Triazoles on trial

A comprehensive triazole efficacy trial was conducted last year by a team of scientists at Nottingham University's School of Biosciences and Harper Adams' Crop and Environment Research Centre (CERC).

This study produced some interesting results — with a suggestion that prochloraz may have a useful role to play in future resistance management strategies.

An in-depth approach was adopted in the trials protocol, ranging from practical field assessments to laboratory and glasshouse studies, to try to gain new insight into the issues involved.

"A broad range of triazoles were applied to wheat at GS31 and GS39 using full label rates to test their efficacy against *Septoria tritici*," says Dr Peter Kettlewell of CERC. "We assessed the level of disease control achieved from each product and we also looked at the yields.

"We managed to achieve high levels of disease control with all triazoles we tested" (see figure 1, right).

The best level of flag leaf disease control was achieved using epoxiconazole and prothioconazole, with tebuconazole also performing relatively well, he says. "An experimental formulation of prochloraz, developed by Nufarm, also gave a good result on septoria — performing better than straight chlorothalonil."

The results were more or less as expected, and the yields generally reflected the level of disease control achieved, says Dr Martin Hare of CERC. "We were also interested to see how septoria samples taken from the untreated trials plots would behave in the lab."

These samples were tested in the Nottingham University plant pathology lab by Dr Steve Rossall and his team. Four isolates of *S.tritici* were assessed for sensitivity to tebuconazole, epoxiconazole, prochloraz and chlorothalonil, in addition to three un-named triazoles.

"There was quite a range in the degree of sensitivity to tebuconazole but all of the isolates tested were found to be highly sensitive to epoxiconazole and prochloraz," says Steve Rossall (see figure 2). "In this experiment, the EC50 value indicates the level of sensitivity of the isolate to the triazole — with lower values indicating greater sensitivity.

"We also tested a 'time locked' isolate which has been in our collection of samples from 1995. When comparing this with the 2006 isolates, it became clear that there has been a definite shift in sensitivity to all the triazoles we tested."

This study, in addition to work by ADAS and others, confirms some triazoles aren't performing as well as they used to. So is there a way of controlling less sensitive mutant septoria strains leaving the residual population more sensitive to control by older triazoles, such as tebuconazole?

Dr Tudor Dawkins, technical manager for Nufarm, believes there is. "But the wrong choice of triazoles to 'stack' could inadvertently make things worse, rather than better."

Nufarm conducted a number of field trials last year comparing the response to a tebuconazole/ prochloraz/ chlorothalonil tank mix at T1 with a prochloraz/ chlorothalonil treatment at T1, followed by a tebuconazole /chlorothalonil spray at T2. "The addition of prochloraz to the mix definitely resulted in a yield improvement over the tebuconazole /chlorothalonil mix on its own.

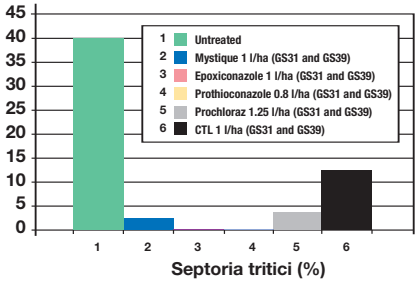
"In fact, the result wasn't far short of the yield achieved from 1l/ha of epoxiconazole (e.g. Opus) at T1 and T2."

Here again, *S. tritici* isolates taken from the untreated plots were analysed and compared with a 'time locked' isolate from 1995 — with a similar pattern of results emerging. "Epoxiconazole and prochloraz achieved the best control of all the isolates but each of the samples collected in 2006 showed a reduction in sensitivity to triazoles, compared with the 1995 isolate.

"Growers therefore need to use the current fungicide armoury wisely, choosing the right triazoles and adding chlorothalonil to maximize the robustness and sustainability of the products available. Unfortunately, there's nothing new on the horizon in this sector."

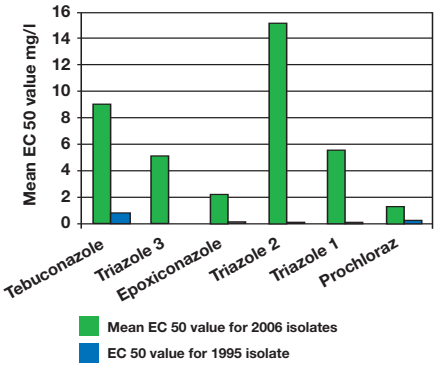
Fig 1: Triazole comparisons

S.tritici on the flag leaf at GS75



Source: HAUC 2006

Fig 2: Fungicide insensitivity — 2006 vs 1995



Source: University of Nottingham 2006