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Shared insight delivers potential

In association with 

Technical Beat Your Best Yield

Ten #Clubhectare members are some of the growers who have taken up the challenge to beat their best wheat yield with a crop of Reflection. CPM gets an insight into the Syngenta wheat-breeding programme and gleans progress from the field.

By Tom Allen-Stevens

Wandering through the breeding lines in the Syngenta plots at Whittlesford, Cambs, you wonder which of the numbered wheat varieties may be future rising stars on the AHDB Cereals and Oilseeds Recommended List.

It's clearly something that preoccupies senior wheat breeders David Feuerhelm and Duncan Warner, although they're not going to pin their colours to the mast and say which of the thousands of lines waving their leaves in the spring sunshine, have the brightest prospects.

"Every year you can guarantee there'll be one cross you've been looking forward to that'll disappoint and then another that'll surprise you," notes David Feuerhelm.

Reflection, however, was one variety that showed its potential from the off, he reveals. "The first year the line was in the field, the whole cross looked as though it was packed with potential. In yield trials, the Reflection plots were full of ears, and

these were tight with grain. Putting the combine through just confirmed everything we knew."

High-yielding feed wheat
Since 2006, the Syngenta wheat-breeding programme has been ramped up, with 70% of crosses now targeting the high-yielding feed wheat market. With glasshouse facilities at Jealotts's Hill in Berks, along with its base at Whittlesford, the aim is to be the biggest UK wheat breeder.

"It's a highly focused programme and there's a strong integration of technology through the use of doubled-haploid methods and marker-assisted selection along with single-seed descent," continues David Feuerhelm. "That means we can be very efficient at bringing high-yielding feed wheats with good agronomics to the market."

The programme started as New Farm

Crops with varieties such as Apollo in the 1980s, Reaper recommended in 1998, and more recently Duxford, which first appeared on the 2007 RL and went to take an 8% market share. A focus on high yield potential with good grain quality resulted in Group 1 lead variety Gallant, recommended in 2009, followed closely by Ketchum and Kingdom.

Hard Group 4 Reflection leads the new focus on feed wheats, and currently holds a 10% share of the certified seed market, having debuted on the RL as the highest yielding newcomer last year. New on the list this year is Graham, one of only two varieties on the RL with a score of 7 for Septoria tritici and boasting the third highest untreated yield. Candidate varieties Savello and Shabras look to be strong contenders in the soft and hard Group 4 categories respectively.

"Reflection brings more than just high yields," explains David Feuerhelm. "It also brings orange wheat blossom midge

resistance, high specific weight and early maturity.

"One aspect you notice about it is that it's relatively short — it stands very upright and its leaves are erect. This allows good penetration to the lower leaves for sunlight and fungicides."

Wheat yield record

This is one of the features that Lincs grower Tim Lamyman claims drew him to the variety with which he succeeded in breaking the world wheat yield record in 2015, achieving 16.5t/ha. "Whether the leaf angle is the whole story is up for debate — when it comes to yield in wheat there is no ideotype. Every high-yielding variety has its characteristics that, if nurtured well, will bring out the potential," notes David Feuerhelm.

"But when it comes to maturity, Reflection breaks the mould of most high performers that tend to ripen late — it's much earlier to harvest, which is a feature



The Syngenta wheat-breeding programme has a new focus on feed wheats with high yields and good agronomics.

favoured by many growers."

Graham comes from a very different background and was originally a cross in ▶

Agronomy key to beating your best



Reflection responds well if it's pushed, advises Kathryn Hearn, but keep up the PGR and apply a rust-active T0 spray.

All the Syngenta feed wheats are relatively easy to manage and will fit in alongside other wheats in the farm portfolio with no special measures required. But if you want to achieve your best yield, there are a few tweaks you can make to tip the odds in your favour and push the potential of the variety, advises Syngenta's Kathryn Hearn.

"Reflection's upright growth means you can raise the seed rate — 300-350 seeds/m² is quite normal, with the ideal drilling window being the second week of Sept to first week in Oct. You can go as high as 400 seeds/m², and trials show Reflection really can deliver the number of ears you need for a top-performing

crop, but you do need to be spot on with your management."

The variety has seedling susceptibility to yellow rust, she says. "That means you need to put on a good T0 spray with a rust active to clear up any disease in the crop and set it up for a clean spring."

Another essential is a good PGR programme, especially if the seed rate has been raised. "It's a short variety, so will stand well. But if you're pushing it, we recommend a split dose of Moddus (trinexapac-ethyl) applied at the T0 and T1 timings. On fertile sites, a T2 application of mepiquat chloride plus 2-chloroethylphosphonic acid may be necessary, but note a harsh programme will shorten the crop too much."

Current advice is to apply nitrogen just as you would for any other feed variety. "But we have an extensive trials programme underway, and will have more tailored advice for growers next year," she adds.

The notable feature about Graham is its speed of development in the spring. "The variety has a prostrate growth during winter, so could be well suited to early drilling. But once it gets to GS30, it'll race through the growth stages fairly fast — it'll probably be your last variety to receive the T0 spray, but the first to get its T1."

Graham has a high Hagberg as well as a good specific weight. "It's unusual to get a feed variety from France, but its good grain characteristics also mean it'll resist sprouting in a wet harvest year. Graham has bigger leaves

and it's a darker green than other varieties, and its septoria resistance makes it the highest performer in the West."

But the knowledge on how to get the best out of these varieties is constantly evolving, she notes. "It's one of the reasons we're running the Beat Your Best Yield campaign — as much as it's a platform for us to pass on agronomy tips we've learnt from trials, we're keen for it to be an open and honest exchange of information. We're also learning new ideas from growers and are feeding that back into our management trials programme."

Graham will race through the growth stages fairly fast in the spring.



A challenging spring



The ten #Clubhectare #beatyourbest challenge growers (L to R): Keith Challen, Charles Anyan, Chris Hewis, James Stafford, Pip Partridge, Jono Dixon, David Watson, Andrew Ward, Andrew Watts, Peter Gadd.

Reflection has got off to a strong start, according to the ten #Clubhectare growers trying the variety for the first time. Signs of the seedling susceptibility to yellow rust caused concern initially, especially for those in eastern counties, but this now appears to be in check.

"I'm generally quite pleased with my crop at the moment," says Peter Gadd, with a 24ha field at Stragglethorpe in South Notts. Combination-drilled on 2 Oct with a 4m Accord drill atop a Kuhn power harrow into clay loam at 355 seeds/m², it benefited from biosolids after the previous oilseed rape crop.

"The crop established with the Freeflow is streaks ahead. What's more, the other varieties are clean as a whistle, but we had some early yellow rust in the Reflection."

This has been checked with the T0 spray and new growth is green, he says — all varieties were treated with tebuconazole plus chlorothalonil. 180kgN/ha has been applied in three splits as liquid 30%N.

"For me, the real benefit of this challenge

has been the interest and the interaction we've had on Twitter — we're all learning from each other and getting to grips with this variety. But the jury's out on it so far — we'll have to see how it performs at harvest," he says.

On Sunk Island, north of the Humber, Jono Dixon has seen very little of the disease that's dogged growers further south. "I think I benefit from the sea air here. But soil condition makes a difference — we've an easement that 3-4 years back, went across the field where the Reflection is now, and the stressed crop was noticeably more spotted with yellow rust."

With 8ha of Reflection on warp land after vining peas, he's hopeful of achieving a 12.5t/ha crop. A T1 spray of fluxapyroxad, pyraclostrobin and epoxiconazole plus Bravo (chlorothalonil) followed a T0 of Bravo plus epoxiconazole. A total of 190kgN/ha has gone on in two splits.

But like Andrew Ward, he's learning

from the others involved in the challenge. "Not a day goes by that you don't find out something new."

Further north at Cockle Park on the Newcastle University farm, David Watson reports his 20ha crop is clean, as is the untreated Reflection in Frontier trials on the farm.

"We drilled in the second week in Sept into heavy clay. It came through nice and even and hasn't looked back," he says. A T0 spray of tebuconazole plus chlorothalonil was applied in the first week of April with the T1 planned for mid May. 200kgN/ha is being applied in total in three splits.

"It looks a promising crop of wheat — good and solid — but not much different from other varieties. Last year we had exceptional yields, averaging 11.5t/ha, and I'd be surprised if the Reflection does that well, but we'll see."



Just been to look at the Reflection planned to report the T1 has done a cracking job and the crop is in the pic below <https://twitter.com/beatyourbest> X14371881
Arno Dixon - May 14



In yield trials, the Reflection plots were full of ears, and these were tight with grain.

► Syngenta's French programme, explains Duncan Warner. "We test a number of varieties from across the Syngenta European programme for National List trials, and Graham seemed to be suited to UK conditions. We put it into our NL-1 trials for 2012 harvest and it stood out as a variety with great potential."

It's a cross of Premio, an RAGT line, with Expert, a Syngenta variety that's performed well in northern France. "Neither parents have fantastic Septoria tritici scores, but it's the accumulation of genes from both that's given it the very robust and stable disease profile," he continues.

"What you notice in the field is a fantastic finish — the way the ear develops is very pleasing to see and, like Reflection, there's a good specific weight. It also matures earlier than Reflection, with a harvest date closer to Cordiale."

The candidate hopefuls Savello and Shabras are both from the same parents — Cassius and Hereford. "Cassius is a Limagrain soft wheat variety recommended for the North with good disease resistance, apart from Septoria tritici. That's supplied by Hereford, a Sejet variety that yields, particularly as a second wheat, and also has good yellow rust resistance."



Earliness is a feature of both Graham and the RL candidates Savello and Shabras, notes Duncan Warner.

Earliness is again a feature of both these RL candidates, with some quick spring regrowth. But there's one very different variety Syngenta has in NL2, that was the top-yielding variety from 2015 NL1 trials. "It's a hard Group 4 with good all round disease resistance. An early drilled variety, it's slow and steady in the spring and matures late," says Duncan Warner.

Currently just a coded line, it's

Syngenta wheats at a glance

	RL varieties*		Candidates*	
	Reflection	Graham	Savello	Shabras
Endosperm texture	Hard	Hard	Soft	Hard
Treated grain yield (% treated control)	105.4	104.2	105.4	106.8
Untreated grain yield	88.2	94.4	85.1	86.1
Protein content	10.8	11.1	11.3	11.2
Hagberg Falling Number	230	266	210	194
Specific weight (kg/hl)	77.6	76.5	74.3	76.0
Resistance to lodging without PGR	7.3	[7]	-	-
Lodging % (untreated)	-	-	3	5.2
Ripening (days +/- JB Diego)	-0.07	-0.46	0	-1
Disease resistance				
Mildew	6.6	7.6	7.5	7.2
Yellow rust	6.0	8.0	8.7	8.6
Brown rust	8.9	7.0	4.6	3.6
<i>Septoria tritici</i>	5.4	6.6	5.4	6.0
Eyespot	5.0	[4]	[7]	[5]
Fusarium ear blight	5.8	7.0	-	-
Orange wheat blossom midge	R	-	-	-

Source: 2016 / 17 AHDB Cereals and Oilseeds Recommended List and Candidate Varieties Winter Wheat; [] limited data; *NOTE: Candidates and RL varieties are taken from different datasets

one of a number of prospects offering something different for the future. "When Reflection first came through, we had very little in feed wheats, but now there's a promising pipeline," he adds. ■

Beat Your Best Yield challenge

Growing a new variety for the first time can be a step into the unknown. Those who achieve the best outcome combine knowledge of their own farm with the best agronomy advice and also take the time to visit trials and draw on the experiences of others.

In this sponsored series of articles, CPM has teamed up with Syngenta and ten growers of the top-yielding winter wheat Reflection to provide key insights, hints and tips as they get to know this new variety. They've each set a target yield to beat and are sharing regular updates via Twitter.

Each article updates on

progress and gets an exclusive, behind-the-scenes look at the Syngenta wheat-breeding programme with agronomy advice on how to make the most of its promising new varieties.

Why not join them and try to 'beat your best yield'?

Find out more at www.beatyourbestyield.com



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