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Weed Robots Save On Labor And Chemicals

Set up a Solix robot in a field and let it go, spraying target weeds as needed until the crop canopies. No refueling, no driver needed. Just refill the tanks and check your cell phone for alerts should a problem develop. Not only are weeds controlled, but the solar-powered sprayer is scouting the field, collecting valuable field data as it goes.

"We had 50 robots running in the field this year, our second crop year in Indiana and Illinois," says Taylor Wetli, Solinftec. "Next year, we'll be north of 100 units working from Indiana to Kansas. We're also starting our second commercial season in Brazil."

The 1,200-lb. Solix robot looks a bit like a high table on wheels with a 40-ft. boom. The chassis is 7 ft. by 7 ft. at the base. The four-panel tabletop solar array extends slightly over the chassis to capture available solar power, including UV rays.

"Even in the case of clouds or smoke-induced haze, the arrays capture enough UV rays to allow it to run and store energy," says Wetli.

The chassis holds batteries and the AI control system. Electric wheel motors on two table legs pull the machine through the field.

Cameras every 5 ft. on the boom feed images to the AI. As the robot passes overhead at about 5 in. per sec., a 12-in. by 12-in. spray pattern is laid over the target weed.

In one case study of a 135-acre field, Solix identified 737,726 weeds. It sprayed 150.2 gal. of solution in square-foot blocks on a total of 8.1 acres, reducing chemical inputs by 94 percent over conventional broadcast spraying.

"Solix can identify seedlings as small as 1/2 in. high with our heightened sensitivity.

However, our standard identification is 2 in. or larger," says Wetli.

Targeted applications using AI for independent nozzle control require less spray solution, which reduces weight and potential soil compaction. The Solix is equipped with two 20-gal. tanks. The solution is recirculated in the tanks every 6 hrs. to keep the product mixed. The dual tanks self-level as the solution is applied.

Inch by inch, foot by foot, the robot covers the field, 5 acres per hr., averaging 50 acres per day. "Currently, we're not applying at night due to label restrictions and product efficacy for the products we're applying," says Wetli. "However, we do have the capability to scout at night."

On average, each machine makes four application passes in soybeans and three in corn. Additional passes are made to scout the field, monitor and understand field conditions, and gather data. This includes the identified weeds, plant population and placement, crop health and more.

When to apply is based on a combination of grower/agronomist recommendations and Solix-generated weed maps showing the percentage of a field with weeds.

Solix units are designed to operate independently. They're monitored and managed by software or the growers using an app or webpage. The machine navigates the field using maps updated by the grower to mark out different areas, such as standpipes, waterways and spray/no-spray zones.

Wetli notes that precision spraying of individual weeds versus broadcast spraying reduces input costs. It also reduces or eliminates the need for the crop to metabolize the product, which can increase yield.

Solinftec estimates a three-year return on

investment for 300 acres. The more acres covered, the faster the return.

"Some customers keep their machines in a single field for multiple passes, while others move them from one field to another, such as from corn to a double crop field," says Wetli. "In the latter case, a machine might cover 600 acres."

Refilling the onboard tanks is the only human interaction needed for the Solix to function. However, that, too, will be automated in the future.

"We'll have automatic refill stations in place on a limited scale next year," says Wetli. "The unit will simply back up to the station, connect and refill. With refill stations, there's the potential to have multiple products available. If the machine recognizes a need for an alternative product, it could grab it on refill."

Currently, only one size unit is offered, but this may change in the future. He notes that growers are enthused about the machine's current capabilities and can justify the machine in terms of savings on chemical inputs and increases in yield. As more data layers are gathered, Wetli is confident that more yield increases will be seen.

"They're excited about what they can do with the data gathered," he says. "The platform will continue to evolve. Growers may use it to apply microbials or fungicides earlier or at multiple times. We've seen it work with weed control. Now we'll see what more it can do."

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Cotton Stalk Puller Expands To All-Crop Tillage

The Stalk PULLr from Orthman by Unverferth was initially designed to pull cotton stalks. Today, it's proving itself in residue management and seedbed preparation for multiple crops, including corn, milo, sunflowers and cotton.

"Cotton producers needed to get the cotton stalk and root ball out of the ground to eliminate the habitat for the boll weevil," says Justin Trout, Orthman. "Through the years, it moved into ridge tillage to pull corn stalks. Today, it's used for high-speed, low-horsepower, low-maintenance residue management and more."

Stalk PULLr row-units are mounted on heavy-duty 7 by 7-in. frame construction in multiple sizes up to 18 row widths and row spacings of 30 to 40 in. Folding toolbar models feature the Orthman Toolbar with internal hydraulic fold cylinders and in-line wing hinges. Each row-unit requires as little as 5 to 10 hp., as there's minimal ground engagement.

"You just pull it across the ground," says Trout. "If a tractor can lift it, it can pull it."

Key features of the tillage tool include 24-in. dia. ground-driven cutting discs with cleats on their sides to keep them turning when engaged in the ground in very hard conditions. Paired blades slightly overlap each other to present a leading edge. As the blades wear, one can be moved in to maintain the overlap. Eventually, the blades can be swapped for even more wear from both.

"There's a lot of adjustability with the Stalk PULLr," says Trout. "There are four different disc cutting angles for fine-tuning the aggressiveness of the tillage, from just cutting off the stalk at the root ball crown to pulling out the root crown to pulling out the



Stalk PULLr blade with cleats.

entire plant with the root ball."

The Stalk PULLr can be operated at up to 12 mph, removing weeds and crop residue and drying out the soil. The self-lubricating, greaseless bushings in the row-unit parallel linkage eliminate daily maintenance.

Options include front-mount chopping units with seven 12-in. dia. high-carbon steel blades with angle and depth adjustments. Gauge wheels with adjustable heights for added depth control are also available.

"The 12-row model with folding toolbar wings and chopper units on the front is our most common model," says Trout. "It has a list price of \$75,000."

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Each mat is crafted with a polyurethane grid for top grip and rugged polycarbonate lugs on the bottom to bite into slippery surfaces.

Traction Mat Gets Vehicles Unstuck

"There's nothing on the market like it."

Mark Anthony Pasqua, sales director of Plastipro Canada, stands by this bold claim about Protrax™ traction aids. Two personal experiences back it up. Designed for vehicles, ATVs and other equipment stuck in snow, ice or mud, Protrax delivers results where others fall short.

Last winter, during the product's launch, Pasqua's neighbor, a paramedic, was stranded in the snow. Without hesitation, Pasqua grabbed a pair of traction aids from his trunk. Within minutes, the paramedic was back on the road. Pasqua found himself in a similar predicament this winter and once again relied on Protrax to get moving.

The traction aids are sturdy and durable, designed for repeated use. They're also flexible and small enough to fold and store in a carry bag under a car seat. Since they're made of plastic, they'll never rust like other models on the market. Protrax mats snap together to create a longer or wider tread, depending on the size of the tires. They're simple to use; just place them in front of the tires and accelerate slowly. They even provide traction

on icy surfaces.

"There's nothing like it; they're lightweight, user-friendly and durable. Everyone driving in snowy conditions should have one," says Pasqua. "We built the mold ourselves. Protrax is made in Canada using all USA resins."

Protrax, priced at \$49.95 CAD (about \$37.50 USD), is an affordable safeguard for anyone traveling in challenging winter conditions.

Each mat is crafted with a polyurethane grid for top grip and rugged polycarbonate lugs on the bottom to bite into slippery surfaces. Measuring 6 1/4 by 17 1/4 in., Protrax mats are available for purchase on Plastipro's website, along with other injection-molded products like sports cones, traffic cones, paver edgings and floor tiles. They're also part of a snow removal kit, which includes a compact shovel.

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