

It's all in the timing



Technical Disease control

Getting the T1 spray timed correctly is essential to ensure wheat crops get the early season protection they need. But a recent *CPM*/Bayer survey has revealed getting that right isn't as simple as it sounds.

By Tom Allen-Stevens

Most growers don't know the correct timing for the T1 fungicide spray, but most believe they're getting all of their spray timings right, according to the results of a recent survey, carried out by *CPM* and Bayer.

The survey asked respondents what they considered to be the ideal T1 timing. The most popular answer, at 46% was "leaf three half emerged" (see chart opposite), with 45% of respondents opting for "leaf three fully emerged", and 9% choosing "leaf three emerging".

"The correct answer is leaf three fully emerged, and it's worrying that less than half of respondents correctly identified that," notes Jonathan Blake, senior research scientist at ADAS.

When asked how much of their wheat

area had been sprayed at the correct timing, almost two thirds of respondents reckoned all of it had. However, half of these then went on to choose the incorrect timing for the T1 spray.

Contribution to yield

"Leaf three counts for only 11% of light interception contributing to final yield, while leaf two contributes 25% and the flag leaf 40%," explains Jonathan Blake. "But it's remarkably important to get a well timed spray on to leaf three to protect the emerging leaf two. That's why you need to wait until leaf three is fully emerged, so that leaf two is just emerging.

"Working back, that means it's also important not to apply your T0 spray too early — it could start to run out of steam after about three weeks, which could tempt you to go early with the T1," he notes.

What's more, the tillers will be slightly behind the main stem. "That's all the more reason not to go early with the T1."

There's rarely a spray applied that targets leaf two, he points out. "Leaf two relies on the protective properties of the T1 spray and curative kickback from the T2 application, which is why a crop can be left exposed to disease if the T1 spray isn't timed correctly."

Bayer commercial technical manager, Tim Nicholson notes that keeping the flag leaf clean isn't just the preserve of a T2



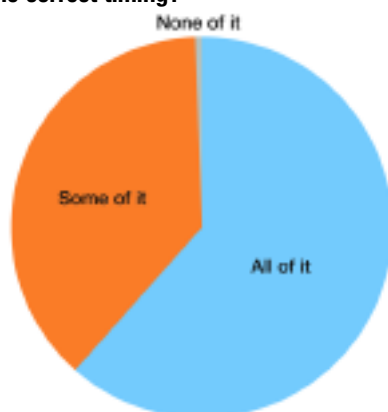
Jonathan Blake reckons it's a worry that most growers don't know that leaf three fully emerged is the correct timing for the T1 spray.

application. "In recent seasons, we've seen septoria transfer via leaf rub. Infection spreads from leaf three onto an emerging flag leaf. Even with the potency of new SDHI formulations, if septoria is established, the curative activity of fungicides rarely recovers the situation fully. It's why staying in a protective position is so important."

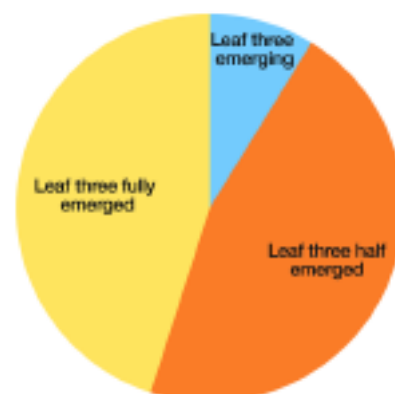
To achieve this, you must fully protect leaf three in the early part of the season, he continues. "Any movement from recommended timings risks disease becoming established. Regardless of when T0 sprays are applied, get the T1 right and protect leaf three."

Getting the timing right

Over the past three seasons, how much of your wheat area has been sprayed at the correct timing?



What do you consider is the ideal T1 timing?



“Any movement from recommended timings risks disease becoming established.”

Temperature also has an effect, with GS32 lasting as long as ten days in cool conditions, but much less if April is warm, notes Tim Nicholson. “Varietal resistance could extend septoria’s life cycle by as much as 40%, giving you a wider spray window and helping you stay in a protective position.”

“It’s refreshing to see growers go for more resilient varieties — it gives them more scope to reduce fungicide spend, although that will always depend on weather conditions within the season.”

Wet weather in April 2012 saw many T1 sprays delayed, he adds. “By the time growers went back in, leaf three was already infected, and with ideal cycling weather and leaf-to-leaf transfer, inoculum spread to the flag leaf was inevitable.

Sowing date also contributes towards disease pressure early in the season, and only 23% have sown their wheat in Sept. “The first two weeks of Oct is the optimum timing to balance yield potential without pushing disease pressure,” he notes.

“So if you go beyond leaf three fully emerged, septoria control could be compromised. Too early and you’ll leave the base of leaf three unprotected — even highly systemic fungicides like our Xpro range move mainly towards the leaf tip.”

Highest disease threat

Septoria is seen by growers as by far the highest disease threat (see chart on p16), according to results of the survey. Around a third of respondents have Skyfall in the ground — a variety with a score of 6.0 for septoria resistance, according to the AHDB Cereals and Oilseeds Recommended List.

Other diseases should be borne in mind, he adds. “Growers appear to have their priorities right, but yellow rust will be a concern in susceptible varieties. Brown rust and fusarium can be a problem, but there are no signs at this stage that brown rust will be a priority, as it was in 2007, for example.

Four of the top five varieties grown and seven of the top 15 have a septoria rating of 6.0 or above, notes Jonathan Blake.

“Eyespot often receives more attention than it deserves, but there are specific ▶

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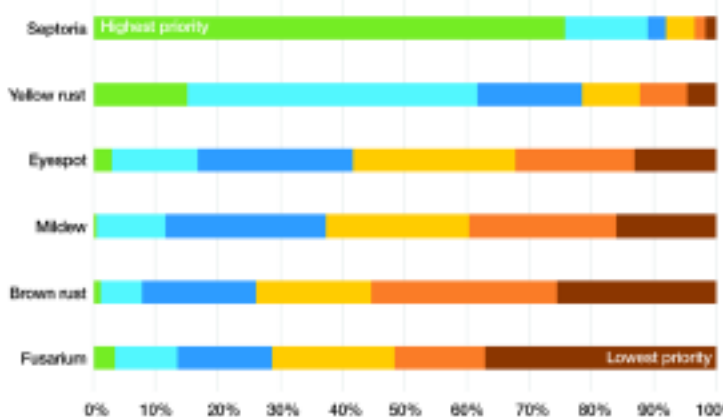
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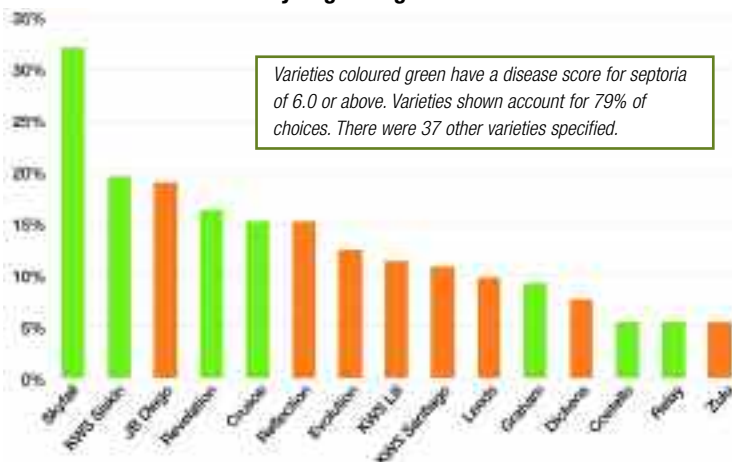


Disease susceptibility

Please rank in order of importance your main disease threats at T1.



Which wheat varieties are you growing?



Varieties coloured green have a disease score for septoria of 6.0 or above. Varieties shown account for 79% of choices. There were 37 other varieties specified.



Varietal resistance could extend septoria's life cycle by as much as 40%, says Tim Nicholson

► circumstances that will encourage the disease — early sown second wheat on ploughed or heavy land will increase the threat, and some varieties are particularly susceptible.”

Milder autumn weather has seen eyespot return to many areas, points out Tim Nicholson. “It may not pose the same threat as septoria but where T1 applications are delayed beyond GS32, the

disease could get into the base of stems, and if so can be very damaging,” he warns.

AICC agronomist Richard Cromie believes it's important to keep an eye on other diseases at the T1 timing, especially as he manages large areas of milling wheats. “At that time of the season you have a lot of diseases to think about. Septoria is the main target here but you could also have rusts, eyespot, mildew and fusarium. At T1 you need a broad-spectrum approach, which is a good reason why azoles are so important in our disease control strategies,” he says.

More than a third of growers are planning to use an SDHI with an azole and chlorothalonil (CTL) at T1, with a quarter putting a strobilurin in place of the SDHI (see chart on p17). Over four fifths of respondents are planning to use an SDHI at the T2 timing, with or without CTL.

Jonathan Blake notes that almost 20% of growers plan not to use CTL at T1. “That surprises me — I'd hope all tank mixes at that timing include a multi-site fungicide.

“But there is a strong economic argument for not using an SDHI at T1, especially if you are a grower in the East with Graham, KWS Siskin or Revelation, for example,

and there isn't sufficient septoria present at that timing to warrant an SDHI.”

Respondents were also asked to name two benefits of SDHIs that would influence their decision. While the most popular choice was better disease control, a third of growers picked resistance management as a benefit. “That's not a reason to opt for an SDHI,” notes Jonathan Blake.

Resistance pressure

“Where conditions and situations allow, reducing the number of SDHIs in a programme or the rate used will help to reduce resistance pressure, provided azole and multi-site rates are maintained.”

Bayer-funded trials show Proline (prothioconazole) plus CTL performs well at T1, so Tim Nicholson agrees a blanket move to an SDHI isn't always necessary. “The decision is more down to capacity and resource — if the T0 spray has done its job and you can be assured that you can spray your entire wheat area on the correct leaf layer around GS32, then an azole plus CTL still has a place.

“But including an SDHI just offers that bit more flexibility. Where growers have concerns about the weather, distance between fields, have drilled early or opted for septoria-susceptible varieties, an SDHI just gives that bit more assurance.”

While azoles continue to decline in their efficacy, Bayer-funded research with SRUC, ADAS, Prime Agriculture and Envirofield shows a T1 and T2 application of an 80% dose of prothioconazole gave over 50% control of septoria, he reports.

“For the foreseeable future, the main azoles are likely to remain a key part in cereal disease control strategies. The question is how to slow further decline. Claims that an SDHI can compensate for

Good timing brings a winning response

Three lucky *CPM* readers have each won a stunning Barbour jacket for taking part in the *CPM*/Bayer survey.

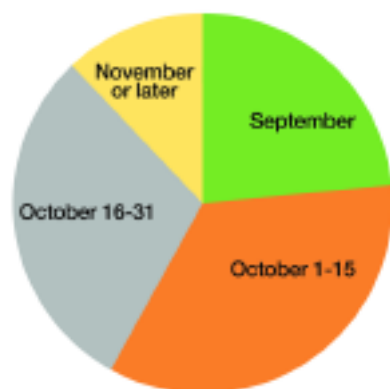
Stephen Wood of Easington Hall Farm, Cleveland, Matthew Copley of East Newton Hall Farm, N Yorks, and Mark Ireland of Heath Farm in Lincs responded to the survey and completed the tie-breaker question.

Their replies to the question asking them what their main focus was at the T1 spray

timing were deemed best by the judging panel. In his response, Stephen Wood correctly identified the correct timing of the T1 fungicide spray.

The aim of the survey was to gather views on early season disease control and the issues surrounding timing of the T1 spray. To take part in the next survey, make sure we have the correct details for you by emailing angus@cpm-magazine.co.uk

When did you establish your winter wheat?



a reduced azole performance or dose I find questionable. A poor azole choice or low dose will add to the pressure on the partnered SDHI. At recommended doses, some SDHI co-forms are only delivering a 60% azole dose."

Including CTL is an option but he'd prefer to see azole rates increased. "A 1 l/ha dose of CTL is providing similar levels of protection to a robust dose of an effective azole. But it's a surface protectant and doesn't move within the leaf in the same way that an azole does. Using azoles at a higher dose is the best way to protect the SDHIs which are the most potent tool in our armoury. It might mean added cost and inconvenience for growers but in my view, there's no alternative," he concludes.

Richard Cromie is earmarking SDHIs for the T1. He says that although the T2 is still the most responsive timing, he sees the T1 as almost equally important. "If disease gets going early on in the season, you might struggle to clean it out fully. With triazoles being mainly protectant now, we're reliant on SDHIs for curative activity, but these are no silver bullets. If you don't control septoria at T1, it could be established on the flag leaf come T2.

"In the past, we've seen lush crops full of disease come out of mild winters. In such situations, I think you could easily say the T1 would be as important as a T2."

For him that means being prepared for the unexpected. "If septoria is established in the lower canopy then there's no choice but an SDHI. But there's a persistence issue too. An azole plus CTL mixture still gives good control, providing the gap to T2 isn't extended. But with the weather can you take a chance, especially if you have a large area to treat? An SDHI just gives that greater assurance." ■

Which one is leaf three?

Growth stage isn't directly linked to leaf emergence, notes Jonathan Blake, so the way to identify when leaf three is fully emerged is to pull apart the main stem.

"The knack is to peel back to the node and count the leaves as you uncover them. The flag leaf will be the last leaf before the embryonic ear is revealed. Note at this stage the flag leaf may be less than 1cm in length."

Richard Cromie says dissection with a sharp knife is crucial. "The first task is to identify the main tiller, which will be the widest one. Once identified, separate this from the secondary tillers and peel away the lower leaves. Also, discard any nodes within a centimetre of the roots."

Now with the main tiller in hand, split it in half from top to bottom, cutting through the leaf layers. "As you move down the tiller you should feel the nodes. Then gently lift everything out from the inside until you get to the top node in the plant."

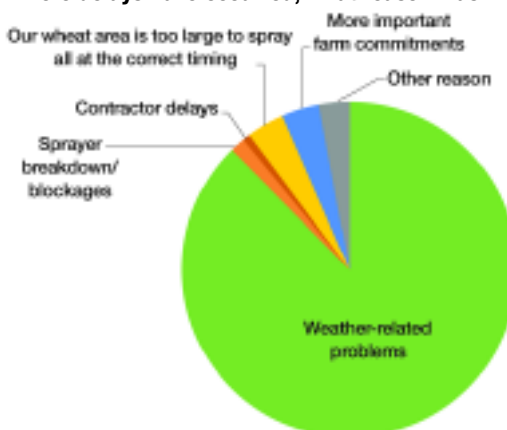


The knack is to peel back to the node and count the leaves as you uncover them.

At this point you can discard the remainder of the tiller and then working from the ear, count backwards from the flag leaf to identify which leaf is currently emerging. "At the point of GS32, leaf three should be just fully emerged, and this is the perfect timing for a T1 spray," he advises.

For a more visual explanation, click on to the story on the CPM website, www.cpm-magazine.co.uk for a video where Richard Cromie has captured a step-by-step guide.

Where delays have occurred, what reason was most common?



Of those growers who admitted they sometimes missed the correct timings, the vast majority (88%) identified weather-related problems as the most common reason. To address this, 29% are considering an increase in sprayer capacity and around a quarter each of respondents are planning to adopt block cropping or use a bowser or remote water access.

What will be your likely T1 and T2 choices for the majority of your wheat area?

