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System waters -- and more

Area farmer's idea conquers heat, runoff

By Chris Anderson

canderson@pantagraph.com

COLFAX -- Larry Durbin looks at his drought-stressed cornfield and sees a pond filled with water lapping at its banks.

Contrary to popular belief, the heat hasn't gotten to the rural Bloomington farmer. At this time next year, Durbin will look out on the pond that will feed a new subirrigation system designed by AgRem LLC at Anchor. The revolutionary design will mean Durbin never has to worry about losing yield to drought stress.

And most importantly, he'll be better able to control water runoff containing valuable nitrogen and phosphorus nutrients -- the driving force behind creation of the system.

Scientists believe runoff of agrichemicals from the Midwest contributes to hypoxia in the Gulf of Mexico. Hypoxia is an oxygen deficiency that can contribute to death of marine life.

"Three things had to come together for this to work. There needed to be machines that could keep a grade of 1/10 of a foot per 100 feet or less. Knife-cut tile now available with barely visible holes doesn't silt in. And we can make highly defined topographic maps," said Bob Meiners of Anchor, owner of AgRem LLC and creator of the patented system.

Meiners has specialized in developing computer software for drainage contractors. He was attending a meeting with some Southern Illinois customers six years ago where Ohio State University "drainage guru" Larry Brown presented his subirrigation research.

Contractors at the meeting said Brown's system could only work on flat soil. And then the system would be doable on a maximum of 40 acres.

"Larry gave me the Ohio State 'bible' on subirrigation. The problem with nitrogen loss is so critical that something had to be done," said Meiners.

So, Meiners developed and patented a software program that allows an 80-acre field to be mapped in 45 minutes. Global positioning system technology takes 6,000 reference points across the field. A map is produced as soon as the surveying ends.

"Without this technology, surveying costs would have been astronomical. In fact, it would have cost about \$1,700 per acre to survey -- the same cost for installing the subirrigation system," said Meiners, noting cost mirrors that of center pivot irrigation systems.

Advanced tiling technology -- Meiners relies on Canadian machinery -- provides the most accurate method of laying 3-inch knife-cut tile every 15 feet. The machines plow a furrow in which to place tile at about 2 feet deep compared to traditional tiling machines that cut a 3- or 4-foot trench.

Mark Miller of Colfax, a partner in Meiners' marketing company AgRem Marketing LLC, said it's important for

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the tiling machines to be able to hold a grade of 1/10th or less. That's because the system relies on gravity to drain water from fields into a holding pond.

Meiners' maps tell the tiling machine where to lay tile and water control gates. A 4-cylinder, 50-horsepower diesel pump can push water from the holding pond back into the crop field when dry soil conditions develop. Additional crop nutrients can also be added through the system.

If the holding pond should overflow because of torrential rains, it drains into a wetland before reaching streams. Durbin's land drains into a stream that eventually flows into the Mackinaw River. Durbin already planted vegetative filter strips along the creek to prevent soil nutrients from running into the creek.

But the subirrigation project caught the attention of The Nature Conservancy, a conservation group Durbin had worked with on another conservation project. The Nature Conservancy along with Ducks Unlimited serve as partners with Durbin to install the wetland, holding pond and tile this fall following harvest.

"It's a win-win situation. It will trap runoff water and keep nitrogen from getting into the stream. And it should help in a drought year. I wish it was in already," said Durbin.

Facts about the system can be found at www.agremmarketing.com.

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