

# Agricultural Nonpoint Source Pollution and Best Management Practices

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# Nonpoint Source (NPS) Pollution

Pollution from diffuse sources across the landscape, transported by runoff into waterways.

Agricultural sources of NPS pollution include nutrients from excess fertilizer, sediment from crop fields and pastures, and nutrients and pathogens from livestock waste.

# Identifying Agricultural NPS Pollution

- Water quality monitoring (DEQ)
- Visual site assessment
- Aerial photography
- Topographic maps/elevation profile
- Distance and direction of water bodies

# Identifying Agricultural NPS Pollution



# Developing a Solution

- One or more best management practices (BMPs) may be used.
- Funding is often available through state and federal programs for voluntary BMP implementation (cost-share).
- BMP(s) need to address the pollution and be feasible for the farmer.

# Cropland BMPs

- No-till and reduced tillage, stripcropping
- Nutrient Management
- Cover Crops



# Nutrient Management BMPs



- Target the rate, placement, and timing of Nitrogen and Phosphorus applications to improve plant uptake and avoid over-application



# Cover Crop

- Establish vegetative cover on cropland to reduce erosion and loss of nutrients
- Many options depending on season, species, preceding crop, and more



# Land Use Conversion

- Planting cropland to long-term vegetation (5+ years)
  - Establishing grass or legume cover for 5+ years reduces erosion compared to row crop use
- Planting crop, hay, or pasture to forest (10+ years)
  - Converts existing ag land use to forest, typically on marginal fields
  - Reduces pollutants from pre-conversion erosion, nutrient application, and livestock

# Riparian Buffer Planting

- Establish trees on a minimum of 35' from edge of streambank to establish forested buffer
- Buffers filter runoff from adjacent land use and provide many co-benefits
- May be done independently or in combination with livestock stream exclusion



# Livestock Stream Exclusion

- Streams are fenced to prevent livestock access
- Often includes installation of watering troughs
- Creates a vegetated buffer to filter pollutants from the pasture before runoff reaches the stream
- Eliminates direct deposition of waste and erosion of streambank due to livestock traffic

# Livestock Stream Exclusion



# Animal Waste

BMPs provide for collection, storage, and/or management of livestock waste

- Prevent contact with runoff and allow the waste to be used appropriately
- Most commonly for poultry and cattle
- Includes manure and mortality
- Various BMP options depending on type and number of livestock, how the operation is managed



# Animal Waste



# Animal Waste



# Other BMPs and Tools

- There are many other BMPs that can be implemented on agricultural land!
- Virginia encourages farmers to adopt Nutrient Management Plans, which can be written by DCR staff at no cost to the farmer
- Virginia provides state tax credits for BMPs and for the purchase of agricultural equipment used for conservation tillage and for precision fertilizer and pesticide application

# Resources

- Chesapeake Bay Program BMP Quick Reference Guide (Urban and Ag)  
[https://d18lev1ok5leia.cloudfront.net/chesapeakebay/documents/BMP-Guide\\_Full.pdf](https://d18lev1ok5leia.cloudfront.net/chesapeakebay/documents/BMP-Guide_Full.pdf)
- DCR Soil and Water Conservation website
  - Agricultural Incentives: <https://www.dcr.virginia.gov/soil-and-water/costshar>
  - VACS Program Manual: <https://casdsis.dcr.virginia.gov/htdocs/agbmpman/agbmptoc.htm>
  - Nutrient Management: <https://www.dcr.virginia.gov/soil-and-water/nutmgt>
- Natural Resources Conservation Service (NRCS) Conservation Practices  
<https://www.nrcs.usda.gov/resources/guides-and-instructions/conservation-practice-standards>