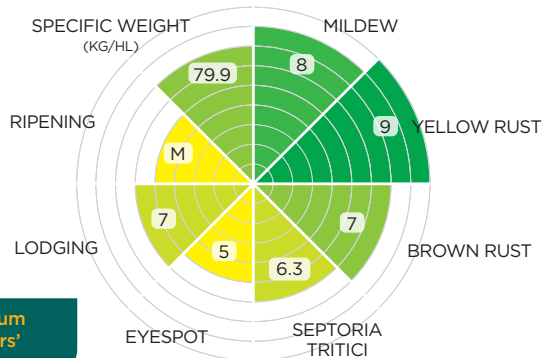
KWS *KWS Kerrin x Costello*

Yield as a percentage of controls (AHDB RL 2024):
 UK: 103% East: 103% West: 104% North: 105%

KWS Dawsum has become the benchmark feed wheat for many growers. It delivers across the board with high yields, fantastic grain quality, and consistent performance. A perfect partner for varieties suited to later drilling such as Champion or SY Insitor. Though suited to earlier drilling, this will require closer management with fungicide and PGR.



The top selling variety of 2022, and with good reason. Dawsum looks set to cement its place as the mainstay of many growers' wheat rotations.



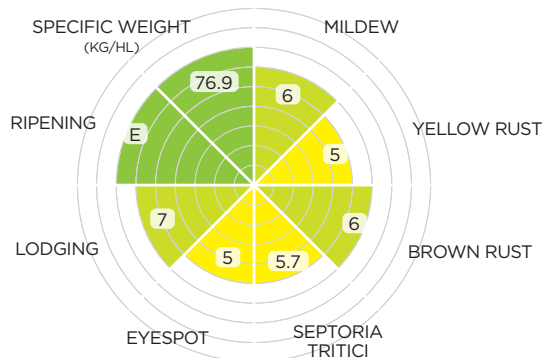
Gleam

Group 4 Hard

Syngenta *Hereford x KWS Kielder*

Yield as a percentage of controls (AHDB RL 2024):
 UK: 103% East: 103% West: 103% North: 103%

Gleam's status as long-term farm-favourite was confirmed with yet another strong performance in Harvest 2023. Though Gleam is now slipping behind the frontrunners for yield, the consistency we've seen across varying seasons still make it a reliable option for all regions and all situations. Disease management does now require closer attention, for yellow rust in particular.



Graham

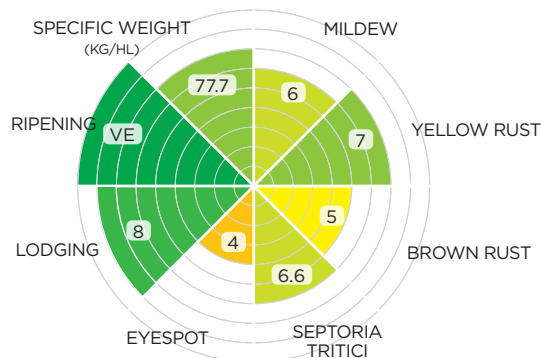
Group 4 Hard

Syngenta *Premio x Expert*

Yield as a percentage of controls (AHDB RL 2024):

UK: 102% East: 101% West: 104% North: 102%

As Graham enters its ninth year on the Recommended List, it remains a popular and reliable option. Early harvest maturity, stiff straw, and a robust resistance to Septoria tritici continue to provide good yield performance in the West and North.



KWS Cranium

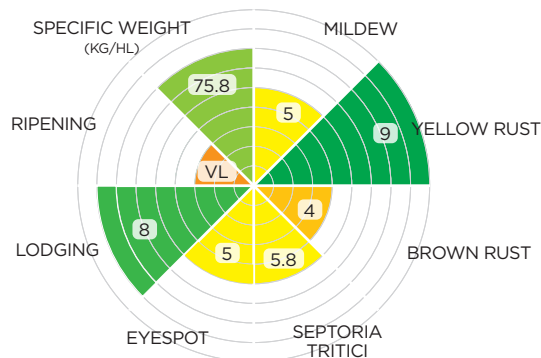
Group 4 Hard

KWS *KWS Crispin x KWS Kielder*

Yield as a percentage of controls (AHDB RL 2024):

UK: 102% East: 102% West: 100% North: 102%

KWS Cranium is well known as a specialist variety for late drilling, with an extremely vigorous growth habit offering good competition to grass weeds. Team that with some of the stiffest straw available, excellent yellow rust resistance, and resistance to OWBM and you have a solid variety that can cope with a range of on farm situations.



LG Typhoon

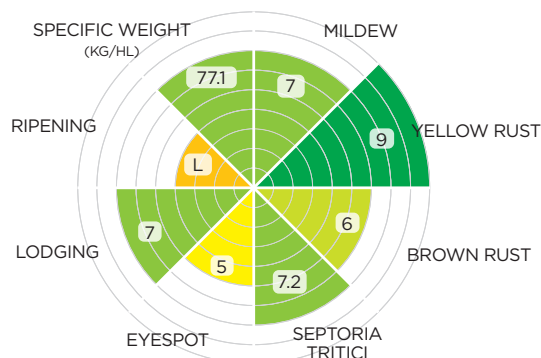
Group 4 Hard

Limagrain *Garrus x LGW88*

Yield as a percentage of controls (AHDB RL 2024):

UK: 100% East: 100% West: 100% North: 101%

With very high untreated yield and good resistance to all the major wheat diseases, LG Typhoon is regarded as a resilient variety which will cope well in high disease pressure seasons or scenarios. With a growth habit suitable for early sowing and later harvest maturity, LG Typhoon offers a good spread of drilling and harvest workload.



KWS Parkin

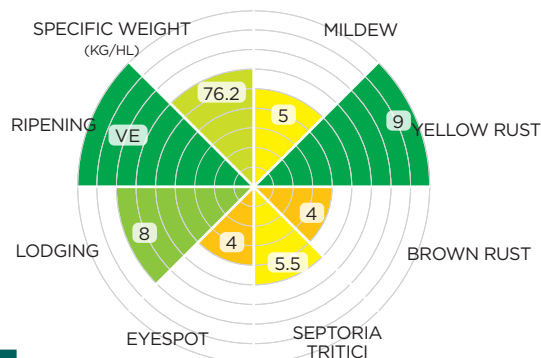
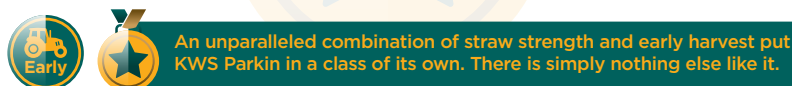
Group 4 Hard

KWS *Reflection x Costello*

Yield as a percentage of controls (AHDB RL 2024):

UK: 101% East: 101% West: 101% North: 100%

KWS Parkin remains a unique proposition for growers in 2024. The shortest and stiffest straw available paired with an earlier maturity than anything on the Recommended List will draw comparisons to old favourite Grafton. Suitable for drilling from the second week of September onwards and with yields comparable to KWS Extase, Parkin offers something genuinely different and should not be overlooked.



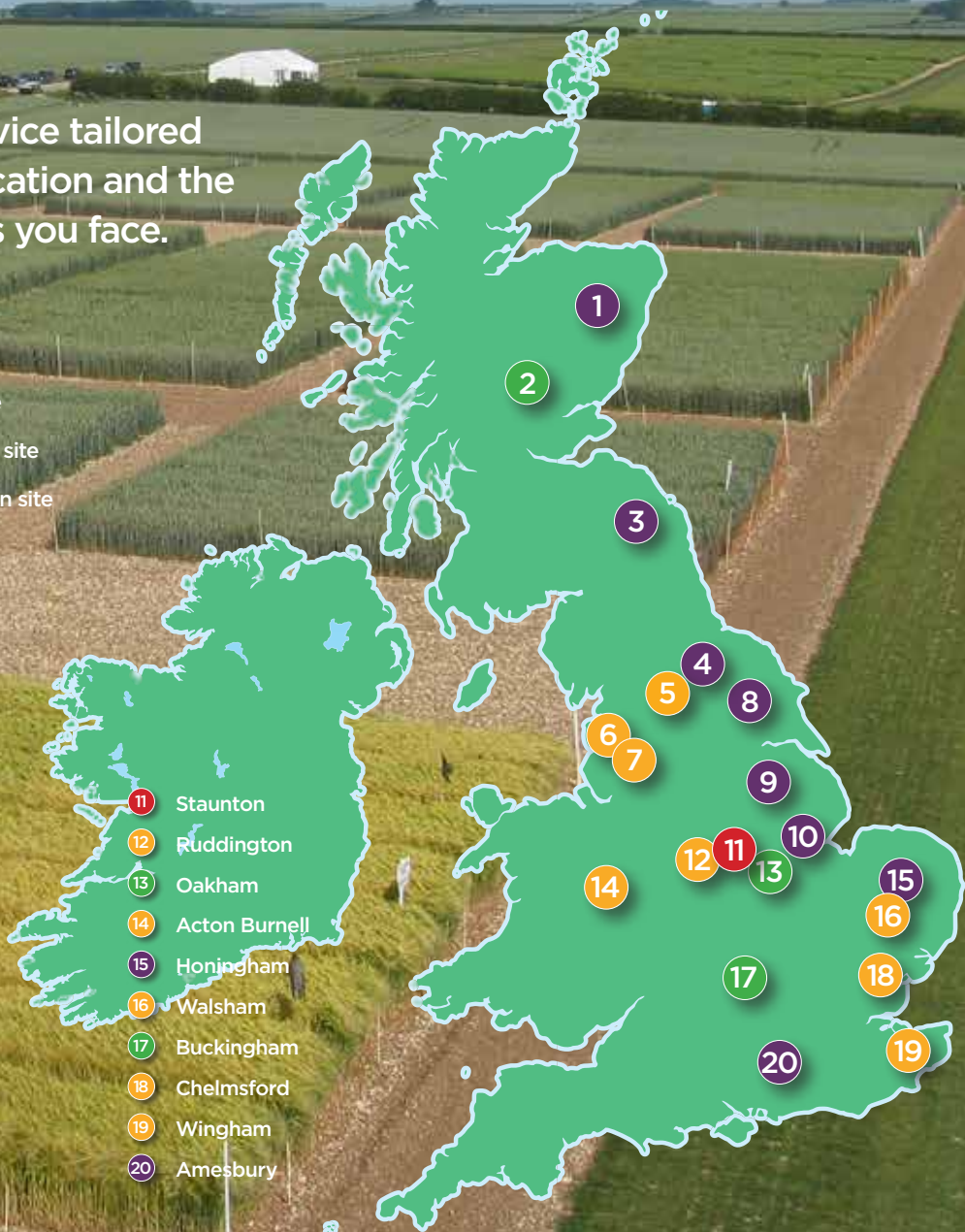
Every year, we establish
more than
12,000 trial plots
across the UK
to find solutions to
crop production challenges

Expert advice tailored
to your location and the
challenges you face.

Key

- Discovery site
- Development site
- Demonstration site
- Kings site

- | | |
|----------------|------------------|
| 1 Barra | 11 Staunton |
| 2 Perth | 12 Ruddington |
| 3 Coldstream | 13 Oakham |
| 4 Stokesley | 14 Acton Burnell |
| 5 Topcliffe | 15 Honingham |
| 6 Burscough | 16 Walsham |
| 7 Shuttleworth | 17 Buckingham |
| 8 Haywold | 18 Chelmsford |
| 9 Bleasby | 19 Wingham |
| 10 Holbeach | 20 Amesbury |



Winter Wheat 2024/25

	In Frontier seed production	Fungicide-treated grain yield (% treated control)										Grain quality		
		United Kingdom (11 t/ha)	East region (10.9 t/ha)	West region (11.2 t/ha)	North region (11.3 t/ha)	First cereal (11.3 t/ha)	Second and more (10.2 t/ha)	Early sown (before 25 Sept) (11.4 t/ha)	Late sown (after 1 Nov) (9.5 t/ha)	Light soils (10.7 t/ha)	Heavy soils (11.4 t/ha)	Protein content (%) - milling	Hagberg Falling Number	Specific weight (kg/hl)
UKFM Group 1 (Hard)														
KWS Zyatt	Y	99	98	99	97	98	98	[100]	97	97	99	12.5	248	78.3
SY Cheer	Y	97	97	98	[98]	97	95	[[97]]	[[100]]	[96]	97	13.0	299	79.5
Skyfall	Y	96	96	96	95	96	97	96	97	96	96	12.9	265	79.1
Crusoe	Y	95	95	96	94	96	94	[98]	94	93	96	13.2	265	78.3
RGT Illustrious	Y	95	95	96	94	95	93	[99]	93	94	96	12.5	258	78.0
UKFM Group 2 (Hard)														
KWS Extase	Y	101	101	102	99	101	101	101	101	101	101	12.3	283	79.1
KWS Palladium	Y	100	99	101	99	100	99	[[99]]	98	99	99	12.2	305	77.6
Mayflower	Y	97	97	97	96	97	98	101	94	96	97	12.5	294	79.1
UKFM Group 3 (Soft)														
Bamford	Y	106	105	107	[105]	105	106	[104]	[[105]]	[105]	106	11.6	239	78.5
RGT Wilkinson		100	101	99	99	100	100	[100]	[102]	100	100	12.1	248	75.4
LG Astronomer		98	98	98	97	98	97	99	97	98	98	12.5	232	78.1
Soft Group 4														
LG Redwald		106	105	107	104	106	106	[104]	[104]	105	105	11.4	147	75.2
Blackstone	Y	103	103	101	[103]	103	102	[103]	[[105]]	[102]	102	11.7	299	78.2
KWS Zealum		102	103	102	102	102	104	105	[[104]]	[101]	103	11.8	202	76.8
KWS Colosseum	Y	104	-	-	-	-	-	-	-	-	-	-	295	74.4
RGT Bairstow		102	102	103	102	102	103	101	104	103	103	11.7	224	76.6
LG Skyscraper	Y	102	103	101	101	102	103	102	102	102	102	12.0	204	77.1
Hard Group 4														
LG Beowulf	Y	106	106	106	[107]	106	106	[105]	[[108]]	[105]	106	12.3	253	78.3
Champion	Y	106	106	106	103	105	107	107	106	105	106	11.9	235	75.4
SY Insitor	Y	104	104	105	105	104	105	[107]	102	106	104	11.2	261	78.6
Oxford	Y	104	104	104	101	104	104	104	[105]	102	105	12.2	202	76.1
KWS Dawsum	Y	103	103	104	105	104	104	106	103	105	103	11.7	299	79.9
Gleam	Y	103	103	103	103	103	102	103	102	103	103	11.5	215	76.9
Graham	Y	102	101	104	102	102	101	101	99	102	102	11.8	271	77.7
KWS Cranium	Y	102	102	100	102	101	102	[101]	104	103	101	11.7	286	75.8
KWS Parkin	Y	102	102	101	[101]	81	-	-	-	-	-	-	259	76.3
LG Typhoon	Y	100	100	100	101	100	102	103	100	101	100	11.8	164	77.1
Costello		98	99	98	99	99	97	99	100	99	98	12.3	321	81.1

	Agronomic features							Disease resistance								
	Resistance to lodging w/out PGR (1 low to 9 high)	Resistance to lodging with PGR (1 low to 9 high)	Straw length without PGR (cm)	Straw length with PGR (cm)	Ripening (days +/- Skyfall)	Resistance to sprouting (1 low to 9 high)	Latest safe-sowing date (Brackets [] denote limited data)	United Kingdom (11.0 t/ha)	Mildew (1 low to 9 high)	Yellow rust (1 low to 9 high)	Yellow rust (young plant)	Brown rust (1 low to 9 high)	Septoria tritici (1 low to 9 high)	Eyespot (1 low to 9 high)	Fusarium ear blight (1 low to 9 high)	Orange wheat blossom midge
UKFM Group 1 (Hard)																
KWS Zyatt	8	8	86	76	0	6	End Jan	71	7	3	s	7	6.3	6@	6	-
SY Cheer	8	7	91	82	+1	-	[[End Jan]]	84	[8]	7	-	6	6.0	4	[7]	-
Skyfall	8	7	87	78	+0	5	End Feb	66	6	3	s	9	5.8	6@	7	R
Crusoe	7	8	84	77	+1	6	End Jan	75	7	8	s	3	6.3	5	7	-
RGT Illustrious	8	9	91	81	+1	6	End Jan	82	6	7	s	5	5.9	6@	6	-
UKFM Group 2 (Hard)																
KWS Extase	7	8	92	86	-1	6	End Jan	93	7	7	s	6	7.4	4	6	-
KWS Palladium	8	8	85	78	-1	[6]	End Jan	90	8	9	r	5	7.3	6	6	-
Mayflower	6	7	90	83	-0	[6]	End Jan	91	7	9	r	6	8.9	5@	6	-
UKFM Group 3 (Soft)																
Bamford	7	7	90	83	+1	-	[[End Jan]]	92	[6]	7	-	6	6.7	6@	[5]	-
RGT Wilkinson	8	8	84	78	+2	[5]	[End Jan]	83	7	7	s	5	5.5	6@	6	-
LG Astronomer	7	9	90	80	+2	[7]	End Jan	85	4	8	r	7	5.9	5	6	R
Soft Group 4																
LG Redwald	5	5	95	88	2	[6]	[Mid Feb]	89	5	7	s	7	6.5	4	6	R
Blackstone	8	7	92	85	+2	-	[[Mid Feb]]	87	[7]	9	-	6	6.2	5	[8]	R
KWS Zealum	6	7	90	82	+2	[6]	[End Jan]	84	7	9	r	5	6.1	5	7	R
KWS Colosseum	7	8	80	77	1	-	[End Jan]	-	6	8	r	5	6.5	-	7	-
RGT Bairstow	6	6	92	82	+2	[6]	End Feb	84	6	8	r	6	5.9	4	6	R
LG Skyscraper	6	6	93	84	+0	6	End Jan	83	7	7	s	5	4.9	5	6	R
Hard Group 4																
LG Beowulf	8	8	90	81	+2	-	[[End Jan]]	91	[6]	9	-	5	6.7	6	[6]	R
Champion	6	6	89	82	+0	[6]	Mid Feb	90	7	8	r	5	7.9	4	6	R
SY Insitor	6	7	95	84	+1	5	End Jan	79	7	4	s	6	6.4	5	7	R
Oxford	7	7	86	79	+2	[6]	[End Jan]	88	5	8	r	6	6.6	5	6	R
KWS Dawsum	7	7	85	77	+1	[6]	End Jan	91	8	9	r	7	6.3	5	7	-
Gleam	7	7	89	78	-0	6	Mid Feb	80	6	5	s	6	5.7	5	6	R
Graham	7	8	91	81	-1	6	End Jan	89	6	7	s	5	6.6	4	6	-
KWS Cranium	8	8	90	81	+3	[6]	Mid Feb	79	5	9	r	4	5.8	5	7	R
KWS Parkin	8	8	79	73	-2	[6]	[End Jan]	81	6	9	r	5	5.5	-	6	-
LG Typhoon	7	7	88	79	+2	[5]	End Jan	89	7	9	r	6	7.2	5	6	R
Costello	7	8	85	76	+2	6	End Jan	83	8	9	r	5	5.8	5	7	-

Data sources: Frontier 3D Thinking trials, AHDB Recommended List, breeder information.

[] = limited data [[]] = very limited data @ = believed to carry the Pch1 resistance gene to eyespot.

	Supplementary information					Market information					Breeder	Scope of recommendation
	Suitability as a second cereal	Suitability for early drilling (1st-15th Sept)	Suitability for late drilling (Nov. onwards)	Speed of development	Tillering capacity	UK bread-making	UK biscuit, cake-making	UK distilling	ukp bread wheat for export	uks soft wheat for export		
UKFM Group 1 (Hard)												
KWS Zyatt	***	*	**	Moderate	High	Y	-	-	Y	-	KWS	UK
SY Cheer	**	*	***	Moderate	Moderate	Y	-	-	-	-	Syngenta	UK
Skyfall	***	*	***	Fast	Low/Mod	Y	-	-	-	-	RAGT	UK
Crusoe	*	**	**	Slow/Mod	Moderate	Y	-	-	Y	-	Limagrain	UK
RGT Illustrious	**	**	**	Slow	Mod/High	Y	-	-	-	-	RAGT	UK
UKFM Group 2 (Hard)												
KWS Extase	*	*	***	Fast	Mod/High	Y	-	-	Y	-	KWS	UK
KWS Palladium	***	**	**	Moderate	High	Y	-	-	-	-	KWS	UK
Mayflower	***	**	**	Moderate	Moderate	Y	-	-	Y	-	Elsoms	UK
UKFM Group 3 (Soft)												
Bamford	***	***	**	Moderate	Moderate	-	Y	[Y]	-	[Y]	Elsoms	UK
RGT Wilkinson	***	**	**	Mod/Fast	Moderate	-	Y	[Y]	-	[Y]	RAGT	UK
LG Astronomer	**	***	**	Mod/Slow	Moderate	-	Y	[Y]	-	-	Limagrain	UK
Soft Group 4												
LG Redwald	***	*	***	Fast	High	-	-	[Y]	-	-	Limagrain	E & W
Blackstone	**	**	***	Moderate	High	-	-	[Y]	-	-	Elsoms	UK
KWS Zealum	**	***	*	Slow/Mod	Mod/High	-	-	[Y]	-	-	KWS	N
KWS Colosseum	**	***	***	Moderate	Mod/High	-	-	-	-	-	KWS	-
RGT Bairstow	**	*	***	Mod/Fast	High	-	-	Y	-	-	RAGT	UK
LG Skyscraper	**	*	***	Moderate	Mod/High	-	-	[Y]	-	-	Limagrain	UK
Hard Group 4												
LG Beowulf	***	***	***	Moderate	High	-	-	-	-	-	Limagrain	UK
Champion	***	*	***	Fast	High	-	-	-	-	-	DSV	UK
SY Insitor	***	*	***	Fast	High	-	-	-	-	-	Syngenta	UK
Oxford	**	**	**	Moderate	Moderate	-	-	-	-	-	DSV	E & W
KWS Dawsum	***	**	**	Moderate	High	-	-	-	-	-	KWS	UK
Gleam	***	**	**	Moderate	High	-	-	-	-	-	Syngenta	UK
Graham	*	**	**	Moderate	Moderate	-	-	-	-	-	Syngenta	UK
KWS Cranium	***	*	***	Fast	High	-	-	-	-	-	KWS	UK
KWS Parkin	**	***	**	Moderate	Moderate	-	-	-	-	-	KWS	UK
LG Typhoon	***	***	**	Slow	Moderate	-	-	-	-	-	Limagrain	UK
Costello	**	**	**	Moderate	Mod/High	-	-	-	-	-	Senova	UK



Open
for more
information
about our
wheat varieties

Winter Barley

2024/25 Varieties

AHDB approved and Frontier preferred varieties

For further variety data see page 28.

Winter barley is an important crop on many farms, providing an early entry for oilseed rape and useful sources of grain and straw for livestock farms. Malting varieties should be at least provisionally approved by the Malting Barley Committee (MBC) to ensure marketability, or grown on a named variety contract. Contracts usually specify certain criteria, including specific weight, nitrogen content, moisture and admixture.

For feed barley, a high yield would be an important requirement but in conjunction with a reasonable specific weight. Six-row varieties have improved in this respect over the years, with many now having the same specific weight as their two-row counterparts.

All varieties should have a good all-round disease resistance. In particular, resistance to barley mosaic virus is increasingly important and most varieties now have this trait. Short, stiff strawed varieties are beneficial where crops are being grown on heavier or more fertile soil.

Some varieties with a genetic tolerance or resistance to barley yellow dwarf virus (BYDV) are now available, such as the hybrid variety SY Buzzard. These will become increasingly important following the loss of insecticidal seed treatments such as Deter and a desire from many growers to move towards reduced use of pyrethroid applications, supported by the SFI payments for growing crops without insecticides.

Considerations for 2024

Soil conditions

- Aim for good seed-to-soil contact to ensure rapid seed germination and provide good conditions for residual herbicides to work effectively.

Geographical region

- The colder the field aspect and the further geographically north, the earlier crops can safely be drilled with lower risk of running into early pest problems. Early September drilling is much more feasible in the north, while late drillings can be slow to emerge. In cold winters, crops will stop growing sooner, with a potential knock on effect and late harvest.

Disease and pest risk

- Risk of disease in highly susceptible varieties will only increase if drilled early. BYDV infection can occur from early September until the temperature drops consistently below 5°C.

Drilling dates

- Winter barley should not be drilled late if at all possible as establishment will suffer and few tillers will be present. The use of manganese seed treatment can help to mitigate yield-reducing tiller loss. This is crucial as winter kill is more common in barley than wheat.

Hybrid barley

- Seed rates are significantly reduced for hybrid barley with 200seeds/m² advised. The speed of development helps to compensate for the lower seed rate, but management of the crop needs to be slightly different to conventional barley. Early nitrogen in the spring is really important, so apply 3 splits, with the first application of 30% at GS25, 50% at or just before GS31 and 20% 2-3 weeks after this. An alternative would be a 2 split programme with 40-50% at GS25 and the balance at or just before GS31. Even when tiller numbers are high, early nitrogen is advised.

Genetic traits and characteristics

To make clear which varieties carry these different genetic benefits, we have introduced an easy to follow range of symbols on the variety profiles that follow.



BYDV tolerant

This variety has genetic tolerance to symptoms and yield loss from the Barley Yellow Dwarf Virus



Late driller

This variety is suited to being drilled later than the mainstream drilling window



Frontier recommends

This variety has been picked out as particularly notable, either for overall performance or a specific feature

Hybrid barley

Hybrid barley is the name given to varieties of barley that are multiplied from two genetically different cross-pollinating parents. F1 Hybrid crops provide exceptional yields of feed quality grain and offer a number of other benefits such as increased vigour, wider sowing windows, and grassweed suppression.

SY Thunderbolt

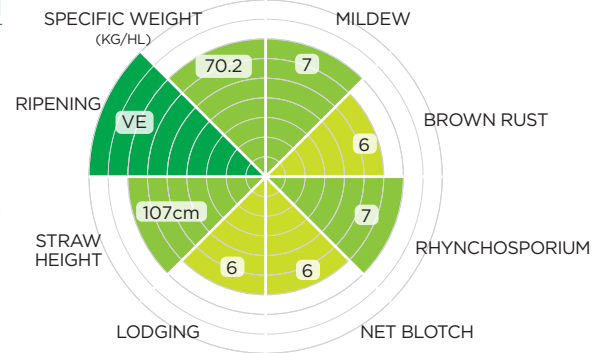
Six-row hybrid feed

Syngenta F1 Hybrid

Yield as a percentage of controls (AHDB RL 2024):

UK: 107% East: 106% West: 108% North: 107%

SY Thunderbolt remains the joint highest yielding barley variety on the 2024 Recommended List, a title that it shares with fellow hybrids SY Kingston and SY Kingsbarn. SY Thunderbolt is an early maturing option with good disease resistance, though slightly weaker straw will make it a priority for timely harvest.



SY Kingsbarn

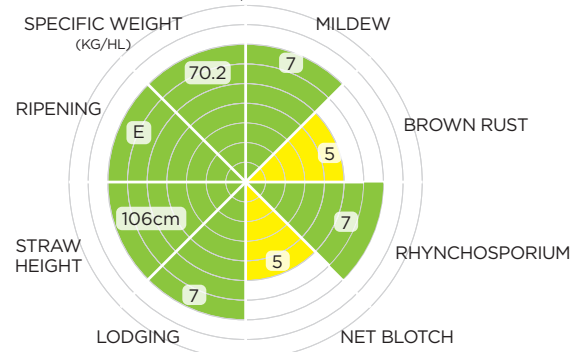
Six-row hybrid feed

Syngenta F1 Hybrid

Yield as a percentage of controls (AHDB RL 2024):

UK: 107% East: 106% West: 107% North: 107%

SY Kingsbarn is a high yielding hybrid barley variety with a reputation for consistency across the extremely varied seasons of recent years. Whilst difficult to separate from SY Kingston for yield, it has marginally stiffer straw and, by hybrid standards, a later harvest maturity.



SY Kingston

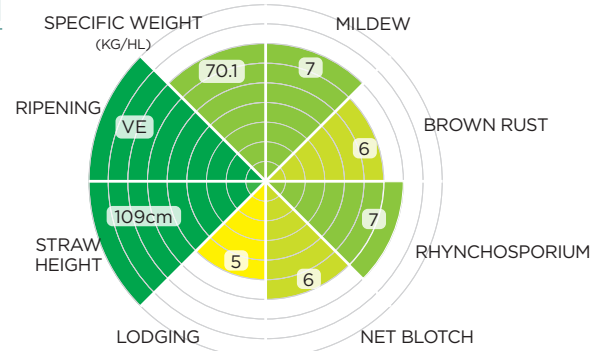
Six-row hybrid feed

Syngenta F1 Hybrid

Yield as a percentage of controls (AHDB RL 2024):

UK: 107% East: 106% West: 108% North: 106%

SY Kingston sits alongside farm-favourite SY Kingsbarn as a reliable option for hybrid barley growers across the UK. SY Kingston has the strongest all-round disease resistance available. As the earliest maturing hybrid barley variety, SY Kingston is a good option for spreading harvest dates and an early entry for the following crop.





BYDV tolerant winter barley

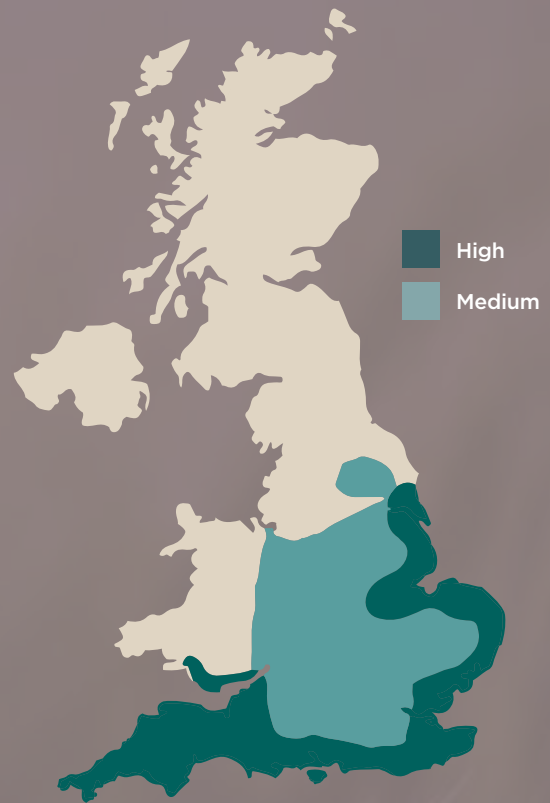
Barley Yellow Dwarf Virus (BYDV) had, by 2015, almost become one of the forgotten threats of UK agriculture. However, with the range of effective insecticide sprays shrinking, and the necessity to drill winter barley at the optimum period for aphid activity, BYDV is once again posing a challenge to UK farmers.

Following the revocation of the Deter seed treatment in 2018, growers are left with no options for early protection beyond cultural controls like delayed drilling and multiple applications of insecticide sprays. After the difficult late-autumn weather patterns of 2019 and 2020, delayed drilling may itself seem more of a risk than BYDV for many growers.

With infection levels on the rise and warmer and wetter autumns making insecticidal control more difficult and costly, it seems clear that BYDV is once again a significant threat to our cereal crops. This threat is most pronounced in winter barley crops, which experience both higher potential yield losses and a greater impact from the main cultural control of delayed drilling.

Against this backdrop, 2024 sees the arrival of the first hybrid winter barley variety with genetic tolerance to BYDV. SY Buzzard, a new addition to the 2024 AHDB Recommended List, is an excellent example of how new plant genetics can support growers in the fight against insect borne viruses.

Regional BYDV risk



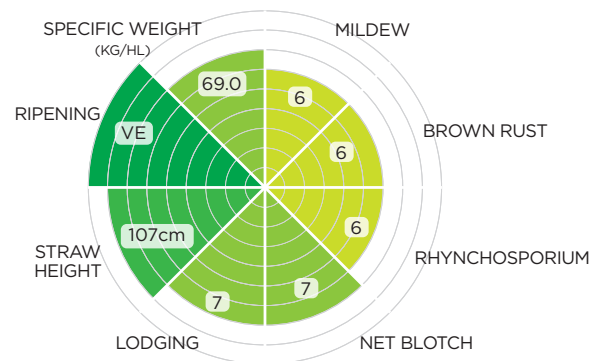
SY Buzzard

Six-row hybrid feed

Syngenta

Yield as a percentage of controls (AHDB RL 2024):
UK: 103% East: 104% West: [101%] North: [102]%

The first hybrid barley variety with BYDV tolerance SY Buzzard can fully capitalise on the wide drilling window that hybrids are known for, without concerns about aphid pressure or dwarf virus infection. An exciting new option for growers in high pressure areas or those looking to reduce insecticide use.



LG Caravelle Two-row conventional feed

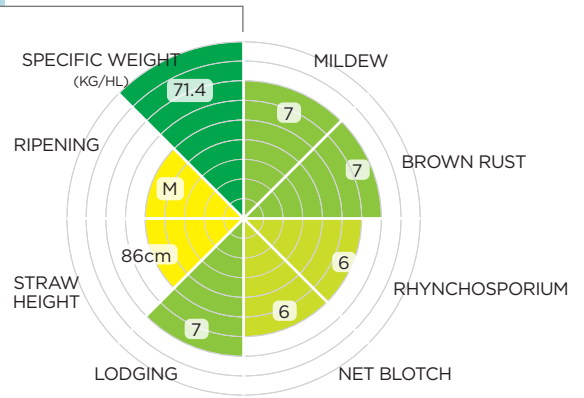
Limagrain *LGBU11-5495B x KWS Moselle*

Yield as a percentage of controls (AHDB RL 2024):

UK: 106% East: 107% West: 105% North: 104%

LG Caravelle remains for the second year in a row the highest yielding conventional barley in AHDB Recommended List trials. More impressive still is the teaming of yield with grain quality - Caravelle has the highest specific weight on the 2024 RL.

 A truly outstanding combination of yield and bushel weight should make LG Caravelle the most sought after barley variety for harvest 2025.



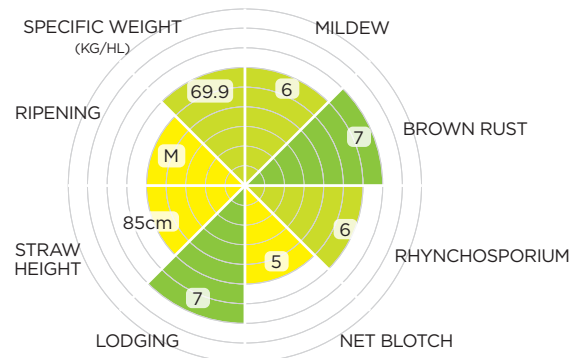
NEW LG Capitol Two-row conventional feed

Limagrain *LGBU11-5495B x KWS Moselle*

Yield as a percentage of controls (AHDB RL 2024):

UK: 106% East: 107% West: [103]% North: [105]%

LG Capitol is the only new 2-row barley added to the 2024 Recommended List. From the same parentage as LG Caravelle, LG Capitol matches its sister-line for UK and East yield, whilst outstripping it to be the outright highest yielding 2-row in the North.




KWS Tardis Two-row conventional feed

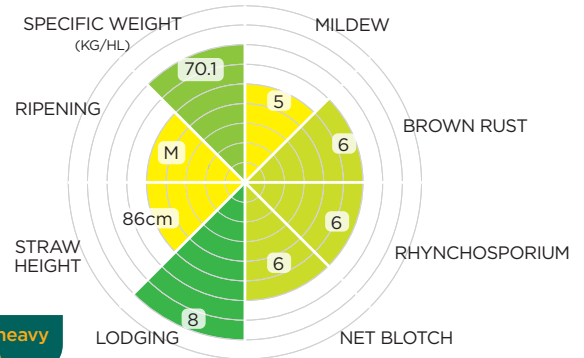
KWS *11-12 x KWS Orwell*

Yield as a percentage of controls (AHDB RL 2024):

UK: 103% East: 104% West: 101% North: 103%

KWS Tardis is the most widely-grown winter barley variety in the UK. Drawing clear comparisons with long-lived favourite and parent variety KWS Orwell, Tardis outperforms Orwell on yield, specific weight, and mildew resistance whilst matching it for height and straw strength.

 After four years of consistent performance, KWS Tardis remains our top pick for heavy soils where that combination of yield and straw strength provide maximum value.



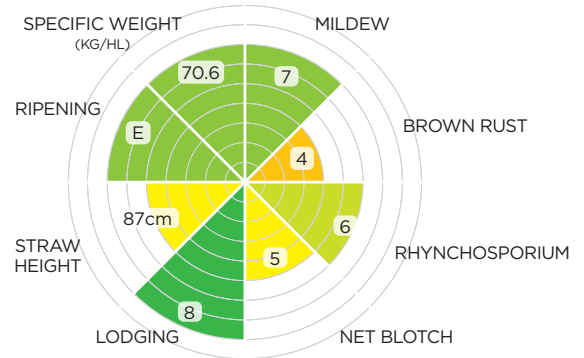
Valerie Two-row conventional malting

Senova *207-589 x Sandra*

Yield as a percentage of controls (AHDB RL 2024):

UK: 99% East: 99% West: 97% North: 100%

With excellent grain quality, early maturity and similarly strong straw to Orwell, Valerie has found favour with many growers, particularly those who grew KWS Cassia for similar reasons. Valerie will appeal to mixed farms where bold grain for on-farm feeding is desirable.



Winter Barley 2024/25

Data sources: Frontier 3D Thinking trials, AHDB Recommended List, breeder information.

[] = limited data # = Hybrid variety

⌘ = carry tolerances to barley yellow dwarf virus (BYDV)

	Fungicide-treated grain yield (%treated control)							Grain Quality		Agronomic features					Disease resistance					
	Frontier Seed Production	United Kingdom (9.8 t/ha)	East region (9.5 t/ha)	West region (9.7 t/ha)	North region (10.5 t/ha)	Light soils (9.7 t/ha)	Heavy soils (9.4 t/ha)	Specific weight (kg/hl)	Screenings (% through 2.25 mm)	Resistance to lodging without PGR (1-9)	Resistance to lodging with PGR(1-9)	Straw length with PGR (cm)	Brackling (%)	Ripening (days +/- KWS Orwell)	Untreated grain yield (% treated control)	Mildew (1-9)	Brown rust (1-9)	Rhynchosporium (1-9)	Net blotch (1-9)	BaYMV
Two-row malting																				
Buccaneer		99	100	98	100	98	98	69.6	2.2	[7]	7	91	4	1	87	6	8	7	6	R
Electrum	Y	96	96	96	96	96	96	69.7	2.4	7	7	92	9	-1	80	6	7	5	5	R
Craft	Y	93	93	93	93	94	93	69.9	2.3	8	8	91	10	0	80	6	7	6	5	R
Two-row feed																				
LG Caravelle	Y	106	107	105	104	103	106	71.4	1.7	[8]	7	86	8	0	90	7	7	6	6	R
LG Capitol	Y	106	107	[103]	[105]	[104]	[109]	69.9	1.9	[7]	7	85	11	0	89	6	7	6	5	R
Lightning		103	104	102	103	103	103	68.8	1.9	6	6	89	13	-1	90	6	8	6	6	R
Bolivia	Y	103	104	102	103	104	103	69.9	1.3	[8]	8	90	15	0	88	8	8	6	6	R
KWS Tardis		103	104	101	103	102	106	70.1	1.7	8	8	86	6	0	85	5	6	6	6	R
Bolton		103	105	101	101	103	104	69.3	1.6	8	8	84	8	0	86	6	7	5	5	R
Bordeaux		102	104	100	102	102	104	70.5	1.3	8	8	85	9	0	82	6	6	4	5	R
LG Mountain		101	102	102	101	102	101	70.7	1.9	7	7	85	27	-1	84	6	7	5	4	R
LG Dazzle		101	103	99	101	102	102	68.9	2.0	7	7	86	7	1	88	5	8	7	5	R
KWS Orwell		100	99	100	99	99	100	68.9	1.7	8	8	87	8	0	83	3	7	6	5	R
Valerie		99	99	97	100	100	[100]	70.6	0.8	8	8	87	8	-1	74	7	4	6	5	R
Six-row feed																				
SY Thunderbolt#	Y	107	106	108	107	106	105	70.2	2.0	5	6	107	18	-1	88	7	6	7	6	R
SY Kingsbarn#	Y	107	106	107	107	107	103	70.2	1.5	6	7	106	16	0	83	7	5	7	5	R
SY Kingston#	Y	107	106	108	106	106	101	70.1	2.7	6	5	109	19	-1	87	7	6	7	6	R
SY Canyon#		106	105	106	106	107	102	71.1	1.9	6	6	109	11	-1	91	7	6	6	6	R
Belfry#		105	105	104	105	104	102	68.8	2.7	7	8	104	11	0	87	6	6	7	5	R
SY Nephin#	Y	104	105	102	105	105	102	70.7	3.5	[6]	7	104	23	0	92	6	7	7	6	R
Bazooka#		104	104	104	106	106	103	69.9	2.6	6	6	111	14	0	83	5	5	7	5	R
SY Buzzard#	Y	103	104	[101]	[102]	[101]	[100]	69.0	3.2	[8]	7	107	10	-1	82	6	6	6	7	R
KWS Feeris#⌘		102	102	102	100	101	102	69.2	1.4	8	7	97	12	0	84	5	6	6	6	R

Winter Oats 2024/25 Varieties

AHDB approved and
Frontier preferred varieties

Winter oats are a good alternative cereal where a take-all break is required. Typically lower input than winter wheat, oats are useful as a feed grain, but more commonly used in the premium market for oat milling. The crop is usually grown not more than one year in four. Contracts exist in the form of buybacks, allowing growers to secure some attractive premiums and reduce the marketing risk associated with free market oats.

Most widely grown as a second cereal (due to the take-all break), oats have a lower requirement for fertiliser and also extract lower levels of nutrients than other winter cereals.

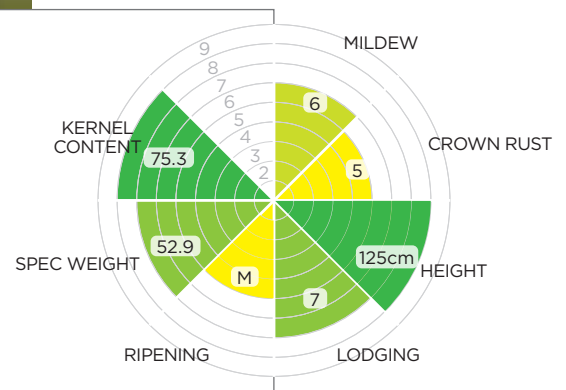
Key characteristics for winter oats are high yield, stiff straw and good kernel content for the milling market.

Varieties should have good disease resistance to both crown rust and mildew, particularly important in the south and west.

Mascani [UK]

Senova

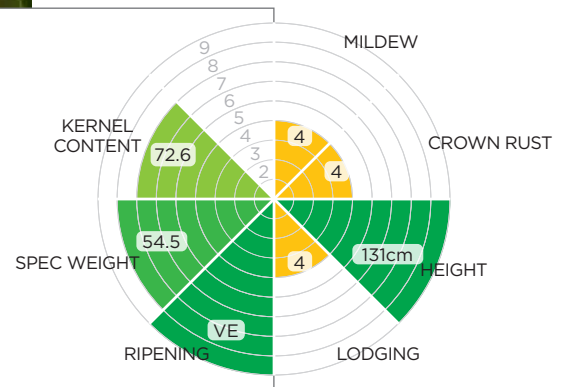
The leading variety across the UK and well liked by all end users. The variety has good winter hardiness and low screenings. Yields are a bit behind the best but its consistent performance and good specific weight will keep it in the market for a few more years.



Dalguise [SCOT]

Senova

A familiar name to many northern and Scottish growers, Dalguise continues to hold a place in the oat market with consistently high yields and good grain quality. Taller straw does make this variety more prone to lodging.



Winter Hybrid Rye

2024/25 Varieties

Frontier preferred varieties

Considerations for 2024

Markets

Hybrid rye can be grown for both grain and wholecrop. Grain can be sold into feed and milling markets, whilst wholecrop rye is commonly used as a high value substrate in biogas plants. When used for anaerobic digestion, rye helps to balance the high productivity of energy beet or maize substrates, providing an alternative nutrient source for the bacteria in the digester and stabilising gas output.

Correct harvest timing for wholecrop silage is important to ensure optimal yield, quality, and ensiling conditions. Crops should be between 35 - 40% dry matter. This allows for maximum grain fill which is a large contributor to yield and quality. Approaching harvest, the dry matter of the crop will increase by around 1% per day allowing for a narrow harvest window. It is important to have the harvesting capacity available for your acreage so that you can achieve close to optimum maturity across the crop.

Agronomy

Hybrid rye is a moderate input crop, with input costs significantly lower than those required for winter wheat, and producing a rewarding yield where crops are well managed. Hybrid rye establishes and grows very quickly, particularly in the early spring, so growers should be ready to apply all inputs in good time to ensure they meet the correct growth stages. This is especially important for timing of plant growth regulators. Hybrid rye has a well-developed root system that extracts nutrients and water from greater soil depths than most cereals. This minimises N-loss during the winter and can also help minimise soil erosion, acting both as a cover crop and cash crop.

Rye performs particularly strongly as a second cereal crop, in many cases out-yielding both second wheat and barley crops. Rye is a hybrid cereal benefiting from lower seed rates, therefore reducing the requirement for handling and storage of seed bags and improving the logistics of drilling larger areas.



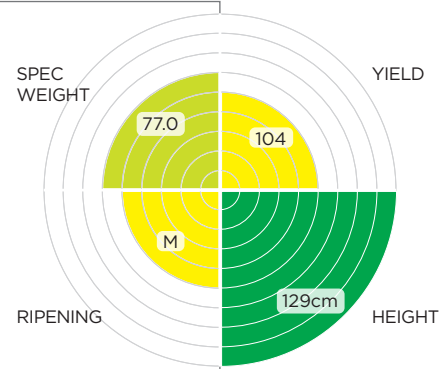
KWS Tayo

KWS

Exceptional harvest index (ear size) resulting in the highest grain yield of any trialled variety, KWS Tayo also has very high dry matter yields for use in AD. This dual purpose variety has a high specific weight and a wider sowing window than most hybrid rye varieties. Tayo benefits from the Pollen Plus gene, which helps to reduce ergot levels. It is suitable for sowing in all regions.



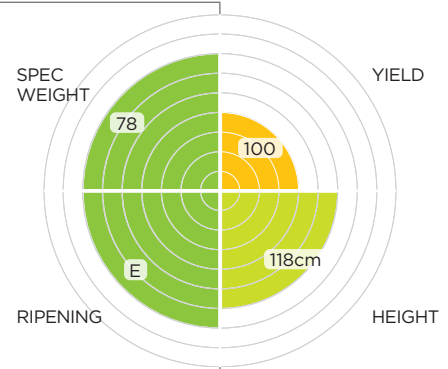
With the highest yield potential, lowest lodging scores, best resistance to brown rust, not to mention suited to almost all soil types, KWS Tayo is the 1st choice for both grain production and AD.



KWS Bono

KWS

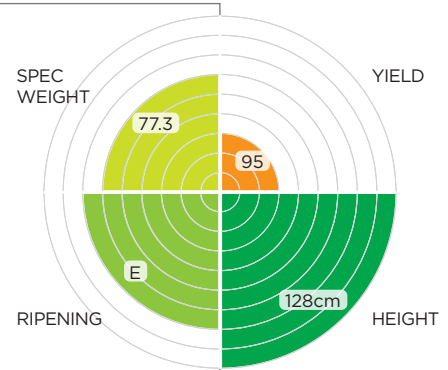
A widely grown and well liked variety, KWS Bono provides a useful contrast to KWS Tayo in several areas. It is significantly earlier to mature, allowing a spread of dates for optimum harvesting when used alongside a later maturing variety like Tayo. It is also shorter and stiffer than other hybrid rye options, and performs particularly well on light soils. Bono has good grain quality and the potential to find more specialist baking markets.



SU Mephisto

Saaten Union

The preferred variety for milling use, SU Mephisto has shown consistent yield performance across a wide range of sites. It remains unmatched for milling quality and is the preferred variety for several key rye end consumers. Mephisto is slightly more susceptible to brown rust than other varieties. It is sold as a technical mix with 10% inclusion of the variety Dukato, which serves to improve pollination and reduce ergot levels.



Winter Beans

2024/25 Varieties

Frontier preferred varieties

Considerations for 2024

Feed markets

Year on year demand for feed beans has increased by 10-15% and looks to rise further.

Winter beans continue to be in strong demand as a protein source for the livestock sector, with all major species having beans incorporated into their rations. With the continued pressure to reduce the level of imported soya meal in high protein feeds, beans are a natural alternative.

Some of the biggest UK milk contracts now strongly favour the use of domestic proteins such as beans or rapeseed meal. Several feed compounders are now producing soya free rations and many beef farms are including an element of field beans in their home-mix rations.

Aquaculture is the biggest growth area for UK bean demand. The total market for farmed salmon diets in Scotland and Norway is over 1.5 million tonnes, with de-hulled beans now accounting for up to 11% of that total.

Frontier operates a specialist de-hulling plant at our site in Ruddington, Nottinghamshire. We de-hull over 50,000 tonnes of beans each year for the aquaculture market. To avoid wastage, the bean skins are blended with other UK protein products to make a high energy feed pellet ideally suited for feeding young stock.

Human consumption markets

Demand for human consumption beans has generally been supplied by spring beans in recent years, due to improved quality and visual appearance of beans from spring sown varieties. This is by no means exclusive; we are always looking to buy winter beans that meet human consumption standards, are relatively low in bruchid levels, and with a nice creamy colour. We generally see this marketing opportunity early in the season, before the bulk of spring beans have been harvested in the North of England. Varieties like Vespa and Pantani may well fulfill this requirement, with the early harvest of Pantani in particular providing the widest possible marketing window, prior to the availability of spring beans.



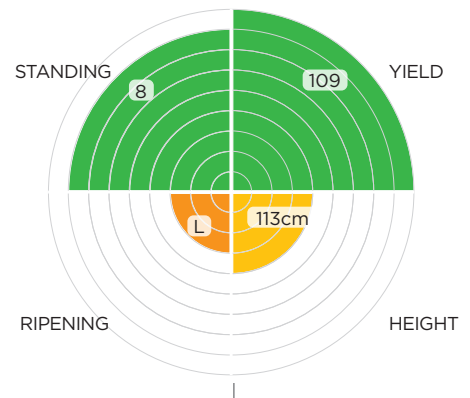
Vespa

Senova

Data from PGRO Descriptive List 2024

Vespa remains the highest yielding variety on the PGRO Descriptive List, after consistently strong performances during the past five years.

Vespa has a later harvest maturity and the best available disease resistance to chocolate spot.





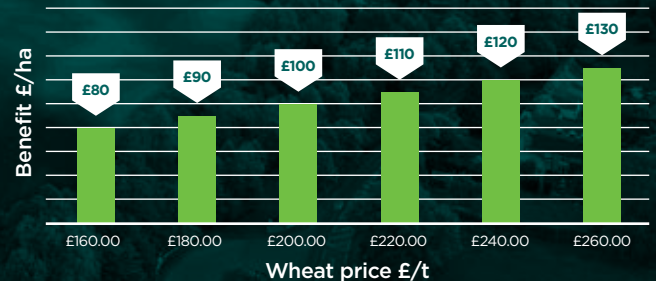
Variable rate seed: the foundations of yield

Drilling seed at variable rates can result in more even plant populations and reduce crop variation by up to 50%.

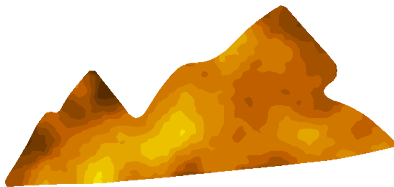
Establishing an optimum plant population and an even canopy in the spring is fundamental to achieving maximum yields. The benefits include reduced lodging risks, lower disease pressure and more efficient use of crop inputs.

Variable rate seed is proven to provide a financial benefit, with variably drilled fields providing an average yield increase of 5%.

The value of a 5% yield increase at different wheat prices

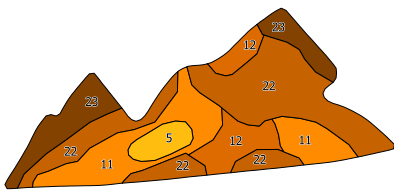


The most accurate way to introduce variable rate seed into your business is via the SOYL Seed system:



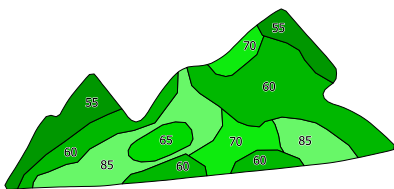
Stage 1 - Electrical conductivity scan

A non-intrusive survey of the soils' physical properties is undertaken. Soil conductivity correlates to its clay/moisture content, depth and stone content. The electrical conductivity scan will determine each soil type zone within the field.



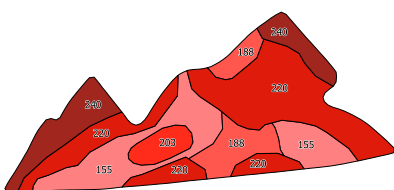
Stage 2 - Textural classification

An experienced soil scientist will texturally classify the soil types within your field. They will factor in texture, slope and stone content to create a soil type map.



Stage 3 - Establishment allocation

Each soil type zone is assessed for seedbed quality and potential winter losses. Local knowledge, such as that of black-grass or slug damage pressures, can be factored in here. From this, a percentage establishment layer is then created.



Stage 4 - Drilling plan

A variable drilling plan is compiled, using the establishment plan to vary the seed rate across the field. Drilling plans can be created in minutes on MySOYL ready for export to your drill controller.

For more information on variable rate seed and nutrient management

Nutrient Management from SOYL

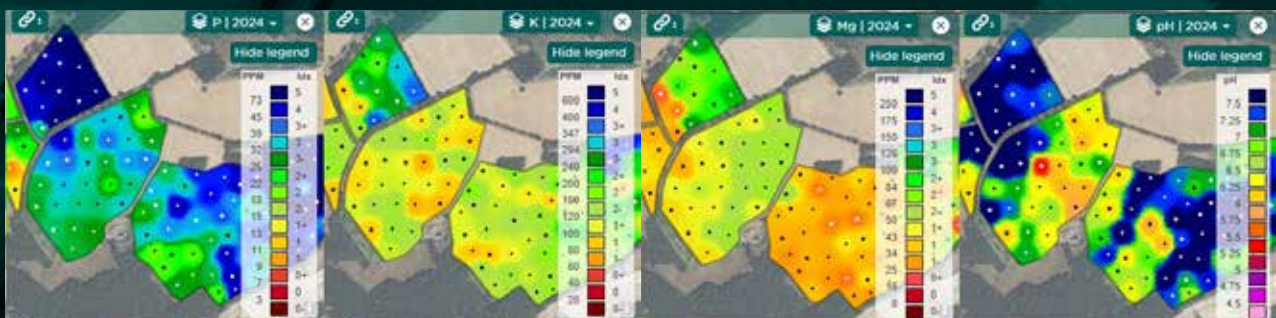
Delivering for your business and the farmed environment, our nutrient mapping allows easier and more informed management decisions.



Plus: Organic matter and trace elements

Through the use of innovative technology you can:

- Build resilient soils and manage your environmental risk
- Target fertiliser and organic inputs based on soil requirements
- Understand your soil limiting factors and optimise yield where nutrients or acidity are impacting
- Gain peace of mind as our FACTS-qualified advisors support with legislative compliance with annual fertiliser recommendations.



Talk to a member of the SOYL team today.

visit www.soyl.com, call 01635 204190 or email info@soyl.co.uk.



Helping your agricultural business fulfil its legal obligations

The MyCompliance team will work with you
to develop tailored management plans
to meet the requirements of:

- SFI Actions for Soils, Nutrient Management and Integrated Pest Management
- Nitrate Vulnerable Zones and the Farming Rules for Water
- Farm Assurance schemes
- Your unique supply chain requirements.

Find out more

Call the MyCompliance helpline: 03330 044555
Email: mycompliancehelpline@frontierag.co.uk

Winter
wheatWinter
barley

The specialist seed treatment for reducing take-all losses



Secure your crop with Latitude

- Protects yield, quality and profits
- Reduces take-all in wheat and barley
- Enables flexibility of drilling date
- Improves nutrient and water uptake



Typical "white-head" symptoms of take-all

Take-all: major risk factors

Climate
34%

- Take-all will thrive in a warm wet autumn, followed by a warm wet winter

Rotation
33%

- Situations where take-all is likely include: second and third wheat; winter barley following a cereal; first wheat after a fallow or a spring cereal

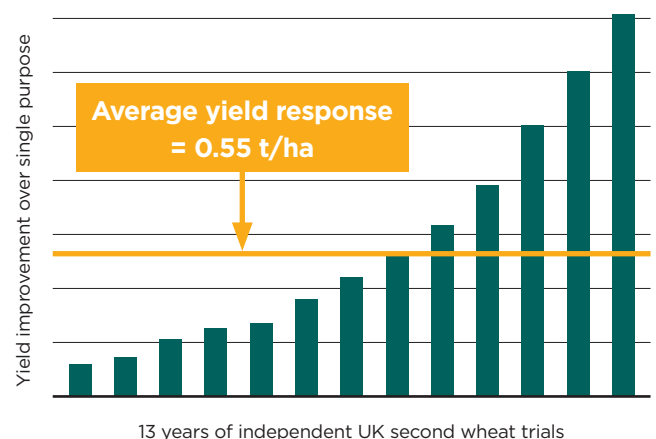
Sowing date
17%

- Earlier drilled crops are more susceptible, early October drilling is optimum

Soil type
16%

- Soil texture (7%), pH (6%) and organic matter (3%) can all have an influence on take-all risk.

Yield benefit, wheat after wheat



£70/ha
gross margin

Average yield and gross margin benefit = 0.55 tonne or £70/ha*.

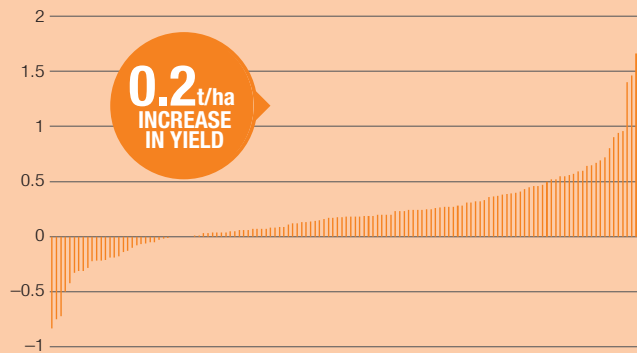
Yield response required to break even = 0.18 t/ha.

*Based on a Latitude cost of £40/ha and a November 2025 wheat price of £200/t



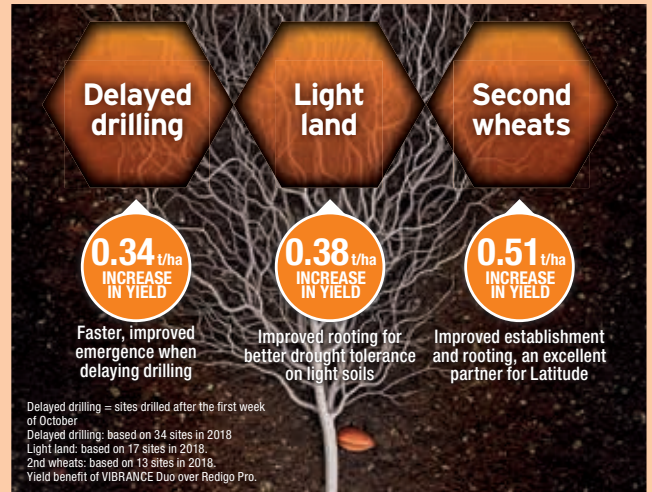
The first choice seed treatment for winter cereals

VIBRANCE® Duo is proven to consistently protect yield across multiple seasons and a huge number of trials



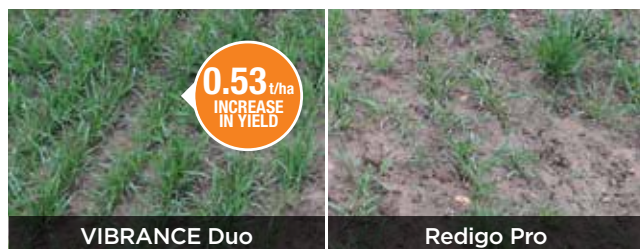
Yield difference (t/ha) VIBRANCE Duo vs Redigo Pro 2013–2021

VIBRANCE Duo excels in three key positions

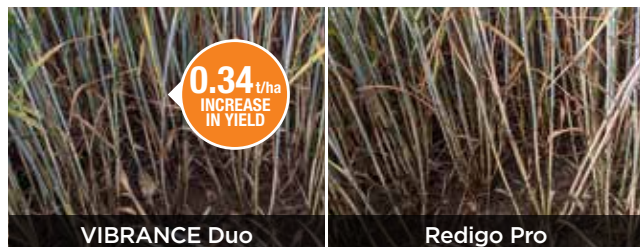


Build a resilient wheat crop to cope with weather uncertainties

Whether you plan to drill early or late, at the time you buy your seed you don't know what the weather has in store. Building a resilient crop gives insurance against adverse conditions.



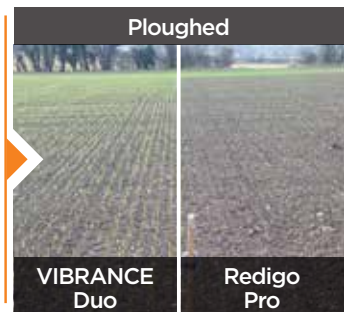
Newark, Nottinghamshire drilled the season of the 'Beast from the East'



Rougham, Cambridgeshire, drilled 20/10/20.

Reliable performance across different cultivation and establishment systems

32% INCREASE IN ROOTING
54% INCREASE IN FOLIAGE WEIGHT
17% INCREASE IN TILLERING
8% INCREASE IN PLANT ESTABLISHMENT



91% INCREASE IN ROOTING
47% INCREASE IN FOLIAGE WEIGHT
30% INCREASE IN TILLERING
7% INCREASE IN PLANT ESTABLISHMENT



Shipston on Stour, Warwickshire. Heavy soil. Drilled 29/10/17.

4:1 return on investment

A £10/ha investment in Vibrance Duo returns an average of £40/ha in yield*

*Based on an average yield difference of 0.2t/ha and a November 2025 wheat price of £200/t



Previously marketed as:



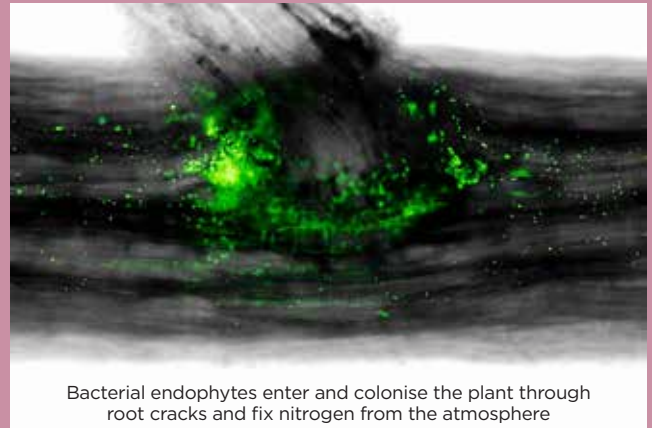
A biostimulant treatment that improves plant nitrogen uptake

Nuello iN improves nitrogen use efficiency:

- N-fixing bacteria capture nitrogen directly from the atmosphere
- These “always on” bacteria provide a back-up generator to the plant, even in nutrient limiting conditions
- Enhanced crop biomass and root development improve the plant’s ability to scavenge for nutrients from the soil.



Improved rooting for Nuello iN, images taken 42 days after planting



Bacterial endophytes enter and colonise the plant through root cracks and fix nitrogen from the atmosphere

Where to use Nuello iN:

- **Complement current nitrogen strategies:** apply Nuello iN on crops receiving standard nitrogen applications, as an additional source of N
- **Manage nitrogen limiting situations:** use Nuello iN in soils and rotational positions where nutrient access may be limited: light land, drought prone soils, and second cereals
- **Substitute small amounts of nitrogen inputs:** where synthetic N applications are planned to be reduced, Nuello iN can help maintain yield by replacing up to 30kg N/Ha.

Stay-green benefits extend the grain fill period



Stay-green effect of Nuello iN in SY Insitor, Haywold 2023

**+30kg
Nitrogen**

UK trials demonstrate a nitrogen benefit from Nuello iN equivalent to up to 30Kg N/Ha

Nuello iN does not offer any protection against seed and soil borne disease. It is advised that Nuello iN be co-applied with a fungicidal seed dressing such as Beret Gold or Vibrance Duo.

Cereal Seed Treatments

Single-purpose treatments

Single-purpose treatments are one of the great unheralded heroes of modern agriculture. Over the past forty years they have become so widespread and so efficient at their jobs that many of the diseases they protect crops against have faded from memory. Yet these “forgotten diseases” still present a very real threat to UK cereal crops.

Seed and soil borne disease such as bunt, seedling blight, and smut can have significant impacts on crop yield and marketability. In seed treatment trials during 2019/20, we saw establishment losses of 56% from *Microdochium nivale* in untreated seed. Fungicidal seed treatments not only protect against these diseases, but limit their multiplication and spread between soils, fields, and farms.



Microdochium nivale impact on untreated seed April 2020, Frontier trials

Frontier only applies the best-in-class single-purpose treatments to our certified cereal seed. We base our decisions on extensive research and trials work which takes into account the following criteria:

- Health and safety – how safe the treatments are for everyone involved in the treating, transport, and drilling process
- Efficacy – how well the treatments protect against the key seed and soil borne diseases for each cereal crop
- Quality – looking at all practical aspects of the treatment including seed coverage, flowability through the drill, and compatibility with other seed treatments

Our preferred single-purpose treatments for 2024 are:

Beret Gold (25g/l fludioxonil) Wheat, oats, triticale and rye

- Wheat: Snow mould (*Microdochium nivale*), foot rot and seedling blight (*Fusarium* spp), bunt and stinking

smut (*Tilletia caries*), Septoria seedling blight (*Septoria nodorum*)

- Oats: Snow mould (*Microdochium nivale*), foot rot and seedling blight (*Fusarium* spp), leaf spot (*Pyrenophora*)
- Triticale: Snow mould (*Microdochium nivale*), foot rot and seedling blight (*Fusarium* spp)
- Rye: Snow mould (*Microdochium nivale*), foot rot and seedling blight (*Fusarium* spp), striped smut (*Urocystis occulta*).

Rancona i-Mix (20g/l ipconazole, 50g/l imazalil) Wheat, barley

- Wheat: Snow mould (*Microdochium nivale*), foot rot and seedling blight (*Fusarium* spp), bunt and stinking smut (*Tilletia caries*)
- Barley: Snow mould (*Microdochium nivale*), foot rot and seedling blight (*Fusarium* spp), loose and covered smut (*Ustilago* spp), leaf stripe (*Pyrenophora graminea*)

Enhanced seed treatments

Signal 300ES (300g/l Cypermethrin) Winter wheat and winter barley

- Signal is the only insecticidal seed treatment with approval for use in winter cereal crops during 2022/23
- Provides effective control against wheat bulb fly, frit fly, and wireworm. Particularly advised for crops following a grass ley.
- Crops dressed with Signal 300ES must be sown by 31st January. Care should be taken not to drill seed too deep, with an ideal depth of 2.5cm-4cm.

Vibrance Duo (25g/l fludioxonil + 25g/l sedaxane) Wheat, barley, winter rye, winter triticale, spring oats

- An enhanced single-purpose treatment, Vibrance Duo brings the same level of disease control as Beret Gold and additionally promotes stronger root and shoot growth to aid establishment and early crop development.
- Vibrance Duo can provide benefits in a wide range of situations and excels as a treatment for use in delayed drilling, light land, and second cereal situations. The larger root systems can also help to mitigate drought and water-logging stress.

Latitude (125g/l silthiofam)

Winter wheat, spring wheat and winter barley

- Latitude is the only seed treatment to provide protection against Take-all (*Gaeumannomyces tritici*), a soil and trash borne disease which can have devastating effects on yield
- Particularly prevalent in second and continuous cereal situations, Take-all affects wheat and barley and is most commonly identified by crop stunting, whiteheads, and blackened roots
- Latitude can provide a benefit for any cereal crop following another cereal crop, including second and third wheats, winter barley following a cereal, winter barley or wheat following a spring cereal, and first wheats following a fallow.

Prosper ST (N, P, K, Zn, Mg, Mn, Cu, B, Fe, Mo) All crops

- A potassium phosphite and nutrient seed treatment, Prosper ST is scientifically proven to promote primary and lateral root growth by an average of 30%. The larger root system allows for improved access to soil nutrients and moisture, mitigating against stressful conditions and ultimately improving yield potential
- Prosper ST also provides faster germination and plant development, particularly in cooler soils, and research has demonstrated an increase in nitrogen assimilation and shoot growth, with Prosper-dressed plants showing 27% larger shoot biomass after 39 days.

Mn-Tain – (597gm/t Mn in nitrate form) All crops

- A high concentration manganese nitrate seed treatment to provide essential early Mn to the developing plant
- Provides a high dose of readily available Mn, improving emergence and early plant growth and lowering reliance on foliar applications (or the weather conditions required for them)
- Specially formulated for excellent seed coverage, adherence, and flowability. MnTain is compatible with all other Frontier recommended seed treatments.

Nuello iN (formerly sold as Tiros ST) All crops

- A biological seed treatment containing two naturally occurring bacterial strains, co-applied with a prebiotic biostimulant. Nuello iN was formerly sold in the UK under the brand name Tiros ST.
- Nuello iN works within the plant to take freely available nitrogen from the atmosphere and convert it into a form that the crop can readily use. This can help provide improved N to the plant and give greater flexibility to the timing and quantity of nitrogen applications.
- Alongside these nitrogen efficiency benefits, Nuello iN also provides benefits to germination, root and shoot weight, establishment, and green leaf area.

Cereal seed treatment compatibility

	Single purpose treatments (SPDs)				Enhanced seed treatments			
	Beret Gold	Rancona i-Mix	Vibrance Duo	Prosper ST	Nuello In (Tiros)	MnTain	Latitude	Signal
Winter Barley		Frontier standard	See note 1					See note 2
Winter Wheat	Frontier standard							See note 2
Winter Oats	Frontier standard							
Winter Rye	Frontier standard							

■ Approved for use
 ■ Not approved for use

Frontier standard: Our standard single purpose treatment for this crop, based on an assessment of the technical merits of all available treatments and the individual disease requirements of the different cereal crops.

Note 1: Vibrance Duo does not carry a label claim for loose smut control. It is recommended that winter barley treated with Vibrance Duo also be treated with a companion single purpose treatment to provide the best possible protection against loose smut.

Note 2: Signal can only be used on crops sown in the “winter”, which includes all crops sown between 1st August and 31st January. Signal-dressed seed cannot be sown from 1st February onwards.

Anglia Grain Services

A division of Frontier Agriculture



THE LEADING MOBILE SEED CLEANING & TREATMENT SPECIALISTS

Established in 1986, Anglia Grain Services is the largest UK processor of Farm Saved Seed, operating a fleet of high specification mobile seed processing units nationwide. Our experienced team of operators, sales and support engineers offer an unrivalled professional service.

Our Farm Saved Seed Service Allows:

- Savings on seed inputs
- Improved cash flow at a critical time of year
- Full seed traceability
- Flexible processing for optimum drilling dates
- Uniform quality seed
- Seed treatments tailored to your requirements
- Precision application of seed treatments with our batch treaters

Conforming to the Highest Standards:

We are a member of the National Association of Agricultural Contractors and registered on the Verified Seed Scheme conforming to producing a safe, fully traceable seed processing service to meet the requirements of national quality assurance programmes.

We are a British Society of Plant Breeders registered collector of plant royalties.

Email: enquiries@angliagrainservices.co.uk

www.angliagrainservices.co.uk

 @AngliaGrainSeed

1 Conventional Screen & Aspiration Cleaner

Law Denis D200 - Compact high capacity seed dresser, incorporating double aspiration, scalping and screening.

3 Gravity Separator

High capacity gravity table separators remove shrivelled and diseased grains to produce a superior seed sample.

2 Seed Elevators and Conveyors

Our bespoke belt and bucket seed elevator and conveyor system ensures seed quality remains by minimising physical damage.

4 Bayer Vanguard Batch Treaters

Serviced by Bayer, our batch treaters precisely apply seed treatments to bold viable seed, complying with environmental stewardship.



5 Anglia Grain Power

Each mobile seed processing unit is self-contained and powered by a specially designed 3 phase generating set.

6 Bag Support & Roller System

This allows a safer and more seamless removal of bulk bags. Each machine also includes trading standard approved bulk bag weighing system.

Experienced Trained Operators:

High capacity seed cleaning and chemical treatment machinery will only work efficiently if set up by skilled operatives.

Anglia Grain Services employ fully trained, experienced operators to ensure correct, precise machine adjustment and quality control.

They are also competent in the safe, precise and accurate application of seed treatments.

The Benefits of Our Full Gravity Table Separation:

- Seeds are separated by specific weight
- Uniform quality seed samples give greater seed rate accuracy when drilling
- Advanced purity and germination
- Removes shriveled, diseased, and damaged grains
- Removal of weed seed (some of which may be resistant)
- Improved vigour and establishment
- Only apply seed treatments to bold, superior seed.

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Kent Office
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www.frontierag.co.uk

Frontier is grateful to AHDB and all other organisations involved for allowing us to use their 2024/25 Recommended Lists.

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frontier