Beating the virus

Ten years in the making, ST Tweed poses one of the first in a generation of new virus yellows-tolerant sugar beet varieties. Now entering its second season of availability, *CPM* speaks to breeder Strube, to find out why it should pique grower interest.

By Janine Adamson

According to Strube's Richard Cogman, ST Tweed is a prime example of what can be achieved following a 10-year, targeted sugar beet breeding programme. The variety – one of the first to deliver virus yellows tolerance – offers a robust package, he adds, and is expected to be reliable and stable in its 'real world' performance.

While Tweed became commercially available earlier this year, its story began long before, explains Richard. "Anticipating that the beet industry's reliance on neonicotinoid seed treatments was under threat, Strube commenced breeding and field trials for virus yellows tolerance in 2015.

"In ways this was timely, given the very high incidence of virus yellows in 2020 where the value of the loss was estimated at more than £65M – equivalent to around 25% yield loss."

EMERGENCY AUTHORISATION

This high pressure year did lead to an emergency authorisation for neonicotinoid seed treatments between 2022 and 2024, which had previously

Genetic power
Varietal tolerance is critical in the fight against viruses in beet, stresses Strube's Richard Cogman.

been banned in 2019. However, moving forward without this option leaves two main solutions, points out Richard.

"Although growers can use foliar insecticides to combat the aphid vectors of beet viruses, the insect's ability to adapt and develop almost complete resistance remains strong. This was a key reason why the industry turned to insecticidal seed treatments in the first place.

"So while these are currently applied in accordance to monitoring and thresholds, their long-term future is under question. This means varietal tolerance is critical in the fight against viruses in beet," he stresses.

Delving into more detail, Richard highlights that the earliest understanding of 'beet yellows virus' (BYV) dates back around 90 years, but it wasn't until the early 1950s that the aphid species responsible for transmission were identified.

At the same time, another less yield impactful virus was detected, now known as 'beet mild yellows virus' (BMYV). Then in the 1980s and 90s, a new virus was discovered, later named 'beet chlorosis virus' (BChV) – forming the three-virus complex faced by growers today.

Results from BBRO's 2024 Goliath trial suggest Tweed is highly tolerant to poleroviruses (BChV and BMYV) when compared with controls, raises Richard. "It's well documented that poleroviruses can reduce yield by 24-27%. This risk is increased by their greater prevalence in recent years when compared with closterovirus BYV, which is generally more fluctuating.

"Tweed is promising because in the trials it retained around 88% and 95% of its yield against 100% inoculation of BChV and BMYV, respectively. This demonstrates the variety's tolerance to both viruses; we knew it had potential, but the trial has provided hard, independent evidence.

"Furthermore, accompanied by aphicides applied at threshold before the crop reaches 'mature plant resistance' at 12-14 leaf growth stage, Tweed can offer a high level of protection against these devastating viruses."

As for the specific genetics involved in achieving this tolerance, Richard says they're derived entirely from Strube's own 'pool' and internal classic breeding programme. He also points out that they're based on a multi-gene tolerance mechanism, rather than single gene, to help future-proof.

But critically, has this genetic advancement come at a cost? Richard believes not. "Tweed is very low bolting and has excellent canopy health; it scores an 8 for cercospora (2026 RL) and is also better than average for rust and powdery mildew.

"Breeders must stack traits for cumulative benefits that align with the demands and challenges UK beet growers face. Maintaining yield and overall resilience is essential, which is what we were striving for with Tweed."

All-rounder

ST Tweed is low bolting, scores an 8 for cercospora, and is better than average for rust and powdery mildew.

FROM THE FIELD

Suffolk arable farmer, James Faulds, opted to grow Tweed this season for its virus tolerance. On heavy land, the farm's sugar beet crop is both drilled and lifted early, with risk management a key priority.

"Although we're not as exposed to virus yellows as other growers, I've seen the damage it can do so it's something I'm very cautious of. That's why I decided to add more diversity into our beet by growing Tweed."

Having just harvested the crop he says it's showing promise. "We drilled into good seedbed conditions at 15cm row spacing, although the weather meant the ground did dry up quickly.

"Even so, we achieved a stand of around 110,000 plants/ha with a decent canopy structure. Now at harvest, the crop's root size is surprisingly large despite the lack of moisture. Trial digs 10 days ago suggested 87t/ha at 18% sugar, so if we achieve that, I'll be happy."

James says based on these numbers, Tweed has delivered a solid performance that's on par with the other varieties he'd usually grow. "I don't see any negatives so far, it's a good all-rounder.

"The only other trait we require is low bolting due to our early drilling window. We had a few bolters in the crop of Tweed, but nothing consequential," he adds.

For those growers without a virus yellows problem, the relevance of Tweed may be questioned; Richard proposes there are two other Strube varieties which could appeal.

"Ultimately, varieties have to align with what growers are facing on their land, while respecting the requirements of British Sugar and BBRO. For those looking for an all-round yield builder, there's Morgan, which has a treated adjusted yield of 96.8 and demonstrates good all round resilience.

"While if the main challenge is beet cyst nematode (BCN), Button is a tolerant variety aimed specifically at that market," he explains.

For now, these three varieties are being marketed by Strube, but following the company's recent acquisition by RAGT, there's a transition to become one combined force.

Richard believes the move will enable greater investment and resource into the sugar beet breeding work Strube has conducted so far. "Growers can expect to see further progress to support yield stability from pest and disease pressure through resilient genetics and the combination of multi-tolerance traits.

"This will be the direction of our candidate pipeline into trialling for national (now VL) listing, then RL listing and commercial reality; breeding progress together," he concludes. ●

Being careful with Conviso

Why attention to detail is a must when it comes to Conviso beet

While interest in the Conviso Smart system continues to grow due to being a reliable and effective weed control method in sugar beet, crop husbandry still requires the same level of detail, stresses one agronomist.

Having advised on the system – which involves planting a Smart beet variety and using a dedicated accompanying herbicide – for around five years, Farmacy's Jack Richardson says spray timings are critical in achieving success.

Furthermore, this has been demonstrated acutely this past year, given challenging spring weather conditions. "It's not a case of it's easy and you can blanket spray herbicides regardless, Conviso varieties require good management.

"While the Conviso system is effective at weed control, including weed beet, careful husbandry in the crop is still required to time everything correctly. You can drill multiple fields on the same day, but due to soil type, condition and weed pressure, they'll develop very differently," says Jack.

Evaluating a crop of Smart Rixta KWS grown at WD Branton in Deeping Saint Nicholas, he highlights the importance of pre-emergence herbicides in preparing for Conviso beet.

"This crop received Goltix (metamitron) plus Efeckt (ethofumesate) with the purpose of buying some time. On siltier land especially, you can be waiting for weed beet to emerge and in the meantime, broadleaf weeds such as fat hen will become established and too big."

Regarding application of the Conviso One (foramsulforon+ thiencarbazone-methyl) herbicide, Jack believes in this instance, it could have been earlier. "There's maybe only one week in it, but once fat hen is 5-10cm tall and just above the sugar beet, it's very difficult to control, continues to grow and competes with the crop.

"We timed the application according to emergence of the weed beet, but you have to be mindful that in doing so, you must have controlled the fat hen adequately with the pre-em first."

Looking to the 2026 growing season, Jack hopes with some moisture in the seedbed, this should help with pre-em performance. "Then it's targeting the weeds when they're at 2-4 true leaf stage with Conviso One. It might seem a little strong for the sugar beet crop, but the damage won't be as bad as you'd perhaps expect."

Overall, he believes the Conviso system has been revolutionary, allowing sugar beet to be grown on fields regardless of weed beet pressure. "There's also the added benefit of the chemistry controlling volunteer potatoes.

"Having advised on the technology since it first came out, I've not noticed yield penalties in terms of the varieties; I believe there's more to yield than the variety or seed rate.

"However, it doesn't suit everyone and there are stringent stewardship requirements, such as staying on top of bolters within the crop to prevent carry over of resistant seed, as well as controlling any volunteers within following cereal crops."

As the 2025 sugar beet campaign is now underway, the importance of accurate harvester set-up has also been highlighted. This is due to variable root size and therefore potential harvester losses and subsequent volunteers.

Despite prolonged arid conditions, initial feedback is that yields are encouraging, although there's variability, says Andrew Dear, British Sugar's head of technical support. "Overall, this year's crop continues to develop well; we're expecting good yields and sugar contents in the Wissington area."

Accurate harvester set-up requires a skilled operator with good attention to detail, because if done poorly, the results are often highly visible, explains Stephen Aldis, BBRO head of field operations.

"Most contractors are experienced and use well-maintained machinery, so do a good job. Changing crop conditions often require harvester adjustments and this can be where issues occur such as over-crowning, broken roots and beet being lost through the machines," he says.

Losses of this type pose a risk to future crops through the proliferation of disease, virus and soil-borne pests, as do temporary clamps of field margins. Controlling these threats to future performance can be achieved through ploughing or spraying with Roundup (glyphosate).

Critically, where Conviso Smart volunteers emerge in the following rotation and the crop restrictions permit, these are best controlled with Group 4 herbicides, says Bayer's Roger Bradbury. This group includes mecoprop, 2,4-D, MCPA, aminopyralid, fluroxypyr, triclopyr and dicamba, meaning there should be a range of suitable products available, he adds.

According to Roger, the use of ALS inhibitors in sugar beet isn't new – triflusulfuron-methyl, a sulfonylurea used for the control of broadleaf weeds, gained approval more than 20 years ago. However, the introduction of the Conviso Smart system and Conviso One extended use of an already heavily utilised group of active substances, he stresses.

"ALS herbicides are often widely used because of the flexibility and efficacy they bring to weed control, but changing farming practices mean increasing reliance on a reducing number of products. Cultural measures and use of alternative modes of action are vital if they're to remain effective long-term."

Field management ahead of drilling is often the best opportunity to control problem weeds, and an important step in reducing the risk of resistance developing, he points out.

"Effective weed control and convenience of operation are strong justifications for choosing the Conviso Smart system, but without effective bolter control, groundkeeper management and diligent use of all available herbicide groups across the rotation, growers risk compromising its versatility."

Yield performance
Having advised on the Conviso Smart system since it first came out, Farmacy's Jack Richardson hasn't noticed significant yield penalties in the varieties.