

Controlled drainage studied in farmers' field

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HAYFIELD, Minn. -- John Kruger was leery of piloting controlled drainage on his land, but now he's eager to see the study continue.

Leonard Binstock of ADMC asked Kruger to install a pilot site on his land north of Hayfield along Highway 56. The land is flat and outlets to the Ripley Ditch. Binstock told him that farmers need to show society in general that they are trying to solve the problem of nitrate in water before society comes in and tells farmers how to solve the problem.

Kruger mulled Binstock's question and agreed to become a test site. The control structure was installed in spring 2007.

The structure itself costs \$1,100 per unit, Binstock said, and it drains roughly 20 acres. The control structure is a rectangle shaped box that extends from the tile line to several feet above ground. The height of the water table is managed by individual stop logs stacked atop one another.

As the logs are removed, the water table falls. As more logs are added, the water table rises. Last week, all the logs were in and water was running over the top log.

Kruger said he will leave all the logs in until mid-April as the 62 acre field will be planted to soybeans this year.

The field is divided into three plots of land for the study. The controlled drainage plot is 16 to 17 acres and has tile spaced at 35 feet.

The second plot is a little smaller and has 35 foot tile spacing. A third plot has 70 foot tile spacing and is a little larger. Kruger installed tile in 1991 at 70 feet intervals and came back in 1993 and put east and west lines in at 35 foot intervals.

The control structure was installed in the drainage ditch buffer so Kruger didn't lose any cropland and he said having the structure is no extra work for him. It takes longer to drive out to the structure than to take out or put in logs, he said.

"It's a very easy thing to do," Kruger said.

He annually submits data on farming practices, including his tillage, crop variety, chemicals used and yield data. His son takes weekly water samples from the three tile outlets on the property and they are submitted to the Minnesota Department of Agriculture.

The samples are tested for nitrate concentration, said Mark Dittrich, MDA senior planner in conservation drainage. Thus far, samples have shown that the total amount of nitrogen in each sample is the same. However, the amount of water that leaves the system is reduced 15 percent using controlled drainage.

In general, with controlled drainage there is 26 percent to 38 percent less flow, he said. This means less nitrogen in the system.

It also means potentially more water for the crop to use. One of the reasons farmers are interested in this technology is the potential it has to generate more yields and greater return to per acre, Dittrich said.

Farmers also are and want to be good stewards, he said. They understand what it takes to produce a good crop, and they also want to hold the water and soil dear to them so they can continue to farm.

Kruger said he was concerned that the tile line would blow out because of extra pressure, but he was assured there would be no problems and there haven't been.

The controlled drainage site also yielded seven bushels better than the other plot with 35 foot spacing last year, Kruger said, about the same as the site with 70 foot spacing. Kruger learned more about the results of his project, which is funded through a Conservation Innovation Grant, and another site in Dodge County at a meeting earlier this month in Dodge Center.

“I thought it was very interesting,” he said.

Kruger hopes the study continues so he can learn more about the system and Dittrich said there is money to fund research at Kruger's site through June 30.