2015 PROGRESS REPORT

IMPLEMENTING NUTRIENT MANAGEMENT PROGRAMS

A Report to Governor Larry Hogan
and the Maryland General Assembly
by the Nutrient Management Advisory Committee
July 1, 2015

Maryland Department of Agriculture
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TABLE OF CONTENTS

THE NUTRIENT MANAGEMENT ADVISORY COMMITTEE

The Nutrient Management Certification and Licensing Law of 1992 required the Maryland Department of Agriculture (MDA) 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.

2015 NUTRIENT MANAGEMENT ADVISORY COMMITTEE MEMBERS

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Maryland Farm Bureau

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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 nutrient management program implementation progress 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

Maryland law requires all farmers grossing $2,500 a year or more or livestock producers with 8,000 pounds or more of live animal weight to follow nutrient management plans when fertilizing crops and managing animal manure. These science-based plans specify how much fertilizer, manure or other nutrient sources may be safely applied to crops to achieve yields and prevent excess nutrients from impacting waterways. Nutrient management plans are required for all agricultural land used to produce plants, food, feed, fiber, animals or other agricultural products.

Maryland's Phosphorus Management Tool (PMT) regulations became effective June 8, 2015. The regulations provide a multi-year process for farmers to transition from the Phosphorus Site Index to the PMT, an updated tool that uses the latest scientific findings to identify the potential risk of phosphorus loss from farm fields and will also prevent the additional buildup of phosphorus in soils that are already saturated. Effective immediately, however, fields with the greatest risk for phosphorus runoff into nearby waterways as indicated by a FIV of 500 or greater are immediately banned from receiving additional phosphorus.

Additionally, to take advantage of the latest scientific data on nutrient movement and provide enhanced protections for Maryland's waterways, the Maryland Department of Agriculture (MDA) revised its nutrient management regulations in 2012. The revised regulations modified how a farm nutrient management plan is developed and implemented and change the way organic nutrient sources are managed. Farmers are now required to incorporate manure and other organic nutrient sources into the soil, establish no-fertilizer zones next to streams, and curb livestock access to waterways. The regulations further limit fall nitrogen applications to small grains and, beginning in 2016, phase in a ban on spreading manure, biosolids, and organic nutrients in winter.

Ensuring farmer compliance with nutrient management regulations is at the core of MDA's mission. Maryland farmers are required to submit copies of their initial nutrient management plans to MDA. By the end of the fiscal year, over 99% percent of the state's 5,332 regulated farm operators had met the requirement. Although the number of regulated farms decreased in 2015, MDA continues to locate "new" farm operations through a variety of methods and actively pursues enforcement action against operators who have not submitted their initial nutrient management plans.

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 calendar year. By the end of the fiscal year, approximately 97.6 percent of regulated farmers managing about 1.3 million acres of land had submitted their AIRs to MDA.

Enforcement is a chief priority for the program. During FY 2015, the number of MDA enforcement specialists was reduced from nine to seven. Nevertheless, these specialists conducted 890 on-farm audits, representing about 16 percent of regulated farms. This represents a 2 percent increase over FY 2014. MDA nutrient management staff levels limit the capacity to address the workload associated with 5,332 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 agricultural operations is essential as Maryland tracks TMDL requirements.

Technical assistance is needed to assure that nutrient management plans are updated and implemented properly. The advisory committee supports the current menu of plan development options available to farmers, including continued funding of University of Maryland (UMD) Agricultural Nutrient Management Program services and farmer training and certification programs. MDA and University of Maryland Extension (UME) routinely evaluate program effectiveness to assure that farmer needs and agricultural nutrient management goals are met. In FY 2015, MDA funded 20 UME consultant positions. As of June 30, 2015, 565 farmers have been trained and certified to write plans for their own operations and 1,289 consultants have been certified to write nutrient management plans for farmers.

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 conducted 32 voucher training sessions attended by 698 farmers seeking to obtain or renew their vouchers. MDA and UME continue to explore new ways to deliver continuing education programs that are useful, informative and convenient for busy adult learners.

During state fiscal year 2015, the Manure Transport Program provided Maryland farmers with grants to transport 167,237 tons of manure to approved farms and businesses. Maryland's 2015 Two-Year Chesapeake Bay Milestone commitments call for farmers to annually transport 44,000 tons of excess poultry litter or livestock manure to farms or alternative use facilities that can use the manure safely and in accordance with nutrient management plans. In FY 2015, Maryland farmers achieved 380 percent of this goal.

Turfgrass Nutrient Management Program

The Fertilizer Use Act of 2011, also known as Maryland's Lawn Fertilizer Law, requires lawn care professionals to be certified and licensed by MDA's Turfgrass Nutrient Management Program to apply fertilizer to lawns that they manage. In addition, the law limits the amount of nutrients contained in lawn fertilizer products sold in Maryland for use by homeowners and lawn care professionals. Nitrogen content has been reduced while phosphorus has been banned in most types of lawn fertilizer.

As of June 30, 2015, MDA has certified 1,507 turfgrass professionals to apply lawn fertilizer as required by law. In addition, 1,248 turfgrass employees have been trained to apply fertilizer under the supervision of a certified professional and 848 business licenses have been issued.

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 their first nutrient management plan to MDA 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 upon request 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 meets 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 continues to change. These changes may reflect land use changes from agriculture to development, owner or operator changes, as well as updates to the nutrient management program 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.

Compliance with First Plan and Annual Implementation Report Filing

MDA records indicate that 5,332 active farm operators manage approximately 1.3 million acres of farmland and are subject to nutrient management laws. As of June 30, 2015, 5,307 farms have filed an initial nutrient management plan with MDA, representing 99 percent of regulated farms. MDA is pursuing enforcement actions against 25 operators who have not submitted their initial nutrient management plans. The enforcement process includes a series of letters and site visits, and can result in administrative penalties. In FY 2015, MDA issued $5,600 in fines against 16 farmers who failed to file an initial nutrient management plan and have not responded to certified letters. The number of farmers without plans has dropped due to proactive actions by MDA nutrient management specialists who have identified both new and existing farmers who are required under Maryland law to have a nutrient management plan.

Nutrient management regulations apply to farm operators, and not necessarily the owners of agricultural land. A good amount of 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, changes in property farmed, the continued use of a nutrient management plan, and document fertilizer and nutrient uses during the previous calendar year. Regulations require all farm operators to submit to MDA an AIR summarizing nutrient applications for the previous calendar year by March 1, 2015. In April 2015, MDA issued warning notices to 919 farmers who failed to file their AIRs on time, followed by 395 notices of pending fines and 143 default notices. By the end of the fiscal year, 97.9 percent of regulated farmers had submitted their AIRs. In FY 2015, MDA issued $30,750 in fines against 123 farmers 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 before it expires or 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.

Site visits are scheduled by several means including a random selection process, as a result of a complaint, and as a result of incomplete and/or inaccurate information supplied on the Annual Implementation Report (AIR). MDA's seven nutrient management specialists conducted 772 random on-farm audits in FY 2015 During the farm inspections 69% were found to be fully in compliance, slightly higher than last year.

During site visits, specialists educated famers on technical and regulatory aspects of nutrient management and helped set up record keeping systems. Specialists issued 323 warnings to correct major violations and documented minor violations to be corrected. Follow-up visits determined that 69 percent of the operators with violations had come into compliance and the remaining operators are progressing through the enforcement process.

Since farms selected through a targeted approach are almost sure to be out of compliance, MDA initiated a separate category for those farms so that we can continue to work closely with those farms to achieve compliance while retaining a more statistical representation of the compliance rate from farm operations chosen randomly throughout the state. An additional 118 on-farm audits were scheduled as a result of incomplete/irregular/inaccurate information on the AIR. These farms represent 2 percent of the total regulated farms. NM staff are actively pursuing full compliance for these operations which in many cases involve incomplete AIRs. Not all of the 118 targeted farms were found to be out of compliance when the audit was conducted.

In FY 2015, MDA issued $32,950 in fines against 47 farmers who failed to take corrective actions in a timely manner. It should be noted that the number of farmers receiving fines and the fine money collected are much higher than FY 2014 primarily due to the increased number of inspections for FY 2015.

MDA follows enforcement policies and procedures to follow up on plan implementation reviews. A nutrient management specialist schedules site visits with operators at a mutually agreeable time. The specialist mails a verification packet with confirmation of time and date for the visit, fact sheets that explain the review process, and a checklist of the records the operator should have available for review. Once the inspection is complete, an operator may receive a written warning for major violations such as failure to keep their plan current or up to date, absence of actual yield records, incorrect timing of

fertilizer application, over application of nutrients, or mismanagement of organic wastes. If an operator fails to correct these violations within a prescribed timeframe, the warning 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. After these steps are completed, MDA may issue the fine.

Summary of PMT Requirements

Use of the PMT only applies to farm fields with high soil phosphorus levels identified by a Fertility Index Value (FIV) of 150 or greater on soil test results. **If farm fields score less than 150, the farmer can apply phosphorus to the land following current University of Maryland** recommendations. The following phased-in implementation schedule applies:

Effective Immediately

- Fields with the greatest risk for phosphorus runoff into nearby waterways as indicated by a FIV of 500 or greater are immediately banned from receiving additional phosphorus. These farms will receive priority for cost-share assistance to relocate excess animal manure.
- All new/updated nutrient management plans must be developed using both the PSI and the new PMT for farm fields with a FIV of 150 or greater. By running both the PSI and the PMT, farmers will be better informed and can plan for management changes required by the PMT.

September 30, 2015

- Nutrient management consultants and certified farmers must report soil phosphorus FIV results to MDA for all farm fields. The report will not associate these values with a specific address or farm operator.

June 30, 2016

- Nutrient management consultants must provide farmers with an average soil phosphorus FIV for all fields in their operations with a FIV of 150 or greater. This average will determine the "tier" or timeframe that farmers must follow when transitioning to the PMT. Use of the PMT only applies to fields with a FIV of 150 or greater.

September 1, 2016

- Farmers report average FIV values for their farm operations to MDA.

Beginning in 2018

- New phosphorus management requirements begin to phase in for High Risk (Tier C) farms with average phosphorus levels greater than 450 FIV.

Beginning in 2019

- New phosphorus management requirements begin to phase in for Medium Risk (Tier B) farms with average phosphorus levels of 300-450 FIV.

Beginning in 2020

- New phosphorus management requirements begin to phase in for Low Risk (Tier A) farms with average phosphorus levels of 150-299 FIV.

January 1, 2022

■ The PMT must be fully implemented on all fields with a FIV of 150 or greater (unless the deadline is extended).

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 with nutrient management requirements are ineligible to receive State cost-share from any program funded through the Maryland Agricultural Water Quality Cost-Share (MACS) Program, including the Cover Crop Program, Manure Injection and Incorporation 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 2015, MDA and UME conducted 32 voucher training sessions attended by 698 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 2015, MDA and UME sponsored 42 education classes on nutrient management topics and approved an additional 64 courses and field events sponsored by other recognized organizations. The sessions were attended by 2,806 individuals.

MDA and UME train farmers who want to become certified to write nutrient management plans for their own operations. Farmers undergo about 11 hours of classroom instruction and practice in writing plans specific to their operations. In FY 2015, 38 farmers were trained to write their own nutrient management plans. To date, 565 farmers have been trained and certified under the program.

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. Twenty-eight new consultants were certified following the exam bringing the total number of consultants certified under the program to 1,289.

In FY 2015, 20 UME consultants were funded by MDA to provide farmers with nutrient management plans free of charge.

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 2015, MDA actively promoted the Manure Transport Program through news releases, an updated brochure, newsletter articles and a manure education outreach campaign aimed at crop farmers that touted the benefits of switching to manure as a crop fertilizer.

Qualified applicants are eligible to receive grants of up to $18/ton to transport excess manure from their properties. Cost-share rates are 20 percent higher for poultry farms located in Dorchester, Somerset, Wicomico, and Worcester Counties on the Eastern Shore.

In FY 2015, MDA provided Maryland farmers with $790,310 in grants to transport 167,237 tons of manure to approved farms and businesses—a 141 percent increase over 2014. More than 31 percent of this tonnage was shipped to alternative use facilities and not land applied in the watershed. Delmarva poultry companies provided $409,548 in matching funds to transport poultry litter, bringing the total amount of financial support provided to farmers through the Manure Transport Program to $1,199,858.

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. During the year, the Matching Service was actively promoted to farmers. The Service is voluntary, free and available to both sending and receiving operations.

Program Effectiveness

The program has been operational since the spring of 1999. During the first three years of the program, most of the participants used poultry litter as a fertilizer for land application; however, currently more poultry litter has been transported for alternative uses. Perdue AgriRecycle began participating in the program in August 2001, and has since transported approximately 290,675 tons of poultry litter using program assistance. The majority of the transported poultry manure is not land applied in the Chesapeake Bay watershed.

MDA regulations 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 nutrient management 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 Program, driven in part by full implementation of phosphorus-based plans. Additionally, the development of local Watershed Implementation Plans and implementation of the Phosphorus Management Tool are likely to increase demand for assistance in transporting manure.

Part IV. TURFGRASS NUTRIENT MANAGEMENT PROGRAM

The Fertilizer Use Act of 2011—Maryland's Lawn Fertilizer Law—significantly strengthened MDA's existing Turfgrass Nutrient Management Program by expanding its regulatory authority to include more than 1,500 individuals and companies that apply lawn fertilizer to properties that they manage, including golf courses, parks, recreation areas, athletic fields, business properties, school campuses, cemeteries, highway right-of-ways and home lawns.

During the fiscal year, MDA completed promulgation of its turfgrass nutrient management regulations and began implementing the new requirements. Beginning October 1, 2013, lawn care professionals hired to apply fertilizer to lawns were required to be certified by MDA or work under the direct supervision of an individual who is certified. In addition, business licenses are now required for individuals and businesses that fertilize turf.

Maryland's Lawn Fertilizer 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, has established a training, certification and licensing program for lawn care professionals as well as a public education program for homeowners.

Professional Training, Certification & Licensing

In FY 2015, MDA, in cooperation with University of Maryland Extension, area businesses and trade organizations, conducted 27 precertification training sessions across the state to prepare lawn care professionals for the certification exam. An exam was held for the professionals later that same day. FY 2015 was the first year for renewal of Business Licenses and recertification of Professional Fertilizer Applicators and Trained Employees. Recertification of PFAs will occur annually, requiring two continuing education units prior to the renewal being approved.

As of June 30, 2015, 1,507 individuals have received Professional Fertilizer applicator (PFA) certificates and 1,248 employees have been trained and issued a Trained Employee card. Additionally, 848 Business Licenses have been issued.

By the end of the fiscal year, MDA had offered 46 recertification courses that fulfilled the two hours requirement for PFAs and approved numerous training courses offered by private industry and trade groups. Beginning in 2015, license holders were required to file an annual activity report with MDA covering the previous year. The first activity report was due to MDA March 1, 2015.

MDA continues to offer support to local governments, homeowner associations and other organizations to ensure that lawn care contract specs are in line with the law and regulations.

During the year, MDA updated its dedicated web page at www.mda.maryland/gov/fertilizer with educational materials, training and exam dates, continuing education offerings, license holder information, an updated listing of certified lawn care professionals (as required by Maryland law) and other valuable information to assist lawn care professionals and homeowners in complying with the law.

Enforcement Activities

During FY 2015, the program conducted 344 reviews of turf managers' fertilizer records to assess compliance with the law. Ten warnings were issued and all but one has been resolved through follow up inspections and education. The warnings were the result of: missed site visit after confirmation with owner, lack of adequate fertilization records, and fertilizer over-application. Resources for the remainder of the fiscal year focused on training and certifying professional

fertilizer applicators. Funding will expire in spring of 2016 for a contractual enforcement specialist who was hired in FY 2014 with a grant from the Chesapeake Bay Trust. It is anticipated that revenues from certification and licensing fees will be used to cover salary and other program expenses when the grant expires. The position is proposed to become permanent in FY 2017.

Homeowner Outreach

During 2015 MDA continued an educational campaign using social media, the Internet and print advertising to help spread the word about Maryland's lawn fertilizer law. Fact sheets were updated and reprinted and displays were presented at various public events and functions across the state, including county fairs and events, the Maryland State Fair, Maryland Home and Garden Show and the Master Gardeners Conference.

Key Features of Maryland's Lawn Fertilizer Law

✓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 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. 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, seven full-time nutrient management specialists conduct inspection and enforcement activities for more than 5,300 regulated farmers and about 130 active certified consultants. As the Fertilizer Use Act of 2011 shifts into high gear, training curricula and exam materials will need to be updated and provided as well. An escalating focus on implementation and accountability means that more

personnel will be needed to reach farmers and urban land managers. The newly established PMT will require additional administrative staffing for completing the soils analysis, economic analysis, and assessment of the comparison of PMT to PSI as well as other tasks.

4. **Continued and expanded research is needed 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 and Phosphorous Management Tool 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 program responsiveness in meeting 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 along with 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 non-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. Although most farmers in the state are in compliance, enforcement continues to be necessary in order to encourage all farmers to submit the AIR in a timely fashion, maintain a current nutrient management plan, and implement that plan to protect water quality. Operators need continuing support in understanding the process, keeping records and adapting nutrient management to their operation-specific conditions and changing needs. Use of the Phosphorous Management Tool generated considerable debate and discussion in 2015 and will continue to challenge farmers until fully implemented. Most importantly, a strong Nutrient Management Program in Maryland plays a major role in helping the state meet TMDL requirements.

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