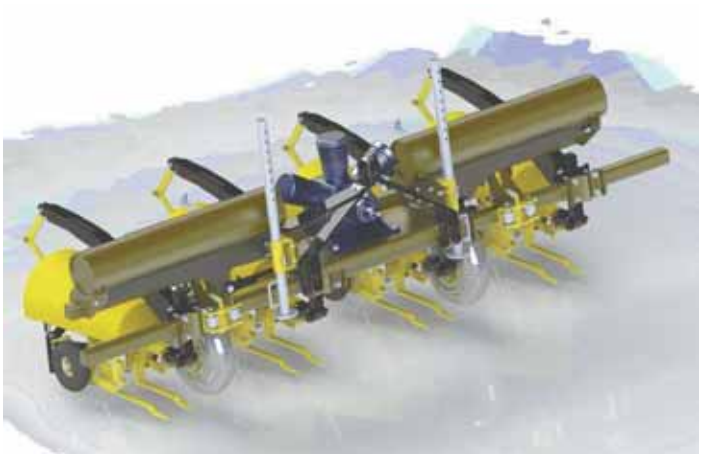
Andy Lysaght's inter-plant weeder eliminates hand weeding in high-value, precision-placed crops. It requires no computers, circuit boards or programming.



Mechanical hoes and sensing fingers on in-row weeder are activated by air pressure from a pto-driven compressor.

All-Mechanical In-Row Weeder Cleans Rows Fast

Andy Lysaght has an inter-plant weeder that eliminates hand weeding in high-value, precision placed crops. However, unlike other mechanized or robotic in-row weeders, the "Andweeder" requires no computers, circuit boards or programming.

"Adjustment requires only a wrench," says Lysaght, Plant Detection Systems, Ltd. "The units are not computerized. The sensing is all done by touch, which triggers the hoes."

The prototype Andweeder consists of individual row units with mechanical hoes and sensing fingers. As the unit passes a plant, the sensor activates hoes to either side. The hoes flash back and forth stirring the dirt until the sensors touch the next plant.

"We have successfully weeded between the plants in rows of 20-in. tall field corn and 12-in. tall and 16-in. wide squash," says Lysaght. "The machine can identify individual plants, even when there is a full canopy. That's something that infrared vision systems cannot do as far as I'm aware."

The Andweeder can work in rows as narrow as 16 in., but work is being done to get row spacings down to 12 in. or less. The minimum distance between plants is 4 in.

"We can travel at approximately 0.6 mph with 4-in. spacings and approximately 3 mph with 20-in. spacings," says Lysaght. The top speed is a little over 3.3 mph.

The hoes are activated by compressed air at a maximum speed of 3 times per second per unit. Plant spacing within the row determines maximum travel speed.

Initially the prototype had its own engine for powering the compressor. A more recent generation uses a pto-driven compressor. The prototype has 3 units on a toolbar, each unit protected by a cowling.

Developed initially for cultivating squash, the Andweeder is now being tested on a variety of other plants. Lysaght estimates a sale price of around $75,000 for a 3-row unit. It requires a second operator to adjust the unit side to side hydraulically to match variations in row width.

"Side shift can be automated using GPS or infrared detectors if desired," says Lysaght. "We'll leave choice of that technology to the customer, so he can go with what he is comfortable with."

You can see the Andweeder in action at www.farmshow.com.

Contact: FARM SHOW Followup, Andweeder, P.O. Box 2032, Stortford Lodge, Hastings 4153, New Zealand (andylysaght@xtra.co.nz; www.plantdetectionsystems.com).

Compressed CO_2 "Works Better Than Air"

Whether using an impact wrench or just filling tires, a 10-lb., 1.8-gal. Power Tank filled with CO_2 equals the useable air in forty 10-gal. air tanks. Steve Sasaki says his Power Tanks are the perfect answer for adjusting air pressure or making repairs out in the field.

"When I started 4-wheeling in 2007, I learned about the advantages of raising and lowering air pressure depending on what you're doing," says Sasaki. "I could buy a compressor for under the hood or one that ran off the battery. I didn't like either, so I came up with my own system."

Sasaki's Power Tank system makes use of the fact that CO_2 is significantly different from air. It will pressurize to a liquid at normal temperatures at a pressure of 870 psi at 75 degrees.

"CO_2 is more dense than air and continues to generate head pressure even when the amount of liquid is near bottom," says Sasaki. "It stays at 870 psi until it's all gone."

Developing the Power Tank required developing a special regulator unlike those used in welding or for other purposes. It's designed to release CO_2 vapor without "freeze clogging" or damage to components from sub-freezing temperatures. It also offers high flow, as much as 40 cfm. This means that downstream components have to be high pressure as well.

"I can run a 1/2-in. impact wrench off my 1/4-in. braided hose," says Sasaki. "We have a much higher push pressure than an air compressor tank does."

Sasaki says getting refills is easy. He suggests taking tanks to fire extinguisher stores, welding suppliers and others. The tanks do not have a meter on them indicating remaining CO_2, notes Sasaki.

"A 10-lb. tank will refill between 16 and 20 tires," he says. "You can weigh the tank occasionally or just keep track of how you are using it."

Power Tank pressurizes CO_2 to a liquid. Works great for adjusting air pressure or making repairs in the field.

Power Tank offers 4 levels of air systems, all featuring SuperFlow regulators. Depending on the level, regulator flow can range as high as 400 psi. Models include a 20-oz., 2 1/2, 5, 10, 15 and 20-lb. tanks. The size indicates how much CO_2 it can hold when filled. Power Tanks start at $149.95 for the 20-oz. Power Shot. A 20-lb. Power Tank is priced at $429. The best selling Power Tank is the 10-lb. system. The base price for it is $389.95.

Contact: FARM SHOW Followup, Power Tank, 43 Commerce St., Unit 103, Lodi, Calif. 95240 (ph 209 366-2163; www.powertank.com).

Create A Farm-Wide Wireless Network

You can stop paying for data plans for each wireless device you use on your farm or ranch, says Bill Moffitt, president of Ayrstone Productivity. With his "whole farm" network system, it's possible to connect up to 9 1/2 miles away by setting up a series of 3 high-powered Wi-Fi boosters and a receiver. Even better, it's possible to transfer real time data from devices in tractors, combines and other equipment with the company's Cab Hub introduced this year.

The Ayrstone system is specifically designed for the open spaces and larger distances in rural areas. The main hub is hard-wired with an Ethernet cable to a router mounted vertically outdoors and up high (recommended 20 to 25 ft. above the terrain) with clear line-of-sight.

A single Hub blasts a half-mile of WiFi and, with meshing technology additional, Hubs can increase that range several times, according to Ayrstone. The Hubs are made out of UV-stabilized plastic and rated for -4 to 158 degrees Fahrenheit. The Hubs require an electrical connection, and up to 3 can be connected in a line for 7 1/2 miles of coverage. That can be extended another 2 miles with a receiver, Moffitt says. Receivers also bring the network connection inside buildings made of metal, stone or concrete that typically stop Wi-Fi.

The actual range to connect to a Hub varies with devices - from 200 to 300 yards for a Smartphone to 1,000 yards for a laptop. Customers often use the Hubs to provide access in workshops or remote cameras or to remotely control operations.

"One of our testers in Iowa built his own grain dryer controller. The grain dryer is 2 1/2 miles from his house so he has a Hub on his house and a Hub on the grain dryer. He can control the dryer when he is at home," Moffitt says. "He has 5 Hubs on his farm, and he's now testing the Cab Hub during harvest to collect data as he goes."

"Whole farm" network system makes it possible to connect as far as 9 1/2 miles away, by setting up a series of 3 high-powered Wi-Fi boosters and a receiver.

The Cab Hub is powered through the accessory power outlet (with a magnet-mounted antenna) and makes it easy to transfer data. No more manually moving it via a USB drive or paying for a data plan to do it, Moffitt notes.

Cost to set up a farm wireless network varies according to the area covered. Each Hub is $375. Receivers cost $190; and the Cab Hub is $500. Even without technology experience, customers with basic mechanical skills can easily install the system.

"There are situations it won't work," Moffitt says. "We can't predict farm conditions, big trees, or nearby radar systems. So we have a 90-day money back guarantee."

Moffitt points out that while all kinds of customers have found interesting uses for the Ayrstone system, it's really designed for rural areas.

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