The Agricultural Drainage Management Systems Task Force

Jane Frankenberger, Purdue University

Science Advisor for Water Quality, NRCS

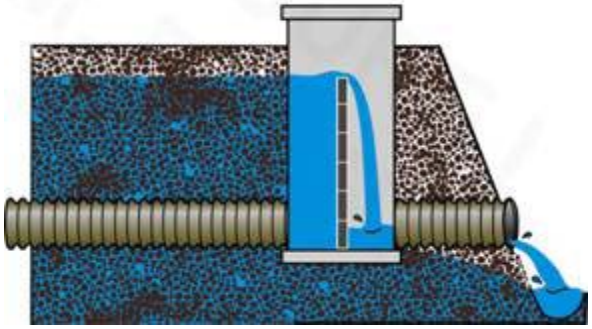
on behalf of participants from NRCS, ARS, universities, USGS, EPA, and others

The Agricultural Drainage Management Systems Task Force

- **Goal:** to develop a national effort to implement improved drainage water management practices and systems that will enhance crop production, conserve water, and reduce adverse off site water quality and quantity impacts.

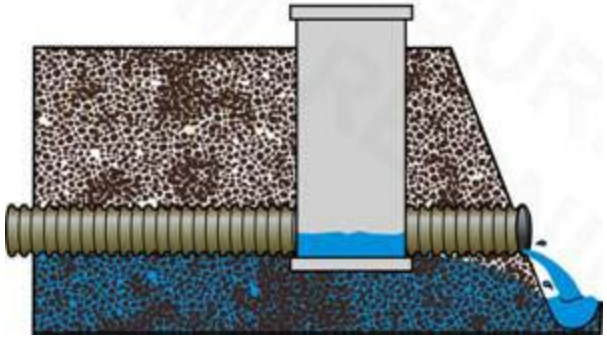
Primary practice: Drainage water management

After harvest



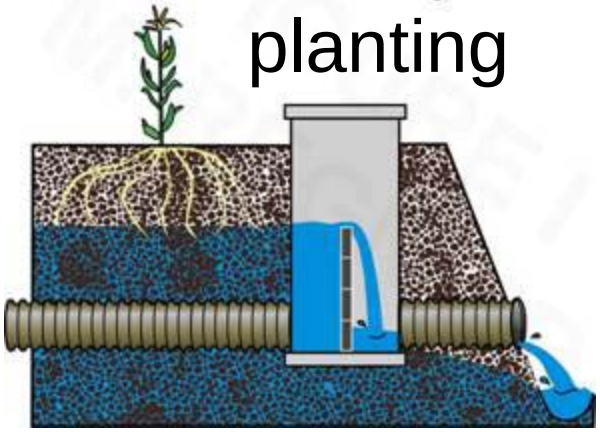
The outlet is raised after harvest to reduce nitrate delivery.

Before planting or harvest



The outlet is lowered a few weeks before planting and harvest to allow the field to drain more fully.

After planting



The outlet is raised after planting to potentially store water for crops.

Brief History

- Began with meetings in 2002 with the drainage industry, ARS, NRCS, and land grant universities.
- It was later decided that industry would establish a separate organization (Agricultural Drainage Management Coalition)
- The Ag Drainage Management Systems Task Force was formally established in 2003 as a technical work group of USDA's Partnership Management Team, a collaborative effort among the
  - Agricultural Research Service (ARS);
  - Natural Resources Conservation Service (NRCS); and
  - the Cooperative State, Research, Education, and Extension Service (CSREES), now NIFA

Leadership

ARS	NRCS	CSREES/NIFA
• Jim Fouss • Norm Fausey	• Wil Fontenot • Mike Sullivan • Doug Toews	• Jane Frankenberger asked to serve in this role by Deputy for environmental programs

ADMS main page

hostedweb.cfaes.ohio-state.edu/usdasdru/ADMS/ADMSindex.htm

http://tinyurl.com/admsTF

ADMS
Agricultural Drainage Management Systems Task Force

Home | Charter | Vision/Goals | Objectives | Action Plan | Members | Gallery | Links | Technology | Meetings | FAQ

Click on image to visit state information

The ADMS Task Force focuses on eight states. In this area, the Task Force works with farmers, advisors, contractors, and industry to implement agricultural drainage management systems. Technical guidance is provided through the NRCS eFOTG, the Practice 554 document and accompanying technical note on Agricultural Drainage Water Management, and State Extension Bulletins.

ADMS Task Force Fact Sheet

Who participates?

- Researchers - from universities and ARS
- NRCS - national and some state
- Extension faculty
- Minnesota Dept of Agriculture
- EPA is usually represented.
- Drainage districts
- US Geological Survey
- Environmental groups
- Non-profit organizations representing the agricultural and drainage industries
- Canadians – Agriculture Canada

Why we participate:

- Share good ideas
- Learn what's happening at various agencies
- Keep up on latest research
- Discuss what the research means
- Produce products together that have regional impact

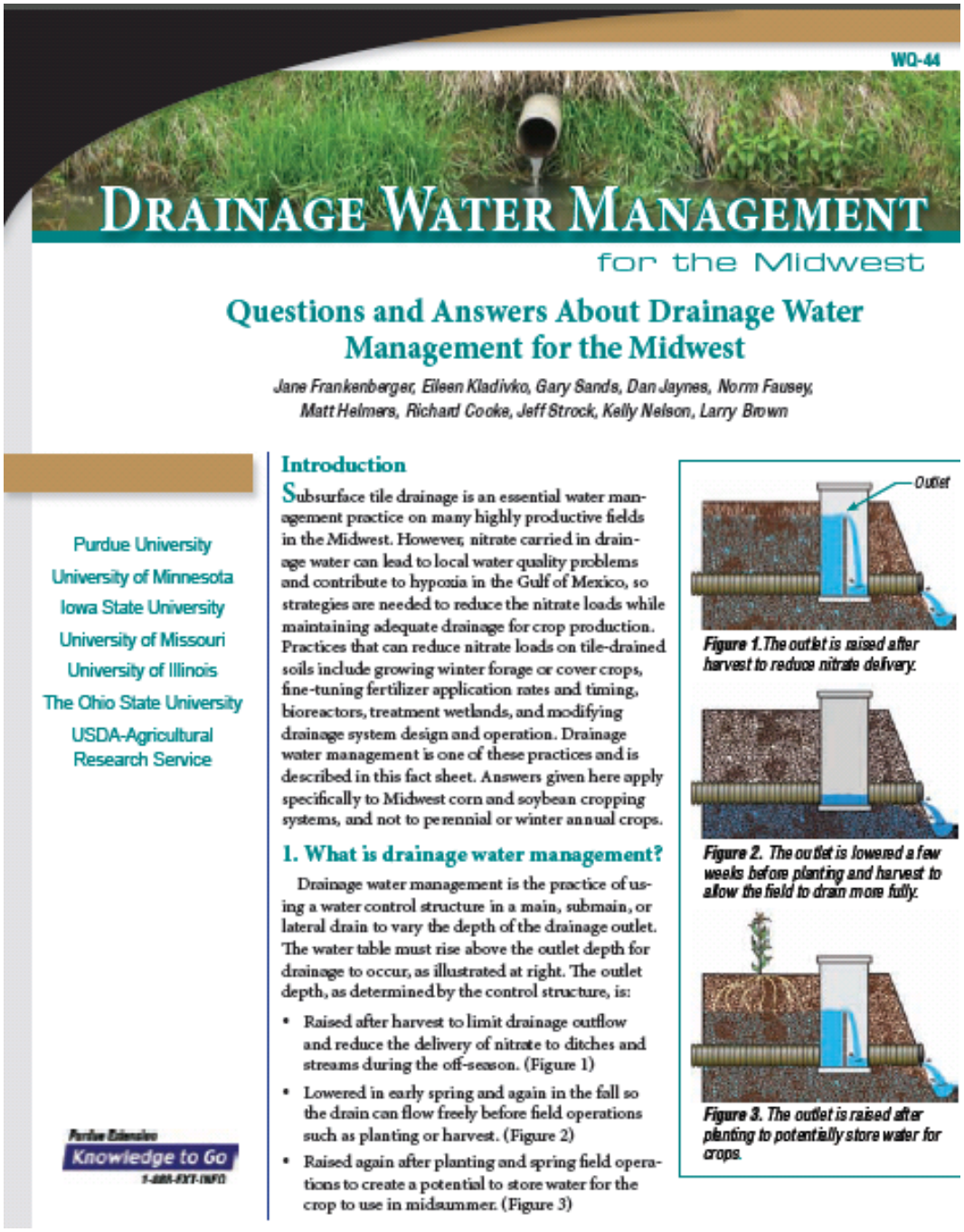
Good ideas: “Conservation Drainage Focus Groups” in Minnesota

- Goal: to gain insights about how drainage professionals around the state think about “conservation drainage” so future outreach and research can be informed by the knowledge and perspectives of the people who actually design, install, and regulate drainage.
- Three separate groups
  - Engineers and agency staff
  - Farmers and contractors
  - Drainage authorities

Keeping up: New NRCS Conservation Practice Standards discussed

- Drainage Water Management
  - Structure for Water Control
- Bioreactors
- In Indiana: Added two-stage ditch to Open Channel standard

- University and ARS participants produced educational publication; ADMS members reviewed



WQ-44

Drainage Water Management

for the Midwest

Questions and Answers About Drainage Water Management for the Midwest

Jane Frankenberger, Eileen Kladivko, Gary Sands, Dan Jaynes, Norm Fausey, Matt Helmers, Richard Cooke, Jeff Strock, Kelly Nelson, Larry Brown

Purdue University
University of Minnesota
Iowa State University
University of Missouri
University of Illinois
The Ohio State University
USDA-Agricultural Research Service

Introduction

Subsurface tile drainage is an essential water management practice on many highly productive fields in the Midwest. However, nitrate carried in drainage water can lead to local water quality problems and contribute to hypoxia in the Gulf of Mexico, so strategies are needed to reduce the nitrate loads while maintaining adequate drainage for crop production. Practices that can reduce nitrate loads on tile-drained soils include growing winter forage or cover crops, fine-tuning fertilizer application rates and timing, bioreactors, treatment wetlands, and modifying drainage system design and operation. Drainage water management is one of these practices and is described in this fact sheet. Answers given here apply specifically to Midwest corn and soybean cropping systems, and not to perennial or winter annual crops.

1. What is drainage water management?

Drainage water management is the practice of using a water control structure in a main, submain, or lateral drain to vary the depth of the drainage outlet. The water table must rise above the outlet depth for drainage to occur, as illustrated at right. The outlet depth, as determined by the control structure, is:

- Raised after harvest to limit drainage outflow and reduce the delivery of nitrate to ditches and streams during the off-season. (Figure 1)
- Lowered in early spring and again in the fall so the drain can flow freely before field operations such as planting or harvest. (Figure 2)
- Raised again after planting and spring field operations to create a potential to store water for the crop to use in midsummer. (Figure 3)

Figure 1. The outlet is raised after harvest to reduce nitrate delivery.

Figure 2. The outlet is lowered a few weeks before planting and harvest to allow the field to drain more fully.

Figure 3. The outlet is raised after planting to potentially store water for crops.

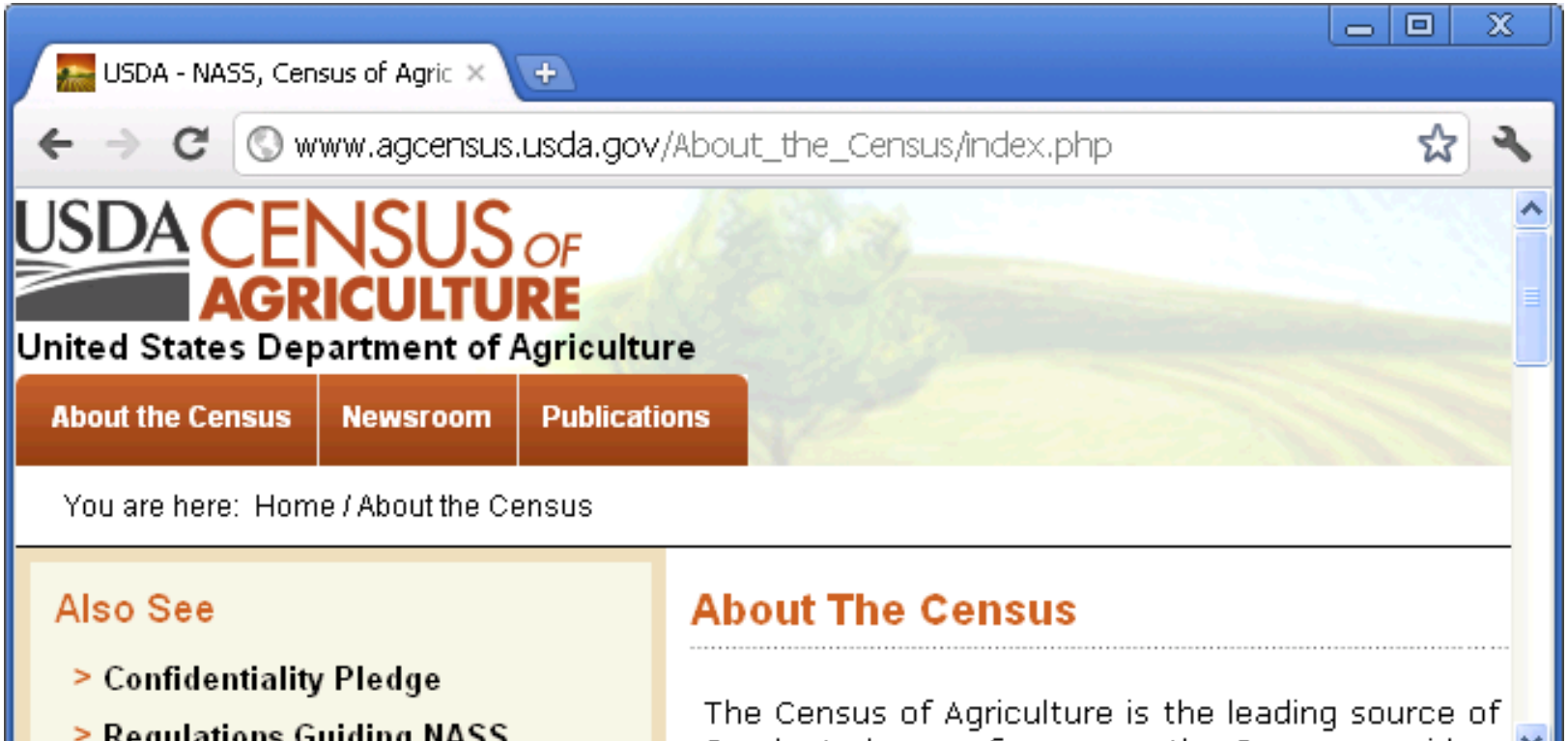
Purdue Extension
Knowledge to Go
1-888-EXT-INFO

Learn from Canada's agricultural drainage management activities

- Regular participant helps us learn from Canada's "Watershed Evaluation of Beneficial Management Practices" project
- Adoption studies – barriers

Worked to have drainage question on 2012 Agricultural Census

- Succeeded?



5-state Conservation Innovation Grant funded demonstration sites in Minnesota, Iowa, Illinois, Indiana, Ohio)

Field Days allow contractors to participate in installation, and farmers and others to see the practice

Photo: Steve Hawkins

Next meeting April 17-19 in Michigan

- Mini-symposium on phosphorus loss in drain tiles
- Field trip
- Research updates
- Many other exciting reports
- Networking and communication

The Agricultural Drainage Management Systems Task Force

Summary:
The Agricultural Drainage Management Systems Task Force brings together researchers and action agencies such as NRCS.