

**AHDB**

*from theory  
to field*

**AHDB Fungicide Performance trials provide farmers and agronomists with key information to help decision making. CPM looks at both the project's history and latest results.**

*By Mike Abram*

**From mostly forgotten fungicides such as Bayfidan (triadimenol) to new additions like Vimoy (isoflucypram), plus six others where data hasn't yet been released pending registration, the AHDB Fungicide Performance trials have had a long-lasting impact.**

Since 1994, over 60 products containing more than 40 different active ingredients have been tested in projects that have cost in excess of £4.5M in total to deliver. And that's just the actives tested in wheat trials; others have been evaluated in barley and oilseed rape too.

The results matter, not least when a new product is launched. From the head office of the manufacturer where the result will help to confirm likely market penetration, to agronomists and farmers for whom the data provides valuable independent verification of performance against key diseases.

During the 30 years of trials, active ingredients have moved from being based mostly on azole chemistry to strobilurins (Quinone outside Inhibitors), followed by SDHIs (succinate dehydrogenase inhibitors) and most latterly a Qil (Quinone inside

# Aiding disease control decision making

Inhibitor) in the form of fenpicoxamid.

As well as practical day-to-day information concerning relative product performance, some of the most valuable information has been in highlighting the first indications of resistance, suggests Jonathan Blake, technical director of crop protection for ADAS.

## Critical moment

"A key moment for the project was when strobilurins failed," he recalls. "We saw a sharp change in field activity following the development of the G143A mutation in both powdery mildew and more critically, the Septoria tritici population.

"It was a mutation that conferred complete insensitivity to the strobilurins, a change in efficacy that clearly identified that growers had to change what they were doing with immediate effect."

The first indications of poor control of septoria by strobilurin fungicides were seen in 2003, when mean data from three sites in eastern England, Scotland and Ireland showed that the straight strobilurins in the trials that year were less effective as protectants and gave very poor control as eradicants, compared with previous years.

It gave agronomists and farmers the data to start making changes to programmes, which was definitely required in 2004 when the trials showed strobilurins gave very little control of the disease, says Jonathan.

Over a much longer period, the project has also tracked the slow decline in azole performance against septoria and changes in SDHI performance as less precipitous changes in sensitivity have been selected for by the septoria pathogen.

"More recently, we've seen changes in the relative performance between Univoq

*“This project gives sound independent information, which gives growers confidence to try something in the first season and then expand use subsequently.”*

(fenpicoxamid+ prothioconazole) and Revystar (fluxapyroxad+ mefentrifluconazole), where Revystar started off as the stronger of the two but now we've had a switch and Univoq looks stronger against septoria," says Jonathan.



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That was the case in 2023 Fungicide Performance trials, adds ADAS's Rebecca Joynt. "The mild, wet autumn followed by a warm, dry February and very wet March, especially across southern Britain, resulted in a high septoria pressure leading into T1 — perfect for testing efficacy until hot, dry weather from late May into June limited the disease's progression," she says.

"In some places this caused early senescence, but in other trials rainfall in late June created a late season rise in septoria which tested the persistence of T2 applications."

In total, there were 10 wheat trials in the Fungicide Performance network last season, seven of which targeted septoria, says Rebecca. Nine registered products,



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including Bayer's new fungicide Vimoy were tested, along with the six as yet unregistered products — the data for those will be released on registration. Four of the trials provided protectant data, one eradicant and three were mixed (see box 1).

"For protectant activity against septoria, Myresa (mefentrifluconazole) and Vimoy showed very similar activity, with Peqtiga (fepicoxamid) giving better control than either, especially at lower doses," says Rebecca.

"There was a step up in control from the inclusion of mixture partners, for example with Revystar versus Myresa. As with the solo products, the product containing fepicoxamid, Univoq, which is co-formulated with prothioconazole, gave the highest level of control," says Rebecca.

The results mirrored what a larger data set of 17 trials has shown, she adds. "Eradicant data over the past three seasons highlights a drop-off in control from all products compared with protectant activity. This reflects the importance of spray timing," stresses Rebecca.

The trials are also taken to yield, and perhaps not surprisingly, the benefit of using a mixture over a single active is apparent with yield benefits for both Univoq and Revystar over Peqtiga and Myresa respectively.



*According to Rachel McGauley, it would only take a few hundred thousand hectares treated with superior products to cover the cost of the project.*

"At a full label rate, yields of Vimoy and Myresa are comparable, while yield responses of over 1t/ha were achieved from the strongest products sprayed at full rate in a single application."

Providing quick access to independent data of how a new product compares with market standards is crucial for helping farmers and their agronomists to make immediate decisions about whether that product should fit into programmes, says Jonathan.

"There'll always be hesitation when new chemistry is introduced and farmers won't ▶

## Trial protocols

Right from day one, AHDB says the trials were designed to maximise differences between active ingredients. But by using high risk locations growing high risk varieties, and, perhaps controversially to some, just one spray timing, it means it doesn't always reflect commercial reality.

In an ideal world, products would be tested in a programme, suggests Jonathan Blake. "But the truth is, it's impossible to test chemistry reliably in programmes and get sufficient precision and clarity. The way we test at least allows us to separate treatment differences out."

A range of timings are now used for the one spray in septoria trials from leaf three emerged through to the flag leaf, increasing the chances of the trials achieving both protectant and eradicant data for the products.

"Data collected from the target leaf of fungicide application or leaves that emerge after that leaf is classed as protectant activity," explains Rebecca Joynt. "Leaves that emerged prior to the target leaf are used to assess eradicant activity."

There's also a mixed category which was used

in 2023. "This is where we look at leaves that emerged prior to the spray application as an eradicant, but saw activity from products known to only have activity as a protectant."

Another advantage of the single spray approach is that in low disease pressure seasons it's still possible to see differences between products that otherwise might not be seen, she adds.

Those type of seasons, plus ones with very high disease pressure or where mixed diseases have infected leaves, require careful evaluation to avoid skewing the overall results from the trials, says Rebecca.

"If necessary we'll exclude data but we have clear guidelines how to make processing data fair and consistent," she explains.

Where possible, the project prefers to compare single active ingredients rather than multi-active formulated products, something which has become easier in recent years as registration of co-formulated products has seemingly become more challenging.

"The single actives are the building blocks within those different mixtures and within programmes, so it's important to understand



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what each active is doing against target diseases," says Rebecca.

But key mixtures are also tested — in 2023 that included Univoq (fepicoxamid+ prothioconazole), Revystar (mefentrifluconazole+ fluxapyroxad) and Ascra Xpro (bixafen+ fluopyram), she concludes.

► switch 100% from using one product to another overnight. But, this project gives sound independent information which gives growers confidence to try something in the first season and then expand use subsequently," he comments.

Calculating returns on investment for such projects isn't easy, suggests AHDB's Rachel McGauley. "The project's information is just one part of a complex decision-making process, and often results arrive at the farm indirectly via an agronomist," she points out.

An independent evaluation commissioned by AHDB in 2021 working with 150 farmers advised by independent agronomists, identified a typical net yield gain worth £17.67/ha from farmers switching to a superior fungicide product.

"With this figure in mind, it would only take a few hundred thousand hectares treated with superior products to cover the cost of the project, which is approximately £125,000 per year," says Rachel.

While the calculation didn't include any costs saved or incurred, or use of reduced doses, it did give the sector council confidence to continue investment in the project.

A smaller number of telephone interviews (17) conducted as part of the evaluation

highlighted that agronomists felt well informed and were reasonably happy with the data. "This is why AHDB releases the results at the AHDB Agronomy Conference," says Rachel. "We work closely with agronomists because of their role in developing practical field-level recommendations."

## Communication channels

But that focus has perhaps come at a cost, with a feeling that the project is too disconnected from farmers. In response, the sector council has instructed project leaders to promote the project more directly, notes Rachel.

"That's perhaps a little trickier than it sounds, as the best way to reach a wide audience of farmers is through the agronomist network, who might not highlight directly to farmers how the Fungicide Performance project helps with their decision making.

"So, we're trying to communicate with agronomists that, if they want this project to continue to be funded, to highlight to farmers its importance," says Rachel.

In addition, AHDB is encouraging the researchers from ADAS, NIAB, SRUC and Teagasc on the steering group to disseminate results directly with farmers

## Research roundup

From Theory to Field is part of AHDB's delivery of knowledge exchange on grower-funded research projects. CPM would like to thank AHDB for its support and in providing privileged access to staff and others involved in helping to put these articles together.

For more detail about the project, visit [ahdb.org.uk/fungicide-performance](http://ahdb.org.uk/fungicide-performance)



at events. "We also want to engage with farmers at Monitor Farm meetings where appropriate," explains Rachel.

The latest results and historic reports are housed on the AHDB website. "On our website it's one of the top rated pages for hits at key times of year, so we know it is being used and valuable information," she concludes. ■

## Septoria challenge forces RL rethink



Paul Gosling says AHDB can't keep disease below 5% in fungicide-treated trials with the chemistry currently available.

Increasing difficulty in controlling septoria in AHDB Recommended List (RL) trials has forced a rethink in how yield data from the project is used.

The RL aims to assess genetic potential by removing barriers that could help to prevent a variety from achieving its maximum yield at a trial location. That includes in

fungicide-treated trials using up to five sprays in a programme containing the strongest products (see table) applied at robust rates.

In the past, the aim was to keep disease below 5% in these trials, with the yield information discarded from the main data set if levels rose above this, explains Paul Gosling, who leads the RL project at AHDB.

But with declining activity in azoles and SDHI fungicides, keeping disease below 5% has been increasingly difficult in recent seasons, he says. "The 2023 season was a good example with a septoria epidemic driven by a relatively wet March and cool April boosting septoria disease levels in many areas, and in some trials, even in the most septoria-resistant variety on the RL, Mayflower, levels reached over 5%.

"We now recognise we can't keep disease below 5% in our fungicide-treated trials with the chemistry we have available," says Paul.

### Septoria-active parts of RL fungicide programme

Timing	Product	Rate
T0	Arizona (folpet)	1.0 l/ha
T1	Reyvostar XE (mefentrifluconazole+ fluxapyroxad) Arizona (Elatus Era (benzovindiflupyr+ prothioconazole))	0.8-1.25 l/ha 1.0 l/ha (0.6 l/ha)
T1.5	Prothioconazole Arizona	0.6 l/ha 1.0 l/ha
T2	Univoq (fenpicoxamid+ prothioconazole) Arizona	1.0-1.5 l/ha 1.0 l/ha
T3	Prosaro (prothioconazole+ tebuconazole) Arizona	0.8-1.0 l/ha 1.0 l/ha

Note: Arizona is compulsory at T1 and T2 but can only be used at one other timing. Elatus Era is an optional extra primarily for rust control in very high pressure situations but has activity against septoria. Mildewicides and other non-septoria acting fungicides in programme not shown above.

That prompted a change in approach where yield data will be used in the main data set even if disease gets to 10%. "If a disease exceeds 10%, we'll look at whether the protocol was followed. If the protocol was followed, the data will still be used," he explains.

The data won't be used where a protocol wasn't followed, for example, if a timing was missed or

delayed significantly, or the incorrect product was used.

"So now when we look at genetic potential of varieties in treated trials, we're looking at it in context of what we can do with the fungicides that are currently available, not what they can do if we completely exclude disease as that is no longer possible," concludes Paul.