Applying the Advantages of Updating Boom Height Control

Modernizing outdated technology can preserve economic ROI of applied chemicals, improve sprayer performance and relieve stress

For many farmers, sprayers annually cover more acres and log more engine hours than any other piece of equipment in their fleet.

But keeping current with boom height control is sometimes an overlooked upgrade that can improve application accuracy, reduce stress and add value to sprayers.

"Sprayers are the most heavily used piece of equipment on a modern farm," says sprayer expert Tom Wolf, co-founder of Sprayers101.com. "And boom height control is perhaps the most neglected, though most important aspect of the machine."

Given the cost of ag chemicals and new machinery today, modernizing boom height control technology can maximize short- and long-term return on those investments.

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Economic Incentive

While chemical and machinery costs have increased dramatically in recent years, so too has the need to feed and protect crops to increase production.

On a modern farm, Wolf says it's common to see sprayers in the field almost every week of the growing season – from pre-plant burndown and banding fertilizer to post-emerge herbicide and topdressing.

"Steady boom control significantly reduces spray drift and can improve the canopy penetration of sprays. But many operators can't take advantage of this because their booms sway too much," he says. "There is economic and environmental momentum for farmers to rehabilitate sprayers through technology upgrades like boom height control."

Spraying upwards of 20,000 acres each year with his 2017 Hagie STS12, Kyle Johnson can't afford inconsistent application of costly chemicals. He farms corn and soybeans west of Iowa City and is also a custom applicator.

"My sprayer provides the highest payback of any piece of equipment in my fleet," he says. "I'm probably paying half as much in chemical purchasing and application costs owning my sprayer vs. buying from a co-op."

Responsive, reliable height control is critical to preserving ROI when covering the volume of acres Johnson does, which includes rolling, rapidly changing terrain. Whether it's variable-rate applying pre-emerge 32% nitrogen on his own operation, or making custom crop protection passes during the growing season.

Johnson's sprayer came with Norac's UC5 boom height control previously installed, and he ran the system for two years. When the opportunity to upgrade to the UC7 system arose, Johnson saw enough economic promise to graduate to the next generation technology.

"Doing custom application, farmers rely on me to spray herbicides in a timely manner, so having the UC7 relieves stress and gives me more confidence in my accuracy," he says, "There were instances with the old system, especially on terraces, which required a manual override."

That's no longer the case. Sensors now provide quicker detection of obstacles and automatic boom height adjustments. This allows Johnson to navigate steep hills, terraces and washouts with less worry and more efficiency.

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"I'm not overwhelmed with constantly watching my booms and feel I can get more done in a day," he says. "In wide open fields, I can spray at 15-16 miles per hour with confidence because I trust the sensors to automatically make corrections on-the-go."

Cleaner Design

Navigating waterways with aging boom height control technology created a dilemma for Ionia, Iowa, farmer Lawrnie Seamans across his 1,500-acre corn-on-corn operation. After eight years, the system struggled to adjust boom height through waterways, which resulted in broken or muddy nozzle bodies.

"When the boom isn't at the height is should be, two things happen," Seamans explains. "I'm not getting herbicide accurately applied to every weed in those lower areas, and I'm costing myself downtime because I'm stopping to fix or clean nozzle bodies."

Seamans does 90% of the chemical application on the farm, along with some custom acres, and spends upwards of 350 hours in the cab of his sprayer each year.

The threshold for efficiency loss came when he needed to replace four of the five sensors on the system. Rather than spend on a short-term solution, Seamans invested in a new UC7 for his 2015 Hagie self-propelled sprayer.

"I consider the dollars per hour that I'm paying for that sprayer when I operate it. The cost of replacing the sensors was going to be about 40% of upgrading the unit," Seamans says. "Spending money on old technology in a newer sprayer didn't make sense."

The investment paid off with better responsiveness, quicker height adjustments, and less stressful application, especially through waterways. When Seamans moved to a 2020 Hagie STS12 model in 2023, he made sure it had a UC7 system to control the 120-foot booms.

"The boom ends aren't diving into the dirt because I don't have to manually lift them up and lower them again," he says. "I can operate and automatically maintain my boom at lower heights, especially on windy days in the spring."

Selling Simplicity

While replacing sensors and other components on aging boom height control systems is an option, sourcing replacement parts for maturing technology is becoming more challenging.

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"Diagnosing and servicing older systems can be impractical and inefficient," says Derek Bontrager, precision equipment salesperson with Eldon C. Stutsman Inc. "We'll begin to see a generation of boom height control technology become obsolete within a few years."

Stutsman's has sold more than two dozen UC7 upgrade kits, the majority during the last year as mature systems began showing their age. Customers often report slow or unresponsive machines as components wear out – a catalyst for an upgrade conversation.

But the last thing frustrated farmers want is a complex, costly solution to their boom height control problem. The simplicity of the UC7 design is one reason Stutsman's has been successful selling upgrade kits.

"We've been able to get rid of three roll sensors and two modules that were on the boom and replace them with more responsive sensors and one module," says Nate Sutton, precision equipment salesperson with Stutsman's. "It makes the whole system much simpler and streamlined."

Johnson agrees after working with Stutsman's to remove the UC5 system from his sprayer and install the UC7.

"Simplicity is a substantial benefit," Johnson says. "There's a lot less componentry. Less controllers, less harnessing means less room for error. Now there's one module that manages all the controls."

For farmers who also invested in other precision spraying technology, like pulsating nozzles, the UC7 system can enhance accuracy by reducing drift.

"If the height is fluctuating inconsistently with pulsating nozzles, the application won't be accurate," Sutton says. "If operators are driving through an area where nozzles aren't pulsing very fast, or regularly and the boom is elevating quickly, there's a chance for underapplication."

Extending Value

While upgrading to a streamlined system improves application efficiency, it can also extend the life of equipment and retain its value.

"When farmers go to remarket an older model sprayer and the dealer or next customer sees it already has a UC7 system on it, that machine will hold more value," Sutton says.

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Rather than trade in an aging machine for a new model, farmers can "future proof" their sprayers through technology upgrades including boom height control.

"We've seen the cost of new sprayers increase more dramatically than other equipment during the last 10 years. A new $300,000 sprayer in 2013 costs almost twice as much today," Wolf says. "Farmers are more reluctant to spend on a new machine, so the retrofit market is alive and well in spray technology."

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>
> **Tom Wolf**

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