Agricultural Environmental Management

Cayuga Lake Watershed

September 28, 2019

Andrew M. Cuomo
Governor

Richard A. Ball
Commissioner

Greg Albrecht
AEM Coordinator/NMP Specialist
Manure nutrients fertilize the crops

Crops grown to feed the cows

Manure nutrients collected & stored
Protect and enhance the environment and the viability of agriculture in New York State.

www.agriculture.ny.gov/soilwater/aem
## AEM 5-Tier Approach

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<thead>
<tr>
<th>AEM Tier</th>
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<th>NRCS 9 Step Process</th>
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<td>Identify existing stewardship, resource concerns, and opportunities</td>
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AEM Tier 2 Assessment Worksheets

Core
- Watershed Site Evaluation
- Agriculture & the Community
- Soil Management
- Manure & Fertilizer Mgmt
- Manure & Fertilizer Storage
- Waste Disposal
- Pesticide Use
- Pesticide Storage, Mix & Load
- Farmstead Water Supply
- Stream & Floodplain Mgmt.
- Petroleum & Oil Product Storage
- Forest Management
- Irrigation Water Management

Livestock
- Livestock Heavy Use Areas
- Silage Storage
- Process Wash Water
- Management of Feed Nutrients
- Water-Bourne Pathogens
- Pasture Management
- Livestock Odor Management
  
  plus
  
  GHG Mitigation Opportunities
  
  Equine
  
  Greenhouse
  
  Vineyard (www.vinebalance.com)

  Fruits & Vegetables

  Long Island

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Many NRCS Standards are used in AEM Tier 3 Plans

www.nrcs.usda.gov/technical/efotg

- Nutrient Management (NY590)
- Cover Crop (NY340)
- Conservation Tillage Practices
- Buffer Practices
- Conservation Crop Rotation (NY328)
- Grassed Waterway (NY412)
- Water & Sediment Control Basin (NY638)
- Manure Storage Facility (NY313)
- Manure Transfer (NY634)
- Compost Facility (NY317)
- Heavy Use Area Protection (NY561)
- Vegetated Treatment Area (NY635)
- Prescribed Grazing (NY528) and more
## Ag Best Management Practice Systems

<table>
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<tr>
<th>BMP SYSTEM NAME</th>
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<tr>
<td>Access Control System</td>
<td>Pathogen Management System</td>
</tr>
<tr>
<td>Agrichemical Handling and Storage System</td>
<td>Petroleum and Oil Products Storage System</td>
</tr>
<tr>
<td>Composting System – Animal</td>
<td>Prescribed Rotational Grazing System</td>
</tr>
<tr>
<td>Erosion Control System – Structural</td>
<td>Process Wash Water Management System</td>
</tr>
<tr>
<td>Feed Management System</td>
<td>Riparian Buffer System</td>
</tr>
<tr>
<td>Integrated Pest Management System</td>
<td>Silage Leachate Control and Treatment System</td>
</tr>
<tr>
<td>Irrigation Water Management System</td>
<td>Soil Conservation System – Cultural</td>
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<tr>
<td>Livestock Heavy Use Area Runoff Management System</td>
<td>Stream Corridor and Shoreline Management System</td>
</tr>
<tr>
<td>Manure and Agricultural Waste Treatment System</td>
<td>Waste Storage and Transfer System</td>
</tr>
<tr>
<td>Nutrient Management System – Cultural</td>
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Funding Programs to Help Advance AEM on Farms

• Locally-led and sponsored by your Soil & Water Conservation District
  • AEM Base Program
  • Agricultural Non-Point Source Pollution Abatement and Control Program (AgNPS)
  • Climate Resilient Farming (CRF)
  • CAFO Waste Storage and Transfer System Program
  • Source Water Buffer Program
  • Conservation Reserve Enhancement Program (CREP)
  • State Aid to Districts

• Other Programs from NYSDEC, USDA-NRCS, USDA-FSA, Cornell, USEPA, and others....
  • NRCS EQIP
  • Cornell/NYS Dairy Advancement Program

+ Significant, on-going investment by farmers.
## Progress Through the AEM Tiers
### In the Cayuga Lake Watershed

<table>
<thead>
<tr>
<th>AEM Tier Work in the Cayuga Lake Watershed</th>
<th>Total Completed</th>
</tr>
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<tbody>
<tr>
<td>Tier 1 Inventory</td>
<td>208</td>
</tr>
<tr>
<td>Tier 2 Assessments</td>
<td>179</td>
</tr>
<tr>
<td>Tier 3 Plans</td>
<td>98</td>
</tr>
<tr>
<td>Tier 4 BMP Systems (in addition to AgNPS, CRF, and CAFO Programs)</td>
<td>53</td>
</tr>
<tr>
<td>Tier 5A Assessment Updates</td>
<td>25</td>
</tr>
<tr>
<td>Tier 5B Plan/BMP Evaluations</td>
<td>37</td>
</tr>
</tbody>
</table>

- **Total Implementation Projects via the AgNPS, the CRF, and the CAFO Storage programs**
  - ~$11.5M from NYS
  - ~$7M from farmers
  - across the full range of BMP Systems

- **Significant addition if USDA effort is included**

- **All CAFO regulated farms implemented**

- **Education, outreach, partner activities, program evaluation, and reporting**
Farmstead Facilities Plan and Practices

Manure Storage and Transfer System
Waste Storage Facility Standard (NY313), Waste Transfer Standard (NY634), etc.
Silage Process Water Control and Treatment System
Waste Transfer Standard (NRCS 634),
Vegetated Treatment Area (NRCS 635), etc.
Livestock Heavy Use Area Runoff Management System

Heavy Use Area Protection (NRCS 561) integrated with Prescribed Grazing (NRCS 528), Roof Runoff Structure (NRCS 558), etc.
Soil Conservation & Nutrient Management Planning

Field Nutrient Balances, Manure Volumes, and Risk Indicators

<table>
<thead>
<tr>
<th>Field ID</th>
<th>Field Name</th>
<th>Acres</th>
<th>2006 Crop</th>
<th>Residual Soil N</th>
<th>Crop N Req</th>
<th>Residual Manure N</th>
<th>Total Nutrients Required (lbs)</th>
<th>Nutrients From Applied Manure (lbs)</th>
<th>Nutrients From Resid (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1213</td>
<td>Field 1</td>
<td>31.2</td>
<td>0.90</td>
<td>13</td>
<td>122</td>
<td>16</td>
<td>127</td>
<td>18</td>
<td>0</td>
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<tr>
<td>1214</td>
<td>Field 2</td>
<td>28.9</td>
<td>0.90</td>
<td>0</td>
<td>40</td>
<td>16</td>
<td>26</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>1215</td>
<td>Field 3</td>
<td>70.3</td>
<td>0.90</td>
<td>15</td>
<td>135</td>
<td>25</td>
<td>60</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

**Summary:**
- Field nutrient balances and manure volumes are critical for effective nutrient management planning.
- The tables and diagrams illustrate the importance of accounting for both applied and residual nutrients to prevent nutrient deficiencies or excesses.

**References:**
- USDA NRCS
- RUSLE2

**Image Highlights:**
- Farm layout and field identification
- Soil and nutrient data analysis
- Planning tools and software

**Additional Information:**
- Soil Conservation and nutrient management planning are essential for sustainable agriculture.
- New York State of Opportunity: Department of Agriculture and Markets.
Multiple Barrier Approach

**Nutrient Management Systems**
Conservation Tillage Practices, Strip Cropping (NRCS 585), Grassed Waterway (NRCS 412), Filter Strip (NRCS 393s), Cover Crop (NRCS 340), Nutrient Management (NRCS 590), Buffer Practices, etc.
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Protecting and enhancing the environment and the viability of agriculture in New York State.

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Dept. of Agriculture and Markets
NYS Soil and Water Conservation Committee

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