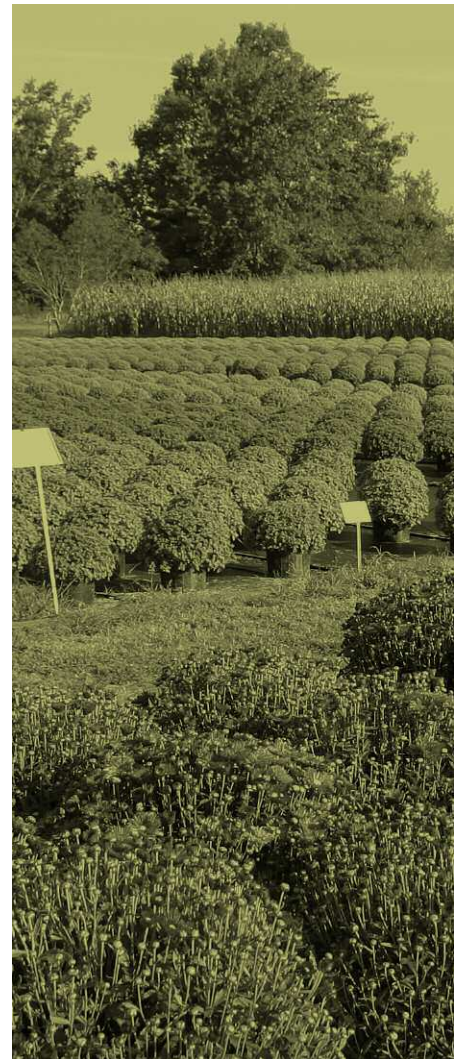


Maryland Department of Agriculture

preserving farmland, protecting consumers, promoting profitable agriculture





Mission Statement

To provide leadership and support to agriculture and the citizens of Maryland by conducting regulatory, service, and educational activities that assure consumer confidence, protect the environment, and promote agriculture.

Vision Statement

To achieve excellence in programs and in services that preserve and protect agricultural resources and the environment, promote profitable agriculture and consumer confidence, and enhance the quality of life for all Marylanders.

Legal Authority

Code of Maryland Regulations (COMAR) Title XV
Annotated Code of Maryland Title 2



Governor
Robert L. Ehrlich, Jr.



Lt. Governor
Michael S. Steele



Secretary
Lewis R. Riley



Deputy Secretary
John R. Brooks, D.V.M.



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Maryland farmers are on the national forefront of efforts to protect the environment, to expand profitability through new market development, respond to emergencies, and address increasing pressures of competing land uses and escalating land values. There is no time to let the grass grow under our feet. In the past year, we have made very positive progress toward ensuring a strong future for farming.

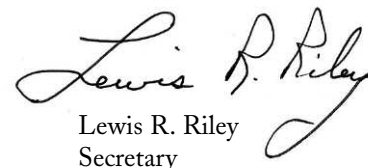
The farm community accepted Governor Robert L. Ehrlich, Jr.'s challenge to develop a strategic plan for the future of farming. Led by the Maryland Agricultural Commission, farmers from across the state participated in the process through a series of listening sessions. The priorities identified will be refined during the Governor's Agricultural Forum slated for February 2006. The resulting document will guide the direction of state programs and policies in many areas.

We celebrated the 25th anniversary of the Maryland Agricultural Land Preservation Foundation, one of the most successful programs of its kind in the United States, without resting on our laurels. With the sixth highest land values in the nation, we are working to make the program more flexible to meet the changing face of agriculture. A working group of local governments and farming interests was convened by Deputy Secretary John R. Brooks, D.V.M. to look at ways to meet a common goal of maintaining land for farming and a positive regulatory framework to succeed.

Thanks to funding made available by the Chesapeake Bay Restoration Fund and the Governor's commitment to agriculture, farmers signed up a record number of acres for the cover crop program. By year's end, 80 percent of farmland was in compliance with the Water Quality Improvement Act, something for which I thank each and every farmer.

We are pleased that because of MDA's education, regulation, promotion, service and preservation activities, Marylanders can expect a safe and healthy food supply and environment, fairness in the marketplace, and that agriculture will remain a strong economic force.

It is a privilege to serve the citizens of Maryland, the Executive Branch, and the General Assembly of Maryland State Government. Working together we are creating a very bright future for agriculture and for all Marylanders.


Lewis R. Riley
Secretary

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Maryland Agricultural Commission

An advisory body to the Secretary and Deputy Secretary of Agriculture, the Commission consists of 29 members representing various industries within Maryland agriculture, and includes both a consumer and a University of Maryland representative.

Legislation was passed by the General Assembly that increased membership from 24 to 29. New industries being represented include the following: aquaculture, forestry, agri-tourism, agri-business, as well as a seconded nursery representative. This increase reflects a more uniform representation of the diversity of agriculture in Maryland.

As part of their mission the Commission was asked by the Secretary of Agriculture to develop a strategic plan for the industry. This process was a collaborative effort between various stakeholders, agricultural, environmental and conservation group leaders that began with monthly planning meetings and the development of a survey reflecting areas of concern requesting feedback from group leaders. Additionally, eight activities included regional listening sessions allowing for further feedback on concerns from the county level, development of draft strategic plan, and the Governor's Agricultural Forum, followed by strategic plan implementation schedule. The whole process was intended to be a grassroots effort since this is a road map outlining the future of Maryland agriculture.

Maryland Agricultural Land Preservation Foundation

The Maryland Agricultural Land Preservation Foundation (MALPF) was created by the Maryland General Assembly in 1977 to preserve productive agricultural land and woodland that provides for the continued production of food and fiber for the present and future citizens of the state. Preservation of agricultural land and woodland helps to curb the expansion of random urban development, protects wildlife and preserves the environmental quality of the Chesapeake Bay and its tributaries.

In order for landowners to participate in the foundation's program, they must first establish an Agricultural Land Preservation District. If the property meets the minimum criteria as established by MALPF, the landowners sign a voluntary agreement stating that the land will be maintained in agricultural use for a minimum of five years. The agreement further states that the land will not be subdivided for residential, commercial or industrial use while under district status.

Once land is in Agricultural Land Preservation Districts, landowners are eligible to apply to sell agricultural land preservation easements to MALPF. During FY 2005, the foundation approved 32 new districts, representing 3,536 acres belonging to landowners who voluntarily restricted their land for at least five years. As of June 30, 2005, there were 410,865 acres enrolled in the program.

Despite a partial diversion of State transfer tax funds in FY05, the foundation was able to extend 60 new easement offers covering 7,437 acres. As of June 30, 2005, MALPF has purchased agricultural preservation easements on a cumulative total of 1,751 properties, permanently preserving 241,475 acres

The 2004 General Assembly passed legislation which will require all new easements to be perpetual, with no "25 year out" clause for special circumstances where farming is no longer possible. Easements purchased from 1980 through 2004 are not affected by the new perpetual easement language. The foundation developed new regulations and procedures for landowners to use in 2005 when the first easements eligible to request the termination of their easements are possible.

The General Assembly also passed legislation that permits MALPF to add an installment purchase agreement (IPA) option to landowners selling easements. The foundation believes this new option could be available for the FY2008 easement cycle. The legislation also

established a grants program for IPAs to counties with approved IPA options. The installment purchase agreements pay the landowner tax-advantaged interest on the entire amount of their easement over the period of the agreement (15-30 years) and then pay the principal as a lump sum at the end of the agreement period.

MALPF also partners with other state agencies and local governments to meet a legislative goal (SJ 10, 2002) of preserving 1,030,000 acres of agricultural land by 2022. As of June 30, 2005, Maryland has preserved nearly 430,000 agricultural acres under MALPF, Rural Legacy, GreenPrint, TDR's and local land preservation programs.



Virginia Greene and her grandson, Caleb Roessing, survey the soybeans on their farm in Henderson, Caroline County which is protected through the Maryland Agricultural Land Preservation Foundation.

The Office of Information Technology

The Office of Information Technology is moving forward in spite of unexpected budgetary initiatives and a 33 percent staff reduction in 2005. The networking, programming and technical support sections have made significant strides in maintaining an efficient environment for the department's personnel as well as the public sector.

Remote MDA sites were connected to Headquarters by a Wide Area Network (WAN) that utilized legacy inter-LATA circuits maintained by Department of Budget and Management (DBM). In 2005, these circuits were decommissioned, necessitating MDA's unforeseen migration to network.Maryland circuits. As part of this migration, the core router (a Cisco Catalyst 5500, managed by DBM) had to be replaced with a Cisco Catalyst 7200 ATM switch which is managed by MDA. Both the cost of the migration and the cost of the new switch had not been budgeted.

As the MDA network expanded and additional hardware was incorporated, the air conditioning system in the computer room was unable to handle the additional heat load generated by this equipment. In 2005, a new, self-contained air conditioning unit was installed in the computer room. This has enabled the IT to maintain a significantly lower temperature, with humidity control, which will prolong the useful life of our servers and protect data integrity. Additional air conditioning was also installed in the IT Services office area.

The current E-mail scanner (Guinevere) was upgraded, and the new version came with an integrated SPAM filter which was configured and put on line. This significantly reduced the number of unsolicited e-mails reaching MDA employees. Overall e-mail volume has been reduced by more than 80 percent.

IT Services worked with the Seafood and Aquaculture section to introduce the new Maryland Seafood and Aquaculture web site (<http://www.marylandseafood.org>). The initial design and development of the web site was made by the same firm that produced MDA's web site (<http://www.mda.state.md.us>). Among the new features of this web site is a searchable database of Seafood Business in Maryland. Visitors to the web site can search for businesses by name, city, type of business, or type of product. Other features include, on-line ordering of bulk quantities of recipe brochures, nutritional information about seafood, calendar of events, and information about Maryland's Aquaculture program IT Services has assumed technical responsibilities for the

maintenance of this site. The domain names for this site, farmsense.org, and mdinvasiesp.org have all been registered by IT Services. This enables one point of contact for all MDA domain names.

All MDA computers were updated to Service Pack 2 which is a critical Microsoft upgrade. The completion of the upgrade to all field offices laptops is currently in progress.

A complete inventory was conducted at headquarters and in all the field offices located throughout the state. This will assist IT in maintaining an accurate count of computers and their locations.

Training was provided to MDA employees in the Microsoft Office Suite (Word and Excel) as well as GroupWise. By providing this training in-house to more than 100 employees, the department saved thousands of dollars.

Help Desk calls exceeded 1,500 hours with an additional 1,200 hours spent researching and acquiring computer hardware and software for the department. Another 2,000 hours were incurred for updates, virus removals and new support of PDA's and blackberries.

Oracle applications for cover crops, a veterinary hospital database and veterinary technician certification were developed and implemented by our programming staff during 2005. In addition, Oracle application enhancements were completed for the Nutrient Management, Pesticide Regulation, Plant Protection, and MACS programs as well as the Maryland Agricultural Land Preservation Foundation and the Maryland Veterinary Medical Board.

An Oracle Application Server was brought on-line in 2005. This is the first step in the migration to web-enabled applications, which ultimately will simplify application development and deployment, and provide the means for public access to some of our databases.

External requests for information stored in the Oracle databases have been increasing. There were over 40 data-extractions performed for the Vet Board and Weights and Measures in 2005.

Public Information and Outreach Offices

The Public Information and Outreach offices reach out to the media, general public, government agency peers, elected officials, the agriculture industry, and to MDA employees with the intent of strengthening the appreciation and understanding of the importance of agriculture and MDA activities to the everyday lives of Marylanders.

A major accomplishment for 2005 was the launch of a new agency web site. Without a designated agency web master, a team representing the Information Technology and Public Information offices, and the Plant Protection and Weed Management Section keeps the site up-to-date and meets regularly to determine ways to expand and improve it.

Two of the most prominent public events produced by the Public Information and Outreach offices are the agency's Open House in March and its "exhibits" at the Maryland State Fair in August. Both of these events showcase the agency to thousands of people and require the involvement of dozens if not hundreds of employees. In addition, the office produced the prestigious Century Farm and Governor's Agriculture Hall of Fame awards programs. The offices represented MDA at a number of conventions and other also special events such as the Delmarva Chicken Festival, the Maryland Municipal League, Maryland Association of Counties, and the Maryland Farm Bureau conventions.

Some of the biggest news stories handled by the information office in 2005 were a neurologic equine herpesvirus outbreak at a commercial riding and show stable; the establishment of the Bay Restoration Fund providing dedicated source of monies to help farmers plant cover crops; successful nutrient management compliance rates; and agricultural bio-security. Other high-profile media inquiries included the work of a number of task forces, the 25th anniversary of the Maryland Agricultural Land Preservation Foundation, the purchase of a new mosquito control plane, and the lead up to the Governor's Agricultural Forum.

The Public Information office was actively involved in a first-of-its-kind multi-state, multi-agency effort (Delmarva Poultry Industries – Health Departments Joint Task Force) to develop response and communications plans in the event of avian influenza outbreak on the Delmarva Peninsula. In a related effort, the communications officers of the Maryland and Delaware departments of agriculture coordinated a groundbreaking workshop that brought together communicators from

state and federal health and agriculture departments along with private poultry companies and associations to develop consensus on ways to discuss avian influenza with the media, invested parties, and the general public.

During FY2005, staff distributed 208 news releases to approximately 150 news outlets, which generated approximately 775 calls from the media. Staff identified 346 agency news stories published or aired by the media. In the first six months of the year, following the launch of the new web site, we tracked web hits for the first time. In the first six months we had 36,000 unique visits.



Secretary Riley, Deputy Secretary Brooks and the new dean of the University of Maryland College of Agriculture and Natural Resources, Cheng-i Wei, tour the State Fair together and visit an MDA biosecurity display.

The MDA's outreach and information offices are heavily involved in the Center for Agro-Security and Emergency Management (CAEM), a collaborative effort between MDA and the University of Maryland College of Agriculture and Natural Resources, to coordinate emergency communication and education efforts for the farm/rural community and to help ensure the agricultural and food security of the state and the nation.

In addition, Agricultural Local Emergency Response Teams (ALERT) have been established as field contacts to county offices/district offices, and laboratories. There are a minimum of two ALERT designates from MDA and AGNR staff/faculty for each county. ALERT personnel coordinate with their local Emergency Operation Center (EOC) field offices as well as the Center for Agro-Security & Emergency Management. ALERT members would report to their local EOC as required and provide CAEM with situational information should an event occur.

MDA, AGNR, Department of Health and Mental Hygiene, the Maryland Veterinary Medical Association, along with key stakeholders are developing a Maryland State Animal Response Team (M-SART) along with a Volunteer Vet Corps. Both initiatives are unique in nature with M-SART assisting with animal search/rescue, and the Volunteer Veterinary Corps providing veterinary medical and/or surgical services to injured and sick animals. These two initiatives are key components of Maryland's Emergency Operation Plan that will assist with both agricultural and companion animals following an event.

Office of the Attorney General

Staff of the Office of the Attorney General (OAG) represents the department on behalf of the State Office of the Attorney General and provides legal representation and advice. The office routinely provides legal assistance to the boards and units within the department, reviews regulations proposed by various units within the department for legal sufficiency, and assists in producing educational programs for department staff.

Activities in 2005 included:

- Working with the OAG in Pennsylvania on a claim for more than \$5 million against tobacco companies under the

National Tobacco Grower Settlement Trust. A court in North Carolina has jurisdiction over the Trust, and Maryland and Pennsylvania, on behalf of the tobacco farmers of each state are asking the court to order the tobacco companies to continue to make payments to farmers under the Trust until 2010.

- Appearing on behalf of the department before the circuit and appellate courts and county property tax assessment appeals boards on a variety of regulatory issues.
- Drafting avian influenza regulations.
- Advising departmental staff on the requirements of the state ethics law, the public information act and animal health laws.

The Office of Administrative Services

The Office of Administrative Services manages all technical and support services for the department. It is comprised of three sections—Central Services, Fiscal Services, and the Human Resource Office.

The department has approximately 460 permanent and seasonal employees and the Human Resource Office facilitates the recruitment, training, appropriate compensation, and retention of qualified individuals. Programs and services for employees include risk management and total quality management, employee leave bank, teleworking, wellness, blood drives, training and employee recognition.

Central Services manages facilities, records, inventory, telecommunications, warehousing, the agency motor fleet and the distribution of supplies and mail. The office also oversees departmental procurement. The office is responsible for the maintenance and repair of 340,000 square feet of facilities on 44.5 acres of owned and leased facilities throughout the state. The maintenance staff implements energy-saving projects

wherever possible. A recycling program uses compost piles to transform organic waste into mulch, which is utilized in landscaping projects at MDA and other state agencies. The motor pool provides quality maintenance and repairs of the department's 284 vehicles in addition to semi-annual inspections on all vehicles. The MDA fleet traveled more than 2.6 million miles last year.

Central Services provides procurement assistance throughout the department; continues to improve management practices and automated data concerning motor vehicle operating costs, telephone costs and billing, inventory control and minority procurement; and continues to incorporate the financial management information system to improve monitoring, ordering, and delivery of goods and services.

Fiscal Services handles all centralized accounting transactions for the department. This encompasses all phases of the budget, grants management, accounts receivable, accounts payable, payroll and leave management. The office has continued its fine record of paying MDA bills 99 percent of the time, as defined by the State "on-time" guidelines.

USDA/Maryland Agricultural Statistics Service

The Maryland Field Office of the U.S. Department of Agriculture's (USDA) statistical agency, the National Agricultural Statistics Service (NASS), provides the public data relating to the production of most crops grown and livestock raised in the state. In addition, annual information is provided on the general economic well being of the state's agricultural sector. NASS statistics are used to administer and support USDA farm programs that benefit Maryland farmers, to determine the feasibility of new ventures affecting our state's farmers, and to direct program research and development.

In 2004—the most recent year that statistics are available for this report—agriculture generated more than \$1.7 billion in cash receipts for the state's farmers; not accounting for the additional impact provided by related jobs and services. Maryland's leading cash commodities in 2004 were broilers, greenhouse/nursery products, milk and dairy products, corn, and soybeans. The Maryland Agricultural Statistics Service (MASS) estimated

there were 12,100 farms in 2004 with an average size of 169 acres. Total land in farms in Maryland was 2.05 million acres in 2004; one-third of the state's entire land area.

Timely rains and moderate temperatures throughout the 2004 growing season provided excellent growing conditions for Maryland farmers. Yields for major crops were near or reached record highs as producers enjoyed one of the most bountiful seasons in years. Some farmers sought additional storage capacity as grain yields pushed elevator capacity to the limit. Although crop prices somewhat suffered from excellent crop production across much of the Nation, livestock prices were strong throughout most of calendar year 2004.

To obtain a copy of the complete *Agriculture in Maryland 2004 Summary or the 2002 Census of Agriculture*, call 410-841-5740 or visit the web site at www.nass.usda.gov/md. The Census of Agriculture is conducted once every five years and provides detailed agricultural data down to the county level. Other reports available through NASS include state-level studies on the Maryland nursery and landscape industry and the state's equine industry.



Resource Conservation Highlights

The Maryland Department of Agriculture's (MDA) Office of Resource Conservation (RC) works closely with Maryland farmers to plan and implement conservation practices and programs that balance crop and livestock production with the need to protect natural resources. RC provides a range of educational, financial, technical assistance and regulatory programs to support Maryland agriculture and protect natural resources for future generations. The Office works with a number of local, state, and federal agencies, while implementing policies established by the State Soil Conservation Committee. Four key areas—Program Planning and Development, Conservation Grants, the Nutrient Management Program, and Conservation Operations comprise the Office of Resource Conservation. Here are the highlights and accomplishments for 2005:

Nutrient Management Compliance Reaches 80 percent

By the end of the calendar year, nutrient management plans aimed at protecting waterways from excess crop fertilizers and animal wastes were being used on approximately 80 percent of Maryland's farmland or 1.2 million acres. Enforcement actions to bring the remaining farm operations into compliance are underway.

Cover Crop Program Takes Off

Dedicated funding provided by Governor Robert L. Ehrlich, Jr.'s new Chesapeake Bay Restoration Fund enabled MDA to offer farmers more attractive cost-share rates for early planting that resulted in an overwhelmingly successful signup in which farmers quickly depleted the record \$3.6 million projected to be available from the fund. When Governor Ehrlich learned of this, he quickly committed to an additional \$1.4 million for the program so that all applications—accounting for more than 200,000 acres of cover crops—could be approved.

Additionally, program improvements recommended by farmers who responded to a cover crop survey conducted earlier in the year were implemented by the Maryland Agricultural Water Quality Cost-Share Program (MACS) in time for the 2005-06 cover crop sign-up. Improvements include split incentive payments dispersed in the fall and spring, a higher enrollment cap of 500 acres, uniform statewide planting dates, and an online application form that can be faxed to local soil conservation district offices.

CREP Reauthorized

A new agreement was reached with USDA to reauthorize and extend the popular Conservation Reserve Enhancement Program (CREP) until 2007. During the year, MACS provided farmers enrolled in CREP with \$691,517 in cost share payments to install streamside protection measures.

Soil Conservation and Water Quality Initiatives

RC staff provided technical assistance to soil conservation districts to help farmers develop and implement 983 new soil conservation and water quality plans preventing erosion and nutrient runoff on 78,791 acres of land. Another 790 plans benefiting 84,075 acres of farmland were updated to ensure their continued effectiveness in meeting farmers' needs and protecting natural resources. More than 5,400 best management practices aimed at protecting local water quality were implemented this year in accordance with these plans.

STATE SOIL CONSERVATION COMMITTEE

Established in 1938, the State Soil Conservation Committee (SSCC) consists of 11 members representing local soil conservation districts (SCDs) and state and federal agricultural and natural resource agencies. The SSCC coordinates the activities of Maryland's 24 soil conservation districts and appoints SCD supervisors. SSCC also develops, reviews, and refines policies on soil conservation and water quality issues, while advising the Secretary of Agriculture on these matters. Importantly, the Committee serves as a forum for all agencies involved in protecting natural resources.

In 2005, the SSCC authorized or recommended:

- Changes to the law that would authorize MDA to pro-rate repayments for best management practices (BMPs) installed with MACS funds but destroyed or not maintained in accordance with contracts
- Eligibility of the channel composter design for use by poultry operations for MACS grants
- Modifications to MACS eligibility criteria for horse operations to meet cost effectiveness and flat rate criterion used for other livestock operations.
- Cover Crop Program eligibility guidelines

The SSCC also received briefings and tracked the following initiatives:

- A survey on the Cover Crop Program conducted by MDA and the University of Baltimore Schaefer Center
- Expansion of the Low Interest Loans for Agricultural Conservation (LILAC) program to help farmers supplement federal and state cost-share payments for approved conservation projects on their farms
- A Chesapeake Bay Commission evaluation of the most cost-effective best management practices in the Chesapeake Bay region to address water quality improvements

- An agro-security proposal establishing a network staffed by MDA and Maryland Cooperative Extension personnel to provide assistance to the farm community during pre-emergency, emergency and post catastrophic events
- Biological treatment research addressing product consistency and processing options for biosolids produced at the Blue Plains Sewage Treatment Plant

In other areas, the SSCC sponsored a half day training program for Soil Conservation District Boards of Supervisors which included information on ways to improve public relations and methods for dealing with change.

PROGRAM PLANNING AND DEVELOPMENT

This section is responsible for planning, developing and coordinating policy, programs, and public information on resource conservation issues and nonpoint source pollution. Programs and activities are coordinated among local soil conservation districts, federal and state agencies, and public and private agricultural and natural resource organizations. The section also provides staffing support to the State Soil Conservation Committee.

Manure Transport Program

The Manure Transport Program helps poultry, dairy, beef and other animal producers cover the costs of transporting excess manure off their farms. Animal producers with high soil phosphorus levels or inadequate land to spread their manure can receive cost-share assistance of up to \$20 per ton to transport excess manure to other farms or alternative use facilities that can use the product safely. To support Maryland's goal of transporting 20 percent of the poultry litter produced on the Lower Eastern Shore to other regions, cost-share rates are 20 percent higher for farms located in Dorchester, Somerset, Wicomico and Worcester counties.

In FY 2005, Maryland's Manure Transport Program provided farmers with \$239,196 in state grant payments to transport 36,329 tons of manure to other areas that could use the product safely. The amount of manure transported from dairy, beef and swine operations increased more than 400 percent over 2004 levels, with approximately 12,175 tons of livestock manure transported from farms with high soil phosphorus levels. Cost-share funds, to transport poultry litter which comprises the bulk of the manure transported, were matched by Delmarva poultry companies, bringing the total amount of financial support provided to \$439,309.

Geographic Information Systems

A geographic information system (GIS) is a computer-assisted system for acquiring, storing, analyzing and presenting geographic data about places on the earth's surface. GIS combines data from many sources including digitized and scanned maps, aerial photography, soil surveys, and global positioning systems to create a "smart map" of a specific location. In agriculture, this "smart map" is comprised of layers of information concerning soil types, crops, topography, and a farm's proximity to streams and roads. Because of its ability to manage large amounts of data about a specific location, GIS helps soil conservation planners to more accurately site, design and evaluate the effectiveness of best management practices installed on a farm to protect water quality.

In 2005, RC staff attended training classes to prepare for a migration from Arc View 3.3 GIS software to ArcGIS 9.1, a more advanced and integrated suite of professional GIS applications. In addition, work was completed on the development of a GIS Strategic Plan for MDA and submitted to senior staff for comment.

Information and Education

The Information and Education Program provides creative, editorial, design, and production services to all program areas within the Office of Resource Conservation. During the year, efforts to educate Maryland's agricultural community on Maryland's revised nutrient management regulations and enhanced cost-share incentive programs continued. The office produced the spring and winter editions of the newsletter, *Maryland Nutrient Management News*, and increased the circulation to include farmers as well as nutrient management consultants. The office also supervised production of a 10,000 piece mailing to Maryland farmers informing them of new reporting requirements and deadlines for complying with the Nutrient Management Program.

A major promotional effort for the cover crop program now being funded by the Chesapeake Bay Restoration Program was initiated on behalf of the MACS Program. The office also worked with the U.S. Department of Agriculture (USDA) and the Department of Natural Resources to promote Maryland's newly renegotiated Conservation Reserve Enhancement Program (CREP). A number of farmer publications, annual reports and informational displays were developed or updated to reflect program enhancements and educate the public on Maryland's agricultural conservation efforts.

Efforts to educate students on Maryland's water quality goals and initiatives continued in 2005. A farm activity book was developed to teach younger children the importance of

conservation and its connection to healthy food. In addition, the office provided a presentation to 50 elementary and middle school teachers participating in the Maryland Agricultural Education Foundation's summer workshop on innovative ways to teach conservation in the classroom.

To educate homeowners on the importance of using fertilizers wisely, a major cooperative program with the University of Maryland's Home and Garden Information Center was initiated. Special soil test bags and fact sheets were developed and distributed to Extension offices and soil conservation district offices statewide.

CONSERVATION GRANTS

Since 1984, the Maryland Agricultural Water Quality Cost-Share Program (MACS) has helped farmers protect natural resources on their farms, maintain farm productivity, and comply with federal, state and local environmental requirements. Because productive soil and healthy waterways benefit all Maryland citizens, MACS provides farmers with grants to cover up to 87.5 percent of the cost to install best management practices (BMPs) on their farms in order to prevent soil erosion, manage nutrients and safeguard water quality in streams, rivers, and the Chesapeake Bay.

In Fiscal Year 2005, MACS provided Maryland farmers with \$5.5 million in grants to install more than 1,300 projects on their farms. These projects represent an investment of approximately \$650,000 by Maryland farmers, who will shoulder maintenance and upkeep expenses of the BMPs for years to come. Collectively, the projects will help prevent 14,000 tons of soil annually from impacting Maryland waterways while managing 4,400 tons of manure daily. Cover crops, nutrient management services, filter strips, riparian forest buffers, grassed waterways, manure transport, waste storage structures, conservation cover, watering facilities, and livestock fencing round out the top 10 BMPs installed during the year with MACS assistance.

To help farmers supplement grant payments on costly structural BMPs such as animal waste management systems and certain types of conservation equipment, Maryland provides Low Interest Loans for Agricultural Conservation (LILAC) to qualified applicants. Guaranteed by the State Revolving Loan Fund, these loans are typically offered at three to four percentage points below market rates and are available at more than 20 lending institutions with local branch offices statewide. In 2005, MACS worked with the Maryland Department of the Environment and soil conservation districts to process \$936,000 in LILAC applications.

Program Highlights and Accomplishments:

- Issued \$296,486 in cost-share grants to 256 farmers who used private sector consultants to develop nutrient management plans required by the Water Quality Improvement Act of 1998. The cost-shared plans were used to manage fertilizers on 124,770 acres of farmland. Since its inception in 2000, the program has funded nutrient management plans and plan updates on 538,667 acres of farmland.
- Provided farmers with \$1.5 million in grants to plant 54,000 acres of cover crops statewide. During the 2004-05 planting season, MACS teamed up with the USDA Natural Resources Conservation Service (NRCS) to offer farmers increased cost-share benefits to plant cover crops of wheat, barley and rye early in the fall, when their environmental benefits are greatest. Farmers who planted their cover crops by October 1, 2004 received \$40 an acre in cost-share funding. Those who planted by October 15, 2004 received \$30 an acre; and cost-share funding of \$20 an acre was available to farmers who planted by November 1, 2004.
- Provided 331 landowners with \$691,517 in cost-share funds to install protective BMPs on farmland enrolled in the Conservation Reserve Enhancement Program. The funding was used to install forested and grassed riparian buffers, conservation cover, stream crossings, animal fencing and other best management practices designed to protect streamside property.
- Signup for the new CREP is ongoing and will continue through December 31, 2007 or until 100,000 acres are enrolled. To date, land owners have enrolled approximately 72,700 acres.

MARYLAND NUTRIENT MANAGEMENT PROGRAM

The Water Quality Improvement Act of 1998 requires all Maryland farmers grossing \$2,500 or more annually or raising 8,000 pounds or more of live animal weight to run their operations using a nutrient management plan that addresses both nitrogen and phosphorus inputs. The Nutrient Management Program oversees a licensing and certification program for consultants and farmers, compliance activities and education and training programs necessary to implement the law.

Program Highlights and Accomplishments:

- As of December 2005, accepted nutrient management plans aimed at protecting waterways from excess crop fertilizers and animal waste on 80 percent of Maryland's farmland, or 1.2 million acres.

- Initiated enforcement actions in June to bring the remaining farm acreage into compliance with the law. MDA is incrementally notifying farmers who have not submitted their nutrient management plans to schedule site visits. Following the site visits, farm operators who are found to be out of compliance with the law are given an agreed upon timetable in which to obtain and implement their plans. Since June, MDA inspectors have visited 607 farms across the state and have brought 568 farms into compliance.
- Certified 27 new consultants who successfully passed the nutrient management certification exam bringing to 1,038 the total number of certified nutrient management consultants. The figures include 230 private sector consultants who operate under a license and are actively writing plans and 30 Maryland Cooperative Extension consultants funded by MDA.
- Expanded the farmer training and certification program by offering six regional workshops throughout the state for 54 farm operators representing poultry growers, livestock producers, crop operations and orchard operations. To date, 137 farmers have been certified by MDA to write nutrient management plans for their own operations under this program. Another 176 farmers have been certified under the Consultant Certification Program.
- Partnered with the University of Maryland Cooperative Extension to offer 17 comprehensive continuing education workshops attended by nearly 800 registrants on topics ranging from *Animal Waste Systems and Pasture Management to Phosphorous Dynamics in the Soil*.
- Working with Maryland Cooperative Extension, conducted 73 applicator voucher training sessions attended by 1,916 participants. The applicator training courses are required for farmers who apply nutrients to 10 or more acres of cropland. As of June 30, 2005, 4,565 operators had active nutrient applicator vouchers.
- Conducted approximately 60 field inspections in order to ensure the quality of plans written by certified consultants. An additional 410 plans required for MDA cost-share projects were evaluated to ensure that they met regulatory standards.
- Reviewed the records and fertilizer programs of 92 lawn care or landscape companies to determine their compliance with the law. Approximately 54 of the 92 companies reviewed were determined to be fully or substantially in compliance; 25 applicators received a fair rating; and 13 applicators were unsatisfactory. MDA provides training and follow-up to companies that are not in compliance in order to help them improve their management programs. Also during the year, MDA contacted 238 additional companies to provide information about Maryland's urban nutrient management requirements.
- Provided financial support to Maryland Cooperative Extension for 30 nutrient management consultants and additional staff who provide technical assistance to farmers and support nutrient management educational activities, including continuing education, farmer certification and voucher training.

RESOURCE CONSERVATION OPERATIONS

This program provides operating funds and staffing support to the state's 24 soil conservation districts for promotion and delivery of soil conservation and water quality programs at the local level.

Conservation Planning

Soil Conservation and Water Quality Plans (SCWQPs), sometimes referred to as farm plans, help farmers protect natural resources on their farms. Unlike nutrient management plans, which deal specifically with fertilizer applications, SCWQPs address a range of natural resource concerns for the entire farming operation while helping farmers to control soil erosion, manage animal wastes, protect water quality and enhance wildlife habitat.

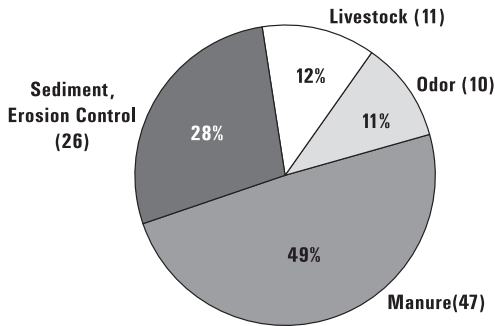
Developed by technical staff working in the soil conservation district, SCWQPs identify best management practices (BMPs) that can be implemented by a farmer over several years in order to improve the farming operation. Farming along a hill's contour may be recommended to reduce erosion. Cover crops and streamside buffers are often installed to prevent nutrient runoff from entering waterways. Other more complex BMPs such as animal waste storage structures, livestock crossings, and watering facilities help animal operations protect water quality.

In 2005, soil conservation planners developed 983 comprehensive Soil Conservation and Water Quality Plans for 78,791 acres of Maryland farmland. Another 790 plans affecting 84,075 acres were updated to ensure their continued effectiveness in protecting natural resources. Together, these plans contained more than 5,400 BMPs that will be installed this year.

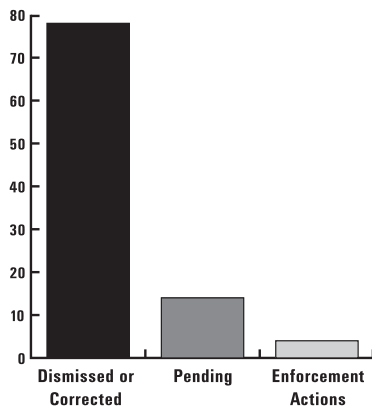
Enforcement

Maryland has a procedure in place for addressing cases of water pollution caused by agriculture. The strategy uses a progressive approach to handling individual pollution cases based on the severity of the situation. Conditions that are likely to cause pollution or that have resulted in inadvertent farm pollution require timely corrective action, whereas chronic or willful mismanagement of farm resources is handled through a formal enforcement action. The Maryland Department of Agriculture and the Maryland Department of the Environment work jointly with soil conservation districts to assess farm management

2005 Types of Agriculture Complaints



2005 State Water Quality Complaints Agriculture



practices and take action against polluters when necessary. Emphasis is placed on voluntary corrective actions by farmers or landowners with assistance provided by the local soil conservation district or Maryland Cooperative Extension. In 2005, 94 agricultural complaints were received concerning sediment and erosion control, odors, manure and livestock concerns. Of this figure, 78 complaints were corrected or dismissed, 13 complaints are pending, and enforcement actions were taken in three instances.

Agricultural Water Management

To prevent pollution and protect water resources, the Office works with local public drainage associations (PDAs) to assure operation and maintenance plans for public drainage systems are technically adequate and properly implemented. During the year, technical assistance was provided for the operation and maintenance of approximately 821 miles of drainage ditches.

Tributary Strategy Team Activities

Members of the Resource Conservation Office and soil conservation districts are active supporters and participants in Maryland's Tributary Strategy Teams. These teams—comprised of local citizens, farmers, business leaders and government officials—meet monthly in each of Maryland's 10 major tributary basins to recommend pollution prevention measures and address local water quality problems unique to each watershed with the overall aim of improving water quality in the Chesapeake Bay.

In 2005, the Tributary Strategy Teams refined implementation strategies necessary to meet the ambitious water quality goals outlined in the Chesapeake 2000 Agreement. It is estimated that the Maryland strategies will cost \$10 billion to implement by 2010.

In other areas, presentations were made throughout the year to educate key stakeholders—including the State Soil Conservation Committee and the Maryland Association of Soil Conservation Districts—on the latest tributary team developments. The Middle Potomac, Upper Potomac, Upper Eastern Shore and Lower Western Shore Tributary Teams also conducted agricultural tours.

Maryland Envirothon

Soil conservation districts sponsor the Maryland Envirothon in cooperation with MDA, the USDA's Natural Resources Conservation Service, the Maryland Department of the Environment and the Maryland Department of Natural Resources. A competitive environmental education program for high school students interested in the outdoors, this intense natural resources competition challenges students to identify and categorize living resources, perform soil surveys, and solve other complex natural resource issues unique to Maryland and North America. Teens work closely with SCDs and receive hands-on training to compete at the county, state and international levels. More than 1,000 challengers from 17 counties across Maryland took part in this year's local competitions, with a team of students from Queen Anne's County High School taking top honors at the state event. The winner of the Maryland Envirothon represents the state at the national competition.

Marketing Services

The Marketing Services Division's principle role is to identify and develop profitable marketing opportunities for Maryland farmers and agricultural producers. The division also serves as a conduit for federal resources and for policy information specific to the agricultural sector. These programs have direct and indirect financial impact on farmers and producers and the way they sell their products and develop new buyers.

National Marketing and Agribusiness Development

The Marketing Services staff works with farmers and agricultural producers to assist the farmers to market their products directly to supermarkets, hotels, food service businesses and to other wholesale buyers as well as directly to consumers. The *Shore to Store* initiative involves 40 Maryland farmers selling directly to Eastern Shore supermarkets. In 2005, the farmers participating in this program estimated their sales to be more than \$2 million. Maryland farmers estimate their sales to be nearly \$700,000.

The Maryland's Best™ program enables producers to capitalize on the consumer's preference for local agricultural products. Maryland's Best Direct provides opportunities for farmers and producers to sell their products directly to wholesale buyers in Maryland and beyond. The 2005 Maryland's Best campaign promoted Maryland farmers in a dozen newspapers statewide throughout the growing season. The ads also featured Maryland retailers who are proud to purchase and promote produce items grown within the State. The entire campaign was designed to direct consumers to the Maryland's Best web site where additional information and prizes were available.

In November, staff traveled to Atlanta to exhibit at the annual Produce Marketing Association show. Maryland items were featured along with others in the largest produce show in the country. A number of Maryland growers also participated and learned a great deal as well as benefited from sales generated at the show.

One of a series of advertisements encouraging consumers to look for locally-grown products in grocery stores. This ad features Jim and Gina Shillinger, Anne Arundel County produce growers.

In 2005, the division held its third annual Produce Buyer-Grower Seminar, introducing 34 Maryland growers to buyers from major chains including Weis, Wal-Mart, Safeway, and Giant. Buyers estimated that the event would result in more than \$1 million in additional purchases of Maryland produce. The division continues to cultivate relationships with more major supermarket chains as well as restaurants, schools, prisons, garden centers, state agencies, and other wholesale buyers, and to work to minimize obstacles to direct-to-wholesaler sales.

The Marketing office has supported the development of 73 farmers' markets in all 23 of Maryland's counties and the City of Baltimore. In 2005, MDA was actively involved with 40 farmers' markets, providing various levels of support from the initial creation and development of new markets to promotional materials and occasional consultation for well-established markets. These markets are an important source of revenue to farmers; farmers estimated their sales (for insurance purposes) at \$2.25 million in 2005.

In addition, 251 farmers at farmers' markets across the state participated in the Farmers' Market Nutrition Programs (FMNP) for Women, Infants, and Children (WIC) and for Seniors in 2005. Funded primarily by USDA's Food and Nutrition Service, FMNP provides fresh produce for nutritionally at-risk women, infants, children and senior citizens while putting cash money in the pockets of farmers. In 2005, MDA leveraged general funds of \$65,000 to generate a total program commitment of \$675,000. The FMNP is a standing program commitment from USDA and must be administered by a state department of agriculture or similar agency, which requires that MDA provide both staff and general fund resources to continue.

Marketing personnel are pivotal to the success of these direct marketing programs. Without their involvement, an individual producer would find it difficult to access the buyers and decision-makers. Marketing staff support makes these efforts possible. The public-private partnership strengthens the initiative and could only be done with Marketing's support and coordination.

In addition to direct marketing activities, the staff administers a number of programs and grants, and provides staffing for activities which improve the policy climate and long-term profitability for farmers. Staff administers various grants made to Maryland agricultural organizations. The *Agricultural Mediation* program provides prompt, low-cost, confidential and collaborative options for resolving disputes related to agricultural production. The mediation program, funded mainly by USDA with matching funds from existing state resources, not only serves those who have received an adverse

ruling related to a USDA program, but also provides assistance to those who are involved in developing policies specific to agriculture. Staff is also developing ways to work more effectively with other state agencies on shared interests in order to create a more business- and consumer-friendly face of government.

Most recently, division personnel have provided staffing and assistance to several statewide task forces, including the Farming and Land Use Initiative. This process is designed to enable state and local government officials to work together constructively to address shared concerns and provide a consistent business-friendly message statewide. In June 2005, MDA convened a meeting of more than 100 individuals—elected and appointed officials from every county as well as state agency and industry representatives. Participants voiced the need for a central source of information about agricultural concerns, and identified three primary areas of concern: Right to Farm (RTF) ordinances (and related farmer-neighbor communications), zoning regulations, and health regulations. Since then, MDA has compiled information about existing regulations and posted this data on the web (See www.mda.state.md.us/on_web/ag_links/countyag.php.) and is continuing to develop and implement collaborative action items supporting agricultural profitability and rural quality of life.

Marketing staff manage a federally-funded program to inform Maryland farmers of crop insurance. This program, financed with \$370,000 from the USDA-Risk Management Agency (RMA), combines the resources of MDA, the University of Maryland, RMA and the National Agricultural Statistics Service to target producers for promotional and educational activities. From 2003 to 2005, participation among Maryland farmers increased by 14 percent—the highest increase in the Northeast. Farmer investment in crop insurance helps stabilize Maryland's agricultural economy. In 2002, for example, producers received \$23.4 million in indemnity payments from crop insurance designed to help them survive bad weather, insects, disease, and market fluctuations—more than \$7 for every \$1 spent by producers to purchase crop insurance.

International Marketing and Trade Development

The International Marketing and Trade Development office's (IMTD) mission is to increase export sales by Maryland agricultural producers and agribusinesses in order to enhance their economic well being. The staff accomplishes this by conducting outreach and educational programs, organizing and conducting trade promotion activities and facilitating participation by Maryland companies in international trade

Crop Insurance
...protect your farming future

J.D. Rinehart
Rinehart Orchards, Smithsburg, MD

*"Crop insurance lets you sleep a little easier.
Hailstorms can do a lot of damage in our business
and crop insurance helps reduce that risk."*

—J.D. Rinehart, farming operation: apples, peaches, nectarines

SPRING DEADLINE: MARCH 15

See a crop insurance agent for details.
For a list of crop insurance agents visit your Farm Service Agency office.

RMA MDA

This message brought to you through a cooperative effort of the Maryland Department of Agriculture and the USDA Risk Management Agency.

www.mda.state.md.us www.rma.usda.gov

promotion events. The office's vision is to develop a model for the effective and competitive exportation of all Maryland agricultural products into foreign markets. Staff works closely with farmers, processors and distributors to expand export sales and thereby increase farm income, creating new jobs, both on the farm as well as in value-added food and transportation industries.

The IMTD office focused on two types of activities; market access and international policy and relationships. The priority areas for **market access activities** are horticulture, value-added foods, seafood and livestock. Activities ranged from researching new and developing markets to designing and implementing missions and trade shows, hosting reverse trade missions, arranging one-on-one meetings with buyers and Maryland agribusinesses, conducting seminars, and assisting companies with developing international market strategies. The staff worked with more than 250 agribusinesses in more than 40 countries around the world.

Through international policy and export activities, IMTD participated in the development of export phytosanitary protocols for agricultural products going into new markets. Working with the Foreign Agricultural Service (FAS) and the Animal Plant Health Inspection Service (APHIS) of the United States Department of Agriculture (USDA), IMTD hosted foreign government officials to learn about Maryland and U.S. standards for production and processing of agricultural products. The establishment of fair and scientifically-based

import regulations in foreign countries will enable Maryland livestock breeders and food processors to further expand their international markets.

The most recent issue that ITDM staff is working to resolve involves the equine protocols for horses being exported to Russia. We are working closely with USDA officials in both Washington and Moscow as well as with key members of the Russian equine industry on this initiative.

Beyond the normal difficulties of international trade, such as differences in language and business practices, exporting food products, livestock and nursery products poses additional challenges because such products require phytosanitary certificates and adherence to labeling standards. Program staff helps prepare Maryland's agricultural processors, manufacturers, and farmers to be export ready, to develop niche markets that are competitive in the global market place and to pursue an export marketing management program that is results-oriented.

Despite the difficulties, exporting can be profitable for small- and medium-sized agribusinesses. The USDA/FAS reports that every \$1 of product exported generates another \$1.62 for the economy in related economic activity, such as transportation or packaging. It also reported that employees engaged in export businesses receive higher wages than their counterparts in non-export businesses.



Maryland Thoroughbreds are racing well overseas, making them very attractive to international buyers at the Fasig-Tipton sales, as well as other outlets.

Diversification into profitable export markets can serve as a good risk management tool for U.S. farmers and can help keep domestic prices high during currency fluctuations. Exporting has become increasingly a part of the maintenance of a profitable family-farm sector and USDA offers a number of incentive programs to encourage farmers and processors to enter the global marketplace. IMTD sources federal funds to underwrite nearly all of its trade missions, trade shows and reverse buyers missions. Given the complexities of exporting agricultural products, most USDA funds are awarded to state departments of agriculture where they are administered for the benefit of the state's farmers and processors.

Maryland agricultural exports increased from \$214.6 million in 2003 to \$248.3 million in 2004. Exports are increasingly important to Maryland's agricultural and statewide economy. Measured as exports divided by farm cash receipts, the state's reliance on agricultural exports was 14 percent in 2004.

International marketing specialists work closely with USDA staff at embassies worldwide and with other organizations to facilitate successful exports of Maryland products to more than 35 countries. Through the Southern United States Trade Association (SUSTA) and the United States Livestock & Genetics Export Association (USLGE) specifically, MDA invested \$12,500 in membership dues which resulted last year in more than \$200,000 in funding for international trade missions managed by MDA, including reverse trade missions bringing foreign buyers from several countries to visit Maryland farms. Through SUSTA and the *Market Access Program* (MAP), an additional \$130,000 in federal funding was allocated directly to Maryland companies for their own export promotions.

As the year came to a close, IMTD estimated that Maryland's exports for agricultural products, livestock, livestock genetics and feed increased by 20 percent over 2003 exports. The future of the export business for Maryland companies is very positive partly due to the low exchange rate of the U.S. dollar and better export business savvy exhibited by U.S. exporters.

Export Activities Implemented by IMTD in 2005:

Africa

- Hosted a reverse trade mission to visit the Food Marketing Institute Export Showcase and to visit Maryland to meet with Maryland agribusinesses. The buyers purchased four containers of food products from a Maryland company.
- Helped Maryland companies participate in a SUSTA-sponsored trade mission to South Africa to promote Maryland value-added food products.

China

- Assisted with the opening of a dairy bull station as a joint venture between a Maryland dairyman and Chinese businessmen.
- Hosted a reverse trade mission to strengthen recent relationships with equine industry leaders in China. The delegation attended the 2004 Preakness and met with numerous Maryland horse breeders. Many opportunities were realized and are being pursued.
- Hosted a reverse trade mission to introduce buyers of agricultural seeds to Maryland producers.
- Organized a reverse trade mission to sign dairy genetics contracts.
- Cooperated closely with the Sister State Program, hosting agricultural trade missions for equine, agricultural seeds, seafood and value-added foods.
- Deputy Secretary John Books, D.V.M. traveled to China as part of a federally-funded livestock initiative and met with key officials to discuss a potential sale of dairy cattle genetics. Negotiations are on-going. IMTD is aggressively pursuing opportunities to enter this large and lucrative market.

Caribbean Nations

- Continued a program to export dairy cattle semen to Trinidad/Tobago. Staff introduced genetic suppliers to consultants from Maryland who are helping to develop a dairy and milk processing plant.

Cuba

- Continued to work with the Cuban government in regard to a variety of food products in Maryland. These include apples, spices and portion-controlled processed foods for schools.

Canada

- Participated in the Canadian Produce Marketing Association Convention and is encouraging growers to participate in the Go South! program of the Southern U.S. Trade Association. This program matches produce buyers in Ontario and Quebec with growers in the Southern United States. Canada is the largest trading partner and IMTD is working closely with growers to enable them to take advantage of selling to our northern neighbor. Currently, Maryland growers of spinach, sprouts and potatoes sell in the Canadian market, but there are significant opportunities for other Maryland products and growers.
- Worked to develop a market for seafood products in eastern Canada and are planning a major promotional event for summer 2006.

Europe

- Worked with processors interested in key European markets. Staff assisted one Maryland food business to participate in SIAL in Paris, France. The company successfully negotiated a contract to sell its products as a private label product in France. The Southern U.S. Trade Association has hired a consultant who is working with six Maryland companies to follow-up with sales in the United Kingdom.

Japan

- Assisted Maryland processors in penetrating the Japanese market for canned corn.
- Hosted a delegation of key Japanese importers of ornamental nursery products at the Southern Nurseryman's Association show in Atlanta. The purpose of this buyers' mission was to introduce nursery product buyers from Japan to suppliers in the Southern and mid-Atlantic regions of the United States. Goals of the mission included increasing contact between European buyers and U.S. suppliers/nurseries and introducing the buyers to U.S. nursery products and techniques. The mission built awareness and relationships.

Increasing the education of the Japanese people about the different gardening styles has helped increase the demand for Maryland ornamental horticultural products. ITMD now received trade leads and requests for products directly from Japan.

Korea

- Continued to host reverse trade missions comprised of Korean Thoroughbred horse buyers and are planning a mission to Korea in 2006.
- Managed SUSTA's value-added food project for Korea. In 2005, IMTD organized the participation of six Maryland companies at the Seoul Food Trade Show in Korea and hosted a delegation of Korean importers.
- Hosted a delegation of food buyers at the Food Marketing Institute Export Show in Chicago and in Maryland where the buyers met one-on-one with six Maryland producers. Special attention was focused on our state's small but growing organic industry.

Mexico

- Actively participated in the newly-formed Agribusiness Subcommittee of the Maryland/Jalisco Sister State Program. ITMD organized the participation of members of the seafood and nursery industries. With strong private industry support, this subcommittee will focus on developing sales and investment opportunities for both states.

Philippines

- Hosted two delegations of Filipino horse industry representatives. Using funds from the Emerging Market Program, IMTD organized delegations at the Preakness and at the Fasig-Tipton sale in October. The delegation purchased 16 horses at the event. The delegations also visited Maryland horse farms and met with owners and breeders.
- In February 2005, Dr. John Brooks, Deputy Secretary of the Maryland Department of Agriculture led a delegation from Maryland to meet with the leaders in the Philippine Department of Agriculture, the Veterinary Associations and the University of the Philippines Veterinary School. The delegation was funded by the United States Livestock Genetic, Inc. and conducted educational seminars on genetic

superiority of U.S. livestock. In October 2005, a group of buyers from the Philippines attended the Fastig-Tipton Yearling Sale and purchased 16 horses. The Philippines Racing Commission is now advocating the purchase of US Thoroughbreds.

In cooperation with the Maryland Thoroughbred Association, ITMD is planning to host a "Maryland Race Day" in the Philippines in 2006. ITMD is also developing contacts with cattlemen in the Philippines.

Russia

- Used funding from USDA's Emerging Market Program, ITMD sponsored the first reverse equine trade mission to the United States focusing on standardbred horses. The delegation, which included the director of the All-Russia Horse Racing Association, toured several Maryland horse farms and met with key Maryland breeders ITMD facilitated lengthy discussion regarding the export of genetic materials.
- Hosted several reverse trade missions to purchase horses at the Fasig-Tipton sales in Timonium. The delegations' agendas included attending the Preakness, and Maryland Million, as well as the Fasig-Tipton horse sales and a number of Maryland horse farms.
- Served as a liaison between Russian equine industry members, Maryland breeders and USDA veterinarians and agricultural trade policy representatives in regard to the establishment of a protocol for the importation of U.S. horses and genetics into Russia.
- Expanded opportunities in Russia for horses, beef and dairy cattle. The IMTD staff continues to host reverse trade missions from the Leningrad Oblast, which is interested in cattle genetics, turkeys, horse and cattle feed, small fruit processing and meat processing.
- Organized the participation of two Maryland food processors at World Food Moscow, the largest food industry trade show in Russia. Both received a number of trade leads and are negotiating sales.

Ukraine

- Hosted reverse trade missions to purchase horses. A delegation attended the Maryland Million, the Fasig-Tipton horse sales and visited Maryland horse farms.

Seafood Marketing and Aquaculture Development Program

Task Force

During the 2001 session of the General Assembly, the legislature unanimously passed House Bill 662, which established the Task Force to Study the Economic Development of the Maryland Seafood and Aquaculture Industries. This 40-member task force was staffed by the Aquaculture Development and Seafood Marketing Program. The task force was charged with studying both industries to expand markets, improve processing techniques, and evaluate legislative, regulatory and permitting procedures. From this Task Force, House Bill 971 was created and passed by the 2005 session of the Maryland General Assembly.

HB 971 established an 18-member Seafood Program Management Team, an Innovative Seafood Technologies Program, an Aquaculture Coordinator, and a five-member Aquaculture Review Board within the Maryland Department of Agriculture. The bill renamed the Seafood Marketing Authority as the Seafood Marketing and Aquaculture Development Program. The bill also renamed the Aquaculture Advisory Committee as the Aquaculture Coordinating Council and modifies its duties. It also mandates the Tidal Fisheries Advisory Commission and the Sports Fishery Advisory Commission to provide a comprehensive report on fisheries management.

Aquaculture Development Program

The Aquaculture Development Program supports the Maryland aquaculture industry through promotional, educational, and technical assistance programs. In 2005, there were 30 commercial aquafarms in production in Maryland and additional aquafarms with production in previous years, which plan to go back into business in the future. Maryland has eight licensed fee-fishing operations and 45 schools, nature centers, government agencies, and private organizations producing fish, shellfish, and aquatic plants for educational and restoration projects. Species that are being cultured in Maryland have expanded to include corals, guppies, shrimp, turtles, and saltwater ornamental fish. This trend in diversification is expected to continue.

The overall farm gate value of Maryland aquaculture products in 2005 was estimated at nearly \$4 million. Growers in production saw higher prices in live markets for Tilapia. Growers sold product live and on ice to markets in the

Washington, D.C., Philadelphia, New York, and Canada. Maryland growers also experienced an increase in the production and market values of aquatic plants, clams, and oysters. Shellfish growers plan to increase production in 2006. Ornamental species continue to dominate Maryland aquaculture production and sales, accounting for more than 80 percent of the total farm gate value.

The Task Force to Study the Economic Development of the Maryland Aquaculture and Seafood Industries developed recommendations and accompanying legislation in 2005 that will help to resolve lingering issues and impediments that have hindered the development of aquaculture in Maryland. Included in this legislation was the creation of an Aquaculture Review Board and a Coordinating Council that will function to support responsible industry growth. The Aquaculture Development Program played a major role in developing Task Force recommendations and drafting legislation. The Program will organize and provide administrative support for these two groups. The Aquaculture Coordinator's role in aquaculture permitting has been expanded to include serving as chairman of the Aquaculture Review Board and as a member of the Coordinating Council. This effort will provide the industry with stronger support and more opportunity to expand. It will also increase the demand for the limited resources currently available within this program.

The Aquaculture Development Program continues to provide the industry with the opportunity to participate in regional, national, and international trade shows, conferences, fairs, and tours in order to promote and market Maryland farm-raised products. Cooperative programs with the Maryland Waterman's Association, Maryland Sea Grant, Maryland Seafood Marketing Advisory Commission, the National Aquaculture Association, and many others are essential elements in providing aquafarmers with these opportunities.



Jack Brooks, co-owner of the J.M. Clayton Company in Cambridge, Md., gives food writers from regional media outlets a tour of his crab processing facility in September to promote the sale of late season crabs.

Seafood Marketing Program

The Seafood Marketing Program promotes increased sales and consumption of Maryland seafood and aquaculture products through consumer education, promotion, and advertising. The total estimated value of the Maryland seafood industry is more than \$700 million. There are 75 processing plants employing 1,471 people and more than 6,500 watermen who work the Chesapeake Bay. In 2004, 49.5 million pounds of seafood was landed at a dockside value of more than \$49 million.

Advertising funds are generated from a \$10 surcharge fee collected from commercial fishing and seafood processing licenses. In 2005, this amount was \$66,530. Funds were used to place advertisements in newspapers and trade journals and for special promotions. The use of the \$10 surcharge is overseen by the Seafood Marketing Advisory Commission and the Tidal Fisheries Advisory Commission. The Seafood Marketing Advisory Commission is composed of 11 industry members who recommend marketing activities.

To promote the increased sale of rockfish, the program, in conjunction with the commission, created the “Maryland Rockfish Celebration.” In 2005, the “Celebration”—a program funded by the surcharge fee—included restaurants, grocery stores, and seafood markets throughout the state. The “Celebration” also included an annual recipe contest held in Ocean City.

The program launched the web site, www.marylandseafood.org, this summer. Announcements were sent out to all mailing lists. The web site features information for consumers as well as wholesale and retail dealers of seafood. It includes a searchable database, seafood handling and nutrition information, recipes, cookbook order forms, an annual seafood festival list and information on starting aquaculture ventures.

In the fall, there was a surplus of large crabs at lower prices. It was reported that this was the best crab harvest in five years. The Seafood Marketing Program responded by promoting Maryland blue crabs and crab meat through an advertising and news release program. Consumers could receive an incentive by mail by purchasing one dozen Maryland blue crabs or a pound of Maryland crab meat. The program aired a 30-second television ad over a two-week period in October on Baltimore channel 13 and on the Eastern Shore channels 16 and 21. Newspaper ads were placed throughout the central portion of the state and the Eastern Shore. The program provided retail markets with point of sale materials to inform customers that they sell Maryland crab meat. News releases were sent out to inform consumers of the advantages of buying Maryland crabs and



A sampling of MDA promotional brochures highlighting the nutritional value of seafood, recipes to cook different species, and proper food handling techniques.

crab meat in the fall. The program held a press event for writers to promote the sale of Maryland crab meat and crabs in the fall. The editors toured a crab meat plant in Cambridge, then boarded boats to observe crabbing by watermen and had a Maryland seafood feast with dishes made with crab meat and fresh steamed crabs for lunch. Several print articles and two televised news spots were resulted from this event.

Other seafood promotions, including newspaper advertising, recipe distribution and news releases, revolved around seasonal holidays and included “Celebrate the Holidays with Maryland Seafood” and “Fish on Fridays” in the spring. The program is sponsoring the Maryland Watermen’s Association’s “Waterman in the Classroom” project. This program enables watermen to visit schools to educate students on the life of a waterman and includes lessons on ecology.

The office distributed nine news releases to more than 300 food editors in the mid-Atlantic region. The topics covered seasonal species, special events and promotions. Consumer education included in these news releases discussed safety, handling, and nutrition information. The releases included photos and recipes with an opportunity for consumers to request more information or recipe brochures by mail, phone or web site. These releases are posted on the Maryland seafood web site.

Seafood Marketing staff participated in a wide array of trade shows, conferences, exhibits and special seasonal events including: International Boston Seafood Show, International Restaurant Show, the Mid-Atlantic Food Service, Lodging and Beverage Expo, East Coast Commercial Fishermen’s and

Aquaculture Trade Expo, MDA's Open House and the Maryland State Fair. At the events, informational literature, point of sale information and Maryland seafood samples are offered. At the International Boston Seafood Show, space is shared with industry members, assisting them in marketing their products. The program sponsored and administered several seafood cooking contests including: National Oyster Cook-off, Great American Seafood Cook-off, Rockfish Celebration Cooking Contest, the Mid-Atlantic ACF-sanctioned Chesapeake Seafood Chef Contest and the National Hard Crab Derby & Fair Cooking Contest.

The Seafood Marketing Program administers the Maryland Crabmeat Quality Assurance Program. This voluntary program, which the industry helps fund, provides an extra level of sanitary inspection and education through the Maryland Sea Grant Program. Product and environmental surfaces are microbiologically tested and evaluated at the College Park Laboratory for Listeria, E-coli and bacteria plate counts. More than two-thirds of Maryland crabmeat processors belong to the quality assurance program. Participation in the program allows them to use the "Maryland label" on cans and plastic cups. The generic "Maryland label" is promoted and advertised nationally through trade shows and trade magazine advertising. Future plans for this program will include elimination of shell in product for an extra quality assurance.

The program assisted in funding the Marine Stewardship Council's assessment for the certification of Maryland (Chesapeake Bay and Ocean) striped bass as a sustainable fishery. The fishery passed pre-assessment and is now undergoing full assessment. When it is certified, it will enable Maryland striped bass to carry the MSC certified sustainable label and will be marketed as such. This will be the first fishery on the East Coast of the United States to achieve certification.

The program continues to distribute Maryland seafood information on safety, handling, nutrition and recipes. These are distributed through travel centers, seafood markets, grocery stores, direct consumer requests, trade shows and the web site. The program also produces and distributes a variety of point of sale materials including: decorations, pins, table tents, menu inserts, and posters. The program sells the world-famous Maryland Seafood Cookbooks and uses the funds to offset the cost of printed materials.

The program participated in many of the meetings that were held to discuss the cap limit of H2B (guest workers) program of the federal government. The Maryland seafood industry processors depend heavily upon this program to provide seasonal employees. Many plants would have had to close due to the lack of workers if the cap had not been lifted. A letter-writing and public relations campaign and the diligent work of Senator Barbara Mikulski lead to the passage and signage of legislation to lift the cap for two seasons. New federal legislation is being debated in Congress to revise the H2B program to eliminate the shortage of workers for the future.

The program is representing MDA on the newly reorganized Maryland Oyster Steering Committee that was previously the Oyster roundtable. The committee advises DNR on oyster issues and is currently studying power dredging and dredged oyster shell program.

Animal Health Section

The Animal Health Section of the Office of Marketing, Animal Industries and Consumer Services is responsible for protecting the health and well being of Maryland livestock and poultry. This is done through diagnostic and surveillance activities provided by the staff at the five Animal Health Diagnostic Laboratories, the field veterinarians and field inspectors in the program. The laboratory and field forces work closely with their counterparts in neighboring states and the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Services' Veterinary Services group to ensure an efficient team effort for disease prevention, detection and control.

One of this year's major milestones was the filling of the State Veterinarian position which had been vacant for almost 10 months. Dr. Guy Hohenhaus was chosen from the field of applicants and started his new job the first part of October after returning from a second tour of duty with the U.S. Army in Afghanistan. Dr. Hohenhaus was previously an instructor with the Virginia-Maryland Regional College of Veterinary Medicine and the Public Health Veterinarian for the Maryland Department of Health and Mental Hygiene.

With the continued threat of foreign animal diseases and the relentless march of avian influenza across South East Asia and Eastern Europe, disease surveillance was a big part of the year's activities. The new PCR diagnostic equipment that the Salisbury laboratory acquired last year has been fully utilized for doing screening tests on poultry statewide for avian influenza plus other poultry diseases such as exotic Newcastle disease. This equipment gives the agency a rapid response to any potential outbreak by returning preliminary results in a matter of hours on samples submitted. Grant



Diagnostic activities at the Salisbury Animal Health Laboratory

monies from various sources continued to be utilized for testing activities and supplies in addition to upgrading and installing new equipment in the diagnostic labs thus allowing for more efficient and broad disease surveillance.

Another busy fair and show season presented more opportunities for disease surveillance. Inspecting exhibited livestock and poultry at the start of events and continuing inspection during the course of the show are important tasks in monitoring the health of Maryland animals. Preliminary data collected at the fairs this year show that the Animal Health staff traveled 8,109 miles; spent 699 hours inspecting 21,313 animals. The show season always offers opportunities for the field staff to promote biosecurity to exhibitors.



On-farm biosecurity to maintain the health of livestock is of growing importance. MDA has produced and distributed a number of publications so that animal owners have the information they need.

Corresponding with the show season are most of the livestock breed sales, farm dispersal sales and 4-H/FFA club sales. This year the preliminary data shows that Animal Health field staff worked 24 hours, traveled 324 miles to oversee the sale of 304 animals.

Other livestock diseases such as bovine spongiform encephalopathy (BSE or mad cow disease) in cattle and scrapie in sheep and goats continued to be part of our surveillance programs. The Animal Health Diagnostic Labs conducted many tests over the year and a table giving the numbers of tests for different species is given at the end of this report.

In addition to surveillance, disease prevention and control programs continue to be an important part of Animal Health activities. This year Animal Health teamed with the Maryland Association of Agricultural Fairs and Shows, Maryland Cooperative Extension, the Maryland Department of Health and Mental Hygiene and local fair administrators to spearhead an animal risk disease awareness program that focused on preventing human disease problems at fairs and shows such as *E. coli* O157:H7, *Salmonella* and *Campylobacter* outbreaks. They asked that Animal Health partner with them in this program since we had a large presence at the targeted events.



After petting fair animals, Governor Robert L. Ehrlich, Jr. helps son Drew use one of the new hand-washing stations found at fairs and shows across Maryland to help prevent the incidence of e-coli, for example.

Previous disease control planning and the development of protocols to follow in the event of some type of disease outbreak paid off this past summer when there was another equine herpesvirus event in a large riding/boarding stable in Howard County. Following the measures called for in the protocol kept this serious equine disease's spread at a minimum in the stable and allowed the most efficient response.

Johne's disease in cattle continues to be a serious threat and the Animal Health staff's efforts have assured that Maryland's part in the National Johne's Control Program has steadily grown in momentum. A great deal of energy has been put into the educational/informational process to producers. This involves enlisting the support of practicing veterinarians as well as dairy and beef producers. To date there have been 94 dairy and 14 beef herds participating in the program.

To continue to prepare for an emergency disease situation, Animal Health field and laboratory staffs conducted an emergency readiness exercise in December. Prior to the exercise there had been extensive training on the Incident Command System (ICS) approach to responding emergency situations. Using the ICS system for emergency situations has been mandated by Homeland Security directives. The exercise scenario involved a simulated low pathogenicity avian influenza outbreak in a backyard poultry flock on the Eastern Shore. At the conclusion of the exercise, MDA-AH staff and allied personnel had gained valuable experience in working with the ICS at the staff and field level as appropriate and will be ready to practice with more in-depth and complex scenarios in the near future.

This year saw rapid advances in Maryland Department of Agriculture's participation in the USDA National Animal Identification System (NAIS). The first step of registering producer premises is well advanced due to the efforts of the Animal Health NAIS Coordinator who supervised mass mailings and media output to inform producers of the registration procedure plus what to expect as the NAIS program evolves over the next 2 to 3 years. To date, there have been 984 premises registered in Maryland.



Marilyn Bassford kicks off the National Animal Identification System sign up with a premises registration day at MDA headquarters.

Throughout the year, other MDA Animal Health programs remained active. These included the licensing of livestock markets and dealers, issuance of permits to hatcheries and dealers of poultry and hatching eggs, investigation of antibiotic residues in meat, accreditation of new veterinarians and overseeing the Maryland Contagious Equine Metritis program for horses coming into the United States from overseas for breeding purposes.

New initiatives include a proposed cooperative agreement with USDA Food Safety Inspection Service (FSIS) to possibly take over the inspection of custom exempt food processing operations and exempt poultry plants. This would allow for some on-the-farm processing of beef and poultry. Developing and offering a voluntary certification program for the slaughter and sale of FSIS exempt species such as rabbit and buffalo is also being considered. These initiatives are in the planning stage.

Maryland's Animal Health Diagnostic Laboratory staff conducted many tests during 2005. The following diagnostic test summary outlines the activity level:

| Species | Total of diagnostic tests performed |
|---------------------------------|-------------------------------------|
| Ovine | 416 |
| Equine | 5,666 |
| Bovine | 26,060 |
| Caprine | 2,227 |
| Porcine | 972 |
| Canine | 1,587 |
| Feline | 818 |
| Poultry | 2,073 |
| Poultry avian influenza testing | 2,422 |
| Other | 1,685 |



Diagnostic activities at the Salisbury Animal Health Laboratory

The Maryland Horse Industry Board

The Maryland Horse Industry Board (MHIB) consists of 11 members appointed by the Governor to four-year terms, and the Secretary of Agriculture. Chapter 416, Acts of 1998 defined six statutory duties of the Maryland Horse Industry Board—licensing and inspecting horse stables in the state, advising MDA on matters affecting the horse industry, and supporting research, education, and promotion of the Maryland horse industry.

The MHIB conducts projects for the benefit of the horse industry utilizing a specially funded source. The board continues to achieve all of its legislatively mandated functions. The main challenge the board faces in the next year are:

- the loss of revenue, horse businesses, and horses from the breeding and racing sectors of the Maryland horse industry due to an uneven economic playing field which has been created by the installation of slot machines at race tracks in neighboring states;
- raising enough funds to cover the cost of conducting an equine census in 2007 and economic impact report on the status of the Maryland horse industry. The estimated \$180,000 is beyond the current budget of the MHIB. The information from a equine census and economic impact report will prove vital in analysis related to the Maryland horse industry including the perceived, but as of yet unstudied, decline in the state's racing and breeding sectors; and
- the limited budget for the promotion of the Maryland horse industry. To fulfill its mandate, the MHIB has an annual budget of less than \$120,000 (including staffing), of which approximately \$115,000 is brought in as funds directly from the horse industry from a \$2 per ton assessment on feed.

As the commodity board for the Maryland horse industry the board hopes to continue to develop and to continue to grow the success of the recreational horse industry and to work to re-establish the prominence of the Maryland horse racing and breeding industries.

Key Accomplishments in 2005

1. Partnered with the Maryland Stadium Authority, the State Highway Administration, and the departments of Business and Economic Development, Natural Resources, and Labor, Licensing and Regulation to conduct a feasibility study of a Maryland Horse Park.

The study selected a site in Gambrills, Anne Arundel County for evaluation of its merits as a potential home of the Maryland Horse Park. The park would essentially be a large-scale market for Maryland equine goods, and services as well as an attraction for increased business, media attention, and marketability of the equine industry. The establishment of a Maryland Horse Park could generate more than \$163 million a year in economic impact on the local and state economy, more than 4,000 new jobs, and millions of dollars in annual tax revenue from tourists. This project was one of the original missions of the MHIB and will remain as such until its completion.

2. Licensed 473 horse stables in FY 2005

This was an increase of more than 44 stables from FY 2004 and an increase of 93 stables from FY 2003. The rise in facility licenses may be attributed to the work of the stable inspectors, the hiring of a full time executive director, the implementation of a new Oracle database to monitor licensed and unlicensed stables, and improved records being supplied to stable inspectors.

3. Completed 495 stable inspections in FY 2005

This was the first time in the current decade that more inspections were completed, than there are licenses issued by the MHIB. This was an increase of 77 inspections from FY 2004, and an increase of 127 inspections from FY 2003. Once again this increase can be credited to the diligence of the MHIB stable inspectors, and the hiring of a full time executive director for the administration of the MHIB programs.

4. Distributed \$22,952 in Maryland Horse Industry Grants

Funded projects include 4-H youth educational programs, therapeutic riding programs, horse rescue programs, adult education projects through the Maryland Cooperative Extension, university research and teaching projects, promotional campaigns for Maryland equestrian events, and the co-funding of an industry-wide economic impact study. The money for the grant program is derived from special funds obtained through the Maryland Equine Feed Assessment, and is thus funded entirely by the equine industry itself.

5. Worked with MDA and USDA to promote the establishment of a public quarantine facility for horses in transit to and from Maryland.

As international marketing efforts continue to attract foreign buyers to the Maryland market, there is an increased need to improve the quarantine and

transportation options in the mid-Atlantic region. The installation of an animal export and import quarantine facility associated with the Baltimore-Washington International Airport (BWI) would enhance the potential of the equine industry thereby preserving working lands by reducing transportation costs, enhancing the marketability of Maryland horses to foreign buyers, and improving access to in-state events, all of which contribute to the viability of this industry.

6. Gave a presentation on “Developing a statewide equine industry forum” at the 2005 Equine Science Society meeting in Tucson, Arizona.

This project was presented as part of the teaching and Extension section. The report was developed from information gleaned from the 2004 Maryland Horse Forum that was held in Upper Marlboro. That event and its results have garnered national attention for its effectiveness in addressing industry issues on both governmental and non-governmental levels.

7. Assisted several divisions of MDA in its implementation of policies, statutes, and regulations which involve the Maryland horse industry.

Sections of the MDA which have been assisted by the MHIB include but are not limited to Resource Conservation, Nutrient Management, Agricultural Land Preservation Foundation, Animal Health, National and International Marketing, and the Office of the Secretary.

8. Hosted meetings between industry leaders and different government bodies.

Topics have included the establishment of a Maryland Horse Park, insurance companies’ policies and their impact on the Maryland horse industry, and issues related to equine disease.

Listed below are key statistics from the past three calendar years:

| Category | 2003 | 2004 | 2005 |
|---|-------------|-------------|-------------|
| Number of stable licenses issued | 386 | 429 | 473 |
| Number of facilities inspected and in compliance | 99% | 99% | 99% |
| Revenue collected from licensing and inspecting horse stables and directed to General Funds. | \$28,950 | \$32,175 | \$35,475 |
| Revenue collected from assessment based on tons of horse feed sold in Maryland, at \$2 a ton ¹ | \$42,733 | \$90,356 | \$91,826 |
| Percentage of total special fund revenue distributed as grants for the Maryland horse industry. | 82% | 29% | 25% |
| Total amount of money distributed as grants for for promotional, educational, or research projects for the Maryland horse industry. | \$34,906 | \$25,895 | \$22,952 |
| Staffed booths or presented talks at trade shows, conferences, fairs and exhibitions promoting Maryland equine. | 8 | 10 | 12 |

¹ Calendar year 2003 was the first year of new funding source from feed sales. Implemented in the beginning of 2003, full revenues first received in 2004.

Weights and Measures

The Weights and Measures Section has a mandated responsibility to inspect and test all weighing and measuring devices used in buying and selling of commodities or the exchange of goods and services. Prepackaged commodities are inspected and tested for accuracy of quantity statements and compliance with labeling requirements. Investigations and test purchases are conducted to prevent fraud in quantity and measurement determinations during commercial transactions and in response to consumer complaints. Routine monitoring of commercial transactions occurs to assure that proper measurement and methods of sale for commodities are employed. These efforts provide a level playing field thereby protecting both buyer and seller.

While the federal government has some limited responsibility for weights and measures controls, the states have historically taken the initiative in this area. Today, enforcement in the United States is recognized primarily as a state government responsibility. The federal government plays an important role by providing assistance to the states through the National Institute of Standards and Technology (NIST). NIST is responsible for maintaining the national standards and operating a laboratory for certification of standards. The National Conference on Weights and Measures (NCWM) in cooperation with NIST develops and promotes uniformity in standards, laws and inspection methods to provide maximum public protection through an equitable marketplace. The NCWM also manages the National Type Evaluation Program (NTEP), which type-certifies weighing and measuring equipment prior to entering the marketplace.

In FY 2005, the field staff conducted approximately 54,390 inspections of commercial weighing and measuring devices. This is approximately 5,000 more devices than the previous year. The inspectors also tested 10,030 individual lots of prepackaged commodities offered for sale. This is approximately 2,400 lots less than the previous year.



Weights and Measures staff ensures the accuracy of grocery store scales.



Weights and Measures staff certifies the accuracy of railroad scales.



Weights and Measures staff ensures the accuracy of fuel dispensers.

In FY 2005, the field staff investigated 442 consumer complaints. The large number of complaints is contributed to consumers being more aware of the Weights and Measures Section. The investigation of consumer complaints is given priority over routine inspections.

Funding for the field inspection program continues to be an important issue. The field inspection program currently operates on special fund revenue collected from device registration fees. The 1992 Maryland General Assembly established the registration fees to offset General Fund budget reductions. MDA was successful in its efforts to increase fees in the 2005 Maryland General Assembly. The increased fees are only a temporary fix to the funding of weights and measures inspection staff. The statewide interval between inspections has risen to approximately 18 months. Staff anticipates this trend will continue due to the size (18 field inspectors) of the current inspection staff. In light of its funding issues, the Weights and Measures Section continues to review the operational aspects of the program in an effort to maintain an acceptable level of service.

The registration of approximately 7,600 businesses has created a database that has become an effective management tool. It allows the administrative staff to apply its limited resources in the most critical areas and provides each field inspector a tool to plan their inspection work more effectively, thereby reducing driving time and providing more uniform inspection coverage. This information will assist the section in prioritizing its limited resources to protect Maryland consumers and maintain a level playing field for industries that operate in the state.

The section published regulations for the Voluntary Registration of Service Agencies and Service Technicians early in FY 2004. This program establishes controls over the installation, servicing or repairing of commercial weighing and measuring devices with a goal of reducing the number of callback or follow-up inspections necessary each year. Currently,

43 states have a program establishing some type of control over the installation, servicing or repairing of commercial weighing and measuring devices. The effort has produced some additional special funds for the section, but not nearly enough to eliminate the problems encountered in the last five years.

Maryland's Metrology Laboratory maintains primary standards of mass, length, volume and temperature that are legally traceable to the National Institute of Standards and Technology and provides a measurement capability at the state level that is consistent with national measurement goals.

The Maryland Weights and Measures Laboratory is recognized by the National Voluntary Laboratory Accreditation Program (NVLAP) for compliance with criteria set forth in The International Standard ISO/IEC 17025:1999 and relevant requirements of ISO 9002:1994.

The NVLAP is an independent agency under NIST in Maryland. NVLAP accredits testing and calibration

laboratories that are found competent to perform specific tests or calibrations, or types of tests or calibrations.

It is the laboratory's policy to provide the highest quality measurement services attainable, to clients and field staff, through a continuous improvement of the quality system. Following the International Standards, the Maryland Weights and Measures laboratory assures consistency and accuracy in regulatory activities and test measurement services for many industries, including manufacturing, science and technology, in addition to calibration laboratories and government agencies.

Maryland's National Type Evaluation Program (NTEP) Laboratory is authorized as one of only four fully participating laboratories in the nation. NTEP laboratories are authorized by the National Conference on Weights and Measures. Meeting the required performance standards and formalized procedures denotes a high degree of technical and professional competence. Authorization is specific to a type of weighing or measuring device. The Maryland NTEP laboratory is authorized in 14 areas of evaluation.

WEIGHTS AND MEASUREMENTS ACTIVITIES TABLES

FIELD INSPECTION AND TEST EFFORT

| | 2003 | | 2004 | | 2005 | |
|---|----------------------|-------------|----------------------|-------------|----------------------|-------------|
| | Percent in Violation | Total Tests | Percent in Violation | Total Tests | Percent in Violation | Total Tests |
| A. WEIGHING SYSTEMS | | | | | | |
| Large Scales | 37.2 | 866 | 33.4 | 1250 | 30.7 | 1326 |
| Medium Scales | 19.6 | 1020 | 17.0 | 1040 | 18.8 | 977 |
| Small Scales | 16.1 | 12537 | 18.1 | 11806 | 14.0 | 10615 |
| B. LIQUID MEASURING SYSTEMS | | | | | | |
| Gasoline Dispensers | 18.3 | 39764 | 17.2 | 33419 | 16.8 | 38838 |
| L P Gas Meters | 38.9 | 656 | 32.0 | 466 | 28.5 | 460 |
| Vehicle Tank and Other Large Meters | 19.1 | 1662 | 14.0 | 1187 | 13.5 | 1733 |
| C. GRAIN MOISTURE METERS | 11.3 | 149 | 9.5 | 139 | 16.0 | 143 |
| D. PROGRAMMED TARE INSPECTIONS | 9.2 | 4702 | 8.4 | 4550 | 10.0 | 3955 |
| E. PRICE SCANNING AND METHOD OF SALE | 4.9 | 9109 | 3.0 | 8140 | 2.2 | 9892 |
| F. DELIVERY TICKET INSPECTIONS | 1.3 | 2430 | 2.0 | 2257 | 1.7 | 3055 |
| G. PACKAGE LOTS | 11.8 | 13753 | 12.0 | 12100 | 1.2 | 10029 |

Inspection and testing of packages involves, not only correct weight or measure determinations, but compliance with method of sale and labeling requirements.

WEIGHTS AND MEASUREMENTS ACTIVITIES TABLES

LABORATORY EFFORT Inspection and Test

| | 2003 | | 2004 | | 2005 | |
|----------------------------------|---------------|------------------|---------------|------------------|---------------|------------------|
| | Number Tested | Percent Rejected | Number Tested | Percent Rejected | Number Tested | Percent Rejected |
| Weights | 7005 | 8.1 | 6996 | 9.5 | 6490 | 10.5 |
| Volumetric Measures, (Non-Glass) | 100 | 65.0 | 128 | 40.0 | 243 | 38.0 |
| Length Devices | 3 | 0.0 | 5 | 0.0 | 5 | 0.0 |
| Temperature Devices | 275 | 1.6 | 67 | 6.0 | 61 | 0.0 |
| Timing Devices | 6 | 0.0 | 0 | 0.0 | 9 | 0.0 |
| Volumetric (Glass) | 111 | 6.3 | 2 | 0.0 | 0 | 0.0 |
| Scales/Meters | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| Milk Samples | 158 | 1.9 | 172 | 3.5 | 160 | 2.5 |
| Standard Grain Samples | 702 | N/A | 701 | N/A | 700 | N/A |

The Laboratory involves technical support of the field effort and provides a base of measurement for Weights and Measures officials. Additionally, it provides measurement support for other state agencies and Maryland industries.

ADMINISTRATIVE CONTROLS AND MISCELLANEOUS

| | 2003 Number | 2004 Number | 2005 Number |
|---|----------------|----------------|----------------|
| Weighing and Measuring Devices | | | |
| Registration Certificates, Issued | 7520 | 7489 | 7373 |
| Type Evaluation of Devices Conducted (NTEP) | 57 | 56 | 55 |
| Samplers and Testers Licenses, Issued | 27 | 24 | 19 |
| Citizen Complaints Received and Investigated | 335 | 446 | 442 |
| Disciplinary Hearings, Criminal Arrests and/or Summons Obtained | 9 | 10 | 18 |

Aside from day-to-day administration, coordination and support of the laboratory and field activities, the Weights and Measures Section is involved in the registration of commercial weighing and measuring devices, and the examination and licensing of individuals for specific functions.

Food Quality Assurance Program

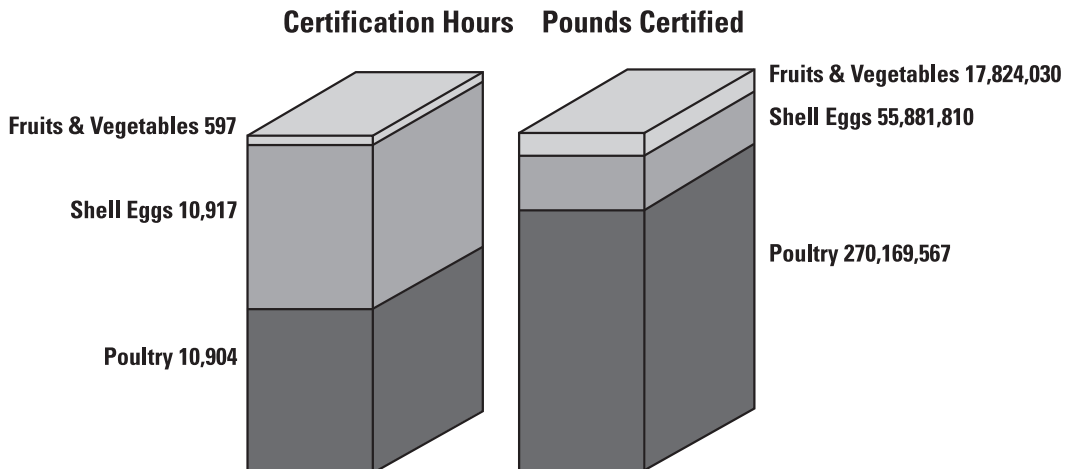
Grading Services

The Grading Services Section offers producers and processors a voluntary certification program for agricultural commodities including poultry, eggs, fruit, vegetables and grain. MDA graders sample commodities for comparison with standards developed by USDA and/or MDA for reduction of microbial, chemical and/or physical contamination, quality, size, labeling and packaging. Commodities meeting the criteria established by USDA and/or MDA standards are identified and certified by MDA graders. Official certification provides a uniform basis for the marketing of agricultural commodities that enhances the marketability of Maryland commodities. Foreign countries, wholesale food suppliers, large grocery store chains, and state institutions, among others, often require official certification to ensure they are purchasing agricultural commodities that meet their specifications. The provision of a cost-effective and service-oriented grading program is crucial to Maryland producers competing in these markets.

In addition to providing certification services to the producing industry, the section has assisted buyers in developing specifications to meet their needs. Many buyers have begun requiring audits of production practices in addition to the certification of product. The section conducts audits of agricultural production facilities for compliance with standards for animal welfare, good agricultural practices, food security, food safety and quality assurance programs.

The agriculture commodity industry has continued to change and the section has adapted to these changes by offering the services necessary for the industry to market their products. Consolidation in the poultry and egg industry has continued to have an impact on the pounds of poultry and eggs certified. The section began offering certification services for meat during 2005 at the request of meat processors. Program changes related to the consolidation in the poultry and egg industry, training costs for offering meat certification, increased salaries and operating costs required the section to increase fees for services provided. The Commodity Certification chart summarizes the work hours and volume of the primary commodities certified by the section this year.

COMMODITY CERTIFICATION



Egg Inspection

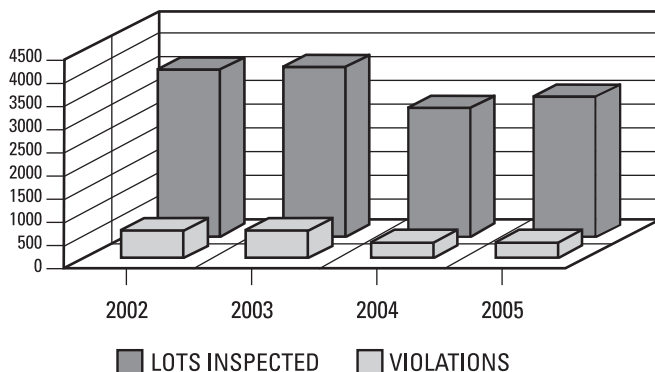
The Egg Inspection program is responsible for enforcement of the Maryland Egg Law. Inspections are performed at the wholesale, food service and retail levels to ensure eggs sold in our state meet the standards established for quality, size, refrigeration, microbial and physical contamination, labeling and record-keeping. The section is also responsible for the registration of egg wholesalers and packers. Portions of the labeling, record-keeping and registration requirements were developed to provide traceability in the event of a *Salmonella enteritidis* outbreak. Other sections of the law were established to reduce the risk of consumers purchasing eggs that could cause food-borne illness. Eggs found to be out of compliance with the established standards are removed from sale and violation notices are issued to the responsible party. The inspection activities are funded through the collection of \$.0026 per dozen of eggs sold in Maryland.

The percentage of eggs sampled found to be in compliance with the Maryland Egg Law increased to 91 percent this year compared to 88 percent last year. The Egg Inspection chart shows comparison data for the eggs inspected and violations.



MDA Egg Grader, Jeanine DeLeonardo, candles eggs to determine their quality.

EGG INSPECTION LOTS INSPECTED/VIOLATION



Organic Certification Program

The federally accredited Maryland Organic Certification Program (MOCP) certified 76 farms along with six handlers of organic products in Maryland in 2005. The program also registered an additional 10 farms as organic that are exempt from the inspection requirements.

Organic producers and handlers have expressed an interest in exporting organic products. For their certification to be valid for export, MOCP must become ISO 65 compliant. The program has spent time this year developing operating procedures that will meet the ISO 65 standards.

Maryland organic producers and handlers also have continued to benefit from the federal Cost-Share Reimbursement Program funded by USDA. This cost-share program allowed MDA to reimburse 75 percent of the inspection costs growers paid for certification. This program is expected to continue until 2006.

Grain Laws

All persons in the business of buying, receiving, exchanging or storing grain from a grain producer are regulated by this section. Licenses are issued to businesses that meet requirements set by law for insurance and financial status. There are four categories of licenses issued based on the number of bushels purchased in a calendar year. Fees range from \$50 to \$300. A Directory of Licensed Grain Dealers is published and distributed annually. The section licensed 40 businesses with 65 business locations in 2005.

Forest Pest Management

The Forest Pest Management (FPM) Section is responsible for minimizing losses due to insect pests and diseases affecting Maryland's valuable forest and landscape trees in rural and urban areas. The FPM Section advises landowners about the management of forest pests. When there are serious outbreaks, as from the gypsy moth, the section will cooperate with local jurisdictions to manage the infestation. To accomplish this, monitoring, assessment, control and education actions are administered through two major programs, Cooperative Gypsy Moth Suppression Program and Cooperative Forest Health Program. Both are cooperative cost-share programs conducted with technical and financial assistance from the USDA, Forest Service (USFS).

The Cooperative Gypsy Moth Suppression Program conducts an integrated pest management (IPM) program to protect forest and shade trees from the continuing threat of defoliation and damage by the gypsy moth. An effective statewide IPM program for gypsy moth requires extensive amounts of accurate population data that must be collected annually. When survey data indicate the potential for defoliation that could lead to death or dieback of high value hardwood trees, aerial application of insecticide may be implemented. In 2005, no areas of trees warranted suppression of gypsy moths and no defoliation was recorded. This is the first time since 1979 there was no gypsy moth damage or suppression activity.

The Cooperative Forest Health Program monitors and evaluates insects and diseases affecting Maryland forests and conducts education and training activities. In addition, separate projects are conducted targeted at specific agents or situations that are having or may have significant impact on the health of Maryland's forests. In 2005, numerous assessment surveys were conducted to determine the impact of several insects and diseases. Staff conducted special projects to monitor the health of Maryland's forest and roadside trees, and to detect the emerald ash borer insect and the sudden oak death disease. Also in 2005, the hemlock woolly adelgid suppression project continued, and a project to assess and reduce the impacts of exotic invasive weeds on State forest land was initiated.

Cooperative Forest Health Program

The Maryland Cooperative Forest Health Program (CFHP) combines two federal cost-share programs: Cooperative Forest Health and Forest Health Monitoring. The objectives of these combined programs are to conduct surveys of major forest pests in Maryland and to provide technical advice and

assistance to managers of state and private forests. The CFHP also provides training on the importance, identification and control of forest pests to various state and local agencies and forestry organizations.

Surveys

Hemlock woolly adelgid (HWA)—The HWA-infested area now includes the metropolitan area between Baltimore and Washington and native stands of hemlock in Harford, Frederick, Washington, Allegany and Garrett counties. As part of a mid-Atlantic, multi-state survey, MDA continues to monitor 13 plots established in six Maryland counties to assess the impact of the adelgid on hemlock resources.

Southern pine beetle (SPB)—Since 1989, Maryland has participated in a multi-state SPB survey throughout the southern United States using pheromone-baited traps. Trap data indicated that SPB numbers would continue to remain low in 2005. Populations have been below outbreak level since 1994. A minor outbreak of SPB occurred in 2005 in Talbot County (99 acres, 22 spots), a first-time record for that county.

Emerald ash borer (EAB)—With special funding from the U.S. Forest Service, MDA's Forest Pest Management Section conducted a survey for emerald ash borer in Western Maryland by placing trap trees and conducting visual surveys. No detections were made in 2005 by either survey method. In late 2003, MDA's Plant Protection and Weed Management (PP&WM) Section found EAB infesting nursery stock in Prince George's County. This exotic pest has caused the loss of millions of ash trees in Michigan. The PP&WM Section issued a quarantine and established a 1/2 mile buffer zone for eradication efforts. FPM staff provided administrative and field assistance with contracting for the removal of more than 1,000 ash trees in the buffer zone. Follow up surveys, using trap trees, by FPM and PP&WM personnel have so far detected no persisting infestation of EAB in the environment near the once-infested nursery. Recreational areas in Western Maryland are often visited by Michigan residents, and so are considered as potential introduction sites.

Pine shoot beetle—In cooperation with the Plant Protection and Weed Management Section, surveys for the pine shoot beetle have been conducted since 1993. Garrett, Allegany, Washington, Fredrick and Montgomery counties are now regulated by a federal quarantine. In 2005, surveys were conducted in Western Maryland, Central Maryland and the Eastern Shore. [See Plant Protection Section report for pine shoot beetle survey details.]

Exotic bark beetles—Also in cooperation with the Plant Protection and Weed Management Section, surveys for exotic wood boring beetles were conducted during 2005. The CFHP Program provided identification of beetles collected in traps placed in and near warehouses receiving overseas shipments of tile, marble and granite that contain wood for protection and bracing. These warehouses have been identified as a pathway for exotic woodborers to enter Maryland and impact the state's forests. No target species were trapped.

Roadside tree health survey—A cooperative project with the USFS and Maryland Forest Service assessed the health of Maryland roadside trees. A pilot project in 1999 and 2000 was conducted in the Baltimore-Washington corridor. In 2001, methods developed in the pilot project were used to collect information on tree species, tree health and distribution of roadside trees statewide. In 2005, the final year of this five-year project, selected plots were revisited to detect change in the health of urban trees. MDA is cooperating with the Maryland Department of Natural Resources (DNR) and U.S. Forest Service staff to analyze this data and to make it available to the urban forest community.

Ramorum blight (sudden oak death) disease—In cooperation with the USFS and MDA's Plant Protection and Weed Management Section, Forest Pest Management conducted a survey for the organism causing sudden oak death. [See Plant Protection Section report for sudden oak death survey details.] Forest Pest Management surveyed around Maryland nurseries that received potentially infected nursery stock from California and Oregon. Forested areas around 45 nurseries were examined and more than 350 samples were collected and analyzed. All samples were negative for the disease-causing organism – *Phytophthora ramorum*.

Miscellaneous surveys—During the year, various insects and diseases may become important in localized infestations, and surveys may be conducted to determine the distribution and impact of these infestations. During 2005, there were several insects and diseases directly affecting forest health. Reports were received of light to moderate infestations of orange-striped oakworms, and fall webworms.

Defoliation and Damage Report

Fall cankerworms defoliated 1,000 acres of hardwood trees in central Maryland. Cankerworms caused minor defoliation in the suburban Washington and Annapolis areas of Maryland in 2000, 2001 and 2002, but were largely absent from these areas in 2003 through 2005. In 2004, cankerworms caused 279 acres of defoliation of hardwood trees in Central and Western Maryland.

The cool wet conditions resulted in a statewide buildup of leaf spot diseases, known as anthracnose. Sycamores, maples and oaks were most severely affected. In addition, hundreds of homeowner and forest owner calls were answered on the identification and control of insects and diseases.

Suppression and Management Report

Hemlock wooly adelgid suppression—In 2003, a Task Force was created and co-chaired by MDA and the Department of Natural Resources (DNR) to bring together various groups with an interest in hemlock management. The Task Force selected important hemlock stands, established a prioritization system and coordinated their review by different disciplines within DNR. With leadership from the MDA Forest Health Entomologist, management plans for HWA were developed and the Task Force coordinated its approval. In Fall 2004, FPM staff assessed HWA infestations on priority publicly-owned hemlock stands, and made management recommendations to the Task Force. FPM staff then began implementing the management strategies beginning with the release of the predatory beetle *Laricobius nigrinus* and conducting trunk injections of insecticide on selected trees in critical areas. In 2005, the predatory beetles *Scymus*, and *Sasajiscymnus* were released. Trunk and soil injection of priority trees was conducted. *Laricobius nigrinus* was recovered from the 2004 release site, after only one year of releases.

Invasive exotic plant assessment and management—With funding from the U.S. Forest Service, and in partnership with DNR, a new program to assess the impacts of invasive exotic plants was initiated in 2005 on three state forests managed by DNR. An interagency interdisciplinary Steering Committee was formed and candidate sites were requested where invasive plants are or could interfere with the management objectives of that site, including habitat and rare species preservation. A novel assessment protocol was developed and 15 sites representing over 2,700 acres of habitat were formally assessed. A dozen species of invasive weeds were catalogued and some treatments initiated with additional treatments scheduled for 2006. All management strategies, including mechanical and chemical techniques are considered and selected based on several site specific factors.

Cooperative Gypsy Moth Suppression Program

The basis for all decision-making for the integrated pest management of gypsy moth in Maryland is timely, accurate pest population data. These data, in the form of annual population samples and other survey information and observations, are collected from state-owned land, forested residential areas, and privately managed forest tracts. Seventeen counties and Baltimore City are cost-share partners in

conducting the surveys and collecting the samples. In addition, forested communities, groups of citizens, or the owners of managed forested tracts in any Maryland jurisdiction, can participate directly through cost sharing with community or neighborhood-based funds, or through their local forest conservancy board, as in the case of privately managed forested tracts.

If warranted by survey data, spraying to suppress gypsy moth caterpillar populations may be proposed on a priority basis to protect high value forest and shade trees, especially in those areas where death and die back of the trees would not be tolerated. For instance, in residential or recreational areas, dead and dying trees present a safety hazard requiring the removal of dead branches and trees, usually at a cost to the landowner that is many times the per acre average cost of the spraying. Spraying is conducted using one of two insecticides—diflubenzuron (Dimilin) or *Bacillus thuringiensis* (B.t.)—chosen for their specificity and effectiveness. In other areas and situations, the gypsy moth population “cycle” is allowed to run its course and natural controls like parasites, predators and diseases may take their toll.

In 2005, no areas warranted treatment, and defoliation surveys detected no areas of damage. This is the first year since 1979, when gypsy moth first became a threat to Maryland forests that there was neither treatment nor damage. Surveys have been highly useful for detecting and tracking new areas where gypsy moth populations are emerging and/or appear to be rising rapidly. New areas of outbreak can develop quickly and unpredictably in terms of both timing and location. For example, in 2005 gypsy moth defoliated 44,131 acres of trees in New Jersey and 270,000 acres in Pennsylvania despite recording only 6,502 and 16,843 acres respectively the year before. Recently, the FPM Section has been alert to low but growing populations in Northeastern and Central Maryland, and in 2005, new surveys indicated damaging levels of gypsy moth populations in several counties in these areas.

Maryland Cooperative Gypsy Moth Suppression Program 1999 – 2005*

*NOTE: In 2005, no gypsy moth suppression was conducted.

| | 2004 | 2003 | 2002 | 2001 | 2000 | 1999 |
|---------------------|-------------|---------------|---------------|---------------|---------------|--------------|
| | Total Acres | Total Acres | Total Acres | Total Acres | Total Acres | Total Acres |
| Allegany | 0 | 0 | 3,941 | 18,979 | 2,344 | 0 |
| Anne Arundel | 93 | 1,821 | 4,845 | 3,381 | 166 | 0 |
| Baltimore | 0 | 388 | 1,041 | 1,050 | 251 | 0 |
| Baltimore City | 0 | 0 | 135 | 0 | 0 | 0 |
| Carroll | 0 | 29 | 272 | 220 | 313 | 0 |
| Cecil | 567 | 5,644 | 13,114 | 2,971 | 0 | 0 |
| Charles | 0 | 879 | 3,809 | 1,517 | 362 | 0 |
| Dorchester | 0 | 1,198 | 1,148 | 156 | 416 | 521 |
| Frederick | 0 | 968 | 4,331 | 9,172 | 5,638 | 3,150 |
| Garrett | 0 | 0 | 0 | 429 | 0 | 0 |
| Howard | 0 | 159 | 255 | 149 | 0 | 0 |
| Kent | 0 | 0 | 0 | 0 | 0 | 0 |
| Montgomery | 0 | 1,273 | 413 | 2,112 | 640 | 26 |
| Prince George's | 0 | 0 | 505 | 499 | 512 | 0 |
| Queen Anne's | 0 | 0 | 0 | 0 | 0 | 0 |
| Somerset | 0 | 0 | 52 | 0 | 0 | 219 |
| St. Mary's | 0 | 0 | 0 | 0 | 56 | 0 |
| Talbot | 0 | 1,289 | 0 | 0 | 120 | 0 |
| Washington | 0 | 115 | 5,204 | 7,953 | 5,853 | 2,390 |
| Wicomico | 0 | 290 | 69 | 0 | 300 | 0 |
| State Totals | 660 | 14,053 | 39,134 | 48,588 | 16,971 | 6,306 |

Defoliation by Gypsy Moth 1999 – 2005*

*NOTE: There was no gypsy moth defoliation detected in 2004 or 2005.

| | 2003 | 2002 | 2001 | 2000 | 1999 |
|---------------------|-------------|---------------|---------------|---------------|--------------|
| | Total Acres | Total Acres | Total Acres | Total Acres | Total Acres |
| Allegany | 0 | 0 | 25,194 | 8,913 | 0 |
| Anne Arundel | 0 | 203 | 527 | 2 | 0 |
| Baltimore | 0 | 27 | 9 | 104 | 29 |
| Baltimore City | 0 | 0 | 0 | 0 | 0 |
| Calvert | 0 | 0 | 0 | 0 | 0 |
| Caroline | 0 | 0 | 0 | 0 | 0 |
| Carroll | 0 | 0 | 10 | 2 | 0 |
| Cecil | 0 | 1,161 | 49 | 734 | 11 |
| Charles | 0 | 346 | 0 | 0 | 0 |
| Dorchester | 112 | 7,055 | 12,150 | 4,698 | 1,101 |
| Frederick | 0 | 1,156 | 799 | 2,402 | 32 |
| Garrett | 0 | 0 | 0 | 0 | 0 |
| Harford | 0 | 0 | 0 | 0 | 0 |
| Howard | 0 | 0 | 4 | 13 | 0 |
| Kent | 0 | 0 | 2 | 0 | 0 |
| Montgomery | 0 | 755 | 116 | 272 | 0 |
| Prince George's | 0 | 50 | 98 | 2 | 0 |
| Queen Anne's | 0 | 0 | 0 | 0 | 0 |
| Somerset | 0 | 536 | 663 | 0 | 0 |
| St. Mary's | 0 | 0 | 0 | 0 | 1 |
| Talbot | 0 | 6 | 24 | 0 | 0 |
| Washington | 0 | 507 | 5,079 | 6,089 | 23 |
| Wicomico | 0 | 1,937 | 1,459 | 0 | 0 |
| Worcester | 0 | 0 | 0 | 0 | 0 |
| State Totals | 112 | 13,739 | 46,183 | 23,231 | 1,197 |

Mosquito Control

Mosquito control is a service program that has been in continuous operation since 1957. Prior to legislative creation of the Maryland Department of Agriculture (MDA), mosquito control was provided through the University of Maryland, State Board of Agriculture. Legislative authority for the activities of the Mosquito Control Section of MDA is the Maryland Mosquito Control Law, Agriculture Article, Title 5, Subtitle 4.

Participation in cooperative mosquito control projects by counties and communities is available to all Maryland jurisdictions. Activation of program service requires a request from a jurisdiction to begin new service, or annual renewal of existing service, and agreement by local government to pay a share (typically 50 percent) of the cost of providing mosquito control. In most counties, MDA provides mosquito control directly; however, Calvert, Caroline and Queen Anne's counties provide service to their respective communities. The towns of Easton, Fruitland and Ocean City also operate their own programs. During 2005, mosquito control service was provided in all Maryland jurisdictions except Baltimore City and Garrett County.

The MDA mosquito control program is staffed by 20 classified employees and 65 seasonal contractual technicians. Regional offices are located in Annapolis, Hollywood, Riverdale and Salisbury. Equipment operated by the program includes 63 light trucks, one van, two heavy trucks, four boats, five all-terrain vehicles, 75 insecticide sprayers and two aircraft.

Mosquito control, as provided by public agencies, in Maryland has three objectives: (1) protect public health by managing mosquito populations to reduce the risk of mosquito-borne disease; (2) improve the quality of life by reducing the populations of pest mosquitoes; and (3) protect the environmental quality of Maryland. These objectives are achieved by following integrated pest management principles and adhering to all applicable federal and state laws and regulations.

Mosquito Control During 2005

The Maryland Department of Agriculture and cooperating local agencies provided service in 2,104 communities, with an estimated population of 725,000 residents, during 2005. The number of participating communities per county varies from three in Carroll County to 329 in Baltimore County. Counties in the piedmont and mountainous areas of the state have less of a mosquito population, hence less community participation, as compared to counties in the coastal plains



This year, MDA was able to expand its spray operations greatly through the purchase and use of a new, more efficient plane.

where the flat topography and abundance of wetlands provide conditions that are generally more favorable for mosquitoes.

Maryland mosquito populations in 2005 were depressed due to the cool, wet spring followed by a hot, dry summer, the virtual absence of tropical storm activity and a greater than normal frequency of tidal flooding of the Chesapeake Bay and Atlantic coastal wetlands. These environmental factors collectively created conditions inimical to most mosquito species and beneficial to a variety of predators that naturally control mosquitoes. As a result, populations of most mosquito species (with exceptions noted below) were among the lowest recorded in the past 30 years.

The hot and dry conditions of August and September were favorable to *Culex pipiens* and *Aedes albopictus*. Many creeks and ditches that maintain good water flow with normal rainfall were drawn down to isolated, stagnant pools which furnished good breeding habitat for *Culex* larvae by mid-August. The population of *Cx. pipiens* was above average throughout central Maryland by late summer and, while not important as a pest species, it is an important vector of disease. The tiger mosquito, *Aedes albopictus*, is an invasive species that has spread throughout Maryland. It is a mosquito very closely associated with domestic breeding sites such as containers, flower vases, tires, etc., and appears to best flourish under hot conditions. Because 2005 was one of the hottest summers on record, the tiger mosquito did especially well and was responsible for more public complaints about mosquito annoyance than any other species.

Mosquito control activities during 2005 were reduced in some aspects, but increased in other areas. Application of insecticides was reduced commensurate with the lower

than normal mosquito populations. The total area treated with insecticides for mosquito control statewide was 1.7 million acres, which is a decrease of more than 407,500 acres (19.3%) compared to 2004 activity. The acreage treated per county varied from a low of one acre in Howard County to a high of 232,668 acres in Wicomico County. The number of acres (81,631) treated by aircraft was the third lowest total in the past 28 years, with only 1979 and 1983 recording less aircraft spraying—58,334 acres and 79,665 acres respectively. Mosquito Control Section staff produced a three minute public service announcement video for homeowner awareness and control of *Aedes albopictus*. MDA's public information office distributed this PSA to all public and cable television outlets, all municipal governments and the state public library system in Maryland. Public education of mosquito control and mosquito-borne disease awareness also continued at the community and school level by mosquito control staff.

Stocking of mosquito fish for the biological control of mosquito larvae occurred at above average level. A total of 16,138 fish were stocked, primarily in stormwater management ponds and sewage treatment ponds, during 2005. Source management projects also increased this year and were implemented on 812 acres. These projects consisted primarily of renovation of existing ditching systems on tidal wetlands on the Eastern Shore.

Because of the continued threat to public health from West Nile virus, control operations in 2005 were conducted according to a disease suppression strategy to aggressively manage vector mosquito populations at as low a level as possible. By following a mosquito-borne disease suppression strategy, as compared to a pest suppression strategy, insecticide is applied more frequently and expenses are greater, but mosquito populations are lower. This approach has been followed since 2001 to successfully protect people from West Nile encephalitis and will continue as long as West Nile virus remains a public health threat.

Insecticide resistance and effectiveness evaluations were conducted in laboratory and field environments. Laboratory screening of field collected mosquitoes for resistance to mosquito control adulticides indicate that all populations tested remain highly susceptible to permethrin, phenothrin and naled insecticides. Field evaluations of mosquito larvicides showed continued high effectiveness of all formulations of methoprene applied by ground equipment and aircraft. Helicopter applications of *Bacillus sphaericus* (Vectolex™) continues to provide excellent initial control of *Culex salinarius* larvae and residual control of up to 30 days post application. Control of floodwater mosquito larvae and

anopheline larvae is poor with Vectolex. *Bacillus thuringiensis israelensis* (BTI) continues to provide highly variable results for larval control. Ground applications of BTI, particularly granular formulations, are generally effective for control of floodwater mosquitoes and anophelines, but marginally effective for *Culex*. Liquid formulations of BTI show a great deal of variation in effectiveness, apparently as a result of quality control at the formulator level and/or stability problems of the formulations during transport or storage. Aircraft application of liquid BTI is variable, but as a rule an unacceptably low level of larval control is achieved. Ground application of liquid BTI generally produces acceptable results, but because of significant failures of control experienced in the past, most ground larviciders apply a tank mix of BTI and methoprene to assure a high level of larval control. The inconsistency of liquid BTI formulations has been an issue for more than 20 years of Maryland mosquito control. Beginning in 2006, use of liquid BTI in Maryland mosquito control will be limited to ground applications. All aerial larviciding by MDA aircraft applying liquid insecticide (MDA aircraft are not equipped to apply granules) will use methoprene.

The Mosquito Control Section was very pleased to accept delivery in March 2005 of a second aircraft, a Beechcraft A-90 King Air, equipped for applying liquid insecticide. The King Air is a larger aircraft with about twice the range and payload capacity as the Piper Aztec airplane operated since 1996. Both aircraft fit specific niches in the program. The Aztec is smaller, more maneuverable and more economical to operate per flight hour and is best suited for spraying smaller areas. The King Air is best suited for large block area spraying and it is specially equipped and capable of applying adulticides at night.

To maximize the potential value of the night spraying capability of the King Air aircraft, night vision goggles were necessary. MDA requested the loan of aviator night vision goggles from the Maryland Air National Guard, which graciously agreed to loan two sets of night vision goggles and flight helmets to MDA for the 2005 season. The National Guard also provided training to maximize the use of the high-tech equipment. The efficacy of night spraying is approximately nine percent greater as compared to spraying in the evening prior to sunset. The reduction of adult mosquito populations as a result of night spraying exceeded 99 percent. The best we have been able to achieve in the past with spraying prior to sunset was a reduction of 90 percent of adult mosquitoes. The increased effectiveness of night spraying is due to greater mosquito activity and more favorable conditions of temperature, wind and humidity.

Mosquito-Borne Disease Surveillance

The cooperative effort between MDA and the Maryland Department of Health and Mental Hygiene (DHMH) to monitor the occurrence and distribution of mosquito-borne viruses continued during 2005. A total of nearly 75,000 mosquitoes were collected by MDA staff throughout the state and screened for the presence of virus at the DHMH virology laboratory. This resulted in the finding of 20 mosquito samples carrying West Nile virus (MFIR = 0.27/1000) in three jurisdictions (10 from Prince George's County, nine from Montgomery County and one from Worcester County). All West Nile virus infected mosquitoes were *Culex*. In addition to West Nile virus, two other arboviruses were recovered in 2005: three mosquito pools (*Aedes vexans*, *Coquillettidia perturbans* and *Culex erraticus*) carrying Cache Valley virus from Anne Arundel County and one collection of *Culisetta melanura* infected with Highlands J virus from Wicomico County.

The number of human cases of West Nile virus caused illness reported in Maryland during 2005 totaled five people from four jurisdictions (two from Baltimore City and one each from Baltimore, Prince George's, and Washington counties). There were no fatalities. None of the people suffering from WNV disease in 2005 resided in communities receiving mosquito control services.

There were no veterinary cases of mosquito-borne viral illness in Maryland during 2005.

Future Projects

Of highest priority for beginning the 2006 season is the preparation of toxic material permit (TMP) applications for submission to the Maryland Department of the Environment. TMP's are required before mosquito control larviciding can occur in any wetland, roadside ditch or stormwater area of Maryland. The applications must be site specific, include maps of treatment areas, list the type or formulation of insecticide to be applied, anticipated frequency of application and personnel responsible for supervising the project. A TMP is valid for up to five years.

MDA will continue to monitor for mosquito-borne disease in cooperation with the Maryland Department of Health and Mental Hygiene during 2006. A level of surveillance similar to 2005 is anticipated.

We also look forward to cooperating with the Maryland Department of Natural Resources and the U.S. Fish and Wildlife Service in marsh restoration projects on the Eastern Shore. These projects will attempt to restore natural hydrology and wildlife use value of wetlands adversely impacted by past, ill-advised management efforts.

In February, 2005, MDA cooperated with several other state agencies, local governments, the U.S. Environmental Protection Agency and the American Mosquito Control Association to have a one-day workshop in Salisbury to investigate the growing problem of mosquito production in stormwater management facilities and ways to stop this from occurring. The workshop opened lines of communication and understanding of conflicting mandates of legislation and agency guidelines regarding stormwater management. We hope to continue this dialogue and cooperation with agencies mandated to manage stormwater.

Cumulative Acres Treated with Insecticides for Mosquito Control

By County during 2005

| County | Acres |
|------------------|------------------|
| Allegany | 5 |
| Anne Arundel | 75,875 |
| Baltimore City | 73,438 |
| Baltimore County | 0 |
| Calvert | 75,242 |
| Caroline | 50,647 |
| Carroll | 129 |
| Cecil | 72,886 |
| Charles | 86,465 |
| Dorchester | 156,460 |
| Frederick | 922 |
| Garrett | 0 |
| Harford | 12,213 |
| Howard | 1 |
| Kent | 31,713 |
| Montgomery | 13 |
| Prince George's | 33,536 |
| Queen Anne's | 77,368 |
| St. Mary's | 129,881 |
| Somerset | 155,747 |
| Talbot | 208,048 |
| Washington | 792 |
| Wicomico | 232,668 |
| Worcester | 227,636 |
| TOTAL | 1,701,685 |

Number of Communities Participating in Mosquito Control

During 2005

| County | Acres |
|------------------|--------------|
| Allegany | 6 |
| Anne Arundel | 177 |
| Baltimore City | 0 |
| Baltimore County | 329 |
| Calvert | 91 |
| Caroline | 73 |
| Carroll | 3 |
| Cecil | 41 |
| Charles | 86 |
| Dorchester | 120 |
| Frederick | 22 |
| Garrett | 0 |
| Harford | 50 |
| Howard | 18 |
| Kent | 34 |
| Montgomery | 27 |
| Prince George's | 317 |
| Queen Anne's | 24 |
| St. Mary's | 117 |
| Somerset | 140 |
| Talbot | 107 |
| Washington | 8 |
| Wicomico | 180 |
| Worcester | 134 |
| TOTAL | 2,104 |

MOSQUITO CONTROL ACTIVITY SUMMARY

| | 2002 | 2003 | 2004 | 2005 |
|---|-----------|-----------|-----------|-----------|
| Communities Participating in Mosquito Control Program | 1,709 | 2,095 | 2,204 | 2,104 |
| Number of Light Trap Nights | 2,336 | 3,223 | 3,198 | 3,333 |
| Percent of Light Trap Nights Below Threshold | 64 | 39 | 55 | 63 |
| Number of Landing Rate Counts Performed | 19,882 | 19,694 | 20,876 | 18,971 |
| Percent of Landing Rate Counts Below Action Threshold | 46 | 18 | 31 | 68 |
| Number of Public Service Requests | 4,760 | 5,163 | 3,532 | 3,324 |
| Number of Mosquitofish Stocked | 11,573 | 12,237 | 19,698 | 16,138 |
| Acres Managed by Open Marsh Water Management | 96 | 221 | 709 | 812 |
| Acres Treated with Insecticide | 1,413,623 | 2,550,112 | 2,109,236 | 1,701,685 |
| Acres Treated for Mosquito Larvae | 34,370 | 28,842 | 27,928 | 15,095 |
| Acres Treated for Adult Mosquitoes | 1,379,253 | 2,521,270 | 2,081,308 | 1,686,590 |
| Acres Treated by Aircraft | 255,198 | 332,020 | 118,120 | 81,631 |
| Acres Treated by Ground Equipment | 1,158,425 | 2,218,092 | 1,991,116 | 1,620,054 |
| Number of Mosquitoes Tested for Arboviruses | 115,494 | 195,135 | 52,616 | 74,930 |
| Number of Mosquito Pools Positive for Arbovirus | 46 | 72 | 20 | 24 |
| Number of Human Cases of Arbovirus Statewide | 36 | 73 | 16 | 5 |
| Number of Human Cases of Arbovirus in Areas with Mosquito Control | 0 | 2 | 3 | 0 |
| Number of Cases of Arbovirus in Domestic Animals | 17 | 235 | 2 | 0 |
| Number of Wild Birds Positive for West Nile Virus | 604 | N.D.* | N.D.* | N.D.* |

*Surveillance of wild bird deaths caused by WNV was discontinued in 2003 due to cost containment.

State Chemist Section

The State Chemist Section regulates the sale and distribution of pesticides, feeds, pet foods, fertilizers, compost, soil conditioners and agricultural liming materials in order to enhance and promote agricultural production, protect consumers and the environment from unsafe products, ensure the sale of effective products and provide the regulated industry with a competitive marketplace. Regulation is accomplished by product registration, laboratory analysis, inspection, voluntary compliance and enforcement actions such as stop sale orders. Civil penalty authority was provided through legislation passed during the 2005 General Assembly Session. The section is totally fee-supported.

Registration of Products

Pesticide products, commercial feeds, fertilizers, fertilizer/pesticides, liming materials, and soil conditioners are registered for sale or distribution only after careful review of the label to determine the material's nature, proposed uses and potential adverse impacts on agriculture, the environment, the general public, and the regulated industry. During 2005, the section registered 11,855 pesticide products; 11,957 commercial feeds; 3,363 fertilizers; 522 fertilizer/pesticides; 135 liming materials; and 533 soil conditioners. See Table 1 for details and comparisons to product registrations of prior years.

Inspection

Field inspectors routinely inspect regulated products at retail outlets, distribution centers, warehouses, and formulating facilities. These inspections enable the section to maintain efficient regulatory control that ensures the sale, distribution and use of effective products that are safe for the consumer and environment, when used in accordance with approved label instructions. The inspectors sample a representative cross section of products for chemical analysis and obtain reliable data on the distribution, formulation and sale of these commodities. This enables the section to stop the sale or distribution of ineffective products or those that are harmful to humans, animals or the environment because of unacceptable levels of pesticides, plant nutrients, trace elements and/or toxic materials. In 2005, section inspectors performed approximately 1,000 on-site inspections. See Table 2: Inspection Program.

Laboratory Analyses/Investigations

MDA's state-of-the-science laboratory is staffed with chemists who have expertise and experience in the use of

highly sophisticated computer controlled instruments used for the analysis of agricultural chemicals and toxic contaminants in commercial products, crops and environmental samples (water, soil, fish), etc. The laboratory staff provides reliable scientific data that are used to assist farmers and to initiate or support regulatory actions against violative products or violators of state and federal agricultural and environmental laws. The laboratory also provides support to its sister agencies, MDE and DNR, and to the federal Department of Agriculture (USDA) and the U.S. Environmental Protection Agency (EPA).

Enforcement

Any regulated product determined to be ineffective, misbranded or deleterious to the public, agriculture, or the environment is removed from the market place. Determination for product removal is based on inspection, laboratory analysis of official samples, information received from federal or state regulatory agencies, products offered for sale but not registered for use or distribution in Maryland, and review of labels or other materials submitted by companies to support product registration. See Table 2 for details relating to stop sale orders and issuance of non-registered notices for products not properly registered with the section.

Food Safety Activities

Bovine Spongiform Encephalopathy (BSE)

The section continued a feed mill inspection program that began in 1999, to determine if feed mill operations within Maryland comply with U.S. Food and Drug Administration (FDA) regulations pertaining to the prevention of bovine spongiform encephalopathy (BSE), also known as mad cow disease. Feed mills and /or feed distributors are issued stop sale orders for products determined to be not in compliance with FDA regulations.

Recent concern about terrorist activities have resulted in placing additional emphasis on section inspection activities that go beyond the protocols established by the FDA. Section inspectors distributed handouts that list specific precautions that farmers, retailers, distributors and warehouses should follow to help ensure that ruminant animal feed manufactured or distributed in Maryland does not contain ingredients that may transmit BSE. The inspectors have been instructed to personally emphasize to mill workers, distributors, etc. the need to read, understand and follow the specific precautions that appear on the warning handouts.

The economic havoc that would ensue from animal feed

containing BSE transmissible ingredients inadvertently or deliberately fed to the ruminant farm animal populations could be ruinous to the beef industry and allied businesses, e.g., fast food companies, food stores, restaurants, etc. Beyond the economic considerations, public health concerns would be even greater because ingestion by humans of BSE-contaminated meat could result in incurable fatal brain cell degeneration.

In 2005, the State Chemist Section of MDA completed 41 BSE feed mill/manufacturing inspections in the State of Maryland. All facilities that were inspected during this period were found to be in compliance and void of any violations of the FDA regulations pertaining to BSE.

The section performed 433 analyses for ruminant tissue on 361 samples collected at the 41 feed manufacturing facilities. The analyses were performed to confirm the findings of the 41 inspections.

USDA — Pesticide Data Program (PDP)

Since 1997, the USDA has contracted with the section to sample various food items from principal distribution centers in the state. These samples consist of such diverse items as pineapple, potatoes, processed food, processed fruit juices, produce, milk, peanut butter, etc. Approximately 6,000 food samples have been sampled and analyzed by federal and state laboratories for several hundred different pesticides. In 2005, the section collected approximately 800 samples. In concert with the EPA—Food Safety program, the data will be used to establish new pesticide food tolerances with added emphasis on the diet of infants and children.

USDA — Microbiological Data Program (MDP)

Since 2001, the USDA has contracted with the section to sample various food items (fruits and produce) from principal food distribution centers for analysis to determine the presence of specific pathogens relative to a national health concern about food-borne bacteria. In 2005, more than 200 samples of raw agricultural food commodities were collected by section inspectors to be analyzed for *E.coli*, *Salmonella sp.* and *Listeria monocytogenes*. These analyses are being conducted by various federal and state contract microbiological laboratories.

Food Safety Survey of Maryland Produce

In 2005, the section collected from roadside vegetable/fruit stands random samples of produce grown in Maryland. Eighty-nine samples of various vegetables and fruits were collected for analysis of more than 400 different pesticides. The laboratory staff will complete the analyses in 2006. The data will be sent to EPA and USDA for incorporation into national data banks.

Drugs and Additives in Livestock Feed

In order to help ensure the safe and effective use of drugs in livestock feed, the section has expanded its feed analysis program. Any feed products containing drugs that do not meet the federal requirements relative to use, overformulation or deficiency are removed from the marketplace. Removal of violative products not only protects farm livestock but also provides protection to the public against exposure to drug resistant bacteria. In 2005, the section analyzed 200 samples of feed for 10 different drugs and 77 feeds for phytase. All feed samples tested for phytase were in compliance. Distributors and registrants of defective feed products were notified and either stop sale orders or warnings of potential regulatory action were issued to remove unacceptable products from the marketplace. In addition to monitoring animal feed for drugs and phytase, the section randomly samples and screens the ingredients that are used in the production of feed for pesticides and heavy metals.

FERN (Food Emergency Response Network) for Chemistry

In 2005, the section's laboratory program was officially accepted by the USDA and FDA into the Food Emergency Response Network for chemistry as part of the federal government effort to secure the nation's food supply. The section will be expected to perform priority analysis of U.S. food/feed samples and to rapidly supply data to FDA and USDA for the purpose of deciding what food/feed stuffs are safe for consumption in the event of a terrorist attack on the nation's' food/feed supply.

Commercial Compost Inspection and Certification Program

The commercial compost industry has grown significantly and sold/distributed about 100,000 tons to homeowners and horticultural establishments during 2005. The section has increased its efforts to monitor this important nutrient management tool, and has also been able to include representatives of the Maryland Department of the Environment and the local county governments on complaint investigations related to composting operations. This cooperation among agencies has resulted in corrective actions that have eliminated or significantly reduced the adverse impacts on the environment and the public from commercial composting, without seriously impacting the efficient operations of compost producers. All commercial compost facilities must have an MDA Certified Operator to oversee the operation.

Management of Chemical Terrorism Risk— Cooperation with DHMH

Through the cooperation of DHMH in obtaining Centers for Disease Control and Prevention (CDC) funds, the section received two gas chromatographs with state-of-the-science detectors (flame pulse photometric and halogen specific detectors) and a new high performance liquid chromatograph to its highly sophisticated repertoire of laboratory instruments. This equipment will be used to provide rapid and precise identification of pesticides and other toxic organic chemicals relative to (1) misuse and accident investigations, and (2) potential terrorist attacks on Maryland crops, animal feed, and food intended for human consumption.

Audits

At the request of the McCormick Company, section chemists performed an audit of the company's analytical chemistry laboratory and scientific data relative to launching the sale of a McCormick product in Europe. The purpose of the audit was to satisfy the European Union (EU) requirement that McCormick's laboratory facility and scientific data met EU standards. MDA issued an Audit Certificate to McCormick that validated the acceptable quality of the data and the capability of the analytical laboratory. The product was accepted by the EU for sale in Europe.

Legislation

Two bills were passed during the 2005 General Assembly Session that impact the State Chemist Section. HB77, Commercial Feed and Fertilizer, Agricultural Liming Materials and Pesticide Registration and Labeling Laws – Penalties, was passed and gives the Secretary of Agriculture the authority to assess a civil penalty of up to \$2,000 on any person who violates the aforementioned laws. HB402, Commercial Fertilizer – Ammonium Nitrate – Identification for Sale or Distribution, requires fertilizer dealers to maintain for two years a record of all sales of ammonium nitrate fertilizer. Sales records have to be made available to the department upon request.

Table 1
Product Registration and Enforcement Actions

| Product Registration | 2003 | 2004 | 2005 |
|-----------------------------|---------------|---------------|---------------|
| Commercial Feeds | 11,690 | 11,448 | 11,957 |
| Fertilizers | 3,343 | 3,374 | 3,363 |
| Pesticides | 11,148 | 11,236 | 11,855 |
| Soil Conditioners | 487 | 510 | 533 |
| Liming Materials | 158 | 133 | 135 |
| Fertilizer-Pesticide | 637 | 522 | 522 |
| TOTAL | 27,463 | 27,223 | 28,365 |
| | 3,371 | 3,217 | 3,614 |
| REGISTRANTS | | | |
| Enforcement: | | | |
| Non-Registered Notices | 893 | 1,085 | 441 |
| Stop Sale Orders | 267 | 116 | 216 |

Table 2
Inspection Program

| INSPECTIONS (FEED, FERTILIZERS, PESTICIDES, COMPOSTS, ETC.) | | SAMPLES OBTAINED FOR CHEMICAL ANALYSES | |
|--|-------|--|-------|
| plants, warehouses, retailers, etc. | 1,000 | feed (livestock and pet food) | 1,451 |
| special investigations | 9 | fertilizers, soil conditioners, etc. | 614 |
| BSE feed mill inspections (mad cow) | 41 | pesticide formulations (farms, homes and disinfectants) | 226 |
| Pesticide and Microbiological Data Sites visited (USDA/MDA) | 196 | pesticide/fertilizer products | 39 |
| Food Safety Program (Farmers market, chain stores, etc.) | 98 | liming materials | 226 |
| Composting sites | 6 | | |
| VIOLATIONS | | STOP SALE ORDERS | |
| Non-registered products: | | Non-registration | |
| feed | 301 | feed | 58 |
| pesticide | 16 | pesticide | 40 |
| fertilizer/pesticide | 14 | fertilizers | 6 |
| fertilizers | 96 | liming material | 2 |
| soil conditioners | 8 | | |
| liming material | 6 | Deficient | |
| | | feed | 40 |
| | | fertilizer | 50 |
| | | pesticides | 3 |
| | | Label Violations | 3 |
| | | Warnings | |
| | | overformulation | 16 |

Table 3
Samples Collected and Analyzed – 2005

| | Samples Collected | Total Number of Chemical Analyses |
|--|--------------------------|--|
| Toxic Metal Analysis of Feeds and Fertilizers | 161 | 2,415 |
| EPA Samples (Pesticide Misuse Investigations and Market Place Product Monitoring) | 36 | 301 |
| Pesticides Formulation Analysis | 226 | 567 |
| Food Safety of Maryland Product/Fruit In progress-will be reporting in 2006 | 89 | |
| Feeds and Pet Foods (Protein, Drugs, Phytase, etc.) | 1,451 | 18,067 |
| Broiler Feed for Phytase | 77 | 140 |
| Livestock Feed for Drugs | 381 | 1,924 |
| Ruminant Tissue Analysis of Feed | 361 | 433 |
| Fertilizers (N, P, K, Micronutrients) | 614 | 4,884 |
| Agricultural Lime | 77 | 267 |
| Service Samples for Farmers, Veterinarians, etc. | 20 | 245 |
| National and International Quality Assurance Samples | 40 | 1,642 |
| Animal Health Samples | 235 | 340 |

Turf and Seed

Seed is the single most important input to any cropping system. To be successful, the grower, whether a farmer tilling hundreds of acres or a homeowner with a garden, must begin with quality seed. This section conducts regulatory and service programs, including seed inspection, testing, certification and quality control services, designed to insure the continued availability of high-quality seed to Maryland's seed consumers.

Today's seed industry exists in an environment of rapid change. The continued development and expansion of GMO's (*genetically modified organisms*), or genetically-modified crops, has had an enormous effect on the production, distribution and marketing of seed and, thus, upon state seed programs. Seed regulatory, testing and certification programs throughout the country are being challenged to meet the demands brought about by these changes.

Seed Laboratory

Maryland's seed testing laboratory is central to the operation of the section, supporting the regulatory, certification, supervised seed mixing and turfgrass activities, while also providing service testing for seed producers, dealers, farmers and other seed consumers. Turfgrass professionals look to the laboratory to provide them with extended purity and noxious weed examinations for seed destined for use on golf courses, sod production fields, public grounds and other areas demanding high quality turf. Commercial vegetable growers utilize the laboratory for specialized vigor testing, particularly for peas, garden beans and lima beans.

The State Highway Administration relies upon the laboratory to test all grass, wildflower, shrub and other seed planted along Maryland's highways. Maryland farmers participating in the Maryland Agricultural Water Quality Cost-Share (MACS) cover crop program utilize the laboratory to insure that the seed they use meets the standards required for that program. The laboratory also identifies seeds submitted by farmers, veterinarians, health officials, other government agencies and the general public. Round-up® Ready testing of seeds is conducted by the laboratory for authorized seed producers. The laboratory also tests seeds used on wetland mitigation and restoration projects.

Key to a successful laboratory operation is a well-trained staff. The Association of Official Seed Analysts (AOSA) maintains an accreditation program for seed analysts in official laboratories throughout the United States. Analysts who pass rigorous tests,

which include both written and practical elements, are certified as purity and germination analysts. At the present time, seven members of our laboratory staff are certified by AOSA in both purity and germination testing, out of a nationwide total of 105 analysts who have achieved this level of certification by AOSA. The laboratory staff also participated in various seed referees. These referees develop new testing methodology and ensure uniform and accurate seed testing throughout the country. During the past year, several of our analysts attended a seed testing workshop in Harrisburg, Pennsylvania.

Seed Regulatory

The Maryland Seed Law requires that all seed offered for sale in the state must be accurately labeled and represented. This includes agricultural seed, vegetable seed, flower seed, lawn and turf seed, and includes specialized seed, such as tree and shrub seed, seed of native species, wildflower seed and seed used in reclamation and wetlands mitigation projects. This seed is sold in quantities ranging from the small packets of vegetable and flower seed sold to home gardeners to bulk sales of thousands of pounds of crop seed sold to farmers. All seed distributed in Maryland is subject to inspection by this section.

For much of its seed needs, Maryland relies on other areas of the country and the world where climates are more suited to seed production. Thus, it is important that Maryland maintain a strong and effective regulatory program. Seed importing states that fail to maintain good seed regulatory programs become "dumping grounds" for low quality seed that is not acceptable to be sold in many other states.

Maryland's seed inspectors visit both retail and wholesale seed dealers throughout the state. They review label claims, insure that germination test dates are current and look for seed lots that have been found to be mislabeled or otherwise illegal for sale, based on samples taken at other locations. Seed lots are sampled and submitted to the laboratory for testing. Lots found in violation of the Maryland Seed Law are placed under a stop sale order until they are brought into compliance. Corrective action may include relabeling, reconditioning, destruction of the seed lot or its removal from the state. Seed dealers who fail to comply with a stop sale order are subject to civil penalties.

The section continued its participation in the U.S. Department of Agriculture's varietal grow-out program. This cooperative program is designed to monitor seeds moved in interstate commerce to be sure they are of the variety claimed on the label. In accordance with a cooperative agreement with USDA, the section staff assisted with enforcement of the Federal Seed Act.

Seed Certification

The seed certification program is quickly adapting to changes in the seed business. As biotechnology increases in agricultural crops, movement away from traditional certification services is occurring. With large investments involved in biotech research, more and more variety development is being funded by private companies. The involvement of public institutions, which in the past were the source for most certified seed varieties, continues to decline.

With the increased number of crop varieties being released by private companies, the demand for “quality assurance inspections” by third parties is strong, particularly from small- to medium-sized seed companies that cannot afford the expense of quality control programs. Companies growing seed in Maryland looked to this section for expertise in field inspections, sampling and laboratory analysis for quality control of their products. In the future, it is anticipated that quality control inspection acreage will increase as certified acreage decreases.

Staff members worked closely with seed growers and conditioners to assist them in producing a product that meets some of the highest quality standards in the United States. Maryland seedsmen have become a net exporter of wheat, barley, and soybean seed, adding much revenue to the Maryland agricultural economy.

Staff members cooperated with the Maryland Crop Improvement Association, the Maryland Agricultural Experiment Station, and the University of Maryland in the production and distribution of Maryland foundation seed. Much effort was spent to maintain the genetic purity of foundation seed of public varieties important to Maryland agriculture. This foundation seed was distributed to Maryland seedsmen for the production of Maryland Certified seed.

Supervised Seed Mixing

The supervised seed mixing system enables certification to be continued when certified lots of different kinds and varieties of seeds are mixed together. Demand from the industry and consumers for supervised seed mixing is strong and continues to grow. Our program provides a level playing field by precluding the opportunity for substitution of varieties or seed lots that have not been approved. All seed used on State Highway Administration projects, and the seed used for the production of Maryland Certified turfgrass sod is mixed under this program, which has served as a model for other states. Many county and local governments, school systems, golf courses, recreation departments and professional seeding contractors also require that the seed they purchase be mixed under this program.

Prior to mixing, component seed lots must be officially sampled and tested by the Maryland Seed Laboratory. Seed lots that meet applicable standards are then mixed under the direct supervision of an MDA inspector, who insures that the mixer is free of any contaminants and that only approved seed lots are used in the mixture. Special tags are sewn into each bag to verify that the seed was mixed under MDA supervision.

Turf Regulatory

Maryland’s Turfgrass Law is unique in the nation. It requires that all turfgrass sod, plugs and sprigs be accurately labeled. Due to the overall high quality of sod produced by Maryland sod growers, staff efforts are usually limited to responding to complaints, which are promptly investigated and resolved. In the majority of cases, the problems are determined to be due to site preparation and other growing conditions rather than the quality or condition of the sod. In these cases, staff makes recommendations to remedy the situation. The Maryland public continues to be able to purchase some of the highest quality sod available anywhere.

Turf Certification

Maryland’s turf certification program is a leader in the nation and has served as a model for certification programs in other states. Growers must plant varieties recommended by the University of Maryland based on trials conducted in this region and all seed used in this program is tested by the Maryland Seed Laboratory and mixed under supervision of MDA inspectors. Many sod specifications require the use of Maryland certified turfgrass as a means of assuring the use of high quality turfgrass of varieties that are well adapted to this area.

TURF AND SEED ACTIVITIES 2003-2005

| | 2003 | 2004 | 2005 |
|--|--------|--------|--------|
| Field Inspections | | | |
| Acres in Turf Certification Program | 4,714 | 7,344 | 4,574 |
| Acres of Crop Seed Inspected | 18,473 | 16,184 | 14,964 |
| Supervised Mixing | | | |
| Pounds of Seed Mixed (thousand) | 1,776 | 2,240 | 2,801 |
| Retail and Wholesale Seed Inspections | | | |
| Number of Lots Sampled | 1,583 | 1,129 | 910 |
| Number of Regulatory Seed Tests Conducted | 3,395 | 3,331 | 3,213 |
| Seed Testing | | | |
| Purity Service Tests Conducted | 2,437 | 2,542 | 2,566 |
| Germination Service Tests Conducted | 5,592 | 5,558 | 5,290 |
| State/Federal Cooperative Agreement | | | |
| Cases Submitted | 20 | 31 | 25 |
| Federal Grow-out Samples Submitted | 240 | 80 | 239 |

Pesticide Regulation Section

The Pesticide Regulation Section is responsible for regulating the use, sale, storage and disposal of pesticides. The primary functions of the section are to enforce state and federal pesticide use laws and regulations and to ensure that pesticides are applied properly by competent individuals so that potential adverse effects to human health and the environment are prevented. The Pesticide Regulation Section contains five major programs: (1) Pesticide Applicator Certification and Training; (2) Pesticide Use Inspection and Enforcement; (3) Pesticide Technical Information Collection and Dissemination; (4) Integrated Pest Management in Schools and on School Grounds; and (5) Special Programs.

Pesticide Applicator Certification and Training

Two types of pesticide applicators are certified by the Pesticide Regulation Section—private and commercial. Private applicators are farmers and other individuals applying restricted use pesticides to their own land or rented land for the purpose of producing agricultural commodities. Commercial applicators apply general use and restricted use pesticides as employees of licensed pest control businesses or public agencies.

A total of 125 private applicators were certified in 2005 for a three-year period after passing a closed book examination administered by section personnel during 25 exam sessions. One thousand one hundred forty-four (1,144) private applicators renewed their certificates by attending recertification training. Currently, there are 3,778 certified private applicators. Section staff approved and monitored 125 private application recertification training sessions that the University of Maryland Cooperative Extension, MDA, or the pesticide industry conducted.

A total of 512 new commercial pest control applicators and consultants were certified in one or more of the 12 categories of pest control by satisfying minimum experience or education requirements and by passing written certification exams. The section certified 1,056 public agency applicators in 2005, bringing the total number of certified commercial applicators to 3,957. Staff processed 553 applications for certification in 2005 and held 18 exam sessions during which 1,784 exams were administered to 867 applicants. Once certified, commercial applicators are required to participate in at least one update training session approved by the department each year in order to renew their certificates. Two hundred and ninety-five (295) recertification training sessions for commercial pesticide applicators were approved and monitored by this section and were conducted by the pesticide industry, the University of Maryland Cooperative Extension, or the department. By attending recertification training, 3,785 applicators were recertified in 2005.

During 2005, the section licensed 1,557 businesses to apply pesticides and to perform pest control services. Three hundred eleven (311) public agency permits were issued to governmental agencies that apply pesticides. Forty three pest control consultant licenses were issued. A total of 2,913 registered employee identification cards were issued during 2005. The department currently has 43,204 employees of pesticide businesses and public agencies registered to apply pesticides under the supervision of certified applicators. A total of 144 dealer permits were issued to businesses that sell restricted use pesticides.

Pesticide Use Inspection and Enforcement

Besides enforcing state pesticide laws, MDA enforces federal pesticide laws under a Cooperative Enforcement Agreement with the U.S. Environmental Protection Agency (EPA). Routine inspection activities are conducted throughout the year and include use observations and inspections of businesses; public agencies, dealers, market places and producer establishments. Consumer complaint and pesticide misuse investigations also are conducted by the staff.

In 2005, 861 routine business inspections were performed, during which 205 businesses were cited for violations of the Pesticide Applicators Law and Regulations. Seventy-nine (79) pesticide dealer inspections were conducted to ensure that restricted use pesticides were sold only to certified applicators. Seventy-seven (77) use observations were conducted, during which pest inspections and pesticide applications performed by commercial and private applicators were observed by section personnel. A total of 71 consumer complaints were investigated. Under the federal cooperative agreement, 16 producer establishment and 32 market place inspections were conducted. Other enforcement actions taken during 2005 included the assessment of 22 civil penalties totaling \$10,210.

Pesticide Technical Information Collection and Dissemination

During 2005, several newsletters and a “Pesticide Information Sheet” were printed and distributed to both private and commercial pesticide applicators that provided information on federal and state pesticide management programs and regulatory updates.

A listing of pesticide sensitive individuals was first compiled in 1989. During 2005, this section registered 152 individuals. These individuals receive advance notification of pesticide applications made to adjacent properties by commercial ornamental plant and turf pest control businesses and public agencies. Two update mailings were sent to all commercial companies and public agencies licensed or permitted in the ornamental plant and turf pest control category.

Searchable databases of registered pesticide products, licensed pesticide businesses, commercial and private applicators and pesticide dealers were posted on the MDA's web site in 2005. These databases provide information to applicators and the public about pesticides that may legally be sold, distributed, or used in Maryland and the names and addresses of licensed pesticide businesses. Pesticide dealers can check the certification status of pesticide applicators prior to selling them restricted use pesticides. This database is linked to EPA's registration database so that information on each pesticide product queried, such as the EPA registration number, pest controlled, site of application, formulation, active ingredient, and the brand name, can be obtained.

Integrated Pest Management in Schools

The section continues to promote and support implementation of the Integrated Pest Management (IPM) Program in Public Schools. Regulations that require schools to develop and implement notification and IPM plans for indoor pest control became effective in 1999, and regulations for notification and IPM plans for school grounds became effective in 2002. Staff provided technical assistance in the development of the plans and distribution of information on potential adverse effects of pesticides applied.

A total of 58 public schools were inspected to insure compliance with the Integrated Pest Management and Notification of Pesticide Use in a Public School Building or on School Grounds Regulations. Of the 58 sites inspected, 27 schools (34.6 percent) were found to be in violation of at least one requirement.

Special Programs

During 2005, the section offered the recycling program for empty plastic pesticide containers to growers and commercial pesticide applicators at nine locations. Collection centers were maintained in nine counties (Anne Arundel, Calvert, Frederick, Harford, Kent, Prince George's, Talbot, Washington and Wicomico) with the assistance of county government agencies. A total of 40 collection days were held during June through October. In addition, seven pesticide dealers/custom applicators and one golf course participated in inspection and collection of containers at their own facilities. A total of 42,130 containers, weighing 21 tons, were collected from 99 participants. The containers were processed for transporting to a plastic recycling facility.

Maryland Department of Agriculture Pesticide Regulation Section staff continued to offer outreach and compliance assistance to growers and pesticide dealers under the Worker Protection Program. The Worker Protection Standard (WPS) was established to minimize occupational exposure to agricultural pesticides. The WPS requires agricultural workers, who might be exposed to pesticides, to receive training on pesticide safety. Brochures on the Worker Protection Standard have been produced and widely distributed to the regulated community. To aid with on-farm compliance, the section has developed a pocket-sized WPS Compliance Evaluation Checklist, which is available to all of the WPS regulated community. The section also contracted with Telamon Corporation to provide pesticide safety training to farm workers. In 2005, Telamon members provided training to 502 farm workers, 20 non-farm workers, and 29 handlers. Telamon also provided pesticide safety and awareness training to 154 farm worker children, from pre-K through eighth grade.

The section, in cooperation with the Maryland Department of the Environment, the University of Maryland Cooperative Extension and various agricultural organizations, offered an unusable/unwanted pesticide disposal program, for all agricultural producers, in Anne Arundel, Calvert, Charles, Prince George's and St. Mary's counties. Registration for the program was conducted through November 30, 2004 and collection was completed in April 2005. Approximately 12,000 pounds of unwanted pesticides were collected from 24 sites in 2005. Since 1995, the program has collected more than 489 different pesticides totaling nearly 121,000 pounds of unwanted or outdated pesticides.

PESTICIDE REGULATION SECTION ACTIVITIES, 2003–2005

| | 2003 | 2004 | 2005 |
|---|-------------|-------------|-------------|
| Pesticide Businesses Licensed | 1,479 | 1,487 | 1,557 |
| Commercial Pest Control Applicators | | | |
| Certified in One or More Category | 3,048 | 2,860 | 3,957 |
| Registered Personnel Employed by Licensed | | | |
| Businesses and Public Agencies | 38,943 | 40,012 | 43,204 |
| Public Agency Permits Issued | 309 | 304 | 311 |
| Commercial, Public Agency Applicators | | | |
| Certified In One or More Category | 1,040 | 1,032 | 1,056 |
| Private Applicator Certified to Date | 3,913 | 3,856 | 3,778 |
| Dealer Permits Issued | 152 | 144 | 144 |
| Examination Sessions Held | 18 | 18 | 18 |
| Individuals Taking Examinations | 540 | 770 | 867 |
| Examinations Administered in All Categories | 1,141 | 1,657 | 1,784 |
| Number of Businesses Inspected | 1,164 | 1,316 | 861 |
| Number of Businesses with Violations | 291 | 265 | 205 |
| Unregistered Employees | 24 | 17 | 38 |
| Records Incomplete or Inaccurate | 143 | 147 | 128 |
| Vehicles Not Properly Identified | 47 | 37 | 41 |
| No Anti-siphon Device | 34 | 29 | 31 |
| No First-aid/Safety Equipment | 12 | 6 | 7 |
| Incomplete or No Customer Information | 63 | 82 | 15 |
| Pesticide Dealer Inspections | 100 | 84 | 79 |
| Application Records Reviewed | 1,164 | 1,316 | 1,144 |
| Hearings and Investigational Conferences | 0 | 1 | 1 |
| Consumer Complaints Investigated | 70 | 87 | 79 |
| Pesticide Use Observations | 69 | 74 | 77 |
| Pesticide Samples Collected for Analysis | 58 | 40 | 47 |
| Market Place Inspections | 29 | 31 | 32 |
| Producer Establishment Inspections | 17 | 17 | 16 |

Plant Protection and Weed Management

Apiary Inspection

The primary purpose of this program is to control honey bee diseases, mites, and pests in order to maintain healthy bees for the essential pollination of more than \$40 million of Maryland crops. Maryland growers of fruit and vegetable crops annually rent approximately 5,000 colonies to improve pollination. Beekeepers' colonies are essential to Maryland because two parasitic mites have nearly eliminated feral (wild) colonies.

American foul brood disease is the most serious brood disease of honey bees and can destroy a colony in one year. Colonies detected with American foul brood (74) were destroyed to control the spread of this bacterial disease to healthy colonies. The incidence of disease remains relatively low (only 2 percent of colonies inspected).

Varroa and tracheal mite populations were very low in Maryland in the first half of 2005, but brood problems were attributed to Varroa mite later in the season. The Varroa mite often has been found to be resistant to Apistan[®], which has been the primary product used to control this parasite. The Maryland Department of Agriculture requested and received a Section 18 Special Exemption from the U.S. Environmental Protection Agency for the use of Check Mite+7 (Coumaphos) and Api-Life VAR7 (Thymol) to control Varroa mites.

Africanized honey bees arrive occasionally on cargo ships coming from South or Central America. Swarm traps for collecting and monitoring bees were placed at 35 sites at marine and other shipping locations. Only three swarms were collected in 2005 and were determined to be local bees, not Africanized. MDA is working with two groups – Mid Atlantic Apiculture Research and Extension Consortium (MAAREC), for education/information to the general public on emergency incidents, and the Apiary Inspectors of America (AIA), for information on the control of movement, other than through natural spread.

Small hive beetle (SHB): The SHB was detected in packaged bees and reported or detected in eight counties this past year. Each apiary was treated and monitored to ensure successful control of the beetles. There has not been any report of larvae or damage to established colonies. The small hive beetle is a pest mainly in stored equipment and in honey houses, although it can render stored honey in the hive unsalable.

ETO-Fumigation

There were 21 complete loads of equipment fumigated with a sterilizing gas, to decontaminate infested equipment. The fumigated equipment had a value of \$17,924.23 if the beekeepers had needed to replace with new.

Colony Movement

Permits were issued for 4,303 honey bee colonies to move out of Maryland and 523 colonies to move into Maryland for pollination services. For the second year, Maryland beekeepers sent colonies to California for almond pollination. In November, 2,600 colonies were transported to California for this purpose, to return to Maryland in March 2006.

Nursery Inspection and Plant Quarantine

The nursery and greenhouse industry continues to be a strong part of Maryland's agricultural economy. Based on farm receipts in 2004 of more than \$360 million, it is the number two agricultural commodity in the state. Total sales of Maryland horticultural products and services were \$1.04 billion. It is a goal of the section to facilitate the production and sale of Maryland nursery stock by inspecting all plant material intended for sale or distribution to ensure that it is disease and pest free.

Maryland law and reciprocal agreements with other states require plant material at each producing nursery is to be inspected annually for freedom from dangerously injurious plant pests prior to its movement out of Maryland. These inspections also facilitate phytosanitary certification of Maryland plants for export from the United States. MDA inspectors issued 678 phytosanitary certificates for the movement of plants and plant products to 18 states and territories, and to 14 foreign countries, during 2005. Most of the certificates were issued to meet other states' quarantine requirements for Japanese beetle. The number of phytosanitary certificates issued was reduced during 2005, primarily due to a revised protocol which reduced the need to send certificates with shipments, and a decrease in mail-order trade. Inspections of plants at 1,353 plant dealers (garden centers, chain stores and landscape contractors) were conducted to intercept pests not known to occur in Maryland. The general health of Maryland-produced nursery stock was found to be excellent.

Pest Survey

On August 28, 2003, the **emerald ash borer** (*Agrilus planipennis* Fairmaire) (EAB) was detected in a Prince George's County nursery in a lot of 121 ash trees shipped in April 2003 to Maryland from Michigan, in violation of a Michigan quarantine. This quarantined pest is the focus of an eradication effort not seen before in Maryland, or the currently impacted states of Michigan, Ohio and Illinois.

After two years of intensive surveillance and eradication efforts, no signs of EAB were observed in 2005. A questionnaire to inventory ash stock in the state was mailed in the early spring to all Maryland nurseries. Of the 639 responses, 563 reported no ash stock. Ninety-seven sites in 15 counties belonging to 55 nurseries were surveyed in late winter/early spring. The remaining nurseries will be surveyed in the fall. Damage from other borers was noted at a few sites but no EAB were detected.

Ash trees are one of the most utilized landscaping trees in the United States and are common in Western Maryland forests. Ash accounts for 5,982,000 to 6,591,000 of the trees planted in the Baltimore metro area. USDA has estimated that losses could exceed \$227,568,000 in the Baltimore area alone, should this pest become established. Maryland will continue the emerald ash borer eradication program initiated in 2003, and will pursue federal funding to support activities during the three fiscal years needed for the eradication.

Current information on pest distribution and abundance is needed for regulatory actions by the department and for pest control actions by Maryland farmers. The Plant Protection and Weed Management Section's **Pest Survey Program** has been the instrument fulfilling this mission.

The Cooperative Agricultural Pest Survey (CAPS) is a joint project between MDA and USDA-APHIS-PPQ. USDA recommends pests of quarantine export significance as survey priorities and provides funding for these surveys. MDA develops the appropriate survey methods and conducts the actual survey. This cooperative program provides necessary data used to certify Maryland products for export to many countries.

These surveys document the presence or absence of exotic pests in Maryland, support APHIS-PPQ exotic pest survey activities, and provide state-specific data for exotic pests in the United States. Pests to be surveyed are selected from lists such as the National Pest Target List and the Eastern Region Primary Pest Survey List. If any of these species were to become established, it would pose a significant threat to our agricultural production and have a significant impact on Maryland's ability to export agricultural commodities. Early detection of exotic pests before they become established will aid in any eradication or control efforts and protect Maryland agriculture from potentially devastating losses.

Blacklight traps have been in use in Maryland since 1973 to detect economically important insects. In 2005, 49 traps were operated in 22 of Maryland's 23 counties. Trap catches were mailed daily to Annapolis for processing. Between March and

October, 6,490 samples were screened and 88,005 specimens were identified to species for 25 important crop pests, including pests of corn, soybean, alfalfa, small grains, sorghum, tomatoes, peppers, potatoes, tobacco, and tree fruits.

In addition, 118 pheromone traps for three endemic agricultural pest species were maintained and monitored at 39 sites in seven counties. These traps contained chemical lures to attract target insects and capture them. During 2005, 1,727 trap collections were analyzed. The information obtained from these traps was summarized twice weekly and made available to farmers, pest management consultants, and extension agents on two regional 800-number recordings. Enhanced web presentation of these data included daily totals at individual trap locations, available by clicking on an interactive map. This information was also incorporated into the Mid-Atlantic regional sweet corn monitoring web site maintained by the Pennsylvania State University.

Pest Survey Results

As part of the national Cooperative Agricultural Pest Survey, 451 trap sites were monitored for exotic pests that either do not occur in the United States or are restricted in their distribution: Chestnut weevil (*Curculio elephas*); Khapra beetle (*Trogoderma granarium*); four field crop pests: (*Autographa gamma*, *Spodoptera littoralis*, *Spodoptera litura* and *Helicoverpa armigera*); soybean pod borer (*Maruca vitrata*); a generalist pest *Copitarsia* sp.; and exotic wood boring beetles: *Tomicus piniperda*, *Hylurgops palliates*, *Hylurgus ligniperda*, *Ips sexdentatus*, *Ips typographus*, *Orthotomicus erosus*, and *Pityogenes chalcographus*. All trap catches were negative for these pests.

Screening of 147 samples for exotic wood boring beetles did not detect European spruce bark beetle (*Ips typographus*) at the 12 sites monitored in five counties, as happened in Frederick County in 2002. The origin of this infestation was traced to dunnage on marble slabs imported from Italy. Steps were taken to eradicate this pest and after three years of negative sampling, eradication can be declared.

The department continues to survey for the **pine shoot beetle**, *Tomicus piniperda*, a potentially severe pest of pine trees in North America. This European beetle was inadvertently introduced into the Great Lakes Region in 1992. Since that time, this pest has been found in 14 states. Its detection has resulted in a federal domestic quarantine to regulate the movement of pine nursery stock, cut pine Christmas trees, pine wreaths and garlands, and pine logs from areas where it is established. Tree-growing sites within the regulated area must be surveyed and found free of the beetle before regulated products can be shipped to areas outside the quarantined area.

MDA surveys first detected pine shoot beetle in 1995 in Allegany County. Since then pine shoot beetle has been detected in Garrett, Washington, Frederick and Montgomery counties. Over the past five years, Garrett County has experienced a 10-fold increase in captured beetles however, over the last two years no beetles were trapped in Frederick and Montgomery counties (both counties had low numbers of beetles trapped in 2003). Infestations in Allegany and Washington counties continued to be monitored and remain low. Additionally, five other counties, including the pine timber producing counties on the Eastern Shore, were surveyed and no beetles were detected.

MDA staff, in cooperation with federal Plant Protection and Quarantine officers, continued to work with the nursery, Christmas tree, and logging industries in Western Maryland to inform them of the quarantine and methods of compliance in order to minimize potential risks and to facilitate commerce and trade. Trapping and/or visual inspections were conducted at all nurseries and tree farms that requested certification of Christmas trees and pine products. All farms met the requirements for shipping pine trees and pine products. MDA's Plant Protection and Forest Pest Management staff surveys made it possible for growers to prove compliance with federal law and to continue shipping high quality pine trees and pine products from within the quarantine area in Western Maryland.

The **red imported fire ant**, *Solenopsis invicta*, a South American stinging insect, continued to present survey challenges to MDA. This pest is occasionally shipped out of the Southern United States, in spite of a federal domestic quarantine that prohibits movement of a variety of commodities unless treated and/or certified free of fire ants. The insect's ability to quickly colonize in a variety of habitats, and its aggressive foraging behavior, pose additional dangers if established in Maryland. It is a serious pest, of both agricultural and human health importance. Interstate shipment of nursery stock has been the most common means of long distance spread of red imported fire ants. Thirty-two isolated infestations have been eradicated in the state since 1989. Monitoring activities for fire ants continued during 2005. There were three new detections in 2005 among 17 sites where eradication efforts are underway. Twelve of the detections were associated with palm trees imported from Florida.

In addition to inspections for ants during routine nursery inspections, 97 surveys were conducted for fire ants at 72 sites in nine counties. These sites, often at new construction and commercial buildings, contained landscape plants obtained from out-of-state vendors located in areas with fire ant infestations. A total of 1,420 baited film canisters were set out and then retrieved during surveys—409 contained ants that were submitted to the MDA taxonomist for identification.

Sharka disease, caused by **plum pox virus**, was first detected in the United States in September 1999 in a peach orchard approximately 20 miles north of the Maryland border in Adams County, Penna. Plums, peaches, nectarines, and apricots may be infected by the virus that is spread via budwood, infected root stocks, and by aphids. Fruit produced on infected trees is of poor quality and may show rings on the skin. Plum pox virus is economically important because it can cause fruit to be unmarketable and can decrease the yield of infected trees. In Europe, several wild or ornamental *Prunus* species have been identified as alternate hosts, possibly putting Maryland's ornamental nursery stock at risk as well.

In 2005, 1,842 field samples were collected, resulting in over 2,690 samples that were processed in the MDA Plant Pathology Laboratory using the serological test, ELISA (enzyme-linked immunosorbent assay) as part of the Plum Pox Virus Cooperative Agricultural Pest Survey. Because of the proximity of the detections in Pennsylvania, and potential threat this virus poses to stone fruit in Maryland, this survey program is expected to continue indefinitely. The survey was based on the USDA National Surveillance Protocol for Plum Pox Virus. No plum pox virus was detected by ELISA, or by observing symptomatic plant tissue, in Maryland.

Considerable amounts of budwood for propagation purposes have been, and continue to be, exchanged between Maryland and Pennsylvania growers. Many fruit growers in Maryland have orchards planted with trees that originated in Pennsylvania. A survey to document infected orchards has been a top priority since 2000. Because Adams County, Pennsylvania borders Maryland, MDA elected to survey all Maryland stone fruit orchards, private orchards, and known budwood producers and recipients. Maryland's survey was part of a national survey and data will be used to answer questions from regional, national and international trade partners concerning the distribution and abundance of plum pox virus in the United States.

In 2005, orchard, homeowner, and nursery surveys were conducted. All sampling was done between April and October. Orchard sampling began in May and continued through August. Orchard surveys were conducted in six northern counties, five of these bordering Pennsylvania. All orchard blocks have been surveyed at the 25 percent level since 2000. Newly-planted blocks have been surveyed at the 100 percent level. Six orchards were sampled in 2005 resulting in 1,244 samples. Six nurseries were also surveyed.

The homeowner survey was conducted from May through October. Emphasis was placed on three counties that are near or border Adams County, Penna. Within these three counties, orchards in which previous surveys had collected more than 10

samples were selected and a one-mile buffer was created around these orchards. All homeowners within the buffer were to be surveyed for any *Prunus* including ornamental types that were on the properties. From the 3,536 homeowner sites surveyed, 428 *Prunus* samples were collected. Although the survey is incomplete, budget constraints have halted plans for completion of the homeowner survey by 2007.

Commercial cotton production in 2005 required surveys for **boll weevil** (*Anthonomus grandis grandis*). This was necessary for the harvested cotton to be allowed into Virginia for ginning and to comply with the national boll weevil eradication program. One grower planted one-half acre solely for the purpose of “agritainment”. Twenty-four traps were monitored from late July through November. No boll weevil was detected.

The **golden nematode**, *Globodera rostochiensis*, is considered to be the most serious pest threat to the American potato industry. Presently known distribution is limited to seven counties in New York. Difficult to control and capable of causing complete yield losses, it is an important quarantine pest. Countries not known to be infested have rigid regulations governing the importation of potatoes or other products that might carry golden nematode. The North American Free Trade Agreement (NAFTA) and General Agreement on Tariffs and Trade (GATT) agreements resulted in political pressure from trading partners to provide sanitary and phytosanitary documentation for U.S. products. As part of the Eastern Region Cooperative Agricultural Pest Survey core project, the golden nematode survey provided data to support trade negotiations for the export of U.S. potatoes. Six soil samples collected from potato fields in three Mid-Shore counties tested negative for golden nematode.

In 2005, the **soybean aphid** (*Aphis glycines*) was identified from seven additional counties in Central and Southern Maryland along with all the Eastern Shore counties and the northern tier counties east of Allegany County that were positive in 2003. Soybean aphid has now been detected in a total of 21 Maryland counties. The **marmorated stink bug** (*Halyomorpha halys Stal*), first detected in Allentown, Penna. in 2001, was found for the second year in a row in late fall 2005, in Hagerstown. This horticultural pest severely injures various shade and fruit trees, vegetables, and leguminous crops in its native Japan. It was found injuring stone fruit in New Jersey orchards this year.

The **Field Crop Pest Suite** (FCPS) survey did not detect the **Egyptian cottonworm** (*Spodoptera littoralis*), **cotton leafworm** (*Spodoptera litura*), **old world bollworm** (*Helicoverpa armigera*) or **silver-y moth** (*Autographa gamma*). These pests were selected because they could potentially attack field crops in the major production areas of Maryland. A potential pathway for these exotic pests to escape into Maryland is on fresh cut flowers, so

all survey sites were located in cemeteries that border field crops. There were 34 sites in 12 counties. Each site had four wing traps containing pheromone lures for each pest listed for a total of 136 traps. The 952 samples were negative for the target pests.

The **euonymus leaf notcher** (*Pryeria sinica*) was detected for the first time in Maryland in the spring of 2003, and was the second detection in the United States. It was first discovered in 2002 in Fairfax County, Virginia, where it was reported by a homeowner who noticed it damaging *euonymus*. Alerted by Virginia authorities, MDA entomologists were vigilant and quick to identify larvae that were submitted in May, 2003 from the Glen Burnie area. The pest was found to be abundant on *euonymus* planted throughout the development. In followup surveys, feeding damage was found to be quite dramatic in many locations over a 10 square mile area. Fall surveys for adults indicate that the population has slightly expanded its known distribution.

Twelve **soybean rust** sentinel plots in five counties were monitored in 2005 for this potentially devastating disease, first discovered in the United States in late fall, 2004. The sites were monitored in conjunction with the University of Maryland at least weekly between June and early September. No soybean rust was detected in Maryland.

Plant Certification Programs

The MDA greenhouse continued to maintain virus-free Flower Carpet® roses for tissue culture production of plants. The seven Flower Carpet® varieties were propagated by tissue culture and by cuttings in 2005, producing a total of 4,202 plants in tissue culture and 49 cuttings. In addition to the seven Flower Carpet® varieties, 10 other varieties are currently being evaluated and indexed at the greenhouse for possible inclusion in the virus-free program.

The **Maryland Ginseng Management Program** protects American ginseng, *Panax quinquefolius*, from over-harvesting by monitoring the harvest of ginseng by licensed diggers of wild, wild-simulated woods-grown, and cultivated ginseng. MDA conducts a management program, in cooperation with the U.S. Fish and Wildlife Service (USF&WS), that follows established protocols to insure the continued availability of a potentially threatened native resource and to protect it from over-harvest. Harvested ginseng is certified through the program to enable licensed dealers to sell this wild harvested plant product in international markets. The dried roots are highly prized, especially in China and Korea, for their putative properties in promoting good health.

During the 2004-2005 harvest and sales season, the certification program inspected, collected size and age data from, and

weighed 160 pounds of dry wild ginseng root, 633 pounds of “artificially propagated” dry ginseng root (this category, initiated by the USF&WS includes wild simulated and woods grown ginseng categories), and 3.9 pounds of green (fresh) “artificially propagated” ginseng root. Data were gathered and reports submitted as per U.S. Fish and Wildlife Service requirements. The amount of wild ginseng certified in 2004–2005 represented an approximate 30 percent increase as compared to 2003–2004. Certification and export of wild-simulated ginseng also increased by nearly 30 percent. These data seem to reflect a slight upturn in the price per pound offered for ginseng on the international market, but also were likely influenced by regulatory changes made by the USF&WS.

There were several changes in the federal regulations. As of August 2005, the USF&WS, Division of Scientific Authority, determined that all wild ginseng harvested for sale and export must be 10 years of age or older. This is a significant change. Previously, all wild American ginseng harvested was required to be a minimum of five years old for harvest for export. This change affects all ginseng exporting states, not only Maryland. No changes have been made to the minimum ages for harvest for export of cultivated, woods grown and wild simulated American ginseng, therefore ginseng *growers* should be minimally affected by the changes in federal regulations. Cultivated field grown American ginseng roots of any age may still be harvested for export. Woods grown and wild simulated American ginseng of five years of age or older may still be harvested for export provided that the source of such roots is documented and the roots are kept separated from truly wild roots, from the grower to the exporter. This means that buyers must keep records of their sources of ginseng (name, address, and phone number of grower, amount purchased, date purchased, etc.). Subsequent buyers, up to and including the exporter, should keep a similar record (who they purchased from, amount, date) so that, if necessary, all ginseng could be traced back to origin. The exporter must be able to certify that they have kept such records.

The changes to the regulations were implemented to “ensure that wild American ginseng remains viable throughout its range in the United States” and that the harvest and export of wild American ginseng remains “non-detrimental to the survival of the species,” primary goals of the U.S. Fish and Wildlife American Ginseng Management Program and goals that are supported by the Maryland Department of Agriculture Ginseng Management Program.

The amount of ginseng cultivated in Maryland, and certified by the department, continues to remain high relative to the amount of wild ginseng. This reflects both continuing interest in ginseng as an alternative crop, and the ability of Maryland growers to

produce high quality ginseng. If this trend continues, harvest pressure on wild ginseng may be reduced, in turn, allowing wild ginseng populations to rebound.

In 2002, the department submitted a proposal to help promote the cultivation of American ginseng as an alternative crop in Maryland. The Ginseng Management Program, along with researchers at the College of Agriculture and Natural Resources at the University of Maryland, were co-awarded a grant from USDA to help fund the investigation. In 2002, the work involved making contacts with growers and parties interested in participating in the study, surveys for, and collection of, ginseng samples from both wild and cultivated populations, and laboratory analysis to determine the chemical and genetic makeup of wild and cultivated ginseng in Maryland. This effort was continued in 2003, with additional survey and sample collection and refinement of analytical laboratory techniques. In 2004, laboratory analysis of the genetic and chemical makeup of wild and cultivated Maryland ginseng was completed. During 2005, manuscripts of these results were being prepared for publication, and an informational pamphlet on cultivation and preservation of American ginseng in Maryland was being developed. These efforts should ultimately help create a germplasm collection of American ginseng from Maryland, characterize the quality of Maryland cultivated ginseng relative to wild ginseng, and provide knowledge and support for Maryland growers regarding ginseng cultivation and marketing. The long-term effects of this study will be the expansion of an alternative crop, the promotion of a natural heritage for Marylanders, and the preservation of wild populations of American ginseng in the state.

Diagnostic Laboratories

The diagnostic laboratories provide testing and analyses that support departmental programs and provide answers to inquiries from outside the department and from the general public. During 2005, samples submitted to the laboratory were received from Plant Protection and Weed Management Section survey and inspection programs, other MDA sections, University of Maryland Cooperative Extension, nursery and landscape businesses, and the general public.

Entomology Laboratory

Some interesting samples came through the laboratory this year. In addition to the usual camel crickets, harmless giant fishing spiders and dead non-poisonous snakes, there were some less common specimens submitted. A redbud in Owings was defoliated by flannel moths, (*Norape ovina*); the homeowners were also being stung by these caterpillars. Grape sawfly, (*Erythraspides vitis*) were locally plentiful in Galesville while an armored bamboo scale (*Kurwanaspis pseudoleucaspis*) was collected

from a bamboo grove in Bowie. Dead termites, (*Nasutitermes costalis*) were found in shipping crates from St. Croix and another shipping crate from Russia contained dead household casebearer moth (*Pheroeca uterella*) pupae.

Plant Pathology Laboratory

The mission of the Plant Pathology Laboratory (PPL) is to collect, accept, and evaluate plant samples for plant pathogens and diseases. General activities include: evaluating plant samples in support of the Nursery Inspection Program to ensure that all plant material in Maryland intended for distribution or sale is disease free; diagnosing plant diseases submitted by other sections of MDA, other Maryland agencies, home gardeners and home owners, consultants, and industry representatives; providing technical and diagnostic support for virus-free certification programs; supporting the Cooperative Agricultural Pest Survey Program through laboratory assays for specific diseases; and supporting USDA/APHIS and MDA regulatory functions through diagnostic assays for pathogens of regulatory importance.

The Plant Pathology Laboratory has been involved with a number of different projects in addition to the regulatory testing programs. A major emphasis is to identify species of *Phytophthora* that are present on nursery stock, landscape plants, and forest species. Numerous isolates of *Phytophthora* have been obtained through survey efforts and clinic samples, and identified to species by morphological and restriction fragment length polymorphism (RFLP) analyses. Predominant species include *P. cactorum*, *P. cinnamomi*, *P. citricola*, and *P. nicotianae*.

The laboratory also has been working with the Maryland Arborist Association (MAA) to determine the cause of a *Phytophthora* disease affecting European beech trees (*Fagus sylvatica*). Several sites with large, declining European beech trees have been located in Baltimore and Harford counties, and are being monitored. Experimental fungicide treatments were conducted this fall on a large European beech located on the campus of Towson University and at an additional site. Carroll Tree Service donated and applied the fungicide treatment.



Declining
European
Beech

The laboratory continues to participate in the virus-free rose certification program with Angelica Nursery. MDA maintains and certifies stock plants of 17 varieties of roses as virus free. Plants are maintained in the MDA greenhouse with insect controls. From these stock plants, 4,202 plants were produced via tissue culture and 49 plants from cuttings. Laboratory personnel participated in a visual inspection of all rose plants in the nursery both in the spring and fall, and submitted leaf samples of the stock plants to Agdia for testing in their rose screen for viruses. Visual surveys are conducted twice a year, and testing occurs once each year.

The major acquisition of the laboratory this year was a Cepheid SmartCycler. This is a real-time, quantitative Polymerase Chain Reaction (PCR) diagnostic system (qPCR). Real-time PCR is many times more selective and sensitive than conventional PCR, less labor intensive, and capable of high sample throughput. Presently, qPCR protocols validated by USDA/APHIS are available for plum pox virus, *P. ramorum*, and *P. pachyrhizi*, and are being incorporated into the lab's testing and diagnostic schemes when appropriate. Protocols for *Xylella fastidiosa* and other plant pathogens and possibly insect pests are being pursued or will be developed.

Plum Pox Virus (PPV)

In 2005, the Plant Pathology Laboratory assayed 2,690 samples for plum pox virus using the Durviz enzyme-linked immunosorbent assay (ELISA) as part of MDA's continuing involvement with the Plum Pox Virus Cooperative Agricultural Pest Survey. The laboratory samples originated from 1,842 field samples from commercial growers and private yards in neighborhoods. All samples in 2005 were leaf samples (no budwood or fruits) and all tests were negative. Continuation of the plum pox survey in 2006 is uncertain.

Phytophthora ramorum

In 2004, **ramorum blight/sudden oak death**, caused by *Phytophthora ramorum*, a fungus-like microorganism, exploded on the American nursery industry. Economically-important nursery plants (e.g., *Rhododendron*, *Viburnum*, *Pieris*) were found to be susceptible to what was previously a forest disease in California and Oregon on several oak species. Over 100,000 trees on the West Coast have been killed as a result of infection by this pathogen. Plants from nurseries where *P. ramorum* was found were shipped to all parts of the country, including Maryland where *P. ramorum* does not exist. In 2004, Maryland had three confirmed sites where plants infected by *P. ramorum* were found. In an attempt to keep *P. ramorum* out of Maryland, where 60 percent of the state's forest trees may be susceptible to the pathogen, MDA again

participated in the National Nursery Survey and the Forest Pest Survey. Nursery inspectors also visited and sampled plants from nurseries that may have contained trace forward plants. Additionally, an outreach program established in 2004 in cooperation with the University of Maryland's Home and Garden Information Center was continued this year. The purpose of the program is to alert the public about sudden oak death, and to request homeowners to send in samples from plants that may have come from infected nurseries and have symptoms caused by *P. ramorum*. Seventy-four sample kits were sent out this year, and 35 were returned (47 percent).

The Plant Pathology Laboratory received 399 field samples from 166 sites, and processed 427 laboratory samples using culture methods as well as the DAS-ELISA and nested PCR protocols specified by USDA/APHIS/PPQ. Suspect samples were sent to USDA's Beltsville laboratory for clarification and confirmation. **All samples tested negative for *P. ramorum* in 2005.** The hot, dry weather pattern this year was not conducive for infection by *Phytophthora* species, and contributed to the lower number of samples processed this year. Stringent testing of nursery stock in West Coast nurseries before shipping also helped reduce the spread of pathogens to other parts of the country. Increased awareness of the potential of *P. ramorum* to spread in nursery stock by the nursery and landscape industry also may have been a factor in the lower number of symptomatic samples processed this year. Laboratory personnel presented information about this pathogen and the potential of disease in the nursery to numerous professional, extension, and industry meetings during the winter months of 2004-2005.

The Plant Pathology Laboratory will continue in 2006 to assay plant samples for *P. ramorum*, participate in survey and trace forward programs, and continue efforts to educate the

nursery industry and the general public about the seriousness of the disease and what it means to Maryland's nursery industry and forests. Additionally, the laboratory will continue to work toward USDA/APHIS provisional approval for specific assays, and eventually full laboratory accreditation.

Phakopsora pachyrhizi

Asian soybean rust, caused by *Phakopsora pachyrhizi*, was introduced into the southeastern United States in the fall of 2004 on the coat tails of Hurricane Ivan. This disease has the potential to severely limit soybean production. MDA, in cooperation with the University of Maryland and other interested parties, developed an action plan to prepare for the arrival of soybean rust into Maryland. The pathogen survived the 2004-2005 winter in southern Florida, and spread throughout the Southeast during the 2005 growing season. Epidemics developed locally and slowly, mostly due to the hotter than normal weather. Major hurricanes in 2005, Katrina and Rita, did not appear to facilitate inter-regional, long distance transport of the pathogen even though spores of the pathogen are capable of being wind-blown over long distances. Wind patterns and weather conditions in 2005 were, for the most part, not conducive for transport and establishment of *P. pachyrhizi* from the Southeast into Maryland this year. The amount of over-wintering pathogen from 2004 to 2005 was most likely very low due to the late season introduction and the short time it had for establishment. In 2005, the pathogen became well established in the Southeast, extending as far north as North Carolina. Depending on winter temperatures, a much larger amount of the pathogen may survive the winter and enable the disease to develop earlier and at a higher rate. Spread of soybean rust into Maryland in 2006 is possible.

Phytophthora ramorum

| Assays 2005 | # Sites | Field Samples | Lab Samples | ELISA samples | PCR samples | Culture samples |
|---------------------------------------|---------|---------------|-------------|---------------|-------------|-----------------|
| National Survey | 48 | 161 | 170 | 170 | 132 | 68 |
| Trace Forwards | 4 | 42 | 58 | 58 | 54 | 48 |
| U. of MD / HGIC | 35 | 41 | 42 | 42 | 21 | 71 |
| Miscellaneous | 24 | 24 | 26 | 26 | 23 | 28 |
| Forest Pest Survey¹ | | | | | | |
| Maryland | 33 | 82 | 82 | 82 | | |
| Delaware | 15 | 35 | 35 | 35 | | |
| New Jersey | 7 | 14 | 14 | 14 | | |
| Total | 166 | 399 | 427 | 296 | 361 | 215 |

¹ Forest Pest Survey samples were tested with nested PCR only.

MDA established two sentinel soybean plots in Southern Maryland in 2005 (in addition to four established by the University of Maryland). These plots were sampled weekly for both healthy and diseased tissue. Samples from the University of Maryland Plant Diagnostic Clinic also were received. Diseased tissue contained brown spot (*Septoria glycines*), downy mildew (*Peronospora manshurica*), frog eye leaf spot (*Cercospora sojina*), and thrips damage, just to name a few. DNA was extracted from all samples and assayed for *P. pachyrhizi* using real-time PCR (qPCR). Forty-six samples were assayed (19 healthy and 27 diseased), and all results were negative for *P. pachyrhizi*.

Synchytrium endobioticum

During the summer of 2005, a request was received by the Plant Protection and Weed Management Section from the USDA/APHIS concerning the eradication of the **potato wart disease's** causal agent, *Synchytrium endobioticum*, from Maryland. Potato wart was first found through surveys in Western Maryland in 1920, and a quarantine was imposed in 1921 by Governor Richie. Activities related to this disease continued on and off until 1993. The request for information was initiated by the Japanese government in relation to the importation into Japan of potatoes grown in the United States. The Japanese government wanted to know whether this potato pathogen was still present in Maryland or if it had been eradicated, and whether the methods used were appropriate to declare the pathogen eradicated. This fungus is on the USDA/APHIS Select Agent List and is an economic concern where it is found.

Laboratory personnel were in almost daily contact with APHIS representatives passing on information that had been researched in response to the very detailed questions posed by the Japanese. Large amounts of old data, maps, and manuscripts still on file in the laboratory were reviewed and synthesized to determine what was done to declare potato wart eradicated in Maryland. Additionally, Japanese officials from the Ministry of Agriculture, Forestry, and Fisheries visited MDA and toured the former potato wart sites in Western Maryland.

Chrysanthemum White Rust (CWR)

Chrysanthemum white rust, caused by the fungus *Puccinia horiana*, was discovered in one nursery in Montgomery County in late September 2004. Nurseries, including the one where *P. horiana* was discovered in 2004, were surveyed and inspected for signs of the disease in 2005. No Chrysanthemum White Rust was detected in Maryland in 2005. *Puccinia horiana* is not established in the United States and is a pest of quarantine significance (Plant Protection Act of 2000). All quarantine actions are directed towards eradication.

Plant Diagnostic Clinic

The Plant Clinic received and processed 223 samples in 2005. Samples were submitted by MDA nursery inspectors and pesticide investigators, nurserymen, landscapers, IPM scouts, private consultants, and homeowners. The majority of the samples were of fungal leaf spot diseases, with a number of fungal root rots and canker diseases. Host plants consisted of the usual range of popular nursery and landscape plants. The summer ended in a drought this year, and extensive winter injury is expected for next spring. Some of the more interesting specimens the lab received this year included Harry Lauder's Walking Stick (*Corylus avellana* 'Contorta') with Eastern Filbert Blight, caused by *Anisogramma anomala*, and hybrid pepper seeds that were tested for bacterial leaf spot, caused by *Xanthomonas campestris* pv. *vesicatoria*, which is seed-borne.

The Plant Clinic continues to improve its diagnostic abilities by incorporating advanced cultural and molecular methods into its diagnostic scheme, concentrating on bacterial diseases caused by *Agrobacterium* (crown gall), *Xylella* (leaf scorch), *Erwinia* (fire blight), and *Pseudomonas* spp. The clinic also received a new stereo microscope with upgraded lighting and optics through a cooperative agreement with the University of Maryland. This acquisition greatly improved our ability to observe diagnostic structures *in situ*.

Greenhouse Laboratory

Plants were produced for integrated pest management and biological control programs that require food for insect colonies and plant material for research. A collection of herbaceous perennials used for teaching and testing purposes by the Certified Professional Horticulturist Program, in conjunction with the Maryland Nursery and Landscape Association, was increased.

Integrated Pest Management & Biological Control

The Integrated Pest Management (IPM) Program is responsible for the administration, development, and evaluation of biological control and IPM programs. In 2005, more than one million insects of five species were reared to support inundative and classical biological programs. The largest rearing program was for Mexican bean beetle (MBB), *Epilachna varivestis*, to support the propagation of *Pediobius foveolatus*, an effective larval parasite that does not overwinter in the United States. Mexican bean beetle populations increased in the region in 2005. Nearly 16,000 parasites were sold to the public and organic growers in eight states, including Maryland. Insect biocontrol projects have declined overall due to reductions in general funds. The section will pursue federal and

special funding to support these programs for new invasive exotic pests as opportunities become available.

Participation in the IPM Maryland Program, a cooperative effort between MDA and the University of Maryland, continued and expanded. IPM Maryland consolidates research, education, outreach, regulatory, and support aspects of IPM to mutually benefit agriculture, the environment and the citizens of Maryland. The fourth annual joint *IPM Maryland Report* was produced in Internet format in 2004. Cooperative efforts continued with MDA, the University of Maryland, growers, and the Northeast Integrated Pest Management Center (NEIPMC). MDA represents Maryland state regulators at the NEIPMC through a seat on the Advisory Council.

Weed Integrated Pest Management (IPM)

Under the direction of Plant Protection and Weed Management Section entomologists, staff assisted in an integrated pest management (IPM) program to provide biological control of certain thistle species. The program has helped greatly to control musk thistle along highway areas that are inaccessible to mowing and/or spraying equipment. MDA provided technical assistance to the federal government, county governments and other state agencies with noxious weed problems on public land, including the University of Maryland, Department of Natural Resources, correctional institutions, county road departments, State Highway Administration and the U.S. Department of the Interior.

Thistles

Weed IPM research activities continue to be conducted at field plots at the MDA facility in Cheltenham. Field plots established along State Highway Administration rights-of-way sites during each of the past six years continued to be used for evaluation and to conduct weed suppression trials. Investigations continued on integrated pest management of *Cirsium* and *Carduus* thistles. Research is concentrating on the evaluation of organisms for potential biocontrol, testing herbicide formulation efficacy, and evaluating the use of competitive vegetation (including native grasses and forbes) in an effort to provide environmentally-sound and cost-effective methods for suppression of noxious thistle species in Maryland. The department continues to be involved with the State Highway Administration in a cooperative thistle management program on state highway rights-of-way.

Rose Rosette Disease

A survey for the presence and effects of rose rosette disease was continued in 2005. Rose rosette disease is a pathogenic malady of the multiflora rose, *Rosa multiflora*, that has become

established in North America and is spread by natural means. The disease reduces populations of this invasive rose species. Results indicate that the disease is continuing to spread over a wide portion of Central and Northern Maryland. In 2001, rose rosette disease was detected for the first time in Cecil and Prince George's counties and, in 2002, symptomatic plants were found in Queen Anne's and Kent counties. In 2003, symptomatic plants and the eriophyiid mite vector were discovered in Garrett County. New detections of rose rosette disease have been recorded in 2004 and 2005; however, it has not been found in any new counties. In 2002, a field experiment to test the relative susceptibility of various rose cultivars and native species to rose rosette disease was designed and implemented at the MDA facility in Cheltenham. In 2003, problems with deer and vandalism postponed efforts at gathering data. In 2004, major renovations to the plots where the experiment is being conducted were made, including installation of deer exclusion cages and replacement of weed barrier cloth. Experimental results continue to be recorded in 2004 and 2005. This experiment is intended to provide valuable information needed to assess the effects of the disease on rose species other than *R. multiflora*.

Purple Loosestrife

No new releases of purple loosestrife (*Lythrum salicaria*) biological control agents, *Galerucella californiensis* and *G. pusilla* (leaf-feeding beetles), were made during the 2005 season. This is due to the closure of the USDA insect-rearing facility in Niles, Michigan in 2004 that supplied the beetles to MDA. To address the demand for adult beetles for release at various locations around the state, preparations are continuing to establish a *Galerucella* rearing facility at department headquarters and at the MDA Cheltenham insect rearing facility. MDA and DNR staff visited the New Jersey Department of Agriculture, Alampi Beneficial Insect Laboratory in Trenton, New Jersey in September 2005 to gather information, and first-hand knowledge regarding the artificial rearing of *Galerucella* leaf beetles in greenhouse and laboratory settings. Preparations are currently underway to ready the MDA Cheltenham insect-rearing facility for this new endeavor.

Locations of prior releases in Prince George's and Howard counties were surveyed for the biocontrol agent in 2005 and beetle activity was detected. An average of 30,000 beetles per year have been released over several years through 2003. The releases were intended to establish populations of the leaf feeding beetles in field insectaries, to support field collections for biological control efforts, and to allow for redistribution in the future. Sites where beetles were released in past years (Font Hill Park in Howard County, Baltimore-Washington

Parkway, and Merkle Wildlife Management area in Prince George's County) were evaluated for levels of plant control and were surveyed for establishment of the beetles. No detectable level of control of purple loosestrife has been noted, but for the first time, high numbers of beetles were recovered at the Howard County site, indicating that establishment is in the beginning of the exponential population increase phase at that location. The apparent slow initial increase in population levels of the beetle, and initial lack of significant control of the pest plant is typical of *Galerucella* biocontrol of purple loosestrife. Slow increase of beetle populations is not uncommon, and significant reduction of purple loosestrife populations has taken five to seven years or longer in some other states. Additional releases of adult beetles, and the establishment of the *Galerucella* rearing facility at Cheltenham are planned for 2006.

Statewide levels of **cereal leaf beetle** (*Oulema melanopus*) parasitoids, both egg (*Anaphes flavipes*) and larval (*Tetrastichus julis*), were healthy. One thousand five samples were collected, showing egg parasitoid populations about the same as in 2004 and an increase in larval parasitoids.

Japanese Stilt Grass

Experiments in the management of Japanese stiltgrass, *Microstegium viminium*, were designed and initiated in 2004 in a cooperative effort with the Howard County Department of Recreation and Parks. The project is directed at finding proper management tools to help suppress and control this invasive weed species in both natural and roadside environments. In 2005, pre-emergent herbicide treatments were applied and additional data gathered. Data will be scrutinized and additional treatments planned, if justified by the results, for 2006. The potential for widespread control of this pest plant through use of herbicides is rather limited. Herbicides are likely to be most effective on small populations, limited in spread. Large scale control of Japanese stiltgrass is likely only through use of biological control **agents**.

Noxious Weed Management

This program supports the control and eradication of designated noxious weeds in order to reduce their economic and aesthetic impact on farmers and landowners. Noxious weeds (Johnsongrass, shattercane, thistles, and multiflora rose) cause losses in excess of \$15 million annually to Maryland agriculture due to reduced quality and yields of crops and forages, increased control costs, and increased roadside and development property management cost. The Maryland General Assembly enacted the first Nuisance Weed Law on Johnsongrass in 1969. In 1987, the Nuisance Weed

Law was rewritten and renamed the Noxious Weed Law (Title 9, Subtitle 4, Agriculture Article, Annotated Code of Maryland). The Noxious Weed Law requires that a landowner, or a person who possesses and manages land, eradicate or control the noxious weeds on that land by using practices prescribed by the department, including mowing, cultivating, or treating with an approved herbicide. The law prohibits the importation and transportation of these weeds in the state and prohibits the presence of viable noxious weed seed and rhizomes in seed, topsoil, mulch, nursery stock, on-farm machinery, or any other article. The Noxious Weed Law also provides that the Department of Agriculture may enter into an agreement with a county or political subdivision to provide technical and financial assistance for initiating weed management and eradication programs.

A weed control advisory committee has been established in each of the 20 participating counties, with representatives from farming organizations, governmental agencies, and local farmers. Each committee provides advice or input into planning the noxious weed control program in that county. A county weed control coordinator, usually employed on a part-time basis, determines the degree of noxious weed infestations within the county, locates uncontrolled infestations, provides information on currently recommended control practices, and initiates agreements with landowners to implement a control program. In many counties, the local weed control coordinator also performs spot-spraying on roadsides, in cooperation with the Maryland State Highway Administration, to help eliminate Johnsongrass or thistles and to control noxious weeds on private or public lands for a fee. In counties with no weed control coordinator, section employees handle these duties. This program was active in reducing the impact of noxious weeds in most areas of the state during 2005.

The weed control program provided grant assistance to 20 counties, averaging \$4,400 per county which was leveraged with similar amounts of money from the counties. In addition, the counties generated in excess of \$625,000 from spraying services.

Under the direction of Plant Protection and Weed Management Section entomologists, staff assisted in an integrated pest management (IPM) program to provide biological control of certain thistle species. The program has helped greatly to control musk thistle along highway areas that are inaccessible to mowing and/or spraying equipment. MDA provided technical assistance to the federal government, county governments and other state agencies with noxious weed problems on public land, including the University of Maryland, Maryland Department of Natural Resources,

correctional institutions, county road departments, Maryland State Highway Administration and the U.S. Department of the Interior.

Noxious weed advisory notices were mailed to 189 managers of property infested with a noxious weed. Generally these notices were effective in obtaining compliance; when necessary, MDA sent follow-up correspondence resulting in compliance.

The weed control program responds to citizens' requests for technical assistance in controlling invasive, persistent weeds, such as phragmites, kudzu, mile-a-minute, *Ailanthus* (tree of heaven), Japanese stilt grass, purple loosestrife and Japanese bamboo, (*falopia japonica*). Cultural control strategies and herbicidal recommendations are made, after a site visit determines the appropriate strategy.

Giant hogweed is a federal noxious weed that was first detected in Maryland in 2003. This species is dangerous due to the phytophotodermatitis it causes (blistering, burning of the skin). Giant hogweed (*Heracleum mantegazzianum*) was originally detected at 29 sites in Baltimore and Harford counties. In 2005, eight additional sites in Garrett County were added to this list. A multi-state eradication effort is underway, all previous sites and all newly verified sites were brought into this program. The eradication effort involves monitoring the sites and chemically treating all emerged plants. Plans have been made for continuing this effort in 2006.

The staff participated with the Maryland Department of Natural Resources for the ninth year in providing a Phragmites

Management Program. Phragmites is an invasive species which colonizes tidal and intertidal areas crowding out all our native species. Upon request from landowners or managers, the Weed Control Program staff supplied technical and spraying assistance for control. The DNR provided the material (Glypro) that was applied in the nine counties of the Eastern Shore for phragmites. Total spray revenue for phragmites control was in excess of \$45,000 for treating approximately 340 acres in 260 locations in 14 counties.

In all counties, the noxious weed control program's spraying service was offered to landowners participating in the Conservation Reserve Program (CRP) or Conservation Reserve Enhancement Program (CREP). Due to the likelihood of weed problems occurring on land in these programs, spraying services were offered for noxious weed control.

Other Section Activities

During 2005, MDA continued to take a leadership role in the Maryland Invasive Species Council (MISC), a forum for information exchange and consensus building among diverse interests in public and private agencies or organizations concerned with invasive species. Several Plant Protection and Weed Management staff members were directly involved with MISC and were able to assist other members or individuals with technical information on control of invasive plant species or with actual spraying as well as partner with other agencies on grants to control invasive species. Through MISC, MDA has been able to disseminate information on many of the serious pests cited in this report. The MISC web site is www.mdinvasivesp.org.



Eastern Filbert Blight on Harry Lauder's Walking Stick.

| | 2003 | 2004 | 2005 |
|--|--------|-----------|-----------|
| Beekeepers Registered | 992 | 957 | 987 |
| Apiaries Registered | 1,335 | 1,311 | 1,337 |
| Apiaries Visited | 581 | 729 | 776 |
| Apiaries Inspected | 527 | 539 | 591 |
| Apiaries with Disease | 76 | 85 | 40 |
| Bee Colonies Registered | 9,337 | 7,771 | 8,333 |
| Bee Colonies Inspected | 3,450 | 3,700 | 4,138 |
| Bee Colonies with Disease | 221 | 42 | 74 |
| Laboratory Diagnoses of Bee Diseases and Pests | 47 | 64 | 77 |
| Colonies Certified for Movement Out of State | 1,714 | 1,559 | 4,303 |
| Colonies Moved into Maryland Under Permit | 2,267 | 572 | 523 |
| Bee Colonies Certified During Inspection | 3,450 | 3,700 | 4,138 |
| Field Diagnoses for Varroa Mite | 144 | 96 | 192 |
| Ginseng Dealers Registered | 7 | 6 | 8 |
| Ginseng Collectors Licensed | 251 | 249 | 229 |
| Plant Inspections Conducted | 1,143 | 1,316 | 1,217 |
| Nurseries Certified | 389 | 394 | 282 |
| Nursery Acreage Certified | 9,012 | 10,039 | 8,126 |
| Plant Dealers Licensed | 652 | 679 | 563 |
| Plant Dealer Retail Outlets Licensed | 743 | 693 | 679 |
| Greenhouse Plants Inspected (1,000 sq. ft.) | 8,024 | 7,972 | 7,556 |
| Plant Brokers Licensed | 12 | 17 | 17 |
| Post-entry Quarantine Inspections | 22 | 38 | 36 |
| Phytosanitary Certificates Issued | 275 | 976 | 678 |
| Condemnation-Seizure Notices Issued | 29 | 39 | 4 |
| Plants Condemned | 1,307 | 15,739 | 493 |
| Virus-Free Strawberry Plants Certified (acres) | 8 | 8 | 0 |
| Vegetable Transplants Certified (million) | 33 | 31.3 | 32 |
| American Beach Grass Plants Certified (thousand) | 1,000 | 1,000 | 0 |
| Biological Control Organisms: | | | |
| Number of Species Reared | 5 | 6 | 5 |
| Number of Insect Reared | | 1,200,000 | 1,100,000 |
| Number of Insect Specimens Released | 68,323 | 17,520 | 5,500 |
| Counties Where Releases Were Made | 3 | 3 | 4 |
| Insect Traps Monitored | 2,321 | 2,719 | 2,329 |
| Insect Identifications from Blacklight and Pheromone Traps | 82,792 | 90,195 | 98,764 |
| Identifications (plants, insects, diseases) | 57,353 | 44,381 | 41,835 |
| Soil Samples Processed for Nematode Surveys | 51 | 44 | 73 |

Maryland Department of Agriculture Budget Allocations for Fiscal Year 2005

| | |
|---|---------------------|
| Total State Budget (Operating and Capital) | \$21,661,187,699 |
| Maryland Department of Agriculture Budget | \$77,840,430 |
| Maryland Department of Agriculture Budget Sources | |
| State General Fund | \$25,368,671 |
| Special and Reimbursable Funds <i>(Fees, Registration & Testing)</i> | \$29,313,641 |
| Federal Funds <i>(Grants & Cooperative Agreements)</i> | \$7,158,118 |
| General Obligation Bonds <i>(Maryland Agricultural Water Quality Cost Share, Maryland Agricultural Land Preservation Foundation, and Tobacco Conversion Program)</i> | \$16,000,000 |

Source: *Fiscal Digest of the State of Maryland, FY2005*
C-11, C-24, H-2, H-7

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Employees of the Quarter, 2005

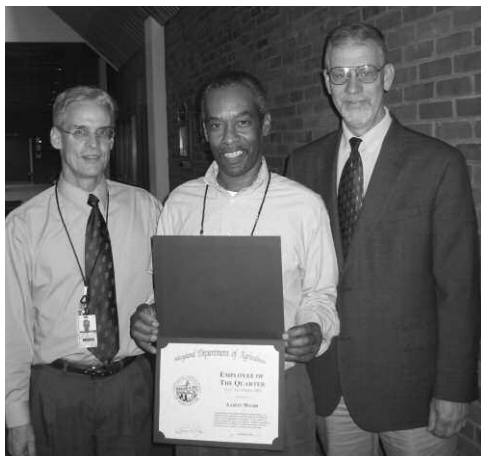
Every three months, an MDA staff member is selected as Employee of the Quarter based on his or her outstanding performance, attitude and motivation, among other considerations. At the end of the year, one of the four is selected as Employee of the Year. In 2005, these employees were Laura Downes, Office of the Attorney General at the time and now Executive Director of the Board of Veterinary Medical Examiners; Dr. Mark Dulin, Animal Health Section; Aaron Webb, Weights and Measures; and Richard Anacker, Plant Protection and Weed Management Section. The employee of the year was Aaron Webb.



Laura Downes was with the Office of the Attorney General and is now with the Board of Veterinary Medical Examiners.



Mark Dulin is a field veterinarian in the Animal Health Section.



Aaron Webb, field inspector with the Weights and Measures Section.



Richard Anacker with the Plant Protection and Weed Management Section.



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