

# 2014 Nutrient Management Annual Report


HELPING CITIZENS MANAGE NUTRIENTS SINCE 1989



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**T**he fiscal year 2014 (FY 2014) Nutrient Management Annual Report highlights the programs of the University of Maryland's College of Agriculture and Natural Resources (AGNR), which include nutrient management in field and vegetable crops, animal production, nursery and greenhouse industries, and urban environments.

The guiding principle behind nutrient management planning and implementation, as outlined in the Maryland Water Quality Improvement Act of 1998, is that nutrients applied in any form should balance with plants' nutrient needs. In agricultural production systems, managing nutrients to meet, not exceed, crop needs may increase profitability and improve the health of the Chesapeake Bay and its tributaries.

Regardless of land use, improperly or excessively applied nutrients can leach into the groundwater or exit landscapes via runoff from precipitation, and then migrate into Maryland's waterways. Once in the water, excess nutrients upset the Bay's ecological balance by causing algal blooms and contributing to eutrophication and degradation of wildlife habitat.

*For more information on the College of AGNR, visit [www.agnr.umd.edu](http://www.agnr.umd.edu)*



# Agricultural Nutrient Management

The University of Maryland Extension's (UME) Agricultural Nutrient Management Program (ANMP), which is funded by the Maryland Department of Agriculture (MDA), provides (1) nutrient management planning services to Maryland farmers through a network of nutrient management advisors located in all county Extension offices and (2) continuing education and technical support to certified nutrient management consultants and certified farm operators via nutrient management specialists.

## 2014 Priorities

A formal agreement between the MDA and the University of Maryland details the nutrient management planning priorities for the ANMP. The agreement targeted several groups of farmers for assistance with developing or updating nutrient management plans in FY 2014:

1. farmers who have filed a notice of intent (NOI) as a Concentrated Animal Feeding Operation (CAFO) or who were designated a CAFO by the Maryland Department of the Environment (MDE) or the Environmental Protection Agency;
  - a. and whose Comprehensive Nutrient Management Plan (CNMP) was being prepared by their Soil Conservation District; or
  - b. who need an updated nutrient management plan to remain in interim compliance while they awaited the development of the CNMP by their Soil Conservation District; or
  - c. who had previously developed a CNMP with a nutrient management component that required updating.
2. farmers who have filed a NOI as a Maryland Animal Feeding Operations (MAFO) or who have been designated a MAFO by MDE who require a current nutrient management plan to complete permit requirements;
3. farmers with pollution problems or designated as non-compliant by MDA through an enforcement procedure;
4. farmers participating in the Manure Transport Project and those with a Maryland Agricultural Cost-Share (MACS) application pending for animal waste storage and poultry mortality composters;
5. updating nutrient management plans for the existing clientele with animal operations and expired plans developed by the nutrient management advisors; and
6. first come, first serve for any other farmer who must comply with the Water Quality Improvement Act.

## 2014 Progress and Achievements

Under the ANMP, UME nutrient management advisors:

- prepared nutrient management plans for 40 Manure Transport Project clients, allowing transportation and application of manure on 12,493 acres;
- developed or updated nutrient management plans to partially fulfill permit requirements for 68 CAFO or MAFO clients;
- conducted the Phosphorus Site Index for 213 clients on 1,384 fields;
- performed 11 yield checks and calibrated 8 manure spreaders;
- implemented the Pre-Sidedress Nitrate Test for 34 producers with a total of 3,338 acres. This resulted in an estimated reduction of over 40,000 pounds (or approximately 12 pounds per acre) of nitrogen;
- implemented the Fall Soil Nitrate Test (FSNT) for over 200 fields in 13 counties. This resulted in an estimated reduction of over 41,000 pounds of nitrogen;
- wrote 324 new nutrient management plans for 178 Maryland producers for more than 10,000 acres. The nutrient management advisors updated 5,605 plans for 1,200 clients for approximately 250,000 acres (Figure 1).

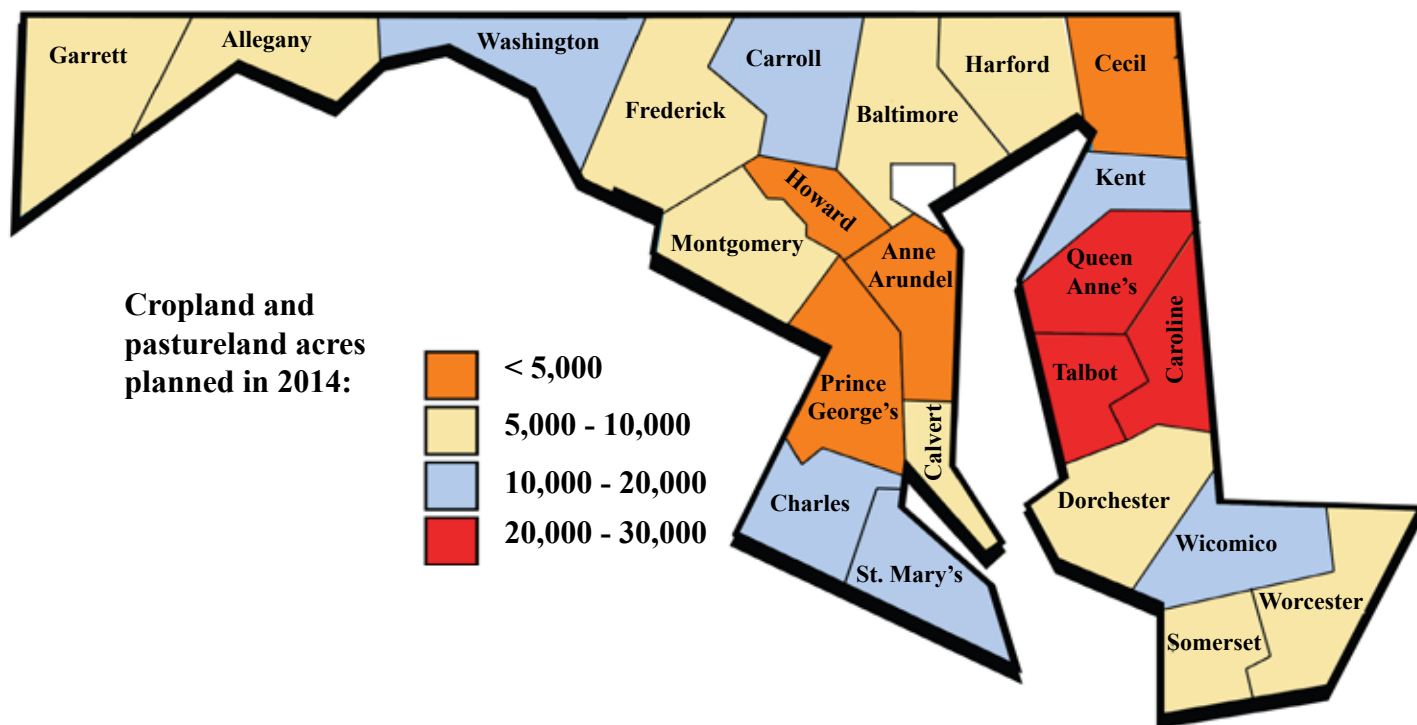


Figure 1. Farmland acres planned per county in fiscal year 2014 by University of Maryland Extension nutrient management advisors.



# Agricultural Nutrient Management (Continued)

## Continuing Education

MDA and the College of AGNR co-sponsored continuing education programs to help certified nutrient management consultants and certified farmers meet their continuing education requirements in 2014.

- Fifty-four (54) people attended the annual nutrient management field day, *Practical Experiences in Nutrient Management (PENM)*. Workshop topics included:
  - writing plans for perennial fruit operations, calibrating manure spreaders, corn silage and corn grain yield checks, field data collection for phosphorus risk assessments, and using drive-on scales for yield checks and equipment calibration.
- Eleven (11) face-to-face workshops had 232 attendees. Workshop topics included:
  - *How to Write a Nutrient Management Plan, Fall Soil Nitrate Testing, Revised Universal Soil Loss Equation Version 2 (RUSLE2), and Pre-sidedress Soil Nitrate Testing and Nutrient Management Update.*
- Five online sessions had 178 attendees. Sessions were offered via the College of AGNR's web conference system in 2014. The topics were:
  - *Introduction to NuMan Pro Man 4.0,*
  - *Introduction to Phosphorus Site Index and University of Maryland Phosphorus Management Tool Software,*
  - *Manure Management in No-till,*
  - *The Science Behind the New Forage Recommendations,*
  - *Soil Fertility Management and Environmental Factors Impacting Wheat Quality,*
  - *Phosphorus in Fertilizers and Organic Sources - Quantification and Behavior,*
  - *Mineralization – What Really Happens: An Intro to Soil Microbiology, and*
  - *Mineralization Rates of Organic Nutrient Sources: Some Old Favorites and Some Rising Stars.*
- UME coordinated with other organizations to provide Maryland certified clients with continuing education opportunities, such as eXtension's Livestock and Poultry Environmental Learning Center (LPELC), the American Society of Agronomy's webinars, and the USDA-Natural Resources Conservation Service's (USDA-NRCS) East Technology Support Center webinar series.

For more information on the ANMP, visit <http://extension.umd.edu/anmp>

## Pre-certification Exam Training

Thirty-six (36) individuals attended *Fundamentals of Nutrient Management*—a course designed to help participants prepare for the MDA nutrient management certification exam.





## Farmer Training and Certification

- Forty-three (43) farmers were certified through the Farmer Training and Certification (FTC) initiative to write their own nutrient management plans. To date, 523 farmers have been certified through this training initiative.
- After initial certification, University of Maryland nutrient management specialists assisted farmers with updating nutrient management plans and using *NuMan Pro* software.
- Six plan writing help sessions were offered at five different locations to provide certified farmers with assistance in updating their nutrient management plans.



## ANMP Web Site

The ANMP web site (<http://extension.umd.edu/anmp>) provides users with access to general information about the program, training materials, publications and resources for nutrient management plan development. The ANMP also maintains a web page of training opportunities and current events on the social media site, Twitter ([www.twitter.com/UMANMP](http://www.twitter.com/UMANMP)).



## Nutrient Applicator Training

Thirty-one (31) face-to-face Nutrient Applicator Training sessions were held whereby 481 operators either received or renewed their nutrient applicator vouchers.



## Composting School

Composting animal manures and other organic wastes stabilizes nutrients and makes the materials easier to handle.

Composting animal mortalities is beneficial for managing diseases. By composting mortalities in the production facility or adjacent to it, any diseases that may have caused the animal's death are reduced or eliminated without moving the animals on public roads.

Animal Mortality Compost School was taught in January at UMES in Princess Anne to 9 farm operators.

# 2014 Field Days

## 2014 Mid-Atlantic Precision Agriculture Equipment Day

The University of Maryland, University of Delaware, Pennsylvania State University, and Virginia Polytechnic Institute and State University organized the August 2014 Mid-Atlantic Precision Agriculture Equipment Day. Topics included use of UAV's in precision agriculture, data accuracy and usage, and current topics in precision agriculture. Continuing education credits were awarded to 325 participants.



## Winterkill Cover Crops Field Day

Winterkill low-residue cover crops are being investigated for inclusion in no-till spring vegetable systems.

A field day was held in November 2013 at University of Maryland Central Maryland Research and Education Center in Clarksville to highlight the research data on various cover crops such as radish, phacelia and mixtures of species that winterkill. Afterwards, 75 attendees toured plots planted to the various cover crops and investigated the residual soil nitrate in the soil profile in one of the plots.





# Poultry Farm Management Workshop

UME, in cooperation with Soil Conservation Districts, USDA-NRCS, Delmarva Poultry Industry, MDE and MDA, offered a Poultry Farm Management Workshop and Certification course designed to help new and existing poultry growers comply with their National Pollutant Discharge Elimination System (NPDES) CAFO permit.

Workshop topics included:

- basic farm management;
- brooding management;
- poultry welfare;
- basic poultry ventilation;
- site management and maintenance of poultry houses, pump rooms, manure sheds, composters, etc.;
- manure and mortality handling;
- vegetative environmental buffers;
- nutrient management and financial record-keeping;
- the CAFO permitting process; and
- comprehensive nutrient management planning.

Maryland certified farmers, certified consultants and applicator voucher holders received four continuing education credits for attending this workshop. In 2014, poultry farm management workshops were held on Maryland's Eastern Shore with 38 participants.

## Nutrient Management Software

UME updated two software products in fiscal year 2014.

- Nutrient Management for Maryland Professional Edition (NuMan Pro) software version 4.0 was released in July 2013. It allows the calculation of the University of Maryland Phosphorus Management Tool (UM-PMT) in addition to updating recommendations for several crops.
- Phosphorus Site Index, a stand-alone product which calculates Phosphorus Site Index independent of NuMan, was updated with new soil files and the Phosphorus Source Coefficient. It was released in December 2013.

A new product, released in September 2013, is the stand-alone version of the University of Maryland Phosphorus Management Tool.

## Nutrient Management Publications

UME released *TT115: Fertilizer Recommendations for Commercially Maintained Lawns and Turfgrass in Maryland*



# Nutrient Management Research For Agronomic and

Researchers in the University of Maryland's Department of Environmental Science and Technology and Plant Science and Landscape Architecture have on-going projects designed to improve the understanding and management of nutrients in crop production.

## Agronomic Crops: On-going Projects

- **Subsurface injection of poultry litter to minimize nutrient losses**  
New funding was received from USDA-NRCS to continue to develop this into a workable technology in cooperation with the National Fish and Wildlife Foundation, University of Delaware, Virginia Tech, Penn State, Oklahoma State University, and University of Kentucky.
- **Development of a second-generation phosphorus risk assessment tool, University of Maryland Phosphorus Management Tool (UM-PMT), for predicting the relative risk of phosphorus transport from agricultural land**  
UM-PMT is under regulatory consideration by MDA and it is anticipated that it will be implemented within the next year.
- **Effectiveness of *in-situ* treatment of agricultural drainage ditch water to remove nutrients and other pollutants and reduce off-field nutrient transport**
- **Utilization of variable rate nitrogen application in the Mid-Atlantic region to increase nitrogen use efficiency in corn**
- **Estimation of an agronomic nutrient mass balance for nitrogen and phosphorus in Maryland**
- **Effectiveness as nitrogen scavengers and weed suppressors of low-residue winterkilled cover crops for early-planted vegetables as well as the impact of cover crops on fertility requirements of spring crops**
- **Investigating nitrogen deep in agricultural soil profiles, innovative cover crop systems, and tillage to capture and recycle nitrogen for the benefit of both water quality and crop production**  
Twenty sites in Maryland and Pennsylvania are involved in the study where the nitrogen capture and recycling ability of radish, two small grains (triticale or rye), and a three to four species cover crop mixture (grass, legume and brassica species) will be compared along with various planting techniques (such as after corn silage, aerial seeding into standing crops, early-harvested short season hybrids and late spring inter-seeding).
- **Efficiency of fertilizer nitrogen use in corn**  
It is difficult to accurately measure the uptake of fertilizer nitrogen by corn in a field situation. Nitrogen use efficiency (NUE) is a measurement that assesses how efficiently a crop utilizes nitrogen. Typically, NUE is evaluated by using a range of nitrogen rate treatments applied to the corn crop. Whole plant and grain samples are collected and each is analyzed for their nitrogen concentrations. This approach measures the total amount of nitrogen consumed but does not identify the sources, i.e. if the nitrogen was obtained from the fertilizer supplied or from either residual nitrogen present at corn planting or mineralization of organic matter during the growing season. To accurately identify the nitrogen contribution from fertilizer nitrogen, a study using labeled nitrogen (N-15) started in 2012. This three-year project has not only measured nitrogen uptake for corn but has also measured the uptake that occurred in the following rotation crops of winter wheat and double crop soybean. The field portion of this project will conclude following the harvest of the 2014 double crop soybeans. A summary of the findings of this research should be available in 2015.

# Vegetable Crops

## Agronomic Crops: Completed Projects

### Optimum application time of spring nitrogen for winter wheat

Current Maryland regulation restricts the first application of spring nitrogen to commodity cover crop wheat to March 1. Wheat growth is dependent upon adequate moisture and nutrients. In addition, the rate of both fall and spring wheat growth is influenced by temperature. The timing of the first application of spring nitrogen is important to the continued development of plant tillers that are needed to produce optimum yield. Thus, should the first spring application of nitrogen be March 1 for wheat, or is there a better way of determining when it is needed? A study was initiated during the 2011-2012 wheat production year to identify the optimum time for spring nitrogen application using the accumulation of temperature, i.e., growing degree units (GDU). Over the past three years the study has been conducted at a total of 14 sites representing a range of Maryland planting dates and growing conditions. Optimum wheat yield over the 14 sites occurred when the first nitrogen application coincided with the accumulation of 375 GDUs from January 1. March 7 was the average date for those 375 GDUs across the 14 sites. However, the earliest and latest dates for optimum response were January 20 and March 24, respectively, indicating considerable variability existed. The most frequent dates for optimum response were between February 5 and March 15. This indicates that first application of spring nitrogen to wheat should be allowed earlier than March 1 if field and weather conditions permit.

## Vegetable Crops: On-going Projects

### Grafting heirloom tomatoes for increased yields and reduced nutrient use

Tomatoes are grafted by joining the top part of one plant (the scion) to the root system of another plant (the rootstock). The resulting plant is more vigorous and productive. Several studies have been conducted over the last 10 years that show the benefits of using grafting for soil disease control in tomato production, but there is not much research that examines the influence of rootstocks in tomato high tunnel production systems with no disease pressure. In general, vegetable grafting can increase yield by improving crop tolerance to abiotic stresses because of the plant's ability to increase water and nutrient uptake via a more vigorous rootstock. Therefore, fertilization programs could be revised to show the improvement of nutrient uptake when growing grafted tomato plants. The first year of a grafting study was initiated wherein the benefit, if any, of grafting an heirloom tomato variety, Cherokee Purple, onto a more vigorous rootstock (Maxifort) in a high tunnel production system was evaluated.

Grafting treatments consisted of three combinations: a scion/rootstock graft, a non-grafted control, and a self-grafted control (the scion and root stock were from different plants but the same variety Cherokee Purple to test for any 'grafting effect'). Three levels of total nitrogen inputs were evaluated during the growing season: 50, 100 and 150 pounds of nitrogen per acre.

*To learn more about vegetable production practices and on-going vegetable research at the University of Maryland, visit <http://extension.umd.edu/mdvegetables>*

## Vegetable Crops: On-going Projects (Continued)

The first year's preliminary data shows the following:

- The grafted plants had 25% greater overall yields, with approximately 30% greater marketable fruit yield compared with the non-grafted and self-grafted plants.
- In this first year of the study grafted plants reached their “economic return” limit between 100 and 150 of nitrogen per acre whereas non-grafted and self-grafted plants reached their nitrogen “economic return” at greater than 150 pounds of nitrogen per acre. It appears, at least from this 1st year of study, that nitrogen inputs could be reduced for grafted heirloom tomatoes while increasing yield and maintaining quality.
- The all-important nutrient, potassium, was 23% greater in grafted plants vs. self-grafted and non-grafted plants. Potassium is critically important for producing high quality tomatoes.

## Animal Nutrient Management

Researchers in the University of Maryland's Department of Animal and Avian Sciences are studying how nutritional factors and feed management interact to effect phosphorus and nitrogen digestibility and retention in animals.

*For more information, visit <http://ansc.umd.edu>*

### Poultry On-going Projects

- Causes and solutions for late lameness in broilers: the relationship between nutritional factors (calcium, phosphorus, micronutrients, vitamin D and/or K)
- Effectiveness of currently used and new forms of phytase enzymes in decreasing phosphorus in diets fed to broilers
- Impact of dietary calcium and phosphorus on effectiveness of phytases
- Availability of calcium from limestones and impact of limestone particle size on calcium and phosphorus availability as well as effectiveness of different phytases
- Development of *in vitro* fast assays to determine calcium availability from limestone, based on correlations with *in vivo* work
- Development of methodologies that will allow determination of ingredient nutrient (calcium, phosphorus, energy, and amino acids) digestibility in one assay, in the presence or absence of one or several enzymes
- Exploration of how management tools such as lighting programs and diet particle size can be used as tools to improve diet nutrient utilization by broilers. The goal of this research is to maintain or improve productivity while decreasing the nutrient excretion.
- Use of the dietary imprinting concept where changes in early nutrition could improve the broilers' ability to:
  - perform well when low phosphorus diets are fed in the finisher and withdrawal phases, and
  - deposit breast muscle such that breast yield does not change when low protein diets are fed in the finisher and withdrawal phases. This would allow producers to decrease the amount of phosphorus and nitrogen in the finisher and withdrawal phases that account from between 55 to 70 percent of the feed broiler consume without negatively impacting performance. The ultimate goals are to decrease phosphorus and nitrogen in litter without affecting performance.
- Determination of the impact of high copper concentrations used in poultry diets as growth promoters or antibacterials on phytase efficacy and on intestinal microbial populations
- Investigation into proteases that might help improve protein availability from diets, thus allowing formulation of diets with lower protein, and ultimately lower levels of excreted nitrogen and lower nitrogen volatilization
- Examination of amino acid digestibility in ingredients, their variability and how proteases can increase their utilization by poultry
- Defining requirements for calcium and phosphorus as affected by age and breed



The future focus includes:

Data from different sites and multiple years will be needed before conclusions can be reached on the cost-effectiveness of grafting heirloom tomato plants in low-disease environments. In addition, further research is needed to determine optimal nitrogen and phosphorus inputs for grafted heirloom tomato plants in high tunnel systems. Hybrid tomato varieties will also be incorporated into the study to determine if there are any benefits from grafting.

*(Photo courtesy of Anastasia Vvedenskaya,  
ANMP Communications Specialist)*



## Equine Rotational Grazing Demonstration Site

The Equine Rotational Grazing Demonstration site is a unique 5.5 acre pasture system used to train horse farm operators how to optimally manage their pastures for the health of their horses and the environment. Since initiating the Horse Pasture Management Training Series in 2009, the University has hosted 19 events with a total of 733 visits by participants from 7 states. In 2014, the program held an advanced seminar to provide more in-depth learning for those that already had a basic understanding of pasture management, but wanted to maximize production or be more strategic in grazing management.

- The Advanced Horse Pasture Management Seminar had 35 people in attendance and featured talks on managing pastures for soil type, buying the right fertilizer and lime, using pastures for profit, carbohydrates and the pastured horse, and use of herbicides to control weeds. Afternoon demonstrations using the new rainfall simulation demonstration showcased how various managed pastures (bare soil, low vegetation, and dense vegetation) relates to run-off and infiltration.
- Post-event surveys revealed that the seminar was successful at inspiring change in the way participants currently manage their horse pastures - most post-survey respondents indicating they will rotationally graze. Also, the majority of respondents felt that they were better able to identify soil type, select and apply lime and fertilizer, understand the interaction of pasture carbohydrates and horse health, and understand the role of pasture in reducing runoff. Overall, the educational event increased environmental stewardship awareness of horse farm operators, and helped them make smart management changes to reduce their farms' environmental impact.

To learn more about horse management and upcoming educational events, visit the University of Maryland's Equine Rotational Grazing Demonstration site website:  
<http://extension.umd.edu/horses/equine-rotational-grazing-demonstration-site>

# Nursery and Greenhouse Nutrient Management Program

Under provisions of the Water Quality Improvement Act of 1998, Maryland's nursery and greenhouse operators must develop water and nutrient management plans to ensure that nitrogen and phosphorus are not lost to surface and groundwater from production sites in the state. The University of Maryland's Nutrient Management Program for the Nursery and Greenhouse Industry works with the industry to help develop these plans and promotes other sustainable practices that minimize environmental impacts through education and research.

## Training

A number of nutrient management training opportunities were offered for nursery and greenhouse operators in 2014:

- **Farmer Certification Training:** Growers were certified to write their own nutrient management plans. Trainings were held east and west of the Chesapeake Bay. Nine operators and consultants attended these certification programs. Six growers were certified by the MDA at the follow-up sessions in September and May in Annapolis.
- The team also conducted seven other nutrient management programs (for a total of nine CEU or voucher credits) throughout the winter, spring and summer of 2014, reaching a total of 411 attendees.



*Photos: Pepper and lettuce varieties at a Baltimore, MD greenhouse.  
(Photos courtesy of Anastasia Vvedenskaya, ANMP Communications Specialist)*

## Research and Extension

- **Maryland Nursery and Landscape Association Five-Year Economic Survey:** A five-year Economic Survey of nursery, greenhouse and landscape industries in Maryland was conducted using 2012 industry data. Gross receipts for the ornamental industry, including landscape installations, exceeded \$1.19 billion and were expected to increase to \$1.3 billion in 2013. Survey highlights included that the Green Industry paid wages in excess of \$361 million (plus benefits of \$84 million) to over 26,500 employees; the average wage being \$10.80 per hour. Ornamental horticulture had over 33,971 acres in production, in Maryland, including covered and non-covered facilities. Based on cash receipts, production horticulture has been the number two incoming producing commodity group, behind poultry, for the last decade (Maryland Department of Agriculture).

*A copy of the full report can be downloaded from the MNLA website at <http://www.mnlaonline.org> under the Industry Surveys tab, or directly from [http://issuu.com/marylandnurserylandscape-assn/docs/final\\_report\\_-\\_dec\\_23\\_2013](http://issuu.com/marylandnurserylandscape-assn/docs/final_report_-_dec_23_2013)*

- **Wireless Sensor Networks for Irrigation and Nutrient Management:** The final year of a 5-year USDA-funded national specialty crops project was completed in 2014. Four commercial nursery and greenhouse operations in Maryland have actively involved in this research (Raemelon Farm, Waverley and Moon Nurseries and Bauers Greenhouse). A number of economic studies have shown, on average, a 50% reduction in applied water and a 25% reduction in nitrogen use, in addition to reduced crop production times, increased crop quality, reduced disease loss and decreased labor costs when sensor-controlled irrigation is implemented.

*A full description of the final project results can be found online: <http://www.smart-farms.net/impacts>*

- **Integrated Management of Zoosporic Pathogens and Irrigation Water Quality for a Sustainable Green Industry:** This national specialty crops project involves a team from the University of Maryland and two nursery operations (Moon, Tidal Creek) in Maryland and three nursery operations in Virginia (Colesville, Bennett's Creek and Lancaster Farms). Containment ponds and irrigation systems are being actively monitored for water quality and pathogen status at each operation, to understand the dynamics of nutrient loading on water quality and pathogen survival. The overall goal is to elucidate better disease management and water treatment strategies, since this is a key barrier to using recycled water for many growers.

*A full description of the project objective, current results and webinars can be found at <http://www.irrigation-pathogens.info>*

- **Knowledge Center for Water, Nutrient and Plant Health Management:** There are currently over 1,250 registered users in the Knowledge Center, which has 26 learning modules on various aspects of substrate, irrigation, nutrient and pathogen management for nursery and greenhouse operations.

*General information can be found at <http://waternut.org> and learning modules can be accessed at <http://waternut.org/moodle>*

# Urban Nutrient Management

## Master Gardener Program

UME Master Gardeners teach residents how to become soil stewards and minimize the negative impacts of fertilization practices on water quality. Master Gardeners are trained by UME field and campus faculty to “educate Maryland residents about safe, effective, and sustainable horticultural practices that build healthy gardens, landscapes, and communities.”

- Currently there are active programs in 20 of 23 counties and Baltimore City.
- Master Gardener trainees receive basic and advanced training in soils, fertilizers, and composting.
- One thousand, seven hundred thirty-eight (1,738) volunteers donated over 103,000 hours of volunteer service to the state of Maryland.

The Home and Garden Information Center (HGIC) has 9 video clips and 11 fact sheets related to soils, composting and fertilizers. Of the 10,000+ phone and e-mail questions answered by HGIC’s Certified Professional Horticulturists, 8% are related to soil, fertilizer, and composting.

*For more information about the Master Gardener program, visit <https://extension.umd.edu/mg>*



*Photos from top to bottom:  
Rye in January, barley  
winterkilled*

*(Photos courtesy of Jon Traunfeld)*

## Urban Agriculture

Nationally, Baltimore City is a leader in Urban Agriculture. In Fall of 2013, the City of Baltimore adapted its first Urban Agriculture Policy Plan: Home Grown Baltimore. In Spring 2014, the City released a soil safety standard for urban food production. Extension educators and specialists were important resources for both of these endeavors.

A specially designed module of Farmer Training and Certification (FTC) was developed for small intensive food production operations for growers in Baltimore City and the surrounding communities. Both a Fall and Winter series of FTC were held leading to the certification of 14 individuals as certified farm operators.





## Center for Educational Partnership's Community-based Gardens

The Center for Educational Partnership (CEP) supports Urban Agriculture and Nutrition Education in the Riverdale area of Prince George's County. There is a special focus on supporting local food production, school gardens, and youth development. Urban agriculture can increase local access to fruits and vegetables and can improve nutrition knowledge, attitudes, and dietary intake. Community gardens can help decrease storm water runoff, air pollution, while increasing urban biodiversity.

- **Sheridan Street Community Garden:** The *Sheridan Street Community Garden* is located at CEP. A new Extension Program Coordinator was recently hired to coordinate community classes, conferences, and informal learning opportunities to expand opportunities for area residents related to nutrient management, sustainable garden programs, youth gardening, and nutrition. This community garden has 47 plots and hosts four community groups based in the CEP: Gapbusters, Prince George's County Health Department, Maryland Multicultural Youth Center, and William Wirt Middle School.



- **Field of Greens Community Garden:** The *Field of Greens Community Garden* was started in 2014 with funding from Prince George's County Redevelopment Authority and the support of many community partnerships. This project consists of individual and family plots, a youth garden, and a communal food forest. Led by UME, partners involved in the establishment of this community garden are the Neighborhood Design Center, AmeriCorps VISTA, and the refugee agencies housed out of the Suburban Washington Resettlement Center. Casey Trees recently planted 39 fruit, nut and shade trees to contribute to the urban canopy and assist in rain water retention, while a Tree ReLeaf grant from Prince George's County Department of the Environment will provide additional trees and shrubs in 2015. In order to utilize the site as a training ground for sustainable agriculture, the garden recently conducted a soils workshop with help from Love & Carrots, of Washington D.C., that highlighted the value of cover crops.



Photo  
Maryland.

(Photos courtesy of Anastasia Vvedenskaya, ANMP Communications Specialist)

# Urban Nutrient Management (Continued)

## Fertilizer Use Act of 2011

The Fertilizer Use Act is a Maryland law that became effective October, 2013. HGIC faculty and Master Gardeners have been educating residents around the state about the new law. The statute institutes new guidelines for lawn fertilization, including:

- lawn fertilizer products sold in Maryland cannot contain phosphorus (with certain exceptions);
- new label requirements will ensure that no more than 0.9 pounds of total nitrogen is applied at one time per 1,000 square feet, and at least 20 percent of this nitrogen must be in a slow release form;
- all lawn care professionals must be certified to apply fertilizer; and
- fertilizer use will be prohibited between November 15 and March 1, within 15 feet of a waterway, or when heavy rain is predicted.

UME continued to partner with MDA to distribute educational materials about lawn care and the law to homeowners.

*MDA's Fertilizer Use Act information can be found online:  
<http://mda.maryland.gov/pages/fertilizer.aspx>*

## Nutrient Management Training for Lawn Care Professionals

Professional lawn care applicators are required to have both pesticide certification and nutrient application certification. Preparation for the nutrient management certification exam was offered during the annual Maryland Turf grass Council meeting and at other locations around the state. In FY 2014, 1,218 individuals became certified.

Professional lawn care nutrient applicators are required to participate in continuing education classes. MDA and UME taught this class jointly at one location to 32 participants. Designed to give new information relevant to lawn care, this year's theme was urban soils.

## Bay-Wise Landscape Management

Bay-Wise training in 2014 focused on: the history and condition of the Chesapeake Bay; hydrology; wells and septic systems; lawn fertilizers, the Bay and the new Fertilizer Use Act of 2011; critical areas and coastal zone management; soil compaction; stormwater management (including rain gardens, the SMART tool); integrated pest management; native plants; riparian buffers; and ecologically sound landscape maintenance.

- Eighty-three (83) new Master Gardener volunteers were trained in Bay-Wise Landscape Management techniques. To date, 1184 Master Gardeners from 21 counties and Baltimore City have been trained in Bay-Wise techniques.
- Eighty-nine (89) additional Bay-Wise Master Gardeners had their personal landscapes certified as Bay-Wise demonstration sites by the Bay-Wise Landscape Management program, bringing the total to 565.
- To date, 1293 private properties (residential landscapes) have been certified as Bay-Wise by Master Gardeners in nineteen Maryland counties. An additional 159 public landscapes have also been certified as Bay-Wise by Master Gardeners throughout the state.

Bay-Wise principles were featured in a residential landscape during a Bay-Wise tour hosted by Howard County Bay-Wise Master Gardeners in September. The property featured nine stations highlighting such Bay-Wise features like rain gardens, rain barrels and pervious surfaces. The event was chronicled in the Baltimore Sun.

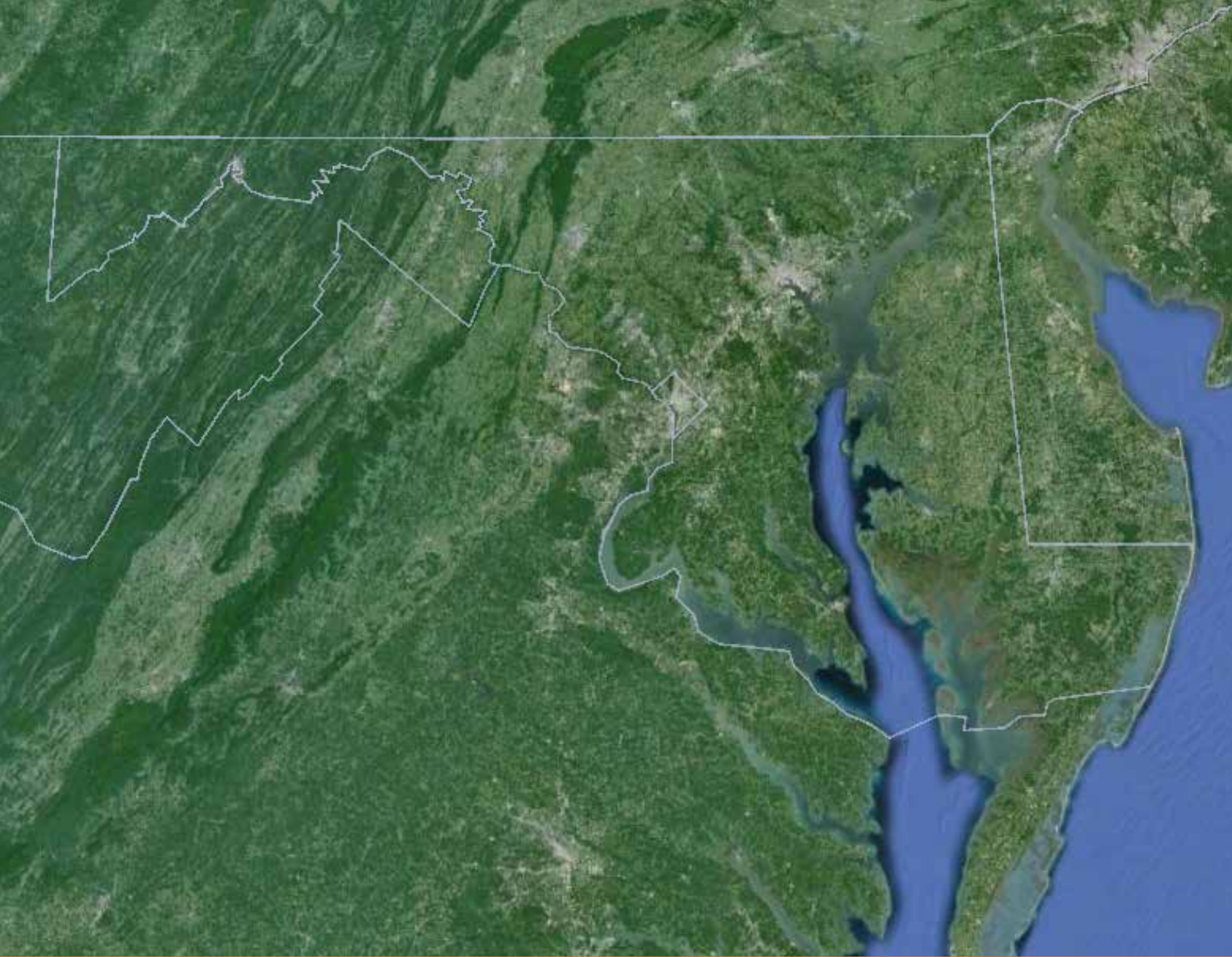
*For more information about the Bay-Wise Landscape Management Program, visit: <http://extension.umd.edu/baywise>*



*Photos: Rain gardens (left top and bottom), Chesapeake Bay (right).*

*(Top left photo courtesy of Wanda MacLachlan, bottom and right photo courtesy of Anastasia Vvedenskaya)*





## IN CLOSING

In 2014, the College of Agriculture and Natural Resources' nutrient management programs continued to conduct research on nutrient utilization in agronomic and horticultural crop production and animal nutrition, as well as educate the public on fertilizer management and sustainable horticultural practices. These research and education efforts allow the College's nutrient management initiatives to continue achieving their goal of improving and protecting the health of the Chesapeake Bay and Maryland's tidal and nontidal waterways while maximizing the state's economic potential.

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