Shifting the Norm – Ohio’s Grain Farmers and Water Quality

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Elizabeth Toot-Levy | March 9, 2016
Lake Erie - 1971

From Understanding Lake Erie and Its History – Dr. Jeff Reutter (March 2012)
Photo Credit: Forsythe and Reutter
Solutions to the Problem
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“Herdendorf said researchers pushed for policies and regulations to persuade farmers to use no-till methods on their fields, to push soapmakers to remove phosphorus from detergents and to get money to cities and towns to improve wastewater-treatment plants to limit the amount of phosphorus that came from sewage.”

Eddie Herdendorf, as quoted in the Columbus Dispatch 08/25/2014
Then and Now....
Today’s Solutions

**Ohio Department of Agriculture**
- Agricultural nonpoint program implementation
- Agriculture Fertilizer Applicator Certification Program
- CAFO permitting and regulatory oversight
- Certified Livestock Manager training and inspections
- Manure and Fertilizer Application (SB 1) enforcement
- Fertilizer sales records
- Watershed coordinator program administration
- Agricultural nonpoint BMP technical assistance and oversight
- Agricultural Pollution Abatement Program
- Ohio Runoff Risk Forecast website
- Conservation Reserve Enhancement Program

**Ohio Environmental Protection Agency**
- National Pollutant Discharge Elimination System (NPDES) permit approval and monitoring
- Wastewater treatment technical and feasibility studies
- Storm water management program administration
- Water quality monitoring (Watershed and Lake Erie)
- Combined Sewer Overflow monitoring
- Environmental Infrastructure funding (wastewater, drinking water)
- 319 Grant, Surface Water Improvement Fund (SWIF), GLRI Fund administration
- Areas of Concern program administration
- Harmful Algal Bloom program administration
- Total Maximum Daily Load (TMDL) studies
- Administer and enforce a program for the regulation of sewage sludge management

**Natural Resource Conservation Service (NRCS)**
- Farm Bill financial and technical assistance for conservation planning and practice implementation
- GLRI grants
- Co-Chair the WLEB Partnership with the U.S. Army Corps of Engineers
- Maintain Ohio Field Office Technical Guide conservation practices and standards

**Farm Service Agency**
- Conservation Reserve Program
- Conservation Reserve Enhancement Program
- Farmable wetlands program administration
WLEB* Collaborative Action Plan -

- Ohio Department of Agriculture
- Ohio Environmental Protection Agency
- Ohio Department of Health
- Ohio Department of Natural Resources
- Ohio Lake Erie Commission
- Natural Resource Conservation Service
- Farm Service Agency
- US Environmental Protection Agency
- US Geological Survey
- National Ocean and Atmospheric Agency
- Heidelberg University National Center for Water Quality Research (NCWQR)
- Ohio Department of Higher Education
- The Ohio State University
- University of Toledo

*WLEB = Western Lake Erie Basin
Shifting the norm…

MYTHBUSTERS
Misconception

- Misconception - It’s affordable for Ohio farmers to control nutrients
  - “Farmers are four times wealthier (measured as net worth, or assets minus debt) than non-farm households.”
  - “The agriculture community has spent very little of its own money on nutrient controls and federal subsidies have amounted to only an estimated $5 billion”.

Reality Check

- **Farmers may be asset rich and cash poor**
  - It takes a lot of expensive equipment to farm
  - Limited amount of time to work
  - Equipment can be liquidated for cash, but then lack the tools to do the job

- **Net farm income**
  - 2017 forecast 8.7 percent decline
  - Could be the lowest since 2002 (inflation adjusted)
  - Increasing debt, decrease in asset value
  - 2017 profit prediction is ½ of 2013
• Misconception - Farmers over fertilize to ensure they are eligible for crop insurance payments
• Higher levels of insurance coverage increase a farmer’s incentive to make riskier decisions
2014 Farm Bill eliminated direct payment subsidies to farmers, that were paid every year regardless of need.

Crop insurance protects against disasters as a risk management tool.

Stipulations in crop insurance to ensure a successful crop and implement modest conservation management practices.
Crop Insurance Requirements

• Meet the conservation compliance requirements
• Supply historical data regarding farms they want to insure (to evaluate risk of insuring farm or farmer)
• Meet terms of agreement – including doing everything you can to ensure a crop is produced
  – Over application is not considered ensuring crop is produced
  – Over application of fertilizer is likely to harm crops
  – Not following prescribed application rates is illegal
Misconception

- Farmers are reluctant to install Best Management Practices (BMPs) on their land.
- They don’t think pollution is a problem.
- Farmers are not taking advantage of every opportunity to install BMPs.
Reality Check

• ½ of Ohio’s farm land is rented
• Most landowners don’t want more than 3-year lease
• Need long-term agreements for conservation
• In a leased land situation, farmers may not be able to control the installation of BMPs
• When surveyed, approximately 60% of OCW Growers felt that environmental BMPs were more important to reduce nutrient loss than they are to avoid regulation
• In the same survey 46% of respondents believe Farm Bill payments should be more conservation focused compared to 32% who believe they should not be conservation focused
• Farmers can easily recoup increased costs of farming that may be associated with BMPs by raising prices.
• Farmers control their own profit.
Reality Check

- Individual farmers don’t set the price
- Regulated futures markets (US Commodity Futures Trading Commission)
- Prices are set by the local grain elevator – ADM Grain Company - Columbus
- Ohio prices based on the Chicago price and the local supply and demand situation
So what are farmers in Ohio doing?
On-Field Ohio!

- Research program, began in 2012, to better understand and mitigate the impact of nutrient runoff on water quality
- Evaluate the relationship between on-field conditions and nutrients leaving the fields
- Ohio P index score re-evaluation and potential integration in to the Tri-State Fertility Guidelines
- Led by The Ohio State University – Dr. Elizabeth Dayton
On-Field Ohio!
On-Field Ohio!

- 29 fields monitored, 14 in WLEB
- Edge of field testing
- Evaluation of different practices
- On the ground results
- Data from 1993 through 2015 shows soil phosphorus levels holding steady or trending down in 80% of Ohio’s counties

*STP ≠ TP
Blanchard River Demonstration Farms

• 3 demonstration farms in the Blanchard River watershed
  – Stateler Family Farms
  – Kurt Farms
  – Kellogg Farms

• Serve as models for other farmers
  – Researching innovative practices to reduce nutrient run-off
  – Results will be widely shared with other farmers, management agencies, and the public
Blanchard River Demonstration Farms

- Evaluate standard and innovative agricultural practices
- Mechanism to share technology and information with other farmers, conversation agencies, and the public
- Share information in the WLEB
Stateler Family Farms – Hancock County

- Practices
  - Variable Rate Manure Application
  - Cover Crops
  - Drainage Water Management
  - Animal Mortality Composting Facility
  - Wetland with Pollinator Habitat
  - Home Septic System Replacement
Kurt Farms – Dunkirk, Ohio

• **Practices**
  – Two-stage ditch
  – Phosphorus Removal Beds
  – Filter Strips
  – Blind Inlets
  – Drainage Water Management
  – Cover Crops
  – Abandoned Oil Well Removal
Kellogg Farms – Forest, Ohio

• **Practices**
  – Subsurface Nutrient Placement
  – Cover Crops
  – Reduced Tillage
  – Abandoned Water Well Removal
  – Grassed Waterway
  – Controlled Traffic
Field 2 Faucet

- PLOTS app
- Allows farmers to digitally compare different practices
- Set up trials of various nutrient management options
- Analyzes response parameters (yield, crop health, etc.) and creates a report
Precision Farming
Cover Crops

- To increase organic material
  - Sorghum, cereal rye, oats, wheat, barley
- To increase soil nitrogen
  - Legumes, clover, alfalfa
- Capture excess nutrients
  - Oilseed, radish, turnips, buckwheat
- Natural herbicides
  - Mustard, oats, rye, sorghum
- Alleviate soil compaction
  - Radish, turnips
Fertilizer Incorporation

• Current research is showing fertilizer placement may be very effective at reducing nutrient loss
  – Complicated for no-till systems
  – Disk injection
  – Chisel injection
  – Surface banding
  – High pressure injection

Photo Credit: Crops and Soils Magazine, May – June 2011
Fertilizer Incorporation

• **Specialized Equipment**
  – 4R Nutrient Stewardship Certification Program
    • 12,600 individuals have been certified
    • 34 agronomy facilities serving 1.9 million acres in WLEB
    • 5,500 farm-based clients
  – Ohio Farming Co-ops
  – Commercial Applicators
Checkoff Programs

- Collects ¾ cent per bushel on corn sales and ½% on wheat, ½% on soybeans
- Funds are used for research, market development and promotion, or education
- Current Checkoff funded research
  - On-Field Ohio!
  - Updates to tri-state fertility recommendations
  - Fertilizer placement methodology
  - Sources and fates of nutrients
Tile Drains versus Surface Runoff

- Inconsistent data interpretation regarding impacts of surface drainage and tile drainage on watershed nutrient levels.
- What we do know is that we can’t solve problems associated with drain tile discharges at the expense of the progress that has been made reducing surface water runoff and the associated nutrient load.
Where are farmers today?

- Want to do the right things for the right reasons.
- Farmers are continually adapting farming practices to improve water quality.
- Decision-making on the best science available.
- Farmers are actively doing and funding research.
- There are still really important research questions that need to be answered.
Questions

Tadd Nicholson
Ohio Corn & Wheat
Executive Director
tnicholson@ohiocornandwheat.org

John Torres
Ohio Corn & Wheat
Directory of Government and Industry Affairs
jtorres@ohiocornandwheat.org

Kirk Merritt
Ohio Soybean Council
Ohio Soybean Association
Executive Director
kmerritt@soyohio.org

Tom Fontana
Ohio Soybean Council
Director, Research and Education
tfontana@soyohio.org

Elizabeth Toot-Levy
Geosyntec Consultants
Project Scientist
etoot-levy@geosyntec.com