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A cercospora quandary

With cercospora now of high concern for both industry experts and growers, there's been a shift in perception of the key sugar beet diseases. CPM facilitates this month's Real Results Roundtable which weighs up the threats for the season.

By Janine Adamson

As well as the old trouble makers such as powdery mildew and rust, UK sugar beet growers now have to contend with a new foliar disease — cercospora leaf spot (*Cercospora beticola*).

With reports from Europe of resistance to some fungicide groups and an ability to adapt to climatic conditions, cercospora has fast become the number one foliar disease concern for industry experts.

For this Roundtable, CPM brings together BBRO's head of science, business development Professor Mark Stevens; BASF's business manager, Iain Ford; and farm

manager, Michael Wilton from the Stody Estate in North Norfolk.

The Stody Estate is a family-run business with an arable enterprise which operates a wide rotation including milling and feed wheat, malting and feed barley, oilseed rape, sugar beet, maize, rye, vining peas and beans. The business also has a diversification which offers visitors access to one of the largest rhododendron and azalea gardens in the country.

The discussion at hand is the shifting importance of different sugar beet foliar diseases, the current state of this season, and the role of a robust and fully integrated control strategy.

Seasonal disease challenges

To open up the discussion, Mark provided context on the current challenges following difficult autumn and spring conditions for sugar beet. “The consequence of the mild, wet winter is an impact on this season's crop. As we speak, one outcome is that aphids have overwintered in large numbers and consequently virus yellows is higher on the risk register — everything that we were anticipating with modelling and forecasting is coming to fruition.

“And with very few frosts in February and March, the risk for diseases such as powdery mildew will be high because we've

potentially provided a perfect green bridge for diseases to overwinter. We know that from previous work, the level and extent of powdery mildew is correlated to the number of ground frosts in these months,” he explained.

Mark added that temperatures in February were up to 4°C warmer than ▶



Cercospora is a disease which is quite stable under cool conditions, hence why it's becoming a greater problem in the UK, said Professor Mark Stevens.



Michael Wilton sees the benefit of a three-spray programme in terms of sugar beet green leaf retention.

▶ the long-term average. "It'll have to be monitored very closely and will potentially be the first threat of the season when it comes to disease control. However, if we do experience wet, cooler weather, that can temper an outbreak."

Aside from mildew, another 'traditional' disease to be conscious of is rust, continued Mark. "The weather had a considerable impact on rust too last year, with high levels in October and November due to the mild autumn. It's a disease that'll have carried over which means that pressure will be building for 2024," he stressed.

However, the 'new kid on the block' is cercospora, which BBRO is actively researching. "Up until recently, it was a disease of mainland Europe where it tends to favour beet crops grown under warm/hot conditions with high humidity," said Mark.

"But it's also a disease which is quite stable under cool conditions, hence why it's becoming a greater problem. One aspect that we have to be careful of, is again, the green bridge. We've found that some management techniques such as no-till or min-till where surface trash remains post-harvest, could be contributing to increasing threat levels," he explained.

In response, Iain questioned whether growers could expect to see earlier levels of disease this year compared with



As of last year, Revystar XE became available for use in sugar beet crops.

previous seasons.

Depending on what happens between now and July, Mark said he wouldn't be surprised to see early powdery mildew in crops. "Although we do have to temper that slightly with a lot of the crop going in late, and often, it's growth stage driven for when we start to see these diseases," he said.

Providing on-farm context, Michael said he finished lifting the Stody Estate's beet crop on 24 March, which he's never known to be so late before. The crop then remained in clamps until around 8-9 April.

"With the current regime of not over-topping beet, this means you undoubtedly leave an element of green on those crops even when they're in a clamp. You're creating a fantastic microclimate which creates all sorts of problems and a source of infection," he explained.

Michael also pointed out the off-nature of drilling for this campaign's crop, with some plantings only just emerging. "They're not enjoying the cold, wet weather particularly, and compared with last year which again was late, initial growth is very slow."

Robust control

Where good fungicide programmes have been implemented, how much of a reduction to risk does that represent? — that was a question posed by Michael to Mark.

Although acknowledging it was a fantastic point, Mark said he wasn't sure he could provide an exact answer as it will depend on the diseases present, their prevalence and weather, as well as variety selection too. "But what I will add, is we believe from everything we know about rust and powdery mildew, the isolates we have in the UK are susceptible to the portfolio of fungicide active ingredients currently available.

"We know that a fungicide spray will provide around 28 days of protection and by using a judicious programme of one, two or three applications, depending on when you're lifting, populations are controlled," he added.

But again, Mark raised the problem of cercospora, which he said is the most damaging of foliar diseases in sugar beet. "We're aware of resistant strains of cercospora, especially to strobilurin-based fungicide chemistry (e.g. QoI resistance) and this is being investigated as part of a new BBRO research programme.

"This is one of the reasons why the launch of Revystar XE (mefentrifluconazole+ fluxapyroxad) is so important for beet — it brings two different modes of action which protect each other while offering good

control in their own right," added Iain. He also pointed out the longevity of activity which Revystar XE can provide. "We know generally, we can achieve good activity for 4-5 weeks, and depending on disease pressure, sometimes up to six weeks after a two-spray programme.

"So depending on when those final applications go on, if it's September or October, then the period of direct activity on those diseases will only be about a month or so afterwards, which can then leave the crop open to further infection should the weather conditions allow," he said.

Michael added that last season, most of his crops received two fungicide applications with some having three due to being on lighter land and lifted later. "We definitely see the benefit of a three-spray programme in terms of green leaf retention," he explained.

However, current product choice can prove limiting and in some ways is concerning, commented Michael. "Where we're starting to stack the same active ingredient more than once within a programme, we're selecting for the resistance of that isolate to a particular product which in itself can't be a good strategy."

Mark agreed and said the frustration he has as a sugar beet scientist is the struggle for active ingredients. "That's the case for insecticides, for fungicides, and potentially herbicides; so managing resistance is critical.

"Anything we can do to minimise the risk by using an integrated approach will limit the breakdown of a tool. The one thing we can't afford to do is lose the fungicide active ingredient groups we do have because there's very little else," he stressed.

Integrated disease management

For Michael, he believes more focus has to be placed on varietal disease resistance. "Years ago, the advice would be to always lift your poorest crops first, but I think we have to be much more strategic and choose the varieties based on when we want to lift and from where," he said.

Mark concurred and stressed the importance of knowing where each variety is planted. "With some of the interesting new genetics coming on stream, you could have a high scoring resistant variety which you can look after with a couple of sprays and get it through until after Christmas, for example.

"It's making the most of the genetics alongside the chemistry and any other mitigation you might apply — a classic integrated disease management approach."

Then, he says monitoring is the basis of effective control and a key part of integrated disease management. "The BBRO is investigating a new monitoring system using solar-powered 'spornados' which essentially sample the air to detect for rust and cercospora.

"These could give an early warning for when spores are present and used alongside localised weather data, help to fine-tune applications. Of course, the earlier you stop a disease the better it is for the plant to keep growing and develop the physiological benefits for yield performance and sugar concentration," explained Mark.

Another element of integrated disease management which is important to Michael is plant health, he pointed out. "Early in my career we used pesticides to promote plant health but now we have to use nutrition instead; we've seen a step change in how we approach it.

"It's about unlocking some of the plant's natural mechanisms to enhance its genetic capabilities, it's something that we can't ignore."

In response, Mark added that alleviating stress particularly in the early stages of a crop's development is important and part of this is ensuring macro and micro-nutrients are adequate.

"If you have deficiencies you start to open up the risk of greater sensitivity and susceptibility to foliar diseases down the line. A different disease which we haven't discussed is alternaria — anything that causes a leaf to go yellow, or if you compromise a plant with other diseases, means alternaria can quickly establish itself," he said.

According to Iain, integrated management is the backbone of BASF's approach. "The healthier we can keep the plant, the more able it is to withstand further attacks, but also we can enhance that through utilising crop protection as well," he commented.

Around five years ago, the Stody Estate started to conduct fortnightly SAP analysis, explained Michael. "It's not cheap to do but it's allowed identification of the key micronutrients which are always deficient in various crops; it's a crucial management tool.

"We're unlikely to see an economic return from conducting the testing in isolation, but as part of a wider integrated management programme, it will add up," he said. "If you don't monitor, you can't manage it. We have to be much more focused in how we look after plant health, the implications of pesticide use, and be justified in what we do."

Revystar XE in sugar beet

As of last year, Revystar XE became available for use in sugar beet crops. Whereas previously the product had been available for use in cereals, Iain said he was impressed at how well it performs in sugar beet.

"We know both Revysol (mefentrifluconazole) and Xemium (fluxapyroxad) are providing activity against cercospora, mildew, rust and ramularia. That's led to Revystar XE having a very rounded and broad-spectrum disease control," he continued.

Iain believes another benefit is the product's physiological effects in helping to maintain green leaf area. "A lot of that will come from the Xemium component which can in turn lead to an increase in yield over not only untreated crops, but competitor treatments as well, even in the absence of disease," he said.

Michael explained that he used Revystar XE in his sugar beet crops last season whether that was a one, two or three-spray programme and that the green leaf area retention was notable, leading to an improved canopy.

Furthermore, Iain added that having a healthier, green canopy can help a sugar beet crop to better withstand frost and therefore protect its yield potential". This is something that we've seen in trials during the past two years when two applications of Revystar XE were made within the fungicide programme," he said.

As well as sugar beet, Michael has used Revystar XE for a number of years on the farm's cereal crops and has found the product to mix well with no formulation problems. His only concerns are related to resistance management and the different rates of application.



The healthier the plant, the more able it is to withstand further attacks, but that can also be enhanced through using crop protection products as well, said Iain Ford.

"I'd like to understand when the 0.8 l/ha rate is appropriate to use in beet, assuming it's related to disease pressure and crop potential," he said.

In response, Mark said due to the risk of cercospora, he was more comfortable with the higher rate of 1.0 l/ha, although the lower rate is effective on rust.

According to Iain, this is something BASF intends to keep a close eye on. "In the first instance, we've tried to devise recommendations that are both practical and cost-effective. We know that the 0.8 l/ha rate will provide good control of rust and mildew; we're happy for growers to use that to avoid over-spending where these are the target diseases.

"However, when it comes to cercospora, 1.0 l/ha is the required rate to achieve a satisfactory level of control. Equally, to have the most longevity out of a second spray, which could be in the middle of September, I'd support using the higher rate to maintain disease control and green leaf area for as long as possible," he concluded. ■

Real Results Roundtable

BASF's Real Results Circle is a UK-wide agricultural network now in its eighth year. The initiative is focused on bringing together growers, industry experts and BASF to create a more resilient farming system that's sustainable for farm business profit, for the people we feed and for the planet we live on.

Real Results Roundtable is a new initiative which explores related topics, such as resilient disease control, environmental stewardship and return on investment. Roundtables centre around Real Results Circle farmers and associated experts from the wider industry.

By coming together to openly discuss and

therefore face challenges as one, we can find out what really works and help to shape the future of UK agriculture.

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