

Lock in your crop's potential

“Well sown is half grown.”

Technical Fit for the future

KWS Parkin

Choosing the right variety requires so much more than just glancing through the AHDB Recommended List. *CPM* explores the merits of a new initiative from KWS designed to match grower needs to the traits on offer.

By Tom Allen-Stevens

As you look down the AHDB Recommended List of winter wheat varieties, chances are your eyes will be drawn to yield, market options, disease resistance (specifically *Septoria tritici*), lodging score and ripening. So where are the scores on nitrogen use efficiency, consumer satisfaction, climate resilience, food waste and productivity?

These are the challenges UK growers face for their business, and the first step in seeking the solutions lies in the properties of the seed that goes in the ground, points out Dr Kirsty Richards of KWS.

“80% of what your crop can deliver is locked into the seed you buy and its match to your own individual growing conditions,” she says. “You can fine-tune this with the correct nitrogen levels, using fungicides wisely to protect it from disease and paying attention to basic management principles. But once you’ve made your seed choice your production potential is largely set.”

What’s more, the contribution the seed makes is likely to rise even more up the priority list, she argues. “Much of the chemistry growers have come to rely on is slowly being lost to revocation, what we have left is becoming less effective and it’s also increasingly costly for manufacturers to meet regulatory requirements with new alternatives. The use of nitrogen fertiliser is also under pressure due to growing environmental concerns and the challenge of reducing farming’s carbon footprint.”

R&D toolbox

The good news is that plant breeding is stepping up to the plate. Kirsty points to the R&D toolbox currently helping to accelerate new traits and improve existing ones set to step in as traditional means of crop improvement fall away or become obsolete.

“Genomic selection and high throughput phenotyping are already bringing to market improved disease resistance and agronomic performance without the yield lag of old,” she notes.

“The interaction between varieties and management systems will become the next major opportunity to explore. We’re already bringing on resistances which are more complex, such as fusarium, and breeders are collaborating in major international projects to address abiotic stress resistance — drought and stress tolerance.”

But while there’s lots in the pipeline, what’ll help growers today? KWS has launched an initiative designed to augment with current information sources on variety selection, such as the RL and agronomist

advice. Sowing for Peak Performance is a set of principles that aims to make sense of all the information and factors that can affect a crop’s performance (see chart on p30).

“We recognise that every farm is unique and has differing goals, so variety choice is highly personal,” reasons Kirsty. “Maximum output potential and profitability from the seed you buy can only be achieved when you consider a broad range of factors which can include rotational position, soil type, desired chemical spend, local markets and personal experience.”

The team at KWS has distilled these requirements into “macro-drivers”, and then looked at its portfolio of varieties and ▶



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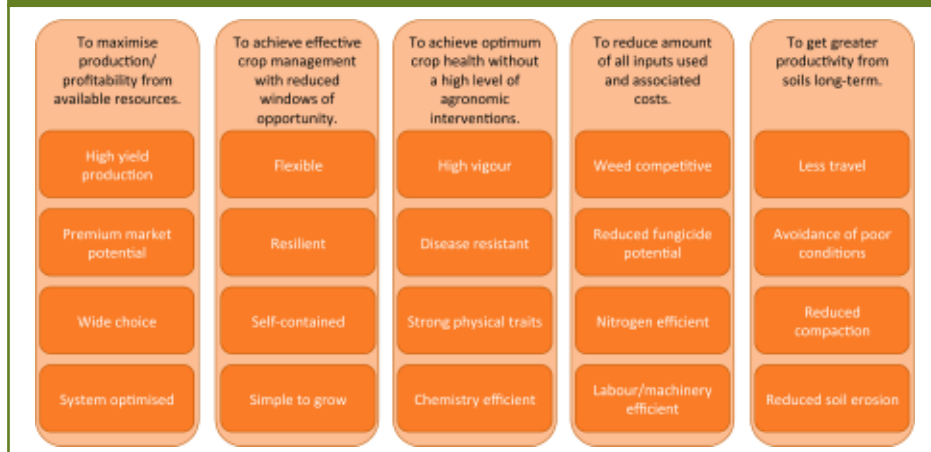
► identified how variety choice can help with their delivery. This comes through expressions of genetic potential — the traits that the breeder develops aimed at delivering grower needs. KWS define these as:

- High in-built resistance
- High resilience
- Flexibility
- Competitive growth habit
- Earliness to harvest
- Good physical/functional traits

“As breeding technology and the varieties themselves progress, we believe a more informed way of choosing the right variety will come from considering how these traits fit with your individual macro-drivers,” Kirsty explains.

She notes that this isn't necessarily

Key grower needs and how varieties/traits can help meet these



Source: KWS, 2019

Sowing for Peak Performance – how does it work?

“When things don't go to plan on farm, there's a cost. Through choosing the right variety, you can avoid some of these,” says KWS product development manager John Miles.

He's quantified some of the potential savings, which can range from about £5/ha by dropping a fungicide or insecticide up to £600/ha from reduced machinery hours through planning an arable system around the wheat varieties you grow. “There are benefits, too, in terms of increased outputs, higher chance of achieving quality criteria, better plant health and improved soils,” he adds.

High in-built disease resistance

“Let's take KWS Extase, that has an RL score for *S. tritici* of 8.1 and for yellow rust of 9. That's major gene resistance with some minor gene resistance working together, although this also has to be partnered with appropriate fungicide chemistry to maximise the benefits and protect the trait going forward. So you wouldn't drop the main two fungicide sprays, but you could rein back on your product rates and consider omitting the T0, depending on the situation you put the variety in,” he suggests.

Another attribute to consider is spraying logistics — a complex tank mixture is more time-consuming — field size and shape and access to water all contribute to output potential. If less than ideal they can all be considered to add to the risks of getting the optimal job done.”

Research measuring latent septoria levels in different varieties suggests those with high in-built resistance offer greater flexibility in terms of the ideal timing for sprays, he notes. What's more, average wind speed data for the eastern regions suggest you may only get the opportunity to spray during 60% of the ideal window for the T1 spray. “When you take into account the lost yield potential from missed timings, greater disease

resistance can add up to considerable overall benefits, depending on your situation,” says John.

Earliness to harvest

This is an attribute that's difficult to quantify, he notes. “Ripening is a snapshot figure on the RL, but it can mean so much more on farm. Go back a few years and there was a considerable difference between when Einstein and Soissons would come to harvest, for example, but there was also around 15% yield difference. KWS Parkin comes ready almost as early as Grafton, but doesn't have the same yield drop, compared with later-maturing varieties.”

A new hard Group 4 variety, an average treated yield in RL trials over harvests 2018 and 2019 of just 102% of controls kept Parkin off the 2020/21 RL. But if sown early, the RL data put the variety at 105% of controls, notes John.

Its real value comes in its earliness to harvest, he says. “The RL has nothing below 0 days earlier than Skyfall, while we feel Parkin is around -1, and survey work we've carried out suggests that can actually work out at about a week on farm. If you've a business that values having wheat safe in the barn, that can have considerable value.”

Good physical/functional traits

Most growers value the benefit of good lodging resistance in their wheats, but few can actually quantify what it brings to the bottom line, says John. “With today's later drillings, we're seeing less issues with lodging. But take a wheat that's usually sown in mid Oct and drill it three weeks earlier and stiffness suddenly becomes a very valuable trait.”

Group 3 RL leader KWS Firefly has lodging scores of 8 both with and without PGR, he notes, while at 82cm without PGR, it's one of the shortest on the RL, he points out. “AHDB-funded work



John Miles has quantified some of the potential savings from choosing the right variety, which can range from about £5/ha up to £600/ha.

suggests PGR savings of around £14/ha. But the real savings come in preserved yield potential.”

Sown too early, a number of varieties are at a greater risk of lodging, notes John. “Many trials have tried to quantify the yield loss. In KWS trials in 2017 this varied from 0.1t/ha per 10% lodged to 0.5t/ha. There's also the loss of quality, while increased drying costs, combining time and potential for deductions can easily add up to over £40/t — it's a case of 'how long is a piece of string?'.”



Extase offers not just savings in fungicide costs, but improved yield potential from spray-timing flexibility, and easier spraying logistics.

Fit for the future

In this series of articles, *CPM* has teamed up for the third year with KWS to explore how the wheat market may evolve, and profile growers set to deliver ongoing profitability.

The aim is to focus on the unique factors affecting variety performance, to optimise this and maximise return on investment. It highlights the value plant genetics can now play in variety selection as many factors are heavily influenced and even fixed by variety choice.

KWS is a leading breeder of cereals, oilseeds, sugar beet and maize. As a family-owned business, it is truly independent and entirely focussed on promoting success through the continual improvement of varieties with higher yields, strong disease and pest resistance, and excellent grain quality. We're committed to your future just as much as you are.



something that hasn't been considered before. "Sowing for Peak Performance is about ensuring our priorities as the breeder bringing the majority of the cereal varieties to the UK market are as closely aligned as possible to those of growers. This is important for KWS as we invest in varieties now you won't see on the market for 10 years — we're actively seeking more interaction with growers to ensure we get it right." ■

• COVID-19 may have quashed your chance of visiting the KWS stand at Cereals, but the company has brought the highlights of its cereals and



A wheat that needs a complex tank mixture is more time-consuming to spray while field size and shape and access to water all contribute to output potential.

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Looking beyond yield for a crop's potential

'Well sown is half grown' is the motto Velcourt agronomist Ryan Hudson goes by. "That goes as much for variety and seed choice and planning of rotations as it does for achieving a good seedbed, and the agronomist is increasingly involved in all of these aspects these days," he notes.

He supplies independent agronomy advice for farmers across Herts, Beds, Cambs and Northants as well as liaising with local Velcourt farm managers. "With less chemistry available, increasingly we're looking at cultural ways of managing crops, and the impact this has on the entire arable system and machinery costs," he notes.

So how does Ryan consider the macro-drivers?

Maximise production

"You have to look at the end market first, what premiums are available and how achievable they are," he says. "Group 1 varieties have caught up in terms of yield with Group 4s, but Group 2 KWS Siskin and Extase also look strong. Group 3 premiums have risen because few were growing them and there's a strong demand. KWS Barrel and Basset gave improved yields and Firefly now offers better disease resistance and a further reason to explore this market."

Effective crop management

"Speed of development and having a spread of these over your wheat portfolio become very important when you're managing large areas," notes Ryan. "I look for varieties that don't sprout or lodge easily, and I don't want to have to rely on chemistry to get the best out of them as timings may be compromised. Untreated yield becomes important, and if planting late because of blackgrass, fast autumn and spring development is a valuable trait."

Optimum crop health

"This is where the loss of chemistry is really putting the emphasis on good variety choice. There are a number of monitoring aids coming on the scene, but no fancy gadget will replace good agronomy. The importance of BYDV tolerance and autumn vigour, for example, will rise now that we can't rely on neonicotinoids. That wasn't such a problem in last year's late season, but many may consider drilling earlier this year as a knee jerk reaction to last autumn and with BYDV and blackgrass this could cause further problems."

Reduced input costs

"The loss of chlorothalonil and a number of good value triazoles presents a real challenge for those looking to keep a lid on fungicide costs, and we're about to lose epoxiconazole," Ryan points out. "It's important to understand how varietal resistance from the likes of Extase, Gleam and Graham fit in — the seed cost is similar for these varieties with a high genetic resistance but there's less risk growing them. Trials data for some varieties suggests treated yield responses of 4.5t/ha which relies on a robust fungicide, compared with 1.5t/ha from more resistant varieties."

Soil stewardship

"The key aspect is not to be pushed into field activities when conditions aren't suitable during periods of unsettled weather," advises Ryan. "Good planning and an appropriate cultivation policy are the fundamentals here, but variety choice is also important. A spread of maturity means you're unlikely to combine in less-than-ideal conditions, for example. A variety that doesn't have to be sprayed as often or receive its fertiliser early in the year will ensure you don't damage tramlines."

His advice when choosing seed for next harvest



With less chemistry available, Ryan Hudson is increasingly looking at cultural ways of managing crops.

is to look around at what's available. "Don't just drill what you've always gone for — look beyond the RL at what varieties have to offer and perhaps try two or three within the same field as a comparison. High yielding varieties are good on paper but it's worth exploring what works on your farm as these may not be achievable or not at the expense of increased disease risk."



With around 100ha of Firefly he's looking after, Ryan notes it has a 7.0 for septoria resistance, and although looking healthy, it's not too tall and leggy.