

# Spraying for success



*“There’s a strong chance that very fine sprays actually deliver a less good result.”*

TOM ROBINSON

**Following a difficult year for weed control in sugar beet, could there be incremental gains to be had from revisiting spray application techniques? CPM tackles the topic of beet spraying...**

*By Janine Adamson*

**W**eed control in sugar beet is a non-negotiable, yet is something that’s become increasingly challenging in recent years. From the loss of several valuable herbicide actives to newly emerging weed threats, plus the extreme drought of last season, growers will likely be feeling the pressure to get on top of crop competition.

While there are tools such as the Conviso Smart system, and new chemistry is in the pipeline in the guise of Corteva’s Rinskor active (florpyrauxifen-benzyl), could it be time to rethink the sprayer itself? Independent spray application consultant, Tom Robinson, believes so.

“The application methods currently used in sugar beet are old – established

around 50 years ago when spraying speeds were just 4-6km/h. The goal was to create very fine sprays. However, my research, albeit in other crops, suggests that very fine droplets are difficult to control,” he explains.

## **OUT WITH THE OLD**

Tom adds that traditionally, high-pressure low-volume has been the ethos, using small fan jet or hollow cone nozzles. “This advice is so imprinted that it’ll be difficult to move away from, but if growers are struggling with weed control, evidently it’s time to reassess. The quality of modern nozzles, particularly patterning, has greatly improved in the past 20 years.

“Ultimately, there’s a strong chance that very fine sprays actually deliver a

less good result. This is because small droplets are so light that they don’t follow the trajectory of the nozzles and migrate in the air. Not as many droplets land on target, moving around the plant in the boundary layer of air,” he says.

British Sugar’s Pamela Chambers agrees that now is a prudent time to shine a spotlight on the topic of better beet spraying. “When weed control



## **Angled nozzles**

**For small targets in sugar beet, attacking the weed at an angle from the side presents a larger surface area for the herbicide to land on, advises Tom Robinson.**



### Spread too thin

UPL's Stuart Jackson says with time often short, finer application details can sometimes be lost.

hasn't been as good as expected, it's easy to blame the herbicide, but it is possible that application methods are not as effective as they could be.

"A lot of work has been done in the past suggesting a flat fan nozzle is optimum, and while these can be effective, there are other methods which haven't been adequately trialled which could be better. We desperately require new replicated data to support their adoption," she says.

Based on Tom's research, 3D angled nozzles such as the Syngenta Hypro 3D and medium-sized droplets should prove more effective. A 38° incline in an alternating spray pattern, the nozzles have proven to increase spray deposition on small weeds, and improve penetration into dense, complex canopies, he notes.

"For small targets as in sugar beet, if you attack the weed at an angle from the side they present a much larger surface area for the herbicide to land on. Equally, having alternating nozzles on the boom helps to overcome shading from clods in the seedbed, and from the growing sugar beet crop."

The Hypro 3D are also designed for performance within a 0.7-3 bar pressure range, with 2-2.5 bar recommended for best results. Tom raises that this is half the pressure of conventional methods offering a significant reduction in spray drift.

However, he advises considering nozzles on a per crop basis, possibly even per weed. Then for marginal spraying conditions, he recommends a 75% drift reduction nozzle with a small drop size, such as a Hypro Guardian air.

"AHDB guidance on air inclusion

nozzles is a useful tool to aid decision-making; select a nozzle that's further down the chart as you want as many drops per litre as possible, without the product drifting. There's considerable difference between the nozzle options available, so make an informed decision," he urges.

### SLOWING DOWN

According to Tom, while his trial work has been mostly conducted in combinable cereal and vegetable crops, he hopes parallels can be drawn for application in sugar beet. This includes the importance of maintaining a modest speed when applying herbicides.

"Research suggests that when applying herbicides pre- and post-em in wheat,

when comparing 12km/hr with 16km/hr, the results are poorer at the higher speed. I wouldn't advise travelling above 12km/hr – that's still a reasonable speed."

He also urges paying greater attention to detail when setting up a sprayer in the first place, well before embarking on an application. "This is critical to achieving optimum results.

"The boom must be straight along its entire length and parallel to the ground, with all nozzle bodies vertical when viewed end on and from behind. Set the nozzle tip height to 50cm above the ground or crop – research has shown that if this is 60cm, drift increases by 50%, while at 70cm, it's 150% more drift."

"This is mostly down to workload pressure across all crops in the rotation



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– subsequently, the temptation can be to go too fast with the boom too high, in compromised weather conditions.

“The result is a large proportion of product doesn’t even hit the target. Rather than acknowledge potential application errors, it’s often assumed the product isn’t as good as it used to be.”

However, what goes into the tank does have an impact, highlights Tom. “Although increasing the water volume increases coverage, it also reduces the amount of active ingredient retained on the target, and reduces work rate. You may require an additional wetter in the spray mix to recover some of the lost spray retention.

“Where a water conditioner such as X-change is necessary, this must be added and mixed with all of the water before adding the herbicide chemical. The tank should then be agitated for at least 10 minutes before spraying,” explains Tom.

## CUT BACKS

A current concern for Stuart is that growers may hope to get away with reducing their spend on beet herbicides full stop this year, thus negating any potential gains from refined application methods.

“There’s talk of it being hard to justify a pre-em spray this season following 2025’s experience, but this is the classic mentality of growing the current crop based on last year. We must move away from this approach collectively as an industry, and focus on the crop in the ground, not what it was 12 months ago,” he stresses.

For the future, Tom hopes BBRO will invest in trials to formally transfer his research into sugar beet. “This would validate a new framework for better beet spraying. Anything not done right is an incremental loss, it all has an impact,” he says.

Pam adds that with innovative agri-tech solutions on the horizon, such as the Ecorobotix AI-driven ARA spot sprayer, there’s an opportunity to completely revolutionise how weeds are controlled in sugar beet. “ARA is already gaining momentum in high-value horticultural crops, we just have to properly understand its abilities, and whether it’s therefore a practical tool for UK sugar beet.

“At the moment, factoring in the spend required and subsequent return on investment, the conventional sprayer still seems to win. But as technology develops apace, this could soon change,” she concludes. ●

## Key weed learnings from BeetTech26

### The cost of sugar beet weed control in the face of seasonal extremes and emerging weeds

**W**hen tackling a scenario such as last season’s extreme drought, even the experts don’t always get weed control right – that was the candid message from British Sugar’s Pamela Chambers during a break-out session at BBRO’s BeetTech26.

Having overseen BBRO’s replicated herbicide trials, she said protocols were finalised early in the season without adjustment, and therefore spraying concluded too early at one site. “With no canopy closure and then some rain, the weeds came through after having spent around £140/ha. In the best treatment we had 15.3 fat hen plants/m<sup>2</sup>, while in the untreated, we counted more than 160 plants/m<sup>2</sup> – I’ve never seen anything like it.

“It’s likely that a further one or even two sprays were required to give adequate control, which would have increased the costs by around £55-60/ha. So my lesson there was that I stopped spraying too early.”

She stressed that every scenario is different and she wouldn’t want to advise a set herbicide programme and therefore spend for sugar beet, although the situation fared better at other trial locations.

“We achieved good control at another site having spent around £120-140/ha on a programme that was based on phenmedipham, metamitron and ethofumesate. We also included lenacil at T2 and T3, which I believe gave additional control for weeds like knotgrass. At this site, black-bindweed was the dominant weed with more than 60 plants/m<sup>2</sup>.”

However, Pam warned that she believes the cost of weed control could increase in the future as different species begin to emerge. One example she highlighted was velvetleaf (*Abutilon theophrasti*), which has been identified in Norfolk and Suffolk.

“This is a highly competitive, invasive weed that grows very tall; I’m surprised to see it in the UK. Where has it come from? I’m not sure, although we’re introducing more cover crops on-farm, so it may have come in through that channel.

“So what to do about it? Always



### Newly emerging species

British Sugar’s Pamela Chambers warns that the cost of weed control will likely increase in the future as different species begin to emerge.

retain a small cover crop seed sample, including the label, so you can go back and check for purity. If you see a weed in the field that you don’t recognise, don’t ignore it, send a photo or specimen to BBRO to get it identified. Importantly, hand rogue and fully remove the weed,” she advised.

Pam also highlighted mugwort (*Artemisia vulgaris*), a native weed which she believes is becoming a greater problem in the UK. “It’s very difficult to control. In sugar beet, you can use something like Debut (triflurosulfuron-methyl) plus Shield Pro (clopyralid). This twists the weed and suppresses growth, although that doesn’t completely kill it.”

To conclude, Pam raised that she’s been trialling new herbicide Rinskor Active (florpyrauxifen-benzyl) for the past two years. “It belongs to the same mode of action as Shield Pro but will have a much lower use rate (26ml/ha) and will target different weed species.

“Rinskor Active has useful activity on fat-hen as well as some of the more difficult weed species such as annual mercury, ALS-resistant poppies and velvet leaf. However, you must follow all tank mix and stewardship guidance, including the dose rate.”