

Techno Revolution

Mechanical and scientific insights and innovations



On the Mark

JACOBSEN'S Cushman SprayTek has a low-profile shape for maximum visibility.

PHOTO: COURTESY OF JACOBSEN

GPS-guided equipment can provide more consistent, accurate sprayers that superintendents need, manufacturers say

BY LAWRENCE AYLWARD / EDITORIAL DIRECTOR

Accuracy and consistency are two key attributes golf course superintendents look for in a good sprayer, according to equipment manufacturers.

"Spraying accuracy is critical to get the optimal amount of chemical applied to the turf," says Chris Fox, product manager at Charlotte, North Carolina-based Jacobsen. "Underapplication may reduce effectiveness, and overapplication can cause turf issues and is a waste of time, resources and chemicals."

Consistency is important to achieve a uniform application, Fox notes.

"You really need to hit that desired rate as close as possible," he adds. "If the rate drifts during application, issues can arise."

Steven Peterson, marketing manager with Bloomington, Minnesota-based The Toro Co., says superintendents want simplified application rate set up and more intuitive sprayer controls. He notes that Toro's newly redesigned Multi Pro sprayer line addresses both requests.

Ken Rost is vice president of technical sales for Shafer, Minnesota-based Frost Services, which offers standard and customized spraying equipment. He says rate control systems have helped with regulating spray volume relative to ground speed, but they don't control where spray is applied.

New nozzle control systems guided by GPS technology can open

and close nozzles only when they're in the area to be sprayed, Rost adds, noting that Frost's Bravo400 Seletron system combines individual nozzle control with rate control and guidance.

With consistency and accuracy comes detailed record keeping, which superintendents also want.

"Keeping records of what was sprayed is a requirement in most states and will likely become mandatory at the federal level soon," Rost states. He notes that the Bravo400 generates KML files that can be viewed in Google Earth to show the exact area sprayed, how much was applied and other data superintendents can use in their management plans.

GPS: Meeting the need

Mike Koppen, product line marketing manager of golf products for Cary, North Carolina-based John Deere Golf, has heard from superintendents about the need for more GPS technology in sprayers.

"Spraying regulations, labor and chemical costs continue to rise, and customers want a system that sprays only where needed, uses less chemicals, gets the job done in less time and is safe," Koppen explains. "GPS technology lets us meet these needs."

In addition, superintendents want to achieve environmentally sound agronomic practices when spraying, and GPS technology can help with that goal.

"Luckily, our John Deere agriculture experts have a deep understanding and history of working with GPS technology, and we



JOHN DEERE GOLF'S sprayer line offers options for pumps, control systems, tank sizes and different width booms.

PHOTO: COURTESY OF JOHN DEERE

are able to draw from that internal knowledge base to identify sprayer solutions and technology to customize for the golf industry," Koppen adds.

Jacobsen's Fox says GPS is becoming widely accepted for chemical applications.

"The ability to mark boundaries with GPS systems provides superintendents savings in dyes, chemicals and labor," he notes.

Toro's Peterson says GPS is only one technology that's likely to be applied to sprayers, largely because it has been successfully used in larger-scale agricultural applications.

"With that said, Toro continually looks at new technologies in all areas affecting spray system applications and efficacy to help improve the spray process and the economic viability of the golf course," he adds.

Improving and innovating

Manufacturers are continually working to develop better sprayers with improvements to tanks, booms and pumps.

"When it comes to tanks, visibility is everything," says Greg Walker, technical training manager for Jacobsen. "When a spray technician is out on the course, he needs to be able to easily view each nozzle to ensure it is functioning properly."

Walker points out that Jacobsen's Cushman SprayTek has a low-profile shape for maximum visibility.

Rost says the biggest improvement Frost Services has made on spray booms is adding individual nozzle control, which makes application accuracy more defined.

"We also set up dual nozzles at each nozzle position which allows for a wider range of speeds," he adds. "With higher application rates and faster speeds being possible through better sprayer controls, more flow is required from the spray pumps."

Centrifugal pumps provide the flow needed, and they run smoothly, Rost notes. In the past, if centrifugal pumps were run dry the main seal could be damaged.

"The centrifugal pumps that we use now have a seal that can take the abuse of running dry and the abrasive products that are common in turf care," Rost adds.

Peterson says Toro's Multi Pro sprayers have been improved with elliptical spray tanks with side agitation nozzles that roll the chemical mixture, ensuring a homogenous mix and 99 percent spray-out of chemical for proper application rates.

Koppen says John Deere Golf's goal is to give superintendents as many options as possible for specific applications.

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TORO'S Multi Pro 1750 offers simplified application rate set up and more intuitive sprayer controls.

"Drones will assess fairway conditions and maps will be created for where applications should be applied," he says. "These technologies currently exist but will be common in the industry in the next five years. Autonomous piloting of sprayer equipment is also currently available technology, but it will take another 10 years to be accepted in the industry by superintendents."

Peterson adds, "As sensing of turf conditions evolves, application of a wide range of materials will become much more sophisticated and be applied more precisely via advanced automation and/or computer control."

Koppen believes the environmental impact of turf care will continue to grow as a concern and with that the need for precision spraying is going to increase. He says, "GPS sprayers will offer benefits to golf facilities that will appeal to superintendents and club managers alike, including a more efficient use of chemicals and fuel to both decrease impact on the environment and also save on operating costs."

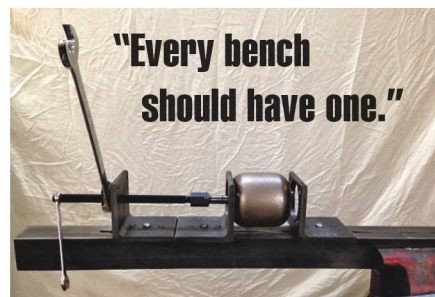
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