



Going Green

Award-winning Missouri farm family powers its environmentally friendly system with John Deere engines

The Stephens farm of Malta Bend, Missouri, was recognized this year as one of only two hog farms in the U.S. to be honored with an Environmental Steward award by the National Pork Industry Forum.

When viewed from a Cessna 172 on an early summer day, the David Stephens family farm stands out like an island in a sea of green. A big reason behind the lush growth of corn and soybean crops that surround this Missouri farmstead can be traced to the family's "green" approach to pork production.

The Stephens family raises 190,000 pigs per year near Malta Bend. Those animals produce a lot of manure, but on this farm, it is not a waste product. Instead, a combination of high technology and high horsepower delivers these manure nutrients to adjacent farm fields, recycling the nutrients for use in the subsequent crop. In fact, on the 630 acres (255 hectares) of farmland that surrounds the hog buildings, little commercial fertilizer is ever needed.

Manure is collected in earthen lagoons, where it mixes with water and is held in a dilute state until applied to fields once each year. "We pump the effluent through 7-inch (17-centimeter) diameter hoses, stretching over thousands of feet if necessary to reach the fields where we want to apply the nutrients," Stephens explains. "On a good day, we typically apply around 700,000 gallons (2,649 cubic meters) of effluent, sometimes more. There's no substitute for horsepower when you are handling that kind of volume."

POWERBOAT.

Stephens uses a drag-hose toolbar applicator to inject the effluent into the soil, which provides the maximum benefit to the crop while minimizing odor. The process is based on application equipment from an Iowa company, Puck Custom Enterprises, and it all starts at the lagoon with a unique boat.

A Puck model 4067C lagoon boat, powered by a 280-kW (375-hp) PowerTech Plus 9.0L engine, stirs the contents of the lagoon to provide a uniform flow of nutrients in the effluent being pumped to the field. This remote-controlled boat has three nozzles, two of which control the forward or reverse direction of the boat, and one that steers it left or right. The operator controls all functions from the bank of the lagoon, directing the boat to areas where more stirring action might be needed.

"Our manure management has evolved through the years," Stephens points out. "We now are able to use a GPS system to automatically steer the application tractor, a John Deere 8310R, and we use an Internet connection to allow me to control the pumps and application equipment from the seat of the tractor."

From that seat, Stephens watches seven electronic displays. He can fine-tune any part of the system, from the lagoon boat to the lead pump (a Puck model SP 5069, powered by a 410-kW [550-hp] PowerTech Plus 13.5L engine), or perhaps change the throttle setting on the booster pump that increases field pressure. (That's a Puck 4069, powered by a 280-kW [375-hp] PowerTech Plus 9.0L engine.)

On the display in his tractor cab, Stephens monitors live readouts of inlet and outlet pump pressure, engine rpm, and flow through each pump. He can start, stop, idle, or throttle the engines; he can shut gate valves on the pump units from the cab as well. "I can shut the system down if I see a problem," he adds. "There is always at least one employee available at the field if we need help."

A John Deere GreenStar system not only guides the application tractor, but also maps the application of nutrients. These maps help provide documentation required by various environmental regulations.

The family was recognized at the recent 2015 National Pork Industry Forum as one of only two hog farms in the U.S. to be honored with an Environmental Steward award. "We have been blessed to raise our four children on the farm, where they have seen the true meaning of being an environmental steward," Stephens says. "We continue to maintain and improve our footprint on the environment, and strive to be good stewards of the land."

 Engine distributor: Northstar Power LLC, Ankeny, Iowa, www.northstarpowerllc.com



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