BMP CHALLENGE ™:
Yield and income risk protection for corn farmers who adopt water quality BMPs

Brian Brandt – Director of Agricultural Conservation Innovation Center
Jim Baird -- Mid Atlantic States Director
Presentation Objectives

- Water Quality: Global & Local
- The INPUT PARADOX
- What is BMP CHALLENGE?
- BMP CHALLENGE in PA
- Results from the field
- Next steps to SCALE UP
Water Quality Stewardship...
Mill Creek
PA’s Nutrient Reduction Commitments

• A lot has been done
  – Through 2006, PA reduced nitrogen loadings to the bay by 25.8 M lbs. (45 % of goal)
  – PA farmers responsible for more than half of all N reductions in the multi-state watershed
• A lot more to go
  – 32 M lbs left to go
  – 25 M lbs from farmlands
  – With more than 40,000 farms, that averages to about 600 lbs of reduction per farm.

Best management practices that work for production agriculture are a necessary part of the answer!
Barriers to adopting BMPs

- High initial capital cost
  - State and Federal cost share $

- Technical knowledge of practice, installation and maintenance
  - Technical Assistance (state, federal, county, non-profit)

- Potentially lower income from production loss.
  - ??????
Input paradox?

EPA, National Academy of Sciences and more than 20 other studies identify **ECONOMIC RISK** as a major **barrier**.

“We’ve used a crop consultant in the past…

…if he’s wrong, the cost of him being wrong is much more than the cost of that additional insecticide or herbicide.”
“EXTRA” is a RATIONAL DEFENSE

Against economic uncertainty

- *Nutrient mgt is an uncertain science* - 1.2# N/bu no longer

- *Nutrients may be lost if heavy spring rains occur or unavailable during droughts*

- *Bumper crop conditions may call for more nutrients*
2005 corn farmer survey

• 700 farmers, each planting 850 acres of crops per year on average

• Some progress
  – 54% have reduced fertilizer over past five years, 18% by 15% or more

• Enormous potential for basic and advanced practice adoption
  – 16% do not credit N from soybeans
  – 25% do not credit nutrients in manure
  – 67% do not use variable rate
  – 88% do not use in-season testing/application
2005 corn farmer survey

• 46% want to see proof before changing practices

• 80% would be interested in reducing fertilizer rates if income were guaranteed
BMP CHALLENGE: Mechanics

- Farmer enrolls field(s)
- Crop advisor prepares recommendation (nutrient, tillage)
- Farmer applies traditional practice to check strip. New practice on rest of field
- Farmer and crop advisor assess yield v. adjacent
- Farmer paid if loss in profit based on Net Returns Analysis
Net Returns Analysis

• Calculate gross returns for check strip and BMP strips using RMA-APH corn price
• Subtract fertilizer or tillage costs from gross returns to calculate net returns
• If net returns to BMP are negative, farmer receives guarantee payment equal to the difference
• If net returns to BMP are positive, farmer contributes 1/3 of savings back to BMP Challenge program
BMP Challenge Participating States
Conservation Tillage and Nutrient Reduction

- **Green** = BMP Recommendations
- **Light Green** = < BMP Recommendations
Enhanced Nutrient Management

• 2008 CIG funded project initiated in 2005 to work with corn farmers in the Chesapeake Bay Watershed (PA, MD and VA) to test methods to reduce nutrient applications without negatively affecting the economics of farming.

• The project provides a yield guarantee and incentive payment for farmers reducing fertilizer applications 5% – 15% below current recommendations
  – Meets baseline requirements for trading
Pennsylvania Chesapeake Watershed
BMP Participants

- York (1)
- North
- Clinton (3)
- Umberland (2)
- Lancaster (11)

Map of Pennsylvania showing the distribution of BMP participants.
<table>
<thead>
<tr>
<th>Check strip yield (bu/acre)</th>
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<th>Net return</th>
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## Enhanced Nutrient Management Results 2007
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## Enhanced Nutrient Management Results 2006
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Enhanced BMP Challenge Results

• **Yield Results** for PA Enhanced Nutrient BMP (15% below BMP)
  – Average for below BMP area
    • Grain = 154 bushels per acre
    • Silage = 21.2 tons per acre
  – Average for Check Strip (BMP rate)
    • Grain = 164 bushels per acre
    • Silage = 23.1 tons per acre

• **Average fertilizer savings**
  – 15% or 27# N/acre
  – Average of nearly $11 in N savings

• **Net Returns to BMP**
  – Average net return = $(20.75)

• **Guarantee Payouts**
  – Guarantee payments for 30 of 36 fields
  – Total payment amount = $123,099.67
  – Average payment amount = $34.63/acre
Enhanced BMP Challenge N Reduction Results

- Total lbs reduced over 2 years: 96,227
- Ave. N reduction per acre: 27 lbs
- Cost per pound of N reduction at field edge: $2.98
- Cost per pound estimated by Chesapeake Bay Commission: $4.41

Scaling Up

If the program expanded statewide to all 1.4+ million acres of corn, Pennsylvania could meet one third of its nitrogen reduction commitment under the Chesapeake 2000 agreement at a cost effective price.
Next Steps to Scale Up

Research & Outreach

2006 & 7 Demos 20 farmers

2008

Targeting

Build Partners

10 farmers

2009

Sustain $

Feasibility

Policy

2011
## Funding

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AFT’s Project Partners

- PDA
- DEP
- Local Conservation
- Farmland Pres
- Bay Commiss.
- Penn State
- Farm Bureau
- NRCS
- CBF
- PCDA
- Producers
- Agflex
- TeamAg

www.bmpchallenge.org