System adapts to a wide range of water sources, including lagoons and reservoirs.

Autonomous Irrigation Expands Farm Options

360 RAIN is designed for row-crop and specialty-crop growers, as well as livestock producers. It stands out as an adaptive application machine that autonomously delivers water, nutrients, manure and other liquid inputs, either banded or broadcast. Even fields with irregular shapes and corners are no problem for 360 RAIN.

The 3-wheeled, diesel-electric hybrid machine is tall enough to navigate full-canopy crops. It operates autonomously, laying out and retrieving up to 3,000 ft of 3-in. hose while following GPS-guided paths. Each component connects to a riser at the water source. A base station runs on standard 110-volt AC power and is pre-wired for communications and control, connecting to the unit via GPS and cellular networks. Farmers can integrate multiple sensors and relays for wells, pumps and injector systems to ensure smooth operation.

To apply manure or nutrients, the optional 360 Injection Skid blends and meters liquid inputs, offering variable rates via the 360 RAIN app. The system adapts to a wide range of water sources, including lagoons and reservoirs, and requires 200 to 250 gpm at about 115 psi. Liquids can be blended simultaneously, with variable-frequency drives (VFDs) controlling pump speed and application rates. The system includes components for water boosting, manure delivery and fertilizer injection. If needed, booster pumps can be added to meet pressure demands.

Using the smartphone app, farmers can manage and monitor their operations remotely, 24/7, making it convenient, efficient and sustainable.

"The 360 RAIN path planning begins at the planter," says 360 RAIN's Eastern North America Sales Manager Loren Weaver. "A GPS receiver mounted on the planter records every pass across the field, and this data is used to generate the paths and obstacles to guide the machine's autonomous navigation. A dedicated RTK GPS receiver on the unit communicates with a base station near the field, allowing it to follow the created paths."

Farmers start 360 RAIN from the app. It drives between crop rows, laying and retrieving hose along backbone paths. Separate front and rear booms automatically switch manifolds based on direction, ensuring water is always applied behind the wheels.

"One machine covers around 200 acres (give or take, depending on multiple factors), running at an average flow rate of 150 to 200 gpm," Weaver says. "It runs autonomously, 24/7, with the farmer monitoring and adjusting everything remotely via the app, including speed, application rate, liquid system settings, engine performance, fuel level and individual drive motor amp draw."

What sets 360 RAIN apart is its ability to efficiently "spoon-feed" resources directly to the root zone. For row crops, a banded drop applies water and nutrients directly over the root zone, doubling the benefit compared to broadcast methods while minimizing evaporation and nutrient loss. For crops like wheat and alfalfa, a flat-fan drop provides broader coverage, while custom drops serve specialty crops such as potatoes and onions.

"This banding approach means the plant effectively sees two times the benefit compared to a broadcast application, because the water and nutrients are concentrated right where uptake occurs," Weaver says. "It also eliminates the evaporation losses common in overhead pivot systems and significantly reduces nutrient leaching, volatilization and runoff."

The 360 RAIN is more than a drought mitigation solution. It tackles perennial farming headaches: labor shortages, manure pit management, rising input costs, and maximizing the value of overhead irrigation. Livestock producers can empty manure pits in-season, and crop growers can boost efficiency and yield potential with more targeted input applications.

With continuous, autonomous operation of up to 600 hr per fill, farmers gain valuable time to focus on other aspects of their business or family life. The system also includes a variable-rate feature in beta, allowing farmers to fine-tune input delivery via prescription map zones.

Currently, 360 RAIN sells about 200 units annually in more than 10 countries.

"Nothing else out there does autonomous, full-field coverage with multi-input capability all in one machine," Weaver says.

Pricing varies by setup, but a local dealer can quickly map a field and provide a customized quote.

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DroneDog's capabilities fit well in orchards, vineyards and other high-value operations in both widespread and remote areas.

Robotic Watchdog Brings Security To Modern Agriculture

Agriculture has embraced many forms of autonomy, including GPS-guided tractors that plant with remarkable precision, drones that monitor crops and apply inputs, and equipment that delivers smarter, faster and more data-driven harvesting. Now, autonomous security is stepping into the future with Asylon Robotics' DroneDog.

"Robotic security is the logical next step to protect high-value equipment, sophisticated production systems, infrastructure, animals and vulnerable crops," says Asylon Robotics' Vice President Kurt George. "We believe it's a perfect way to extend autonomous advancement in the agricultural industry."

The appeal of DroneDog and its technology isn't that it looks futuristic, but that it fills a gap left by traditional systems. Static cameras only see forward. Human guards are costly, limited by fatigue, and not always eager to investigate a suspicious alert in harsh weather at 3 a.m.

The mobile quadruped DroneDog features optical and thermal cameras, along with optional components such as gas detection, all on a platform that moves, adapts and responds. With two-way audio and encrypted recording, it documents incidents, warns intruders, and creates a record useful for insurance claims or post-incident review.

"There are no blind spots with the DroneDog," George says. "It's constantly gathering information for whenever it might be needed."

DroneDog's capabilities fit well in orchards, vineyards and other high-value operations in widespread or remote areas that face outsized economic risk, including trespassing, vandalism, theft and even fire. In wildfire-prone regions, the robot's thermal imaging detects hotspots or drifting embers before they become catastrophic. In an era when response time can mean the difference between a close call and a devastating loss, early detection matters.

To remain patrol-ready, DroneDog recharges in its DogHouse, a dedicated docking station powered by standard 120-volt power or solar energy. The unit uses LTE connectivity rather than a complex fixed network. With a patrol speed of just over 3 mph, it runs for about 90 min before returning to its charging station. Multiple DogHouses can be daisy-chained for extra-large properties.

Mobility is another key advantage. DroneDog can climb grades up to 37.5 degrees, even in snow and ice, and move easily through mud, dirt or gravel.

"That's why it's a quadruped instead of on wheels, so it doesn't get stuck," George says. "It can go up and down stairs and even climb over large rocks or other obstructions."

DroneDog can patrol autonomously or be operated remotely from Asylon Robotics' security operations center in Pennsylvania. Routes are initially mapped using satellite imagery, then refined on-site as staff walk the robot through the property. Once learned, the routes become part of a standard operating procedure and can be repeated without a human escort, though operators continuously monitor the live video feed.

If something unusual occurs, an operator can take manual control, investigate, issue warnings via two-way audio (such as "Are you hurt?" "Are you lost?" or "Are you aware that we've called the police?"), and decide whether to contact the property owner, emergency responders or law enforcement.

Just as important, George explains that robotic patrols needn't be framed as a replacement for people. They can complement human security by handling the dull, dirty and potentially dangerous parts of the job.

Asylon Robotics offers its services worldwide under an annual contract, providing security at roughly $30 per route, with each route typically lasting about 1 hr.

"We offer the service as X number of patrols per day, and 24/7 ready alert monitoring in the background, all-inclusive," George says.

What makes this concept worth watching is where it may go next.

"As machine learning improves, the DroneDog robotic patrol system will begin to identify threats, not requiring 100% human identification," George states. "It'll soon distinguish between routine activity and real threats, between species of wandering animals, intruder variations, vehicle models, or the first signs of a fire. These capabilities will make them more than remote-controlled cameras on legs, allowing them to respond and react accordingly."

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