MONITORING FOR DECISION MAKING
August 27, 2007
Austin, TX

Executive Director
• Leonard Binstock
  – Over 25 Years of Experience in the Drainage Industry
  – Ellingson Drainage
  – Exec. Dir. MN Land Improvement Contractors of America
  – MN Corn Growers Association
  – Born & Raised on MN. Farm
  – Production Agriculture for 24 yrs

Environmental Working Group
  – “The Main Culprit: An annual flood of wasted fertilizer from heavily farmed land, running off into rivers, and finally into the Gulf.”
  – Accounts for more than 70% of N entering the Gulf

University of Maryland – Center for Environmental Science
• The majority of the nitrogen and phosphorus delivered to the Gulf, and nearly all of the spring nitrogen flux, comes from nonpoint sources in the Upper Mississippi and Ohio-Tennessee sub-basins, constituting the tile-drained, corn-soybean landscape of Iowa, Ohio, Illinois, Indiana, and Minnesota.
• Increasing water residence time in drained fields, wetlands, floodplains, and reservoirs would substantially reduce the export of both nitrogen and phosphorus.

MARB River Basin

Hypoxia Zone
Data source: Nancy N. Rabalais, Louisiana Universities Marine Consortium (nd is no data)
The Integrated Assessment reports identified several research needs related to agricultural drainage. Brezonik et al. (1999) emphasized the importance of agricultural drainage in nutrient transport from cropland and identified increased spacing of subsurface drainage tile and controlling water table levels (controlled drainage) among those practices that could potentially reduce nitrate losses from cropland. Mitsch et al. (1999) noted that controlled drainage was not widely practiced in US Corn Belt and that most of the research on controlled drainage had been conducted in more southern climates.

Comments from Richard Swenson
NRCS Clean Water Division

The key strategy for reducing nutrient loads from agricultural non-point sources should be to apply appropriate conservation practices at the point of origin to keep the water clean before it becomes concentrated. This would provide both on-site and off-site benefits and likely be more cost effective than other downstream treatment measures. Assistance should be provided to producers to develop and implement conservation plans that integrate a system of practices to reduce runoff, erosion, and nutrient losses. Key practices could include: cover crops, crop residue management, nutrient management planning to get very specific as to the timing, rates, sources, and methods of application, and drainage water management.

Comments from Jim Fouss
USDA ARS Soil & Water Research Unit

The on-farm drainage water management system should be considered one of the principle methods of reducing nitrate loss from cropland that contributes to the nitrate load in the Mississippi River System. One of its main advantages is that it is an "on-farm" method, and addresses the problem at the "source" and not downstream.

Conservation Innovation Grant

- Total
  - USDA/NRCS $971,790
  - Matching Funds $974,019

Partners/Collaborators

Agricultural Drainage Management Coalition
Agricultural Research Service, Columbus
Iowa State University
Minnesota Department of Agriculture
National Corn Growers Association
National Soil Tilth Laboratory
Purdue University
The Ohio State University
University of Illinois
University of Minnesota
Deliverables

1. 20 paired (DWM vs. conventional drainage) field evaluations of environmental effectiveness and performance of drainage water management in five states.

2. Field evaluations that include as a minimum, the collection of crop yields, profitability of drainage water management, operation timing, climatic conditions, and drainage outflows.


4. Establishment of a communications network to increase awareness and availability of drainage water management data and information.

Automated vs Manual

- Each structure will be outfitted with:
  - Rainfall Sensor
  - Temp/Humidity Sensor
  - Magnetic Flow Meter
  - Electro-conductivity Sensor
  - Two-way Satellite Communications
- Will report on system status, water level, valve position, transmit all data.

Covers Five States

- Iowa
- Illinois
- Indiana
- Minnesota
- Ohio

3 Year Project
C.I.G. Site
Barry, IL

Barry DWM Site

Questions???

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