What are strobilurins?

Advances in fungicide chemistry.

Their very inclusion in many programmes are now questioned. Their benefits

delaying crop senescence.

They were also credited with physiological benefits, maintaining green leaf area for longer and delaying crop senescence. But they have a very specific mode of action, which makes the chemistry vulnerable to resistance.

How does disease develop resistance?

A number of pathogens developed resistance through a genetic mutation that effectively allows them to sidestep the strobilurin mode of action. It gives them resistance across all of the QoI group, which includes fenamidone and famoxadone.

There are three known types:

- **G14A** – isolates express complete resistance to QoI fungicides. This was first identified in mildew, then septoria in 2002 and more recently in ralstoni and Microdochium nivale. There is no fitness penalty from this mutation, which means the resistant pathogens are just as active and spread as well as their non-resistant counterparts.

- **F129L and G137R** – isolates express moderate, or partial resistance. The F129L mutation has been identified in net blotch and different strobilurins have been found to have differing levels of activity against the disease. There is a fitness penalty here, so resistant isolates have not taken over the population. Resistance has spread fast as a result of the widespread use of strobilurin spays. This takes out the susceptible population and allows the resistant pathogens to thrive.

What is the current resistance status?

Septoria, mildew, ralstoni and Microdochium nivale should be considered to be resistant, as isolates are now widespread across the UK and dominate the population. Net blotch has some sensitivity to strobilurins fungicides, although resistant isolates are widespread. Significantly, no resistance has been identified in rust. It is possible a mutation will occur, but it is thought that mutation G14A will make the pathogen unviable, which is why resistance in rust has not yet been an issue.

Resistance was identified in rhynchosporium in France in 2010, but only in one isolate that hasn’t been seen since, so the disease is being closely monitored.

What physiological benefits do strobilurins have?

- The so-called “greening” effect

Golden rules

- Don’t rely on strobilurins for good control of most wheat diseases.
- They are still useful to control nuts and barley pathogens.
- Follow FRAC guidelines when using all fungicides, especially SDHIs.

Strobilurins still have an important role in controlling barley disease.

Much of the benefits of strobilurins has been seen as a big advantage of the chemistry. Treated crops have been shown to have delayed senescence, so leaves stay green for longer, resulting in a longer grain-fill period and higher yields.

Visits differ as to whether this is simply down to good disease control or whether strobilurins have an additional beneficial effect. But the response of crops has reduced considerably since resistance became widespread. Currently, you could expect a yield benefit in winter wheat of less than 0.4t/ha in the absence of rust, and may see no benefit at all. Previously when strobilurins were controlling septoria, yield boosts of 1t/ha were typical.

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Strobilurin + SDHI = More yield

Pyraclostrobin and azoxystrobin offer a risk-free combination.

As the strobilurin at the top of the hierarchy, Comet® 200 fits well in programmes at T1 and T2 particularly for its value in yellow and brown rust control, the chemistry is proven and will not let you down. In 2010 there was unprecedented use of Comet® 200 programmes at T1 because of the rust susceptibility of varieties in the ground. Based on our research amongst agronomists, it is likely similar recommendations will be made this coming season as the same varieties and risks are there.

An 11 trial series in 2010 has shown Comet® 200 gives a yield contribution of 0.3 t/ha when added to new carboxamides (otherwise known as SDHIs) plus azole combinations, and in addition delivers proven physiological effects that don’t seem to be present to the same degree with the new SDHIs.

Comet® 200 is the only strobilurin to have the approved label claim of “yield response in the absence of disease” and supports crops to reach their potential stimulating proven physiological effects, namely:

1) Increased nitrogen uptake
2) Reduced drought stress
3) Reduced sun stress
4) Increased host defence actions - the plant’s ability to protect itself.

Test your knowledge

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