Promoting Viable Farms and Forests
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P Loads by Source to Chesapeake Bay
Source: Chesapeake Bay Program
18 Million lbs P (2007)

Agriculture - chemical fertilizer, 19%
Agriculture - manure, 26%
Urban/Suburban Runoff & In-stream Sediment, 31%
Municipal & Industrial Wastewater, 21%
Natural - wildlife, forest, etc., 3%

Status of Phosphorus in Agricultural Systems
Presentation
2008 Delmarva Poultry Conference

Current Phosphorus Strategy relies heavily on:

- Soil/water conservation plans
- Conservation tillage (erosion control)
- Animal waste storage
- Nutrient management plans
- Phosphorus site index
- Manure transport

Nutrient Management Plan Requirements

- Non-animal agricultural operations
  - N and P based plans in effect by December 2002
- Animal agricultural operations
  - N based plans in effect by December 2002
  - N and P based plans in effect by 2005

How well are we doing?

- What are trends in P levels in soil today compared to 1998?
- What are P levels in streams and rivers in ag-dominated areas?
- What are P trends in poultry manure?
Will the current strategy work?

- Nutrient management planning is important
- Some reductions will eventually occur
- Doubtful we can achieve a 40% reduction in phosphorus
- Particularly difficult with manure/sludge
Effect of Tillage on Sediment Loss

Additional Strategies

- Policy
  - Manure/Sludge management
  - Research
  - Regional Phosphorus Budget

Manure/Sludge Management “Performance Based”

- Policy
  - Incorporate organic waste within 24 hours of application
  - Reduce P losses 4-fold
  - Discourage fall application
  - Promote cover crops
  - Stabilize soil P levels

Research

- Nutrition
  - Poultry Diets
- Application Technologies
  - Injection
## Regional Phosphorus Budget

<table>
<thead>
<tr>
<th>Source</th>
<th>Phosphorus (millions of pounds P per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inorganic Fertilizer</td>
<td>10.0</td>
</tr>
<tr>
<td>Sewage Sludge</td>
<td>2.2</td>
</tr>
<tr>
<td>Imported Corn</td>
<td>1.3</td>
</tr>
<tr>
<td>Supplemental P</td>
<td>5.2</td>
</tr>
<tr>
<td><strong>TOTAL P INPUT</strong></td>
<td><strong>18.7</strong></td>
</tr>
<tr>
<td>Eastern Shore Cropland</td>
<td>9.5</td>
</tr>
<tr>
<td>Litter</td>
<td>8.0</td>
</tr>
<tr>
<td><strong>NET P RETAINED</strong></td>
<td><strong>10.2</strong></td>
</tr>
<tr>
<td>Poultry Production</td>
<td>9.5</td>
</tr>
<tr>
<td>Wheat and Barley</td>
<td>2.6</td>
</tr>
<tr>
<td>Soybean Oil</td>
<td>0.8</td>
</tr>
<tr>
<td>Poultry Products</td>
<td>5.1</td>
</tr>
<tr>
<td><strong>TOTAL P OUTPUT</strong></td>
<td><strong>8.5</strong></td>
</tr>
</tbody>
</table>

*Source: Kenneth Staver, Wye Research and Education Center*

## Conclusions

### Overall
- Nutrient Management Plans are important
- Current strategy will not result in meeting N or P goals

### Specifically
- Cover crops can reduce nitrate leaching by 50% or more
- Use of tillage for poultry manure application can:
  - Reduce nitrogen runoff losses by 50%
  - Reduce phosphorus runoff losses by 75%
  - Where erosion is low
- Modified poultry diets can reduce phosphorus in manure by 30%