Update on strobilurin use on wheat

**Products**

Azoxystrobin is the single ingredient in the Zeneca product, Amistar. Amistar Pro contains azoxystrobin and fenpropimorph.


Trifloxystrobin is a new single ingredient product, Twist, from Novartis. Other companies are also developing strobilurins.

Using strobilurins

Current strobilurins have limited eradicant capacity. They should normally be used with an effective partner, usually a triazole, for reliable disease control, and to form an effective anti-resistance strategy against key diseases.

Landmark and Mantra perform similarly to mixtures of Amistar with a good triazole (or Twist/triazole mixtures) against Septoria. Choice of both triazole and dose are important. The best are epoxiconazole (Opus), tebuconazole (Folicur), cyproconazole (Alto), fluquinconazole (Flamenco) and metconazole (Caramba).

For broad-spectrum disease control triazoles complement strobilurins well. While strobilurins are most effective against germinating Septoria tritici spores, triazoles inhibit fungus growth inside the leaf to eradicate earlier infections.

Fenpropimorph (Corbel), tridemorph (Calixin), Spiroxamine (Torch) or quinoxyfen (Fortress) are usually added to control mildew.

Disease effects

Most leaf diseases are generally well controlled using a strobilurin plus a suitable triazole, although other fungicide programmes or mixtures, eg Opus plus chlorothalonil (Bravo) may control Septoria equally well.

Ear sprays of strobilurin (on occasions without added triazole) can make a useful contribution in controlling ear diseases and prolonging disease control on the flag leaf.

When to apply

The most common timings are second node (GS 32), flag leaf emergence (GS 39) and ear emergence (GS 59). W heat is most responsive to all fungicides, including strobilurins, at GS 39. Only two strobilurin sprays should be applied to any crop.

In most parts of the UK sprays at GS 32 and GS 39 are most cost-effective. In northern areas, GS 39
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Project Reports 164, 185
Ongoing projects 1306, 1405, 2108, 2191
Guidelines for preventing & managing fungicide resistance in cereals published by HGCA and FRAG-UK (Spring 2000)

Summary
Strobilurin fungicides have become a mainstay of cereal production since their introduction in 1997. Their use has usually been cost-effective on wheat, even in the absence of significant disease. HGCA has funded extensive R&D on disease control, crop ‘greening’, variety and nitrogen effects and use within fungicide programmes to help farmers use them more effectively.

Yield effects
Yields of disease-resistant and susceptible varieties are often increased in response to strobilurins, whether disease is present or not. They have physiological effects, particularly in delaying senescence. However, variety responses have been inconsistent and no variety-specific advice is possible.

On average in 1997 and 1998 good strobilurin/triazole programmes resulted in 1.0 t/ha more than those based on triazoles, but responses in 1999 were lower at around 0.5 t/ha. The extra yield responses resulting from strobilurin use have generally been cost-effective.

Nitrogen effects
Trials have shown that the average nitrogen requirement (for yield) of a crop given a strobilurin plus triazole programme is the same as, or slightly higher than one sprayed with triazoles (Figure 1).

Effective fungicides often produce higher yields and a consequent decline in grain protein. However, higher nitrogen uptake associated with some strobilurins means that grain protein is not always lower. Late foliar urea applications may be advisable where milling premiums depend on high grain N.

Limiting resistance development
Wheat mildew strains resistant to strobilurins were detected in Germany in 1998 and in the UK and other countries in 1999. Widespread resistance would probably mean complete and sudden loss of efficacy. (With other fungicides, activity usually declines over several years.)

In order to limit resistance build-up, the current recommendation is that only two strobilurin sprays are applied to any cereal crop, always with an effective mixing partner.

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