



# 2013 PROGRESS REPORT

# IMPLEMENTING NUTRIENT

# MANAGEMENT PROGRAMS

A Report to Governor Martin O'Malley  
and the Maryland General Assembly  
by the Nutrient Management Advisory Committee  
July 1, 2013

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## THE NUTRIENT MANAGEMENT ADVISORY COMMITTEE

The Nutrient Management Certification and Licensing Law of 1992 required the Department to establish a Nutrient Management Advisory Committee to be appointed by the Secretary of Agriculture. The Committee is charged with helping develop regulations and guidelines regarding nutrient management planning. The Water Quality Improvement Act (WQIA) of 1998 further defined membership and responsibilities of the Nutrient Management Advisory Committee as follows:

§ 8-804.

- (a)(1) The Department shall establish a Nutrient Management Advisory Committee. The Secretary shall appoint to the Committee representatives of the agricultural community, the environmental community, the commercial lawn care, biosolids and agricultural fertilizer industries, academia, and appropriate government units. The Secretary also shall appoint to the Committee a representative of county government from a list submitted by the Maryland Association of Counties. The President of the Senate of Maryland shall appoint to the Committee one Senator, and the Speaker of the House of Delegates shall appoint to the Committee one Delegate.
- (2) (i) The Nutrient Management Advisory Committee shall report to the Governor and the General Assembly, in accordance with § 2-1246 of the State Government Articles, by July 1 of each year on the implementation of the requirements of the Water Quality Improvement Act of 1998.  
(ii) The report required under subparagraph (i) of this paragraph shall include information regarding:
  - 1. the level of participation in the nutrient management plan program;
  - 2. additional resources that may be needed to meet the requirements of § 8-803.1 of this subtitle;
  - 3. the effectiveness of nutrient application education programs, and;
  - 4. the effectiveness of the Manure Transport Project set forth in § 8-704.2 of this title.
- (b) In consultation with the Nutrient Management Advisory Committee, the Department shall by regulation:
  - (1) Prescribe the criteria, form and content for certified nutrient management plans applicable to licensees and certificate holders;
  - (2) Establish continuing education requirements for certified nutrient management consultants and persons receiving vouchers of completion under § 8-803.3 of this subtitle, and;
  - (3) Adopt guidelines and requirements for licensees and certified nutrient management consultants on record keeping and on reporting requirements to the Department on nutrient management plans.

## 2013 NUTRIENT MANAGEMENT ADVISORY COMMITTEE MEMBERS

**Peg Althoff**

U.S. Department of Agriculture

**Pat Langenfelder**

Maryland Farm Bureau

**Frank Coale, Ph.D.**

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**Jere De Baugh**

Maryland Dairy Industry Association

**The Honorable Thomas L. Middleton**

Maryland State Senate

**Mark Fuchs**

Delaware-Maryland Agribusiness Association

**Charles Otto**

Maryland Grain Producers Association

**Signe Hanson**

Maryland Nursery & Landscape Association

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USDA Natural Resources Conservation Service

**The Honorable Jay Jacobs**

Maryland House of Delegates

**Bill Satterfield**

Delmarva Poultry Industry, Inc.

**Dan Johannes**

Chesapeake Bay Foundation

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Maryland Association of Green Industries, Inc.

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**Gary Kelman**

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## INTRODUCTION

The Water Quality Improvement Act of 1998 requires the Nutrient Management Advisory Committee to report to the Governor of Maryland and the Maryland General Assembly on the progress of the nutrient management program implementation by July 1 of each year. Specifically, the law requires that the following areas be addressed:

- Status of nutrient management plan development and implementation
- Additional resources necessary to assist agricultural operations in developing and implementing nutrient management plans and meeting regulatory requirements
- Effectiveness of the nutrient application education program
- Effectiveness of the Manure Transport Project set forth in §8-704.2 of this title

## EXECUTIVE SUMMARY

### *Agricultural Nutrient Management Program*

On October 15, 2012, following nearly two years of planning and review, MDA's revised nutrient management regulations went into effect. The new regulations provide enhanced protections for Maryland's streams, rivers and the Chesapeake Bay by requiring farmers to incorporate manure and other organic nutrient sources into the soil, establish no-fertilizer application zones next to streams, and limit livestock access to waterways. The new regulations also limit fall nitrogen applications for small grains and prohibit manure applications to fields in winter.

Manure incorporation and the limits on fall nitrogen applications took effect in fall 2012 with setbacks and stream protection measures coming on board in January 2014. The winter ban on spreading manure will be phased in beginning July 1, 2016 with complete implementation by March 1, 2020. Additional regulatory changes concerning updates to the Phosphorus Management Tool were proposed in FY 2013, but not finalized.

Ensuring farmer compliance with nutrient management regulations is paramount to the program's success. Maryland farmers are required to submit copies of their initial nutrient management plans to MDA. By the end of the fiscal year, 99.5 percent of the state's 5,382 regulated farm operators had met the requirement. During FY 2013, MDA initiated progressive enforcement actions against 27 farmers who failed to submit an initial nutrient management plan.

After the initial plan filing, operators are required to file an Annual Implementation Report (AIR) that summarizes their nutrient applications by crop for the previous growing season. By the end of the fiscal year, approximately 98 percent of regulated farmers managing about 1.3 million acres of land had submitted their AIRs to MDA. It is important that work continue on implementation of plans and enforcement of regulations. During FY 2013, MDA's seven nutrient management specialists conducted 738 on farm audits, representing about 14 percent of regulated farms, an increase of two percent over 2012. MDA nutrient management staff levels limit the capacity to address the workload associated with 5,382 operators across the State. Adequate resources are also needed to improve and administer the database that tracks implementation and compliance. Providing MDA with the resources to report aggregated data on the performance of agriculture is essential as Maryland tracks TMDL requirements.

Technical assistance is an ongoing need to assure nutrient management plans are updated and properly implemented. The advisory committee supports the current menu of plan development options available to farmers, including continued funding of University of Maryland Agricultural Nutrient Management Program services and farmer training and certification programs. As of June 2013, 488 operators have been trained and certified to write plans for their own operations. Continued evaluation

of technical assistance needs and examination of efficiencies and alternatives is necessary to assure responsiveness of the program to meet farmers' needs and agricultural nutrient management goals.

Farmers who apply nutrients to 10 or more acres of cropland are required to attend an applicator training course once every three years. During the year, MDA and UME helped 528 farmers obtain or renew their nutrient applicator vouchers. MDA and University of Maryland Extension have continued to explore new approaches to provide continuing education that is useful, informative, and convenient for busy adult learners.

During the year, the Manure Transport Program received \$500,000 in additional funding from the Chesapeake Bay 2010 Trust Fund to restore program eligibility for all types of livestock operations seeking financial assistance to transport excess manure off their farms. In recent years, due to budget reductions, Transport Program grants have been awarded almost exclusively to poultry producers shipping poultry litter out of the Chesapeake Bay Watershed. The additional funding allowed dairy, beef, swine and other livestock producers to transport manure away from areas with high soil phosphorus levels.

#### ***Turfgrass Nutrient Management Program***

MDA's Urban Nutrient Management Program currently regulates approximately 700 individuals and companies that apply fertilizer to ten or more acres a year, a figure that will more than double when Maryland's new lawn fertilizer law takes effect October 1, 2013. During the year, MDA's urban nutrient management program spent a considerable amount of time and resources gearing up to implement the phased in requirements of the *Fertilizer Use Act of 2011*. The new law requires MDA—with technical guidance from the University of Maryland (UME)—to establish a training, certification and licensing program for lawn care professionals and to conduct a homeowner education program on Bay-friendly fertilizer practices.

*The Nutrient Management Advisory Committee recommends additional resources be provided for the efficient implementation of the program. The Committee also highlights the importance of a continuous funding source for research related to nutrient management and the need for coordination of information from research institutions across the country. Working cooperatively, government agencies and educational institutions can develop positive solutions to environmental issues while preserving the economic viability of agriculture.*

## **Part I. NUTRIENT MANAGEMENT PLAN DEVELOPMENT & IMPLEMENTATION**

### **Summary**

The Water Quality Improvement Act of 1998 (WQIA), with amendments made in 2004, requires farm operators to submit a nutrient management plan to the Maryland Department of Agriculture and to implement that plan. Deadlines were included to phase in both nitrogen and phosphorus based plans, the last being July 1, 2005, when farm operators who used manure or biosolids were required to submit and implement a phosphorus-based plan. After filing their initial nutrient management plan, operators must implement updated plans and keep supporting documentation with their personal files. These records must be made available to MDA's Nutrient Management Specialists for inspection.

Each year by March 1st, farm operators must file an Annual Implementation Report (AIR) to verify farm information, document nutrients applied during the previous calendar year and certify that the farm operator will have a valid nutrient management plan and will continue to follow it during the current and upcoming cropping years. Concentrated animal feeding operations (CAFOs) and Maryland animal feeding operations (MAFOs) submit a single form that met the reporting requirements for MDA and the Maryland Department of the Environment.

As MDA works with individuals to bring them into compliance, the number of operators and acres that come under the auspices of the Water Quality Improvement Act continue to change. These changes may reflect land use changes to development, owner or operator changes as well as updates to the original database as follow up visits and communication verify who must comply.

Commercial applications of fertilizers to non-agricultural land (e.g., golf courses, campuses, public grounds and parks, highway rights-of-way and property serviced by lawn care companies) are not required to have a nutrient management plan; rather the service provider or manager must keep property-specific records regarding nutrient application timing and rates, and follow University of Maryland recommendations based on soil test results.

### **Compliance with First Plan and Annual Implementation Report Filing**

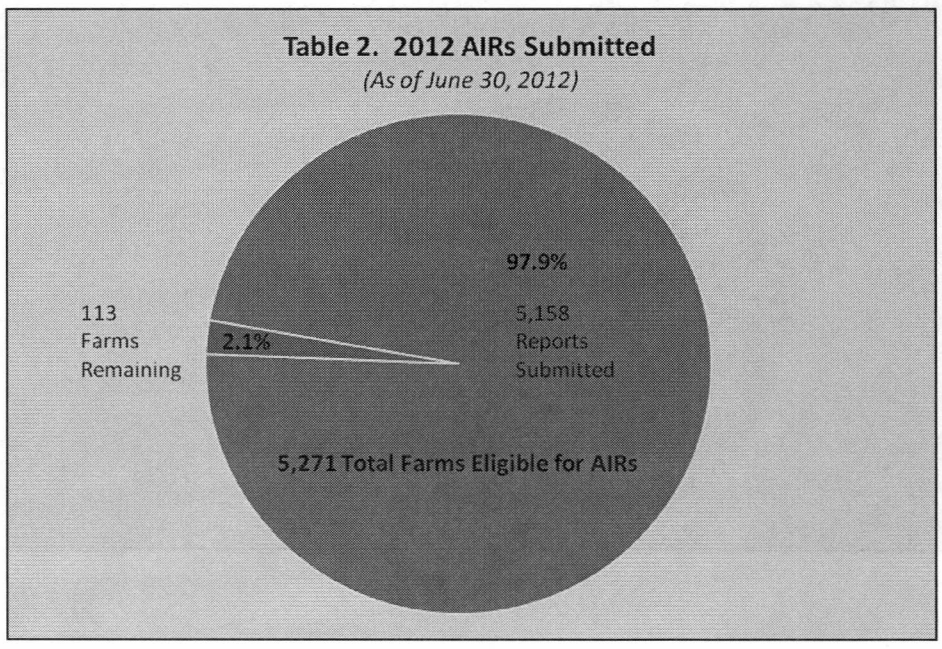
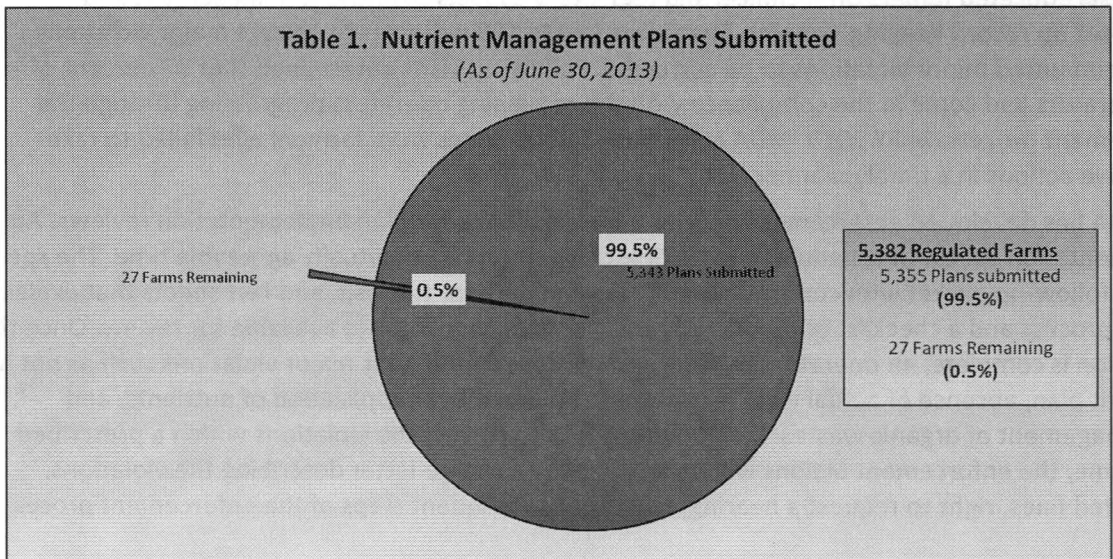
MDA current information indicates that 5,382 active farm operators manage approximately 1.3 million acres and are subject to nutrient management laws. As of June 30, 2013, 5,355 farms have filed an initial nutrient management plan. See Table 1. This represents 99.5 percent of regulated farm operators. MDA is currently pursuing progressive enforcement actions against 27 operators who are subject to enforcement efforts as explained below.

Nutrient management regulations apply to operators, not necessarily the owners of agricultural land. Much of this farm acreage is rented, and the operator of any parcel of land may change from year to year. MDA continually works to update records with new operators, including equine enterprises on land that is not tax assessed as agricultural, and to eliminate parcels of land sold for development. The complexity of keeping records on various types of operations, changing land use and levels of compliance continues to challenge MDA's computer database tracking system, which is currently based on manual data entry.

Ongoing compliance tracking of nutrient management regulatory requirements is also documented through a farm operator's submission of an Annual Implementation Report (AIR). This report is designed to verify farm operation information, any changes in property farmed, the continued use of a nutrient management plan and documented fertilizer and nutrient uses during the previous calendar year. Regulations initially required that all farm operators submit an AIR summarizing their nutrient applications for the previous year by March 1, 2013. The difference between this number and the total number of operations that have actually submitted an AIR includes new operations that have recently

filed a nutrient management plan and are not yet subject to AIR filing or operators who became inactive during calendar year 2012. In April 2013, MDA issued warning notices to 1,417 farmers who failed to file their AIRs on time, followed by 376 notices of pending fines and 153 default notices. By the end of the fiscal year, approximately 98 percent of regulated farmers had submitted their AIRs as shown in Table 2. In FY 2013, MDA collected \$6,750 in fines for late or missing AIRs.

*The Nutrient Management Advisory Committee recommends additional resources for improved ease of AIR submissions, increased data management capacity and further development of electronic data capture to automatically document the implementation of plans by operators.*



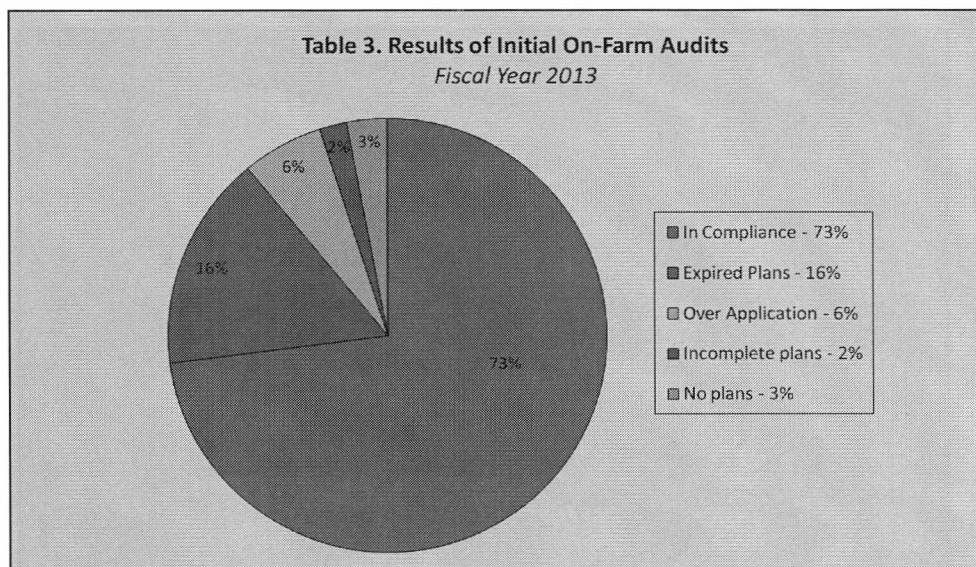


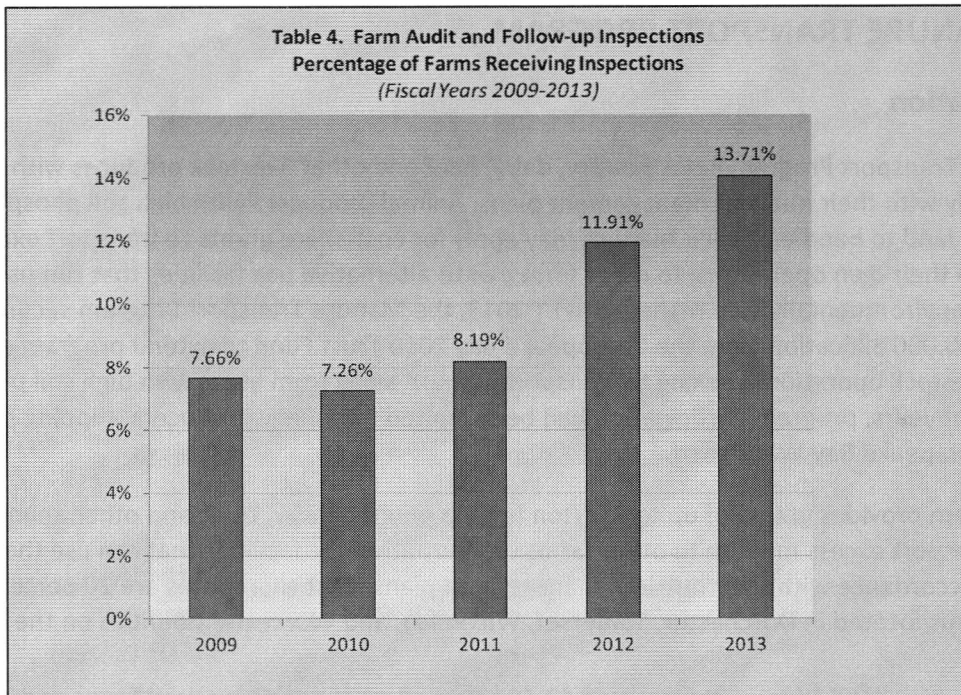
## Plan Implementation Inspection

The submission of the initial nutrient management plan is the first step in coming into compliance. Maintaining compliance requires ongoing plan implementation, record keeping, updating the plan when conditions change, and timely filing of the AIR. MDA Nutrient management specialists conduct site visits and review the implementation of plans with operators to verify that an operator is following the plan as written by a certified consultant.

MDA's seven nutrient management specialists conducted 738 on-farm audits in FY 2013 representing approximately 14 percent of regulated farms (Tables 3 and 4). During these visits, specialists educated farmers on technical and regulatory aspects of nutrient management and helped set up record keeping systems. Specialists issued 189 warnings to correct major violations and documented minor violations to be corrected. Follow-up visits determined that 37 percent of the operators had come in the compliance with the remaining operators progressing through the enforcement process. In FY 2013, MDA collected \$1,700 in fines from farmers who failed to take corrective actions in a timely manner.

MDA has developed enforcement policies and procedures for plan implementation reviews. An implementation specialist schedules site visits with operators at a mutually agreeable time. The specialist mails a follow-up packet with confirmation of time and date for the visit, and fact sheets that explain the review process and a checklist of the records the operator should make available for review. Once the inspection is complete, an operator may receive a written warning for major violations such as not having a current plan, absence of actual yield records, mis-timing or over application of nutrients, and mismanagement of organic wastes. If an operator fails to correct the violations within a prescribed timeframe, the enforcement actions will be followed by a charge letter describing the violations, associated fines, right to request a hearing, and other subsequent steps of the enforcement process.





### **Incentives for Nutrient Management Planning**

Eligibility for State incentive programs is linked to an operator’s compliance with nutrient management regulations. Those who are not in compliance are ineligible to receive cost-share from any program funded through the Maryland Agricultural Water Quality Cost-Share (MACS) Program including the Cover Crop Program and Manure Transport Program.

*The Advisory Committee supports continuation and increased funding for nutrient management planning through private and public resources. Cost-share incentives can help defray the cost of plan development for farmers who retain private sector consultant services and keep operators in compliance. This is a concern because the majority of the inspection violations are due to expired nutrient management plans.*

### **Part II: NUTRIENT APPLICATION AND OTHER EDUCATION PROGRAMS**

Education related to nutrient application to agricultural land, as required by COMAR 15.20.06, helps farmers and growers improve efficiency and cost-effectiveness of nutrient use while protecting the environment. Farmers who apply nutrients to 10 or more acres of cropland are required to attend an applicator training course once every three years. In FY 2013, MDA and UME conducted 27 voucher training sessions attended by 528 farmers seeking to obtain or renew their vouchers.

To ensure the effectiveness of nutrient management plans in protecting water quality, certified consultants are required to take 12 hours of continuing education credits every three years. In FY 2013, MDA and UME sponsored 38 education classes on nutrient management topics and approved an additional 53 courses and field events sponsored by other recognized organizations. The sessions were attended by 1,241 individuals.

During the year, MDA continued to expand its base of certified consultants. MDA provided a two-day training course for individuals planning to take the certification exam. Eighteen new consultants were certified following the exam.



## Part III: MANURE TRANSPORT PROGRAM

### Implementation

A Manure Transport Program helps poultry, dairy, beef and other livestock producers with excess manure comply with their nutrient management plans. Animal producers with high soil phosphorus levels or not enough land to handle all their manure may apply for cost-share grants to transport excess manure within their own operations, to other farms, or to alternative use facilities that can use the product in an environmentally safe manner. In FY 2013, the Manure Transport Program secured an additional \$500,000 allocation from the Chesapeake Bay 2010 Trust Fund to extend program eligibility to all types of livestock operations seeking to transport manure away from areas with high soil phosphorus levels. In recent years, program participation had been limited to poultry producers shipping poultry litter out of the Chesapeake Bay Watershed.

The Program provides grants of up to \$18/ton to help poultry, dairy, beef, and other animal producers transport excess manure to other farms or alternative use facilities that can use the manure safely and in accordance with their nutrient management plans. Cost share rates are 20 percent higher for poultry farms located in Dorchester, Somerset, Wicomico, and Worcester Counties on the Eastern Shore.

In FY 2013, Maryland farmers transported 52,481 tons of manure to approved farms and businesses using \$377,007 in state grants as shown in Table 5. More than 60 percent of this tonnage was shipped to alternative use facilities and not land-applied in the watershed. Delmarva poultry companies provided matching funds to transport poultry litter, bringing the total amount of financial support provided to farmers through the Manure Transport Program to \$716,259.

**Table 5: Manure Transport Program Summary**

Fiscal Year	Actual	MACS Payment	Poultry Companies
FY1999	1,896	\$17,992	\$17,992
FY2000	13,366	111,464	111,464
FY2001	20,477	195,559	195,559
FY2002	47,481	434,610	420,395
FY2003	28,556	233,444	229,645
FY2004	40,755	295,356	285,806
FY2005	36,329	239,196	200,113
FY2006	69,009	380,694	293,728
FY2007	99,297	490,011	356,955
FY2008	99,817	520,357	370,985
FY2009	119,892	663,177	504,024
FY2010	80,899	469,398	402,846
FY2011	61,150	354,011	294,383
FY2012	35,380	297,587	289,767
FY2013	52,481	377,007	339,252
<b>TOTALS</b>	<b>806,785</b>	<b>\$5,079,863</b>	<b>\$4,312,915</b>

*\*Match provided for poultry litter only.*

## **Manure Matching Service**

A Manure Matching Service connects farmers who have excess animal manure with companies or individuals that can use the manure as a valuable resource. Authorized by the Water Quality Improvement Act, the Service helps farmers manage manure resources, comply with nutrient management regulations and protect water quality in streams, rivers and the Chesapeake Bay. The Service is voluntary, free and available to both sending and receiving operations.

## **Project Effectiveness**

The project has been operational since the spring of 1999. During the first three years of the project, most of the participants used poultry litter as a fertilizer for land application; however, in the last three years, more poultry litter has been transported for alternative uses. Perdue AgriRecycle began participating in the program in August 2001, and has since transported approximately 248,645 tons of poultry litter using program assistance. Although Maryland does not offer direct subsidies or tax benefits for alternatives such as energy production, assistance with transport costs has been favorably considered. The majority of the transported manure is not land applied in the Chesapeake Bay watershed.

MDA has modified project regulations to allow the transport of manure within a dairy operation to qualify for assistance if the distance is greater than a mile. As dairy farmers make management changes to implement phosphorus-based plans, their participation is expected to increase.

A significant number of manure brokers, nutrient management consultants and soil conservation district staff use the Internet to download application forms. Increased demand continues for the Manure Transport project, driven in part by full implementation of phosphorus-based plans. Additionally the development of local Watershed Implementation Plans and revision of the Phosphorus Site Index is likely to increase demand for assistance in transporting manure.

## **Part IV. TURFGRASS NUTRIENT MANAGEMENT PROGRAM**

MDA's Turfgrass Nutrient Management Program has been protecting waterways from excess lawn fertilizer for more than a dozen years. Authorized by the Water Quality Improvement Act of 1998, the program regulates about 700 individuals and companies that apply fertilizer to ten or more acres of turf a year, including golf courses, parks, recreation areas, athletic fields, business properties, school campuses, cemeteries, highway right-of-ways and private lawns. Regulated firms and individuals are required to follow University of Maryland fertilizer and timing recommendations, keep records of fertilizer applications, and make these records available to MDA inspectors.

In FY 2013, the records of 11 golf courses, 10 lawn and landscape companies, and one public lands maintenance office were reviewed by the Turfgrass Nutrient Management Program. The reviews resulted in two warnings for non-compliance. Both companies cited lacked required soil tests. Operations that failed their inspections were instructed to obtain soil tests or adjust fertilization rates for subsequent applications. By the end of the fiscal year, eight follow up visits showed that all operations had come into compliance. MDA collected \$750 in fines in FY 2013.

*The Fertilizer Use Act of 2011*—otherwise known as Maryland's Lawn Fertilizer Law—significantly strengthens MDA's Turfgrass Nutrient Management Program by expanding its regulatory authority to include more than 1,500 lawn care professionals and grounds managers who will need to be licensed and certified to apply lawn fertilizer to properties that they manage, regardless of size beginning October 1, 2013. In addition, the law requires both homeowners and lawn care professionals to obey new fertilizer application restrictions, use best management

practices when applying fertilizer to lawns, observe newly designated fertilizer blackout dates, and follow University of Maryland fertilizer recommendations. MDA—with technical guidance from the University of Maryland—is charged with establishing a training, certification and licensing program for lawn care professionals as well as a public education program for homeowners.

In FY 2013, the Turfgrass Nutrient Management Program worked closely with the University of Maryland to develop a training and certification program for lawn care professionals. An 84-page training manual was developed to provide necessary information to lawn care professionals and prepare them to take the certification exam. The manual was posted on the MDA website in June and by the end of the fiscal year, a training, testing and certification and licensing program for lawn care professionals was launched. To help educate the public on responsible fertilizer use, a four-week radio public education campaign was implemented in April 2013 in three major urban markets: Baltimore, Annapolis and Washington, D.C. News releases, fact sheets and posters on how to fertilize lawns responsibly were developed and distributed statewide.

#### **Key Features of Maryland's Lawn Fertilizer Law (Effective October 1, 2013)**

- ✓ Limits the amount of nutrients contained in lawn fertilizer products used by homeowners and lawn care professionals
- ✓ Expands MDA's regulatory authority to include more than 1,500 lawn care professionals statewide and directs the department—with guidance from the University of Maryland—to establish a training, certification and licensing program for these professionals
- ✓ Authorizes MDA to impose civil penalties against lawn care professionals of up to \$1,000 for the first violation and \$2,000 for each subsequent violation
- ✓ Requires MDA to publish a list of certified professional fertilizer applicators for the public
- ✓ Requires MDA and the University of Maryland to educate homeowners on new fertilizer application rates and restrictions, best management practices, and fertilizer blackout dates

#### **Part V. RESOURCES NEEDED TO MEET THE REQUIREMENTS OF THE LAW**

The Nutrient Management Advisory Committee supports continuation of the current available resources and has identified and recommends additional resources needed to meet the requirements of the Nutrient Management Law § 8-803.1 as specified below:

1. **MDA should continue to work with University of Maryland Extension to provide farmers with continuing education programs** that are useful, timely and that enhance knowledge and understanding of nutrient management concepts and technologies. Flexibility in allowing related seminars, workshops or field days sponsored by other entities and approved by MDA to meet continuing education requirements remains key to the success of the program.
2. **Improvements to MDA's computer capability for managing nutrient management database information are critical.** The capacity to handle the multiple layers of information required to track and respond individually to operator compliance queries and to capture changing patterns of agricultural land rental and management is needed. Critical information is not currently being entered into the database due to lack of personnel. A top priority of the program must be to update the system to provide online AIR submission. The Committee encourages further development of nutrient management implementation assessment metrics and procedures to ensure that regulatory enforcement, corrective measures and sanctions are administered effectively and fairly.
3. **MDA staffing remains at a minimal level** to conduct plan and implementation reviews. Currently, eight full-time Nutrient Management Specialists conduct inspection and enforcement activities for

the nearly 6,000 regulated farmers and about 130 active certified consultants. **One field inspection and one education/outreach position are vacant.** At the end of FY 2012, permission to fill the field inspection position was granted and the recruiting process was started. One Nutrient Management Specialist is currently charged with inspecting an estimated 600 non-agricultural operations (e.g., lawn care companies and golf courses) that manage 10 or more acres of grounds. As the Fertilizer Use Act of 2011 is phased in, the number of regulated non-agricultural operations will exceed an estimated 1,500, with each requiring a license and at least one certified professional applicator. Training curricula and exam materials will need to be developed as well. This escalating focus on implementation and accountability means that **more personnel will be needed** to reach farmers and other land managers.

4. **Continued and expanded research is need in both traditional and specialty agricultural areas, including:**
  - the ability to quantify the effectiveness of the program from a water quality improvement perspective;
  - new technologies and information related to improving nutrient management for field crops and implementation for the plant diversity inherent in many greenhouse and nursery operations;
  - Maryland-specific Phosphorous-Site Index studies, evaluations, and recommendations, and;
  - the impact of irrigation on nutrient use efficiency.
5. **Resources are needed for programs to assist farmers in maintaining and implementing current nutrient management plans. MDA, in consultation with the NMAC, should develop a long term strategy to address nutrient management plan development needs.** These measures are necessary to assure responsiveness of the program to meet farmers' needs and agricultural nutrient management goals.
6. **Farmers and consultants need more information on soil amendments, food processing wastes and other off-farm materials that may be applied to agricultural land.** Information on these materials should include nutrient analyses, mineralization rates and sources of material. Generators and distributors of these materials, and the receiving farm operators need to understand that such information must be included in the farm nutrient management plan, and that application rates must be limited to the plan recommendations for the nutrients contained therein.
7. **MDA and the Maryland Department of the Environment must continue to coordinate their regulatory programs** to assure that the use of biosolids and all other organic nutrient sources are addressed consistently and simultaneously for the entire farm operation.
8. **The Committee continues to support the following legislative recommendations:**
  - increasing penalties for failure to have and implement a nutrient management plan and for major violations found during implementation reviews;
  - increasing penalties for non-certified or -licensed establishments and individuals who write nutrient management plans;
  - establishing penalties for violations in plan development by certified nutrient management consultants;
  - establishing penalties for violations applicable to commercial applicators; and
  - eliminating the nutrient applicator continuing education requirement for voucher renewal.

## CONCLUSION

Maryland farmers and the lawn care industry have risen to the challenge of managing nutrients on their operations in accordance with State laws and regulations. Their efforts need to be supported with ongoing technical and financial assistance as they work for improved environmental outcomes for all citizens of Maryland. Research, education and outreach must continue to keep nutrient management at the forefront. Enforcement continues to bring the stragglers on board. Operators need continuing support in understanding the process, keeping records and adapting nutrient management to their operation-specific conditions and changing needs.





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