

Tackling blight through strategic fungicide management

“Few chemical options have anti-sporulant activity meaning going hard and strong early is the only choice.”

ERIC ANDERSON

As growers face the final months of use-up for stalwart fungicide mancozeb, devising a robust late blight programme is about to become even trickier. CPM learns how early use of a dual-active product could help simplify decision-making while bolstering the approach to resistance management.

By Janine Adamson

With regulatory goalposts frequently being moved plus the constant threat of new resistant strains from Europe, it's no wonder potato late blight management is being likened to a strategic game of chess, but without all of the pieces.

However from a UK potato grower's perspective, battling the disease is far from fun and games – the mission is about to become even more difficult, as the industry enters the final few months of mancozeb use-up.

Scottish Agronomy's senior agronomist Eric Anderson says although the principles of resistance management haven't changed, as new strains of resistant late blight

become apparent, strict adherence to FRAC guidelines is critical.

“Research suggests late blight has a very flexible genome, therefore it will always be at risk of fungicide resistance which can be heightened by inappropriate use of products.

“As such, we must re-visit the fundamentals: no repetitive or solo use, always mix actives with appropriate partners with alternative modes of action, avoid eradicant applications by going hard and strong early in the programme, and apply at, or close to, the manufacturer's dose rate.”

This staunch warning is evidence-based – in autumn 2024, independent monitoring by the Fight Against Blight

(FAB) initiative confirmed two UK cases of EU_46_A1, the first findings of this aggressive genotype in the country. A growing issue on the continent, EU_46_A1 has demonstrated resistance to group 49 oxysterol binding protein inhibitor (OSBPI) fungicides.



FRAC guideline adherence

Scottish Agronomy's Eric Anderson says although the principles of resistance management haven't changed, as new strains of resistant late blight appear, strict FRAC guideline adherence is critical.



Dual-active product

Privest was specifically developed with resistance management in mind due to it being a unique combination of two modes of action, says BASF UK's Paul Goddard.

▶ Then there's EU_43_A1 which is present in Ireland, and has developed resistance to group 40 carboxylic acid amides (CAA) fungicides including mandipropamid, benthiallcarb and dimethomorph, in addition to OSBPI fungicides and metalaxyl (group 4) resistance. It's also well recognised that UK-present EU_33_A2 and EU_37_A2 are no longer controlled by fluazinam (group 29).

However, a primary concern remains around the highly aggressive strains which are prevalent across much of the UK. Eric says many of these have high sporulation rates and short life cycles meaning they spread rapidly. "Not all samples in a clonal lineage of late blight share the same phenotype. As such, life has become much more complicated and we can no longer think about a direct link between genotype and resistance status to a specific fungicide group."

He advises that fungicides with a single-site mode of action act at a specific point in a biosynthetic pathway in the pathogen, and are at risk for resistance development because a change in the pathogen at this point can render the fungicide less effective or ineffective.

"A simple change of just one base pair in the DNA molecule can be sufficient to lead to full resistance; it only takes one mutant spore for potential selection pressure to occur. And, this pressure favours spores which have developed or acquired mutations, conferring resistance to the applied fungicide."

In the presence of fungicides that inhibit susceptible strains, resistant strains are

more likely to survive and be amplified within the population. "EU_36_A2 can produce up to 800,000 spores/cm² after only seven days and has a latent period of just four days. So once infection is created, it quickly produces spores.

"Few chemical options have anti-sporulant activity meaning going hard and strong early is the only choice. It also means we have to work very hard to maintain our effective modes of action," he stresses.

Although UK samples of EU_36_A2 have appeared sensitive to most fungicides, there have been reports of isolates collected in Denmark and the Netherlands with resistance to OSBPI fungicides.

All-in-all, this heightened threat from late blight has led to revised product stewardship guidelines issued by manufacturers, says Eric. "It's become a complicated picture, even more so as we're in the final season of mancozeb use which concludes on 30 November this year.

"For example, UK manufacturer guidance states CAAs must be applied in strict alternation and mixed with fungicides with an alternative mode of action. There's also a maximum of up to six applications in a programme which make up no more than 50% of the intended total number of sprays.

"With other products having stringent guidelines too, namely the group 21 quinone inside inhibitor (Qil) class and OSPBIs, it's not only complex, but necessitates dynamic decision making from both growers and agronomists," he comments.

PRIVEST

One recently launched product – Privest (ametoctradin (Initium)+ potassium phosphonates), was specifically developed with resistance management in mind due to it being a unique combination of two modes of action, says BASF UK's Paul Goddard.

"Initium is classified under the quinone inside and outside inhibitor, stigmatellin binding mode (QioSI) chemistry group, setting it apart from all other actives including traditional CAA and Qil options. This is then combined with potassium phosphonates which act as an elicitor, priming the plant's natural defence mechanisms to protect itself from fungal threats," he explains.

BASF's crop manager for arable crops in the Netherlands, Henco Bouma, raises that Initium was first introduced in

2010 to the Dutch market. Now, with 15 years under its belt, it's become a well-known and trusted active ingredient.

"Whereas potassium phosphonates were originally used as a fertiliser which also offered fungicidal activity. Due to new regulation meaning they're classed as a plant protection product, BASF decided to combine the two actives into one formulation to bolster the options available in late blight control.

"Furthermore, potassium phosphates aren't vulnerable to resistance in the same way as other fungicides while presenting valuable added plant health benefits," says Henco.

According to Paul, because Privest offers non-clashing chemistry with both actives being in different groups, it acts as a 'fire break' when devising a late blight control programme, with no need for a mix partner either.

Eric says this undoubtedly helps when planning a fungicide programme. "There are no simple blight programmes these days but it's useful that Privest doesn't require a second fungicide product in the tank, especially given the impending loss of mancozeb which was a go-to mix partner.

"For the seed market, it can also be mixed with mineral oil Crop Spray 11E and systemic insecticides, as part of Potato Virus Y (PVY) and Potato Leaf Roll Virus (PLRV) control – this is an important consideration."

Paul agrees that it's becoming increasingly challenging to devise a robust fungicide programme for



Potassium phosphates benefits

According to BASF's Henco Bouma, potassium phosphates aren't vulnerable to resistance in the same way as other fungicides while presenting valuable added plant health benefits.

late blight while respecting FRAC guidelines and enhanced product stewardship, plus having a dwindling list of approved actives to choose from.

“And given seasonal conditions are so variable, it’s hard to know exactly how many blight sprays will be required. But by using Privest early in the programme, this frees up other products to be used mid-late season when issues such as tuber blight may also be of a concern,” he adds.

Positioned as a protectant fungicide, guidance states Privest should be used during the rapid canopy stage to best protect vulnerable new growth. Paul highlights that although having the added benefit of assisting with fungicide programme planning, its positioning is actually based on Privest being truly systemic.

“In the past, we’ve managed with translaminar or local systemic-type products but it’s clear that resistance issues are continuing to appear, as demonstrated with metalaxyl and oxathiapiprolin. Privest is the only product which offers systemic action against all blight genotypes.

“Equally, potassium phosphonates elicit a defence response, so are most effective when targeted early doors, working with a plant to help it to grow stronger,” he points out.

Eric supports this timing: “In both ware/processing

and seed crops, I envisage growers using Privest as spray one and three within a programme. In the case of ware, which can receive up to 14 blight sprays, it’s very useful to have another active in the armoury to select from.

“However, ensure it’s used early- to mid-season; don’t hold back. With very limited material offering eradicator activity we mustn’t misuse protectant solutions.”

He also emphasises the financials involved in potato production. “If you take the gross output of a Maris Piper crop at around £13,000/ha and express a fungicide programme spend against it, you’re looking at only 3.5-5% of that final output.

“So it’s a relatively small but very necessary investment to protect the crop when the alternative outcome could be potential crop loss.”

According to Paul, there’s only been

one situation where Privest performed sub-optimally and that was in 2021 when blight entered the crop late in the season, as plants were beginning to senesce. “This actually proved positive learning for us as it supports the early season, preventative use technically, which works alongside the actively growing potato crop,” he suggests.

“Otherwise, having assessed Privest in UK trials since 2019, it’s consistently performed as ‘top drawer’ chemistry.”

FORMULATION INNOVATION

Among the reasons behind Privest’s success is the fact it’s been created using an innovative approach to formulation development, he believes. “It’s the first of a new generation of plant protection products which combine the two active ingredients using Syn-Tech formulation technology for an added synergistic performance.”

BASF’s technical product adviser, Bert Westhoff, is based in the Netherlands and has been trialling Privest for the

past eight seasons. He says because the two actives in Privest are of different formulation types – one oil-based and one water – developing Syn-Tech has played a pivotal role in the product’s success.

“Syn-Tech is what enables us to combine and stabilise the two

active ingredients, but most importantly, trials here in the Netherlands have shown the dual-active product offers up to 10% better efficacy compared with the solo tank mixed equivalents.

“There’s a genuine synergistic effect from Privest because the improved, stabilised formulation is able to get the

“There’s a genuine synergistic effect from Privest because the improved, stabilised formulation is able to get the actives to exactly where they should be within the potato plant.”



Performance in trials

Trials in the Netherlands have shown dual-active Privest offers up to 10% better efficacy compared with the solo tank mixed equivalents, explains BASF’s Bert Westhoff.

actives to exactly where they should be within the potato plant,” explains Bert.

Having seen a major resistance break down in the Netherlands in 2023, and with Privest being available for use in the country from this season onwards, he hopes a uniformed approach to stewardship will assist in fighting late blight across Europe.

“EU_36_A2 is the main genotype present in the Netherlands, together with EU_43_A1 with its multiple resistance to both CAAs and OSPBIs, and EU_46_A1 with resistance to OSPBIs. Continuing with the strategy of combining and alternating active ingredients will be essential to protect the new chemistry in Privest,” says Bert.

To conclude, Eric stresses that preparation is key. “However you choose to cut it, it’s imperative that growers and agronomists plan a late blight fungicide strategy ahead of the season with a plan B and C ready in their back pockets.

“You can no longer just apply the first product which comes to mind as there’ll be significant consequences later in the season.” ●

Product in focus

Privest is a protectant fungicide best used during rapid canopy to early stable canopy growth in potato crops, as part of a preventative approach.

Due to being a unique combination of two active ingredients – Initium (ametoctradin) and potassium phosphonates – Privest gives growers more choice and flexibility within their blight programmes.

CPM would like to thank BASF for kindly sponsoring this feature, and for its assistance in providing access to the relevant experts and contacts required to produce it.

