PA FARM CONSERVATION PRACTICES INVENTORY

Trends Analysis: Exploring Conservation Trends in Pennsylvania’s Chesapeake Bay Watershed

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Jim Shortle
Chris Houser
PA Farmer Survey (2016)
Inventory of practices implemented on farms

- Primary purpose was to document and report “voluntary,” or non-cost shared practices
- 7,682 survey returns
- Rich dataset allowed us to analyze trends in conservation adoption in PA’s Chesapeake Bay watershed
Categories of Practices
From WIP3 Ag Workgroup

• **Compliance**
  • Nutrient/manure management plans
  • Ag E&S/conservation plans
  • Barnyard runoff controls

• **Soil Health**
  • No till/minimum till
  • Cover crops

• **Enhanced Nutrient Management**
  • NMPs on non-manured acres
  • N efficiency (4Rs)

• **Manure Management**
  • Manure storages

• **Stream Health**
  • Riparian buffers
Trends Analysis

Farm Types

- Animal Operations
  - Poultry
  - Swine
  - Dairy
  - Beef
  - Equine
  - Mixed (if animal operation did not have more than 2/3 of AEU of a predominant animal type, it was characterized as “mixed.”)

- Crop Operations
Trends Analysis
Farm Sizes

• NASS acreage categories were used:
  – Zero
  – 0 to 10
  – 10 to 50
  – 50 to 70
  – 70 to 100
  – 100 to 140
  – 140 to 180
  – 180 to 220
  – 220 to 260
  – 260 to 500
  – 500 to 1,000
  – 1,000 to 2,000
  – 2,000 to 5,000
  – 5,000 or more
Farms were categorized by county

Several counties where low respondent numbers were clustered together:
- Cambria, Indiana, Somerset
- Cameron, Elk, Jefferson, McKean, Potter
- Centre, Clearfield, Clinton
- Columbia, Montour, Sullivan
- Fulton, Huntingdon
- Lackawanna, Luzerne, Susquehanna, Wayne, Wyoming

Counties were also analyzed as the Phase 3 WIP tiers 1-4
Trends Analysis
Some Caveats

• We can’t extrapolate this data to all farms.
• Lack of responses means we cannot characterize all 6,782 respondents.
  – Farm Type: 13% of farms did not report any animals or crop acreage
  – Farm Size: 4.9% of farms did not specify overall farm size
  – Region: 2% of farms did not specify county
Trends Analysis
What types of farms responded?

- Animal operations (3,948)
- Crop operations (1,980)
- Farms without animals or crops (854)
Trends Analysis
What types of farms responded?

- Poultry (300)
- Swine (159)
- Dairy (1,958)
- Beef (1,125)
- Equine (162)
- Mixed livestock (244)
- Crops (1,980)
- Farms without animals or crops (854)
Trends Analysis
What sizes of farms responded?

Farm Size in Acres

- Zero
- 0 to 10
- 10 to 50
- 50 to 70
- 70 to 100
- 100 to 140
- 140 to 180
- 180 to 220
- 220 to 260
- 260 to 500
- 500 to 1000
- 1000 to 2000
- 2000 to 5000
- 5000+
Trends Analysis
Where were farms from?
Nutrient/Manure Mgt Plans Adoption by Farm Type

Percent of Respondents with Plans

- All Animal Operations
- Poultry
- Swine
- Dairy
- Beef
- Equine
- Mixed

Farm Type
Nutrient/Manure Mgt Plans Adoption by Farm Size
Nutrient/Manure Mgt Plans Adoption by Region

Percentage of Respondents with Plans

Region:
- Lancaster
- York
- Franklin
- Lebanon
- Cumberland
- Dauphin
- Cent/Clear/Clipt
- Bedford
- Adams
- Northumberland
- Perry
- Fulton/Hunt
- Col/Mont/Sull
- Snyder
- Mifflin
- Lycoming
- Schuylkill
- Juniata
- Union
- Bradford
- Chester
- Tioga
- Lac/Luz/Sus/Wal/Wy
- Berks
- Blair
- Cam/Elk/Jer/McK/Pot

Tier 1: 0.0%
Tier 2: 10.0%
Tier 3: 20.0%
Tier 4: 30.0%
Nutrient/Manure Mgt Plans
Adoption by Tier

Phase 3 WIP Tier

Percentage of Farms with Plans

Tier 1 Counties
Tier 2 Counties
Tier 3 Counties
Tier 4 Counties
Nutrient/Manure Mgt Plans
Gov’t Funding by Farm Type

- All Animal Operations: 22.2% Gov’t Funding, 77.8% Total
- Poultry: 16.3% Gov’t Funding, 83.7% Total
- Swine: 13.0% Gov’t Funding, 87.0% Total
- Dairy: 24.3% Gov’t Funding, 75.7% Total
- Beef: 24.1% Gov’t Funding, 75.9% Total
- Equine: 13.8% Gov’t Funding, 86.2% Total
- Mixed Livestock: 15.7% Gov’t Funding, 84.3% Total
Nutrient/Manure Mgt Plans
Gov’t Funding by Farm Size

Percentage of Respondents with Govt Funded Plans vs. Farm Size

- Zero acre farms
- 0 to 10 acres
- 10 to 50 acres
- 50 to 70 acres
- 70 to 100 acres
- 100 to 140 acres
- 140 to 180 acres
- 180 to 220 acres
- 220 to 260 acres
- 260 to 500 acres
- 500 to 1,000 acres
- 1,000 to 2,000 acres
- 2,000 to 5,000 acres
- 5,000+ acres

PennState
College of Agricultural Sciences
Nutrient/Manure Mgt Plans
Gov’t Funding by Tier

Percentage of Respondents with Govt Funded Plans

Tier 1 Counties
Tier 2 Counties
Tier 3 Counties
Tier 4 Counties

Phase 3 WIP Tier
Ag E&S/Conservation Plans
Adoption by Farm Type

Percent of Respondents with Plans

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<th>Farm Type</th>
<th>Percent</th>
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<td>Crop</td>
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Ag E&S/Conservation Plans Adoption by Farm Size

Percentage of Respondents with Plans vs. Farm Size
Ag E&S/Conservation Plans Adoption by Region

Percentage of Respondents with Plans

Region

Tier 1
Tier 2
Tier 3
Tier 4

Lancaster
York
Franklin
Lebanon
Cumberland
Dauphin
Cent/Clear/Clt
Bedford
Adams
Northumberland
Perry
Fulton/Hunt
Col/Mont/Sull
Snyder
Mifflin
Lycoming
Schuylkill
Juniata
Union
Bradford
Chester
Tioga
Lac/Luz/Sus/Wal/Wy
Bucks
Blair
Cam/Ind/Som
Cam/Elk/Jef/Mck/Pot
Ag E&S/Conservation Plans
Adoption by Tier

Percentage of Respondents with Plans

Tier 1 Counties
Tier 2 Counties
Tier 3 Counties
Tier 4 Counties

Phase 3 WIP Tier
Ag E&S/Conservation Plans
Gov’t Funding by Farm Type

- All Farms: 29.2% (Gov’t Funding), 70.8% (Non-Gov’t Funding)
- Poultry: 21.4% (Gov’t Funding), 78.6% (Non-Gov’t Funding)
- Swine: 35.4% (Gov’t Funding), 64.6% (Non-Gov’t Funding)
- Dairy: 27.4% (Gov’t Funding), 72.6% (Non-Gov’t Funding)
- Beef: 38.0% (Gov’t Funding), 62.0% (Non-Gov’t Funding)
- Equine: 21.3% (Gov’t Funding), 78.7% (Non-Gov’t Funding)
- Mixed Livestock: 22.2% (Gov’t Funding), 77.8% (Non-Gov’t Funding)
- Crops: 28.3% (Gov’t Funding), 71.7% (Non-Gov’t Funding)
Ag E&S/Conservation Plans
Gov’t Funding by Farm Size

% of Respondents with Gov't Funded Plans

Farm Size:
- 0 to 10 acres
- 10 to 50 acres
- 50 to 70 acres
- 70 to 100 acres
- 100 to 140 acres
- 140 to 180 acres
- 180 to 220 acres
- 220 to 260 acres
- 260 to 500 acres
- 500 to 1,000 acres
- 1,000 to 2,000 acres
- 2,000 to 5,000 acres
- 5,000+ acres
Ag E&S/Conservation Plans
Gov’t Funding by Region

Percentage of Respondents with Govt Funded Plans

Region

Ag E&S/Conservation Plans
Gov’t Funding by Tier

Percentage of Respondents with Govt Funded Plans

Tier 1 Counties
Tier 2 Counties
Tier 3 Counties
Tier 4 Counties

Phase 3 WIP Tier
Barnyard Runoff Controls
Adoption by Type

Percent of Respondents with BRCs

- All Animal Operations
- Poultry
- Swine
- Dairy
- Beef
- Equine
- Mixed

Farm Farm Type
Barnyard Runoff Controls Adoption by Farm Size

Percent of Respondents with BRCs

Farm Size

0-10 AEUs, 10-50 AEUs, 50-100 AEUs, 100-250 AEUs, 250-500 AEUs, 500-750 AEUs, 750-1,000 AEUs, 1,000-2,000 AEUs, 2,000 to 5,000 AEUs, 5,000+ AEUs
Barnyard Runoff Controls
Adoption by Tier

Phase 3 WIP Tier

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<tr>
<th>Tier 1 Counties</th>
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<th>Tier 3 Counties</th>
<th>Tier 4 Counties</th>
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</thead>
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Barnyard Runoff Controls
Gov’t Funding by Farm Type

All Animal Operations
- 25.7% Gov’t Funding
- 74.3% Private Funding

Poultry
- 26.1% Gov’t Funding
- 73.9% Private Funding

Swine
- 27.5% Gov’t Funding
- 72.5% Private Funding

Dairy
- 24.6% Gov’t Funding
- 75.4% Private Funding

Beef
- 30.3% Gov’t Funding
- 69.7% Private Funding

Equine
- 7.8% Gov’t Funding
- 92.2% Private Funding

Mixed Livestock
- 24.1% Gov’t Funding
- 75.9% Private Funding
Barnyard Runoff Controls
Gov’t Funding by Farm Size

% of Respondents with Govt Funded BRCs

Farm Size

0-10 AEUs
10-50 AEUs
50-100 AEUs
100-250 AEUs
250-500 AEUs
500-750 AEUs
750-1,000 AEUs
1,000-2,000 AEUs
2,000-5,000 AEUs
5,000+ AEUs
Barnyard Runoff Controls
Gov’t Funding by Region
Barnyard Runoff Controls
Gov’t Funding by Tier

Tier 1 Counties
Tier 2 Counties
Tier 3 Counties
Tier 4 Counties

Percentage of Respondents with Govt Funded BRCs

Phase 3 WIP Tier
Barnyard Runoff Controls
Gov’t Funding by Farm Type

% of Respondents Practicing No/Minimum Till

Farm Type:
- All Farms
- Poultry
- Swine
- Dairy
- Beef
- Equine
- Mixed Livestock
- Crop
Reduced Tillage Adoption by Farm Type

Percentage of Farms by Type Meeting Residue Thresholds for Minimum Till, Conservation Till, and No Till Practices

- 15% Residue
- 30% Residue
- 60% Residue

Farm Type:
- All Farms
- Poultry
- Swine
- Dairy
- Beef
- Equine
- Mixed Livestock
- Crop

% of Respondents Meeting Residue Threshold

- 0.0%
- 10.0%
- 20.0%
- 30.0%
- 40.0%
- 50.0%
- 60.0%
- 70.0%
- 80.0%
- 90.0%
- 100.0%
Reduced Tillage Adoption by Farm Size

% of Respondents Practicing No/Minimum Till

Farm Size

- 0 to 10 acres
- 10 to 50 acres
- 50 to 70 acres
- 70 to 100 acres
- 100 to 140 acres
- 140 to 180 acres
- 180 to 220 acres
- 220 to 260 acres
- 260 to 500 acres
- 500 to 1,000 acres
- 1,000 to 2,000 acres
- 2,000 to 5,000 acres
- 5,000+ acres
## Reduced Tillage Adoption by Region

<table>
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<tr>
<th>Region</th>
<th>Tier 1</th>
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*Note: The percentages represent the percentage of respondents practicing no/minimum tillage.*
Reduced Tillage Adoption by Tier

Phase 3 WIP Tier

Tier 1 Counties
Tier 2 Counties
Tier 3 Counties
Tier 4 Counties

Percentage of Respondents Practicing No/Minimum Till
Cover Crops

- 3,267 farms (55.1% of respondents) growing crops reported planting cover crops in 2015

Percentage of Chesapeake Bay Program Cover Crop Categories Planted in 2015 by Survey Respondents

- 58.6% Commodity
- 15.4% Traditional
- 26.0% Traditional w/ Nutrients
Cover Crop Adoption by Farm Type

- **All Farms**: 50%
- **Poultry**: 60%
- **Swine**: 70%
- **Dairy**: 90%
- **Beef**: 40%
- **Equine**: 30%
- **Mixed Livestock**: 80%
- **Crop**: 20%
Cover Crop Adoption by Farm Type

- **Poultry**
  - 21%
  - 47%
  - 32%

- **Swine**
  - 24.3%
  - 47.7%
  - 28.0%

- **Dairy**
  - 13.6%
  - 73.9%
  - 12.5%

- **Beef**
  - 19.3%
  - 55.1%
  - 29.6%

- **Equine**
  - 11.7%
  - 35.0%
  - 53.3%

- **Mixed Livestock**
  - 11.7%
  - 28.2%
  - 60.1%

- **Crops**
  - 17.9%
  - 31.8%
  - 50.3%
Cover Crop
Adoption by Farm Type

% of Respondents Planting Cover Crops

Size

0 to 10 acres
10 to 50 acres
70 to 100 acres
140 to 180 acres
180 to 220 acres
220 to 260 acres
260 to 500 acres
500 to 1,000 acres
1,000 to 2,000 acres
2,000 to 5,000 acres
5,000+ acres

0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Cover Crop Adoption by Region

- Percentage of Farms Planting Cover Crops

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<th>Region</th>
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Penn State College of Agricultural Sciences
Cover Crop Adoption by Tier

Percentage of Respondents Planting Cover Crops

Tier 1 Counties: 70.0%
Tier 2 Counties: 60.0%
Tier 3 Counties: 50.0%
Tier 4 Counties: 40.0%

Phase 3 WIP Tier
Enhanced N Mgt (4Rs) Adoption by Farm Type

% of Respondents Practicing Enhanced N Mgt

- All Farms Growing Crops
- Poultry
- Swine
- Dairy
- Beef
- Equine
- Mixed Livestock
- Crop

Farm Type
Enhanced N Mgt (4Rs) Adoption by Farm Size

% of Respondents Practicing Enhanced N Mgt

Farm Size

0 to 10 acres
10 to 50 acres
50 to 70 acres
70 to 100 acres
100 to 140 acres
140 to 180 acres
180 to 220 acres
220 to 260 acres
260 to 500 acres
500 to 1,000 acres
1,000 to 2,000 acres
2,000 to 5,000 acres
5,000+ acres

0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Enhanced N Mgt (4Rs) Adoption by Region

% of Farms Practicing Enhanced N Mgt

Region

Tier 1 | Tier 2 | Tier 3 | Tier 4

Lancaster | York | Franklin | Lebanon | Dauphin | Cumberland | Huntingdon | Bedford | Adams | Northumberland | Perry | Fulton/Hunt | Col/Mont/Sull | Snyder | Mifflin | Lycoming | Schuylkill | Juniata | Union | Bradford | Chester | Tioga | Berks | Blair | Cam/Ind/Som | Cam/Elk/Jef/Mck/Pot

Tier 1:
- Lancaster: 10.0%
- York: 10.0%
- Franklin: 10.0%
- Lebanon: 10.0%
- Dauphin: 10.0%
- Cumberland: 10.0%
- Huntingdon: 10.0%
- Bedford: 10.0%
- Adams: 10.0%
- Northumberland: 10.0%
- Perry: 10.0%
- Fulton/Hunt: 10.0%
- Col/Mont/Sull: 10.0%
- Snyder: 10.0%
- Mifflin: 10.0%
- Lycoming: 10.0%
- Schuylkill: 10.0%
- Juniata: 10.0%
- Union: 10.0%
- Bradford: 10.0%
- Chester: 10.0%
- Tioga: 10.0%
- Berks: 10.0%
- Blair: 10.0%
- Cam/Ind/Som: 10.0%
- Cam/Elk/Jef/Mck/Pot: 10.0%

Tier 2:
- Lancaster: 20.0%
- York: 20.0%
- Franklin: 20.0%
- Lebanon: 20.0%
- Dauphin: 20.0%
- Cumberland: 20.0%
- Huntingdon: 20.0%
- Bedford: 20.0%
- Adams: 20.0%
- Northumberland: 20.0%
- Perry: 20.0%
- Fulton/Hunt: 20.0%
- Col/Mont/Sull: 20.0%
- Snyder: 20.0%
- Mifflin: 20.0%
- Lycoming: 20.0%
- Schuylkill: 20.0%
- Juniata: 20.0%
- Union: 20.0%
- Bradford: 20.0%
- Chester: 20.0%
- Tioga: 20.0%
- Berks: 20.0%
- Blair: 20.0%
- Cam/Ind/Som: 20.0%
- Cam/Elk/Jef/Mck/Pot: 20.0%

Tier 3:
- Lancaster: 30.0%
- York: 30.0%
- Franklin: 30.0%
- Lebanon: 30.0%
- Dauphin: 30.0%
- Cumberland: 30.0%
- Huntingdon: 30.0%
- Bedford: 30.0%
- Adams: 30.0%
- Northumberland: 30.0%
- Perry: 30.0%
- Fulton/Hunt: 30.0%
- Col/Mont/Sull: 30.0%
- Snyder: 30.0%
- Mifflin: 30.0%
- Lycoming: 30.0%
- Schuylkill: 30.0%
- Juniata: 30.0%
- Union: 30.0%
- Bradford: 30.0%
- Chester: 30.0%
- Tioga: 30.0%
- Berks: 30.0%
- Blair: 30.0%
- Cam/Ind/Som: 30.0%
- Cam/Elk/Jef/Mck/Pot: 30.0%

Tier 4:
- Lancaster: 40.0%
- York: 40.0%
- Franklin: 40.0%
- Lebanon: 40.0%
- Dauphin: 40.0%
- Cumberland: 40.0%
- Huntingdon: 40.0%
- Bedford: 40.0%
- Adams: 40.0%
- Northumberland: 40.0%
- Perry: 40.0%
- Fulton/Hunt: 40.0%
- Col/Mont/Sull: 40.0%
- Snyder: 40.0%
- Mifflin: 40.0%
- Lycoming: 40.0%
- Schuylkill: 40.0%
- Juniata: 40.0%
- Union: 40.0%
- Bradford: 40.0%
- Chester: 40.0%
- Tioga: 40.0%
- Berks: 40.0%
- Blair: 40.0%
- Cam/Ind/Som: 40.0%
- Cam/Elk/Jef/Mck/Pot: 40.0%
Enhanced N Mgt (4Rs) Adoption by Tier

Phase 3 WIP Tier

Percentage of Farms Practicing Enhanced N Mgt

Tier 1 Counties
Tier 2 Counties
Tier 3 Counties
Tier 4 Counties
Manure Storages
Adoption by Farm Type

% of Respondents with Manure Storages

Farm Type

- All Animal Operations
- Poultry
- Swine
- Dairy
- Beef
- Equine
- Mixed Livestock
Manure Storages
Adoption by Farm Size

% of Respondents with Manure Storages

0-10 AEUs 10-50 AEUs 50-100 AEUs 100-250 AEUs 250-500 AEUs 500-750 AEUs 750-1,000 AEUs 1,000-2,000 AEUs 2,000-5,000 AEUs 5,000+ AEUs

Farm Size
Manure Storages
Adoption by Region

% of Respondents with Manure Storages

Tier 1
Tier 2
Tier 3
Tier 4

Region

Lancaster
York
Franklin
Lebanon
Cumberland
Centre/Clear/Clint
Bedford
Adams
Northumberland
Fulton/Hunt
Col/Mont/Sull
Snyder
Mifflin
Lycoming
Schuylkill
Juniata
Union
Bradford
Chester
Tioga
Dutchess
Berkshire
Blair
Cam/Ind/Som
Cam/Eli/Jef/Mck/Pot
Manure Storages Adoption by Tier

Tier 1 Counties
Tier 2 Counties
Tier 3 Counties
Tier 4 Counties

Percentage of Respondents with Manure Storages

Phase 3 WIP Tier
Manure Storages
Gov’t Funding by Farm Type

- All Animal Operations: 35.8% (Gov’t Funding) / 64.2% (Private Funding)
- Poultry: 40.4% (Gov’t Funding) / 59.6% (Private Funding)
- Swine: 24.5% (Gov’t Funding) / 75.5% (Private Funding)
- Dairy: 32.3% (Gov’t Funding) / 67.7% (Private Funding)
- Beef: 42.3% (Gov’t Funding) / 57.7% (Private Funding)
- Equine: 28.6% (Gov’t Funding) / 71.4% (Private Funding)
- Mixed Livestock: 36.5% (Gov’t Funding) / 63.5% (Private Funding)
Manure Storages
Gov’t Funding by Farm Size

% of Respondents with Govt Funded Storages

Farm Size

PennState
College of Agricultural Sciences
Manure Storages
Gov’t Funding by Region

% of Respondents with Govt Funded Manure Storages

Region

Tier 1
Tier 2
Tier 3
Tier 4
Manure Storages
Gov’t Funding by Tier

% of Respondents with Gov’t Funded Storages

Tier 1 Counties  Tier 2 Counties  Tier 3 Counties  Tier 4 Counties

Phase 3 WIP Tier
Riparian Buffers
Grass or Forest Buffers?

- Overwhelmingly forest. Of the 1,946 farms reporting buffers, 1,694 farms reported having forest buffers (87.1%).

Riparian Buffer Vegetation Type:
All Farms

- Forest
- Grass
Riparian Buffers
Adoption by Farm Type

<table>
<thead>
<tr>
<th>Farm Type</th>
<th>% of Respondents with Riparian Buffers</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Farms</td>
<td>30%</td>
</tr>
<tr>
<td>Poultry</td>
<td>40%</td>
</tr>
<tr>
<td>Swine</td>
<td>50%</td>
</tr>
<tr>
<td>Dairy</td>
<td>60%</td>
</tr>
<tr>
<td>Beef</td>
<td>70%</td>
</tr>
<tr>
<td>Equine</td>
<td>80%</td>
</tr>
<tr>
<td>Mixed Livestock</td>
<td>90%</td>
</tr>
<tr>
<td>Crop</td>
<td>100%</td>
</tr>
</tbody>
</table>
Riparian Buffers
Adoption by Farm Size

% of Respondents with Riparian Buffers

<table>
<thead>
<tr>
<th>Farm Size</th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
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<tr>
<td>0 to 10 acres</td>
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<td>10 to 50 acres</td>
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<td>70 to 100 acres</td>
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<td>100 to 140 acres</td>
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<tr>
<td>180 to 220 acres</td>
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<td>220 to 260 acres</td>
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<td>260 to 500 acres</td>
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<tr>
<td>500 to 1,000 acres</td>
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<td>2,000 to 5,000+</td>
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<td>5,000+ acres</td>
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</tr>
</tbody>
</table>

PennState
College of Agricultural Sciences
Riparian Buffers
Adoption by Region

% of Respondents with Riparian Buffers

Tier 1  Tier 2  Tier 3  Tier 4

Region:
Lancaster  York  Franklin  Lebanon  Cumberland  Dauphin  Cent/Clear/Clint  Bedford  Adams  Northumberland  Perry  Fulton/Hunt  Col/Mont/Sull  Snyder  Mifflin  Lycoming  Schuylkill  Juniata  Union  Bradford  Chester  Tioga  Berks  Blair  Cam/Ind/Som  Cam/Elk/Jef/Mck/Pot
Riparian Buffers
Adoption by Tier

<table>
<thead>
<tr>
<th>Tier 1 Counties</th>
<th>Tier 2 Counties</th>
<th>Tier 3 Counties</th>
<th>Tier 4 Counties</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0%</td>
<td>10.0%</td>
<td>20.0%</td>
<td>30.0%</td>
</tr>
<tr>
<td>40.0%</td>
<td>50.0%</td>
<td>60.0%</td>
<td>70.0%</td>
</tr>
<tr>
<td>80.0%</td>
<td>90.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Phase 3 WIP Tier

Percentage of Respondents with Riparian Buffers
Riparian Buffers
Gov’t Funding by Farm Size

% of Respondents w/ Govt Funded Riparian Buffers

Farm Size

0 to 10 acres
10 to 50 acres
50 to 70 acres
70 to 100 acres
100 to 140 acres
140 to 180 acres
180 to 220 acres
220 to 260 acres
260 to 500 acres
500 to 1,000 acres
1,000 to 2,000 acres
2,000 to 5,000 acres
5,000+ acres
Riparian Buffers
Gov’t Funding by Region

% of Respondents with Govt Funded Riparian Buffers

Tier 1 | Tier 2 | Tier 3 | Tier 4
--- | --- | --- | ---
Lancaster | York | Franklin | Cumberland
Dauphin | Bedford | Adams | Perry
Fulton/Hunt | Col/Mont/Sull | Snyder | Mifflin
Lycoming | Schuylkill | Juniata | Union
Bradford | Chester | Tioga | Berks
Lanc/Luz/Sus/We/Wy | Cam/Elk/Jef/Mc/Po.
Riparian Buffers
Gov’t Funding by Tier

% of Respondents with Gov’t Riparian Buffers

Tier 1 Counties
Tier 2 Counties
Tier 3 Counties
Tier 4 Counties

Phase 3 WIP Tier

PennState
College of Agricultural Sciences
All Conservation Practices Adoption by All Farms

Conservation Practices

- Compliance
- Soil Health
- Enhanced Nutrient Mgt
- Manure Mgt
- Stream Health

Percentage of Respondents with Practice

- NMPs/MMPs
- Ag E&S/Con Plans
- Barnyard Runoff Controls
- No/Minimum Till
- Cover Crops
- NMPs on Crop Farms
- Enhanced N Mgt
- Manure Storages
- Riparian Buffers
All Conservation Practices
Gov’t Funding by All Farms

- NMPs/MMPs: 22.2% (Gov’t Funding: 77.8%)
- Ag E&S/Con Plans: 29.2% (Gov’t Funding: 70.8%)
- Barnyard Runoff Controls: 25.7% (Gov’t Funding: 74.3%)
- No/Minimum Till: 9.2% (Gov’t Funding: 90.8%)
- Cover Crops: 9.0% (Gov’t Funding: 91.0%)
- NMPs on Crop Farms: 15.4% (Gov’t Funding: 84.6%)
- Manure Storages: 35.8% (Gov’t Funding: 64.2%)
- Riparian Buffers: 46.2% (Gov’t Funding: 53.8%)
All Conservation Practices Adoption by Farm Type
All Conservation Practices
Gov’t Funding by Farm Type

<table>
<thead>
<tr>
<th>Farm Type</th>
<th>Average Govt Funded Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poultry</td>
<td>20%</td>
</tr>
<tr>
<td>Swine</td>
<td>30%</td>
</tr>
<tr>
<td>Dairy</td>
<td>20%</td>
</tr>
<tr>
<td>Beef</td>
<td>40%</td>
</tr>
<tr>
<td>Equine</td>
<td>10%</td>
</tr>
<tr>
<td>Mixed Livestock</td>
<td>30%</td>
</tr>
<tr>
<td>Crop</td>
<td>20%</td>
</tr>
</tbody>
</table>
All Conservation Practices Adoption by Farm Size
All Conservation Practices
Gov’t Funding by Farm Size

![Graph showing government funding by farm size.](image-url)
All Conservation Practices Adoption by Region

- Tier 1
- Tier 2
- Tier 3
- Tier 4

Region:
- Lancaster
- York
- Franklin
- Lebanon
- Cumberland
- Dauphin
- Centre/Clearfield
- Bedford
- Adams
- Perry
- Fulton/Huntingdon
- Clarion/Montgomery/Sullivan
- Snyder
- Mifflin
- Lycoming
- Schuylkill
- Juniata
- Union
- Bradford
- Chester
- Tioga
- Luzerne/Warren/Wyoming
- Berks
- Blair
- Cameron/Erik/Erie/Mck/Mont/Pot

Average Implementation Rate

0.0% - 100.0%
All Conservation Practices Adoption by Tier

<table>
<thead>
<tr>
<th>Tier 1 Counties</th>
<th>Tier 2 Counties</th>
<th>Tier 3 Counties</th>
<th>Tier 4 Counties</th>
</tr>
</thead>
<tbody>
<tr>
<td>50.0%</td>
<td>50.0%</td>
<td>40.0%</td>
<td>40.0%</td>
</tr>
</tbody>
</table>

Phase 3 WIP Tier
All Conservation Practices
Gov’t Funding by Tier

Tier 1 Counties
Tier 2 Counties
Tier 3 Counties
Tier 4 Counties

Average Government Funded Rate

Phase 3 WIP Tier
Summary Conclusions

• Higher rates of adoption of practices/plans required by law and those that promote soil health.
• More “innovative” practices have lower rates of adoption, at least as this time.
• Use of government funds fluctuated depending on practice but was generally low across the board.
• Adoption rates highest for swine, dairy and poultry. Equine was lowest.
• Beef had highest proclivity to using gov’t funds; equine lowest.
• Higher rates of adoption and use of gov’t funds for larger farms.
• Regionally, great variation. South and central regions had higher adoption than north and west. Gov’t funding flipped these trends.
Questions?

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  mroyer@psu.edu