

# Beet moth warning issued



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PROFESSOR MARK STEVENS

After an earlier than expected invasion of aphids into beet crops, spring weather could be creating ideal conditions for beet moth. CPM reports from BBRO BeetField25, where experts explained more.

By Mike Abram

**T**he weather patterns in May have instigated concerns that the current season could mirror 2022 due to dry weather creating perfect conditions for beet moth, explained experts at the recent BBRO BeetField25 events.

Favoured by dry, warm weather and an open canopy, the moth caused considerable damage in 2022, said BBRO’s head of science, Professor Mark Stevens. “Sadly, everything could be stacking up to favour the moth again,” he continued.

He shared that initial monitoring has found three yet-to-be confirmed beet moths at BBRO’s Linton site the week prior to the BeetTech25 events, which took place in mid-May. “The problem with this micro-moth is it’s very similar to around 60 other species, so it’s not easy to identify, especially as the pheromone traps we and colleagues in

other countries use seem to attract one or two other similar moths,” he noted.

Consequently, a wider network of pheromone traps was due to be set at the 20 BBRO monitoring sites around the beet region by the end of May.

In terms of life cycle, adults from the species, which Mark believes is now established in the UK, lay difficult-to-see eggs in the heart leaves of beet plants initially towards the end of May and into June. These hatch in around two weeks, depending on temperature.

“The small caterpillars then start to mine into the hearts and as a consequence you see blackening of the heart, which can resemble the secondary stage of downy mildew infections or boron deficiency,” explained Mark.

He said one way to distinguish between beet moth damage and downy mildew infection is to turn leaves over to see whether there’s a

fungal purple bloom typical of downy mildew, whereas with beet moth, the black deposits are faeces or frass.

“Alternatively, send pictures or samples to the BBRO plant clinic,” stressed Mark.

The extent of damage depends on the number of caterpillars, which can become increasingly difficult to find. However, where damage is severe, the affected crown may be killed and lateral



## Control measures

According to BBRO’s Professor Mark Stevens, early-stage data suggests Cythrin 500 (cypermethrin) – which has a general caterpillar control on its label – has efficacy against beet moth.



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## Obliterated beet

The extent of damage depends on the number of caterpillars, which can become increasingly difficult to find.

► growing points stimulated to produce secondary leaves leading to multi-crowning.

In 2022, it was the second generation which laid eggs in July and August that caused more damage, with secondary rots and early harvesting decreasing yields, highlighted Mark.

While cool, wet weather is the best form of defence against beet moth due to heavy rain usually drowning the caterpillars, BBRO has started to conduct early experiments in its laboratory into the efficacy of various insecticides, he reported.

"It's probably the easiest pest to rear that I've seen in my career, which gives us a rich source of caterpillars to test products against. What's been encouraging from the early-stage data is that the product we have available, Cythrin 500 (cypermethrin) – which has a general caterpillar control on its label – has efficacy."

If required, Mark advises using the maximum available water volume to help with penetration into the leaves and canopy. "But we're also conscious to provide tools which aren't pyrethroid-based because we know 80-90% of aphids are resistant to them, and they also have a consequence on beneficial insects.

"So we're looking at one or two other active ingredients, including diamides, and the early signs

are encouraging," he added.

But whether that could lead to more products being available for 2025, possibly through an emergency authorisation, is a developing situation, pointed out Mark.

BeetField25 attendees also heard that the dry spring has contributed to earlier than expected migration of aphids into sugar beet crops, although initially mostly of the potato aphid, *Macrosiphum euphorbiae*, rather than the more typical peach-potato aphid *Myzus persicae*.

Cold weather during January and February has led to mean average temperatures of 4.3°C being used within Rothamsted's model for predicting when aphids would fly into beet crops for Norfolk, explained Mark.

"That's nearly 2.5°C colder than the previous winter and meant we weren't anticipating aphids until 12 May."

However, the weather pattern since the beginning of March meant aphids started arriving in beet crops from around 10 April. "What we've seen through April into early May is one of the largest migrations of *Macrosiphum euphorbiae* that I've seen."

A larger aphid than *Myzus persicae*, the potato aphid is easier to spot, highlighted Mark. "It's probably led to the early insecticide applications controlling this species.

There's nothing wrong with that; it's a green, wingless



aphid which is what the threshold is for, and it does transmit virus, albeit not quite as efficiently as *Myzus persicae*, which is perhaps something we should do a little more work on.”

Across BBRO's aphid monitoring network of 20 field sites with yellow water pans, which started trapping aphids at the end of April, a total of 10 *Myzus persicae* and 10 *Macrosiphum euphorbiae* were caught, added Dr Suzannah Harder, BBRO applied crop protection scientist.

“If you compare that with last year it was 351 aphids, which, while a little academic, does show the winter weather patterns have done something to suppress overall numbers.”

All caught aphids were also tested for whether they carried two of the three viruses that make up the virus yellows complex, she said. “We can test for beet mild yellowing virus (BMV) and beet chlorosis virus (BChV), but not for beet yellows virus (BYV).

“We think it's because BYV stays on the aphid mouth parts and is washed off when the aphid has a bath in the yellow water trap, whereas BMV and BChV particles go further into the aphid gut, accumulating within the body and are more protected,” explained Suzannah.

At the time of the Morley BeetField25 event, no aphid had been found carrying either of the two viruses that could be detected, she reported. “But remember, we're only trapping a very small percentage of aphids coming into a crop which is why the threshold for treatment doesn't account for whether we find virus in the aphids in the yellow water traps.”

Aphid behaviour also makes using the virus level in trapped aphids risky, suggested Mark, as the insects tend to move quickly



#### Potato aphid

April into early May has seen one of the largest migrations of *Macrosiphum euphorbiae* that Professor Mark Stevens has ever witnessed.

from plant to plant as they don't like feeding on sugar beet as much as other plants. That makes the insect a very efficient virus spreader which could easily pick up infections from feeding.

“Make sure you're at the threshold of one wingless green aphid per four plants though before spraying. We only have limited tools available, so it's important to only use them when we're at that point.”

Some beneficial insects could easily be confused with aphids, highlighted Mark. “It's happened several times this season already where growers have asked about orange aphids which were actually globular springtails – a beneficial insect – and we don't want to use an insecticide against an insect that isn't consequential for virus infections.”

Both Mark and Suzannah suggested the four weeks from mid-May through to mid-June would be crucial for aphid control, with the main *Myzus persicae* migration taking over from the early migration of *Macrosiphum euphorbiae*.

“That is starting to happen,” reported Suzannah. “Early catches from this week had more than 20 *Myzus persicae*, while *Macrosiphum* numbers had fallen to just one or two per trap,” she concluded. ●



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