Sprayers **MACHINERY**

Optimising functionality



If there's one machine where technical accuracy is of paramount importance, it's on the sprayer. *CPM* explores some of the newer technologies and features available on machines to optimise performance and chemical usage.

By Melanie Jenkins

he subjects of resistance management and reducing chemical usage are never far away, and with increasing pressure to make these a focal part of spraying operations, manufacturers are continuing to invest in developing technologies which improve accuracy to help growers optimise their spray applications.

AMAZONE

With growers looking to increase output capacity, the trend in the sprayer market is for increased tank size – but not necessarily boom width as field size dictates what's practical in that respect, says Amazone's Simon Brown. "However, more liquid on board to reduce fill-ups and quicker turnround times is key to increasing output."

The single axled high-capacity UX 7601 with a tank size of 8000 litres and the UX 8601 with 9030 litres, are becoming increasingly popular, he notes. "The unique feature in the 7601 and 8601 design is the weight transfer from the tank to the rear of the tractor ensuring better traction, less fuel usage, higher stability and reduced ground pressure as well as ensuring that road legality on one axle is maintained."

New from Amazone for 2025 is an update from AmaSwitch to AmaSwitch plus. "The beauty of AmaSwitch was the solenoid on each individual nozzle body, which can be specified as either a triple or quad body with a manual changeover to each nozzle," explains Simon.

"The quad body can also be used on a 25cm nozzle spacing as well. The solenoid isolates each 50cm section individually meaning less overlap (up to 85% less) and reduced wastage, no chemical resistance build up and no yield penalties. With AmaSwitch plus, the complete hardware has been made more durable to withstand the rigours



Targeting buffer zones The DirectInject addition to Amazone's self-propelled Pantera and the UX 01 allows an additional chemical to be fed into the spray line on the move so buffer zones can be treated differently.

MACHINERY Sprayers



of the harsh spraying environment." More common on the UX 01 is AmaSelect, the flexible individual nozzle control system, he says. "The quad nozzle body is controlled by an electric motor which can send spray liquid to any of the four nozzles individually, or a combination of three pairs of nozzles, or one combination of three nozzles, giving a total of eight nozzle combinations on the move.

"This has huge agronomical benefits where the nozzle output – which may be from more than one nozzle – is matched to the application rate and droplet size. The range of adjustment possible is much greater compared with PWM systems. AmaSelect can be used at both 50cm and 25cm nozzle spacings."

DirectInject is the most novel addition to the self-propelled Pantera and the UX 01 where an additional chemical can be fed into the spray line on the move so buffer zones can be treated differently, says Simon. "The concentration of the chemical can be also be increased on the move, for use in applications such as growth regulator or fungicides in higher yielding areas, or in pockets of fields with bad grassweed issues. There's no wastage of the additional chemical and no crosscontamination of the main tank mix."

Also new this year on the UF 02 mounted sprayers, Amazone offers the ContourControl boom guidance system on 21m and 24m booms. "This is ideal for growers running a mounted sprayer and farming on undulating terrain where the boom sometimes has to go below horizontal as well as above.

"The system was introduced on 27m, 28m and 30m booms in 2023 and has now been extended due to demand on the narrower boom widths," he adds. "And it's that instantaneous response to changes in target height that owners of trailed and self-propelled sprayers wax lyrically about, which is now proving its worth on the mounted models. The system also self-levels when one boom is folded in to go around a pole which makes for better driver comfort."

Finally, the UF 02 sprayer has new contactless flow meters that give increased metering accuracy for better rate control and improved reliability. "We also have the AmaTron Share App now to connect to the AmaTron 4 for sharing application maps and job data between Farm Management Information Systems and the sprayer," concludes Simon.

HORSCH

Horsch has released further precision crop care technological developments to its Leeb sprayers in the form of AutoSelect Pro and Spot Spraying, giving users the opportunity to update existing machines.

AutoSelect Pro is the latest update to the well-proven automatic nozzle control system and adds curve compensation to the current set of features. This system automatically switches the nozzles with the operational speed to help ensure a consistent application rate. It also automatically adapts the working height of the boom, removing workload from the operator and improving performance.

The AutoSelect Pro curve compensation system adjusts application rate when cornering, increasing the quantity on the outside of the curve and reducing on the inside. Horsch sprayers which already have AutoSelect can be upgraded to AutoSelect Pro.

With the intensive focus on spot spraying to help make plant protection even more efficient, Horsch is developing its own technologies based on its pulse nozzle system, PrecisionSpray. Because this system is in widespread use, it offers a practical upgrade path as spraying technologies develop in the future.

Spot spraying means that an individual plant is assessed and treated instead of the whole field, allowing sprays to be used in a more efficient and effective way. Horsch is currently researching different methods such as green-on-brown and green-on-green detection, and carrying out field tests with different camera manufacturers.

The firm says its objective is to adapt the new technology to suit different environmental conditions and meet the requirements of farmers around the world.

Green-on-brown plays a major role in dry regions such as Australia, to remove

Here's an idea 🖗 A sprayer so advanced it uses up to 80% less agrochemicals



When it comes to chemical saving, AMAZONE's unique AmaSelect nozzle control ticks all the boxes.

The electric, four-way nozzle body selects up to 7 different combinations of nozzle on the move – controlling droplet size and minimising drift.

Around bends, CurveControl gives you even dose rates across the full boom width and the individual nozzle switching means less wastage.

Band spraying with AmaSelect Row can further cut chemical usage by up to 65% but, to top it all, spot-spraying to a predetermined weed map using AmaSelect Spot can save you up to 80% of active ingredient use.

More clever thinking from AMAZONE.



Add a little dose from the NEW DirectInject system and those savings go up yet another notch.

amazone.co.uk 01302 751 200

- Zhan Mata

Find out how NEW Amazone technology saves on your chemical bills.







MACHINERY Sprayers

Farm favourite

Chafer's latest Sentry proves a hit on Cambridgeshire farm

hafer sprayers have been a stable sight at Potash Farm near March in Cambridgeshire during the past 11 years, with the farm taking delivery of its third Sentry machine last season.

Run by Mick Mottram, C J Mottram and Sons covers 567ha of owned, rented and contract farmed area. Growing wheat, barley, potatoes, sugar beet, mustard and beans, he has a number of crops to manage, meaning he requires a sprayer that's up to the task. "With the variety of crops we grow, it's important that we can clean the sprayer out and turn it around quickly to go straight back onto fields," he explains.

Other than sugar beet harvesting, all management is done in-house, with cultivations ranging from full inversion with a plough to min-till.

Before first purchasing a Chafer machine, the farm ran two 24m sprayers to help avoid cross contamination with sugar beet inputs, but 11 years ago Mick decided to opt for a single 36m machine to tie in with the existing wheelings on the fields.

"By operating a larger sprayer, we don't travel through the crops as many times and can cover fields faster – I was surprised at how much more I



A performance boost

The latest Sentry has a Norac system which demonstrates significantly improved performance compared with the previous system used by Chafer.



User friendly Barry Glover and Mick Mottram have been equally impressed with the ease of use and improved features of Chafer's latest Sentry model.

could do in a day with a 36m machine than with a 24m one," observes spray operator, Barry Glover.

SPARES PROVISION

Although Mick considered the idea of a self-propelled machine, he couldn't justify the cost. "I decided to visit Chafer to see the spares store and was impressed that the firm carried nearly every spare part the Sentry could possibly require. The site is also only just over an hour away, so I knew that if we

had a breakdown, I could collect the necessary parts and be back on the farm in under three hours. "Since then,

we've had very few

"The latest machine has a Norac system and it's tremendous."

before, making the job so much better and easier," says Barry. "The first two Sentrys we had included Chafer's own contour levelling system, but the latest machine has a Norac system and it's tremendous – hovering just above the ground exactly where you want it to be. "Section control on the boom

"Section control on the boom is now split into 2m sections with two 6m sections in the middle, which has made a lot of difference in reducing overlaps, helping us to reduce chemical usage," he adds.

According to Barry, steering has been vastly improved, making his job easier. "On the last sprayer, if you backed

problems – Chafer has never let us down with parts and are always at the end of the phone. The firm is only made up of a small team, but it provides a personal touch that's followed up with service."

Running a policy of trading in his sprayer for a new one every five years, Mick's latest purchase of a 5000-litre Sentry G Series is what he and Barry coin as a 'step change' in performance. "The first and second Sentry machines we had were similar, but this time we've noticed a real difference in capabilities and performance," says Mick.

Two of the most significant improvements operationally have been the boom flow and steering. "The boom levelling is a hundred times better than it into a corner you'd have to flick a button to make it go straight, but now the sprayer locks the steering into a straight position."

He's also been impressed by how easy it is to change water volumes on the new Sentry. "The sprayer has two lines which you can use variable rates on, whereas the previous machines had a single line. If one of the lines is struggling for pressure, then both lines cut in.

"Now we're working with higher water rates than previously, this works really well. The machine has two smaller fine droplet nozzles and this also makes a noticeable difference, we can use a weaker mixture without compromising our efficiency." As a result, both Barry and Mick anticipate they'll be using less chemicals. "This will all be down to the sprayer, so it's helping us get ahead of the game as far as reducing inputs is concerned," comments Barry. "We can use anything from 100-400 l/ha and where we used to typically apply 100-120 l/ha this now averages 200 l/ha."

Having two separate lines has made the increase in typical water volumes a simpler process. "Because of the two lines and the different nozzles, it's now an instant change, saving a lot of time. Before I'd have to change all of the nozzles to apply a different rate, and with 72 nozzles, this could take 20 minutes. Because there are fewer ideal spray days, any time saved is useful," adds Barry.

With an improved rinse facility, it's now much simpler and easier for him to thoroughly clean the sprayer between jobs, he believes. "It's a case of going into the control box and selecting the type of rinse, and with the ePlumbing, I simply select how many litres of water to use from the clean water tank, press the



Finer details

Chafer has added protective stainless steel plates to a lot of the wear spots, preventing damage to the paint and the machine, and has even added a sheet to prevent mud from the tyres reaching the nozzles. button and it does it itself." The sprayer also features Chafer's AirPurge which uses pressurised air to remove all liquids from the system. "Not only does this thoroughly clean the lines, it also helps with frost protection," says Barry.

TOPCON SCREEN

Additionally, the in-cab setup has been vastly improved through the introduction of a TopCon screen, rather than having an entirely separate box to control guidance and boom controls. "With the last two sprayers I couldn't see out of the right hand window because of all the different displays, but this has now been consolidated. A lot of thought has gone into how to make it easier to operate the sprayer from the tractor."

However, Barry does note that other tractors have in-built displays of sufficient enough size to remove the requirement for a TopCon screen altogether.

Regardless, even some of the finer details and finishing touches to the latest Sentry have impressed Barry. "Chafer has added protective stainless steel plates to a lot of the wear spots, to prevent damage to the paint and the machine. There are plates at every join and a protective sheet behind the tyres to stop mud hitting the nozzles, proving the firm does listen to feedback.

"It also has better boom lights which makes working at night much easier because the tractor lights just aren't enough by themselves."

Mick notes that there are a lot of sprayer options available on the market but he's been suitably impressed with Chafer's approach, machine performance and build quality. "Chafer provides us with great service, and with smaller weather windows to work in, this is so important to help us be operational as quickly as possible."

NUTRISTART

FED WHERE

- Reliable 12v pump
- 600L or 1000L tank
- GPS driven Liquid fertiliser system
- Full in cab control system using pressure sensor

NG BRITISH P

- Control system only option Fit to your tank
- Front linkage or implement mount chassis
- Can be linked into other Techneat applicators
- Stainless steel Pencil jet or tine outlets
- Multiple manifolds available
- Anti drip outlets
- Easy to fit

Email: info@techneat.co.uk

Tel: 01353 862 044 www.techneat.co.uk



SPRAYER PRECISION & PERFORMANCE

KUHN offers a wide range of mounted and trailed sprayers to suit farmers individual needs



be strong, be KUHN www.kuhn.co.uk





Enhanced spot spraying

Kuhn's I-Spray spot spraying system has been developed in partnership with Carbon Bee to offer different applications depending on the crop, with green-on-green spot application designed for weed detection.

individual weeds from the stubbles, while green-ongreen is far more difficult to implement due to the small differentiation between weeds and emergent crops and is proving a challenge for experts across the agricultural industry, it adds. But green-ongreen is most important in northern Europe, for example, for the application of herbicides or fungicides.

KUHN

The latest updates to Kuhn's sprayer range include future technology that's designed to help users apply crop protection products with greater precision, protect the environment and reduce input costs.

The firm's I-Spray spot spraying system has been developed in partnership with Carbon Bee to offer different applications depending on the crop. A key benefit of the targeted system is reducing product use and cost compared with current methods, by up to 95% in some crops, according to Kuhn's Edd Fanshawe.

"Furthermore, the environment is better protected as applications are targeted to the plants that require it, whereas blanket applications are avoided. This also helps to reduce the chances of herbicide resistance."

The system works from live data fed via hyperspectral sensors positioned along the boom. These are lightweight and use a wide-angle view, so the number of sensors required is reduced, he adds. The control module uses the data to activate individual nozzles to target the specific plants or areas.

Three application modes are possible; green-onbrown spot application to target weeds on stubbles; green-on-green spot application for weed detection in growing crops and, green-on-green using variable rate application.

"This allows a low volume spray across the width with targeted individual dosing when weeds are detected," explains Edd. "This is particularly useful to treat whole fields that could require a smaller dose but increased rates to specific plants. Variable rate application of fungicides, growth regulators and nitrogen will be possible using crop biomass measurements." •

"The environment is better protected as applications are targeted to the plants that require it."