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IN FIELD FOCUS

AGRONOMY THAT DELIVERS

TAKING A TAILORED APPROACH TO T2

Avoid using a blanket T2 fungicide programme across all wheat fields this season, regional agronomists are urging. There are too many variable risks.

With the flag leaf contributing about 50% to winter wheat yield, the importance of protecting it properly against disease is unquestionable, agree ProCam agronomists Luke Stevens who advises in Essex and Suffolk, and Jamie Hughes who operates in Herefordshire and Warwickshire.

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PROCAM

Taking a tailored approach to T2

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This season especially, with high grain prices, wide-ranging drilling dates, and reduced Septoria tritici resistance among certain winter wheat varieties on the AHDB Recommended List (RL), they say the case for tailoring T2 fungicides to individual fields is particularly strong. And with high fertiliser prices, T2 could be key for topping up foliar nutrition.

"There are too many variables affecting disease, which can therefore affect yield, to rely on blanket T2 fungicide programmes," says Jamie. "Yes, you need a provisional plan. But you also need to be light on your feet."

To help devise a field-by-field fungicide T2 strategy, they offer the following five tips:

1. Identify main disease risk(s)

Identifying whether your main disease risks are Septoria, rusts, mildew or various pathogen combinations, based on factors such as local climate and variety, is an essential starting point, says Jamie, but also be prepared for unexpected risks that could catch you out. He says: "The appearance of a new yellow rust race affecting a variety with a previously high resistance rating is one example.

"Similarly, attacks of yellow rust in regions not traditionally

There are too many variables affecting disease pressure to rely on blanket T2 fungicide programmes, says Jamie Hughes

associated with the disease is another. This has happened here in the west, possibly because varieties were selected more for their Septoria resistance. Also, bear in mind risks from previous crops."

Although the impact of growing a second wheat on infections such as yellow rust and Septoria should have become obvious before T2, Jamie says another consideration is Fusarium in wheat after maize.

Additionally, last year showed that even Septoria tritici resistance ratings can tumble over the course of a year, adds Luke Stevens, so don't overlook this.

"Assessing all this information helps to shortlist active ingredients," adds Jamie. "Some SDHIs for example are more active on rusts. Others are more active on Septoria. And including a Fusarium-active azole may be important in some fields."

2. Factor in drilling date

As well as a variety's resistance ratings, drilling date can have a huge impact on Septoria pressure in particular, says Luke Stevens, but it can also impact on spray intervals. With some wide-ranging drilling dates this season, it's important to take these into account.

Luke says: "With its high Septoria tritici resistance, a lot of people planted Extase. But even with this it's important not to be complacent. We've seen at our trials hub at the Stockbridge Technology Centre in Yorkshire that even a variety with high Septoria tritici resistance can be infected if drilled in September.

"Also, while later drilling tends to reduce Septoria pressure, don't assume late-drilled crops are less susceptible to yellow rust. We saw at our trials hub that varieties rated 7-9 for yellow rust resistance became infected when drilled in January.

"Earlier drilling can also lengthen the T1 to T2 interval, which increases the chance of T1 fungicides running out of steam. But this stretching effect is not consistent between varieties. The interval for one variety at our trials hub, for example, increased from 16 to 24 days as drilling moved from October to September, while another with roughly similar disease resistance increased from 15 to just 16 days, making it questionable whether the same fungicide programme would be appropriate for both crops."

3. Assess disease pressure at spraying

Tailoring fungicides to disease levels at the time of spraying is obviously crucial at T2, continues Luke, and several factors besides variety and

Last year showed that even Septoria tritici resistance ratings can tumble

Early drilling can have a huge impact on Septoria pressure in particular, says Luke Stevens, but it can also lengthen spray intervals

drilling date can affect these.

"The weather building up to T2 influences disease pressure, with Septoria loving rainfall and yellow rust loving humid conditions. But T2 disease pressure is also affected by the effectiveness of what was applied at T1.

"If the T1 fungicide was lacking in some way – for example if it was applied late or early so that leaf three wasn't fully protected, or if it was weak against a sudden increase in rust – disease levels could be higher than expected. In these cases, relying on a fixed T2 fungicide strategy designed earlier can become outdated.

"The weather can also further

Rising temperatures mean brown rust risk increases around T2, says Luke Stevens, and is one to watch in varieties selected for other traits which have lower brown rust resistance

lengthen T1 to T2 intervals by slowing down crop development, or shorten them by speeding it up. And humid microclimates in thicker crops will encourage disease. In all these situations, T2 fungicides may well need adapting," he adds.

4. Factor in post-T2 risks

As well as responding to disease levels at the time of spraying, remember to build enough strength into T2 fungicides to protect green leaf area through the yield-producing period that follows, stresses Jamie.

"Don't let dry weather or a lack of visible disease at T2 lull you into a false sense of security. Latent infection is almost certain to be present. This can explode in suitable conditions, as we saw in the wet summer of 2019 with Septoria, and again last year.

"Therefore, factor in how future weather could affect disease risks. Do this even if planning to follow up with a T3 fungicide, because fungicides work best preventatively. Long-lasting T2 protection is important."

With rising temperatures in mid-summer, brown rust risk also increases around T2 in some regions, says Luke. And while ideally a variety with good brown rust resistance should have been chosen, if variety decision was driven by other traits such as Septoria resistance, or by end market, he says this isn't always the case.

5. Have a plan B

Taking into account all these factors is important. But if the weather suddenly turns wet and T2 is delayed, it's important to have a backup plan to deal with the need for greater curative activity, Jamie points out.

He says: "It should never be your intention to apply fungicides curatively. You should always keep crops in a protectant state. Older, less expensive chemistry can do a very good job in these situations if used correctly.

"However, there are times when you can't avoid getting into a curative situation. In these scenarios it may be a case of increasing fungicide dose within label limits to boost curative activity, or there may be no other option than using a more curative product."

Persistence, disease ratings and nutrition

Longer intervals between T2 and harvest further north means extra persistence from flag leaf fungicides becomes increasingly important as you move up the country, says ProCam northern region technical manager, Nigel Scott. Fortunately, he says there are fungicides now with good persistence.

"Also, check whether your varieties are among those whose Septoria tritici resistance ratings have fallen for this season." urges Nigel. "You may have chosen them before this happened. I would urge growers to consult the one-year Septoria tritici ratings on the RL. And a multi-site fungicide is important. We have data to back this up."

As well as disease control, some fungicides have physiological effects, says Nigel, and ProCam has trials examining this in relation to reduced nitrogen (N) fertiliser dose.

"T2 is also an opportunity to apply foliar N if applying less bagged N. A foliar treatment is highly efficient at getting N into the plant. Other foliar nutrients such as magnesium for chlorophyll, potassium and sulphur may also be useful at T2."

Check whether your varieties are among those whose Septoria tritici resistance ratings have fallen, says Nigel Scott, you may have chosen them before this happened

On-farm trial to mitigate fertiliser prices

A Dorset farmer is trialling the use of polymerised urea to assess how it can be used to offset rising fertiliser prices and tightening environmental restrictions.

High fertiliser prices and increasingly onerous environmental regulations are forcing arable farmers to re-evaluate their cropping strategies and crop management practices. For George Ireland's farm in Dorset, this means trialling an alternative form of nitrogen to improve nutrient efficiency and to maintain his business' ongoing environmental compliance.

George Ireland farms a total of 550 hectares at Bere Regis in Dorset. Located within the Poole Harbour catchment – a designated 'Protected Area' under the Water Framework Directive – his arable rotation includes main crops of winter wheat, feed-grade winter barley, winter oats and spring malting barley, with break crops of maize, winter beans and peas.

"We stopped growing oilseed rape two years ago following the neonicotinoid ban and replaced it with winter beans to reduce the farm's nitrogen demand," George explains. "We've also been growing cover crops for the last five years, with the entire farm cropped all year round to protect soil structure, retain soil moisture, reduce mineral losses and minimise runoff."

Following the sharp rise in fertiliser prices, George, along with his assistant, Harry Ralph and ProCam agronomist, Phil Edwards, has been looking for additional ways to use nutrients more efficiently and to reduce nitrogen inputs.

"Our farming practices are increasingly being shaped by the region's tightening water regulations," he explains. "We therefore not only need to reduce nitrogen inputs to reduce costs, but also to ensure our farming practices don't fall foul of current and future nitrate restrictions."

To assess the impact of reduced nitrogen usage, George is carrying out a simple field trial to evaluate the impact of an alternative source of nitrogen on yield, crop quality and bushel weight.

"I was fortunate enough to

George Ireland (centre), farm assistant, Harry Ralph (left) and ProCam agronomist Phil Edwards (right) are conducting a split field trial to assess the impact of different nitrogen usage strategies in winter wheat

purchase this year's N ahead of the most recent price increases," George continues. "But next year I'll be in the same situation as everyone else, so I need to prepare for a future where the economics of arable farming will dictate that we can't carry on doing what we've always done.

"We're therefore working with ProCam to assess our options and to challenge our current nutrient strategy to see if we can maintain yields by using nutrients more efficiently. Phil Edwards knows the farm as well as anyone here, so he's ideally placed to help us plan for the future and to keep the farm's cropping strategy viable into next season and beyond."

The trial is being carried out in a field of winter wheat previously in beans. Four nutrient zones have been created on separate tramlines. One comprises 192 kg/ha of liquid N. A second consists of 192 kg/ha of liquid N supplemented with 8 kg/ha of polymerised urea. The third comprises a higher rate of 224 kg/ha of liquid N. And the fourth supplies this same rate of 224 kg/ha of liquid N plus 8 kg/ha of the polymerised urea.

Phil Edwards says with polymerised urea an efficient way of feeding the plant, the second treatment, supplying 200 kg/ha N total, should in theory be as effective as the historical farm standard of 230 kg/ha of liquid N. The final treatment, which still only applies the same total N dose as the historical farm standard, will assess if yield can be pushed above the anticipated field output of 10 t/ha to make the most of strong grain prices, Phil says.

"Polymerised urea has an uptake efficiency of 90% compared to a more typical value of 60% for most conventional forms of nitrogen," Phil explains. "It isn't a panacea for all crops as polymerised urea is taken up over a longer timescale than conventional N which means it isn't ideal for faster growing crops. But it does have the added advantage of not scorching the crop and it can be applied in conjunction with other crop protection chemicals. It'll be interesting to see how the four tramline treatments compare.

"As George's agronomist, my remit is to ensure his crops remain as healthy, productive and profitable as possible year on year. And, because of the farm's location in such a sensitive water catchment, I'm also here to ensure the farm complies with all applicable environmental regulations.

"We're taking a similar approach to nutrient planning as George takes to crop protection: last year, despite low disease pressure in the spring, we still applied a robust T1 fungicide spray as an insurance policy against later disease, and backed this up with vigorous treatments at T2 and T3 to provide continued protection to crop yield and quality. We're essentially adopting a similar philosophy in terms of nutrient planning in the hope that we can insure against the impact of rising fertiliser prices and tightening environmental regulations."

Trial site open day in Yorkshire

Interested in trials?

ProCam is hosting a cereals variety and crop production open day at its trials site at the Stockbridge Technology Centre in Yorkshire on Friday 17 June.

The open day, which is open to all*, will give attendees an insight into ProCam's ongoing plant nutrition and crop protection research.

Tours of the trial site will commence at 10am and 1:30pm and will include an exclusive first look at current and future winter wheat and winter barley varieties. The tours will also include an herbicide weed screen demonstration as well as an introduction to ProCam's variety selector tool and the latest findings from the firm's research into the interaction between seeding rates and drilling dates.

The open day will also highlight ProCam's research into nutrition, fungicide and varietal interactions. Discussions will also focus on the latest drilling and cultivation techniques including direct drill comparisons and regenerative farming methods.

Full details of the event

Date:	**Friday 17 June 2022**
Location:	**Stockbridge Technology Centre, Cawood, Yorkshire, YO8 3TZ**
Tour times:	**10:00am and 1:30pm**
Lunch:	**Available from 12 noon**

Important *All visitorsare required to pre-register for the event: to confirm your attendance please send an email stating your preferred tour time to

cawoodevent@procam.co.uk

or register online at:

https://bit.ly/3BWS0Ya

Attendees to the open day will also be eligible to receive BASIS and NROSO points.

Preparing for potato blight control without mancozeb

The anticipated loss of mancozeb presents a potential problem for potato growers whose crops suffer badly from blight. But its loss isn't an out-and-out disaster, according to Phil Garton-Pope, thanks to alternative fungicides.

Approval for the use of the key early and late blight fungicide, mancozeb, was extended to 31st January 2024 following the UK's withdrawal from the EU. However, despite this extension, many within the industry are predicting that this is only ever likely to be a 'stay of execution' rather than a full reprieve, with some anticipating the multisite fungicide could be withdrawn before the current expiry date.

In the interim, it is feared that manufacturers will be less inclined to invest in the ongoing production of straight mancozeb and its associated co-formulations, so supplies could fall short ahead of the ban coming into effect.

"Growers therefore need to think about how to adapt their crop protection programmes to ensure that if and when the ban comes into effect they are prepared and ready to offset its loss," Phil Garton-Pope, ProCam agronomist, explains. "With a bit of thought and pre-planning, the withdrawal of mancozeb shouldn't be a major loss, especially as a strong arsenal of alternative blight products remains available."

In fact, Phil believes that growers will be able to do a better job of controlling blight without mancozeb: "In my experience, it's possible to achieve comparable, if not better, levels of control without mancozeb in blight programmes," he claims.

"During periods of rapid growth and wet weather, Carial Flex (cymoxanil and mandipropamid) and Zorvec Endavia (benthiavalicarb and oxathiapiprolin) can provide an effective backbone to blight programmes, with the addition of Enervin (straight amectoctradin) and Proxanil (propamocarb and cymoxanil) providing robust alternative modes of action.

Tuber blight

"Later in the programme, when attention turns to tuber blight protection, Shinkon (amisulbrom) and Ranman Top (cyazofamid) both provide useful activity, but the ability to adapt the programme to suit the prevailing conditions should not be underestimated."

Phil also explains that using a combination of different actives will also enable growers to implement an effective anti-resistance strategy.

But he stresses that the key to reliable control is to adapt programmes according to current and predicted weather conditions and to use forecasting tools to determine when the threat of blight is at its highest.

"A flexible approach to application timings will always ensure the best results, especially for those crops destined to go into storage," Phil continues. "Zorvec Endavia has proven to be particularly useful thanks to its slightly longer application interval of 10-11 days compared to 7 days for most other products.

"Controlling blight without mancozeb will push some growers out of their comfort zone, especially as it also provided useful activity against alternaria as well as a beneficial amount of manganese," Phil continues. "A rethink in terms of crop nutrition and alternaria control will therefore be necessary, but by starting with a fresh approach, growers could actually build a more robust and more effective programme of protection if and when mancozeb goes."

A strong arsenal of alternative blight products remains available, says Phil Garton-Pope

Offsetting N with clover

Trials indicate DM yield boost when introducing clover at reseeding.

With nitrogen prices at a record high there has been a surge in interest amongst livestock farmers planning to reintroduce clover-based leys into their rotations to reduce their reliance on bought-in fertiliser. Many are also introducing clover into existing grass leys. This is challenging, but with careful planning can be successful, with experience and evidence suggesting that the best time to introduce clover is as part of a planned reseeding programme.

Trials carried out by Field Options at the Crop and Environment Research Centre (CERC) at Harper Adams University in Shropshire have demonstrated that Red Clover, White Clover and some herbs, introduced at seeding, can significantly improve the protein content and DM (dry matter) yield of forage, even when provided with standard levels of nitrogen. This response is even more dramatic when the same mixtures are managed without nitrogen.

Yield response

The objective of the trials at Harper Adams is to formulate higher performing mixtures, with core blends being compared to leading Hybrid and Perennial Ryegrass controls.

The core grass blends are tested without clover, with White Clover and with both Red and White Clover (Pro-Nitro): over the first three years, the core mixtures outyielded the controls to the tune of 0.5-1.2 tonnes of dry matter per hectare per year. The inclusion of White Clover lifted this yield benefit to 1.3-2.0 t DM/ha/yr, while the addition of both Red and White Clover gave an uplift of 0.8-2.5 t DM/ha/yr.

"The introduction of clover at reseeding can result in a significant uplift in DM yield," Francis Dunne of Field Options explains, "which easily translates into savings on bought-in feeds and improvements in milk and meat productivity."

DM yield without N

Within the trial, an additional block of plots was sown at the same time and with the same mixtures, but managed without the addition of any supplemental nitrogen: although some of the core mixtures struggled to perform in the first season, in years two and three they were able to outyield the leading Perennial Ryegrass blend which received 250 kg/hectare of N.

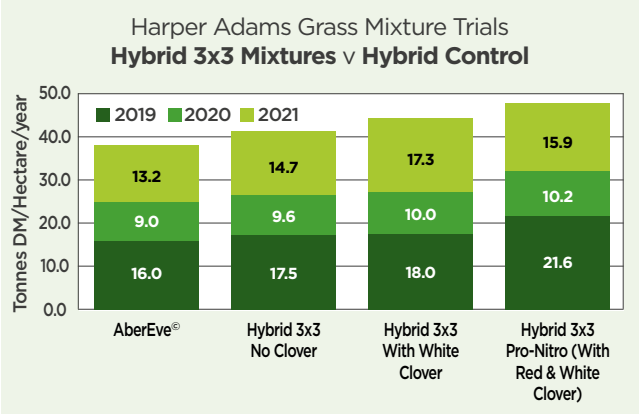
"The addition of clover clearly drove much of this yield, with White Clover contributing >4.0 t DM/ha/yr, and Red Clover delivering more than 5.5 t DM/ha/yr," Francis states.

Species diversity

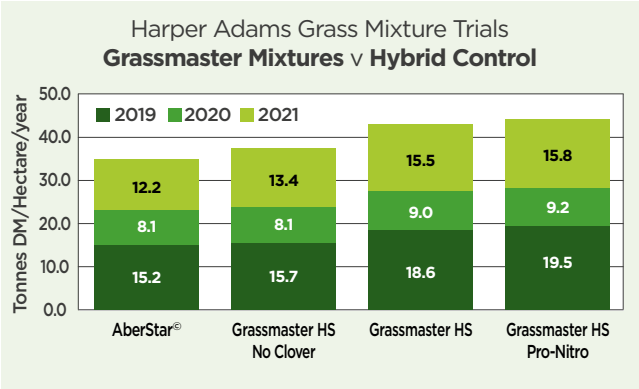
A number of the mixtures tested also contained drought tolerant grasses or Boston Plantain and Puna II Chicory. This species diversity further increased the yield response, especially in the dry season of 2020, with much of the extra performance accounted for by the deep rooting nature of these species which enables them to scavenge nutrients and moisture from deeper soil horizons.

Clover is best introduced at reseeding advises Francis Dunne

"The yield response produced by mixtures containing the best clovers, grasses and herbs in a zero-nitrogen scenario can deliver impressive benefits to pasture output in GS4 stewardship situations," Francis adds. "This not only contributes to better livestock performance plus a stewardship payment, but can also deliver a massive improvement in soil structure and fertility for the following arable crop."



Hybrid 3x3 *(a 3-year mix of perennial & hybrid ryegrasses) produced consistently better DM yields*



Grassmaster HS *(4-5 year mix of perennial ryegrasses & Timothy) also outperformed the control*

Clover timing

Whilst it's understandable for farmers to want a quick fix to the ongoing challenge of high nitrogen prices, Francis warns that introducing clover into an established grass sward won't always deliver the expected results.

"It's important to remember that any nitrogen fixed by clover won't be immediately available for uptake by companion grasses

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Offsetting N with clover

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as clover only generates N for its own use in the first 9-12 months of its lifecycle," Francis explains.

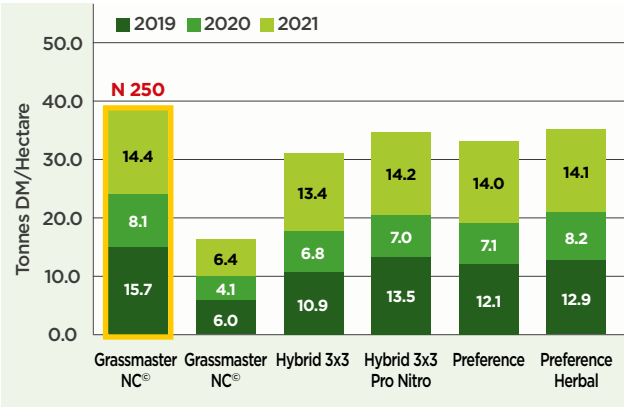
"In addition, overseeding clover into existing leys can be challenging, with good establishment often hard to guarantee. We have developed methods of achieving acceptable levels of clover establishment when overseeding, but growers should temper their expectations if taking this approach. We are therefore more inclined to encourage the introduction of clover at reseeding.

"Some farmers might be wary of this strategy due to the lack of clover-safe herbicides which can make post-establishment weed control tricky, so it may be necessary to control perennial weeds in the previous sward and to modify the cropping strategy by introducing a 'cleaning' break crop. Overall, however, it works out cheaper to sow a complete mixture of grasses and clover in one hit compared to carrying out two separate seeding operations to introduce the two components individually," Francis concludes.

More information

For more information, download a copy of the latest 'Grass, Clover and Forage Crop Guide' at www.field-options.co.uk

CERC Harper Adams Grass Mixture Trials
Nitrogen vs. no nitrogen



Grassmaster NC: *per. ryegrasses, Timothy, no clover*

Hybrid 3x3: *hyb. & per. ryegrasses, white clover*

Hybrid 3x3 Pro Nitro: *hyb. & per. ryegrasses, white & red clover*

Preference: *per. ryegrasses, Timothy, white clover*

Preference Herbal: *per. ryegrasses, Timothy, white clover, plantain, chicory & yarrow*

Introducing clover at reseeding significantly improves protein and DM yields in forage.

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