Nutrient Reporting in Maryland

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Presentation to:
Nitrogen Tracking and Reporting System Task Force
August 28, 2013
History of Nutrient Management in Maryland

University of Maryland Cooperative Extension Nutrient Management Program Created in 1988

- Voluntary
- Initial focus on nitrogen
- Initial target to animal/crop producers
- Nutrient Management Plans written by Cooperative Extension Advisors
- Recommendations based on agronomic needs as determined by UM Cooperative Extension Scientists
- Focus is on surface runoff and groundwater nitrogen
History of Nutrient Management in Maryland

Nutrient Management Plan Components:

- Soil tests
- Manure tests
- Other nitrogen crediting (cover crops)
- Balance bioavailable nitrogen needed to produce expected yields
- Nitrogen recommendations for about 20 Maryland Crops
- Account for crop rotations
- 3-year plans
History of Nutrient Management in Maryland

Mid-1990s saw large increases in Phosphorus in Chesapeake Bay

Previously believed to be controlled through sediment controls

Levels of Phosphorus saturate soils and become water soluble

Pfiesteria outbreak of 1997 turns attention to Phosphorus in Chesapeake Bay
Maryland Water Quality Improvement Act of 1998

- Landscapers, Parks, and Golf Courses
- Agriculture
  - Crop Growers
  - Animal Producers and Users of Animal Manures
  - Poultry Companies
  - Poultry Litter Pilot Transport (Transfer)
  - Horticultural Industry Management
  - Cost Share Programs
  - Tax Credits
Maryland Water Quality Improvement Act of 1998

All farms with more than $2,500 in revenue or more than 8 Animal Units

- All Crop Growers Have and Implement a Nutrient Management Plan (phased-in over 5 year period)

- Soil Test and Phosphorus-Site Index Determine Type of Nutrient Management Plan
  - Nitrogen Based (N-Based)
  - Phosphorus Based (P-Based)

- Controls the Use of All Nutrients
  - Animal Manure, Commercial Fertilizer, Biosolids…
Maryland Water Quality Improvement Act of 1998

Funding for UMD to hire additional nutrient management plan writers (staff)

Training and certification for crop consultants, fertilizer dealers and farmers
Maryland Water Quality Improvement Act of 1998

Required Certified Nutrient Management Plans be written every 3 years

Submit plans to Maryland Department of Agriculture

Plans confidential

Inspections by Maryland Department of Agriculture
Violations enforced by Maryland Department of Environment
Maryland Water Quality Improvement Act of 1998

Freedom of Information Act and law suites
  • Plans no longer confidential

Change in Maryland Law
  • Plans to be kept on farm.
  • Can be reviewed and inspected by MDA or MDE
  • Submit summary nutrient use to MDA (not confidential)
Maryland Nutrient Management Annual Implementation Report

Maryland Department of Agriculture
NUTRIENT MANAGEMENT ANNUAL IMPLEMENTATION REPORT
for Calendar Year 2012
The Nutrient Management Annual Implementation Report is due by March 1, 2013 and represents nutrient application and farm operation information for 2012. General Instructions, worksheets and other information are available at www.mda.maryland.gov; follow the “nutrient management” link.

<table>
<thead>
<tr>
<th>Part A: Farmer/Operator Information</th>
<th>Did you also receive a 4-page MAFO/CAFO AIR form? □ Yes □ No</th>
</tr>
</thead>
<tbody>
<tr>
<td>County:</td>
<td>MDA Operator No:</td>
</tr>
<tr>
<td>Operator Name:</td>
<td>SS # / FEIN:</td>
</tr>
<tr>
<td>Farm/Operation Name:</td>
<td>Telephone:</td>
</tr>
<tr>
<td>Mailing Address:</td>
<td></td>
</tr>
<tr>
<td>City, State, Zip:</td>
<td>□ Operator □ Owner/Operator</td>
</tr>
</tbody>
</table>
## Part B: Farm/Operation Information

**Operation**
- Crop Production
- Nursery/Greenhouse
- Organic
- Animal
- No-Land
- Other

**Type**
- Integrator Name

**Total Farmed Acres including Pastures**

**Nutrient Sources** *(Check all that apply)*
- Commercial Fertilizers
- Sewage sludge
- Animal Manure
- Other

**Animal Type & Number**
- Dairy
- Beef
- Poultry *(in 1,000 per flock)*
- *# Flocks per year*

**# Poultry Houses**

**Total Area of all Poultry Houses (Square feet)**

**Manure Management**

**Total poultry litter generated** ___ tons
**Last total litter cleanout date** ___
**Amount** ___ tons

**Total poultry litter collected** ___ tons

**Solid manure (not poultry litter) generated** ___ tons
**Liquid manure/waste generated** ___ gals

**Manure collected and available for use** ___ tons ___ gals

**Total available storage** ___ cu ft ___ gals ___ tons

**Date installed:**

**Number of manure storage structures** ___
- *Type* ___ (shed, tank, pit, other)
- *Covered* ___
- *Uncovered* ___ mo./yr.

**Date installed:**

---

[Logo: University of California Agriculture and Natural Resources] [California Institute for Water Resources]
Maryland Nutrient Management
Annual Implementation Report

Manure/Organics
Imported/Exported

<table>
<thead>
<tr>
<th></th>
<th>Imported</th>
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<th>Exported</th>
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<tbody>
<tr>
<td></td>
<td>Tons</td>
<td>Gallons</td>
<td>Tons</td>
<td>Gallons</td>
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<tr>
<td>None</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Manure</td>
<td></td>
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<tr>
<td>Biosolids/Sludge</td>
<td></td>
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<td></td>
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<td>Other organics</td>
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</tbody>
</table>

Liquid manure applied with injector or other sub-surface applicator, total acres

Liquid manure incorporated within 48 hrs. with vertical tillage equipment (ex: "Turbo-Till"), total acres

Poultry litter incorporated within 48 hrs. with vertical tillage equipment (ex: "Turbo-Till"), total acres

Conservation tillage, with 30% or more residue coverage at planting, total acres

Container nursery/greenhouse irrigation runoff and leachate capture and reuse, total acres

GPS Guidance Use (such as lightbar, autosteer, variable rate fertilizer application), total acres

Crop land under irrigation, total acres

Account ID Information Updates
(List the Account ID’s, and check if added or deleted from operation since your 2011 report. Attach additional pages if needed. For assistance, contact your MDA Regional Nutrient Management Office.)

□ No change of account ID(s)

<table>
<thead>
<tr>
<th>Account ID</th>
<th>Added</th>
<th>Deleted</th>
<th>Account ID</th>
<th>Added</th>
<th>Deleted</th>
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</table>
Maryland Nutrient Management Annual Implementation Report

Part C: Nutrient Management Consultant and Plan Information

Consultant Name (First) ____________________________ (Last) ____________________________
Certificate # ___________ License # ___________ □ Operator Certified  □ Nutrient Management Plan Cost-Share □ Yes □ No
Plan Coverage Period: Starting Date (mm/dd/yyyy): ______________________  Ending Date mm/dd/yyyy ________________
Part D: Summary of Nutrient Applications by Crop (all operations)

1. This annual nutrient application report covers all crops, pasture, agricultural or horticultural products grown and associated nutrients applied during period from January 1 – December 31, 2012. The report is due to MDA by March 1, 2013.

2. Information on actual nutrient application must include crop acreage and all nutrient types used for each crop during 2012. If you did not apply nutrients, please list the crop and crop acreage, and then place zeros (0) in the nutrient columns.

3. Nutrients reported in this table should be reported as a total POUNDS applied for the entire crop, NOT on a per acre basis. The nutrient values for each source can be found in the "Summary of Nutrient Recommendations" in your Nutrient Management Plan.

4. To calculate the POUNDS of nutrients applied, multiply the nutrient value (N-P₂O₅-K₂O) by the crop acres where you applied nutrients. For example, 2 tons/acre of manure provided a nutrient value of 50-70-50 lbs/acre. When applied to 50 acres of corn, it would be reported as 2,500 - 3,500 - 2,500 lbs of N, P₂O₅ and K₂O in the manure column.

5. Combine ALL the fields and fertilizer use by crop type. For example, add together all nutrient inputs for all your corn acres. If there are several plantings of vegetable crops during a year, add together the total acres for each planting and total nutrients applied. If nutrients from manure/organic sources were applied during 2012 for a 2013 crop, list it as a separate crop entry, for example: corn 2013, 10,000 lbs. of N, 4,500 lbs of P₂O₅ and 6,000 lbs K₂O.

6. Include ALL nutrients applied during the calendar year. If your rotation includes small grains, please differentiate spring and fall nutrient applications. For example, spring topdress and fall starter applied to different small grain crops in 2012.

<table>
<thead>
<tr>
<th>CROP Include Pastures</th>
<th>TOTAL POUNDS available nutrients applied from:</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Commercial Fertilizer</td>
</tr>
<tr>
<td></td>
<td>N</td>
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</table>

Part E: Report Certification

This Nutrient Management Annual Implementation Report, to the best of my knowledge, truly and accurately reflects a summary of implementation records for my operation in 2012. A valid nutrient management plan for the 2013 agricultural production season will be developed and implemented.

Printed Operator’s Name

Operator’s Signature

Date

MDA-N-122-(10-15-12)
Maryland Nutrient Management
Annual Implementation Report (CAFO/MAFO Addendum)

Part F: Summary of Nutrient applications by Field (CAFO/MAFO Operations) List all fields receiving manure (whether generated on site or imported) and provide the field size, crop or crops grown in 2012 and the yield goal, the soil test results for the growing year, the nutrient requirements in pounds of nutrient per acre of the crop grown, the manure application rate in pounds of nutrient per acre and whether other fertilizer was applied, including the number of pounds of nutrients from other fertilizers applied to that field. Field names must correspond with the nutrient management plan field names. Attach additional sheets if needed.

<table>
<thead>
<tr>
<th>Field Name/Management Unit</th>
<th>Acres</th>
<th>Crop &amp; Yield Goal</th>
<th>Actual crop yield harvested</th>
<th>Soil Test Results (indicate ppm, mg/l, or lbs/a)</th>
<th>Nutrients Recommended for Crop/Yield Goal (in lbs nutrient per acre)</th>
<th>Nutrients from Manure/Litter/Process Wastewater Application Rate (in lbs nutrient per acre)</th>
<th>Commercial fertilizer, sewage sludge and other nutrient sources (in lbs nutrient per acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1</td>
<td>30</td>
<td>corn grain 150 bu</td>
<td>130</td>
<td>81 ppm</td>
<td>150 20</td>
<td>Type 150 0</td>
<td>urea 150 0</td>
</tr>
</tbody>
</table>
Maryland Nutrient Management Annual Implementation Report (CAFO/MAFO Addendum)

<table>
<thead>
<tr>
<th>Lab Name</th>
<th>Sample I.D.</th>
<th>Sample Date</th>
<th>% moisture</th>
<th>Total N% dry basis</th>
<th>Total P_2O_5% dry basis</th>
</tr>
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<tbody>
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</table>
Part H: Land Application of Animal Waste

Total acres for land application covered by the nutrient management plan, _______ acres

Total crop acres under operator’s control on which animal waste is applied, _______ acres

Total solid manure land applied, _______ tons

Total liquid manure land applied, _______ gals

Total poultry litter land applied, _______ tons
Maryland Nutrient Management Annual Implementation Report (CAFO/MAFO Addendum)

| Part I: Recipients of Exported Manure or Poultry Litter, List the receivers of your manure or litter. (Use additional sheets if necessary) |
|---|---|
| **Name** | **Address** |
|  |  |
|  |  |
|  |  |
|  |  |
Part J: Unpermitted Discharges

List all times during 2012 that unpermitted discharges of contaminated water occurred from the production area to surface waters, along with the date, time, quantity of discharge and the source (chicken house, manure shed, swale between chicken houses, etc.).

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Quantity</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
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</table>
Maryland Nutrient Management Calculation Worksheet

In general, most of the information you need to calculate the amounts of nutrients applied are located in the “Summary of Nutrient Recommendations” in your Nutrient Management Plan. If for any reason, your nutrient source or application rates have changed significantly from what's written in the plan, contact your consultant to update your nutrient recommendations. Use this worksheet to calculate your actual nutrient applications.

1. If you have followed your nutrient recommendations as written in your plan:

<table>
<thead>
<tr>
<th>STEPS</th>
<th>Example</th>
<th>Your Plan Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. From the “Summary of Nutrient Recommendations” in your plan,</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>locate the nutrient recommendations from your sources of nutrients</td>
<td>P2O5</td>
<td>P2O5</td>
</tr>
<tr>
<td>for N, P2O5 and K2O in lbs/acre for a specific crop grown.</td>
<td>145</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>B. Add up all the crop acres for the same crop (ex. corn).</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>C. Calculate pounds of each nutrient applied N, P2O5 and K2O, by</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>multiplying the application rate by crop acres. (A * B)</td>
<td>P2O5</td>
<td>P2O5</td>
</tr>
<tr>
<td></td>
<td>K2O</td>
<td>K2O</td>
</tr>
</tbody>
</table>

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Agriculture and Natural Resources  California Institute for Water Resources
Nutrient Reporting in Maryland

Goals of the reporting program
Surface water Quality
Groundwater Quality
Environmental Quality
Public Health

determine what is reported
N P K
Micronutrients
Irrigation
Nutrient Reporting in Maryland

Use of reported data
  Regulation
  Education
  Research

Access to data
  Public
  Limited
  Private
Questions