PA Farm Conservation Practices Inventory

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

Presentation of revised report to address Tetra Tech comments
Dec 15, 2016 AgWG Meeting

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Additional Survey Analysis

Issues to Address

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- Aggregate data shows farmer reported data is accurate and is statistically reliable.
- Explore potential for county or regional variability from aggregate data set.
- Demonstrate how expected values and upper and lower 95% confidence limits were applied to aggregate data.
- Account for under and over reporting where appropriate.

Additional Survey Analysis

Exploring county or regional variability

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- County based comparisons did not allow for adequate sample size to conduct reliable statistical analysis.
- We aggregated counties into groups based on river basin:
  - Potomac
  - Juniata
  - Upper Susquehanna
  - Lower Susquehanna

Additional Survey Analysis

Exploring county or regional variability

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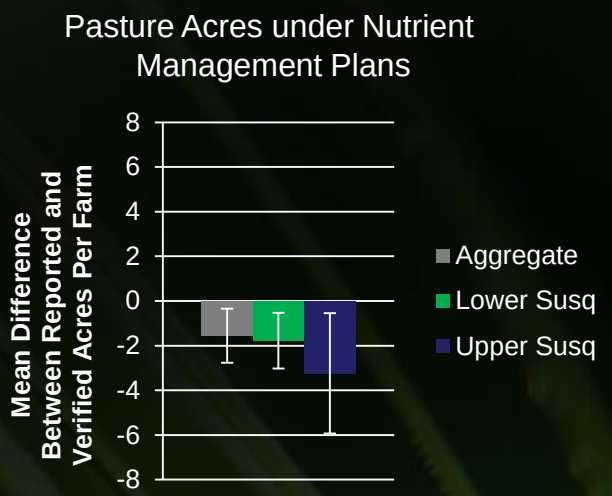
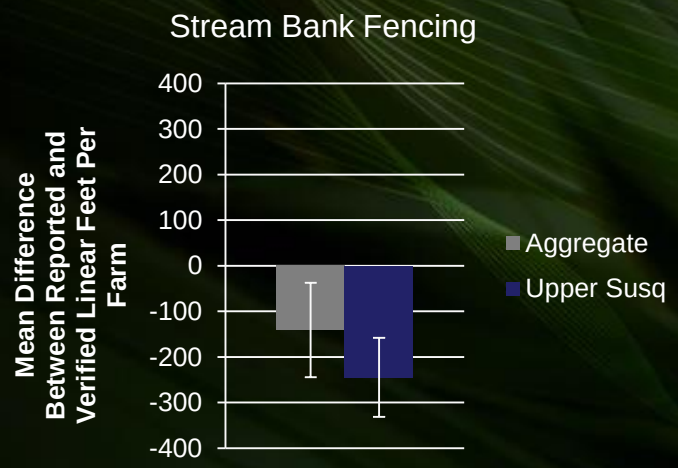
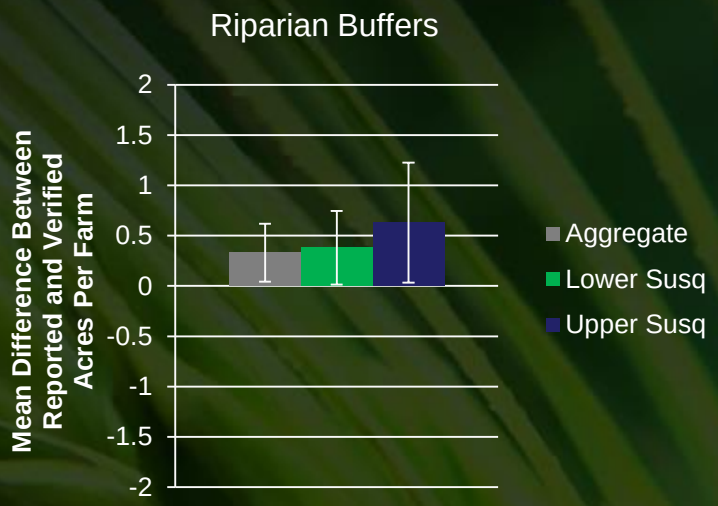
- For BMPs where results were statistically significant, results tracked aggregate data.
- Conclusion: No significant geographic variability from aggregate data.







Statistical Analysis

Per Farm Mean Differences

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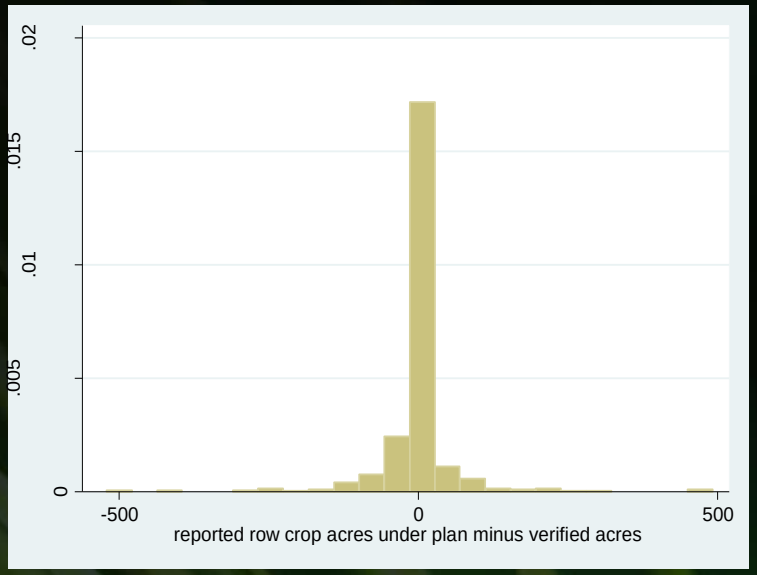
For acres of row crops:

- Mean difference between reported and verified acres: -2.86 acres
- 95% confidence interval: -8.44, 2.73

- Example:
  - If farmer reported 300 acres, we expect him to actually have 302.86 (and we are 95% confident he actually has between 297.2 and 308.4 acres)



Statistical Analysis

Developing Aggregate Data

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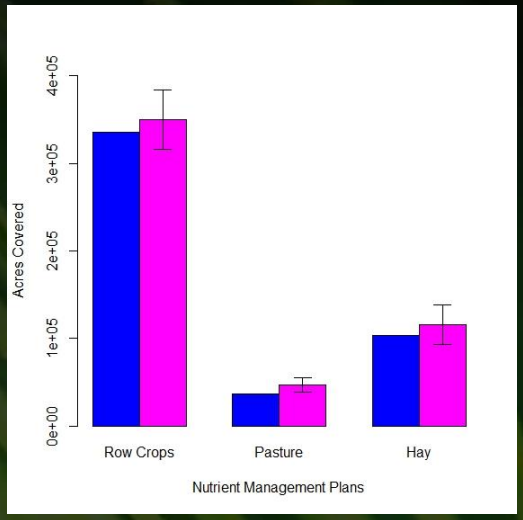
- Reported value – Mean deviation per farm*n = Expected value
- n = 6,782 (total number of survey returns)
- Use same formula to calculate lower and upper 95% confidence intervals
- See Appendix E for more details

Practice	Reported Results	Lower 95% Bound	Expected Results	Upper 95% Bound
NMP Row Crops	335,250	316,193	350,103	384,081



Survey Results

Adjusting for Under and Over Reporting

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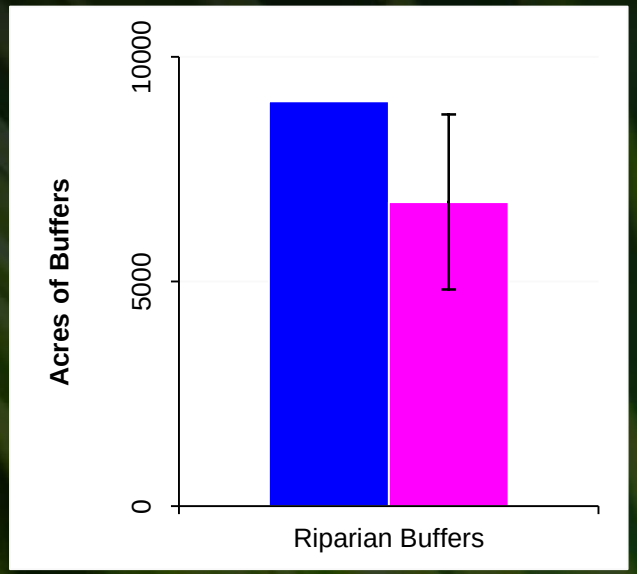
- Adjusted (expected) values allows for under and over reporting adjustments to BMPs
- To eliminate possibility of over reporting, we recommend reporting actual survey results reported by farmers
- Exception: adjustment downward to account for systematic over reporting of riparian buffers



Survey Results

Adjusted for Over Reporting of Buffers

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Practice	Amount Implemented				
NMPs/MMPs*	335,250 ac row crops	37,243 ac pasture	103,307 ac hay		
Enhanced Nutrient Management	97,562 acres				
Manure Storages	1,598 dairy storages	194 beef storages	213 swine storages	159 poultry storages	
Barnyard Runoff Controls	2,106 systems				
Agricultural E&S Plans	40,170 ac row crops	4,930 ac pasture	9,973 ac hay		
Conservation Plans	173,481 ac row crops	17,239 ac pasture	37,544 ac hay		
Stream Bank Fencing	1.34 million linear ft				
Watercourse Access Controls	Grass 10-35 ft width: 705 ac	Grass >35 ft width: 1024 ac			
Riparian Buffers	Grass 10-35 ft width: 342 ac	Grass >35 ft width: 620 ac	Forest 10-35 ft width: 850 ac	Forest >35 ft width: 4,958 ac	

** Includes only non-cost shared NMPs. NMPs still need to be separated from MMPs for reporting purposes.*

Questions?

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