

# Nutrient Management Update and Preparing for an Audit



Define: Nutrient management incorporates both production agriculture and urban lawn care promoting a balance between maximum production and environmental stewardship.

# Update- Concerns with July 1, 2016 NM Regulations

- Winter 2015/Spring 2016, MDA received concerns from livestock operations, food waste and bio-solid companies, and municipalities in regards to new winter restrictions going into affect July 1, 2016

# NM Regulations Adopted in 2012

## Effective July 1, 2016

- No spreading of manure or other nutrients from November 15<sup>th</sup> to March 1<sup>st</sup> west of the Bay, and November 1<sup>st</sup> to March 1<sup>st</sup> east of the Bay
- Lack of language- No emergency spreading provision

# Concerns

Lack of storage for liquid manure, liquid food waste, liquid municipal waste

Many dairy farms with liquid or non-stackable manure did not have adequate storage and the dairy farm economy made construction difficult or impossible for many farmers

Despite mild fall weather, applicators were restricted from applying animal, human or food waste products due to date restrictions

The Department felt a need to address the winter spreading restriction- did not want liquid holding facilities to overflow

# Regulatory Process

- Nutrient Advisory Committee- May 2016
  - Discuss concerns by all parties
- MDA met with ag groups and environmental groups- June 2016
- Nutrient Advisory Committee- July 2016
  - Proposed 3 (three) regulation changes
- Adopted changes in January 2017

# Changes to NM Regulations- Jan. 2017

- Spreading of manure and bio-solids is prohibited from December 16- March 1<sup>st</sup> statewide on farms with adequate storage
- Added an Emergency Spreading Provision with restrictions to allow winter spreading of farm generated manure where there is not adequate storage
- Removed the requirement for manure incorporation for farms that utilize a no-till program. For all others manure must be incorporated within 48 hours

# Emergency Provisions

- Farms needing to spread in the winter under the emergency provision must contact MDA for guidance and they need to contact the SCD to make arrangements for adequate storage
- Winter spreading must observe a 100' setback from any surface waters
- Winter spreading must be on a vegetated cover

# Results

- The Emergency Provision provides allowances that prevent an overflow from a storage structure
- Since 2012 dairy farmers constructed 60+ waste storage structures and many are underway, but an emergency provision is still needed.
- The Nutrient Management Program monitors closely those farms calling in for this exemption. Although more calls were received 2016-2017 winter, fewer complaints were recorded and we believe farmers were more aware of the requirements.

# Additional Restrictions

- Spreading in the fall (before Dec. 15<sup>th</sup>) and spring (after March 1<sup>st</sup>) cannot occur on frozen, snow covered or saturated ground
- Cannot apply more than 50# of N in the fall

# Outreach and Education

- Maryland Department of Agriculture along with University of Maryland Extension
  - Newsletter
  - Website
  - Social media
  - Agronomy days

MDA wants to make sure all who fall under mandated nutrient management law are familiar with regulations, understand a nutrient management plan, and equally important ensure over application does not occur

# Preparing for a Nutrient Management Audit

- “Not a Gotcha Moment”
- Review records
- Assure nutrient applicators both agricultural and urban lawn care are in compliance

# Plan Ag Implementation Reviews

- **Selection Method**

- Either random, in response to a complaint, follow-up to a previous review, to address concerns with submitted AIR's or other non-compliance issues.

- **Notifications**

- Specialists notify the selected operator by letter or phone to schedule the review.

# Plan Ag Implementation Reviews

- **Operator Requirements**

- The operator must make available for review the current **and** two prior years' nutrient management plans and any associated records.
- The specialist will randomly select one or more year's plan and associated records and compare them against nutrient application records and fertilizer receipts.

# Plan Ag Implementation Reviews

- **Operator Requirements**

- Several fields or management units representative of the operation will be examined.
- PSI/PMT calculations and implementation of any resulting BMP's will be verified.
- Following the review, the specialist will go over and provide the operator a copy of the plan implementation evaluation report which will include any necessary follow-up action.

# Plan Ag Implementation Reviews

- **Necessary Records**

- Copy of current and two prior years NMP's
- Nutrient application records to include
  - Types of nutrients applied such as
    - commercial fertilizer, animal manure, bio-solids etc.
  - Dates and locations applied.
  - Method of application such as banded, side-dress, top-dress, etc., as well as pounds, gallons or tons applied per acre.

# Plan Ag Implementation Reviews

- **Necessary Records**

- Manure management information (if applicable) to include
  - Manure type
  - Date of removal from production and/or storage facility location stored or applied
  - Name and location of receiver if moved off-site, along with quantity estimate.
  - Actual yield information per field or management unit for the last 5+ years. Used to support yield goals utilized in plan development.

# Plan Ag Implementation Reviews

- **Actual Review Specifics**

- General discussion of your farm operation so as to compare to your NMP for completeness.
- Detailed review of a few specific management units/fields.
  - Capturing field ID,
  - Acreage,
  - Crop grown,
  - Yield goal,
  - Crop year,
  - Soil lab name, date of analysis,
  - Phosphorus and Potassium FIV levels,
  - PSI/PMT score (if applicable),
  - NMP N-P-K recommendations, actual N-P-K applied from your records.

**Maryland Department of Agriculture  
Nutrient Management Program  
Plan Implementation Evaluation Report**

**Operator Information**

First Name			M.I.	Last Name		Telephone	
Business/Operation Name							
Operator Address						County	
City				State	Zip Code	FID #	

Producer ID #

**Agriculture Article § 8-803.1 Applicability**

**Yes No**

Does the business or activity till, crop, keep, pasture, or produce an agricultural product?		
Does the business or activity have a gross annual income of \$2500 or more?		
Does the business or activity have eight or more animal units?		
Are nutrients applied to the agricultural land?		

**Operation and Plan Information**

Crop Production				Animal Production			
<input type="checkbox"/> Field Crop	<input type="checkbox"/> Nursery/GH	Type:	Number:	Type:	Number:		
<input type="checkbox"/> Vegetables	<input type="checkbox"/> Orchard/Trees	<input type="checkbox"/> Dairy		<input type="checkbox"/> Poultry			
<input type="checkbox"/> Hay	<input type="checkbox"/> Organic	<input type="checkbox"/> Beef		<input type="checkbox"/> Horse			
<input type="checkbox"/> Pasture		<input type="checkbox"/> Swine		<input type="checkbox"/> Sheep			
<input type="checkbox"/> Other:		<input type="checkbox"/> Other:					

Organic Source Storage		Yes	No	N/A	Capacity in Gallons/Year	Capacity in Tons/Year
<input type="checkbox"/> In-use	<input type="checkbox"/> Concrete Pad		<input type="checkbox"/> 3-sided pad base		<input type="checkbox"/> Covered	
<input type="checkbox"/> Earthen	<input type="checkbox"/> Fabricated		<input type="checkbox"/> Floor pit		<input type="checkbox"/> Other:	

Organic Source Application Period(s)			Inorganic (N & P only) Source Application Period(s)		
<input type="checkbox"/> Sep 1-Nov 15	<input type="checkbox"/> Nov 16-Feb 28	<input type="checkbox"/> Mar 1-Aug 30	<input type="checkbox"/> Sep 1-Nov 15	<input type="checkbox"/> Nov 16-Feb 28	<input type="checkbox"/> Mar 1-Aug 30

Exported Manure	Yes	No	Receiving Site(s)	Gallons/Year	Tons/Year

Nutrient Source(s) (check all that are applicable)		
<input type="checkbox"/> Chemical Fertilizers	<input type="checkbox"/> Animal Manure	<input type="checkbox"/> Other(s):

Total Acres Managed	Total Acres Managed w/ Plan	Plan Period		
		Written Date:	Start Date:	End Date:

Consultant's Name/Agency or Company Name	Certification #	License #

**Maryland Department of Agriculture  
Nutrient Management Program  
Plan Implementation Evaluation Report  
Record Keeping**

**A. Plan Records**

	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Producer ID #</b>	
1 Current Nutrient Management Plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Date/Year(s)</b>	
2 Current Annual Implementation Report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	
	<b>Adequate</b>	<b>Inadequate</b>	<b>N/A</b>	<b>Date/Year(s)</b>	
3 Receipts for Nutrients Purchased	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	
4 Documentation for Nutrients Imported	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	
5 Yield Record Information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	
6 Organic Source Analysis Report(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	
7 Organic Source Application Records	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	
8 Equipment Calibration Records	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	
9 Organic Source Export Records	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	

**B. Field Records**

Property Account ID												
Farm Name/Tract #												
Field												
Acres												
Crop												
Yield Goal												
Crop Year												
Laboratory Name												
Laboratory Soil Analysis Report Dates												
<b>Soil Tested Nutrients</b>	<b>P2O5</b>		<b>K2O</b>		<b>P2O5</b>		<b>K2O</b>		<b>P2O5</b>		<b>K2O</b>	
Fertility Index Value (FIV)												
FIV Soil Test Range												
Phosphorus Site Index Value (PSI)												
PSI Range												
<b>Primary Nutrients</b>	<b>N</b>	<b>P2O5</b>	<b>K2O</b>	<b>N</b>	<b>P2O5</b>	<b>K2O</b>	<b>N</b>	<b>P2O5</b>	<b>K2O</b>	<b>N</b>	<b>P2O5</b>	<b>K2O</b>
Planned Nutrients (lbs/acre)												
*Actual Nutrients Applied(lbs/acre)												
Planned/Actual Difference												
Nutrient Rec's Implemented Based on MDA Standards	<b>Adequate</b>	<b>Inadequate</b>	<b>N/A</b>	<b>Adequate</b>	<b>Inadequate</b>	<b>N/A</b>	<b>Adequate</b>	<b>Inadequate</b>	<b>N/A</b>	<b>Adequate</b>	<b>Inadequate</b>	<b>N/A</b>
Nutrient Appl. Documentation												
Application Timing in Compliance												
**Required BMP's Implemented	<b>Yes</b>		<b>No</b>		<b>N/A</b>		<b>Yes</b>		<b>No</b>		<b>N/A</b>	
Nutrient Applicator		Operator			Operator			Operator			Operator	
		For-Hire			For-Hire			For-Hire			For-Hire	
Operator Certificate or Voucher #												
Company or Business Name												

\* Actual nutrients applied takes into consideration ammonia volatilization, nitrogen credits, and/or other UMD-based nutrient recommendation adjustments contained in the MDA Nutrient Management Manual

\*\* Required Best Management Practices required as a result of the Phosphorus Site Index performed and nursery/GHS nutrient management plan requirements.



# Plan Ag Implementation Reviews

- **Actual Review Specifics**

- Comparison of NMP recs against application records for implementation within MDA standards.
  - The applicator of the nutrients, operator or for hire.
- Nutrients applied above MDA standards will earn you a written warning. Warnings are also issued for:
  - Expired or incomplete NMP
  - Plan written with improper yield goals
  - Inadequate manure management records
  - Improper timing of nutrient application

# Plan Implementation Reviews

- **Actual Review Specifics**

- MDA standards for N are within 10#/acre of the recommended rate. Phosphorus is more variable with greater flexibility the lower your soil P level is.
- If P FIV level is 150+, standard will be what was justified by PSI/PMT within the NMP.
- IF P is < 150 FIV and P is from an organic source there are no P limits.

# Plan Implementation Reviews

- **Actual Review Specifics** (continued)
  - If P is from a commercial fertilizer source, allowances are whatever the P recommendation is per the NM Manual for that crop and yield goal within that soil test range
  - Or commercial fertilizer P is allowed up to a crop removal rate if justified by a PSI/PMT assuming the rate is greater than the University of Maryland P recommendation.

# Plan Implementation Reviews

- **Actual Review Specifics (warnings)**

A warning given for an incomplete or expired NMP, unsubstantiated yield goals, or inadequate manure management records will be a 90 day warning to get the problem corrected. If corrected within the 90 days, warning is resolved.

# Plan Implementation Reviews

- **Actual Review Specifics (fines)**

If not corrected within the 90 days, will lead to a charge (fine). Operation is out of compliance with NM until issue is corrected.

# Plan Implementation Reviews

- **Actual Review Specifics** (warnings)
  - Warnings for over application or improper timing are held in limbo until a follow-up review can be completed within 1 year, to allow the operator an opportunity to show proper application and/or timing. These operations are not considered out of compliance with NM during that time period. After follow-up review, if actions were not corrected then operation is charged (fined) and labeled out of compliance with NM.

# Plan Implementation Reviews

- **Actual Review Specifics** (warnings)

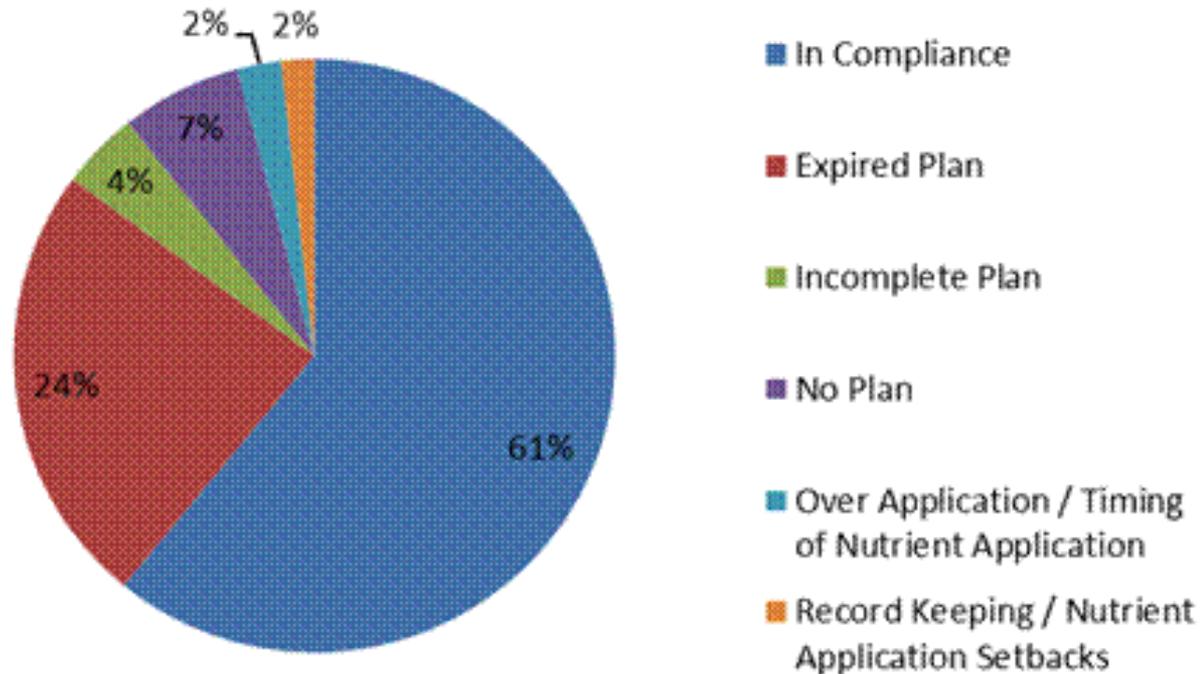
Out of compliance with NM does not allow the operation to participate in any MACS cost share programs such as cover crop, manure transport, etc.

# Enforcement Process

- Warning – Issued at review
- Charge - Notice of Agency Action
  - \$250 Not having a NMP or Expired NMP
  - \$100 Per violation for not implementing the NMP
    - May not exceed \$2,000 per year
  - Fines are set in Agriculture Article 8-803.1
- Default Decision Order
- Collections If the Default Decision Order is not resolved.

# Compliance Rate

## 1016 Random On Farm Audits Fiscal Year 2017



# **Phosphorous Management Tool Update (PMT)**

8/01/2017

				Soil Test P FIV 0 - 149		Soil Test P FIV 150 499		Soil Test P FIV >500	
County	Total AIR Acres Reported 2014	Total Acres submitted	% of County Reported	Acres	% of Acres	Acres	% of Acres	Acres	% of Acres
Western Maryland	354,431.96	284,128.07	80.16%	261,484.43	92.03%	22,301.73	7.85%	341.91	0.12%
Central Maryland	151,880.00	122,863.41	80.90%	114,926.91	93.54%	7,619.11	6.20%	317.59	0.26%
Southern Maryland	96,714.65	82,898.13	85.71%	62,493.29	75.39%	20,154.46	24.31%	250.38	0.30%
Upper Eastern Shore	272,624.49	265,108.99	97.24%	238,964.78	90.14%	25,548.91	9.64%	595.30	0.22%
Mid Eastern Shore	246,509.36	209,403.49	84.95%	157,230.11	75.08%	51,585.56	24.63%	587.82	0.28%
Lower Eastern Shore	155,770.45	140,727.55	90.34%	42,236.01	30.01%	82,813.28	58.85%	15,677.52	11.14%
<b>MD State Total</b>	<b>1,277,930.91</b>	<b>1,105,129.64</b>	<b>86.48%</b>	<b>877,336</b>	<b>79.39%</b>	<b>210,023</b>	<b>19.00%</b>	<b>17,771</b>	<b>1.61%</b>

# PMT- Statewide Tier Group Data

- **1,661 Operations** have been reported
  - Represents one or more fields being 150 or greater
  - Represents **11,769** fields
    - Only these fields transition to PMT
  - Represents **187,870** acres
- **PMT Tier Groups**
  - **Tier A = 150 – 300 Avg FIV (Transitions 2020)**
    - 1,313 operations                      8,220 fields  
122,705 acres
  - **Tier B = 300 – 450 Avg FIV (Transitions 2019)**
    - 252 operations                      2,815 fields  
54,271 acres
  - **Tier C = >450 Avg FIV (Transitions 2018)**
    - 96 operations                      734 fields  
10,894 acres

# PMT- Manure Transport

## (past 5 years)

State FY Year	Tons Transported Annually	Tons Poultry Litter Transported	Tons Non-Poultry Litter Transported
FY13	52,481	38,238	14,243
FY14	118,995	46,906	72,089
FY15	167,237	54,380	112,857
FY16	213,151	57,727	155,425
FY17	241,942	70,653	171,290
<b>Total</b>	793,806	267,904	525,904

# PMT- Animal Waste Technology Update

## **RFP Eligibility Requirements**

- Proven technology (not research)
- Farm partner/s identified and on board
- Site identified and secured
- Technologies must address nitrogen & phosphorus reduction or improve manure management on MD animal operations
- Proponent or subcontractors must have 3 years experience with technology

CURRENT PROJECTS	ANIMAL TYPE LOCATION	STATE FUNDING	TECHNOLOGY	STATUS
Biomass Heating Solutions Inc. (BHSL) Annapolis, MD	Poultry Double Trouble Farm Dorchester County	\$970,000	Fluidized bed combustion (Thermo-chemical)	Operational -8 months
Green Mountain Technologies, Inc. (GMT) Bainbridge Island, WA	Horse Days End Farm Howard County	\$150,790	In vessel composter/turnkey	Project completed/final report pending
Green Mountain Technologies, Inc. (GMT) Bainbridge Island, WA	Dairy Cattle Glamour View Farm Frederick County	\$237,520	In vessel composter/turnkey	Project completed/final report pending
Planet Found Energy Development (PFED) Berlin, MD	Poultry Millennium Farms Worcester County	\$676,144 (MDA) \$ 900,232 (MEA)	Anaerobic digestion with nutrient separating system	Operational -5 months

## FY14 Projects

# FY2016 Projects

2016 projects	ANIMAL TYPE/LOCATION	STATE FUNDING	TECHNOLOGY
Veteran Compost	Livestock/Anne Arundel County	\$350,302	Aerated Static Pile Composting
ChesapeakeBay Renewables	Poultry Litter/Somerset County	\$1,400,000	Thermophilic AD w/Nutrient Recovery

Questions?