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## Controlling farm runoff could have multiple benefits

by [Mark Steil](#), Minnesota Public Radio

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### AUDIO

 [Controlling farm runoff could have multiple benefits](#) (feature audio)

Tracey, Minn. — A big contributor to the Gulf of Mexico's 'dead zone' is farmland runoff, but a new approach to farmland drainage may help reduce its size.

The problem starts when farm runoff, containing a lot of nitrogen and phosphorus, makes its way to the Mississippi River. When the water reaches the Gulf, the nutrients promote massive algae blooms that consume oxygen when they die.

As a result, the water can no longer sustain life. A recent [report](#) by a team of researchers says the dead zone is about 3,000 square miles.

One part of the solution to the dead zone could be a box-like structure found on the farm of Brian Hicks, near Tracy, in southwest Minnesota.

The box extends more than ten feet into the ground and a large drainage pipe from a nearby corn field enters the bottom of the structure. Sliding boards let Hicks control the amount of runoff coming from the field, which in effect creates just the right size dam.

"We use it to stop the water back in the field to keep it from leaving and going into the drainage ditch," Hicks said.

For most of the year, Hicks holds back as much water as possible. Spring is the exception, when he wants drier soil to support heavy, spring planting equipment. So in early April, he pulls boards from the box, reducing the size of the dam and allowing field water out.



*Brian Hicks*

"It's fun in the spring, to hear the rush of water, it's just whoosh as it's leaving," he said.

But overall, Hicks holds back far more water than he releases. Researchers believe this sort of system could be successful on millions of acres of Minnesota farmland. That would be good for the Gulf of Mexico because it would keep most of the fertilizer used on that land contained in the fields.

University of Minnesota soil scientist Jeff Strock is tracking what's leaving the controlled drainage fields on Brian Hicks' farm.

"We've been able to reduce annual loads of nitrate and phosphate running out of these drainage systems on agriculture lands anywhere from 75 to 80 percent," Strock said.

Strock said, besides those sharp cutbacks, there's another benefit when farmland runoff is controlled. He said holding back water means more moisture is available for crops when summer heat arrives.

That should help boost crop production. At least that's been the finding of researchers in North Carolina, which has a more than a two-decade history of controlled drainage.

The state got started early on the concept because it has to deal with higher rates of farm runoff. Robert Evans of North



*Controlled-drainage box*

Carolina State University said one study shows the practice leads to significant yield boosts.

"The average there has been about 10 percent for soybeans, 9 percent for corn and about 4 percent for wheat," Evans said.

Researchers say there's too little data so far on controlled drainage in Minnesota to know whether those sorts of yield gains will also happen here. But even if the boost is not as dramatic as in North Carolina, the environmental benefits may be enough to convince farmers and government to put money into controlled drainage.

And not just in Minnesota, research is underway on the concept in most states of the upper Midwest. Brad Redlin with the Izaak Walton League said the new approach is promising. He says it's time to change the current practice of free-flowing runoff.

"Anything that we can do to affect that system; control it, delay it to some degree, is going to be a positive thing," Redlin said.



*Jeff Strock*

So far, the impact of the new controlled-drainage systems is minimal. Researchers estimate that only about 1,000 acres of Minnesota's 27 million acres of cropland have it in place.

Southwest Minnesota farmer Brian Hicks said most farmers believe it's a good thing to drain as much water as possible, as fast as possible. He said that attitude may be the biggest obstacle to adopting the new technology.

"It's going to stretch our thinking a little bit, but I think it's very attainable," he said. "It's something that will be good for all of us in the future."

Each field is different, but for many farmers cost may be less of a hurdle. The price of a control box like Brian Hicks uses is under \$2,000. If the expected yield boosts materialize, farmers could recover that money in a few years.

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