

While the T2 or flag leaf fungicide timing in wheat has long been held up as being the most important of the possible timings, it is now becoming much more widely accepted that the results from the crop are heavily dependent on getting "it right" at all four application opportunities.

That said, it is important to target the final timings effectively as it is vital to ensure that crops ripen as naturally as possible, rather than senescing prematurely as the result of poor foliar disease control.

As we move towards and beyond T2, disease pressure increases for numerous reasons. As the crop canopy develops it produces its own microclimate which in itself can encourage disease development. On top of that, higher day/night temperatures increase the rate at which diseases develop from a spore landing on the leaf to a new lesion producing further spores to spread the disease onto upper parts of the plant or to other plants by rain splash or wind spread. At T2 dependent upon variety and location, *Septoria tritici*, Yellow Rust, Brown Rust and mildew are all potentially major diseases. Of these, the slowest to recycle is *Septoria* which can take up to three weeks – the others are all much quicker.

For this reason timing accuracy and choice of fungicide is vital. Trials evidence has shown that ideally the gap between T1 and T2 should be no more than four weeks. If, due to slow early crop development (as in spring 2010) this is reduced to nearer to three weeks, then this is probably all to the good. In our own trials, in 2008, the yield difference between a four week gap or five week gap T1 to T2 was a tonne to the hectare in favour of the shorter interval. While T2 is targeted at GS 39 (flag leaf emerged), in reality this can be at any point from start of flag leaf emergence (GS 37) and in situations of high disease threat then an early start is to be encouraged.

With a range of diseases to worry about, it is vital to ensure that fungicide choice at T2 is correct. While *Septoria tritici* remains the number one yield robber, dependent upon variety, yellow rust and brown rust can also have significant negative impacts on the crop and final yield. Already there have been numerous reports of yellow rust developing aggressively on Oakley. As this strain can also infect Solstice, Viscount

Fungicide timings – getting it right

Chris Bean, UAP's technical director, based in Kent gives some tips on Wheat T2 and T3 fungicide choice



and Gallant it is essential that any T2 programme takes account of the complete spectrum. In addition while T3 is the traditional place to start control of toxin producing *Fusarium* spp, research by FERA and Harper Adams has demonstrated that including active products at T1 and T2 as well can significantly improve the likelihood of achieving acceptable levels of control.

For this reason, applications based on prothioconazole conformers eg Kestrel (prothioconazole + tebuconazole) have become increasingly popular controlling *Septoria*, Yellow Rust, Brown Rust and *Fusarium* – and giving some benefit on mildew in susceptible varieties.

In order to help reduce the risk of resistance build up, and to give as long as possible control of disease, dose rates of products should be maintained especially at T2 and it cannot be stressed enough that at least a 75% dose should be used at this timing. Also it is important to partner the triazole with an alternative mode of action. This could be with a chlorothalonil based material but there is plenty of data to suggest that in situations where disease pressure is high and eradication is important, then chlorothalonil can reduce the speed of uptake of the partner material.

An alternative is to use a strobilurin based material (e.g. Comet – pyraclostrobin, or Jenton – pyraclostrobin + fenpropimorph).

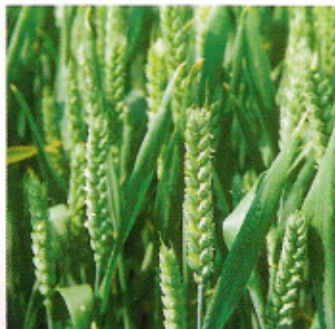
Not only will this improve disease control – Jenton in particular is excellent against both rusts and improves *Septoria* and mildew activity – but will also

assist in the assimilation and uptake of nitrogen and so is a must in bread making wheats where proteins have been shown to be improved by in excess of 1% as a result.

At T2 timing, weather conditions can be even more fickle than at other times with heavy thundery showers not unusual. Therefore the fact that products such as Kestrel and Prosaro have 15 minute rain fastness times, compared to one to two hours with other products, can prove to be a significant advantage.

Accuracy of application, timing and product choice are all of importance at T3 as well. At this later growth stage the major targets will be diseases such as *Septoria tritici*, brown rust (dependent upon variety) mildew and the true ear diseases such as *Fusarium* and *Microdochium nivale*. For quality wheat growers the mycotoxin issues around *Fusarium* – especially *Fusarium graminearum* have become a greater worry over the last few years now that specific targets exist in terms of grain acceptability.

For many feed wheat crops, the major objective is to top



Winter wheat at ear emergence

up flag leaf disease control by applying a triazole or triazole plus strobilurin mix.

However, careful thought is required in any crop in which mycotoxins could be an issue. In this case timing is a major concern and should be made while the crop is in early flower – as the major mycotoxin producing *Fusarium*s tend to develop on the falling flower parts. Because of the nature of the disease, control following infection is virtually impossible although prothioconazole is active up to five days before or after infection. As a comparison tebuconazole only has three days equivalent activity.

Since the launch of the strobilurins in the late 1990s there has been a trend to rely heavily on them at the T3 timing – this has been questionable for some time and more recent research is showing this to be the wrong course of action where *Fusarium* control is required. Because of their broad spectrum activity (with the exception of *Fusarium* spp) the strobils tend to clean up the ear remarkably well which allows *Fusarium* to colonise almost unchecked. As a result such crops can have higher levels of mycotoxin contamination than untreated crops! The best materials at T3 are those based on the most active triazole against *Fusarium*, prothioconazole e.g. Proline, Prosaro, Kestrel. Where brown rust is an additional concern, then the latter two which are coformulated with tebuconazole will be the best choices. All three will give good additive control of *Septoria*. But be warned – *Fusarium* control is not possible at low rates so avoid going below a 60% dose.

Application is important – especially if trying to cover an upright ear. Specific nozzles have been available for several years. Recent trials using silicon based wetters (e.g. SP057) added to the fungicide, have also shown similar benefits.

The latter part of the season can be extremely busy – and very important with regards to ensuring quality and yield. Remember that as well as T2 and T3 fungicides certain varieties in certain locations can be at risk from orange wheat blossom midge which if it is going to be a problem usually crops up after T2 timing and before T3. There's just no peace for the wicked is there!