Follow the science for a larger toolbox

> *Sustainable farming is about doing more with less. Get it wrong and rather than find the solution, we export the problem.*

Photo: Bosch

Technical
Protecting chemistry

However trade deals play out, expect IPM to play an increasing role in crop protection programmes. *CPM e*xplores the political and regulatory landscape.

By Tom Allen-Stevens

Whatever course regulation takes now the UK has completed its exit of the European Union, if decisions are made on the basis of scientific evidence, there's a bright future for UK arable farmers.

That's the view of Rob Gladwin, head of technical management for BASF Agricultural Solutions UK and Ireland, and he has good reason to be optimistic. "International trade is clearly the area where most uncertainty lies. But in trade decisions, whether with the EU or with other world partners, it's more important than ever that we follow the science," he says. "Science-based decisions are far more defendable and carry greater credibility with the WTO, as well as with consumers."

Rob believes current chemistry will continue to face tough scrutiny and new products to replace it will be limited, but points to the opportunities available through a wider set of tools to address the challenges faced by growers.

"As we move into this new era, all the existing EU legislation on plant protection products (PPP) has lifted and shifted into UK legislation. There's room to manoeuvre, and arguably more than the UK had as a member state of the EU. But there's no room to dumb down nor relax existing regulation in any way. To be clear, BASF wants the current strong regulatory framework to remain."

Efficient regulatory body

The UK's in a good place as far as this is concerned — Rob points to the inherent strength of the Chemicals Regulation Division (CRD) which will continue to oversee product approvals and renewals. "CRD was always the most efficient regulatory body when we were part of the EU, and is very well respected for following the science. There have been quite a few changes at Defra since Brexit, and CRD has suffered, but overall staff levels throughout the department have increased."

So growers can expect the regulatory process to remain robust and largely mirror what happens on the continent. In theory it may be quicker, he suggests, as there's less admin involved with gathering the evidence needed over a smaller geographic area — that could even mean UK growers get certain new products first. But decisions on approvals will still relate closely to the EU process and CRD will have no influence over this, he points out.

"The big question is whether the scientific opinion from CRD will follow through to on-farm practice or will politics kick in, as it does in the EU?"

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Rob notes that this could result in divergence from EU policy for some specific products, and this will pivot on how the political arguments play out on both sides of The Channel. "The obvious contender here is glyphosate."

Politics will therefore inevitably have an important role to play, he reasons, which is why the savvy grower or agronomist should bear the political landscape in mind when making decisions.

"Whether it's the EU Farm to Fork Strategy or Defra's Path to Sustainable Farming, the common thread that runs through them is sustainable agriculture, and that's got to be a good thing. At BASF, we want to see cultural control and precision technology as part and parcel of crop protection going ▸

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Rob sees it as an overall enlargement of the toolbox available to growers, with artificial intelligence (AI) and technology helping a move towards true integrated pest management (IPM) systems. "But sustainable farming is about doing more with less. Get it wrong and rather than find the solution, we export the problem. With the current direction of policy, this is a big threat," he warns. "Many agronomists and growers practice aspects of IPM today,

but perhaps don't see it in that context and certainly aren't recording decisions taken in a systematic way.

"Product withdrawals must also keep pace with innovations. A digital tool that gives you accurate information on when to spray has great potential benefits. But it's redundant if all the sprays you want to use have lost their approval."

Nor should policy allow new technologies to get a "free ticket"— Rob's keen that products such as biologicals undergo a level of scientific scrutiny that follows the true aims of the Precautionary Principle, to engender trust from growers and confidence from consumers.

"Conversely, there's a danger the bar will be set too high, making it prohibitively expensive for all but the largest multinationals, as we've seen with GM, which wouldn't help the UK grower.

Use of drones

"CRD must also be given the leeway in legislation to keep pace with technology. A good example is the use of drones for spot spraying, that has clear potential benefits for reducing pesticide use and minimising operator exposure. It's widely used in many countries around the world, but it's classed as aerial spraying under UK law and prohibited," he notes.

The NFU is working hard to ensure UK legislation keeps growers on a level playing field with those they're competing with across the globe, assures vice president Tom Bradshaw. "It's probably the biggest challenge we face, apart from the weather.

"IPM's no golden ticket, but it does indicate growers are committed towards following a more sustainable path, and that helps in negotiations — both with Government and internationally."

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The pivotal aspect is to demonstrate this, and growers may be practising more IPM then they realise, he suggests. "Many decisions on what to apply to a crop involve IPM but they're not recorded as such. The choice of a more disease-resistant variety, the decision to delay drilling, attention paid to good soil health, monitoring nutrient levels and state of the crop canopy — these are all just as important as the choice of product itself and rate applied. They demonstrate that reaching for the can was the final decision, not the first."

The NFU is working on an IPM plan for the cereals sector which will be launched in the coming months and will involve a revamped, interactive version of crop

Necessity drives a natural approach

IPM comes as second nature in the horticulture sector, believes Worcestershire apple and hop producer Ali Capper, but few are given credit for it. "Regulators and consumers may perceive they see the bigger picture, but in reality they think in boxes. Farmers think holistically — they have to as they take so many factors into consideration to balance the many different challenges and ecosystems they work with."

Ali chairs the NFU horticulture and potato board and has seen across the sector how speciality crops producers in particular have adopted IPM measures. "The difficulty is that the products we apply are classed as minor use. So the crop doesn't always generate enough data in a particular climatic region to support a product renewal," she explains.

This means growers have to apply for an expensive EAMU for a product that's approved for broad-acre crops. What's more, new product approvals are often very much more expensive and more specific, she says. "So there's a real economic and commercial imperative behind adopting IPM, as well as the environmental benefits."

Measures include the use of moth traps to accurately assess thresholds and mating disrupters to slow down the growth of pest populations, ensuring they never reach the threshold. "These methods are not cheap but using them forces you to think differently — you only spray as an absolute last resort.

"Speciality crop producers also have to think very carefully about the soil and the effect on the environment because with perennials like tree fruit there's often no rotation, so no reset if a particular management practice doesn't bring the desired result," she adds.

Hop growers are currently in the third year of a farmer-led study, co-ordinated by Innovative Farmers, looking at the effects of reducing the bare soil between bines. "We've established there are soil health benefits and there's anecdotal evidence to suggest there are pest and disease benefits, too," reports Ali.

"Apple growers are looking at the effect of establishing wild flowers between rows. There are benefits for soil health and pollinator population. What's more, the increased diversity of the insect population reduces pest pressure and there are fruit quality benefits, according to the results of an AHDB-funded study."

Farmers think holistically says Ali Capper, as they take so many factors into consideration to balance the many challenges and ecosystems they work with.

But such strategies work best when applied as part of a wider toolbox of measures that includes careful use of chemistry, Ali notes. "Resistance management is also important, and there are many new ideas and technologies coming through. But it doesn't help for regulators to apply siloed thinking to something that's part of a much larger system."

protection management plans. "There's an obligation on growers to take this seriously — if you're applying insecticides for BYDV without using some sort of threshold prediction, that's simply irresponsible," he notes.

Nor does he support any dumbing down of UK legislation or a move away from the EU's Precautionary Principle. "The correct interpretation and implementation of this is critical, but deal or no deal, the direction the EU takes will continue to have an impact on how consumers view PPP. We need the trust of the public in the practices we follow on farm and the way we produce their food. So we may yearn for less regulation and a speedier approvals process, but it must be robust and transparent."

Deal or no deal, the direction the EU takes on the Precautionary Principle will continue to have an impact on how consumers view PPP.

However, Tom believes there's an opportunity for forward-thinking farmers to co-design the regulation they live with. Farmer-led innovation has the potential to help the process.

"As new technologies come forward, offering the prospect of a larger toolbox, a sensible approach would be to authorise these through regulation and develop their use through farmer-led trials," he suggests.

Farmer-led research

"We're not talking about side-stepping a trusted independent authority that would gather the core data — that must continue to underpin the approval process. But there are clear benefits for both consumer and grower in farmer-led research being part of the way new technologies are adopted."

Rob agrees it's an increasingly valuable part of the process. "The reason Real Results has been such a success is that it engages growers. It was through the initiative that they gained a full year of real-world experience with Revystar XE (fluxapyroxad+ mefentrifluconazole) before it was released commercially. So the growers themselves already know a substantial amount about best use of the product at the correct dose and right time over a range of field conditions.

Tom Bradshaw believes there's an opportunity for forward-thinking farmers to co-design the regulation they live with.

"That's just for one tool added to the toolbox. Apply farmer-led innovation across a range of existing and new technologies and you greatly increase the data available for how they interact. The process is measured and balanced, delivering the checks required for positive change, and it's transparent, trusted by growers, giving it a multiplier effect and greater public confidence in the underlying technologies. This accelerates the uptake of IPM and pace of change towards a truly sustainable agriculture," he concludes. ■

No clear answers on biostimulant use in barley

Initial results from a set of spring barley trials suggest a robust fungicide programme provides the best form of defence against ramularia and delivers a yield benefit even when disease levels are low.

A range of biostimulant and nutrition products were tested by Scottish Agronomy in trials funded by Mains of Loirston Trust in the quest to find a non-chemical alternative to chlorothalonil (CTL). These were applied at the two main spray timings at three sites in the Scottish Borders, Fife and Aberdeenshire.

"Revystar XE performed best, in a programme with multi-site fungicide Arizona (folpet), with a standard azole-based fungicide programme not far behind," reports Andrew Gilchrist of Scottish Agronomy.

"But I'm surprised there was little response to the biostimulant and nutrient treatments — the principle that they help a plant that's suffering stress was not borne out, despite the drought experienced in the early part of the season."

Andrew notes there were low levels of both ramularia and rhynchosporium seen across the three sites. "Ramularia is still something of a mystery. The plant may be infected early on, but expression of the disease is related to plant stress. We think it's triggered by bright, dry conditions followed by heavy rainfall," he explains.

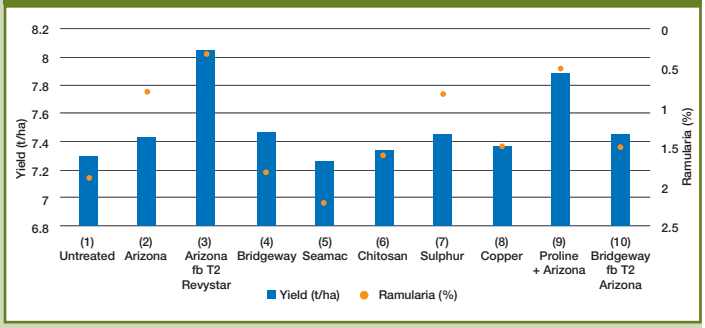
"Spring barley undergoes a lot of stress around the T1 timing, with herbicide, growth regulator as well as fungicide to contend with. CTL has always done a good job at protecting the leaf against infection, but the trial is really exploring whether we can replace the T1 fungicide with an alternative treatment that helps with the stress.

"We now have varieties offering a 15-20% higher yield than previous mainstays, with good disease scores, so this should be a situation where you can cut back on the fungicide chemistry and apply other ways to help the crop perform."

But none of the biostimulant or nutrition products delivered a result that was statistically different from untreated. However, despite the low level of disease, Revystar delivered a yield response, while green leaf area was also significantly higher across the trials where it had been applied at the later spray timing.

"Revystar is certainly a useful product at T2. That's probably down to its persistence to keep the plant protected through the long run-in following treatment," Andrew concludes. Trials are set to continue for the next two years.

Spring barley treatments compared



Source: Scottish Agronomy, 2020; cv Laureate; Only treatments (3) and (9) are statistically significant from untreated; Arizona applied at 1.5 l/ha; Bridgeway – 2.0 l/ha; Seamac PCT – 2.5 l/ha; Chitosan (BioActive KitoSea) – 4.0 l/ha; Sulphur (UPL Liquid) – 5.0 l/ha; Cuprokylt (liquid copper) – 2.0kg/ha; all treatments were applied at both T1 and T2 apart from (3) Arizona 1.5 l/ha fb Revystar XE 0.75 l/ha + Arizona 1.5 l/ha, (9) Proline 275 (prothioconazole) 0.2 l/ha + Arizona 0.75 l/ha fb Proline 0.35 l/ha + Arizona 1.5 l/ha, (10) Bridgeway 2.0 l/ha fb Brideway 2.0 l/ha + Arizona 1.5 l/ha. Ramularia levels and green leaf area assessed 08/07/20-21/07/20.