

Electric Sensors Designed To Boost Crop Yields

Farmer-inventor David Lankford has spent nearly 50 years raising vegetables and crops. For the last 2 decades he's been conducting research to better understand nutrient and water uptake by growing plants. One of the ideas Lankford advocates is the concept of just-in-time water management. It's a concept he compares to just-in-time inventory management in manufacturing, where the supply of parts or ingredients arrives precisely when needed.

Lankford says every irrigated farmer he's met over the years could benefit from more timely application of water and fertilizer. Tests at Clemson University have shown that water applied 2 times a week rather than once on watermelons produced better yields.

Other crops have shown similar results when water and nutrients are portioned according to the plant's needs rather than what's convenient for the irrigator.

Lankford says supplying water and nutrients to plants isn't any different than quenching a child's desire for a drink. When a kid is thirsty, he's thirsty, and he can't wait till you think he might be ready. Likewise, when a plant needs water, it's usually under stress, and eliminating that stress quickly is vitally important. A plant that isn't stressed is operating at peak efficiency and reaching its true potential.

Lankford and his son Lance have developed a probe system to determine when growing plants ideally need water and nutrients. The

probes, which cost \$2,500 to \$3,000 each, are placed into the soil in white plastic tubing. Sensors on the probes detect plant response across various soil types, various levels of moisture content, and fertility levels at various stages of plant growth.

Lankford says corn growers used to use 1 lb. of nitrogen as a rule of thumb to produce 1 bushel of corn. That number is now actually closer to .67 lbs. per bushel, which has been determined by several types of research, including Lankford's.

Contact: FARM SHOW Followup, Agrimeasures, LLC, 29120 Farms Lane, Trappe, Md. 21673 (ph 410 200-0988).



Electronic sensors on probe detect plant response across various soil types, moisture, and fertility levels, at various stages of plant growth.

Home-Built Chicken Feeder Holds 150 Pounds Of Feed

Caleb Howerton, owner of Green Thicket Farm in Springfield, Mo., is always looking for ways to make farm chores more efficient. When he had an upcoming vacation planned, he decided to make a bulk chicken feeder for the farm's flock of 100 laying hens to make chores easier on the farm sitter. The finished feeder holds 150 lbs. of feed, enough for several days.

The materials Caleb used to build the feeder were all things he had handy in the farm scrap pile: an aluminum shelving unit, corrugated barn tin, and some 1 by 6 boards. He disassembled the shelving unit and restructured it to create the main hopper. Using the 1 by 6's, he made a base that was 6 in. wider than the feed box to create a tray for the feed. He added a 2-in. lip onto the tray to prevent feed from spilling out onto the ground.

Next, he took the uprights from the shelving unit and bent them into semi-circles, and attached tin to the uprights with self-tapping screws to create a cover for the feed hopper. The feed hopper was then screwed to the base. Using a large hinge, the cover was attached to the top of the box, and two spring latches were attached to the front and the back of the cover – one latch is used to keep the feeder closed, and the other latch is to keep the cover open when refilling or cleaning the feeder. Finally, Caleb drilled



Bulk chicken feeder holds 150 lbs. of feed, enough to keep Howerton's flock of 100 laying hens going for several days.

three 1-in. holes into each side of the base to allow the feed to trickle out for the chickens.

Contact: FARM SHOW Followup, Caleb Howerton, Green Thicket Farm, 1008 E Farm Rd. 54, Springfield, Mo. 65803.

Flushing Device Cleans Irrigation Pipes

Riggs Irrigation of Kansas has developed an automatic flushing device that cleans irrigation pipes at the beginning and end of every watering cycle. EndFlush is automatically activated and keeps pipes free of debris that can cause plugged sprinkler heads, irregular sprinkler patterns, and even structural failure.

Riggs says EndFlush is the only device that prevents buildup of sand and rust inside pipes.

EndFlush easily installs on any ag sprinkler system that has end pressure of 10 psi or more. Riggs says the device eliminates the need to manually open a valve or dump a sandtrap to clean a pipe. EndFlush is a patented product, made in the USA, that also eliminates lost time due to irrigation pipe malfunctions. The device easily flushes rust flakes as large as a quarter.

The EndFlush 3 for pipes with 15 PSI or more and the EndFlush 4 for low pressure, low gallon 10 PSI pressure both sell for \$378.84 plus shipping direct from Riggs Irrigation.



EndFlush automatic flushing device cleans center pivot irrigation pipes at the beginning and end of each watering cycle.

Contact: FARM SHOW Followup, Riggs Irrigation LLC, 405 W Sumner, Luka, Kansas 67066 (ph 620 546-2527; www.riggsirrigation.com).



Andrew Salisbury's home-built mini dump truck is sized to handle several scoops from his compact Kubota loader tractor.

Mini Dump Truck Handy For Everyday Jobs

Andrew Salisbury sized his mini-dump truck to his compact tractor loader. The 4 by 5-ft. bed with 1-ft. sides can handle several scoops from his small Kubota's loader.

"I've used it to move a lot of dirt, including a remodeling of a 2-car garage into a house addition," says Salisbury. "I excavated for a basement and hauled all the dirt with the mini-dump. I also use it every year to haul firewood. It's really handy."

Salisbury fabricated the main frame from mostly 4-in., 1/4-in. thick channel iron. He used 1/4-in. thick, 2 by 4-in. rectangular tubing for the front axles. The driver's deck, fenders and control panel were made with 1/16-in. thick steel plate with 2 by 2-in. square tubing as an underframe.

He mounted a 16 hp Honda-clone engine at the rear of the frame. Power is delivered to the transaxle via a torque converter system common to snowmobiles with a clutch and drive pulley.

The transaxle has a 1,500-lb. working capacity and is rated for a 20 hp. engine. It came with hydraulic drum brakes and forward, reverse and neutral built into it. Salisbury ordered it from Surplus Center.

"It works great," he says. "I only wish I had ordered two as they no longer carry it."

He used 11-in. rack and pinion steering with spindles from an old go-cart. While not as heavy as he would like, they've done the job, as has the go-cart shocks on the front. They stabilize the front end and reduce sway.

Leaf springs provide suspension on the rear. They are rated for 2,250 lbs, more than enough without being too stiff. The front axle is designed to pivot in the center for a smoother ride on rough terrain.

The dump box is framed with 3/8-in., 1 1/2-



Power is supplied by a 16 hp Honda-clone engine mounted on back of truck frame.

in. angle iron and lined with 1/8-in. steel. It is hinged to the back of the frame with hardened bolts.

"The box doesn't haul enough weight to need lubrication," says Salisbury.

The lift for the box is provided by a cylinder, pump and tank purchased from Tractor Supply. Salisbury used a log splitter valve for a dump valve and powers the pump with a 5 hp electric start engine, also recycled from a go-cart.

Throughout the project, Salisbury looked for the lowest cost component or reused a component he had on hand. The exception was buying his hydraulic cylinder, pump and tank at a local Tractor Supply.

"They were more expensive than I might have found elsewhere, but I could go in and pick out what I needed," he says. "Even with that, I only have about \$3,000 in cost. That was more than I wanted to spend, but it works great and I use it a lot."

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