



# SEED

*my* VARIETIES

2020

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

Winter Oilseed Rape

Winter Wheat

Winter Barley

Winter Oats

Talk to the people  
**that work for the company**  
that makes a difference.

# my VARIETIES 2020

MyVarieties gives a comprehensive description of all the main cereal and oilseed rape varieties being marketed by Frontier for the 2020/21 season. The data has been drawn from a combination of our own trials, AHDB Recommended List trials and information from plant breeders.

For each variety, we have included AHDB yield data, agronomic characteristics and technical comments. In addition you will find data from our own 3D Thinking trials and observations made throughout the season, such as vigour in oilseed rape and tillering capacity in wheat.

Each species section also includes relevant market information, and considerations for variety selection. These cover drilling timings, disease risk, geographical location, and rotation. This information does not constitute a recommendation but is designed as a guide to the varieties' agronomic characteristics.



## Variable seed rate drilling results in more even plant populations and reduces crop variation by up to 50%.

Variable rate seed provides significant agronomic benefits to crops. Our trials have shown up to 50% less variation in spring plant populations and harvest yield. Many drills can connect to a GPS system and we can support you in this process.

A soil survey of each field is the starting point and this can be created based on the system below.

### Stage 1 - Conductivity Survey

A survey of the soil's physical properties is undertaken. This starts with a detailed electrical conductivity survey.

### Stage 2 - Zoning

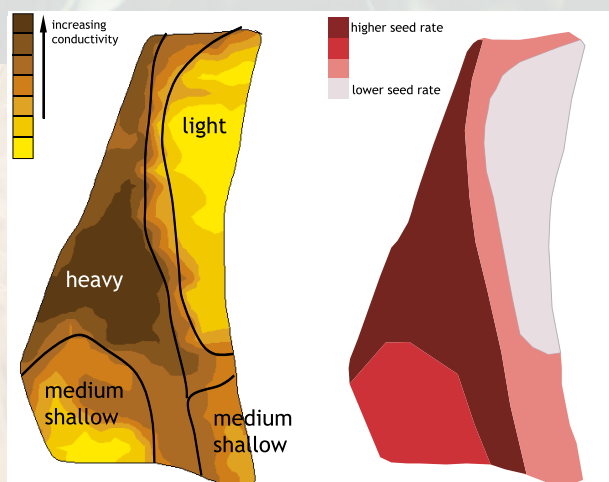
The conductivity map is used as the basis for undertaking a physical soil survey. Areas of similar conductivity values are zoned and then ground-truthed by an experienced soil scientist.

### Stage 3 - Calculate Seed Rates

Each zone is assessed for the potential seed bed quality and plant losses that could occur over winter

### Stage 4 - Annual Seeding Plans

SOYL can create annual seeding plans for you or you can make them yourself in MySOYL.



Soil survey map.

Seed rate map.

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Turn to Kings for Conservation, Game Cover, Green Cover and Forage Crops.

[www.kingscrops.co.uk](http://www.kingscrops.co.uk)

# The positive approach to soil management

Following the relentless barrage of wet weather from October 2019 through to this year, it is clear that there is much work to be done across a range of sectors to help recover damaged soils. Regardless of your key interests, the following guidance will help steer you in the right direction so you can take the correct action.



## Game Cover

Our main advice is... don't travel on the land too soon! Let the soil dry out sufficiently before travelling to remove equipment or beginning any activity. Consider the crop choice and, with increasing variations in the weather, look at perennial options such as reed canary grass, Stand and Deliver (chicory) or Poacher Leave-it to reduce the risk and spread the workload.



## Forage

With much of the planned autumn re-seeding and overseeding still to be done, it will be necessary to consider when best to travel on seedbeds/swards to undertake this work. There is undoubtedly going to be a shortage of straw given the reduced winter cereal planting, so think about how you can introduce more forage to the rotation, either for home consumption or sales from the farm. Consider quick growing, high output grass options, whole crop and quick growing brassica straights or blends as a way to fill the feed stock gaps.



## Un-planted Land

Leaving land bare through to the late summer will undoubtedly result in slumped soils, loss of nutrient and ultimately, a decline in soil health. Careful selection of a cover crop will help with soil re-structuring in addition to retaining and re-cycling available nutrients.

Look to consider the following elements when planning what to do next:

- **Short term** (3 months) – spring rye, phacelia, vetch, oil radish, buckwheat, mustard (take care with brassica rotation), Soil Structure Mix
- **Medium term** (3-6 months) – Crimson, berseem, red clovers, whole crop (arable silage)
- **Long term** (6-36 months) – Ryegrass/legume, Herb Rich leys, red clover and westerwold annual ryegrass for cutting or grazing use



## Stewardship

If ever there was a time to consider a Countryside Stewardship scheme, it is now! Look to park the poor land and earn valuable revenue from it whilst benefiting the wider environment and bringing risk management and efficiency to your farm business.

# Turn to Kings for all your needs



Talk to the Kings team for expert advice on specialist crops.



## Richard Barnes

Sales Manager/Southern Technical Advisor  
Mob: 07834 098784  
richard.barnes@frontierag.co.uk



## Alan Johnson

Scotland Technical Advisor  
Mob: 07827 842107  
alan.johnson@frontierag.co.uk



## Clive Wood

Business Development Manager/Northern Technical Advisor  
Mob: 07970 097523  
clive.wood@frontierag.co.uk



## Charlotte Holliday

Northern Technical Advisor  
Mob: 07825 193953  
charlotte.holliday@frontierag.co.uk



## Meehal Grint

Central Senior Technical Advisor  
Mob: 07919 013520  
meehal.grint@frontierag.co.uk



## Jim Egan

Midlands Technical Advisor  
Mob: 07919 306309  
jim.egan@frontierag.co.uk



## Paul Brown

Seed Business Development Manager/  
Eastern Technical Advisor  
Mob: 07970 220761  
paul.brown@frontierag.co.uk



## Lee Ward

Western Technical Advisor  
Mob: 07967 553010  
lee.ward@frontierag.co.uk



## Neil Harris

Western Technical Advisor  
Mob: 07342 055216  
neil.harris@frontierag.co.uk



## Matt Willmott

West Midlands Technical Advisor  
Mob: 07776 464066  
matt.willmott@frontierag.co.uk



## Hannah Clarke

Technical Advisor/MyCompliance Advisor  
Mob: 07795 506154  
hannah.clarke@frontierag.co.uk



## Rebecca Page

Kings Supply Chain Manager  
Tel: 01379 658109  
rebecca.page@frontierag.co.uk



## Claire Colchester

Customer Service Administrator  
Tel: 01379 658129  
claire.colchester@frontierag.co.uk



## Daisy Havers

Customer Service Administrator  
Tel: 01379 658127  
daisy.havers@frontierag.co.uk



## Jasmine Utting

Customer Service Administrator  
Tel: 01379 658169  
jasmine.utting@frontierag.co.uk

## Our Team

The Kings team brings together industry leading technical advisors and administrators to ensure you receive the best possible service from start to finish. With full UK coverage, we work alongside our Frontier farm trading and agronomy colleagues to meet local needs that work for you and your business.



## Our Production Facility

The Kings administration, production and despatch hub is based at Diss in Norfolk. Following a £500,000 investment during 2019, the new facilities comprise three dedicated seed mixers and a new infrastructure to support a wider range of seed stock and despatches. With an on-site NIAB accredited seed laboratory, all of our seed is tested and analysed prior to production, ensuring only the highest standards are adhered to.

## Our Integrated Offer

Working alongside Frontier Agriculture and its divisions, we are able to offer our customers a full package of services:

- Soil analysis
- Crop nutrition and crop protection guidance from FACTS/BASIS qualified advisors and product supply
- Foliar feeds to boost mid season crop performance
- Agri-environment scheme support for existing schemes or the preparation and submission of new Countryside Stewardship applications
- Environmental Impact Assessments (EIAs)
- Farmland bird surveys for benchmarking and future planning requirements
- Precision farming expertise working alongside SOYL.

# Winter Oilseed Rape

## 2020/21 Varieties

AHDB approved and Frontier preferred varieties

For further variety data see pages 12-13.

### Selection considerations 2020

#### Geography

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 Voltage or Ballad would therefore be more suitable. Temperature also plays a part as some colder regions will need a variety with greater winter hardiness.

#### 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.

#### Soil conditions

The aim is to achieve good seed-to-soil contact to ensure rapid seed germination and good conditions for residual herbicides to work effectively.

#### Rotation

Short OSR rotations can result in higher pressure from soil-borne diseases such as stem canker and verticillium wilt. Consideration should be given to rotation length and disease resistance scores when making variety choices. For example, LG Antigua offers excellent resistance to stem canker, whilst Flamingo has shown strong responses 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 can be drilled later tend to be hybrids, but Ballad and Flamingo have excellent vigour and could 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. DK Imprint CL provides similar yields to many market leading varieties with the added benefit of good broad leaf 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 HEAR or HOLL, to attract a premium. This does have some practical considerations, including isolation from other OSR crops, but offers options beyond the one market that double low OSR trades into.

## 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 and ADM for various outlets such as frying, margarines and cosmetics.

### LG Antigua Limagrain

Hybrid

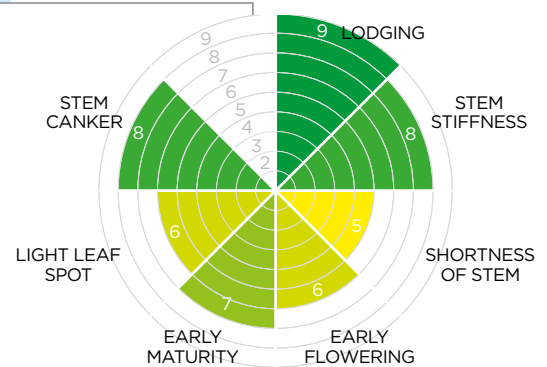
Gross output as a percentage of controls (AHDB Candidate):

UK: 106% East/West: 107%

Oil content: 45.2%

**High Yielding Candidate.** LG Antigua is a hybrid variety with excellent yield potential. It combines a comprehensive package of genetic traits including turnip yellows virus (TuYV) resistance and pod shatter resistance. Antigua has very strong vigour in both the autumn and spring.

TuYV Resistant



### Voltage DSV

Hybrid

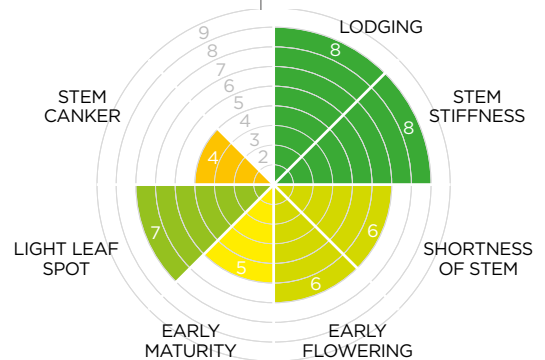
Gross output as a percentage of controls (AHDB Candidate):

UK: 107% East/West: 108% North: 103%

Oil content: 45.6%

**High Yielding Candidate.** Voltage is the highest yielding variety on the AHDB Candidate 20/21 list. With strong autumn vigour and TuYV resistance, Voltage is well suited to coping with modern pest pressures, and has particularly strong performance in the north, underpinned by an excellent light leaf spot resistance. Poor stem canker resistance is the only weakness.

TuYV Resistant



### DK Expectation DeKalb

Hybrid

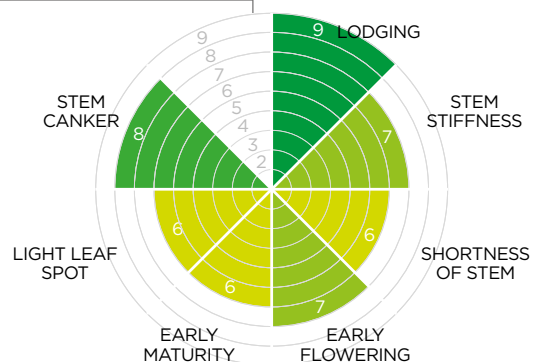
Gross output as a percentage of controls (AHDB Candidate):

UK: 105% East/West: 108%

Oil content: 45.0%

**High Yielding Candidate.** DeKalb’s latest variety builds on the performance of current farm favourites like DK Expansion and DK Expedient. DK Expectation is fully loaded with genetic traits: pod shatter resistance, the RLM7 gene for phoma resistance, and TuYV resistance. Good resistance scores to both stem canker and light leaf spot round off this attractive package.

TuYV Resistant



### DK Expansion DeKalb

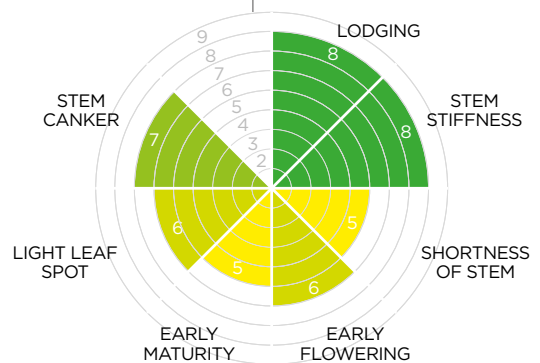
Hybrid

Gross output as a percentage of controls (AHDB):

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

Oil content: 45.5%

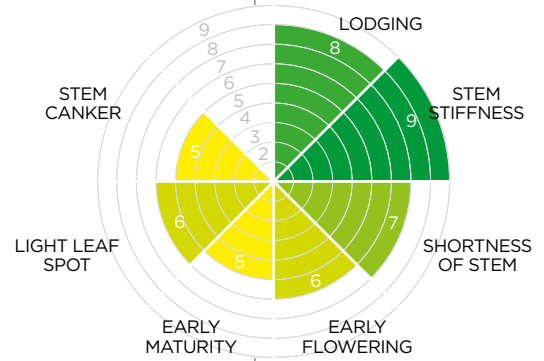
With many of the same traits that have made Extrovert a farm favourite such as the RLM7 gene for phoma resistance, pod shatter resistance and also extremely vigorous autumn growth, DK Expansion adds a little more yield, a stiffer stem, and also a higher oil content.



**Acacia** Limagrain **Conventional**

Gross output as a percentage of controls (AHDB):  
 UK: 109% East/West: 110% North: 108%  
 Oil content: 45.7%

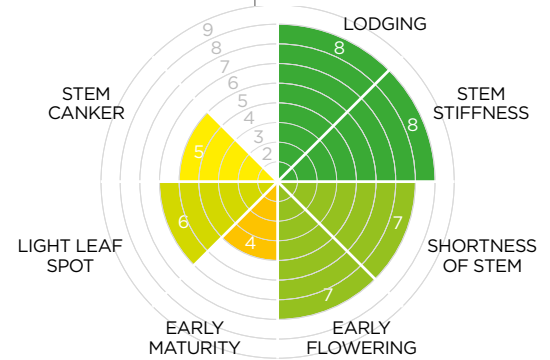
**New Recommendation.** Acacia is the highest yielding variety on the 2020 Recommended List. With excellent performance across all regions of the UK, this conventional variety also has a high oil content and superb standing strength due to its short and stiff straw. High autumn and spring vigour should help with establishment challenges.



**Ballad** KWS **Conventional**

Gross output as a percentage of controls (AHDB):  
 UK: 105% East/West: 105% North: 102%  
 Oil content: 45.8%

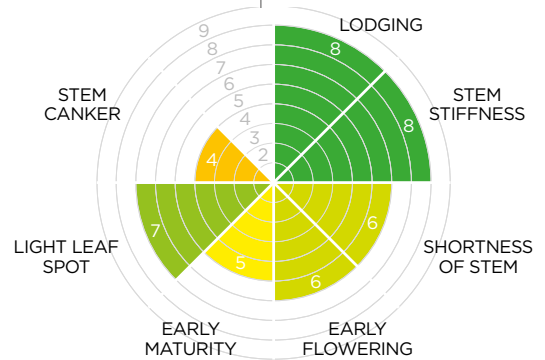
A high yielding conventional variety, with excellent oil content. Bred by Momont, Ballad has similar characteristics to Flamingo such as exceptional early vigour and stiff straw, but with a higher gross output. Good resistance to both stem canker and light leaf spot.



**Flamingo** KWS **Conventional**

Gross output as a percentage of controls (AHDB):  
 UK: 102% East/West: 102% North: 101%  
 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.

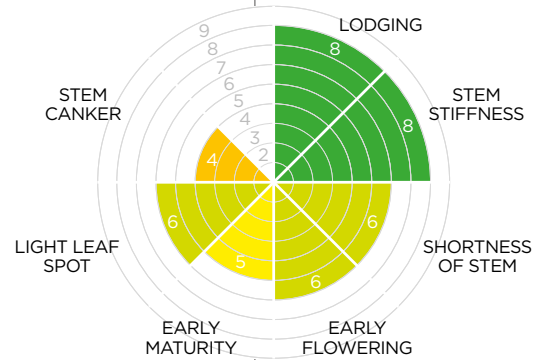


**Crocodile \$** DSV **Hybrid**

Gross output as a percentage of controls (AHDB):  
 UK: 104% East/West: 105% North: 95%  
 Oil content: 45.0%

Crocodile is a high yielding hybrid variety that carries genes providing resistance to strains of clubroot. Early maturing and with good resistance to both light leaf spot and stem canker. Remarkable for bringing the performance of clubroot resistant varieties up onto a level with top non-resistant varieties.

**Clubroot Resistant**

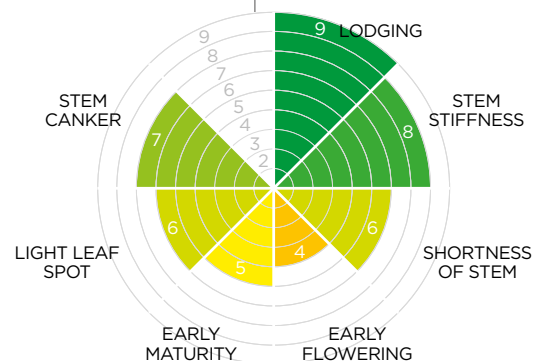


**RGT Azurite** RAGT **Hybrid**

Gross output as a percentage of controls (AHDB NL2):  
 UK: 101%  
 Oil content: 44.0%

RGT Azurite is a high yielding hybrid variety with a strong disease resistance profile and good early vigour. Azurite is also TuYV resistant. Available on an establishment risk share basis, growers will pay a lower up front cost with a later payment based on the hectares successfully established.

**Establishment Risk Share, TuYV Resistant**





## Clearfield

Clearfield OSR varieties can be used where problem weed pressure is high.

Particularly charlock, runch and hedge mustard which are difficult to control with conventional chemistry. The Clearfield hybrids exhibit many of the same agronomic characteristics as any other hybrid, but have the added benefit of the option to use imazamox based products that would damage other OSR varieties.

The clearfield varieties are tolerant to imidazoline herbicides. Imidazoline herbicides are from the same family as the sulfonylurea ALS-inhibiting products which have uses in other crops. A mix of imazamox and metazachlor, this option prolongs the use period and weed control can be tackled later, perhaps 3-6 weeks post emergence, effectively extending the effectiveness of metazachlor which would usually be used pre-emergence or early post.

As it is not a requirement to use this chemistry, Clearfield hybrids can be grown using a conventional OSR growing programme, effectively giving another tool to growers who can experience these difficult weeds. In high weed pressure scenarios, Clearfield varieties will significantly out-yield other OSR varieties and also produce a cleaner sample, with fewer oil contaminants.

### Plurax CL DSV

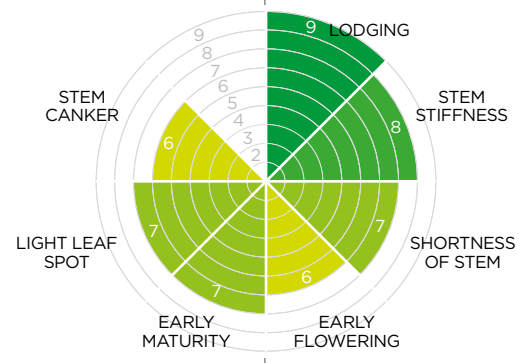
### Hybrid

Gross output as a percentage of controls (NIAB Clearfield Trial 2018):

UK: 104%

Oil content: 45.6%

Plurax CL provides a high yielding Clearfield option, with excellent standing strength, high autumn vigour, and good disease resistance scores. Significantly higher yielding than older Clearfield options, Plurax is ideal for growers wanting a safe and easy-to-manage variety.



### DK Imprint CL DeKalb

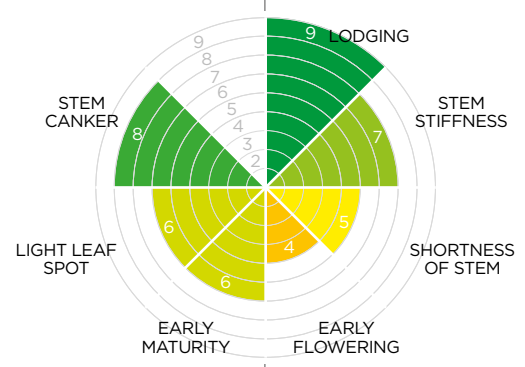
### Hybrid

Gross output as a percentage of controls (NIAB Clearfield Trial 2019):

UK: 107%

Oil content: 43.8%

DK Imprint CL was the highest performing variety in NIAB's Clearfield Trials 2019, with 107% of controls. Imprint has a good collection of agronomic features and disease resistance, including suitability for later drilling to avoid pest pressures. Slower re-growth in the spring makes it well suited to colder and heavier soils.



## HOLL

High oleic low linolenic (HOLL) oil is marketed under the Vistive brand. It's a healthier vegetable oil, lower in saturated fats and free of trans-fatty acids. It's particularly attractive for large food companies because it offers an alternative to oils they may depend on and they can use it in varying blends. It also has the benefit of local sourcing and is more sustainable. One hectare of oilseed rape will produce more oil with less water than one hectare of sunflowers.

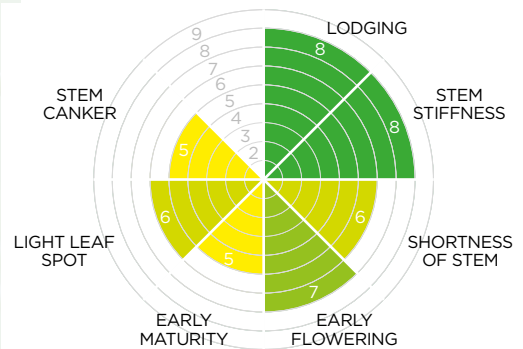
Major fast food restaurants, for example, now fry their chips in British HOLL oil. This is a necessary choice for the fast food industry as it is coming under public scrutiny for its use of trans-fatty acids, which reportedly increase the risk of heart disease. It also allows big oil users to be less dependent on imported palm oil and sunflower oil. Although normal rapeseed oil is used by the domestic market, it breaks down more quickly than other oils in deep fat fryers. HOLL oil, however, is more stable. Growers benefit from a good premium over double-low with the usual bonuses for oil, moisture, and admixture.

### V316OL DeKalb

### Hybrid

Gross output as a percentage of controls (AHDB):  
UK: 98% East/West: 98% North: 97%  
Oil content: 45.3%

HOLL variety V316OL was the first variety with a different oil profile to match yields of some of the best double-low varieties. It is now the most widely grown HOLL variety due to excellent performance on farm, supported by the stiff stem and solid scores for both light leaf spot and stem canker.



## HEAR

High erucic acid rape (HEAR) is a special group of rape varieties used in the manufacture of erucamide, which is a slip agent in plastic components included on products such as printing inks and lubricants. Croda, one of the world's largest oleochemical producers, has a major erucamide production plant in Hull. Frontier sources rape for this plant which has traditionally come from the surrounding regions.

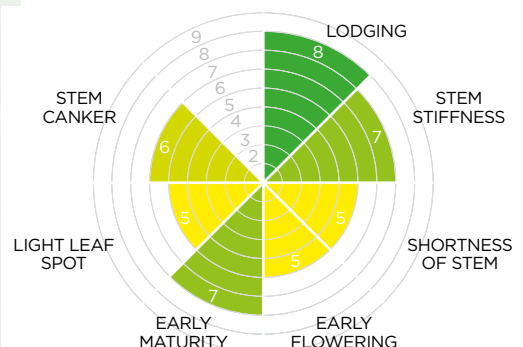
The attraction for the grower is a significant premium over double-low OSR, harvest movement and various pricing options to ensure good base prices are achieved.

### Ramses ID Grain









### Hybrid

Gross output as a percentage of controls (Frontier trials): UK: 107%  
Oil content: 46.5%

Ramses is the latest HEAR variety and has displayed good autumn vigour in Frontier trials. It was slightly later to flower, but as early to mature as Eraton. Ramses has a very high oil content, with gross output exceeding both Eraton and Palmedor in the trial. It has good resistance to both light leaf spot and stem canker and is now the top rated HEAR variety.



# The difference between Frontier's oilseed rape marketing standards and the EEC minimum standards

Number of impurities tolerated per 500g bag	EEC minimum standard	Marketing standard Frontier aims to achieve
Seeds of other plants ▶	 0.3%	0
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 <sub>g</sub>	 5 <sub>g</sub>
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. To date, all samples tested have been well below the required standard.

# Seed treatments and sowing rates

Greater pressure on oilseed rape establishment means it is essential to pay close attention to seed rates and the appropriate use of seed treatments.

## 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 herbicide damage.

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/m<sup>2</sup> rather than by weight. Target 30-40 plants/m<sup>2</sup> after winter, working seed rates back to take into account likely in-field losses. For hybrid varieties this equates to drilling 50 seeds/m<sup>2</sup>, which is the suggested drilling rate from most breeders. Conventional varieties will vary more due to conditions and date, although 80-110 seeds/m<sup>2</sup> 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.

**OSR seed rates will vary based on various criteria. As a starting point, it is suggested hybrid varieties are drilled at 50 seeds/m<sup>2</sup> and conventional varieties at 100 seeds/m<sup>2</sup>.**

**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.**



## 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.



## Early root development

Promoting rapid emergence and earlier growth is vital to a successful crop. Winter survival and eventual crop yield are heavily influenced by early root development. Prosper ST seed treatment has a high proportion of phosphite to stimulate early root growth, an effect enhanced by the use of water soluble phosphate fertilisers and foliar phosphite applications to the growing crop. This is never more critical than with oilseed rape. Frontier OSR seed is treated with Prosper ST along with Seed-Life™, a nutrient rich additive. Results from 20 years of trials show a yield advantage of 123kgs/ha, worth around £40/ha over single-purpose dressed seed.

## Seedbed nutrition

Crop nutrition plays a significant role in early season growth, aiding rapid emergence and establishment. This will allow the correct timing of foliar insecticide sprays but importantly, will also help to alleviate flea beetle damage. To achieve this early applications are essential, either as overall applications immediately after drilling (or even before if using shallow tillage) or placed using the drill. In terms of nutrients, nitrogen is important to fuel overall growth, but the inclusion of phosphate is vital to stimulate the all-important root growth and development. The choice of product depends on the applicator on the drill or the technique used, but options will include DAP, a compound NPKS (e.g. Actyva S or 12.15.21 + 20SO<sub>3</sub>), Seed Sprint micro-granules and NP Clear Liquids (e.g. 7.20.0 or 14.14.0) or Suspensions. Applications must comply with the 30kgs N/ha Nmax limit in the autumn.”

## Treatments available

In addition, Frontier produced OSR seed will be treated with the following added value treatments at no extra charge.

### Prosper ST

(N, P, K, Mg, Fe, Mn, Zn, Cu, Bo, Mo) co-applied with fungicide seed treatments.

- Applying phosphite to the seed facilitates and encourages root growth immediately after germination and establishment
- Best responses come when sowing in less than ideal conditions, min-till establishment systems, and later drilling
- Increased shoot development, thicker crops during establishment
- Strengthens resistance to fungal attack - positive effect against pythium.

### Seed-Life™

(N, P, K, Mg, Ca, Mg, S + Trace elements and growth promoters) nutrition and growth promoter.

- Seed-Life™ is a natural liquid nutrient formulation applied directly to the seed to improve emergence and provide a healthier, more vigorous start for the seedling
- Nitrogen 2%, Phosphorus 9%, Potassium 6%
- More consistent germination, earlier more even emergence
- Larger healthier roots, increased yield potential, assists uptake of moisture from the soil
- Makes nutrients and trace elements available in the immediate zone around the seed which are easily accessed by young roots, thus promoting optimum availability for early growth
- 20 continuous years of Frontier Seed-Life™ trials show an average yield increase of 123kgs/ha, returning an additional £40/ha over single-purpose dressed seed.

### PolySeia\* 500S

- High quality unique formulation polymer coating that positively impacts on germination in dry conditions
- Helps reduce dust
- Provides even coverage of other treatments
- Coloured to allow visibility in field to check drilling accuracy.



# Winter Oilseed Rape 2020/21

\* = Not from same data set

\$ = Crocodile, Crome, and Croozer are recommended for growing on land infected with common strains of clubroot

& = Herbicide tolerant variety. PT279CL and Nizza CL have a specific recommendation for tolerance to specific imidazolinone herbicides (a Clearfield® variety)

- = HOLL (High Oleic, Low Linolenic) variety

† = HEAR (High Erucic Acid) variety



	Variety type	Scope of recommendation	United Kingdom (5.1t/ha)	East/West region (5.0t/ha)	North region (5.7t/ha)	Oil content, fungicide-treated (%)	Resistance to lodging (1-9)	Stem stiffness (1-9)	Shortness of stem (1-9)	Plant height (cm)	Earliness of flowering (1-9)	Earliness of maturity (1-9)	Light leaf spot (1-9)	Stem canker (1-9)	TuYV
<b>Recommended for the UK (both East/West and North regions)</b>															
<b>Acacia</b>	Conv	UK	109	110	108	45.7	[8]	9	7	150	6	5	6	5	-
<b>Ambassador</b>	RH	UK	108	108	[104]	45.3	[8]	8	6	161	7	6	7	8	R
<b>Aurelia</b>	RH	UK	108	107	108	45.2	[8]	8	6	155	7	5	8	8	R
<b>Artemis</b>	RH	UK	107	107	[106]	45.7	[8]	8	5	167	6	6	6	7	R
<b>Aspire</b>	Conv	UK	106	106	105	45.7	8	9	7	147	7	5	7	6	R
<b>Aardvark</b>	Conv	UK	105	105	106	45.7	[8]	8	6	154	8	5	7	6	-
<b>Ballad</b>	Conv	UK	105	105	102	45.8	8	8	7	150	7	4	6	5	-
<b>DK Expansion</b>	RH	UK	103	103	104	45.5	8	8	5	165	6	5	6	7	-
<b>Temptation</b>	RH	(Sp)	103	103	98	46.0	8	7	6	154	6	5	6	5	R
<b>Architect</b>	RH	(Sp)	101	101	97	45.0	8	8	6	161	6	6	5	5	R
<b>Nikita</b>	Conv	UK	100	99	102	45.7	8	8	7	148	7	5	7	4	-
<b>V 316 OL ~</b>	RH	Sp	98	98	97	45.3	8	8	6	157	6	5	6	5	-
<b>PT279CL &amp;</b>	RH	Sp	96	96	92	44.9	8	8	6	156	6	6	6	5	-
<b>Recommended for the East/West region only</b>															
<b>Dazzler</b>	RH	E/W	103	104	[101]	46.2	[8]	9	6	155	8	6	6	8	R
<b>Darling</b>	RH	E/W	103	103	[102]	46.0	[8]	8	6	160	7	5	6	8	R
<b>PT275</b>	RH	E/W	102	103	98	45.5	8	8	6	156	5	5	6	5	-
<b>Windozz</b>	RH	E/W	102	103	99	44.5	8	8	7	150	8	5	5	5	-
<b>George</b>	RH	E/W	102	102	101	45.4	8	8	7	151	7	5	6	9	-
<b>Elgar</b>	Conv	E/W	100	101	98	45.1	8	8	6	154	6	6	7	6	-
<b>Nizza CL &amp;</b>	RH	Sp	96	96	[90]	45.0	[8]	8	6	153	7	5	4	6	-
<b>Recommended for the North region only</b>															
<b>Blazen</b>	Conv	N	103	102	[105]	44.8	[8]	9	6	152	6	5	6	7	-
<b>DK Exsteel</b>	RH	N	101	101	103	45.5	8	8	5	165	6	5	7	8	-
<b>Elevation</b>	Conv	N	98	97	102	45.6	8	8	7	151	5	5	6	5	-
<b>Barbados</b>	Conv	N	99	98	102	45.0	8	8	6	154	6	4	8	7	-
<b>Anastasia</b>	Conv	N	98	97	101	44.6	8	8	7	149	6	5	7	5	-
<b>Kielder</b>	Conv	N	96	95	99	45.9	8	9	6	159	7	5	7	3	-
<b>Broadway</b>	Conv	N	94	93	98	45.2	8	8	6	152	7	5	7	4	-
<b>Butterfly</b>	Conv	N	99	99	98	45.4	8	8	7	149	6	4	7	6	-
<b>Recommended for use on clubroot infected land only</b>															
<b>Crome \$</b>	RH	UK Sp	102	102	104	46.4	8	8	6	154	7	5	6	4	-
<b>Crocodile \$</b>	RH	E/W Sp	104	105	[95]	45.0	[8]	8	6	153	6	5	6	4	-
<b>Croozier \$</b>	RH	E/W Sp	102	102	[97]	44.8	[8]	8	6	152	8	6	6	9	-
<b>Described varieties</b>															
<b>PX131</b>	RH SD	UK	97	97	98	46.7	[8]	9	9	122	6	4	7	6	-
<b>Resort †</b>	RH	UK	94	94	93	45.8	[8]	8	6	155	7	5	6	6	-

# Winter Wheat 2020/21 Varieties

AHDB approved and Frontier preferred varieties

For further variety data see pages 22-23.

Wheat markets and variety choices are extremely important and we encourage growers to review their individual situation. The consumption of wheat is changing with the reduced demand from ethanol and likely increase in exports. As surpluses will need to be of suitable quality for the destination, growing varieties that match the market demand locally is of critical importance. 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	Mid September	Early part of main drilling window	Late part of main drilling window	Late drilling	Light land	Second wheat	Good Septoria tritici resistance
RGT Wolverine KWS Parkin KWS Colosseum KWS Barrel Grafton	Gleam Graham RGT Wolverine RGT Saki KWS Jackal KWS Barrel KWS Parkin KWS Colosseum Costello Crusoe	Gleam RGT Saki LG Spotlight KWS Firefly KWS Kerrin KWS Extase KWS Jackal KWS Zyatt Costello	Gleam RGT Saki RGT Gravity LG Spotlight KWS Firefly KWS Extase KWS Siskin KWS Jackal Skyfall	Gleam RGT Gravity KWS Extase KWS Siskin Belepi	SY Insitor KWS Kinetic RGT Gravity KWS Extase KWS Kerrin KWS Jackal KWS Barrel	Gleam RGT Gravity KWS Kerrin KWS Jackal KWS Extase KWS Siskin KWS Zyatt Skyfall	KWS Extase KWS Firefly RGT Saki Graham KWS Siskin SY Insitor

## Selection Considerations 2020

### Drilling dates

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 seed beds very narrow compared to southern England.



### Disease and pest risk

- Risk of disease in highly susceptible varieties will only increase if drilled early. Mid-September plantings having considerably higher levels of septoria and yellow rust than that drilled in October.
- Frontier trials illustrate how the more resistant varieties withstand septoria and rust pressure while achieving relatively high yields; for example, Extase, Siskin and Gleam.
- 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. Grafton and Barrel are key varieties at this time.

### 20th September to early October (main drilling window)

- Most varieties can be drilled during this period. If a range of varieties is on farm, segregate by speed of early development and straw strength.

### Late drilling

- Attributes should include fast early development and good tillering capacity to ensure good ground cover going into winter, for example KWS Siskin, Extase, Gravity and Gleam.
- Belepi and Chilham are both options which give drilling date flexibility throughout autumn and spring.
- In Frontier 3D Thinking trials Belepi has shown very good yields but does require a robust PGR programme.

### Second wheat

- Most varieties perform much as they would in the first wheat slot. Ideally, varieties should have good resistance to eyespot, but this is not always reflected in final yield.
- Varieties that appear to be less suited include Crusoe, KWS Crispin, Costello, KWS Lili, and Graham.
- Varieties that perform better as second wheats compared to their performance as a first wheat include; Gleam, Gravity, Kerrin, and Extase.
- Quality wheats such as Zyatt, Crusoe, Siskin and Skyfall are often drilled in this slot, as the reduced yield potential can help maintain grain protein content.

## KWS Zyatt

### Group 1

**KWS** Quartz x Hereford

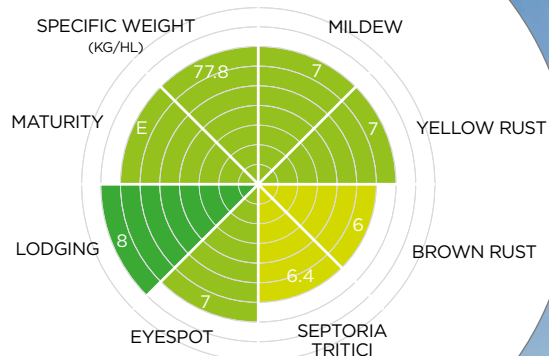
**Yield as a percentage of controls: 99% (AHDB)**

The highest yielding Group 1 variety with a wide range of baking uses and a good specific weight.

The Pch1 gene for eyespot resistance makes KWS Zyatt an attractive second wheat option.

Stiff strawed and early maturing, KWS Zyatt should perform well throughout the United Kingdom.

**Pch1 Gene - Eyespot Resistance**



## Skyfall

### Group 1

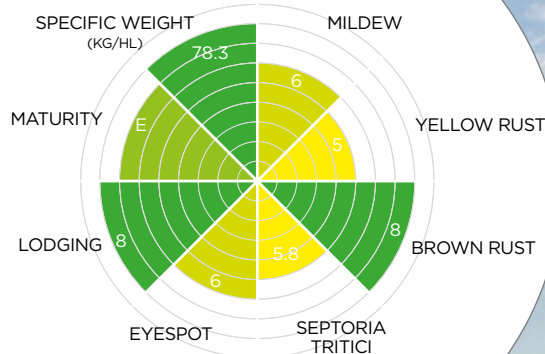
**RAGT** C1418 x Hurricane

**Yield as a percentage of controls: 97% (AHDB)**

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 eyespot resistance. Some evidence of a sprouting risk mean Skyfall should be harvested early.

**Pch1 Gene - Eyespot Resistance, OWBM Resistant**



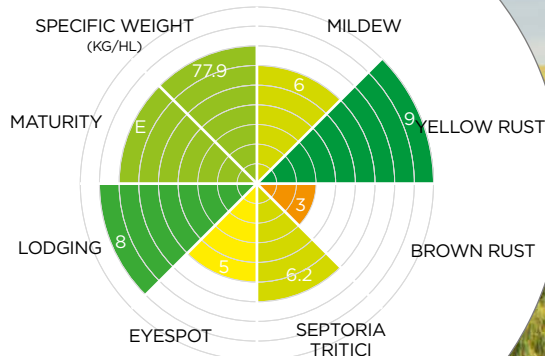
## Crusoe

### Group 1

**Limagrain** Cordiale x Gulliver

**Yield as a percentage of controls: 96% (AHDB)**

Crusoe is a bread making variety, that can be drilled earlier than Zyatt and Skyfall. Crusoe has good disease resistance, apart from Brown rust where it is particularly poor. Usefully high protein, and good sprouting resistance.



## KWS Extase

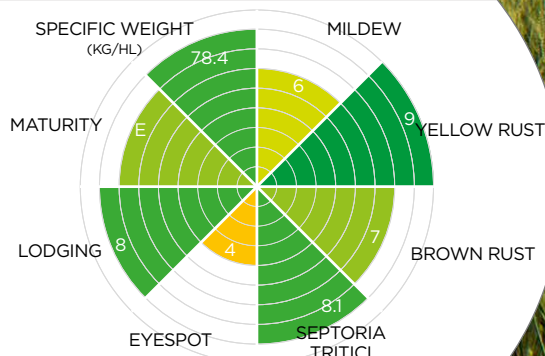
### Group 2

**KWS** Boisseau x Solheio

**Yield as a percentage of controls: 101% (AHDB)**

KWS Extase is sure to be a key variety for many growers in 2020. High yields and excellent grain quality are supported by an outstanding disease resistance package, including an 8.1 for Septoria tritici resistance. With tall straw and a very vigorous growth habit, Extase is well suited to later drilling.

**Outstanding Septoria Tritici Resistance**



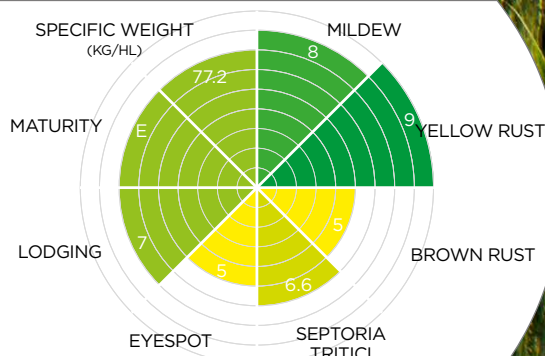
## KWS Siskin

### Group 2

**KWS** KWS Sterling x Timaru

**Yield as a percentage of controls: 101% (AHDB)**

A high yielding Group 2 wheat, KWS Siskin is grown by many as a feed variety due to its strong disease resistance. A consistent performer in Frontier trials, Siskin has a vigorous growth habit and does require a robust PGR programme to minimise lodging risk.



### KWS Firefly

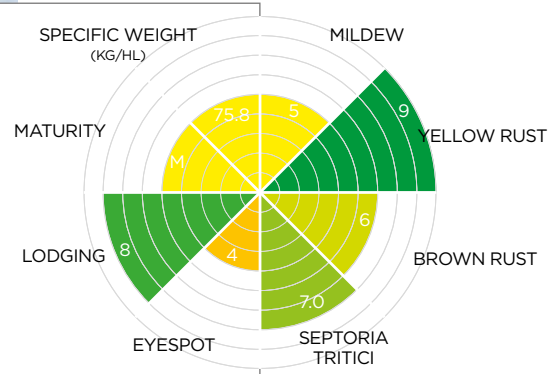
Group 3

**KWS** *KWS Rowan x Cougar*

**Yield as a percentage of controls: 102% (AHDB)**

The top yielding Group 3 wheat, KWS Firefly is the standout choice for biscuit wheat growers in the east and west regions. Very stiff straw and a strong septoria resistance make for an easy-to-manage variety. A slightly lower bushel weight is the only trade off, though OWBM resistance will provide some reassurance in this area.

OWBM Resistant



### KWS Barrel

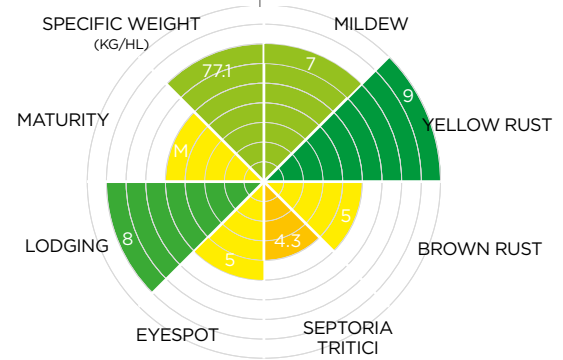
Group 3

**KWS** *Viscount x Bantam*

**Yield as a percentage of controls: 100% (AHDB)**

A well established, high yielding biscuit wheat - particularly in the Northern AHDB region. Barrel also classifies as a UKS soft wheat for export. Short, very stiff straw make it a good performer on light soils or on sites with high organic manure applications. A weak septoria score will require management. A slower developing variety well suited to early drilling.

OWBM Resistant



### RGT Saki

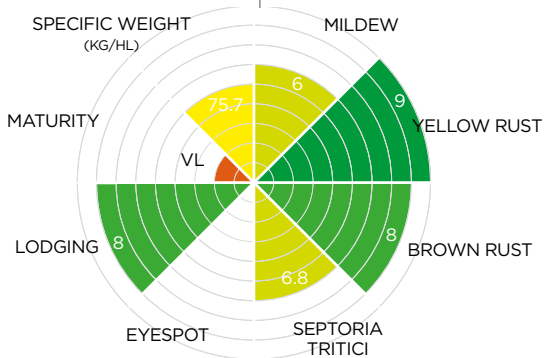
Group 4 Soft

**RAGT** *Cougar x KWS Santiago*

**Yield as a percentage of controls: 104% (AHDB)**

**New Recommendation.** A high yielding soft feed wheat with excellent untreated yield due to a strong all round disease resistance package. Stiff straw and a good septoria resistance make Saki a candidate for earlier drilling, which would offset the late maturity.

OWBM Resistant



### LG Spotlight

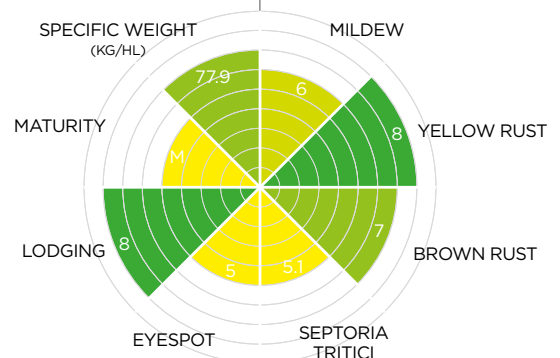
Group 4 Soft

**Limagrain** *Scribe x Horatio*

**Yield as a percentage of controls: 103% (AHDB)**

A soft Group 4 feed wheat with similar yields to RGT Gravity, Gleam, and KWS Kerrin, but with taller and stiffer straw. A very good bushel weight for a feed variety. Tall straw that stands well when treated with a robust PGR programme.

OWBM Resistant



### KWS Jackal

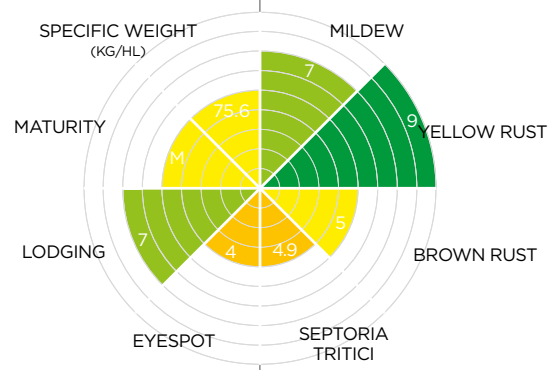
Group 4 Soft

**KWS** *Santiago x W177*

**Yield as a percentage of controls: 101% (AHDB)**

High yielding soft feed variety suitable for distilling. A slow developing variety that is suitable for drilling from 10th September. Performs best in the major eastern and northern regions of the UK across both light and heavy soils. A high tillering growth habit with resistance to orange wheat blossom midge.

OWBM Resistant



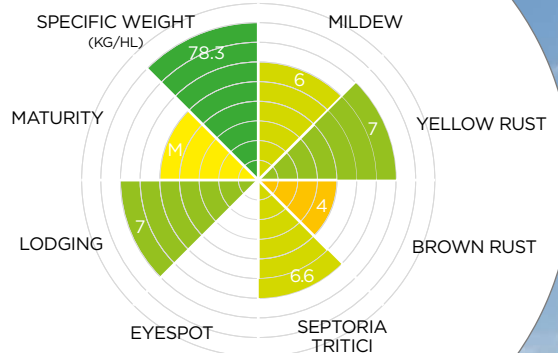
## SY Insitor

## Group 4 Hard

Syngenta (Hereford x Oakley) x Hereford  
Yield as a percentage of controls: 105% (AHDB)

**New Recommendation.** The joint highest yielding wheat variety for 2020, SY Insitor performs exceptionally well in all regions and across all soil types. The variety has a strong disease resistance profile and excellent bushel weight. High biomass potential is used to drive yield, but will require a robust PGR programme to manage lodging risk.

OWBM Resistant



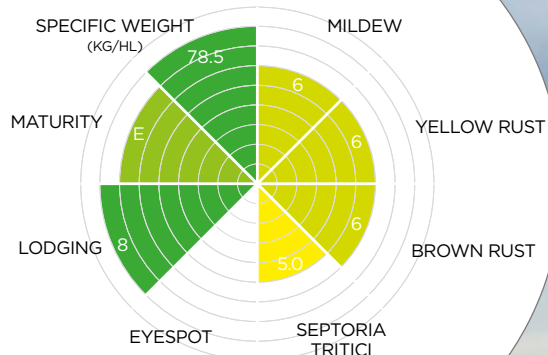
## KWS Kinetic

## Group 4 Hard

KWS Silverstone x Reflection  
Yield as a percentage of controls: 104% (AHDB)

**New Recommendation.** KWS Kinetic offers big yields and bold grain, but will require close agronomic management. Short, very stiff straw make it suited to more fertile or exposed sites. An excellent bushel weight of 78.5kg/hl is only beaten by Costello (which Kinetic out-yields by 5%). Kinetic has a balanced set of disease scores, sufficient to support its impressive yields.

OWBM Resistant



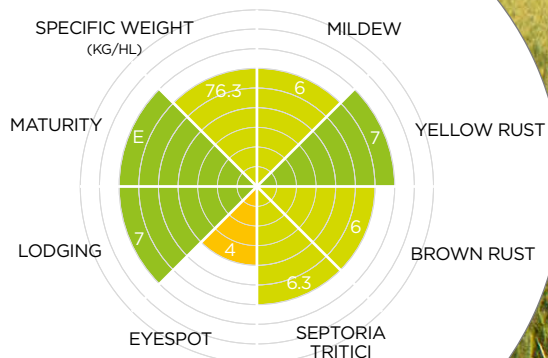
## Gleam

## Group 4 Hard

Syngenta Hereford x Kielder  
Yield as a percentage of controls: 103% (AHDB)

An enormously popular variety in 2019, Gleam continues to provide a well-rounded package of high yields, good agronomic features, and robust disease resistance. Earlier maturing than most other top-yielding feed wheats and with a high tillering capacity and reasonably stiff straw that make Gleam suitable for a wide drilling window.

OWBM Resistant



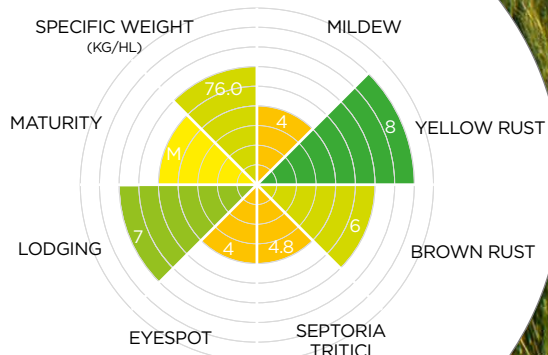
## RGT Gravity

## Group 4 Hard

RAGT Scout x (Oakley x Santiago)  
Yield as a percentage of controls: 103% (AHDB)

A fast developing and high tillering variety that is suitable for drilling from 20th September onwards but is particularly well suited to later drilling. High yield potential comes at a slight trade off in straw strength and disease resistance. A good option as both a first and second wheat.

OWBM Resistant



### KWS Kerrin

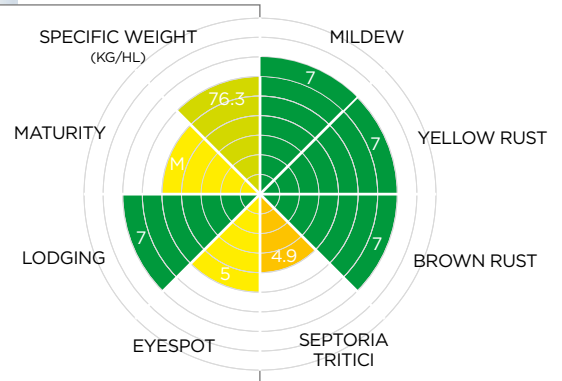
### Group 4 Hard

KWS *KWS Santiago x W177*

Yield as a percentage of controls: 102% (AHDB)

A widely grown variety valued for consistent yield performance, KWS Kerrin is an established farm favourite. Whilst higher yielding options are now available, Kerrin's track record across the last three years of varied growing conditions make it a bankable variety with few weaknesses.

OWBM Resistant



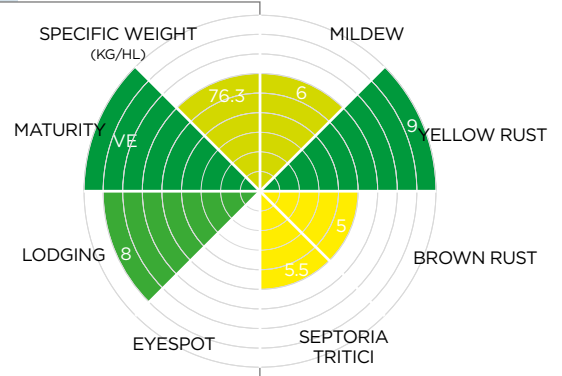
### KWS Parkin

### Group 4 Hard

KWS *Reflection x Costello*

Yield as a percentage of controls: 102% (AHDB)

**New Option.** An exciting and rarely seen combination of features makes KWS Parkin a key new option for 2020. 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 the leading feed wheats, Parkin offers something genuinely different and should not be overlooked.



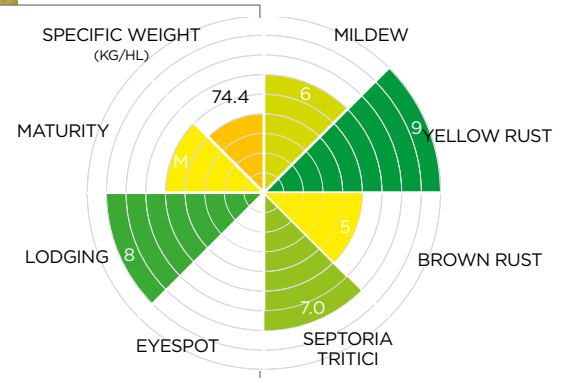
### KWS Colosseum

### Group 4 Soft

KWS *Cougar x Beluga*

Yield as a percentage of controls: 105% (KWS Trials)

**New Option.** KWS Colosseum has shown yields comparable with leading varieties such as LG Skyscraper and Gleam. An excellent 7.0 rating for Septoria tritici and stiff straw make this variety a good option for early drilling. Colosseum's growth habit is slow to move but vigorous once it does, ending a maturity similar to KWS Kerrin.



### RGT Wolverine

### Group 4 Hard

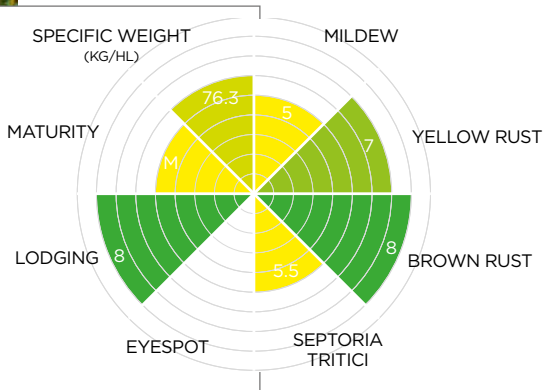
RAGT

Yield as a percentage of controls: 102% (AHDB)

**2021 Candidate Variety.** RGT Wolverine is the first wheat variety with genetic resistance to the barley yellow dwarf virus (BYDV). Better still, this BYDV resistance comes without compromising on yield or agronomic features; Wolverine is of comparable yield to leading feed varieties.

There will be very limited seed availability in 2020.

BYDV Resistant



# Winter Wheat 2020/21

Marketing Group		Yield (t/ha)				Yield (t/ha)				Yield (t/ha)			Speed of development	Tillering capacity	Suitability for early drilling
		United Kingdom (11.2t/ha)	East region (11.1t/ha)	West region (11.2t/ha)	North region (11.3t/ha)	Untreated yield (11.2t/ha)	Light soils (11.1t/ha)	Heavy soils (11.3t/ha)	First cereal (11.6t/ha)	Second and more (9.8t/ha)	Early sown (before 25 Sept) (11.2t/ha)	Late sown (after 1 Nov) (9.6t/ha)			
1	KWS Zyatt	99	99	99	97	83	97	100	98	99	[[104]]	97	Moderate	High	No
	Skyfall	97	97	97	96	78	97	97	97	98	98	97	Fast	Low/Mod	No
	Crusoe	96	96	97	92	71	94	97	96	93	95	94	Mod/Slow	Moderate	Yes
	RGT Illustrious	96	96	96	92	82	92	97	95	94	97	95	Slow	Mod/High	Yes
2	KWS Extase	101	100	101	100	95	103	101	101	100	-	[[102]]	Fast	Mod/High	No
	KWS Siskin	101	101	101	98	83	99	101	100	100	102	100	Fast	Mod/High	No
	LG Detroit	100	100	101	[93]	77	99	101	99	100	-	[99]	Moderate	Moderate	Yes
3	KWS Lili	99	99	99	101	71	100	99	100	98	[[103]]	100	Moderate	High	Yes
	KWS Firefly	102	102	102	98	84	101	103	102	100	[103]	[102]	Moderate	Mod/High	No
	KWS Barrel	100	100	100	104	72	102	100	101	100	98	100	Slow	High	Yes
	Elicit	100	99	100	100	81	99	99	100	100	100	97	Moderate	Moderate	No
	KWS Basset	98	98	98	97	71	97	98	98	98	100	98	Fast	Moderate	No
4S	Zulu	97	97	97	98	69	98	97	97	96	98	99	Mod/Slow	Mod/High	No
	LG Skyscraper	105	106	104	103	83	105	105	105	104	-	[[104]]	Moderate	Mod/High	No
	RGT Saki	104	104	104	[101]	86	[102]	104	103	[103]	-	[[107]]	Mod/Slow	Mod/High	Yes
	LG Spotlight	103	102	104	100	80	101	103	103	101	103	[102]	Moderate	High	No
	KWS Jackal	101	101	101	102	76	101	101	101	102	102	101	Slow	High	Yes
	Elation	101	101	101	101	77	101	101	101	102	100	[100]	Moderate	Moderate	No
	Bennington	101	101	102	96	79	98	102	100	100	100	99	Moderate	Low	No
	LG Sundance	100	100	100	99	85	99	100	100	101	[98]	100	Slow	High	Yes
	LG Motown	99	99	99	98	83	98	98	99	99	[96]	97	Fast	High	No
	Leeds	97	97	96	98	67	98	98	97	97	[98]	100	Mod/Fast	High	No
	Viscount	96	96	96	99	75	99	96	97	[[99]]	[96]	[[99]]	Slow	Mod/High	No
	Revelation	96	96	95	95	77	95	96	96	95	96	[[97]]	Slow	Moderate	Yes
	KWS Colosseum	105	-	-	-	-	-	-	105	103	-	-	Moderate	Mod/High	Yes
4H	SY Insitor	105	104	105	[105]	82	[108]	104	105	[103]	-	[[110]]	Fast	High	No
	KWS Kinetic	104	104	105	[102]	79	[104]	105	104	[102]	[100]	[[103]]	Fast	High	No
	Gleam	103	103	103	102	84	102	103	103	104	103	104	Moderate	High	Yes
	RGT Gravity	103	103	103	102	79	103	102	103	103	[100]	103	Fast	High	No
	KWS Kerrin	102	102	102	103	79	102	101	102	103	-	104	Moderate	High	No
	Shabras	102	102	102	102	81	102	101	102	102	[[105]]	98	Fast	High	No
	Graham	102	101	104	99	88	100	102	102	100	100	[100]	Moderate	Moderate	Yes
	KWS Crispin	101	101	101	96	83	99	101	100	98	[[97]]	102	Fast	Mod/High	No
	Theodore	100	100	102	[[91]]	90	-	101	100	[[99]]	[[101]]	[[100]]	-	-	-
	Dunston	100	100	99	99	82	99	100	99	100	101	99	Slow	Moderate	No
	Costello	99	99	101	98	81	98	100	100	98	99	100	Moderate	Mod/High	Yes
	KWS Parkin	102	102	101	[101]	81	-	-	-	-	-	-	Moderate	Moderate	Yes
	RGT Wolverine	102	-	-	-	81	-	-	-	-	-	-	Slow	Moderate	Yes

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.

Suitability as second wheat	Latest safe sowing date	Protein content (%)	Hagberg Falling Number	Specific weight (kg/hl)	Resistance to lodging without PGR (1-9)	Resistance to lodging with PGR (1-9)	Height without PGR (cm)	Ripening (days +/- Skyfall, -ve = earlier)	Resistance to sprouting (1-9)	Mildew (1-9)	Yellow rust (1-9)	Brown rust (1-9)	Septoria nodorum (1-9)	Septoria tritici (1-9)	Eyespot (1-9)	Fusarium ear blight (1-9)	Orange wheat blossom midge	Frontier seed production
***	End Jan	12.4	269	77.8	7	8	84	0	[5]	7	7	6	[6]	6.4	7@	6	-	Y
***	End Feb	12.4	278	78.3	8	8	83	+0	5	6	5	8	[6]	5.8	6@	7	R	Y
*	End Jan	12.9	273	77.9	7	8	81	+0	6	6	9	3	[6]	6.2	5	6	-	Y
***	Mid Feb	12.2	272	77.2	7	8	89	+1	6	6	9	6	[6]	6.0	6@	6	-	-
***	[End Jan]	12.0	297	78.4	7	8	90	-0	[7]	6	9	7	-	8.1	[4]	6	-	Y
***	End Jan	11.9	286	77.2	6	7	84	+0	5	8	9	5	[6]	6.6	5	5	-	Y
**	[End Jan]	12.3	279	77.6	8	7	85	+1	[6]	5	9	5	-	5.3	[5]	7	R	-
*	Mid Feb	11.5	295	77.3	7	8	81	+2	7	8	7	4	[6]	5.9	4	6	-	-
**	[End Feb]	11.9	245	75.8	8	8	82	+1	[6]	5	9	6	-	7.0	[4]	5	R	Y
**	End Jan	11.3	224	77.1	7	8	83	+1	6	7	9	5	[6]	4.3	5	6	R	Y
***	End Jan	11.7	216	76.9	7	8	85	+1	[5]	6	9	7	[6]	5.5	4	6	R	-
***	End Jan	11.6	235	77.5	7	8	85	+1	6	5	8	5	[6]	5.0	5	6	R	-
*	End Feb	11.7	225	76.0	6	7	89	+0	5	7	5	7	[6]	5.4	4	6	R	-
**	[End Jan]	11.4	218	76.9	7	7	91	+0	[6]	7	8	6	-	5.0	[4]	6	R	Y
**	[[End Jan]]	11.6	221	75.7	7	8	87	+3	[5]	6	9	8	-	6.8	-	6	R	Y
**	[End Feb]	11.4	288	77.9	7	8	93	+1	[7]	6	8	7	-	5.1	[5]	6	R	Y
***	End Jan	11.1	182	75.6	7	7	86	+1	[5]	7	9	5	[5]	4.9	4	6	R	Y
***	End Jan	11.6	206	77.4	7	8	82	+1	[6]	7	9	6	[6]	4.3	4	6	R	-
**	End Jan	11.7	236	77.5	7	8	91	+1	[5]	7	5	7	[7]	6.6	4	6	-	-
***	End Jan	11.3	175	73.9	6	7	86	+2	[4]	7	9	6	[6]	7.9	3	6	R	-
***	End Jan	11.4	223	75.6	6	6	83	-0	[5]	7	9	7	[6]	5.4	4	6	R	-
**	End Feb	11.4	216	77.8	7	8	85	+2	6	3	6	7	[6]	4.8	5	7	R	-
**	Mid Feb	11.4	195	75.9	7	8	80	+1	5	6	6	8	[6]	4.8	4	6	R	-
***	End Jan	11.8	250	76.4	7	8	85	+3	5	6	9	8	[7]	6.0	7@	6	-	-
***	-	-	295	74.4	8	8	83	+1	-	6	9	5	-	7.0	-	-	-	Y
**	[[End Jan]]	10.7	265	78.3	6	7	93	+1	[5]	6	7	4	-	6.6	-	6	R	Y
***	[[End Jan]]	11.3	262	78.5	7	8	83	+0	[6]	6	6	6	-	5.0	-	6	R	Y
***	Mid Feb	11.3	219	76.3	7	7	86	+0	[5]	6	7	6	[6]	6.3	4	6	R	Y
***	End Jan	11.4	204	76.0	7	7	87	+1	[4]	4	8	6	[6]	4.8	4	6	R	Y
***	End Jan	10.9	151	76.3	7	7	85	+1	[5]	7	7	7	[6]	4.9	5	6	R	Y
***	End Jan	11.4	209	75.9	7	7	86	-0	[4]	6	7	5	[6]	6.3	4	5	-	-
*	End Jan	11.4	276	76.8	7	8	87	-0	7	7	8	6	[6]	6.8	4	6	-	Y
*	Mid Feb	11.7	273	77.0	7	7	86	+1	5	6	9	5	[6]	5.9	4	6	R	-
-	[[End Jan]]	12.1	307	73.8	7	8	82	-0	[7]	7	9	7	-	8.2	-	6	-	-
***	End Jan	11.6	229	76.9	7	8	92	+1	[5]	5	7	6	[6]	6.6	6@	6	-	-
**	End Jan	12.0	321	80.7	7	8	82	+2	6	8	9	5	[6]	6.1	5	6	-	Y
**	[End Jan]	11.3	259	76.3	8	8	79	-1	[6]	6	9	5	-	5.5	-	6	-	Y
**	-	11.3	254	76.3	8	8	90	+1	-	5	7	8	6	[6]	-	-	-	Y

# Winter Barley

## 2020/21 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 to barley yellow dwarf virus (BYDV) are now available, such as KWS Amistar. These will become increasingly important following the loss of insecticidal seed treatments such as Deter, which had previously provided effective control of the aphids that spread BYDV.

### Selection considerations 2020

#### 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/m<sup>2</sup> 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. Most important is the nitrogen fertiliser split. 3 splits are advised, with the first application of 30% at GS25, 50% at or just before GS31 and 20% 2-3 weeks after this. Even when tiller numbers are high, early nitrogen is advised.

Feed		Two-row malt	
<b>6 Row</b> SY Kingsbarn (H) SY Kingston (H) Bazooka (H) Belmont (H) KWS Amistar (*)	<b>2 Row</b> KWS Hawking KWS Gimlet KWS Orwell Valerie	Full MBC approval	Craft
		Provisional MBC approval	Electrum



## 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.

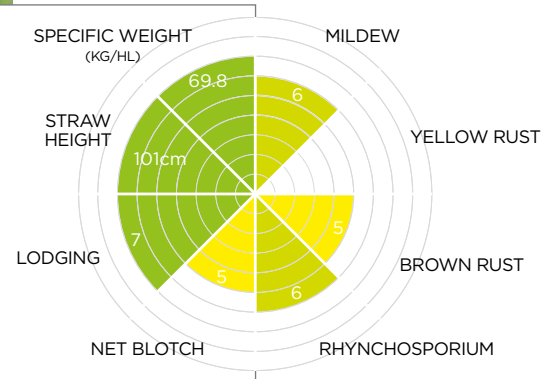
### SY Kingsbarn [UK]

### Six-row hybrid feed

Syngenta F1 Hybrid

Yield as a percentage of controls: 108% (AHDB)

Kingsbarn is a high yielding hybrid barley variety with a strong all-round agronomic and disease resistance package. Having overtaken the previous market leading variety Bazooka, Kingsbarn will be the go-to option for many growers due to its combination of higher yield, better grain quality and stiffer straw.



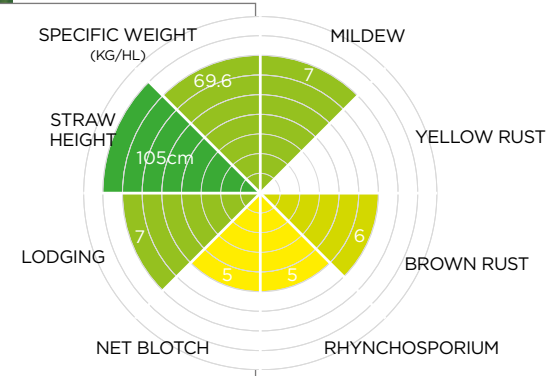
### SY Kingston [UK]

### Six-row hybrid feed

Syngenta F1 Hybrid

Yield as a percentage of controls: 107% (AHDB)

**New Option.** Kingston is a new option for hybrid barley growers in 2020. It offers similar yield and grain quality to that of Kingsbarn and an improved resistance to mildew - the best of any barley in trial. Kingston is also the earliest maturing hybrid barley variety, making it a good option for spreading harvest dates and an early entry for the following crop.



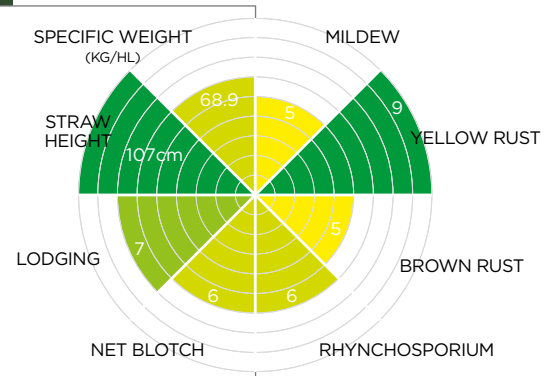
### Bazooka [UK]

### Six-row hybrid feed

Syngenta F1 Hybrid

Yield as a percentage of controls: 106% (AHDB)

Bazooka remains one of the most widely grown hybrid barley varieties, with a strong performance record since it was added to the Recommended List in 2016. A weakness to mildew is the only blemish on an otherwise robust resistance package.

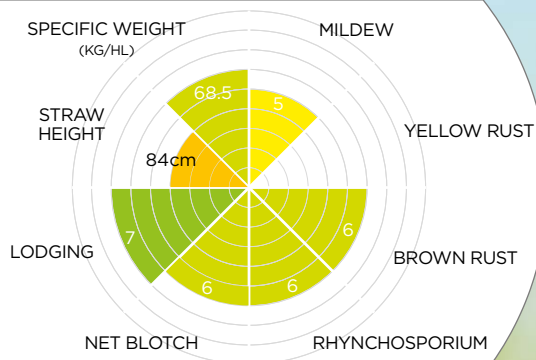


## KWS Hawking [UK] **Two-row conventional feed**

**KWS** (11-12 x California) x KWS Tower

**Yield as a percentage of controls: 104% (AHDB)**

KWS Hawking is the highest yield conventional barley on the 2020 Recommended List, teaming top yields with good grain quality. With shorter and stiffer straw than other high yielding varieties, Hawking will be seen by many as a natural successor to the likes of Orwell and Tower.

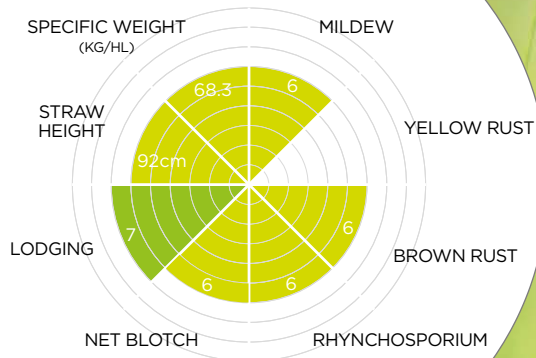


## KWS Gimlet [UK] **Two-row conventional feed**

**KWS** (California x Matros) x KWS Glacier

**Yield as a percentage of controls: 103% (AHDB)**

KWS Gimlet is the joint highest yielding conventional barley for the east region of the UK. Specific weight is just ahead of KWS Orwell. Gimlet's straw is taller than average but still holding a 7 for lodging resistance - similar to the majority of two-row varieties. Yield is supported by good set of disease resistance scores.

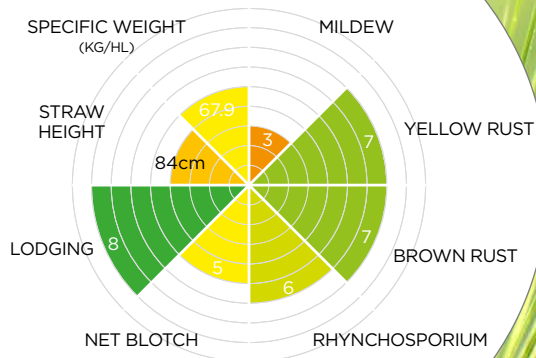


## KWS Orwell [UK] **Two-row conventional feed**

**KWS** KWS Tower x KWS Salsa

**Yield as a percentage of controls: 102% (AHDB)**

The market leading two row feed variety. Orwell is consistent across all regions. Known for having some of the stiffest straw available, but also a susceptibility to mildew. Higher yielding options are now available, but few that give the same assurance of consistent yields and standing ability.

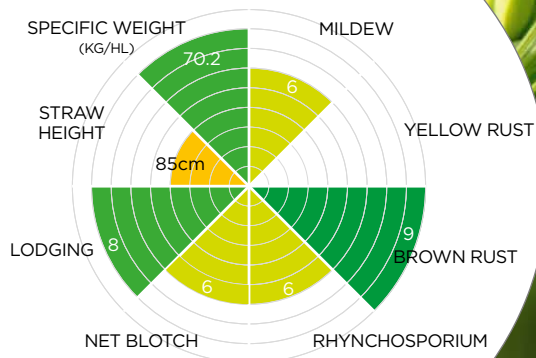


## Valerie [UK] **Two-row conventional feed**

**Senova** 207-589 x Sandra

**Yield as a percentage of controls: 101% (AHDB)**

With excellent grain quality, early maturity and similarly strong straw to Orwell, Valerie will be an exciting proposition for many growers, particularly those who have favoured KWS Cassia for similar reasons. Valerie offers a 4% yield improvement over Cassia and will appeal to mixed farms where bold grain for on-farm feeding is desirable.

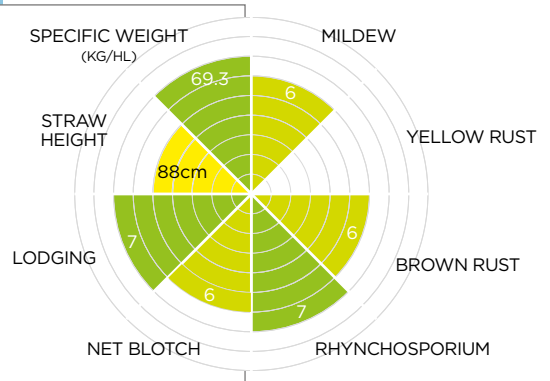


**Electrum [UK] Two-row conventional malting**

Syngenta SY208-56 x SY208-59

Yield as a percentage of controls: 97% (AHDB)

Electrum currently has provisional approval from the MBC for production of malt for brewing, with full approval expected. With slightly higher yields and specific weight than Craft, Electrum is also earlier to mature. This variety will be sought after by maltsters in 2021.

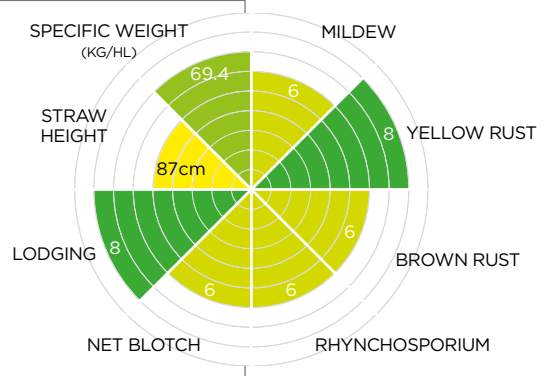


**Craft [UK] Two-row conventional malting**

Syngenta SY208-56 x SY Venture

Yield as a percentage of controls: 96% (AHDB)

Fully approved by the MBC for the production of malt for brewing. Maltsters like the variety and it has a good hot water extract value. It has high yields at 4% over SY Venture. It has relatively short, stiff straw and average disease resistance. Craft has a grain N value of 1.66%, with a good specific weight and lower screening levels.



**BYDV Tolerance**

Barley yellow dwarf virus (BYDV) can have a devastating effect on cereal crop yields and quality. Following the loss of insecticidal seed treatments, which provided early protection from BYDV carrying aphids, seed breeders have worked to develop varieties with a genetic tolerance to the BYDV virus.

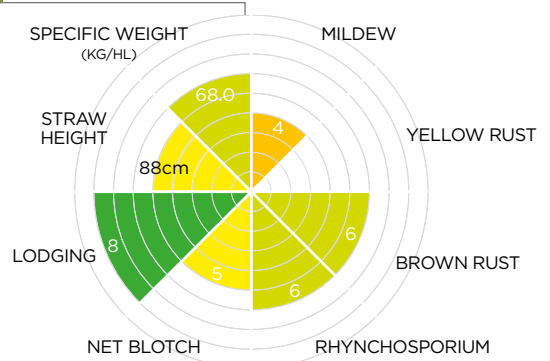
**KWS Amistar\* [UK] Six-row conventional feed**

KWS [Complex cross]

Yield as a percentage of controls: 102% (KWS Trials)

KWS Amistar is French-bred six-row feed variety with genetic tolerance to BYDV. Amistar performed very well in Frontier trials during 2019 with good grain quality, similar to that of KWS Orwell. Very early to mature and with good resistance to brackling and lodging. Under low virus pressure, Amistar yields are comparable to currently grown varieties. However, where aphid and virus pressures are higher, varieties with genetic tolerance should excel.

BYDV Tolerant



# Winter Barley 2020/21

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

[ ] = limited data \$ = Hybrid variety

	Scope of recommendation	United Kingdom (10.0t/ha)	East region (9.9t/ha)	West region (10.2t/ha)	North region (9.9t/ha)	Light soils (9.9t/ha)	Heavy soils (9.8t/ha)	MBC malting approval for brewing use	Specific weight (kg/hl)	Screenings (% through 2.25 mm)	Nitrogen content (%)	Hot water extract (1 deg/kg)	Resistance to lodging (1-9)	Straw height with PGR (cm)	Ripening (+/-KWS Orwell, -ve = earlier)	Mildew (1-9)	Yellow rust (1-9)	Brown rust (1-9)	Rhynchosporium (1-9)	Net blotch (1-9)	BaYMV	Frontier seed production
<b>Two-row malting</b>																						
<b>Electrum</b>	UK	97	98	97	95	96	97	P	69.3	2.2	1.68	305.9	7	88	-2	6	-	6	7	6	R	Y
<b>Craft</b>	UK	96	96	95	97	96	94	F	69.4	1.9	1.66	307.8	8	87	0	6	[8]	6	6	6	R	Y
<b>SY Venture</b>	UK	92	93	91	94	94	93	F	70.0	3.5	1.64	305.8	7	82	0	6	[8]	6	5	4	R	-
<b>Two-row feed</b>																						
<b>KWS Hawking</b>	UK	104	106	102	102	102	106	-	68.5	2.7	-	-	7	84	0	5	-	6	6	6	R	Y
<b>LG Mountain</b>	UK	104	105	101	105	104	107	-	69.1	2.4	-	-	7	84	-1	5	-	7	5	6	R	Y
<b>KWS Gimlet</b>	UK	103	106	101	102	102	104	-	68.3	2.5	-	-	7	92	0	6	-	6	6	6	R	Y
<b>Jordan</b>	UK	103	105	103	101	102	103	-	68.9	1.9	-	-	7	82	0	5	-	8	7	5	R	-
<b>LG Flynn</b>	UK	102	103	101	102	102	104	-	70.2	1.7	-	-	7	90	0	4	-	7	6	6	R	-
<b>KWS Orwell</b>	UK	102	102	102	101	100	102	-	67.9	2.0	-	-	8	84	0	3	[7]	7	6	5	R	Y
<b>Valerie</b>	UK	101	102	[100]	[101]	101	[101]	-	70.2	0.8	-	-	8	85	-1	6	-	9	6	6	R	Y
<b>Surge</b>	UK	101	102	101	98	100	102	-	69.3	1.9	-	-	7	84	-1	6	[8]	8	7	6	R	Y
<b>KWS Creswell</b>	N	100	99	100	102	101	99	-	68.0	2.1	-	-	7	85	-1	5	[8]	6	6	4	R	-
<b>KWS Tower</b>	UK	99	99	99	101	100	99	-	67.4	2.2	-	-	8	85	0	5	[8]	6	6	4	R	Y
<b>KWS Glacier</b>	UK	99	98	98	100	100	99	-	69.1	2.7	-	-	7	80	-1	4	[8]	7	4	6	R	-
<b>California</b>	W	99	99	99	[97]	97	100	-	68.1	1.9	-	-	8	88	-1	6	[7]	5	6	6	R	-
<b>KWS Cassia</b>	UK	97	97	97	98	97	97	-	71.2	1.6	-	-	7	88	0	4	[5]	7	5	6	R	Y
<b>Six-row feed</b>																						
<b>Belmont \$</b>	UK	108	108	107	107	106	107	-	68.5	2.5	-	-	7	104	-1	5	-	4	6	6	R	Y
<b>SY Kingsbarn \$</b>	UK	108	108	107	107	106	108	-	69.8	1.8	-	-	7	101	-1	6	-	5	6	5	R	Y
<b>SY Baracooda \$</b>	UK	108	107	108	107	105	106	-	68.8	2.0	-	-	7	108	-1	7	-	5	7	5	R	-
<b>SY Kingston \$</b>	**	107	106	108	107	107	106	-	69.6	2.4	-	-	7	105	-2	7	-	6	5	5	R	Y
<b>Bazooka \$</b>	UK	106	107	106	105	105	107	-	68.9	2.4	-	-	7	107	-1	5	[9]	5	6	6	R	Y
<b>Belfry \$</b>	UK	106	105	107	105	104	109	-	68.2	2.6	-	-	8	100	-1	5	[8]	7	6	5	R	-
<b>KWS Astaire</b>	UK	105	103	108	103	103	106	-	65.7	2.4	-	-	8	98	0	6	-	6	7	6	R	-
<b>Funky</b>	UK	104	103	106	104	104	104	-	68.9	4.2	[1.57]	[294.9]	8	90	-2	5	[9]	8	7	5	R	Y
<b>Libra \$</b>	UK	103	103	104	103	102	105	-	70.8	2.1	-	-	7	102	-1	5	-	6	7	6	R	-
<b>KWS Amistar</b>	-	102	-	-	-	-	-	-	68.0	-	-	-	8	88	-2	4	-	6	6	5	R	Y

\*\* Not added to RL

# Winter Oats

## 2020/21 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. 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.

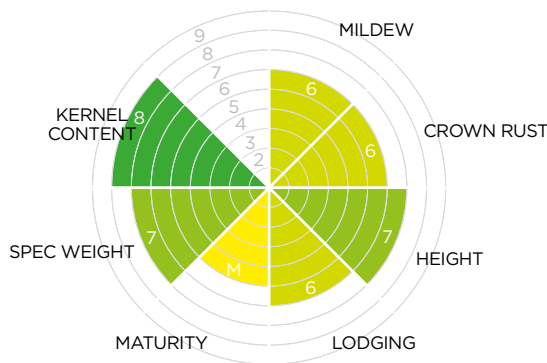
Key characteristics for winter oats are high yield, stiff straw and good kernel content for the milling market.

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

### Mascani [UK]

#### Senova

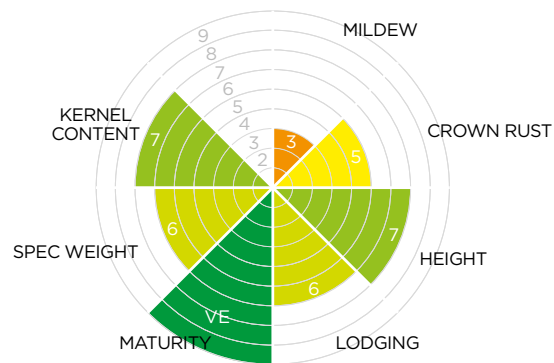
The leading variety across the UK and well liked by all end users. The variety has good winter hardiness and low screenings. Yields are a bit behind the best but its consistent performance and good specific weight will keep it in the market for a few more years.



### RGT Lineout [UK]

#### RAGT

RGT Lineout brings a slight yield increase over Mascani, at the cost of a slightly poorer grain quality. It is both shorter and earlier to mature, providing a good companion variety.



### Gerald [SCO]

#### Senova

Despite the market leading position of Mascani for the UK as a whole, Gerald has been the clear favourite for the Scottish market due to its consistent performance, good specific weight and stiff straw.





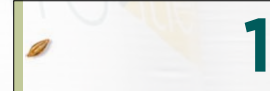







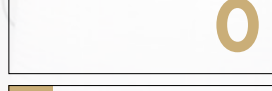
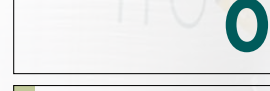
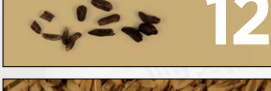
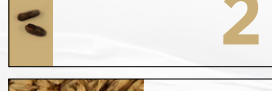


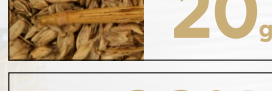
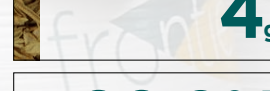
### Dalguise [SCO]

#### 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.



# The difference between Frontier's cereals marketing standards and the EEC minimum standards

Number of impurities tolerated per 2kg bag	C2 EEC 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 <sub>g</sub>	 20 <sub>g</sub>	 4 <sub>g</sub>
Purity ▶	98%	99%	99.8%
Germination ▶	85%	85%	95% <small>Target</small>
Loose smut ▶	0.2%	0.2%	0.00% <small>(Control via seed treatment)</small>

With blackgrass being very topical in the industry, we are confident we are working to the highest seed standards. In the last two years have processed over 100,000t of cereal seed with no blackgrass seeds found in any official samples.

# Cereal Seed Treatments

## Single-purpose Treatments

### Beret Gold (25g/l fludioxonil) Wheat, Oats, Triticale and Rye

- Wheat: Seedling blight and foot rot, common bunt, septoria seedling blight, loose smut
- Barley: Covered smut, leaf stripe, seedling blight and foot rot.

### Raxil Star (20g/l fluopyram + 100g/l prothioconazole + 60g/l tebuconazole) Winter Barley

- Seedling blight and foot rot, seed-borne net blotch, leaf stripe, covered smut and particularly loose smut.

### Redigo Pro (150g/l prothioconazole + 20g/l tebuconazole) Wheat, Barley and Winter Oats

- Barley: Seedling blight and foot rot, loose smut, covered smut, leaf stripe



## Added Value Single-purpose Treatments

### Vibrance Duo (25g/l sedexane + 25g/l fludioxonil) Winter Wheat, Triticale, Rye and Spring Oats

- Wheat: Seed-borne snow mould, septoria nodorum, seed-borne fusarium, common bunt, loose smut
- Oats: Loose smut
- Improves root health and crop establishment to create bigger, greener plants compared to an SPD.



## Added Value Treatments

### Latitude (125g/l silthiofam) Wheat & Winter Barley

- Second and third wheat situations
- Winter barley following a cereal
- Earlier drilled crops
- First wheat after fallow or a spring cereal
- Latitude prevents the take-all fungus in the soil from infecting newly developing roots. This allows better establishment and rooting and reduces the level of take-all through to grain fill. By reducing root damage the product maintains root efficiency to absorb water and nutrients well into May/June.

### Signal 300ES (300g/l Cypermethrin) Winter Wheat & Winter Barley

- Effective control against wheat bulb fly, frit fly, and wireworm
- The only insecticidal seed treatment available in 2020.

### PolySeia\* 500R

- High quality, unique formulation polymer coating that positively impacts on germination in dry conditions
- Helps reduce dust
- Provides even coverage of other treatments
- Coloured to allow visibility in field to check drilling accuracy.

### Mn-Tain - (597gm/t Mn in nitrate form) High Mn concentration for use with all fungicidal seed treatments

- Provides a high dose of readily available manganese nitrate to the developing plant, improving emergence and early plant growth
- Strongly recommended for manganese deficient sites
- Reduces dependence on spray applications, to help with tricky weather conditions
- Fully compatible with all other seed treatments.

### Prosper ST (N, P, K, Mg, Fe, Mn, Zn, Cu, Bo, Mo) coapplied with fungicide and pesticide seed treatments

- A phosphite and nutrient blend, providing a package of essential nutrition to the developing plant
- Phosphites stimulate and encourage enhanced root growth immediately after germination, providing larger and more efficient plant rooting
- Prosper ST can also result in increased shoot development, leading to thicker and more forward crops during establishment.

## Mobile seed processing

Frontier offers a mobile seed processing and bulk grain cleaning service throughout the UK through its divisions Anglia Grain Services and GFP Agriculture. With 33 high capacity mobile seed processors, operated by fully qualified, professional operators, we provide growers with a high standard of seed cleaning and related services.

Anglia Grain  
Services Ltd.



### Anglia Grain Services

Head office t: 01206 263334

South East t: 01797 252216

Peterborough t: 01832 274093

E-mail: [enquiries@angliagrainservices.co.uk](mailto:enquiries@angliagrainservices.co.uk)

[www.angliagrainservices.co.uk](http://www.angliagrainservices.co.uk)

## Frontier Agriculture Regional Offices

### Berwick-upon-Tweed

Windmill Way West  
Ramparts Business Park  
Berwick-upon-Tweed  
TD15 1TB

t: 01289 330303

f: 01289 308145

### Diss

Sandy Lane, Diss  
Norfolk  
IP22 4HY

t: 01379 642936

### Perth

Jura Suite 3/1  
King James VI Business Centre,  
Riverview Business Park  
Friarton Road  
Perth PH2 8DY

t: 01738 500570

f: 01522 866537

### Sandy

Georgetown Road  
A1 Trunk Road, Sandy  
Bedfordshire  
SG19 2UB

t: 01767 680351

f: 01767 692412

### Cranswick

Beverley Road  
Cranswick, Driffield  
East Yorkshire  
YO25 9PF

t: 01377 270441

f: 01377 271248

### Hermitage

Red Shute Mill  
Hermitage, Thatcham  
Berkshire,  
RG18 9QL

t: 01635 204100

f: 01635 201417

### Ross-on-Wye

Phocle Green  
Ross-on-Wye  
Herefordshire  
HR9 7XU

t: 01989 780555

f: 01989 780510

### Witham St Hughs

Witham St Hughs,  
Lincolnshire  
LN6 9TN

t: 01522 860000

f: 01522 868244

[www.frontierag.co.uk](http://www.frontierag.co.uk)

Frontier is grateful to AHDB and all other organisations involved for allowing us to use their 2020/21 Recommended Lists.

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