

## tillage

# Septoria: timing and resistance

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Controlling septoria is a growing problem due to the falling efficacy of triazoles (Opus, Proline, etc). The worry is that this will lead to a decline of SDHIs, which now provide over two thirds of the control against one third from with triazoles. Chlorothalonil (Bravo) should be long since pensioned off but it continues to play a useful role.

“Rotation, wheat variety, product choice and timing of application are all part of the equation for us,” says Stuart Graham, who farms 118ha of tillage crops in Holdenstown, Dunbell, Co Kilkenny. “Our rotation is made up of winter wheat (feed), winter barley (feed), winter oilseed rape, spring oats and spring barley (malting/seed).

“The straw from the winter wheat, spring oats and the oilseed rape is generally chopped and incorporated. Ploughing is sometimes carried out where grass weeds such as sterile brome are problematic and also if there are some compaction issues.”

Stuart uses a min-till system for sowing his crops, which includes a 3m Vaderstad combination drill, along with a Simba X-Press cultivator with

ST bar on front. The ST bar transforms the machine into a one-pass cultivator, which can restructure the soil, taking out compaction down to a depth of 25cm.

“The winter wheat is Lilli, which was sown the last week in September 2016 at 141 kg/ha,” says Stuart. “Lilli scores well on straw strength, lodging and on mildew resistance, but it is moderately susceptible to septoria and other diseases.”

Stuart is careful to “vary the active ingredients at each timing, in order to get the best results from the chemicals being used and to prevent resistance”. He checks the growth stages of the crop himself along with the help of his Teagasc crop advisor.

According to Stuart, “this allows us to get the best return from our spray programme.” He applies Bravo @ 1 l/ha at GS 30. This means he uses a four-spray programme for his winter wheat. “The T0 application of Bravo, along with CCC, is applied early. This gives me peace of mind that if there is some disease activity on the wheat then the Bravo will have some effect. It also helps with the following timing of the T1 and it acts as an insurance policy in case the weather delays the next spray.”

The T1 spray was Bravo @ 1 l/ha mixed with a Triazole and SDHI mix when the third last leaf was fully emerged. The T2 spray will be applied when the flag leaf is fully emerged



and this will be Bravo @ 1 l/ha mixed with Triazole and SDHI (80% to 100% rate), i.e. Adexar, Aviator, Librax and the last spray at flowering stage will be a Triazole (80% to 100% rate), i.e. Gleam/Prosaro.

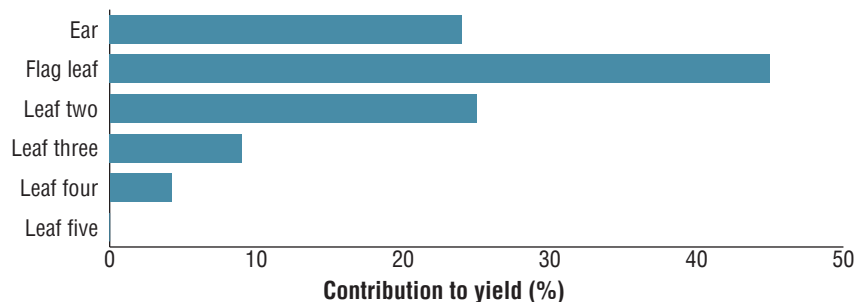
“Septoria control is not getting any easier,” says Stuart Graham. “But we can still manage it provided we don’t lose any of the tools we still have.”

### Getting the timings right

All crops have had a lot of septoria on the lower leaves since early in the season. This is a source of inoculum for most infection later in the season. For yield development, we are only concerned about the top three leaves because that’s where 80% of the yield comes from.

Leaf emergence is primarily driven by temperature. Wheat leaves are produced roughly every 120 degree days so if you get an average daily temperature of 10°C a new leaf will be produced every 12 days. Septoria is also driven by temperature but it has a long latent period of about 400 degree days but this can vary depend-

### 80% of wheat yield comes from top three leaves



Source: HGCA wheat disease management guide January 2014



Stuart Graham and Marianne Mulhall.

## HOW TO MINIMISE RESISTANCE

While resistance is inevitable, there are measures that we can put in place to slow its pace and to help extend the effectiveness of our current fungicides.

- Only apply fungicides in mixtures with additional effective modes of action. For example, using a multisite such as chlorothalonil, a triazole and an SDHI.
- Use the lowest dose required to achieve effective disease control.
- Limit the number of applications of individual modes of action within a programme.

## WHAT SHOULD A FUNGICIDE PROGRAMME LOOK LIKE?

### Leaf three spray (T1)

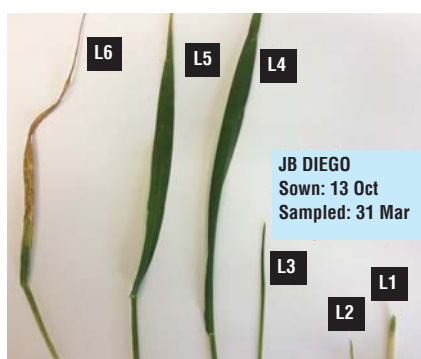
- Yield response: (2012-2014 Teagasc experiments show 0.5t/ha response when included in a full programme).
- Timing: apply on to final leaf three fully emerged.
- Recommendations: 1.0l/ha chlorothalonil plus 80% to 100% (SDHI + triazole).
- Notes: assess for eyespot and mildew also at this timing.

### Flag leaf spray (T2)

- Yield response: (2012-2014 Teagasc experiments 1.7t/ha).
- Timing: apply on to flag leaf fully emerged (~ GS 39).
- Recommendations: 1.0l/ha chlorothalonil plus 80% to 100% (SDHI + triazole mix).
- This is consistently the best-paying spray in winter wheat trials.

### Flowering spray (T3)

- Yield response: (2012-2014 Teagasc experiments 0.5t/ha).
- Timing: apply at the start of flowering.
- Recommendations: fusarium and septoria active triazole.
- The yield response can be low in low disease pressure years.



Target a fully emerged leaf three for the first main timing and fully emerged flag leaf for T2. If you apply a fungicide before the leaf is fully emerged, part of the leaf is unsprayed which will result in poor control due to the inability of fungicides to move back the leaf.

Applying a fungicide too late (leaf fully emerged for five to 10 days) means the disease may have already established and poor control can be expected. We now expect little curative properties from fungicides due to the changes in septoria populations. Regard fungicides as “protectant fungicides”. We do not target leaf two because part of it will be sprayed with the T1 and the remaining unsprayed section will be sprayed at the T2 timing.

The final spray (T3) can be used to top up septoria control especially in high-disease pressure seasons and on susceptible varieties. This should be targeted at mid-flowering, which will help protect developing grains from fusarium but this timing often gives a poor response especially in low disease pressure years.

ing on variety and temperature.

A plant can produce three leaves in the time that it takes septoria to develop within a leaf. This is why leaf emergence is the best guide for spray timings. Growth stage is not a good guide as leaf three normally emerges somewhere around GS 31 to GS 32. This can vary between seasons, sowing dates and varieties. “It’s important to dissect a number of plants in the field to be sure you are spraying the correct leaf,” says Stuart Graham.