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LANDWIRTSCHAFT AUF DEN PUNKT GEBRACHT

FOR COMFORT AND ACCURACY



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FOR COMFORT AND ACCURACY

Electronic and hydraulic technology is the key for more accuracy and greater operator comfort in spraying. We explore which technologies are available for sprayers now and **what they have on offer.**



Modern technology makes spraying more convenient and safer for operators and increases the accuracy of the application.

What is the state of the art in spraying? How effective are the various sprayer packages and features that come with such complex names? We take a look behind the scenes at Amazone to find out. On the UX trailed sprayers we explore the latest spraying technology and its benefits for users.

Let's begin with some technical information: Amazone manufactures two UX sprayer models – the Special and Super. The entry-level UX Special is available with 3,200-5,200-litre tanks and the UX Super with 4,200-8,600 litres (single axle) or 11,200 litres for tandem-axle versions. The speciality about these tanks is that their real volumes exceed their rated volumes to accommodate the foam.

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IN A NUTSHELL

- More technology on field sprayers translates into more operator comfort and safety.
- Active boom control stabilises the boom and enhances application control.
- Automated functions in the operator centre make for easier filling and cleaning.

WHY PENDULUM SUSPENSION?

The boom of the UX Special is suspended on a central pendulum frame. For optimum suspension, Amazone offers DistanceControl which controls the boom's height and slant automatically as an option to manual control.

DistanceControl is available with a system of either two or four ultrasonic sensors. Four sensors are recommended for those who spray non-uniform stands and in uneven terrain. Another advantage of DistanceControl is that it raises the booms automatically after all nozzles are switched off.

WHAT IS AN 'ACTIVE BOOM'?

The active boom control feature on Amazone sprayers is called ContourControl.



Tests on the bumpy track reveal the benefits of active boom control: the sensors measure the distance to the target surface and the hydraulic rams control boom height and slant. This level of specification also stabilises the booms more effectively than the central pendulum suspension.

Unlike DistanceControl which uses springs and dampers to cushion sudden shockloads and impacts, ContourControl relies on extremely responsive hydraulic rams which adapt the boom position instantly. This enables the boom to hover less than 50cm above the stand and is claimed to stabilise super wide booms also at high forward speeds. A system with four sensors can fold the booms independently, reduce the boom width for smaller work widths and adjust the slant when spraying on slopes work. A system with six ultrasonic sensors allow operators to fold one boom or both.

STEADYING THE BOOMS

Those who use the active ContourControl feature on very wide booms should consider investing in the Amazone SwingStop which dampens boom yaw. Another issue is roll, which means the boom ends are moving up and down when the tractor is accelerated or braked less gently.

Boom roll affects the inaccuracy of application on the ends as the boom swings forward and backward, which results in over- and under-application. SwingStop measures the oscillation levels on the boom ends and uses the data for controlling the counteracting hydraulic rams that stabilise the booms.

WHY INDIVIDUAL NOZZLE CONTROL?

The entry-level nozzle bodies can hold one, three or four nozzles for implementing 7, 9,

11 or 13 sections. AmaSwitch is an electric nozzle control system that switches three or four nozzles separately after the operator moved these into spraying position and selected them on the terminal.

This specification requires the sprayer to have the DUS pro pressure circulation system which is an option for machines with section control. AmaSwitch and AmaSelect require the DUS high-pressure circulation system as standard specification. DUS keeps the spray liquid circulating in the boom line.

The advantage of this is that spray liquid rather than clean water is 'on tap' at spraying start. As another advantage of circulating the liquid the chemicals will not deposit or segregate in the lines; and it also makes for easy cleaning before storing the sprayer. Rinsing is with clean water and the liquid is returned to the tank.

REDUCING OVERLAPS IS EASY

An automatic section control system saves of up to 5% of chemical inputs on headlands



The AmaSelect kit spaces the yellow nozzles 25cm apart and all nozzles have LED's.



The ContourControl system maintains the boom-to-target distance hydraulically.



DistanceControl enables the boom to swing freely. Dampers and springs ensure the boom won't roll.

and converging bouts. The individual nozzle control saves another 5% of spray products, says an Amazone study. Unlike AmaSwitch, which requires operators to move the nozzles manually into spray position, AmaSelect controls the four nozzles on a body electrically – either individually or all at once.

This feature enables the manufacturer to implement various spray strategies. On the one hand, it allows operators to work at different forward speeds, because the system selects a higher-capacity nozzle when

the pressure exceeds the pressure range of the currently selected nozzle. This keeps the pressure low and maintains the droplet size.

On the other hand and in combination with the feature CurveControl, it allows operators to select a smaller nozzle for spraying on the inside of a curve and combine a small and a medium-sized nozzle for spraying on the outside. In this configuration, the middle section of the boom is applying the pre-set rate – less on the inside and more on the outside, because the ends spray a larger

area on the outside of a curve than on the inside. AmaSelect also implements a nozzle spacing of 25cm using a special kit that splits the liquid flow and sends it to two nozzles on the same body. The 25cm nozzle spacing reduces the distance to the target surface to less than 50cm.

BAND SPRAYING ALSO AT 25CM?

A 25cm nozzle spacing makes it also possible to apply band spraying not only in crops with 50cm row spacings but also 75cm spac-



Ultrasonic sensors monitor the boom-to-target distance and the hydraulic rams follow suit adapting the boom height.



Acceleration sensors on the boom ends measure the speed for SwingStop and CurveControl.



The Comfort plus package controls all valves electrically by tapping the screen.



At the heart of every sprayer is an ISOBUS-compatible terminal which controls the application rate and switches boom sections and nozzles.

ings. A useful technology is the so-called AmaSelectRow. Operated from a separate user interface/menu, it switches from field application to band spraying in the field when the sprayer is travelling the field perimeter at the beginning. The total application rate is adjusted automatically so that identical rates are applied in the band and in the field. Band spraying is claimed to reduce chemical inputs by 65%. In this type of application, the area between the crop rows is not sprayed but weeded mechanically whereas the crop row itself receives a band spray later on.

NO TROUBLE WITH THE SPRAY LIQUID

User safety on field sprayers starts on the induction hopper. The UX Special has a 55-litre hopper with a suction capacity of 150l/min. The hopper on the UX Super model holds 60 litres and has a suction capacity of 200l/min.

All hoppers are operated manually which means the valves for suction and filling, spraying and cleaning are operated manually. These processes can be automated by the Comfort package which controls the filling rate during suction and frees operators from leaving the cab for cleaning the sprayer. Instead, they can now execute all functions from the cab-based ISOBUS terminal.

The Comfort package for the UX 01 offers even greater convenience and operator safety. In this specification, the sprayer is

Active boom control translates into higher work rates and greater spraying accuracy.

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operated from an extra terminal during the filling process. In this specification, filling is switched off automatically when the filling level reaches the target mark. This applies to both suction mode and pressure mode. More than that, the agitator is controlled automatically to minimise foam formation.

This level of convenience is even topped by the Comfort Package plus. Here, the induction hopper is filled with clean water instead of spray liquid from the tank. This applies also for pressure filling and is attributed to the fact that the fresh water tank is filled automatically, so clean water is available for cleaning the induction hopper. The regular system clean is carried out from the tractor seat. The programmes run automatically, minimising errors and ensuring the quickest possible dilution of the spray liquid and a clean sprayer.

HOW USEFUL IS TOP SPECIFICATION?

The UX sprayer and its options reflect the potential of modern sprayer technology. How useful are these options and is a higher level of specification always better? Each of these upgrades brings at least one benefit – either more user comfort and safety or more accuracy. Yet, not every farm can take advantage of all upgrades. Unlike other machines that boast high-level specifications, modern technology on a sprayer is always beneficial.