PA Farm Conservation Practices Inventory

A survey of Pennsylvania farmers to document conservation practice implementation in the Chesapeake Bay Watershed

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Reasons for the Survey

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- PA farmers have done much to improve water quality and soil health
- Yet many practices not counted toward water quality goals (ex: Chesapeake Bay)
- Especially true with “voluntary” practices
- Survey captures this data

Development of the Survey

A Collaborative Effort

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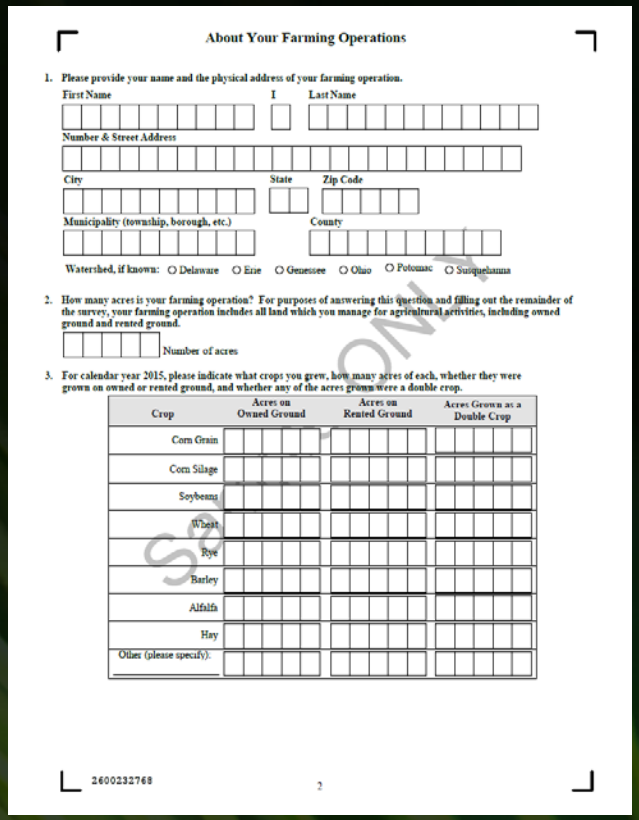
- Developed collaboratively by:

Penn State University	PA Dept of Environmental Protection
PennAg Industries	PA Farm Bureau
PA Assoc of Conservation Districts	PA Farmers Union
PA Assoc of Sustainable Agriculture	Professional Dairy Managers of PA
PA Dept of Agriculture	State Conservation Commission

- Funded by PA DEP
- Questions were pre-tested and refined by farmers and conservation professionals
- Survey conducted by the College of Agricultural Sciences

Survey Overview
Part One: About Your Farming Operations

- Name, address, county, municipality, watershed
- Farm operation size (acres)
- Types and acres of crops grown
- Rented and owned ground
- Types and numbers of animals



About Your Farming Operations

1. Please provide your name and the physical address of your farming operation.

First Name | I | Last Name

Number & Street Address

City | State | Zip Code

Municipality (township, borough, etc.) | County

Watershed, if known: ○ Delaware ○ Erie ○ Genessee ○ Ohio ○ Potomac ○ Susquehanna

2. How many acres is your farming operation? For purposes of answering this question and filling out the remainder of the survey, your farming operation includes all land which you manage for agricultural activities, including owned ground and rented ground.

Number of acres

3. For calendar year 2015, please indicate what crops you grew, how many acres of each, whether they were grown on owned or rented ground, and whether any of the acres grown were a double crop.

Crop	Acres on Owned Ground	Acres on Rented Ground	Acres Grown as a Double Crop
Corn Grain			
Corn Silage			
Soybeans			
Wheat			
Rye			
Barley			
Alfalfa			
Hay			
Other (please specify):			

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Survey Overview

Part Two: Your Conservation Practices

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- Questions about 11 conservation practices or plans:

Nutrient/Manure Mgt Plans	No Till
Enhanced Nitrogen Mgt	Cover Crops
Manure Transport	Stream Bank Fencing
Animal Waste Storage Systems	Riparian Buffers
Barnyard Runoff Controls	Land Retirement
Ag E&S Plans/Conservation Plans	

- Priority practices that achieve high levels of nutrient and sediment reductions, may have high instances of volunteer implementation, and are accepted into Bay model

Survey Administration

Penn State Survey Research Center

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- Survey administered by the Penn State Survey Research Center
- Web and mail option
- Survey ran January 29 – April 30, 2016

- **6,787 survey returns (35% response rate)**

Survey Returns
By County

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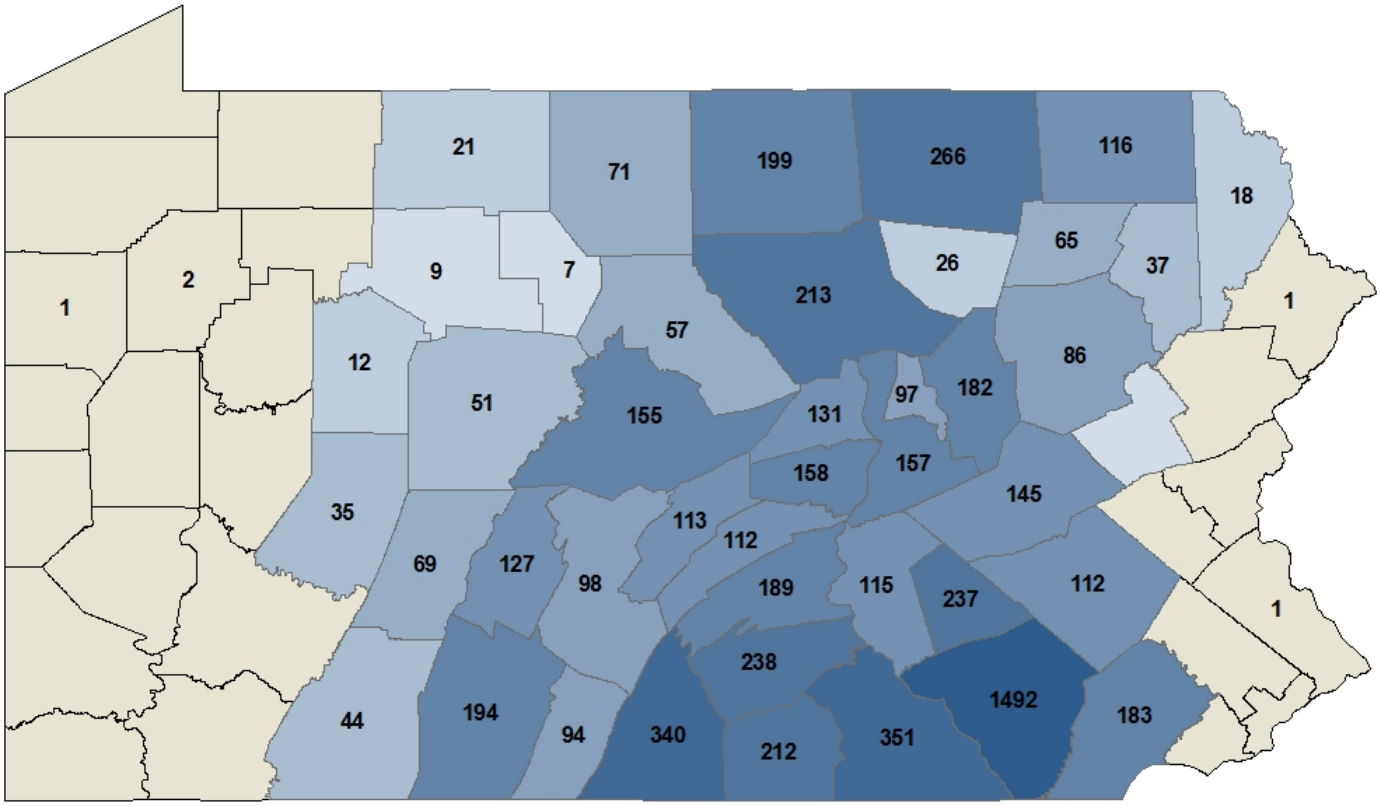
Top 10 Counties

1. Lancaster (1492)
2. York (351)
3. Franklin (340)
4. Bradford (266)
5. Cumberland (238)
6. Lebanon (237)
7. Lycoming (213)
8. Adams (212)
9. Tioga (199)
10. Bedford (194)



Survey Analysis

Analyzing Results: Verification Process

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- 10% randomly selected for farm visits by Penn State Extension to assess inventory results and help researchers analyze data
- Extension staff trained in July 2016
  - Trained on relevant RI protocols:
    - RI 4b, 6 (Watercourse Access Control (trees))
    - RI 9, 10 (Forest Exclusion Area or Buffer on Watercourse)
- conducted farm visits August – September 2016
- 42 Extension agents (specialties in agronomy, horticulture, nutrient management, livestock systems with Master's degree or higher)

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Survey Analysis
Preliminary Data Analysis

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- Survey answers coded and analyzed to determine units of BMPs reported
- Care taken to avoid “double counting”
  - Practices receiving government cost share not reported
  - Practices already captured through regulatory programs not reported (Act 38 nutrient management plans)
  - Practices for which DEP using other data collection methods not reported (i.e., no till, cover crops)

Survey Analysis
Statistical Analysis

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- Subsample of farm visit data compared to survey returns for the following BMPs:

Nutrient/Manure Mgt Plans	Ag E&S Plans
Enhanced Nutrient Management	Conservation Plans
Animal Waste Storage Systems	Stream Bank Fencing
Barnyard Runoff Controls	Riparian Buffers

- For all these BMPs, adequate sample size existed to develop statistically acceptable results
- Manure transport not statistically analyzed because of small sample size

Survey Analysis
Statistical Analysis

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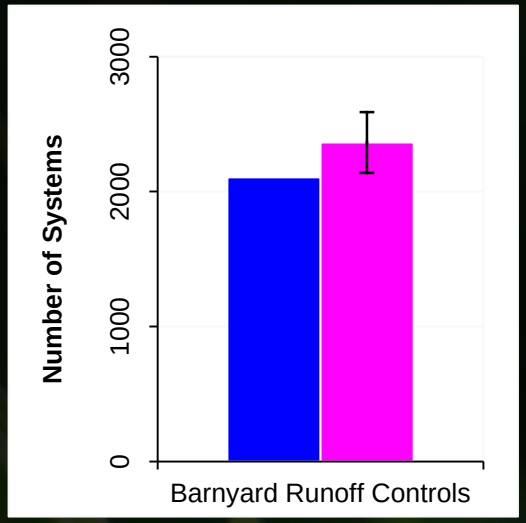
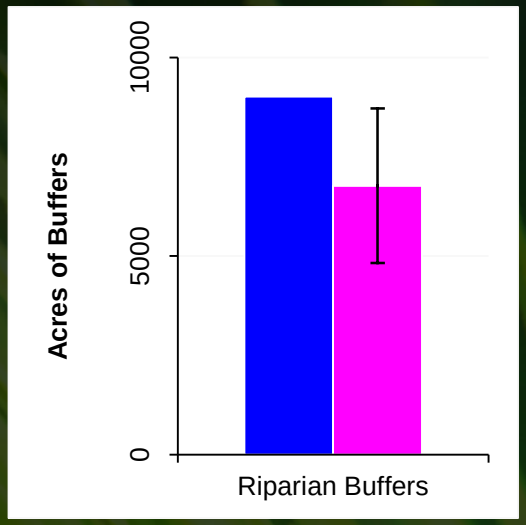
- Survey responses compared to farm visit reports
- Analysis completed separately for each BMP
- For all BMPs except riparian buffers, statistical analysis revealed accuracy in the data reported by farmers, with a trend toward under reporting.
- Riparian buffers were systematically over reported (numbers adjusted to reflect this)





Survey Results

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Practice	Amount Implemented			
Manure Management Plans	210,565 ac row crops	26,658 ac pasture	69,261 ac hay	
Enhanced Nutrient Management	97,562 acres			
Manure Storages	1,598dairy storages	194 beef storages	213 swine storages	159 poultry storages
Barnyard Runoff Controls	2,106 systems			
Agricultural E&S Plans	40,170ac row crops	4,930 ac pasture	9,973 ac hay	
Conservation Plans	173,481ac row crops	17,239 ac pasture	37,544 ac hay	
Stream Bank Fencing	1.34 million linear ft			
Grass Riparian Buffers	1,757 acres			
Forest Riparian Buffers	5,808 acres			

Survey Results

Documenting Progress, Next Steps

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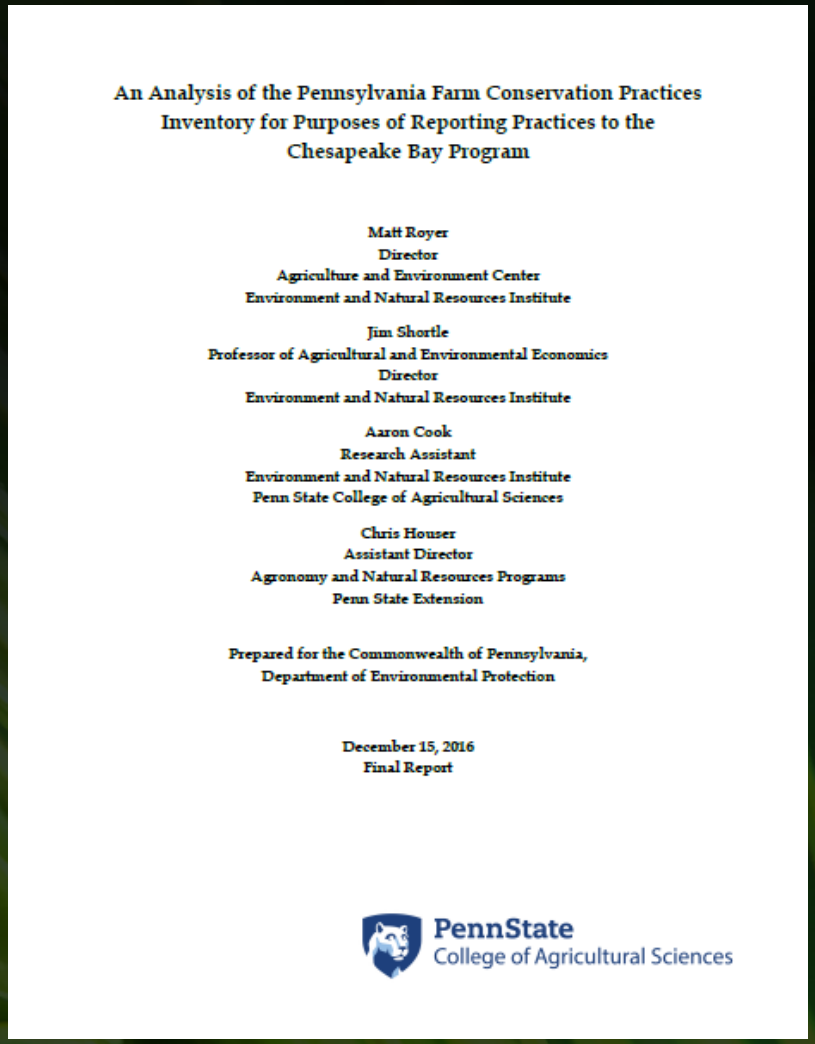
- Dec 15, 2016: CBP Ag Workgroup approved farm survey process as acceptable methodology for collection and verification of non-cost shared BMPs
- Dec 16, 2016: Results announced in DEP webinar

Final Report available on DEP's Chesapeake Bay Office website



An Analysis of the Pennsylvania Farm Conservation Practices Inventory for Purposes of Reporting Practices to the Chesapeake Bay Program

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Prepared for the Commonwealth of Pennsylvania,
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December 15, 2016
Final Report

PennState College of Agricultural Sciences

Survey Results

Documenting Progress, Next Steps

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- End of Dec 2016: PSU provided cumulative data (by county and year) to DEP on previously unreported BMPs
- DEP successfully submitted data to EPA for inclusion in Chesapeake Bay model run
- PSU currently conducting Phase 2 data analysis to look at conservation implementation trends in PA; second report to be released later in 2017

Significance of the Survey

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- Survey confirms PA farmers are doing a lot to improve water quality that has previously be unaccounted for, and gives them credit for that
- Results provide more complete picture of the level of implementation of practices in PA
- Survey provides an approved, cost effective methodology for documenting “voluntary” BMPs

EPA’s 2016 Assessment of Chesapeake Bay TMDL Milestone Progress:

2016 Oversight Status — Ongoing, Enhanced, Backstop

	Agriculture	Urban/Suburban	Wastewater	Trading/Offsets
Delaware	Enhanced Oversight	Ongoing Oversight	Enhanced Oversight	Ongoing Oversight
District of Columbia	Not Applicable	Ongoing Oversight	Ongoing Oversight	Ongoing Oversight
Maryland	Ongoing Oversight	Ongoing Oversight	Ongoing Oversight	Ongoing Oversight
New York	Ongoing Oversight	Ongoing Oversight	Enhanced Oversight	Ongoing Oversight
Pennsylvania	Backstop Actions Level	Backstop Actions Level	Ongoing Oversight	Enhanced Oversight
Virginia	Ongoing Oversight	Enhanced Oversight	Ongoing Oversight	Ongoing Oversight
West Virginia	Ongoing Oversight	Ongoing Oversight	Ongoing Oversight	Ongoing Oversight

Questions?

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