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Soil Health Solution Wins AgTech Award

MyLand, an agricultural technology company, received the 2025 AgTech Breakthrough Award for Overall Smart Irrigation Solution, which recognizes companies advancing agricultural technology across categories including irrigation, precision agriculture, robotics and crop inputs.

MyLand was recognized for its Soil as a Service™, which improves soil health by delivering live, native microalgae through a farm's existing irrigation system to boost crop yields and enhance nutrient density.

"The judges highlighted our ability to improve soil biology and water efficiency simultaneously," says Dave Booher, MyLand's Senior VP of Sales. "Unlike traditional irrigation technologies that focus primarily on water-delivery hardware, MyLand's approach works within the soil ecosystem to help farmers improve overall soil performance."

The Soil as a Service platform includes several components. First, a soil analysis identifies the most effective native microalgae strains for a specific field. A "System" is then installed on the farm to cultivate the microalgae on-site. Finally, the algae are delivered through the farm's existing irrigation system.

Once in the soil, the microalgae support microbial activity and improve soil structure. Over time, this can enhance water use efficiency, nutrient availability, farm profitability, and overall soil vitality. The Service is crop-agnostic, meaning it can benefit soil regardless of what's growing, and soil health improvements can compound over multiple growing seasons.

For growers, the process is straightforward. Farmers allocate space for the MyLand System, connect power and water, and integrate algae delivery into their normal irrigation schedule.

"Our Service is critical because a large portion of our soil has been degraded and has lost biological activity over time," Booher says. "With reduced water efficiency, nutrient availability, organic matter, and poor soil structure, our soils are no longer set up for the level of productivity we need to meet the global food demand. In addition, these degraded soils threaten farmers' way of life and their ability to pass down farms from one generation to the next."

MyLand currently provides Soil as a Service to commercial specialty growers in key agricultural regions of the U.S., including California, Washington, Arizona and Texas. It's designed to deliver a strong return on investment by improving yield, crop quality and water efficiency.

To further reduce adoption risk, MyLand recently launched a crop warranty program in partnership with Growers Edge. The program guarantees at least $250 per acre in financial benefit to qualified growers, offering additional confidence to farmers considering the Service.

"Our use of live, native microalgae strains sourced from the farm's own soil environment helps ensure compatibility with local soil conditions," Booher says. "Unlike products that farmers need to apply, MyLand requires no extra effort from them. The Service can work in tandem with a farmer's irrigation system, seamlessly matching existing growing practices."

MyLand's Soil as a Service includes ongoing remote and on-site system monitoring and maintenance, along with periodic soil testing and agronomic support as soil conditions evolve.

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Kim used a custom handheld shear-gripper with sensors to teach the robot to pick peppers by mimicking human actions and using advanced software.

Learning Robot Harvests Peppers

The agricultural industry continually faces challenges, including labor shortages and the need to improve productivity and sustainability. Automation through robotics is a promising solution.

Traditional control algorithms are often inadequate for the variability of agricultural tasks, whereas "imitation learning" enables robots to learn from human demonstrations, improving adaptability in complex environments.

"Unlike earlier projects that needed specialized modules for vision and control, our method uses imitation learning, collecting demonstrations and training one algorithm to process sensory data and guide pepper harvesting," says John Kim, a PhD student. "It's showing good results."

Kim used a custom handheld shear-gripper with sensors to teach the robot to pick peppers by mimicking human actions and using advanced software (Universal Manipulation Interface framework) to guide its movements.

The ergonomic gripper with pose tracking and a fisheye camera enabled data collection, while the UR5e robot on a Husky platform was tested outdoors. Trained diffusion policy software and a grasp detector managed harvesting and pepper placement.

"We went to pepper fields and manually harvested 300 demonstrations," Kim explains. "It was enough to get us started, but not close enough to get us to the point where we could confidently say there's a very good chance of harvesting 99% accuracy."

Kim completed the demonstrations at the Iowa State University Horticulture Research Station over two days.

"Our main goal during testing wasn't how fast the robot picks, but how well the algorithm works. Speeding up the harvesting is a downstream process when we want to deploy it on a larger scale," Kim says.

The harvesting policy reached a 29% success rate across 221 trials, with results impacted by peduncle shape and occlusion. The grasp detector was 83% accurate, demonstrating strong precision and recall in identifying successful grasps.

Compared with previous greenhouse trials, the system performed similarly under challenging outdoor conditions, demonstrating its adaptability to environmental changes and dynamic lighting.

Failures mainly involved gripper positioning and pepper drops after harvest, highlighting areas needing improvement. Future upgrades could include better cameras for peduncle targeting, improved foliage management, and expansion to other crops.

"It's easy to get lost in the technical detail and application and miss the big picture," says George Kantor, a professor at Carnegie Mellon University who oversaw the trials. "We taught a robot to do an agricultural task by demonstration, which is something that has never been done before.

"If we believe robots will do 10,000 different things in agriculture, there won't be computer scientists available to program that number of robots for so many things. A general-purpose robot and a method to technically program it with a demonstration would be game-changing. We're still far away from a farmer picking peppers, but it's a first step in that direction."

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Hydraulically-Powered Beavertail Trailer

After seeing a trailer with an extended power beavertail at a dealership, priced at $6,000 and no trade-in, Larry Fulton built his own.

"I had a 24-ft. gooseneck trailer with a short and fixed beavertail that I modified," says Fulton.

He ordered a 20-ft. length of 3 by 6-in. rectangular tubing from the local iron works and had it cut into three pieces. He used it for the main frame of the new beavertail.

"I cut out a section of the old beavertail from the trailer's main frame back, leaving 2-ft. sections on either side," says Fulton. "The piece removed matched the width of the trailer bed."

He fabricated a new beavertail platform using the rectangular tubing, with cross members of 2 by 2-in. angle iron and 2-in. channel iron for the edges. He designed it to fill the cutaway section and extend another 6 ft. or so to the rear of the remaining original beavertail. The last 2 ft. or so tapered downward but remained wide enough at the end for taillights.

"I put heavy-wall pipe across the end of the trailer bed where the section had been cut away," says Fulton. "I fabricated cams to fit over the pipe and welded them to the new beavertail. When fully raised, all but the last 2 ft. is level with the trailer bed. I covered the new beavertail framing with expanded-metal diamond plate."

Initially, Fulton used an electric-over-hydraulic lift attached to the trailer. On his first trip, the trailer bounced up and down, and the lift released. The beavertail dropped to the pavement.

Fulton added hydraulic cylinders to power the beavertail on his trailer.

"I tore it out and replaced it with two 2-way hydraulic cylinders," says Fulton. "As they rotate the cam, they push the beavertail up."

Fulton powered the cylinders with an electric two-way pump and wired it to the battery that powers his winch.

"I added some traction bars to the beavertail so material can slide up it onto the trailer," says Fulton. "The beavertail has worked fine and cost much less than the dealer wanted."

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