ANT is a 4-WD, zero-radius turning, battery-powered mini workhorse.

Aerial Image Company Introduces Nano Tractor

Colorado-based Barn Owl Precision Ag (BOPA) has spent the past eight years utilizing drones and other imagery to enhance farm decision-making. Now they're helping farmers use that imagery in the field with their Autonomous Nano Tractor (ANT).

"We use drones and other aerial images to build a map and create field boundaries," says Jessie Klein, BOPA. "Once that's set up, we use the ANT to do work. At this point, we're focusing on using it for precision weed control. One ANT can do the work of a 10-person weeding crew or easily tow an F-150 truck."

Klein explains that the ANT can be used solo in a field or as part of a fleet.

"They're swarm-ready," she says. "The idea is to have several working in a field, so if one goes down, the others can continue working."

Now in its second generation, the ANT is a 4-WD, zero-radius turning, battery-powered mini workhorse. The body is 3 ft. wide by 5 ft. long and stands 30 in. tall. It weighs about 250 lbs., including the 40-lb. battery. Arms on the four-wheel posts pivot at the body with electric actuators, giving the ANT a track width of 14 to 44 in. Standard wheels provide up to a 20-in. clearance. Brackets on the body allow the arms to be mounted lower if desired.

The ANT also uses electric actuators on the rear to raise and lower a toolbar with a linear rail. Tools such as sweeps of various types can be mounted to the rail, positioned to the left or right, and then held in position for autonomous cultivation. Depth can be adjusted with the toolbar actuators.

Equipped with an onboard camera and computer vision, the ANT can carry out in-row precision cultivation.

"We've developed a proprietary AI system to identify weeds in a particular crop, such as a vine in sugar beets," explains Klein.

The ANT's precision weeding tool is reminiscent of an extrusion blender. A multi-element head that spins at 20,000 rpm is mounted to an electric motor, which in turn is mounted to an arm attached to the toolbar. Operating in tandem with the computer vision, it can move in and out of the row to remove weeds, while leaving the crop untouched. It can also be raised above or lowered into the soil.

"It can take out a 1-in. weed stalk without a problem," says Klein. "It can go deep into the soil or be used at the surface in no-till fields."

The current version of the ANT comes equipped with a 40-lb. battery that can be recharged in 2 1/2 hrs. with a fast charger or 6 hrs. with solar power. An 80-lb. battery is available for longer run times.

At a mid-June field day, BOPA co-founder Sarah Hinkley described how the ANT is being used.

"Equipped with the 40-lb. battery, it can mechanically cultivate for 16 hrs. or tow a 6,000-lb. load for 24 hrs.," she says. "Equipped for precision in-row cultivation, it has a 6-hr. run time."

The ANT has a top speed of 5 mph when moving around the field, towing a trailer or in light cultivation. Hinkley notes that the precision cultivation unit's speed slows based on plant density.

"It can cover 4 to 6 acres a day in light to mid-density plants when focused on the smart zone area (crop row width)," she says. "In high density, that can drop to 3 acres per day."

BOPA is field-testing the ANT on farms, working in fields of carrots, black-eyed peas, sweet potatoes, watermelons, pumpkins and more. In some cases, it's doing much more than simple cultivation or even precision weed removal.

"Participating farmers are developing their own tools to use with the ANT, including a carrot harvester attached to the linear actuators," says Hinkley. "We adjust our software to work with them."

She notes that the design of the ANT makes it easy to mount e-mowers, edgers and other tools. BOPA is also developing its own attachments.

"We hope to get a triple-row boom developed by 2026," says Hinkley. "It'll have one section mounted to the actuators on the rear and two pop-out side booms with guide wheels."

To introduce the ANT to farmers, the company will bring in a fleet for a field demonstration for $55 to $60 per acre.

ANTs are available directly from BOPA at $17,000 to $25,000. The $17,000 base is for simple autonomous or remote-control work, such as towing or cultivation. The price increases with the addition of a camera and computer vision. Other options include larger wheels for more clearance. Alternative length linear rails are also available for wider crops.

Contact: FARM SHOW Followup, Barn Owl Precision Ag, 220 Santa Fe Ave., La Junta, Colo. 81050 (info@barnowlag.com; www.barnowlag.com).

Excavator comes with a Bluetooth-connected radio, USB charging ports, and a redesigned cab layout, providing a less obstructed view from the seat.

Compact Excavator Features New Upgrades

The new Kubota KX040-5 excavator was designed for landscaping, construction, rental and utility customers.

A 40.3-hp diesel engine powers the KX040-5. It can reach a digging depth of just over 11 ft. with a bucket breakout force of 9.397 lbs. An improved hydraulic system increases flow rates, while load-sensing hydraulics allow more efficient multitasking and increased productivity.

"Kubota keeps the operator and the service personnel front of mind when designing a new machine or upgrading an already proven workhorse," says Kubota construction equipment product manager Bill Holton.

"For the KX040-5, we've included some creature comforts that keep the operator comfortable while on the job, like an adjustable high back seat, additional leg room, and changeable wrist rests. We've also added an auto-idle and engine auto-stop to deliver fuel savings over time. Additionally, a programmable work light timer provides illuminated coverage in low-light conditions for up to 2 minutes after the machine is shut down."

The KX040-5 features a Bluetooth-connected radio, USB charging ports, and a redesigned cab layout, providing a less obstructed view from the seat. Lower operator noise levels and full climate controls help keep fatigue at bay, while Kubota telematics remain a standard feature on all machines in the compact construction line. Additionally, the new unit sports a password-protected keyless start.

While the excavator has a host of built-in standard features, options include a variety of buckets ranging from 12 in. to 39 in. in width.

"A hydraulic thumb and a travel alarm are possible extras for improved on-the-job service," Holton says. "A straight, angle or 6-way backfill blade, each with float operation, effortlessly moves material. An optional rearview camera, with full color display, provides a view behind the machine at the press of a button."

The KX040-5 is manufactured in Japan and is available throughout North America. Holton recommends interested parties contact their local Kubota dealer for competitive pricing details.

Contact: FARM SHOW Followup, Kubota Tractor Corporation, 1000 Kubota Dr., Grapevine, Texas 76051 (ph 888-458-2682; www.kubotausa.com).

Black Soldier Fly Processing Plant To Be Built In The U.S.

Innovafeed's Decatur, Ill., pilot plant is using black soldier flies (BSF) to turn small amounts of a corn processing co-product into backyard chicken treats. With the help of an $11.8 million grant from the USDA, the company plans to supersize production. A facility under design in partnership with ADM will produce 60,000 metric tons of insect protein for animal and pet food, 20,000 metric tons of oil for poultry and swine rations and 400,000 metric tons of fertilizer.

"We broke ground for our pilot facility in 2023 and completed the construction within 10 months," says Maye Walraven, Innovafeed. "The pilot site has been operational since the end of 2023."

Innovafeed (Vol. 46, No. 4) introduced its BSF technology in France, where it operates two industrial plants, one of which is significantly expanding. It's adjacent to a wheat processing plant and a biomass plant at Nesle and uses wheat bran and ethanol byproducts as BSF feedstock.

The U.S. plant will be built adjacent to ADM's corn processing wet mill plant. Feedstock will be transferred via pipeline, and the Innovafeed plant will use recovered waste heat from ADM in its process. It'll have the capability of using 300,000 tons of byproduct.

Walraven indicates the pilot plant research will help determine the final design of the U.S. commercial facility. Pilot plant research will also explore the incorporation of other feedstocks for specific rations. Operating it helped identify differences in density and viscosity between the wheat and corn coproducts and needed design changes.

U.S. plant will be built adjacent to partner ADM's corn processing wet mill plant.

"Our Nesle facility expansion is still ramping up," says Walraven. "Once it's running at full scale, we'll begin constructing the U.S. plant, likely sometime in 2026."

The pilot plant currently produces about 110 lbs. of dried larvae a week. It's marketed as a treat for backyard chickens and sold through Decatur area hardware stores. The company has announced partnerships with two U.S. pet food brands and is exploring other markets.

The USDA grant was made under the Fertilizer Production Expansion Program. Frass (manure) produced by the BSF contains nitrogen, phosphorus and potassium. It's considered a soil amendment, improving soil health with its slow-release nutrients. Added benefits include the ability to store carbon and increase organic matter in the soil.

Contact: FARM SHOW Followup, Innovafeed, 3130 N. Brush College Rd., Decatur, Ill. 62521 (sales@innovafeed.com; www.innovafeed.com/en).

USDA grant was made under the Fertilizer Production Expansion Program. Frass (manure) produced by the BSF contains nitrogen, phosphorus and potassium.