

All it needs is love

“The answer to ramularia control doesn't lie in direct control of the disease.”

Technical Spring barley disease

The global pandemic may have made self-distancing the new normal, but it's also prompted closer links between communities across the world. *CPM* gets an insight into the problems spring barley growers face from the UK to New Zealand in a recent Zoom briefing hosted by BASF.

By Lucy de la Pasture

Large parts of the English countryside will be graced with a shimmering vibrant green this spring as spring barley temporarily replaces winter wheat in crop rotations. This blip in cropping is the norm in Scotland, Ireland and New Zealand, where spring barley is regarded as a massively important crop.

With an increase in acreage across the

UK expected to be in excess of 215,000ha (30%) by the team at BASF, 2020 is going to see the largest area of spring barley for thirty years. The AHDB Early Bird Survey suggests grower intentions may mean an even bigger swing, which could push the national spring barley crop over the one million ha mark.

But undeniably some spring barley has gone into the ground out of necessity rather than choice this season. That's not to say England doesn't have expertise in growing the crop, says Ben Freer, BASF business development manager for the UK.

Professional growers

“We have some very professional growers who are experienced in growing spring barley. Generally yields average from 7-8t/ha but higher yields are possible, particularly where crops are being grown on heavier ground and for the feed market,” he adds

Even though there are concerns that the extra spring barley in the ground this season is likely to over-supply the market, Ben believes growers shouldn't discount the value in the straw this season. With wheat straw likely to be in short supply,

quality barley straw is predicted to be trading buoyantly as vegetable growers and livestock farmers seek to secure supplies.

In Scotland it's very much business as usual, according to Scott Milne, BASF agronomy manager for Scotland. “There's a slight increase in spring barley area



Ben Freer suggests net blotch is the biggest disease problem for barley growers in England.



The value in the spring barley crop will be in its straw as well as in the grain this season.

but in Scotland it's the main cereal crop anyway, occupying around 250,000ha."

Scott believes the increase in the area of English spring barley will depress the feed barley market. "It's currently trading at £30-35/t below the price of wheat when normally the difference would be around £10-15," he explains.

With the Scottish malting market already at full capacity, that's not such good news for those with no option but to supply the feed market, he points out, though he agrees with Ben that it's a season where straw quality really can't be ignored.

Spring barley has also seen an increase in Ireland from 93,000ha last season to 150,000ha in 2020, according to David Leahy, BASF business development manager in Ireland. He explains the Irish market is self-sufficient in barley — with 72% grown for feed (€140/t) and the remainder for malting (€180/t).

In the southern hemisphere, spring barley is also an important crop, with 49,000ha planted in New Zealand in 2019, says Grant Hagerty, BASF technical manager for NZ. "Here average yields are 7.5-9t/ha with a yield potential of approx. 12t/ha. 85% of spring barley is grown for

feed, where it fetches around €200-220, and the remainder for malting.

Even though the market preferences change from country to country, all face very similar agronomic challenges when it comes to growing spring barley — with commonality in both diseases and the challenges in controlling them.

Underlying baggage

SRUC's Prof Fiona Burnett says in spite of spring barley being blessed with a wide range of active ingredients, there's an underlying baggage of resistance problems which makes the fungicide selection problem an acute one.

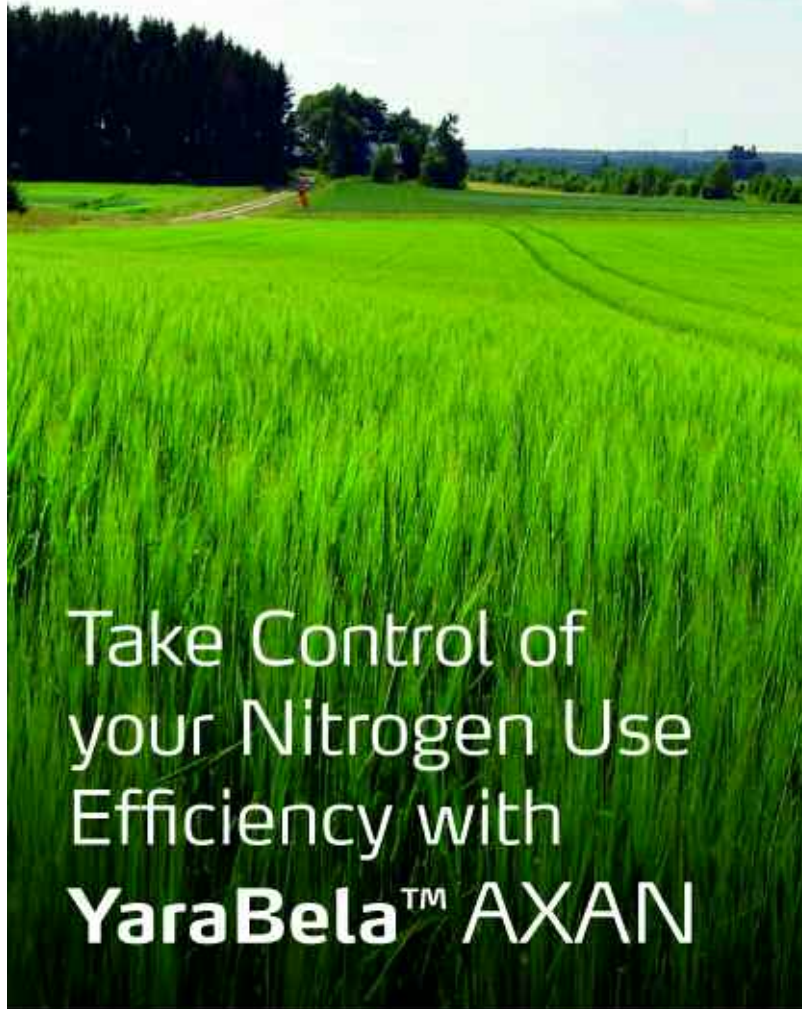
In recent years breeders have made great strides in breeding rhynchosporium resistance into winter barley varieties but it's still a significant problem in spring barley, she says. The BASF country representatives cite it as a key disease, particularly in Scotland and Ireland where the wetter climates can result in yield losses of as much as 30%. Ben suggests net blotch is a greater problem in England, accounting for yield losses of between 0.5-2t/ha.

Yet of increasing importance right across the globe is the mysterious disease, ramularia leaf spot, which spends much of its life within the plant as an endophyte and only when triggered becomes pathogenic, causing disease.

Ramularia presents a particular problem because it has demonstrated a remarkable ability to shrug off the effects of fungicides from all the major fungicide groups — DMIs (azoles), QoIs (strobilurins) and SDHIs — and in recent years multisites have picked up the slack. In Europe, the loss of chlorothalonil (CTL) will have a big impact on ramularia control because it was effectively the 'last man standing' when the single site actives lost efficacy on the disease. ▶



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Spring barley disease



Even though plant breeders have been successful in breeding rhynchosporium resistance into varieties, it's still a problem disease in wetter climates.

▶ Grant explains that New Zealand has never had CTL because it was seen as an animal transfer risk by regulators, so folpet has been the multisite of choice and is generally viewed as being a useful inclusion to help control ramularia, which

can cause them losses of up to approx 1.5t/ha.

"Including folpet has always been viewed as a positive step in New Zealand because we have no database for control with CTL to compare it with. But there is some debate on its value and inclusion at T2, which here is GS45-69 and determined by when the T1 went on," he explains.

Good activity

In European work folpet has proved to be inconsistent in barleys trials and not in the same league as CTL when it comes to ramularia control, says Fiona. She is encouraged that BASF's new flagship fungicide, Revystar XE (mefentrifluconazole+ fluxapyroxad) has good activity on ramularia and views it to be less effective than CTL but better than prothioconazole, which was the best of the azoles until the advent of Revysol (mefentrifluconazole). The latest time for Revystar application is GS45 in malting crops, which is something growers will need to be



Grant Hegarty believes a full rate of Revystar is needed for ramularia control.

very aware of, she adds.

New Zealand trials are showing that T2 sprays need to be applied around GS55 for the best yield response for ramularia

Be aware of BYDV threat

The risk of aphids picking up the virus and transmitting to spring crops is particularly high this year, since autumn-sown cereals didn't receive early protection against BYDV infection from insecticidal seed treatments and most subsequent foliar treatments were restricted by the wet conditions.

"There was practically no control of aphids, and by default BYDV, in early sown autumn cereals last year due to lack of seed treatments, and also very wet conditions in Oct through to Christmas which prevented spray equipment getting onto the land in Oct/Nov," says Dr Alan Dewar.

"However it's also true to say that there were fewer crops sown early last autumn, mostly winter barley, which is at higher risk. A lot of autumn wheat will have avoided the migrations due to late sowing and will be too tall by the time spring migrations start," he adds.

"But we have the reverse situation this spring, with very wet conditions delaying sowing of spring cereals, including barley, wheat and oats. This will increase the risk of BYDV, especially as the overwintering survival of aphids has been good in the mild winter."

Dr Max Newbert, Syngenta insecticides technical manager, highlights the predicted dates for this season's first cereal aphid flights were typically two to four weeks ahead of normal across southern and eastern England — as early as the first week of Feb in western counties and mid-March for East Anglia.

The delayed drilling of spring cereals means many crops will emerge while aphid activity is likely to be high, he warns. "Spring cereals planted in the final weeks of March, or into April, don't typically reach the critical GS31 — when the impact of BYDV infection declines — until mid to late-May, by which time aphid numbers could be at their peak."

He advises growers and agronomists to be alert and target the first mass migrations of BYDV-transmitting aphid species to prevent primary infection foci that could subsequently spread. But getting this timing right could be made more difficult this season by a lack of official suction trap monitoring by Rothamsted as a result of COVID-19 restrictions.

"We've prioritised collection of data from aphid water traps at Syngenta Innovation Centres to identify numbers of the main virus-carrying vectors as part of the remote-working team's ongoing trials research. Results will be available weekly on the Syngenta website," he says.

Alan suggests the best approach growers can take is to monitor their own crops more frequently. "At least there's a good chance that whatever is found there is a cereal aphid, and not something else, unlike with water traps (where aphid identification is a very specialist job).

"With regard to timing, once the spring crops have reached stem elongation stage, I suspect that yield losses will be minimal. While they are still very young, as they are likely to be this year,



Aphid migration into crops is early this spring which means most spring barley crops are at a higher risk of BYDV than normal.

then the risk is as high as it would be in the autumn," he comments.

Alan says that in a normal year, spring crops would be sown in Feb and would be tall enough to tolerate virus infection by the time that cereal aphids migrate in late April or May. "My guess this year is that aphids will be migrating earlier, but we won't know for sure due to the coronavirus lockdown. In early April, many spring cereal crops were still only at single tiller growth stage and some hadn't even been sown so they might, for the first time in decades, have a problem."

Typically one well-timed spring application has proven sufficient to hold aphid numbers below damaging levels. Max also urges growers to assess beneficial predator numbers before targeting aphids because, if lacewing and ladybird populations are sufficiently high, that may prove adequate to limit aphid infestations and avoid the need for treatment.

treatments, says Grant, which is broadly in line with UK trials which have shown the best responses from CTL at T2. He also points out that rates need to be kept up for ramularia control, with at least 150g/ha Revysol (contained in 1.5 l/ha Revystar) required.

"Trials at SRUC are showing most of the yield benefit comes from the T2 timing in spring barley," says Fiona. "A yield response at GS30/31 is uncommon in low risk scenarios, depending on the severity of rhynchosporium infection at the start of stem extension."

That's in contrast with the normal approach to barley disease control and Ben highlights that programmes have historically been front-loaded with fungicide. But he's also noticed that since ramularia has become a more significant disease, bigger responses are becoming commonplace to later T2 sprays.

"Even though the crop is often considered low input/low output, that can become a self-fulfilling prophecy and with a yield potential of around 10t/ha, the crop merits some love," he says.

And where ramularia is concerned, there are some very good agronomic reasons for keeping the crop as clean as possible. "What's becoming clear is that the answer to ramularia control doesn't lie in direct control of the disease," says Fiona, "The secret is in



Ramularia is causing problems in both hemispheres and the best way to reduce its impact is to minimise stresses to the crop.



In Ireland, David Leahy says trials are pointing to a T2 timing of GS45-49 as optimal.

managing the stress the crop comes under. Ramularia is an evolving picture but we're learning that controlling the other foliar diseases helps reduce the effect of ramularia because the crop is under less stress."

David Leahy, BASF's business development manager in Ireland agrees with Fiona. "There's no silver bullet for ramularia, the key is very much using a programmed approach. If T1 is compromised it has a knock-on effect on T2 which increases the risk of ramularia," he says.

"In terms of the timings, our view (and the view of Teagasc) would be a two-spray fungicide programme on spring barley; T1 at GS25-30 and T2 at GS45-49. Early disease control is critical for tiller retention in barley. In Ireland we have to deal with a very wet climate and high rhynchosporium pressure, so the T1 is critical.

"Instead of spending on 100% rates at both T1 and T2, we manage this accordingly with a 50-60% rate at T1 followed by a 50-60% rate at T2. I think this approach will carry more weight going forward as we will no longer have CTL for T2 and a more programmed approach focus will be required for ramularia control." ■



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