

# Breeding up a storm

“ In Typhoon, Limagrain has managed to marry good septoria resistance with OWBM resistance. ”

## Insider's View

**Limagrain looks to whisk growers off their feet with its new wheat variety, Typhoon. Shaping up as good and dependable all-rounder with strong disease resistance and consistent yields, CPM inspects it closer to see how it'll perform.**

*By Melanie Jenkins*

**LG Typhoon is a new hard feed wheat sitting smack-bang in the middle of the Group 4 pack on AHDB's Recommended List. It looks to offer growers consistency, a desirable disease resistance package and good grain quality.**

A cross between Garrus and the pathology cross LGW88, it was Typhoon's parentage which first piqued Agrii's interest in the variety, according to the firm's John Miles. "We identified it as a variety of interest because of its parentage and because it looked like there was something different about it. Typhoon's performing well and is up there with the likes of Graham in terms of yield."

Typhoon has emerged from Limagrain's breeding programme targeted at

producing hard feed wheats. The programme is based around the design of ideotypes — models which combine morphological and physiological traits, says the company's Phil Tailby. "Ideotypes are the blueprints we have of wheats."

### Genomic selection

Part of the drive behind this programme was the incursion of the Warrior race of yellow rust and as a result the firm has redefined the ideotype of all wheats so that only lines with combined multiple yellow rust resistant genes are selected. Septoria resistance has also been a large part of this programme.

"In real terms this means we can now genotype (record genetic make-up) material, so we can select the lines we want before seeing anything in the field and instead grow them in trays," explains Phil. "We start with hundreds of plants, rather than the thousands we would have had previously, and eliminate those without favourable genes.

"Because we genotype a lot of material, we can combine our records of 10 years of high-quality phenotyping (observable traits) and genotyping data to make genomic selections.

"Typhoon is one of the varieties which has come out of the markers used to genotype varieties and is a good indication of where things are going for Limagrain," says Phil.

The cross of Typhoon was first

produced in 2013, he says. "For Typhoon, we looked at the projections of how it would behave and combined that with what we physically saw — this meant we had a better prediction of yield stability," he adds.

In all areas of the UK, Typhoon's yield averages 102%, according to Limagrain's Ron Granger. "Typhoon is similar to Glean regarding its consistency of performance and it's up there with the big boys in a second wheat situation, yielding 104%."

Typhoon's second wheat performance has certainly caught John's attention. "Not many varieties lend themselves to a good second wheat position, but Typhoon looks to be a useful addition in terms of this." ▶



*Phil Tailby spearheads Limagrain's genotype breeding programme which produced Typhoon.*





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► And in earlier drilling trials, before 25 September, Limagrain has seen it achieve 105% of the controls, explains Ron. "This is backed by AHDB early sown trials, which have yielded the same. Typhoon has favourable attributes for early drilling, like a prostrate habit and later spring development. The variety really does sit back and is still on the floor in early April.

"For those with blackgrass issues, you're probably not going to want to drill that early. But if you don't have blackgrass, there's opportunity to drill it early, especially in the North," he adds.

Agrii has had Typhoon in trials for the past year, but also had a small subset of trials the year before. "We've a couple of years of data on it now," explains John. "We like to understand where varieties fit

as there are a lot out there for growers to consider. Sometimes yields is the component that's most important to them but if a good variety isn't the highest yielding of its Group on the RL, it can get passed over. There are some really interesting and useful varieties that aren't the top yielders, and Typhoon is one of them."

## Disease resistance

Its untreated yield is also important as some growers are likely to be considering reducing their inputs at the moment, especially regarding fungicides, explains Ron. "Growers are looking at varieties with robust disease resistance as they're hoping to make cost savings — so disease resistance is very important."

Typhoon scores 9 against yellow rust on the RL and has a three-year mean of 7.2 against septoria, says Ron. "It also appears good against eyespot, with a 6 and it has Orange Wheat Blossom Midge resistance. Typhoon fits everywhere but it stood out for its disease resistance in the West last year."

According to John, the challenge from evolving disease pressures can be a large part of varietal selection. "With the loss of chlorothalonil and of rust actives, the importance of a robust disease profile — though always talked about — is now more important than ever before.

"In Typhoon, Limagrain has managed to marry good septoria resistance with OWBM resistance," he adds. "There are a number of varieties which now have strong

septoria resistance but don't have OWBM — so this is an extra box Typhoon has ticked."

Another aspect of Typhoon which John is keen on is its seedling yellow rust resistance. "Typhoon is 'R' rated by AHDB in UKCPVS young-plant-stage resistance testing in 2021. This can be important as we don't know when a lot of seedling yellow rust resistance finishes and the adult resistance kicks in. Plus, there are only a limited number of varieties that have seedling yellow rust resistance — a lot of varieties are susceptible to it."

Agrii also likes Typhoon's grain quality. "You can take a variety out of trial and onto farm and there's always a disparity between the specific weight in trials and what's then achievable on farm, so you



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## Getting noticed

Farm manager Freddy Calver had one of the first LG Typhoon multiplication crops in the ground last year. Freddy and farm owner, Paddy Walker, liked the variety so much that it's back in the ground this year.

Based at Brundle Barn Farms in Postwick, East Norfolk, Freddy works the 190ha where they grow sugar beet, potatoes, wheat, spring and winter barley, maize and red clover and run a herd of 130 beef cattle. The soil ranges from marshy peat land to very light sandy soils with clay areas as well.

"We grow red clover for silage, which we leave in as a two- or three-year ley and this year we're hoping to direct drill wheat into it," explains Freddy.

In the first year of growing Typhoon, the ground was ploughed ahead of the crop being drilled in early November. It had an application of liquid nitrogen ahead of separate granular applications about a month apart.

The crop was harvested at the end of August and yielded 10t/ha, above the farm average of 8-9t/ha.

Typhoon is in a second wheat position this year, but the farm has adjusted to a regenerative system. "Now we've gone down the zero till route the crop probably went in a bit late on 16 November using a John Deere 750A, but I think we got away with it," says Freddy. "With this new way of farming, we're trying to under sow all cereals with clover to help with the rising cost of fertiliser and fuel."

The biggest trouble on the farm is weed control, according to Freddy. "We're hoping the clover will help suppress weeds and reduce herbicide use. At the moment the spring barley and maize help with ryegrass and blackgrass, so we don't have any trouble with those."

This year's crop was sprayed with sulfonyleurea herbicide — despite the farm

trying to move away from it — to combat volunteers, and had three applications of fertiliser, the same as last year's Typhoon but the crop hasn't had any P or K because of the price, says Freddy. "But our P and K levels on the farm are probably pretty good because of the cattle muck we use."

So far this year's crop is looking good, according to Freddy. "It's very clean and doesn't seem to have much disease. From what I've read about it, it should perform well as a second wheat, so it'll be interesting come harvest. Obviously, we'll see how it performs with our new establishment practice, as I imagine it'll take a few years to get into it, but it'll certainly be one to watch.

"I think we really do have to look closely at the very disease resistant varieties like Typhoon to combat the spiralling cost of fungicides," he adds.



*Typhoon scores highly on Agrii's Variety Stability Rating system.*

want something which has a good score.”

In terms of grain quality, Typhoon has a specific weight of 76.3kg/hl. “It's very comparable to Glean,” says Ron. “Typhoon has a lower Hagberg but this isn't an issue in feed wheat.”

Straw stiffness is another massive element of variety choice, says John. “Certain areas of the country will drill later because of blackgrass and this can lessen the effects of weaker straw, but those opting for a more normal drilling window could find some varieties have less than ideal stem stiffness. So this is why we look

## LG Typhoon at a glance

### Yield (% treated controls)

UK treated	101.8
UK untreated	89.2
East region treated	101.9
West region treated	101.7
North region treated	[102]
Grain Quality	
Specific weight (kg/hl)	76.3

### Agronomics

Resistance to lodging without PGR	7
Straw height without PGR (cm)	87.6
Ripening (+/- Skyfall)	+2

### Disease resistance

Mildew	6.6
Yellow rust	8.7
Brown rust	6.1
Septoria	7.2
Eyespot	[6]
Fusarium ear blight	5.7
Orange Wheat Blossom Midge	R

Source: AHDB Recommended List, winter barley 2022/23  
 – [ ] = limited data.

for varieties with good standing ability and Typhoon is performing.”

Typhoon is slightly later maturing at +2, but Ron feels this can be advantageous to growers. “It's important to spread out the range of variety maturity on farm because you never know when you'll be able to get started with harvest or when it'll end on farm. Spreading variety maturity is just another tool to help manage harvest in a changing climate.”

According to John, Typhoon's slightly later maturity could be seen as a small deterrent to some growers. “This might limit uptake in certain areas where growers don't like later varieties but from how Typhoon's performing at the moment, there doesn't look to be any real negatives to it at all.”

Typhoon also scores highly on Agrii's Variety Stability Rating system, says John. “It sits alongside varieties like Graham, KWS Dawsum and Fitzroy, which also score very highly on our system.”

## Important attributes

The VSR doesn't score on out-and-out yield but instead looks at traits such as grain quality, standing power, disease resistance, second wheat performance, sowing date, consistency, grassweed competitiveness and yield resilience under disease pressure. “We believe these attributes are important to growers and make up the sustainability of a variety on farm,” he explains.

Overall, Typhoon has a range of desirable attributes for growers, according to Ron. “It has a consistency of yield potential over both seasons and regions, a high yield performance as a second wheat and in the early drilling slot. It has a strong, rounded disease resistance profile, taller but stiff straw and a good specific weight. With all of this, it offers growers good security and adaptability for on farm performance.”

John agrees that there's a lot of positive aspects to Typhoon. “Though it's a few percentage points off the highest yielding varieties, when you consider the balance of attributes it has going for it, then it's hands down a winner. The market demands are changing due to pressures from the weather and farm finances and so growers are going to be looking for safer and more dependable varieties as a result. Typhoon looks to be a good all-rounder which is safe and won't expose growers to unnecessary risks which could financially burn them.”

For those growers considering Typhoon



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as an option for the coming season, Limagrain says there's about 3000t of seed available. “There's enough to make up 3-5% of the certified seed market,” says Phil.

So where next for Limagrain? One area the firm is paying close attention to is the regenerative farming movement. “We don't know what varieties on the RL are best suited to regenerative agriculture yet, but we are doing work looking into direct drilling, min-till, wide rows and seeding rates. The breeders and the trade have to do more to explore this,” says Ron.

Limagrain is also using its ideotype breeding technique to predict future crosses, explains Phil. “We can simulate crosses and predict all of the traits we've measured before and use this to filter out varieties — meaning we'll only make crosses from those varieties with the most predicted potential.

“We're focused on discovering more disease resistance genes — whether from historical or ancestral material and maybe even from grass varieties.” ■



*Typhoon has scored 9 against yellow rust on the RL and 7.2 against septoria over the past three years.*