Statistical Sampling Approach for Initial and Follow-Up BMP Verification (DRAFT)

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Purpose

- Statistics-based approach for selecting sites for BMP verification
  - Present
  - Functioning
  - BMP-by-BMP basis

Statistics

- See previous presentation

Source: http://en.wikipedia.org/wiki/Margin_of_error#Calculations_assuming_random_sampling

Practical Sampling Considerations

- Defining population units
  - Support simple enumerations
  - Structures, contracts, plans
  - Fit the BMP

- Stratified sampling
  - Focus on priority BMPs
  - Reflect relative contributions to overall pollutant loads
- Grouping
  - Increase N for BMP(s)
  - Group “similar” BMPs
  - Grouping discussed in agricultural BMP verification guidance

Practical Sampling Considerations

- Field verification methods
  - Decide “YES” or “NO”
  - Consistency
  - Field test

- Sampling timeframe
  - Observe features that show BMPs there and working
  - Multiple visits possible (e.g., cover crops)
- Level of effort (cost)
  - Efficient scheduling of staff
  - Piggyback
  - SOPs

Simple Approach

- Estimate sample sizes for the priority BMPs,
- Choose the largest “n” value from the set of priority BMPs,
- Randomly select the farms to inspect for the priority BMPs,
- Check records for the non-priority BMPs at the selected farms to determine the respective “n” values for non-priority BMPs,
- Estimate confidence intervals for the non-priority BMPs based on the “n” values
- Do either:
  - Increase random sample size for priority BMPs as needed to reach suitable confidence intervals for the non-priority BMPs and repeat steps 3-5 until a suitable confidence interval is reached for all BMPs of interest, or
  - Develop a separate sampling approach for non-priority BMPs by carrying out steps 1-3 for the non-priority BMPs. This creates two sampling approaches, but there may be overlap on sites visited.