The ABC’s of Agricultural BMPs
(Best Management Practices)

Jack E. Frye
Russ Baxter

Department of Conservation & Recreation
CONSERVING VIRGINIA’S NATURAL & RECREATIONAL RESOURCES
Presentation Overview

- What is NPS pollution?
- History and Description of Ag. BMP program
- Current Programs and Partnerships: State, Federal, Private
- Promotion and Outreach Efforts
- Benefits of BMPs
- Funding
- WQIF, Ag. Cost – Share Funding
- Tax Credits
- Loan Programs
- Current and Future Issues, Directions and Needs
Agriculture is one of the Sources of Nonpoint Source Pollution

• Other sources include lawns, streets, rooftops, construction sites, office parks, golf courses, etc.

• NPS requires multiple strategies to control depending on source.

• Current NPS programs in Virginia are a mix of voluntary and regulatory

• DCR is the state’s lead nonpoint source control agency
Nonpoint Source Pollutants

• **Nutrients**
  – Fertilizers
  – Septic systems
  – Pet and animal waste
  – Yard wastes and debris

• **Sediment (silt, sand, gravel)**
  – Construction sites
  – Roadways
  – Suburban lawns and gardens
  – Stream banks
Nonpoint Source Pollutants

• **Bacteria**
  – Septic tanks
  – Sewer lines
  – Boating waste disposal
  – Pet and animal waste

• **Toxic contaminants**
  – Oil, grease and gasoline from roadways
  – Home, garden and lawn chemicals
Agricultural “BMPs” Overview and History

• Practices designed to control topsoil loss & reduce negative environmental impact of farm production
• Initially designed to control soil loss beginning in the “Dust Bowl” days
• “Science-based” management developed and spread from land grant universities (through extension service)
• Protect/improve farm productivity initially
• Now, on & off farm environmental benefits of on-farm practices
• Traditionally BMP programs focused on demonstration and education.
• Given aggressive water quality goals, focus has now moved to ongoing implementation
Agricultural BMPs in Virginia --The Big Picture

• Virginia’s Ag BMP Manual – DCR produces manual that establishes standards & specifications for a comprehensive suite of over 60 BMPs

• Incentive options for farmers vary; 34 of the BMPs contained in the manual provide a cost-shared or flat-rate incentive payment

• Some operations (CAFOs) must implement certain practices, all others voluntary

• WQIF is primary source of funding: 57% Bay / 38% Southern Rivers / 5% to local Soil and Water Conservation Districts according to amendments to WQIF

• 3 BMP categories:
  – farm management (e.g. sidedress application of nitrogen on corn)
  – agronomic practices (e.g. permanent vegetative cover on cropland)
  – engineered practices (e.g establishing terraces or building an animal waste control facility)
Ag. BMPs -- Financial Incentives Supported by the Commonwealth

3 options are available to farmers through state supported programs:

• **Funding Assistance** (VA Ag. BMP Cost-Share Program; CREP)
• **Tax credits** (Virginia State Tax)
• **Loan Programs** (Va. Ag BMP Loan Program- SRLF; Va Small Business Environmental Compliance Assistance Fund)

Note: Farmers can combine programs (e.g. receive tax credit for their portion of cost-share)
Federal Program Administered by Natural Resources Conservation Service (NRCS)

Federal Funds originate from national farm bills (2002 is most recent) and programs that deliver them…

- **EQIP** (Environmental Quality Incentive Program) provided >$10 million in Ag BMP assistance to Virginia Farmers in 2007

- Targeting based on national goals (60% goes for livestock issues e.g. waste structures, stream exclusion and grazing management)

- NRCS also focuses on production and environment, VA program focuses only on water quality
BMPs -- Partnership

Virginia’s Ag BMP Program delivery relies upon local-state-federal-private support and delivery system:

- **Virginia’s 47 Soil and Water Conservation Districts** promote cost-share program to farmers, give technical assistance, manage cost-share $’s through contracts with DCR, comply with program delivery requirements per §10.1-546.1

- **DCR** establishes targeting of $’s with geographic and practice priorities, distributes funds to SWCDs, enables tracking & reporting system, audits SWCDs, provides overall program administration.

- **NRCS** provides engineering expertise, field staff, training, practice standards & specifications

- **Agricultural Producers** install and maintain practices and provides balance of funding according to practice requirements

**Note:** even with incentive options available, farmers often implement BMPs solely on their own initiative (and expense) due to agronomics or their stewardship ethic.
Virginia Agricultural BMPs
(samples of practices in BMP manual)

• Cover Crops
• Continuous No-till System
• Nutrient Management Planning
• Filter Strip
• Riparian Forest Buffer
• Stripcropping Systems
• Livestock Exclusion
• Alternative Watering Systems

• Stream Protection
• Stream Crossing & Hardened Access
• Animal Waste Control Facility
• Sinkhole Protection
• Loafing Lot Management System
• Permanent Vegetative Cover of Critical Areas
BMP Example

This practice protects streams through exclusion of livestock by fencing and provision of alternative water sources...

Grazing Land Protection
SL-6

Important Facts

Practice Lifespan
Maintained for a minimum of 10 years following the calendar year of installation.

Cost-share Rate
A rate based on 75% of the cost of all eligible components has been established. Cost-share may be from the state, funds in a combination of state and other sources. CREP cost share rate is 25% of FSA approved cost.

Tax Credit
The tax credit rate is 25% of the total eligible cost not to exceed $17,500.00. If a cooperator receives cost-share, only the percent of the total cost of the project that the cooperator contributed is used to determine the tax credits.

Grazing land protection are structural and/or management practices that will enhance or protect vegetative cover to reduce run-off of sediment and nutrients from existing pastureland and reduce NPS pollution associated with grazing livestock. Their purpose is to provide livestock water systems and/or fencing that will improve water quality by establishing rotation grazing to control erosion and eliminate direct access to live streams where there is a defined water quality problem.

- A written management plan (and rotational schedule when more than one grazing unit is planned) must be prepared and followed for all grazing units contained in the system in accordance with NEC3 FOTG.
- To supply water, cost-sharing and tax credits are authorized for construction or deepening of wells, development of springs or seeps, construction or repair of dug cisterns, ponds, or ponds, and installation pipelines, storage facilities, cisterns, troughs, and artificial watersheds. Watering facilities which distribute grazing to improve water quality when an existing livestock exclusion of an adjacent stream or sensitive feature fails to protect water quality is also authorized by cost-share.
5 Priority Ag BMPs
Virginia adopted a strategy to promote 5 well accepted and effective practices:

1. Cover Crops
2. Conservation Tillage (no-till)
4. Riparian (streamside) Buffers
5. Livestock Exclusion (livestock watering systems/streamside fencing)

- Full implementation of these 5 priority practices achieves 60% of the Bay NPS goal from all land uses
- 90% of ag acres in Bay need BMPs to meet goals (current status varies by practice, roughly 30% overall)
Ag BMPs Achieve Multiple Farm Benefits

Why farmers implement BMPs:

– Conserve farm natural resources (“original conservationists”)

– Realize benefits to the farm operation (for example)
  • A system of year round cover (including cover crops) and minimal soil disturbance (“no-till”) improves soil quality, retains greater soil moisture, improves crop yields…
  • Excluding livestock from waterways improves herd health, reducing veterinary costs…
  • Maximizing crop production is achievable without wasteful use of fertilizers –both commercial and organic (nutrient management)

– Enhance water quality

However, implementing BMPs comes at a cost “$”
(…time, labor, equipment, materials)
Ag. BMPs -- “Selling” Conservation

- In order to achieve needed levels of participation and promote Districts, DCR contracted for market study and marketing assistance. Study confirms that farmers prefer receiving conservation information face-to-face from trusted sources:
  - Other farmers
  - SWCD personnel with established relationships
  - Extension agents
- Effective use of outreach media helps raise farmer awareness of resources and incentives…
BMPs -- Selling Conservation Through Effective Use of Media
## CHESAPEAKE BAY - 5 Priority Practice
Implementation: 60% in 6 years Estimates (Ag BMPs and Technical Assistance)

<table>
<thead>
<tr>
<th>River Basins (Bay watersheds)</th>
<th>Grand Total (BMPs &amp; TA)</th>
<th>Technical Assistance Needs Sub-Total*</th>
<th>5 Priority BMP Sub-Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shenandoah/Potomac</td>
<td>$97</td>
<td>$4.6</td>
<td>$92.5</td>
</tr>
<tr>
<td>Rappahannock</td>
<td>$46</td>
<td>$2.2</td>
<td>$44.3</td>
</tr>
<tr>
<td>York</td>
<td>$47</td>
<td>$2.2</td>
<td>$45.5</td>
</tr>
<tr>
<td>James</td>
<td>$77</td>
<td>$3.6</td>
<td>$74</td>
</tr>
<tr>
<td>E. Shore</td>
<td>$6.5</td>
<td>$312,000</td>
<td>$6</td>
</tr>
<tr>
<td>State Share- Bay River Basins Total</td>
<td>Approx $275</td>
<td>Approx $13</td>
<td>Approx $262</td>
</tr>
</tbody>
</table>

| Farmer Share Total | $105 | $0 | $105 |
# SOUTHERN RIVERS: NPS TMDL Clean up Estimates

<table>
<thead>
<tr>
<th>River Basins (SR watersheds)</th>
<th>Grand Total (BMPs &amp; TA)</th>
<th>Technical Assistance Needs Sub-Total*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chowan/Albermarle Sound</td>
<td>$210</td>
<td>$10</td>
</tr>
<tr>
<td>Roanoke</td>
<td>$468</td>
<td>$22</td>
</tr>
<tr>
<td>New/Yadkin</td>
<td>$281</td>
<td>$13.4</td>
</tr>
<tr>
<td>Tennessee/Big Sandy</td>
<td>$296</td>
<td>$14</td>
</tr>
<tr>
<td>Atlantic Coastal</td>
<td>$48</td>
<td>$2</td>
</tr>
<tr>
<td><strong>State Share - Southern Rivers Total</strong></td>
<td><strong>Approx $1.3 billion</strong></td>
<td><strong>Approx $62 million</strong></td>
</tr>
</tbody>
</table>
History of WQIF Funding Nonpoint Source

Funding has been unpredictable and dependent upon state surpluses and year-end contributions to the Water Quality Improvement Fund – Nonpoint account.

- FY 02 – No funding
- FY 03 – No funding
- FY 04 – No funding
- FY 05 – $ 9.4 M
- FY 06 – $ 69.7 M
- FY 07 – $ 3.8 M (added in caboose bill during 2007 session)
- FY 08 – No funding
- FY 09 - $ 20 M
## “New” Money Expenditure Schedule

<table>
<thead>
<tr>
<th>Allocations by Program Year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMPs (all basins)</td>
<td>$17.750 m</td>
<td>$1.250 m</td>
<td>$1 m</td>
<td>$20 m</td>
</tr>
<tr>
<td>BMPs CBay (57%)</td>
<td>$10.05 m</td>
<td>$750,000</td>
<td>$600,000</td>
<td>$11.4 m</td>
</tr>
<tr>
<td>BMPs SR (38%)</td>
<td>$6.7 m</td>
<td>$500,000</td>
<td>$400,000</td>
<td>$7.6 m</td>
</tr>
</tbody>
</table>
Virginia Agricultural Conservation Tax Credits

Virginia Code enables two types of credits (non transferable) towards Virginia Income Tax due:

1. Credit from expenses for implementation of Ag BMPs
2. Credit from costs of purchasing certain types of farm equipment
Va Tax Credits for Ag BMPs

1) **Agricultural BMPs**
   - Individuals and corporations eligible
   - 25% of first $70,000 expended for BMPs (up to $17,500 credit in the year completed)
   - May be carried over and applied up to 5 years (credits are not transferable to another)
   - Credits authorized by local SWCD board
   - BMPs include those that address livestock wastes, reduce erosion, nutrients and pesticides and equines (added in 2006)

2) **Credits also available for purchase of certain types of conservation equipment including no-till planters, precision application equipment**
AG. TAX CREDIT $ AUTHORIZED BY PROGRAM YEAR

Note: chart shows credits authorized, not used
Loan Programs

Agricultural BMP Loan Program
- Administered by VA Dept. Environmental Quality (DEQ)
- 22 BMPs and certain equipment eligible
- All farmers eligible
- Interest rate 3%, min. loan $5,000
- To date (2000 – 2008) over $26 million in loans provided to 327 agricultural producers

Small Business Environmental Compliance Assistance Fund
- Administered by VA Dept. of Business Assistance (DBA) and DEQ
- Available to any small business operating in Virginia
- 16 BMPs eligible for loans
- Interest rate 3%, max loan amount is $100,000
- $231,000 have been given in loans
Ag. BMP Incentive Programs – Issues, Future Directions and Needs

• Targeting BMP funds, technical staff and outreach efforts will continue to maximize improvements in water quality: DCR has adopted targeted “priority practice” strategy

• **Funding fluctuation**; recent farmer research confirms this is the greatest deterrent to farmer participation in the Ag BMP Cost-Share Program

• **Insufficient funding** to meet voluntary demand results in farmers being turned away sign-up or the achieve water quality goals

• **Targeting** cost-effective practices is and will continue to be a high priority (nutrient reduction per dollar is generally high for most ag. practices)

• Many Ag. BMPs are **short-term** and must be renewed annually, unlike upgrades at wastewater treatment plants which, if installed and operated correctly, are “permanent”.

DCR
Issues, Future Directions and Needs (continued)

- GA Action in 2008 created a “subfund” to be used exclusively for Ag. BMPS will all 2008 appropriation deposited in it; Will funding for urban NPS controls be provided?
- **Continued outreach and promotion** necessary to achieve needed participation levels.
- Continued and expanded **support and technical assistance needed** (Districts, DCR and NRCS)
- **Emerging issues such a bio-fuels** and resulting higher crop prices could impact farmers desire to keep or take lands out of production
- **Impacts of climate change** and changing precipitation patterns on BMP design and efficiencies are unknown.