Drone "Swarms" Seed Or Sprays Fields Fast

Drones can be equipped with a liquid tank and spray boom, or a dry spreader.

Looking for a new venture with sky-high potential? Independent contractors using the Rantizo drone application system tripled their income potential after the FAA recently approved Rantizo drone swarms. With a drone swarm, a single operator can now charge $450 per hour with 3 drones.

The $7.5 million in new funding the company received in early December will likely provide contractors another boost. Rantizo plans to expand into new markets, make new hires, and ramp up research and development.

"We are the only ones who have swarm approval," says Michael Ott, Rantizo. "With the new investment, we are excited about these new opportunities and building quickly to capture them."

Rantizo's software platform and hardware use existing aerial imagery to identify problems and deliver precise field solutions. While drone use has been a hot topic in agriculture for years, the requirement of one licensed pilot per drone limited productivity.

An individual DJI Agras MG-1P drone used by a Rantizo application services contractor can cover about an acre per flight or 14 acres an hour in 20-ft. swaths. With swarming, Rantizo contractors can cover more acres in a day, which can be vital to growers facing limited application windows.

With drones equipped with a liquid tank and spray boom or a dry spreader, contractors can deliver crop protection products, nutrients, or seed to the spots that need it.

"We can go into a field with 80 percent weed control, but with herbicide resistant Palmer amaranth and spot spray just it," says Ott. "This year was dry, but in 2019 there were wet spots in fields left unplanted. We were able to spread cover crops in them without disturbing the remainder of the field."

The autonomous drones need minimal management. Flight paths and spot applications are mapped prior to field entry. The drones are equipped with terrain and collision avoidance. The main activities for the pilot are field entry, swapping out batteries every 2 to 3 flights, and reloading the application system.

"Currently reloading is a manual activity," says Ott. "Very soon, we will have an autonomous loading system. Our goal is to reduce time on the ground from 2 min. to 30 sec. That will significantly improve productivity."

The FAA recently approved Rantizo drones to be used in "swarms", allowing contractors to cover many more acres at a time.

He adds that the big advantage to autonomous reloading is being able to change up the batch automatically. Each batch can be designed specifically for the next area to be treated, whether with different herbicides, micronutrients or seeds.

Rantizo has nearly 30 contractors across the country, with at least one in each of the Midwestern states, as well as Oregon, California and as far east as Pennsylvania. Contractors purchase drones and collateral equipment from the company, such as liquid and dry applicators, batteries and a multi-battery charger. They also receive help getting appropriate federal operating licenses and state permits.

In addition, contractors qualify for a 2-day training program developed by Rantizo. An annual $3,500 per year support services fee provides contractors with ongoing technical and business support, including marketing and billing support and insurance coverage.

Ott has found that most states welcome Rantizo's services and want to make drone application work. "Michigan had banned drone spraying," he says. "However, once they learned about our program, it did everything they needed, and it was approved."

The base price for a drone offered by Rantizo is $14,500. Upgrades like the spray kit or dry spreader are extra. While individual components can be purchased, service contractors tend to buy turnkey packages.

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Triple-Wide Toolbar Cuts Hay Fast

Triple Cutter Toolbar can carry 16 to 18-ft. New Holland HS sickle heads, or 16-ft. MacDon R85 disc heads. One head is mounted on front of tractor, producing a combined cutting width of 40 to 54 ft.

PhiBer Manufacturing in Manitoba has launched a Triple Cutter Toolbar that can carry 16 to 18-ft. New Holland HS sickle headers or 16-ft. MacDon R85 disc heads. One head is mounted on front of the tractor and the other two are pulled behind, producing a combined single-pass cutting width from 40 to 54 ft.

PhiBer says their sickle system can cut 40 or more acres an hour and the disc cutter can roll through 50 to 60 acres an hour. The mowers put down three separate windrows that can then be merged into a single large row for chopping or baling. Each head can be lifted independently, adjusted or turned from the cab. The angle of each head can be customized, and those with the MacDon system can also adjust disc speed from the tractor seat.

The toolbar holding the two rear heads automatically folds and adjusts vertically to trail directly behind the tractor for safe road transport.

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Large Drone Used To Seed Cover Crops

Tom Leitgen, a longtime engineer with farming roots, believes there's no better time than now to use drone technology for seeding.

Leitgen developed the AeroSeeder drone as a more efficient, less expensive solution to seed cover crops on his northeast Iowa farm. After testing the product on local farms with positive results, Leitgen is ready for the drone to hit the market.

"Our family has always been big into conservation efforts," Leitgen says. His father Tom started seeding cover crops into standing corn and beans several years ago. Leitgen says around 2014 his father came to him with the idea that they should start seeding cover crops with a drone. He thought about the idea while his engineering work took him overseas, then returned to the family farm in 2016 to design a drone seeder. He used his experience as a model airplane pilot to formulate a plan for the seeding drone.

"The basic design for the drone wasn't all that complicated. However, there was a steep learning curve," Leitgen says. His AeroSeeder is 65 in. dia., 55 in. long, and can travel up to 22 mph. It can carry 25 to 30 lbs. of payload and drop about 10 to 20 lbs. of seed per acre. The drone is controlled by GPS positioning, which allows precision accuracy while flying and seeding. It can seed up to 100 acres in 8 hrs. at variable seeding rates. Sensors on the drone allow it to adapt to altitude and terrain.

Leitgan says each seeding flight takes about 4 min. "We fill it up with seed, then send it out to drop its load. We bring it back when it's empty, refill it and launch it again," Leitgen says. "We're doing short, very powerful, push-to-the-limit kinds of flights. That can wear on a machine. So, the process of building a robust drone that can withstand all the rigors and continuous, hard operation can be difficult."

After passing local field tests, Leitgen says the AeroSeeder functioned well on farms in New Zealand and Germany. He's currently offering a pre-production drone for about $10,000, which doesn't include batteries and chargers, which can add about $3,000 to $4,000 to the final price. "For someone with drone experience, we think this package will perform well," Leitgen says. "There definitely are cost savings, especially compared to using a crop duster, which requires a pilot, a small crew, air time, fuel and other expenses."

Leitgen says other advantages with drone seeding include no damage to existing crops by driving through them and definitely no compaction. "There's a low labor requirement, and seeding can be done when soil conditions are less than ideal for ground machines."

AeroSeeder drone is 65 in. in diameter. Controlled by GPS positioning, it can seed up to 100 acres in 8 hrs.

Leitgen used one drone and one or two assistants in 2019 when he seeded about 430 acres near his farm. In 2020 he seeded about 630 acres with the same assistance. He uses a mix of winter rye, annual rye grass, turnips, radishes and other seeds. He says the drone can spread most seeds, including cereal rye.

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