



IFES 2015: Dead Zones & Drinking Water: Farming's Nutrient Loss Challenge

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This is a presentation summary from the 2015 Illinois Farm Economics Summit (IFES) which occurred December 14-18, 2015. A complete collection of presentations including PowerPoint Slides (PPT) and printable summaries (PDF) are available [here](#).

Farmers in Illinois and much of the Midwestern Corn Belt are facing significant challenges stemming from nutrients that are being lost from their farm fields. These lost nutrients, especially from nitrogen fertilizer, are getting into waterways and causing problems in local drinking water supplies, as well as feeding the hypoxic or dead zone in the Gulf of Mexico.

Each year millions of metric tons of nitrogen are carried down the Mississippi River and into the Gulf of Mexico where they feed algae that live in the Gulf's warm waters. When the algae die they consume oxygen, depleting the water of its supply and chasing out shrimp, fish and other aquatic species. Left behind is a hypoxic or dead zone in the water. In 2014, the National Oceanic and Atmospheric Administration (NOAA) estimated the dead zone to be 5,052 square miles, or about the size of Connecticut.

In March of 2015, the Des Moines Water Works (DMWW) filed suit against three drainage districts in Iowa because of nitrate problems in the Des Moines drinking water supplies. The utility serves 500,000 customers and alleged that nitrates leaching out of farm fields and transported through district drainage tiles constitute a point source of pollution. DMWW has claimed millions in damages due to the cost to remove nitrates from drinking water.

Under the Clean Water Act (CWA), point sources of pollution are regulated. The CWA defines a point source as "any discernible, confined, discrete conveyance" of pollutants, such as pipes. Agricultural storm water discharges have been explicitly defined as nonpoint sources of pollution by the CWA. Nonpoint sources of pollution are not directly regulated by the CWA and are considered exempt. The DMWW lawsuit is a novel legal challenge to agricultural sources of pollution under the CWA, most notably by claiming that water containing nitrates is a point source when it is discharged from district drainage tiles, even if a nonpoint source at the farm field.

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Nutrient losses from farming are a challenge throughout the Mississippi River Basin and have also impacted farmers in the Chesapeake Bay region as well as in the Western Lake Erie Basin around Toledo, Ohio. While not unique, the challenges for Illinois are substantial and the State of Illinois has recently instituted a nutrient loss reduction strategy. The science assessment accompanying that strategy estimates that Illinois farmers lose 440 million pounds of nitrogen each year, much of it from the 9.7 million acres of tile-drained farmland. Illinois agriculture accounts for 82 percent of the total nitrogen contributed by the State of Illinois to the Gulf of Mexico. The strategy seeks a 15 percent reduction in nitrate losses by 2025 and a 45 percent reduction overall.

For farmers, the challenges posed by the nutrient loss reduction strategy are significant but may be eclipsed by the DMWW lawsuit and the precedent it may establish. Farmers apply nutrients to feed growing plants and losing nutrients is a cost to the farmer. Depending on the year (weather), soils and drainage, the science assessment estimated that losses in Illinois were between 26 and 43 pounds of nitrogen per acre, per year. This could be costing farmers between \$11 and \$20 per acre each year.

The nutrient loss reduction strategy wants to encourage farmers to voluntarily adopt various best management practices to reduce nutrient loss and retain those nutrients in the field. Among them are practices such as using nitrification inhibitors, switching to split application and reducing fall applied nitrogen. The strategy also encourages cover crops to scavenge nitrogen during the fallow months, as well as use of wetlands, buffers and bioreactors. These practices can have significant costs to the farmer, as well as add complexity and risk to the farming operation. Conservation programs included in the 2014 Farm Bill can help farmers with the costs and planning, including the Conservation Stewardship Program (CSP) and the Environmental Quality Incentives Program (EQIP). Substantial work is underway to help farmers adopt and manage these practices effectively and use the conservation program assistance that is available, including a new effort under the new Regional Conservation Partnership Program (RCPP) led by the Illinois Corn Growers Association and the University of Illinois.

Additional Resources

The slides for this presentation can be found at:
http://www.farmdoc.illinois.edu/presentations/IFES_2015

Mark David, Gregory McIsaac, Gary Schnitkey, George Czapar and Corey Mitchell, "Science Assessment to Support an Illinois Nutrient Loss Reduction Strategy," University of Illinois at Urbana-Champaign, May 6, 2014 (available at:
http://biogeochemistry.nres.illinois.edu/Biogeochem_lab/Science_documents/Illinois_Science_Assessment_Report_May_6.pdf) (IL Science Assessment).