CALENDAR YEAR 2009

PLANT PROTECTION ANNUAL REPORT

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Plant Protection Division

OVERVIEW

Geir Friisoe, Division Director

Last May, the exotic and highly destructive tree pest, emerald ash borer (EAB), was discovered in the City of St. Paul by an observant tree care specialist. Responding to this discovery, staff and resources from many diverse levels of government very quickly and with considerable cooperation from the residents identified and removed infested trees. The City of St. Paul deserves special commodation for redirecting limited resources in a short time frame in the race against beetle emergence. The City of Minneapolis also assisted by providing staff and equipment. Additional technical and survey support was provided by the Minnesota Department of Natural Resources, USDA APHIS and USDA Forest Service. This was very much an example of how government agencies at all levels should and did work together amongst themselves and also with public and private agencies. Given the history of the pest in other states and cities, it is unlikely that we eradicated, but most certainly we made a serious dent in its overall population and, hopefully, have slowed its spread and bought the State of Minnesota more time to prepare for the eventual establishment of this insect.

The second major challenge that the division has faced and continues to face is the very difficult financial situation of the State of Minnesota. Difficult budget decisions had to be made, and some programs were reduced due to funding limitations. For example, our annual plant pest survey conducted of all the major Minnesota crops was reduced such that we are now only able to cover small grains and soybeans.

The division was fortunate that more significant budget reductions were avoided, although further budget reductions are expected in the coming year. Creative new arrangements have been made as we strive to continue those programs that have the most value to our constituents. There are no easy answers when funds become limited, but just as with EAB, division staff understands the challenge and has been proactive in doing what they can to assist in finding ways that we might improve efficiencies and maintain effectiveness despite these shortfalls. The Minnesota Department of Agriculture and the Plant Protection Division are very fortunate to have so many very talented and dedicated staff.

Fruit and Vegetable Inspection *Unit*

OVERVIEW

Harley Olinske, Jr., Supervisor

Web page: **www.mda.state.mn.us/produceinspection**

The Minnesota Department of Agriculture Fruit and Vegetable Inspection Unit operates under a cooperative agreement between the State of Minnesota and the USDA. Through this agreement, fruits, vegetables, raw nuts, and ornamental crops are inspected based on USDA-established standards for commodities and are issued certificates of inspection showing the grade, quality, and condition of the commodity. Inspections are performed for any financially interested party in the world including growers, packers, shippers, brokers, transporters, and receivers. Inspections ensure that the commodities meet the specifications and/or grades that have been agreed on and U.S. Standard requirements. Providing unbiased third-party inspections ensures that the proper quality of produce is being delivered, and receiver and grower contracts are being met. This results in protection for both grower and receiver and in lower costs to the public.

The Fruit and Vegetable Inspection Unit staff is federally licensed by the USDA and has the authority to inspect all commodities from around the world. This program provides four different services to various geographic areas:

✗ Fruit/Vegetable Inspections **✗ Processed Inspection** **✗ Shipping Point Inspection** **✗ Food Safety Audits**

FAST FACTS FROM 2009

- Provided audits for all growers and receivers that have requested to be audited per the USDA GAP/GHP program.
- Inspected 2,200 lots, equaling 250,000 cwt of inspected and certified fruits and vegetables.
- Inspected and certified over 200,000 cwt of potatoes for processing.
- Inspected and certified 75,000 cwt of fruits and vegetables for export to Canada.
- Inspected and certified 130,000 cwt of fresh and seed potatoes.

PROGRAM PLANS FOR 2010

- Begin development of a handbook titled "Good Agricultural Practices/Good Handling Practices" that describes food safety audits and information regarding regulations and contacts.
- Continue presentations and meetings with Minnesota growers and packers to inform and educate on Food Safety and the benefits of the audit-based program.
- Develop a PowerPoint presentation on Food Safety to use for demonstration audits.
- Provide food safety audit results and certification electronically.
- Develop an electronic note sheet and/or certificate for the process inspection program.
- Transfer from paper to electronic GAP/GHP Food Safety Audit Checklists and Score Sheets.
- Plan to host one of the USDA Market Refresher Training Classes in St Paul.

PROGRAM STAFF

Harley Olinske, Jr.
Position: 2003-present, Fruit and Vegetable Inspection Unit Supervisor
Previous experience: 1988-2003, USDA Market Inspection Supervisor for Milwaukee, WI market office; 1985-1988, Inspector for the States of Wisconsin, North Dakota, Kentucky, and Florida.

Chris Benike
Position: 2009-present, Fruit and Vegetable Inspector
Previous experience: 1979-2003, United States Air Force (retired); 2003-2009, Hobby Farmer
Education: B.S., Social Sciences

Abdel Boudlali
Position: 1991-present, Fruit and Vegetable Inspector
Previous experience: 3 years graduate/research in plant pathology
Education: B.S., Plant Pathology

Heidi Hagman
Position: 2009-present, Fruit and Vegetable Inspector
Previous experience: 2002-2007, Natural Resources Technician; 2008-2009, MDA Survey Staff
Education: B.S., Natural Resources

Alan Peterson
Position: 1978-present, Fruit and Vegetable Inspector
Education: B.A., Biology

Stephen Talley
Position: 1993-present, Fruit and Vegetable Inspector
Previous experience: 1983-1993, Inspector for the State of North Dakota and the USDA Chicago Market Office
Education: B.S., Agronomy

Brendan Ward
Position: 2009-present, Fruit and Vegetable Inspector
Previous experience: 2007-2009, Dept of Soil, Water and Climate at the University of Minnesota
Education: B.S., Environmental Science

Left to Right
Front row: Hagman, Peterson, Boudlali
Back row: Benike, Olinske, Talley, Ward

Gypsy Moth Unit

OVERVIEW

Lucia Hunt, Supervisor

Since 1980 the Minnesota Department of Agriculture (MDA) has coordinated and overseen the treatment of more than 328,000 acres of land to delay, prevent or mitigate the adverse impacts directly or indirectly associated with gypsy moth infestation on our state's natural resources, citizens and industries.

FAST FACTS FROM 2009

- 47 seasonal staff set, checked, and removed over 23,000 traps.
- Record year for gypsy moth catches: 27,870 moths statewide.
- Treated over 100,000 acres along the North Shore and in southeastern Minnesota.
- Two eradication sites in the metro area.
- Six compliance agreements signed with mills and nurseries.

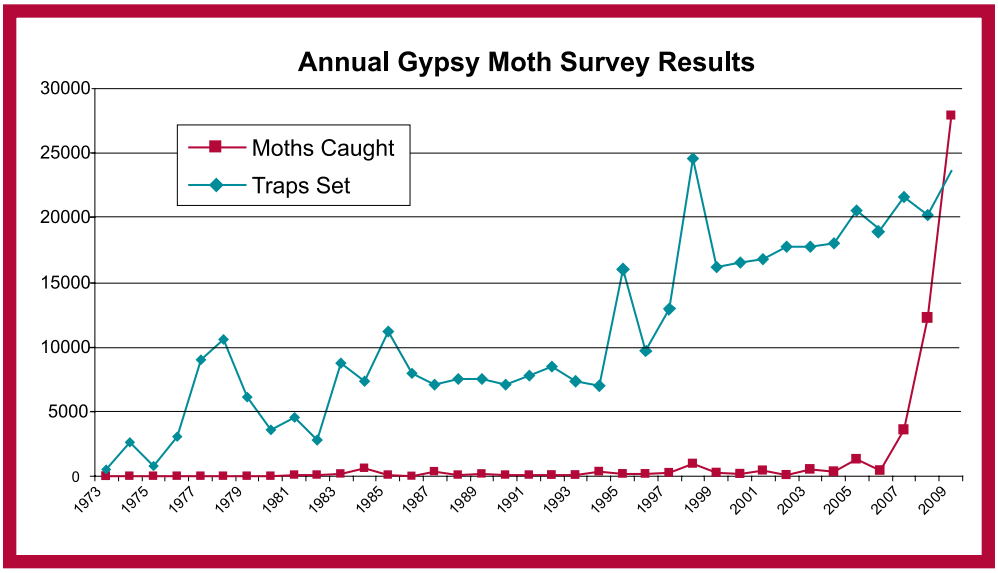
PROGRAM SUMMARY FROM 2009

The gypsy moth detection program is a cooperative effort between state and federal agencies including the Minnesota Departments of Agriculture and Natural Resources, USDA Animal and Plant Health Inspection Service, Plant Protection and Quarantine (APHIS), and USDA Forest Service (USFS). This cooperative effort has built a strong gypsy moth program in the state of Minnesota. Together, 23,639 traps were set across the state and a total of 27,870 male moths were caught.

Since 2004 Minnesota has been a formal member of the Gypsy Moth Slow the Spread (STS) Foundation. The STS Action Area moves annually based on trap catch data to cover the areas where moth populations are building. In 2009 portions of four counties (Houston, Winona, Lake and Cook) were included in the action area. This year's trapping data showed much lower moth activity in the central and southern parts of the state while a record number of moths were trapped in the northeast.

General Survey Program

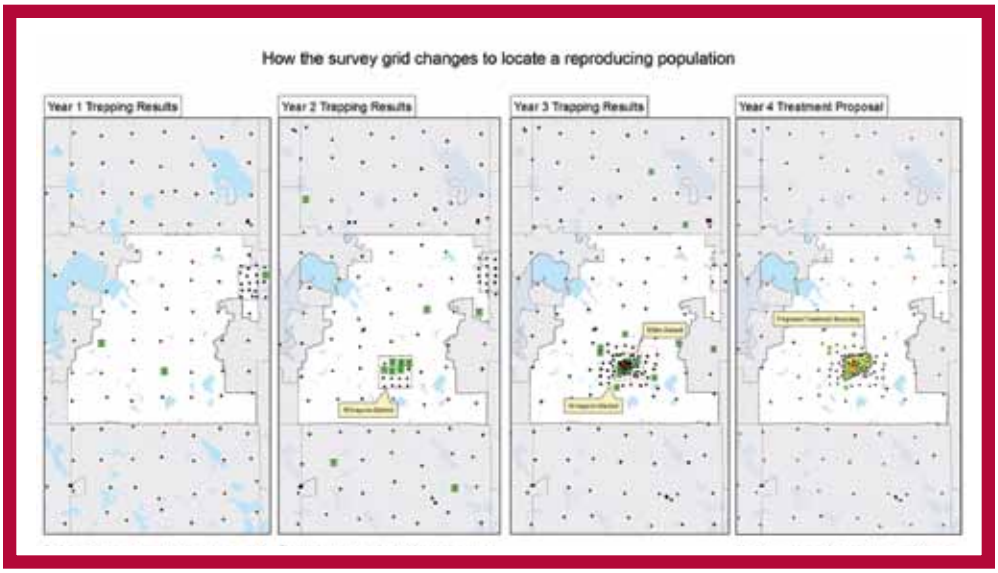
In 2009 the MDA filled positions for 40 trappers and 7 lead workers to oversee field operations. They were responsible for setting, checking, and removing gypsy moth traps all summer. The entire state is not surveyed every year; trapping is typically conducted on a rotating basis throughout the western parts of the state. This year's trapping focused on Minnesota's eastern border including the Twin Cities, west into the north central areas of Leech Lake, and north to Ely.



Standard grid densities differ according to the risk of introduction; smaller grid sizes yield higher trap densities which result in higher resolution of actual moth populations. Isolated traps with high numbers in 2008 were surveyed intensively in 2009 through site delimitation to determine if gypsy moth populations are persisting and if treatments should be administered.

High-Risk Sites

A determination of risk for the introduction and establishment of gypsy moth is based on human activity levels, preferred habitat for gypsy moth, and the advancing gypsy moth front from the east. For example, wholesale nursery dealers and growers that report stock sources from gypsy moth-quarantined areas or have a history of pest problems are considered high risk. Also, sawmills and pulp mills are considered high risk if it is known or likely that they have out-of-state sources and if they are within 100 miles of counties that trap fifty or more gypsy moths. Tourism and heavy recreational use by people living and vacationing on the North Shore puts the area at risk for artificial introductions of gypsy moth.



Most of the differences between Asian and European strains of gypsy moth are subtle, except that Asian females are capable of flight while European females are flightless. This difference, along with a broader host range, means that Asian gypsy moths could be even more devastating to our natural resources than their European cousins. Trapping for the Asian strain of gypsy moth continued in 2009. Traps from pathway sites (ports of entry, warehouses or sites that receive/store containers) and around sites where specific gypsy moth strains were identified previously were sent to OTIS Laboratories for DNA analysis. No Asian gypsy moths have been identified in Minnesota at this time.

Egg mass on gypsy moth trap.

Trap Results

Across the country, several states have seen population crashes attributed to high levels of natural enemies found during cool, wet springs. In Minnesota, moth numbers were much lower in the southeast part of the state where the pressure of adjacent Wisconsin populations has subsided this year. The majority of trapped moths were found in St. Louis, Lake and Cook Counties. High catches have normally been confined to the shoreline, but this year ushered in a wave of moths to inland areas with previously low to moderate catches. The MDA will be working closely with the land stewards within these areas to align management strategies with increased moth populations.

Research

Several national research projects are being focused on the North Shore's recent history of invasion by the gypsy moth. Sentinel trap transects were established along the North Shore to monitor male moth flight activity by checking the traps more frequently than normal. Autotraps, which record both ambient weather data and when individual moths enter, were hung along the shoreline to capture and record daily flight patterns as well as seasonal activity. A random sampling of moths will be processed for wing measurements whether they are resident or immigrant populations. To address the question of how temperatures over time affect lure release rates from traps, the MDA is participating in a regional lure release study to measure these differences. Meteorological data is being analyzed to determine if wind patterns are capable of carrying gypsy moth larvae or adults to Minnesota. These research projects are all coordinated through the USFS Field Station in Morgantown, WV.

Aerial application in Two Harbors

General Treatment Program

The MDA has coordinated and overseen the treatment of over 337,000 acres since 1980. This year, 108,532 acres were treated within the STS Action Area along with 685 acres in two metro eradication sites. An organic formulation of a larvicide was used in the eradication blocks as well as in two STS blocks near Lutsen and Tofte in Cook County. The majority of treatments used mating disruption products designed to interfere with the adult male's method of locating a female to mate with. Two products, SPLAT in the southeast and Disrupt II in the northeast, were used to achieve the goal. As the gypsy moth front moves closer to Minnesota, treatment acreage is expected to increase to meet the statewide objective of decreasing spread rates from the historic 13 miles per year to less than 3 miles per year.

Over 37,000 acres between four sites were treated with SPLAT in Houston and Winona Counties in late June. Around 70,000 acres between five sites in Cook and Lake Counties were treated with Disrupt II in mid-July.

Two environmental assessments (EA) were prepared for the treatment projects. One EA for the eradication sites was prepared from funding obtained from APHIS. An additional EA was prepared by the USFS to address STS-funded treatments on the Grand Portage Reservation, the Superior National Forest, state properties, and private lands.

Treatment Monitoring

Four sites were treated with larvicides this year, which allows for same-year monitoring. After treatment, the two eradication sites were heavily trapped and were found devoid of gypsy moth adults. Analysis by the STS decision algorithm (DA) declares these sites successfully eradicated. The two sites in Lutsen and Tofte were similarly treated and monitored. The DA calculated them as being successfully eradicated; however, the surrounding populations of moths are still quite high. All of the five 2008 mating disruption blocks were evaluated this year and all are considered successful.

Egg Mass Surveys

An egg mass search was conducted in Hopkins, a site where potentially infested nursery stock was planted. No alternate life stages were found. but a delimitation of the area is planned for 2010. Two egg masses near Finland and Schroeder were recovered by seasonal trappers. Additional searches around those sites yielded no additional finds, but those areas are marked for treatment in 2010. Two staff members searched for alternate life stages in northeastern areas that had extremely high trap captures or were near regulatory sites without finding any. (One trap was found with alternate life stages inside it.)

Egg mass search crew in Lake County in 2009. Pictured (L to R): Bob Kangas, Alison Rossow, Natasha Northrop, Chris Cordes.

Egg mass found in Lake County.

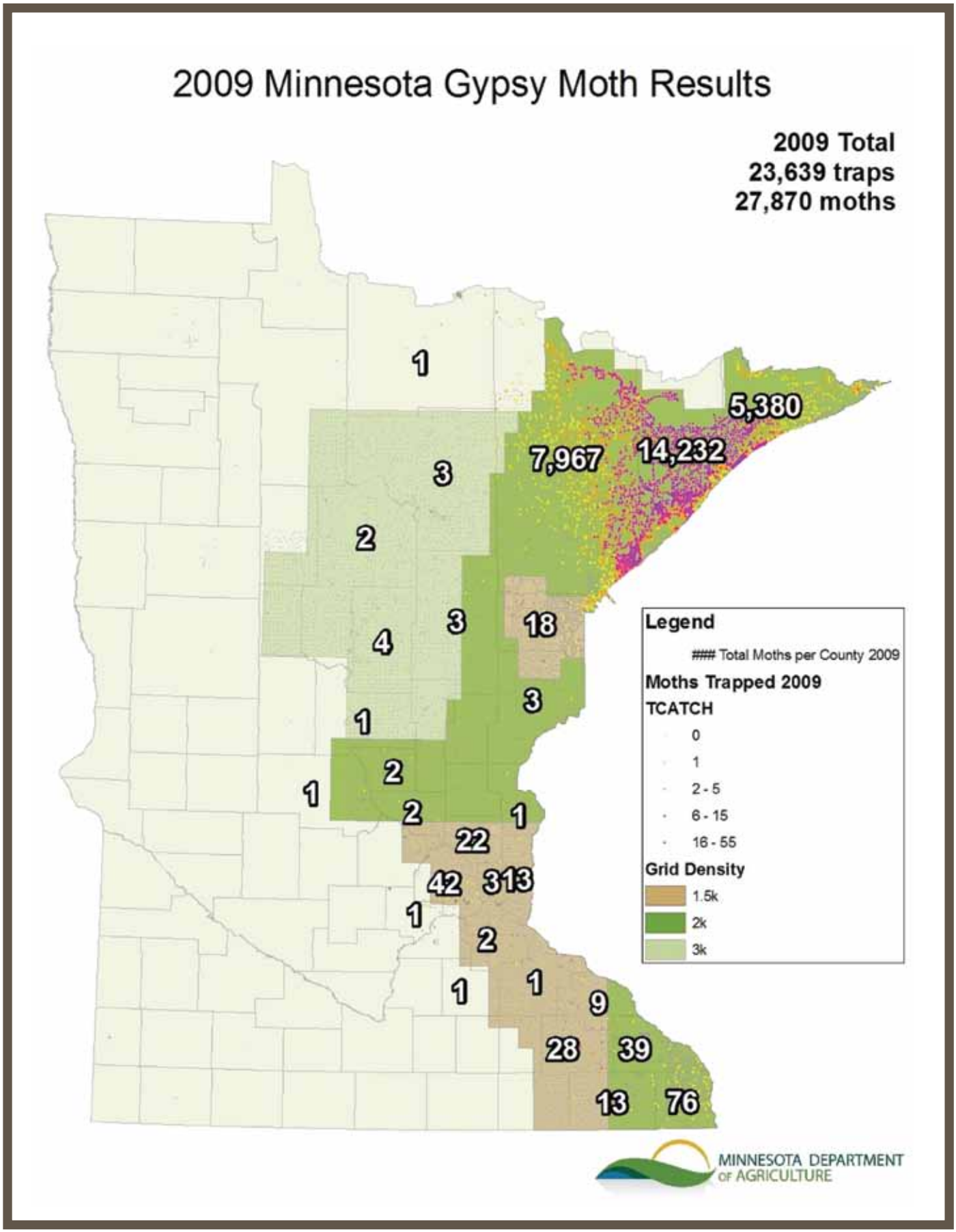
OUTREACH

Outreach for 2009 treatments included press releases, several media interviews, public open houses, and direct mailings to affected residents. A brochure with general gypsy moth information was given to landowners, business owners and interested parties throughout the trapping season. Survey staff also handed out two specialized brochures aimed at the nursery and mill industries to explain ways to protect their operations from the gypsy moth. Presentations about gypsy moth were given at County Agricultural Inspector meetings, compliance agreement trainings, community groups and national meetings.

The MDA hosted this year's Annual Gypsy Moth Review in Minneapolis in October. The program covered several topics from gypsy moth research and aerial application issues to regulatory and regional gypsy moth subject. One hundred people from 24 states and 5 Canadian provinces attended.

PROGRAM PLANS FOR 2010

- Prepare to survey the eastern border of the state, rotating through southern areas but concentrating on northern counties that showed higher gypsy moth activity.
- STS survey and treatment areas are being identified to track and treat isolated gypsy moth populations before they have a chance to become established. Several areas along the north shore will get higher attention to address growing moth concerns in the region.
- Continue with outreach to high-risk businesses, industry groups, and the general public.


2009 Minnesota Gypsy Moth Results
2009 Total
23,639 traps
27,870 moths
1
5,380
7,967
14,232
3
2
3
18
4
3
1
2
1
2
1
22
42
313
1
2
1
1
9
28
39
13
76
Legend
Total Moths per County 2009
Moths Trapped 2009
TCATCH
0
1
2 - 5
6 - 15
16 - 55
Grid Density
1.5k
2k
3k
MINNESOTA DEPARTMENT OF AGRICULTURE

2009 Gypsy Moth Results by County:

County	# Traps Set	# Moths Caught	% of Statewide Moths Caught	%Change '08 to '09
Lake	1,471	14,232	51.0%	27.06%
Saint Louis	3,661	7,967	29.0%	13.82%
Cook	1,318	5,380	19.0%	-6.08%
Houston	978	76	0.27%	-10.94%
Hennepin	722	42	0.15%	-1.52%
Winona	883	39	0.14%	-7.64%
Olmsted	841	28	0.10%	-1.11%
Anoka	508	22	0.08%	-0.01%
Carlton	1,450	18	0.06%	-7.86%
Washington	519	13	0.05%	-0.11%
Fillmore	848	13	0.05%	-1.55%
Wabasha	589	9	0.03%	-1.22%
Crow Wing	374	4	0.01%	0.01%
Itasca	751	3	0.01%	-0.01%
Pine	1,106	3	0.01%	-1.91%
Ramsey	213	3	0.01%	-0.01%
Aitkin	768	3	0.01%	0.01%
Benton	278	2	0.01%	0.00%
Sherburne	334	2	0.01%	0.00%
Dakota	782	2	0.01%	-0.11%
Cass	581	2	0.01%	-0.02%
Koochiching	118	1	0.00%	0.00%
Stearns	214	1	0.00%	0.00%
Chisago	314	1	0.00%	0.00%
Carver	86	1	0.00%	-0.24%
Goodhue	906	1	0.00%	-0.34%
Rice	139	1	0.00%	0.00%
Morrison	245	1	0.00%	0.00%
TOTAL	**23,639**	**27,870**	**100%**	**127.42%**

PROGRAM STAFF

Lucia Hunt, Supervisor
Position: 2007-present, Gypsy Moth Unit Supervisor
Previous experience: 2003-2007, Ohio Dept. of Agriculture, Emerald Ash Borer Program Coordinator
Education: BS in Entomology and Conservation Biology, UW-Madison; A.A., in Geographic Information Systems, CVTC

Erich Borchardt
Position: 2001-present, Research Analyst Specialist (GIS)
Previous experience: 2000-2001, Metropolitan Council – GIS Tech
Education: B.A., Geography and Anthropology, St. Cloud State University

Alison Rossow
Position: 2006-present, Research Analyst Intermediate (GIS)
Previous experience: University of Massachusetts-Environmental Engineering, Research Fellow, 2004-2006
Education: Geography Graduate Level Courses, University of Massachusetts; B.S., Geography and Botany, Miami University, Oxford, OH

Terry Varing
Position: 2008-present, Office Administration Specialist
Previous experience: 2000-2008, Lab Operations Unit

Natasha Northrop
Position: 2009-present, Gypsy Moth Trapping Coordinator (Plant Health Specialist 3)
Previous Experience: MDA Weed Biological Control, Research Scientist, 2005-2009; USDA-APHIS-PPQ, Plant Protection Technician, 2004
Education: B.S., General Biology, Minor in Environmental Studies, St. Cloud State University

Left to Right: Rossow, Varing, Borchardt, Northrop, Hunt

INVASIVE SPECIES EXCLUSION *Unit*

OVERVIEW

Teresa McDill, Supervisor

The Invasive Species Exclusion Unit is Minnesota's first line of defense against new invasive species that threaten food crops, timber resources, and horticultural interests. The unit's core focus is to stop new terrestrial pests from arriving and establishing in Minnesota (Minnesota Statutes Chapter 18G and Chapter 18J). Food production quantity, environmental resources and economic security are the unit's responsibilities, along with the prevention of bioterrorism. With help from our federal partners, the USDA Animal and Plant Health Inspection Service (APHIS), prospective new pests from other parts of the world are evaluated for possible threat. If the threat is high, then the National Strategy (Prevention, Early Detection and Rapid Response) is put into action for new invasive species. Invasive pests already established in Minnesota and aquatic pests are addressed by other cooperating groups inside and outside the MDA.

FAST FACTS FROM 2009

- Emerald ash borer (EAB)
  - ~ EAB detected in Victory, WI, (just outside Houston County, MN) in April.
  - ~ EAB has not been found in Houston County to date, despite extensive visual survey, destructive sampling of 16 trees, sampling of 41 detection trees and monitoring of 120 purple traps in the Houston County Delimit Area.
  - ~ EAB confirmed in St Paul, MN, on May 14.
  - ~ A state Emergency Quarantine was enacted for Houston County on April 22 and for Hennepin and Ramsey Counties on May 15. Both were superseded by a state Formal Quarantine on August 17. A parallel federal quarantine was placed soon after.
  - ~ Visual survey was conducted on a two-mile radius area from the find. 68 confirmed EAB-infested trees were discovered and removed in early June.
  - ~ Of the 685 purple traps deployed in the St. Paul delimit area, three were determined to be positive – all within about one mile of original area.
  - ~ Destructive sampling of declining trees around original area has identified four additional EAB-infested trees – all within about one mile from original area.
  - ~ Five EAB First Detector workshops conducted (two in Farmington, one each in Lamberton, Crookston, and Winona) in March and April.

- Risk of firewood movement
  - ~ 92 inspections to monitor compliance with intrastate and interstate quarantines as well as labeling requirements were completed at various entities selling firewood.
  - ~ Two kilns were certified for heat treatment of firewood. Heat treatment certification means that the core temperature of the wood is brought to a level that is lethal for EAB.
- Potato cyst nematodes (PCN)
  - ~ 4,900 five-pound samples were collected from 100 fields planted to potatoes in 2008, with over 3,300 analyzed to date with no detections of PCN.
  - ~ 1,100 samples have been collected from fields planted to seed potatoes in 2009 and are drying for processing. About half of the samples are from fields of growers who plan to ship some of their seed potatoes to Canada. Cysts of soybean cyst nematode were found in some samples.
- Cereal Cyst Nematode Survey
  - ~ Collected 300 soil samples from across the state to be analyzed for cyst nematodes.
- Crop Pest Survey
  - ~ The Plant Pest Survey changed its name to Crop Pest Survey to better reflect the focus of the program.
  - ~ 1,400 wheat and soybean fields were surveyed for various invasive and native pests.
  - ~ The Minnesota Pest Report was published weekly through the growing season.
- Plant Pest Laboratory
  - ~ The Plant Pest Laboratory provided analysis for phytosanitary certificates for export and protocol support for the division
- Apiary Certification
  - ~ Apiary staff supplied colony health certificates to the 23 Minnesota apiarists who requested them.
- Permits
  - ~ Staff reviewed about 60 applications for federal import permits.

PROGRAM SUMMARY FROM 2009

Emerald Ash Borer

Emerald ash borer (EAB) is an invasive wood-boring beetle that is found in states and provinces throughout eastern North America, including Minnesota. EAB was discovered in southwestern Wisconsin across the border from Minnesota in April. In response, the Incident Command System (ICS) was implemented to coordinate interagency actions. When EAB was discovered in St. Paul in May, the ICS was expanded to also coordinate actions in response to that infestation. The ICS is jointly led by the MDA, USDA APHIS PPQ and the DNR and includes participation from various federal state and local entities. The ICS, as implemented was originally planned and detailed in the Minnesota Emerald Ash Borer Response Plan completed in 2007.

Actions taken in response to these EAB detections included the enactment of quarantines, delimiting surveys, mitigation measures and public and industry outreach. Specifically, state emergency quarantines were enacted on Houston County in April and Ramsey and Hennepin Counties in May. These emergency quarantines were followed by parallel federal quarantines. After public meetings and outreach during the summer, the same counties were placed under formal state quarantines for EAB. An estimated 50 compliance agreements will be in place with businesses affected by the quarantines by the end of 2009.

Delimiting surveys in Houston County included visual survey and cut-and-peel survey of declining trees (16 trees) over a four-square mile area in the southeastern-most tip of Houston County, and purple traps (120) and detection trees (41 trees) in an area 12 miles long bordering the Mississippi River (see Figure 1). To date, all described surveys have been completed and have been negative for EAB.

Delimiting surveys in St. Paul included visual survey over a 16-square-mile area surrounding the find; 68 trees were confirmed to be EAB-positive within about a two-square-mile area. In the delimit area, 685 purple traps (Figure 2) produced three positive traps within about a mile of the infestation discovery site. Cut-and-peel surveys of declining trees (about a 60 trees to date) have identified an additional four infested trees, each about a half mile out of the original two-square-mile area.

Mitigation measures in St. Paul included the removal of the 68 originally discovered EAB-infested trees, the creation of 20 sink trees in the known EAB-infested area (10 removed in October, the remainder to be removed in March 2010) as well as the destruction of the four EAB-infested trees discovered during cut-and-peel surveys.

Mitigation measures have not been enacted in Houston County due to the lack of confirmed EAB-infested trees.

The MDA, University of Minnesota and DNR collaborated on providing Forest Pest First Detector Training in Minnesota during March and April. Five full-day workshops on EAB, gypsy moth, Asian longhorn beetle and Sirex woodwasp were held at four locations around the state (Lamberton, Farmington, Crookston and Winona) adding an additional 72 first detectors to the 166 that were trained in 2008. A higher percentage of people attended the workshops this year without registering to become First Detectors (Figure 3).

The First Detectors addressed roughly 300 of the over 1,500 EAB-related calls the MDA received during June and July. None of the EAB reports received turned out to be positive.

Risk of Firewood Movement

In addition to regulatory work conducted as part of the EAB quarantines on Houston, Ramsey and Hennepin Counties, firewood inspections were carried out at approximately 92 locations selling firewood outside of quarantine areas. Businesses inspected ranged from big-box stores to more informal firewood sales by tree care companies. Inspections are conducted to check for compliance with intrastate and interstate quarantines, and labeling requirements, to identify individuals and businesses in the state distributing or offering firewood for sale, and to educate sellers on risks of spreading invasive species in firewood. Inspections are focused on areas of Minnesota considered high risk for introduction of invasive pests.

The MDA began offering firewood heat treatment certification in 2009 for kilns operating outside the quarantine areas. Two kilns were certified as part of this program. Heat treatment certification provides sellers with a wider range of markets including the DNR state parks.

Figure 1. Peeling trees in Houston County, looking for EAB larval galleries.

Figure 2. Hanging purple panel traps.

Figure 3. Training first detectors.

Forest Protection Reserve Appropriation

To combat the threat posed by invasive forest pests, Forest Protection Reserve funds ($2,000,000) were appropriated to the MDA from the Outdoor Heritage Fund (MN Laws 2009 Chapter 172, Article 1, Section 7). The MDA was directed to make grants to local units of government and other entities. Beyond providing funds to establish a grants program, the appropriation also states that: "Up to $125,000 is available immediately to the commissioner of agriculture to update the state's invasive and exotic tree pest plans by addressing the role of all stakeholders in preventing the introduction or spread of invasive pests, responding to and containing outbreaks, and remediation."

The MDA convened the Forest Protection Reserve Advisory Committee, comprised of various stakeholder groups including state legislators, representatives from the Lessard-Sams Outdoor Heritage Council, federal and state agencies, tribes, local units of government, the University of Minnesota, and industry and non-profit groups, to help guide the MDA in accomplishing the tasks associated with the appropriation. The advisory committee met on June 30, September 8, and October 2 to review and discuss the plans and documents being created for the programs - the Grants Programs and the Invasive and Exotic Tree Pest Plans - described below.

Forest Protection Reserve Grants Program

Two categories of funding have been made available through the grants program:

1. Incident Response Grants intended for use by local units of government and other entities to respond to known infestations of EAB. A total of up to $1,000,000 is available for Incident Response Grants, with a maximum award set at $1,000,000.
2. Planning and Preparedness Grants intended for use by local units of government and other entities to plan and prepare for the invasion of EAB. A total of at least $875,000 is available for Planning and Preparedness Grants, with a maximum award of $100,000.

Funds will be administered on a reimbursement basis for qualified expenses, on a quarterly reimbursement schedule. The organization must do or have done the work and pay expenses before they can be reimbursed by the state. Grant funding through this program is intended to supplement, not supplant, existing budgets. For both categories of funding, a 15% or greater non-state cash or in-kind match is required and must be identified at the time of application. In-kind contributions that qualify for use as a match include but may not be limited to labor, services, equipment, supplies, materials or in-kind donations directly related to attaining the goals of the project.

Invasive and Exotic Tree Pest Plans

The invasive and exotic tree pest plans that will be updated with these funds are emerald ash borer preparedness plans for communities. The MDA will work with the DNR, University of Minnesota and local units of government to finalize a set of operational guidelines called the "Minnesota Community Emerald Ash Borer Management Guidelines." This document, being drafted by the DNR, will provide a single set of operational guidelines for the MDA, DNR, University of Minnesota and local units of government to utilize when responding to EAB detections and outbreaks. The use of a single set of operational guidelines will provide consistent, timely, clear and accurate information to the communities of Minnesota. As a working example, the City of St. Paul's "Emerald Ash Borer Management Program" will also be included. The MDA will meet and work with representatives from the associations representing the counties, cities, townships and tribes to develop strategies to train and guide these groups in the development and implementation of such operational guidelines. This hands-on work will lay the foundation for how the state will work with local units of government and tribes. As necessary throughout the process, the MDA will consult with the Minnesota Forest Resources Council, other agencies, non-profit groups and industry groups.

Potato Cyst Nematode Survey

Surveys for potato cyst nematodes (PCN) have continued through this year. After collecting and testing over 5,700 five-pound soil samples (over 14 tons) since 2006, PCN has not been found to date. This is great news for Minnesota's potato industry, especially our seed potato growers.

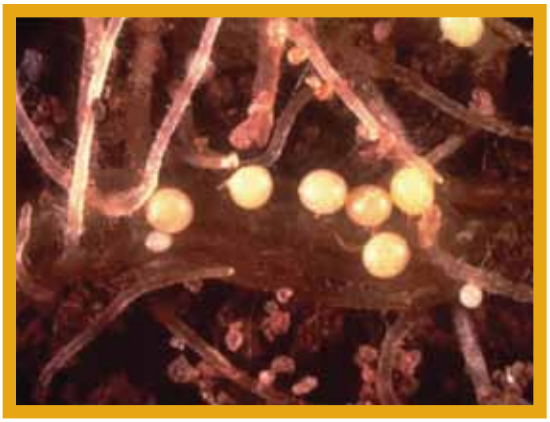


Figure 4: Cysts of PCN on potato root.

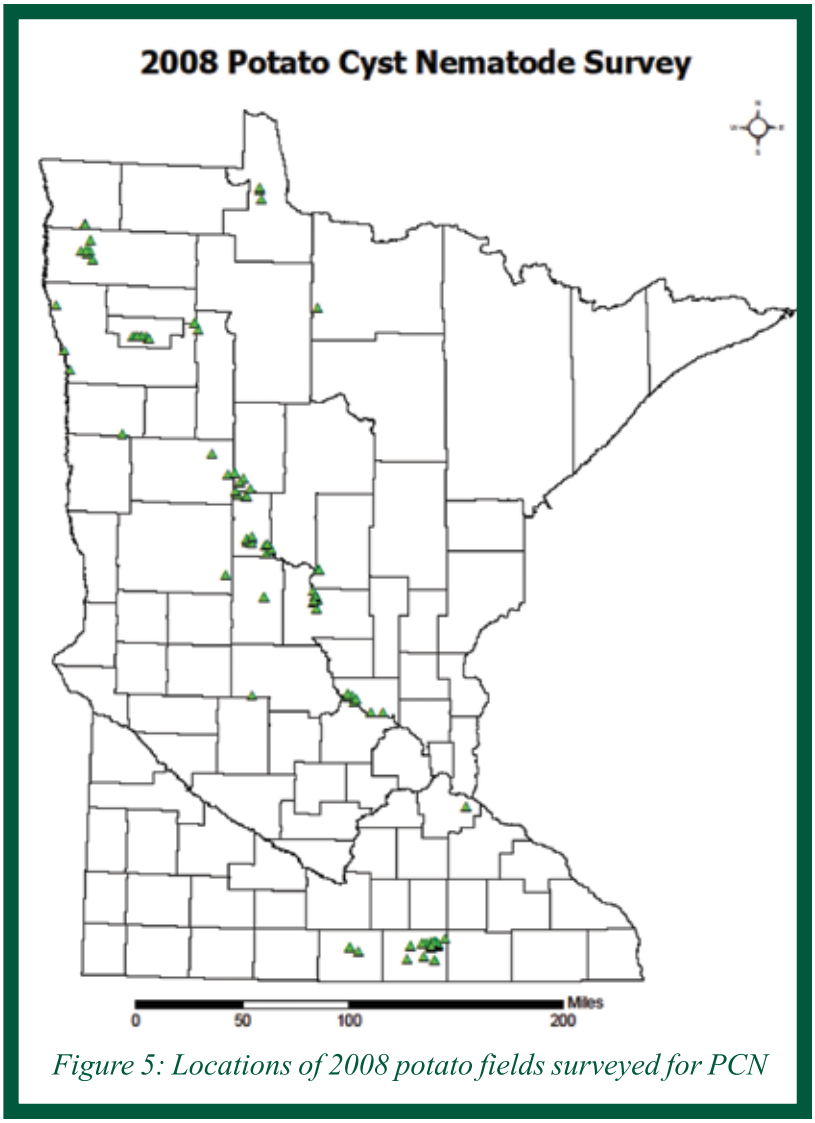


Figure 5: Locations of 2008 potato fields surveyed for PCN

Potato cyst nematodes (*Globodera pallida* and *Globodera rostochiensis*) are microscopic worm-like organisms that feed on the roots of potatoes and other plants in the Solanaceae family. After a female is fertilized, her body swells with up to 400 developing eggs, she dies, and her exterior body wall hardens into a cyst to protect the eggs (Figure 4). High populations of PCN can reduce potato yield up to 80%. The cysts remain dormant, but alive, in the soil for twenty years or more and are spread by seed tubers, rootstock, farm machinery, wind and flood water.

The Minnesota Department of Agriculture (MDA) has been conducting surveys for PCN since 2006. The survey is voluntary except for growers who are shipping seed potatoes to Canada. Their fields must be surveyed according to the "Guidelines on Surveillance and Phytosanitary Actions for the Potato Cyst Nematodes *Globodera rostochiensis* and *Globodera pallida*," an agreement that was signed by both Canada and the US in June 2009.

The 2008 PCN survey included about 100 fields that had been planted to potatoes in 2008 (Figure 5). Sample collection began in the fall of 2008 after harvest and was completed in the spring of 2009 before planting. Over 4,900 samples were collected, both by hand (Figure 6) and with a mechanical sampler designed specifically for PCN survey (Figure 7). All but 1,575 of these samples were processed at the lab in East Grand Forks, Minnesota; the remainder was shipped to Idaho Falls, Idaho, for processing at the National PCN lab. We continued to work with MDA IT staff to improve the accuracy and efficiency of our data collection and to develop a geo-database that allows us to keep records of surveyed fields over time and space.

In the survey of 2008 fields, we did find cysts of nematodes other than PCN in some of our samples (Figure 8). Working with a USDA nematologist in Maryland and Senyu Chen at the University of Minnesota Southwest Outreach Center in Waseca, Minnesota, these cysts were identified as those of soybean cyst nematode (*Heterodera glycine*) and two species of *Cactodera*, which are not known to be agronomic crop pests.

Sample collection for the survey of fields planted to potatoes in 2009 began in September, with the plan to collect from about 1,100 acres of fields planted to seed. The priority is for fields growing seed potatoes going to Canada.

If there should be a find of PCN, the MDA will coordinate with Minnesota potato growers and the USDA APHIS PPQ to determine the extent of the infestation and limit its spread. Exclusion and early detection of PCN are critical to protecting our potato industry.

Figure 6: Collecting soils samples by hand

Cereal Cyst Nematode Survey

Once established, cereal cyst nematodes can cause significant yield losses in small grains and corn. These pests are easily transported through soil attached to plant products or equipment. Intrastate, interstate, and international trade pathways are responsible for the movement of these soil borne pests.

Minnesota ranks among the top five states in the nation for production of oats, corn and spring wheat. In 2008, our small grains and corn crops brought in 5.2 billion dollars to our agriculture economy. The Minnesota Cooperative Agricultural Pest Survey committee identified exotic nematodes as a top priority for survey because of our small grain production and the high-risk pathways. In response, the MDA began a three-year survey for cereal cyst nematodes this summer. The USDA APHIS PPQ through their Cooperative Agricultural Pest Survey (CAPS) funds this survey.

Figure 7: Collecting soils samples with a mechanical sampler

In each of those three years, one-third of the total small grain- and corn-producing counties will be surveyed. Three hundred soil samples will be collected each year. Data collected from this survey will identify the presence or absence of *Heterodera avenae*, *H. filipjevi*, *H. latipons*, *H. zeae* and *Punctodera chalcoensis* and provide a baseline for future surveys. Survey and analysis tools and techniques are the same for all five nematodes, allowing us to get more information with the same resources.

Figure 8: Cysts of nematodes found in samples other than PCN

Karnal Bunt Survey

Karnal bunt is a devastating fungal disease of wheat that has significant trade implications. The fact that the MDA has surveyed for and not detected this pest for over 10 years has allowed Minnesota to continue exporting its wheat commodity. The survey for 2009 had a goal of collecting 45 samples from 13 wheat-producing counties. Samples were collected by the MDA and sent to a USDA laboratory for processing and screening. All samples came back negative for the presence of Karnal bunt.

Crop Pest Survey

This year, the MDA's Plant Pest Survey underwent a name change, to Crop Pest Survey, to better reflect the focus of the program. The Crop Pest Survey began on June 12 and was completed August 14. The focus of the 2009 Crop Pest Survey was refined to those pests for which agricultural professionals can potentially mitigate with current-year management tactics. Data is available weekly to agricultural professionals through the "Minnesota Pest Report," an on-line publication. This year's survey was limited in geographic scale and in the scope of crops and pests covered. The survey was conducted in the following Minnesota districts as set by the National Agricultural Statistics Service: northwest, west central, central, and southwest. The crops surveyed were wheat and soybeans. Besides disease and insect pest data, field staff observed growth stages of crops as the season progressed. Growth stage plays a part in the development of disease and insect population growth and impacts.

In wheat (Figure 9), the field staff collected data on tan spot, stripe rust, leaf rust, scab/*Fusarium* head blight and cereal aphids. Soybean fields were surveyed for soybean aphid.

Figure 9. Wheat field in northwest Minnesota; photo by Ardell Knudsvig, MDA

The 2009 field staff also documented and reported new or unusual pests and diseases they encountered while doing their surveys. We work cooperatively with staff at the University of Minnesota in St. Paul as well as Crookston to identify unknown organisms that might be new diseases or pests for Minnesota growers. We also spent some time in sunflower fields scouting for sunflower rust. Sunflower rust can be treated if found early enough; there was concern about a recurrence of this disease that was prevalent in 2008 fields. In addition, Plant Pest Survey staff supported the MDA's Export Certification Program by inspecting corn and soybean fields for pests of export concern. The field staff that conducted the survey is stationed in Polk, Grant, Morrison, Lac qui Parle, and Brown Counties. They visited approximately 1,400 wheat and soybean fields as part of the Crop Pest Survey this summer. The success of the survey is attributed to their knowledge of the crops and pests in their regions.

Plant Pest Laboratory

The laboratory continues to support this division in a number of ways. Analyses to verify absence of disease to issue a phytosanitary certificate for export are done when needed. The number and type of tests performed are in Table 1. The cereal cyst nematode project is using the lab to process 300 soil samples collected by the Crop Pest Survey staff. The process starts by extracting cyst nematodes from the soil. Identification of cysts using a molecular technique will follow. The laboratory also provides protocol support, laboratory space and equipment to division staff.

Permit Application Review

The MDA reviews permit applications from businesses, universities and individuals who want to import living organisms into Minnesota. This includes plant pest and biological control insects, plant pathogens and other fungi and bacteria, snails, certain plants, and soil. As part of the federal permitting process, the MDA reviews and comments on the organisms and the conditions under which they will be used and maintained once in the state, as well as their final disposal. MDA staff often contact the applicant for clarification and frequently accompany or consult with USDA APHIS PPQ staff on facility inspections. If there are concerns, the MDA recommends changes to the permit. Once a permit is issued, the MDA is notified. A copy of the permit and the original application are stored in our database. Most of the permitting process is done through an online system supported by the USDA APHIS PPQ. In 2009, about 60 permit applications were reviewed.

Some of the organisms for which permits were requested were for research purposes. For example, a plant pathogenic fungus may be brought into Minnesota for disease resistance research. Soils are brought in for various physical and chemical analyses. Other organisms, like certain butterfly species, are imported for sale or release at events. Some of the organisms for which permits were requested were for research purposes. For example, a plant pathogenic fungus may be brought into Minnesota for disease resistance research. Soils are brought in for various physical and chemical analyses. Other organisms, like certain butterfly species, are imported for sale or release at events.

Occasionally, a permit application review will require an inspection of the facility where the work is to be conducted. The MDA and USDA APHIS PPQ staff will participate in these together. For example, the MDA served on the review committee for the new BSL 3 facility at the University of Minnesota when they applied for a permit.

Apiary Certification

Minnesota's honeybees are a valuable resource that produces $13.2 million in honey annually (National Agricultural Statistics Service). Minnesota ranks sixth in the nation in honey-producing colonies of bees, numbering 122,000. Our bees are extremely efficient as Minnesota honey production is ranked fifth in the nation, at 9.5 million pounds.

Inspectors working statewide (Figures 10, 11) performed apiary health inspections for 23 beekeepers, allowing them to move 31,850 of Minnesota's 122,000 colonies to California, Florida, Texas, Louisiana and Mississippi. Most of these colonies go to California and Florida and are intended mainly for pollination purposes, while those moving to Texas, Louisiana and Mississippi are mainly to increase colony numbers or "splits." Roughly one million of the United States 2.3 million honeybee colonies are used to pollinate almonds in California, with California producing 90% of the world almond crop annually. Significant moneys from almond pollination contracts are paid to Minnesota beekeepers and help stimulate our economy.

During inspection this year, inspectors identified American foulbrood, European foulbrood, deformed wing virus, sacbrood virus, small hive beetle, varroa mites, chalkbrood and wax moth in colonies. During inspection, colonies may be certified as "Red Imported Fire Ant"-free upon beekeeper request. Twelve beekeepers took advantage of this inspection option; all 12 were taking colonies to California. Inspections are performed on a cost-recovery basis.

OUTREACH COMPLETED IN 2009

- Grassroots and large-scale media tactics; public meetings held in Ramsey, Houston and Hennepin Counties.
- Public events including an EAB Center at the Minnesota State Fair, Girls and Science, and the Minnesota Public Workers Association.
- Door-to-door distributions of mailings to neighborhoods where infested ash trees were discovered.
- Large-scale media efforts; television ads intended to raise awareness of EAB and firewood movement and were aired on Twin Cities' Channels 9 and 45, Duluth's Channel 10, and Hibbing's Channel 13, and public access cable stations. Radio messages were broadcast over the Minnesota Twins Network and Minnesota Public Radio.
- 72 additional Forest Pest First Detectors were trained, making 166 total trained to date.

PRESENTATIONS

Staff provided 49 presentations, demonstrations, talks on various topics related to invasive species to audiences ranging from tree care professionals, First Detector trainings, staff of city/county governments, industry representatives, community educators (e.g., master gardeners), and students of all ages.

PUBLICATIONS

- Eight hard copy publications were produced and/or co-produced by MDA and various partners.
- Several versions of PowerPoint slideshows were created by MDA staff to address specific public forums and inform on aspects of EAB life cycles, historical background and proliferation, and ash tree identification.
- A video illustrating the EAB life cycle and tree damage caused using 3-D computer-generated imagery was produced by MDA in partnership with Art Institutes International Minnesota faculty and students.

Disease	Commoditiy	# of Tests Performed
Stewart's wilt	Corn	10
Bean pod mottle virus	Soybean	6
Southern bean mosaic virus	Soybean	6
Tomato ringspot virus	Soybean	6
Wheat streak mosaic virus	Wheat	1
Diaporthe	Soybean	12

Table 1. Type of tests done for phytosanitary certificates.

Figure 10. Seth Luchau, MDA Inspector, inspects a frame of bees.

Figure 11. MDA inspection of colonies before shipment.

PROGRAM PLANS FOR 2010

- Emerald ash borer. Continuation of regulatory, survey, mitigation and outreach efforts begun in 2009 in response to EAB detections in and around Minnesota. As time passes, additional finds of EAB can be expected in other parts of the state. The MDA will also participate in a multi-state research project on biological control of EAB using parasitic wasps.
- Risk of firewood movement. Inspection efforts will continue to determine compliance with quarantine restrictions.
- Potato cyst nematode survey. Samples collected in fall of 2009 will be processed and plans developed to survey fields planted to potatoes in 2010. It is likely that we will receive federal funding to survey 2010 fields beginning in the fall of 2010.
- Cereal cyst nematode survey. Continue with the second year of the survey in 2010, collecting 300 samples for cyst extraction. After three years of survey, a representative number of samples will have been collected to provide a statistically relevant survey.
- Karnal bunt survey. Continue in 2010 as in years past.
- Crop Pest Survey. Returning field surveyors will continue to monitor invasive and native agricultural pests during the 2010 growing season with emphasis on insects and diseases that can be managed during the growing season. To increase efficiency, field surveyors will be cross-utilized among the various surveys.
- Plant Pest Laboratory. Provide updated protocols for current laboratory procedures; make them available on the Laboratory Service Divisions document control system. Provide laboratory support for processing soil samples for the second year of the cereal cyst nematode survey, included as part of the crop pest survey. Validate a molecular protocol to identify cyst nematodes.
- Apiary certification. Inspections will continue as requested.

Left to Right Front row: Pahs, Smith, Nelson, Banks, Kromroy, Middle row: Cunningham, Abrahamson, Koch, Seeland, Back row: Sauter, McDill, Goodell, Ahlen, Rynders, Osthus, Roberts, Plunkett

PROGRAM STAFF

Teresa McDill
Position: 2004-present, Invasive Species Unit Supervisor
Previous experience: 2000-2004 Project Manager, MDA Ag Voluntary Investigation & Cleanup; 1990-1999 Project Manager, MDA Comprehensive Site Cleanups; 1988-1990 Pesticide Regulatory Specialist, MDA Enforcement Unit; 1985-1988 Soil Scientist, MN/DOT
Education: B.S., Rangeland Ecology, University of Wyoming, 1984

Paul Ahlen
Position: Plant Health Specialist 1
Previous experience: 1999-2009, Park Ranger WDNR; 2002-2004, Adjunct Instructor MSTC; 2002-2004, Forestry Technician; 2001-2003, Saw Technician
Education: B.S., Forest Management, UWSP, 2000

Mark Abrahamson
Position: Lead Scientist, Entomology
Previous experience: 1999-present, MDA
Education: MS in Entomology, SUNY-Syracuse, 1997; B.S, Biology, UW-Eau Claire, 1994

Neil Cunningham
Position: 2009 - Present, Outreach Coordinator
Previous experience: 2000-2009, Environmental Educator, MDA Biological Control Program
Education: B.A. in Communications, Metropolitan State University; will complete M.S. in Technical Communications, May 2010, Metropolitan State University

Nathan Goodell
Position: Plant Industry Inspector 2, 2007-present Field Surveillance, Northeast
Previous experience: 1979-1980/1997-2007, MDA Grain Inspection; 1998 National Forest Service forestry technician; MN DNR Forestry

Robert Koch
Position: 2006-present, Lead Scientist, Plant Pest Survey
Previous Experience: 2005–2006 Postdoctoral Research Associate, U of MN; 2000-2005 Graduate Research Assistant, U of MN
Education: Ph.D., Entomology, U of MN, 2005; B.A., Biology, St. John's University, 1999

Kathy Kromroy
Position: 2005-present, Lead Scientist, Plant Pathology
Previous Experience: 1999-2005, Post-Doctoral Plant Pathologist, USDA Forest Service; 1978-1998, Research Assistant, Res. Fellow, U of MN
Education: Ph.D., Plant Pathology, U of MN, 1999; M.S., Plant Pathology, U of MN, 1982

Janet Nelson
Position: 2007-present, Office and Administrative Specialist Senior
Previous experience: 1975-present, MDA

Jonathan Osthus
Position: 2009-present, Field Surveillance, EAB Survey Lead Worker.
Education: B.A., Environmental Studies, U of MN Duluth, 2009

Tiffany Pahs
Position: 2007-present, Plant Health Specialist
Previous experience: 2006, MDA Agricultural Technician; 2004-2005, Research Assistant, U of MN
Education: B.S., Wildlife Biology, U of MN

Daniel Pasche
Position: 2005-present, Field Surveillance, Lead Worker (2005-present, State Apiarist and 2006-present, Firewood inspection coordinator)
Previous experience: 1989-2004 MDA Apiary Inspector; 1982-1990 Self-employed

Josh Plunkett
Position: 2009-present, Plant Health Specialist 2
Previous experience: 2004-2009, Consulting Arborist; 1997-2002, Tree Care Foreman; 1996 MN DNR Scientific & Natural Areas Forestry technician
Education: B.S., Environmental Horticulture U of MN, 1997; Associates Degree, Urban Forestry U of MN, 2004

Michael Rynders
Position: 2009-present, Plant Health Specialist I
Previous experience: 2005-2009, Environmental Analyst I, MDA
Education: B.A., Biology, St. John's University, 2005; B.A., Environmental Studies, St. John's University, 2005

Tina Seeland
Position: 2007-present, Lead Scientist, Laboratory
Previous experience: 2007, MDA Plant Health Specialist; 2006-2007, Asst. Scientist, U of MN, Dept. of Entomology; 2004-2006, Biological Technician, Microbiology, USDA Forest Service; 1999-2004, Jr. Scientist, U of MN, Dept. of Plant Pathology.
Education: B.S., Plant Biology, U of MN

Renae Smith
Position: 2008-present, Plant Health Specialist I
Previous experience: 2007, Minnesota Conservation Corps
Education: B.S., Natural Resource Management-Biotic Resources, Min. Zoology, North Dakota State University, 2007.

Crop Pest Survey Seasonal Staff

Brian Anderson, *Plant Health Specialist*
Mary Engelhard, *Field Surveillance, Lead Worker*
Ardell Knudsvig, *Field Surveillance, Northwest MN*
Rich Kvols, *Field Surveillance, West Central/Southwest*
Roy Mayeda, *Field Surveillance, West Central*
Randy Renken, *Field Surveillance, Southeast*
Miranda Trebesch, *Field Surveillance, Southwest*
Jerald Yourczek, *Field Surveillance, Central*

EAB Temporary Staff - Field Surveillance

Samuele Banks
Laura Durenberger
Edward Evens
Seth Luchau
William Martin
Overblessing Msuya
Chris Oppitz
Tammy Oseid
Sam Shroyer

PCN Temporary Staff

Jesse Roberts
Robert Sauter

Nursery Inspection And Export Certification *Unit*

OVERVIEW

Mark Schreiber, Supervisor

Nursery Inspection & Export Certification
The Nursery Inspection & Export Certification (NIEC) Unit administers Minnesota Statutes (2008), Chapter 18.H. These statutes were originally established in the early 1900's and formerly called The Plant Pest Act. Over the years, the language has been updated, fees established and, in 2003, program funding became dedicated through program revenue. In 2005, dealer fees were adjusted to ensure adequate program funding. But the goal of the statutes has remained unchanged for nearly a century. Through the statewide Nursery Inspection Program, unit staff prevents the introduction into and spread within Minnesota of serious plant pests and ensure that nursery stock grown and sold in Minnesota is free of exotic plant pests.

Export Certification Program
The mission of the Export Certification Program is to facilitate and expedite Minnesota's agricultural products into the domestic and international marketplace. Unit staff is responsible for inspecting and certifying agricultural products such as grain, seed, logs, lumber, nursery stock, and many processed products to ensure they meet the import regulations of the destination state or country. This program cooperates with the USDA, Animal and Plant Health Inspection Service, Plant Protection and Quarantine Program to issue federal documents for commodities entering foreign countries. Staff also serves as the important first contact for many exporters in their quest to establish a presence in the international marketplace. Staff is stationed in East Grand Forks, Bemidji, Staples, Nicollet, and St. Paul. Under Minnesota Statutes Chapter 18.G (2008), the export program collects fees and is also fully funded by these service fees making the entire unit completely funded by its regulated clientele.

Wildlife Damage Compensation Program
This year the Wildlife Damage Compensation Program was moved to the NIEC Unit. This program is funded by legislative appropriation to provide financial compensation for producers who can document damage to livestock or field crops due to wolves or elk respectively. Currently the funding level is $150,000 per year, split evenly between wolf and elk damage claims.

FAST FACTS OF 2009

Nursery Inspection Program

- Nursery inspection staff conducted over 850 inspections in 2009.
- Sixteen notices of violation (NOV) were issued, primarily to firms operating without a 2009 nursery certificate. Several retail box store chains were issued second NOVs for selling packaged perennial plants that were either non-viable or in an actively growing condition.
- Significant progress was made in retailers' sale of dormant, packaged nursery stock.
- A firm found operating without a certificate and violating an Order to Cease and Desist had to obtain a 2009 nursery stock grower certificate and was fined $1,500.
- The state's exterior quarantine on Japanese beetle was rescinded because the pest was determined to be widespread within the state (albeit generally at low levels), the division lacked resources to conduct annual detection surveys, and there were no plans to suppress or eradicate Japanese beetle at the state level.

Export Certification Program

- 1,119 acres spread over 80 fields were inspected for export certification. This is a large decrease from 2008, when 4,630 acres were inspected. The 76% drop in acres is a result of our efforts to help customers more accurately and carefully evaluate the need for inspections prior to requesting them. Primary crops continued to be corn and soybeans, with sunflowers, small grains and edible beans playing a secondary role.
- Export staff issued certificates for 150 companies to 65 countries. See the accompanying graphics for information about commodities shipped and major trading partners.
- 870 million pounds of agricultural commodities were shipped internationally with export certificates this year. 408 million pounds were corn and distiller's dried grains (DDGs) and 401 million pounds were soybeans. 1.5 million plants were issued export certificates, primarily for export to Canada.
- 2,978 phytosanitary certificates were issued and more than 3,200 export documents were issued.
- 4.8 billion pounds of corn was shipped to western states through compliance agreements and certificates for freedom from European corn borer.
- Further implemented the use of Phytosanitary Certificate Issuance & Tracking System (PCIT), a federal on-line program used to issue phytosanitary certificates. All phytosanitary certificates issued in Minnesota are now issued and billed through PCIT. Utilizing this program has greatly expanded the ability of field staff to issue certificates and has dramatically reduced billing time.

PROGRAM SUMMARY FROM 2009

Nursery Inspection Program

Inspections

Nursery inspection staff conducted over 850 inspections in 2009. All 7,800 acres of growing nursery stock held by 319 nursery stock growers were inspected. These figures are interesting in that they reflect a decrease of nearly 400 acres of growing stock but a slight increase in actual growers relative to 2008.

Nearly 500 dealer inspections were conducted among the 2,362 dealers to confirm plants were certified at origin, free of serious plant pests and current certificates were on display. The inspections resulted in violations involving 15,375 plants that were restricted or destroyed.

Violations

Sixteen notices of violation (NOV) were issued, primarily to firms operating without a 2009 nursery certificate. Several retail box store chains were issued second NOVs for selling packaged perennial plants that were either non-viable or in an actively growing condition.

Dormant Stock

Progress was made in dealing with dormant, packaged nursery stock. Some suppliers delayed shipment to Minnesota in an attempt to address timing issues. Another firm simply stopped shipping to Minnesota. But some dormant packaged plants again arrived in poor condition and were not properly stored despite pre-season correspondence. In most cases, suppliers were notified and allowed to pull product from the shelves to avoid a fine. To help with more consistent enforcement in 2010, legislation was recently passed establishing definitions of trade terms.

Plant Hardiness

After the first Zone 4 minimum winter temperatures (-20 to -30 degrees) in the Twin Cities since 1996, many evergreens looked very rough in the spring. Most were severely dried out and brown, but new buds were not killed and new growth was normal. The death of many marginally hardy plants that had survived with warmer-than-normal minimum winter temperatures demonstrated why the draft hardiness zone map which shifts warmer zones northward should remain a draft.

Hardiness continues to be a concern at many chain stores which continue to ship and sell trees and shrubs that have little chance to survive winter weather in Minnesota. Inspectors have developed a list of non-hardy plants found during inspections. Store managers, corporate managers and buyers have been made aware of this and still fail to select hardiness zone-appropriate stock for their stores.

Non-hardy fruit trees and other small fruits are purchased by uninformed customers. These plants, if they survive, will not likely bear fruit. Under Minnesota statutes, there is no violation unless the hardiness of a plant is misrepresented. Inspectors have found non-hardy plants labeled “Northern Hardy” and have ordered those tags removed. More commonly, however, plants are displayed with tags that include a minimum low temperature such as -10 degrees (Zone 6). Others correctly identify the plant as Zone 6 or have no hardiness information listed. Minnesota is Zone 4 south of the Twin Cities and Zone 3 north of the Twin Cities. Zone 6 plants are suitable for St. Louis, Missouri, not St. Paul, Minnesota.

Diseases

“Knock-Out” and “Double Knock-Out” roses were found infected with downy mildew in many retail locations. This disease can be very destructive and difficult to control. A notice was sent to retailers recommending removal of plants with disease.

Fletcher scale was found heavily infesting potted Taxus. Plants were ordered off-sale pending successful control. Because this pest requires precise timing of control treatments, several plants were returned to the supplier rather than being held off-sale.

Bronze birch borer was found in "Renaissance Reflection," "Crimson Frost" and "Royal Frost" birch along with the more common "Whitespire" and paper birch. These newer varieties appear to be susceptible to this destructive borer despite claims of resistance.

Linden borer was found at several grower locations attacking little leaf linden. Characteristic sawdust-like frass at the base of infested trees is a telltale sign of this pest.

Various canker diseases and assorted borers were also reported. Often cankers and/or borers are associated with wounding which provides an entry point. Canker can also be spread on pruning tools in damp or wet weather.

Hosta virus complex, though much reduced, continues to be reported. Many infected plants were traced back to imports from Holland. Staff used ELISA stick tests to confirm HVX on symptomatic plants. Some growers have also begun to use these easy and inexpensive tests to assist in the management of virus in their sales or production operations. Tobacco rattle virus (TRV) and impatiens necrotic ring spot virus (INSV) have also been commonly associated with virus symptoms in hosta. Because TRV has a wide host range and is nematode vectored, it has the potential to be very destructive. Virus symptoms were also found on clematis and, though virus was not confirmed, the symptoms were found at separate locations on the same few varieties.

Certification

Inspection staff continued to find retailers operating without the required current certificate. Several previously certified locations were found to have not renewed. Fortunately most operators were cooperative and provided application and payment on the spot, thereby allowing the inspector to release stock for sale without interrupting sales. In some cases more than the current year's payment was delinquent. Growers and tree spade operators were also found offering trees for sale that had not been inspected and certified pest-free. In one case, several attempted contacts including a cease and desist order were ignored until staff witnessed unlawful tree moving activity. This firm, found operating without a certificate and violating the Order to Cease and Desist, was fined $1,500 after paying for a 2009 nursery stock grower certificate. The substantial penalty was paid, required application and payment were made, and the certification inspection was completed before operations could resume.

Staff Cooperation

Excellent cooperation between regional nursery inspectors allows all work to be completed in a timely manner despite some personal absences due to injury, vacations or other assigned duty. Inspectors continue to support the unit's phytosanitary certification activity through regional inspections and issuance of certificates.

Export Certification Program

- 2,978 phytosanitary certificates were issued to over 150 companies, facilitating the export of agricultural commodities, logs, lumber, and plants.
- 870 million pounds of agriculture commodities were exported this year. This is an increase of 80 million pounds from 2008. 1.5 million plants were exported, similar in amount to 2008. 65 countries received export documents issued by us in 2009.
- Staff inspected and certified 1,119 acres over 80 fields to ensure compliance with foreign pest regulations. This was a 76% drop in the number of acres inspected from 2008. The decrease was likely a result of our efforts to help customers save inspection costs by identifying which fields actually needed inspections in 2009. This was accomplished by sending detailed reports of import requirements for major seed destinations to exporters early in the spring and again in the summer.
- The 2009 Karnal bunt (a fungus disease of wheat) survey was completed in October; Karnal bunt was not found.
- Grain handling facilities must have their screening facilities checked annually for compliance to be certified European corn-borer free. Exterior borer quarantines established by west coast states and western Canadian provinces require this compliance if corn is to be shipped to them. Both this certification and the Karnal bunt survey are done by the Seed and Noxious Weed Unit.

Commodities Exported in 2009 with a Phytosanitary Certificate

Commodity Name	Part	Pounds
Corn	DDGs	373,818,615
	Grain	24,578,866
	Gluten Meal	9,358,239
	Seed	107,669
	TOTAL	**407,863,390**
Soybean	Meal	249,372,082
	Grain	141,682,987
	Seed	6,478,527
	Flour	3,426,693
	hull pellets	224,263
	TOTAL	**401,184,551**
Black Bean	Grain	18,162,900
Pinto Bean	Grain	9,386,205
Kidney Bean	Grain	869,356
Navy Bean	Grain	345,000
	Seed	417
Small Red Bean	Grain	90,000
Cranberry Bean	Grain	44,000
	TOTAL	**28,897,878**
Sunflower	Grain	23,009,353
	Seed	10,425
	TOTAL	**23,019,778**
Oat	Grain	1,767,005
	Seed	553,427
	Fiber	80,000
	TOTAL	**2,400,432**
Yellow Pea	Grain	1,697,008
	TOTAL	**1,697,008**
Barley	Malted Grain	1,548,375
	Grain	124,184
	Seed	16
	TOTAL	**1,672,575**
Rye	Flour	785,000
	TOTAL	**785,000**
Ryegrass	Seed	711,000
	TOTAL	**711,000**
Wheat	Seed	357,117
	Grain	338,777
	Flour	11,788
	TOTAL	**707,682**
Mustard	Grain	542,333
	Flour	30,864
	TOTAL	**573,197**
Wild Rice	Grain	183,080
	TOTAL	**183,080**
Potato	Seed Potato	52,021
	TOTAL	**52,021**
Sugar Beet	Pulp Shreds	44,360
	TOTAL	**44,360**
Kentucky Bluegrass	Seed	44,002
	TOTAL	**44,002**
Timothy	Seed	44,000
	TOTAL	**44,000**
Reed Canarygrass	Seed	17,351
	TOTAL	**17,351**
Bent Grass	Seed	1,000
	TOTAL	**1,000**
Durum Wheat	Grain	65
	TOTAL	**65**
Pine (Red, White)	Seed	41
	TOTAL	**41**
Amaranth	Grain	15
	TOTAL	**15**
Spruce (White, Black)	Seed	8
	TOTAL	**8**
Triticale	Seed	4
	TOTAL	**4**
	GRAND TOTAL	**869,898,437**

Commodity Name	Amount	Units
Plants	1,548,775	Individual
Vegetable Seed	2,393	Packets
Kiln Dried Lumber	355,256	Board Feet
	119,090	Pounds
Logs	19,373	Board Feet
	611	Logs
Veneer	247,135	Pounds
Peat mulch	35,420	Pounds
	2,028	Cubic Feet
Processed Animal Feed	7,242	Pounds

2009 Top Ten Phytosanitary Certificate Destinations

County	Certificates in 2009
Canada	499
Indonesia	369
Philippines	365
Mexico	314
Viet Nam	189
Thailand	119
Korea, Republic of	98
Taiwan	95
Chile	89
China	79

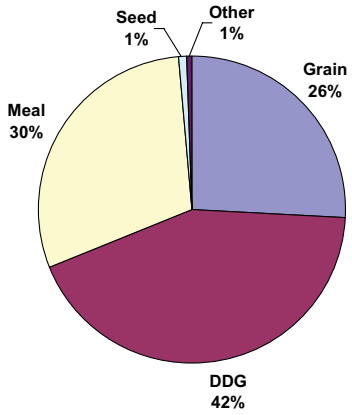
- This year the Export Certification Program expanded its ability to help the exporter through new technology. The program now requires applications to be submitted through the federal online phytosanitary certificate program, Phytosanitary Certificate Issuance & Tracking System (PCIT), which allows customers the option to apply online, removing the need for MDA staff to transcribe information from paper applications to the computer and to track the progress of their application.

  After a certificate is written, the customer can print a copy for their records. The original is printed at the MDA on official certificate paper, signed, and mailed, allowing customers to move forward with the business side of exporting. PCIT also has the capability of allowing staff to track certificates and to print progress reports on demand.

  In August, the export program began billing all phytosanitary certificates through PCIT as well. Money is subtracted out of the applicant's account balance at the time a certificate is issued, preventing the need to invoice. On the 15th of every month, the Feds transfer money into our account for the certificates we issued the previous month. The financial transactions are working well, and we no longer deal with customer non-payment issues.

  On October 1st, we began issuing and billing state phytosanitary certificates through PCIT as well. We have received much positive feedback on our use of PCIT.

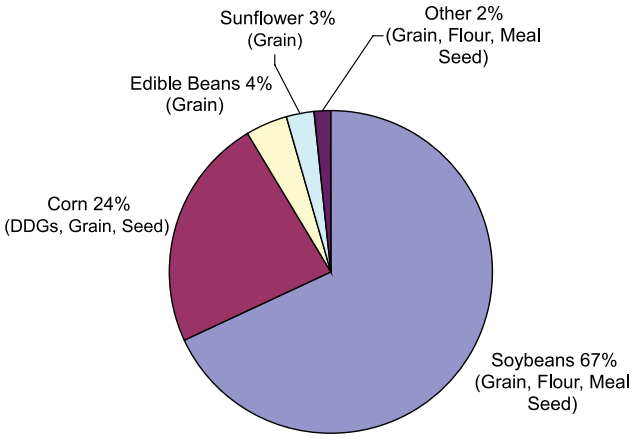
Commodity Types Exported with a Phytosanitary Certificate in 2009



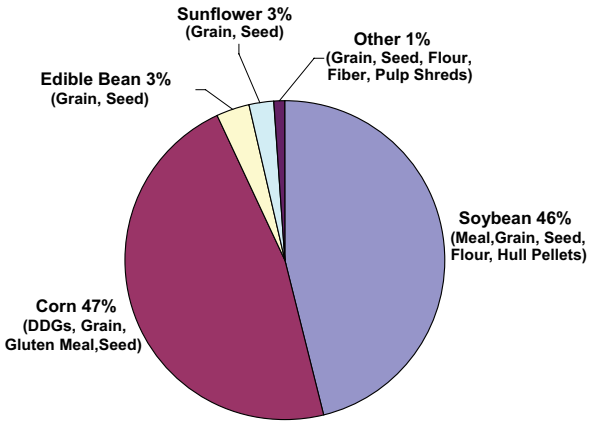
- Export Certification Program staff constantly monitor plant pest regulations and update their knowledge base as countries and states often change their entry requirements. Accurate information and education have become equally as important for our customers as the documents themselves.

- Cooperative staffing arrangements allow Plant Protection staff to combine regular work with export inspections to reduce the certification costs. Seed and Noxious Weed Unit inspectors took official samples from exporting seed companies for inspection by export staff. Nursery Unit inspectors conducted inspections of nursery stock as well as firewood, logs, lumber, and grain. Seed Potato Certification Program staff issued export certificates for soybean, edible bean, corn, and potato exporters in northwest Minnesota.

Commodities Exported with Phytosanitary Certificates in 2008



Commodities Exported with a Phytosanitary Certificate in 2009



- Seed and Noxious Weed Unit staff was trained to inspect small lot seed inspections on site. This training made it possible for seed companies to obtain inspections more quickly and inexpensively via seed unit inspectors and improved our certification service to these firms.
- Comparison of 2008 and 2009 commodity exports reveals interesting shifts in certified commodities. From the pie charts it is clear that corn exports constituted the largest portion of exports while soybean exports fell in 2009. It is remarkable that dried distillers grain (DDG) continued to expand its export footprint from last year.

Wildlife Damage Compensation Program

The Wildlife Damage Compensation Program was implemented during the 1970's in response to the success of conservation efforts to increase the Minnesota wolf population. More wolves meant more interaction with livestock, primarily in northern Minnesota. Similarly, success in introducing elk into northern Minnesota led to loss of field crops to grazing. The program provides financial compensation for producers who can document damage to livestock or field crops due to wolves or elk respectively. During the 2009 legislative session the wildlife damage compensation fund was increased to $150,000 per year with $75,000 designated for each claim type. This increase, however, was only to the 2010 fiscal year which meant that $40,000 in claims in excess of fiscal 2009 funds were carried over, leaving a real balance of only $110,000. As a result, the wolf claim funds have been nearly exhausted by November 2009 and claims continue to be received from farmers experiencing depredation.

Elk damage on farms has not stopped, but with the very difficult growing season many farmers had crop insurance settlements from weather-related damage that effectively removed their crop from coverage for elk damage claims as the amount of the insurance settlement exceeded the value of the crop lost to elk. The farmers also report a high rate of damage to fences by the elk which greatly increases their time and costs of maintaining their fences. Increased elk hunting licenses issued by Minnesota Department of Natural Resources (DNR) seem to have helped reduce damage in some but not all areas.

The DNR reports a decrease in deer numbers across many areas of the state which likely is contributing to the increasing numbers of wolf depredation claims. The high volume of wolf claims continues to increase over the years, and wolf claims are being received from points further south each year as the wolf population expands into more areas of the state.

OUTREACH COMPLETED IN 2009

Nursery Inspection Program

- Regular discussion and distribution of plant pest information to individual nursery clients during routine site inspections.
- The newly fully-staffed Nursery Inspection Unit allows inspectors to spend more time inspecting and conduct better follow-up as needed, resulting in better, more effective service.
- Participated in education and outreach with a display at the Minnesota Nursery and Landscape Association's (MNLA) Green Expo.
- Brochures describing each Plant Protection Division program with details of regulatory requirements and services were printed for distribution to regulated clients and the general public. The nursery publication is included with nursery applications along with a copy of the "Nursery Law."
- Deborah Davis Hudak, inspector, spoke to Master Gardeners and staffed a division display at three meetings in various northern Minnesota communities.

Export Certification Program

- The export brochure was distributed to exporters and potential exporters as needed.
- Attended the Green Expo and promoted the program.
- Created handouts for customers to help them set up accounts, navigate, apply and pay for certification through PCIT.
- Participated in the Fox9 Girls in Science event at the MN Science Museum. Girls sieved soybeans to look for contaminants and determined whether the soybeans could be exported to Japan. Without exception, the girls were interested and enthusiastic. The event proved to be a good outreach opportunity to the girls and their parents/chaperones who asked many questions of their own.

PROGRAM PLANS FOR 2010

Nursery Inspection Program

- Explore and start to address the plant hardiness issue. It has become increasingly common to see plants not hardy in Minnesota shipped into Minnesota and offered for sale across the state. While not technically in violation of state statutes, many local managers are concerned that they are selling plants that will not survive the winter and therefore impact their relationships with their customers.
- Follow-up on repeat violations by retail operations failing to handle packaged plants appropriately. Good cooperation from suppliers in 2009 will hopefully allow us to close the book on this issue in 2010.

Export Certification Program

- Continue to work with other programs' staffs to best utilize division resources and maintain and improve upon the high levels of certification efficiency achieved in 2009.
- Continue our aggressive policy toward field inspections so that only fields requiring inspection will be applied for by seed companies.
- Expand division laboratory testing options for exporters.
- Obtain training for James Jacobs so he is certified as an Authorized Certification Official. This will expand certification staff in the St. Paul office and increase program efficiency as well as stabilize customer services.

Wildlife Damage Compensation Program

- Consolidate and update annual reimbursement records.
- Compile claims data by county by year to better assess wildlife damage and allow better strategic planning and funding requests.

Emerging Issues and Challenges

- Trading partners of the United States continue to move toward adopting the International Standards for Phytosanitary Measures (ISPM). A major challenge facing states will be to conduct various field and/or facility inspections necessary to achieve certification per the ISPM. In some cases, these are labor intensive or time sensitive. With limited resources, it may be difficult to meet some of these standards.
- Various plant pests continue to be found in the United States, requiring unanticipated surveys to establish "freedom from" status to retain export eligibility (e.g., potato cyst nematode, sudden oak death, emerald ash borer, soybean cyst nematode). Finding funding to meet these needs (conducted through our Invasive Species Exclusion Unit) is a challenge. Yet, without surveys the ISPM standards cannot be met and export options are reduced.
- Existing export program staff is aging, reaching retirement eligibility. Backup training has been implemented with four professional staff in the St. Paul office capable of issuing export documents. Training for James Jacobs is planned for spring 2010 and will add a fifth Authorized Certification Official to St. Paul staff.
- Wildlife damage continues to escalate and adequate funding remains a challenge. The reimbursement process needs to be reevaluated.

PROGRAM STAFF

Mark Schreiber
Position: 2000-present, Nursery Inspection & Export Certification Unit Supervisor
Previous experience: 1986-2000, Plant Protection Program Supervisor; 1983-86, Plant Health Specialist; 1979-83, Technical Service Program Lead Worker/Supervisor Plant Health Specialist; 1978-79, Minnesota Shade Tree Program
Education: M.S., Plant Pathology, University of Minnesota; B.A., Biology, Hamline University

Peter M. Dziuk
Position: 2004-present, Plant Health Specialist, Nursery Inspector
Previous experience: 2001-2004, Exotic Species Program Coordinator & State CAPS Program Coordinator; 1996-2001, Gypsy Moth Program Coordinator; 1992-1996, Tree Inspector Certification Coordinator; 1987-1989, Plant Propagator, Bailey Nurseries, Inc.; 1978-1986, Owner, Crestwood Nursery and Landscaping; 1976-1978, Botanical Collection Specialist,MN Zoological Gardens; 1973-1976, Greenhouse Asst., U of MN Horticultural Greenhouse
Education: B.S. Horticulture, U of MN; B.S. Biology, U of WI-River Falls; Secondary Education Certificate, U of W-River Falls

Lorraine Englund
Position: 2001-present, Office Administrative Specialist, Intermediate.
Previous experience: 1990-2001, Department of Transportation; 1987-89, Clerk II Lead Worker; 1983-87, Clerk I with the Minnesota Department of Revenue

Deborah Davis Hudak
Position: 2006-present, Plant Health Specialist, Nursery Inspector, based in Bemidji
Previous experience: DNR Parks Division; Worked in private industry, responsible for inspection, certification and sale of plant material; and overseeing a NASA grant program at Bemidji State University.
Education: B.S., Environmental Science; B.A., English

James J. Jacobs
Position: 2008-present, Plant Health Specialist, Nursery Inspector
Previous experience: Graduate research assistant at the U of MN; technician in the Plant Disease Clinic, U of MN
Education: B.S., Forestry; M.S., Plant Pathology, U of MN

Steven Shimek
Position: 1988-present, Coordinator of Nursery Inspection and Certification Program
Previous experience: 1986-1988, Plant Health Specialist with Shade Tree Program.
Education: B.S. Forestry & Resource Management, U of W-Stevens Pt

David M. Simmons
Position: 2001-present, Plant Health Specialist, Nursery Inspector, based at Staples with an office at the Central Lakes College, Ag Center.
Previous experience: 1998, BASF Chemical Co.; 1994-1997, Crop Consultant, Harvest States, Cenex Land O' Lakes Cooperative; 1988-1994, Crop Management Specialist, Farmland Industries, Inc.
Education: B.S., Entomology, NDSU; A.A.S., Crop Science, U of MN-Crookston

Stephanie Visker
Position: 2008-present, Export Certification Program Coordinator
Previous experience: 2007, Emerald Ash Borer Survey Coordinator, MDA; 2005-2006, Seasonal, Invasive Species Trapper, MDA; 2002-2006, Long-Term Substitute Science Teacher and Daily Substitute Teacher; 2003-2004; Science Teacher, ISD 281
Education: B.A., Biology, St. Olaf College, Teaching Certification - General Science, grades 5-8, Life Science, grade 9-12

Lola Youngblom
Position: 2000-present, Plant Health Specialist, Nursery Inspector, based in Nicollet
Previous experience: summer seasonal pest surveyor for the MDA for 11 seasons; 10 years, Minnesota Zoo as a horticulturalist and horticulture supervisor.
Education: B.S. in Horticulture, U of MN

Left to Right
Front row: Englund, Youngblom, Davis Hudak, Visker
Back row: Schreiber, Jacobs, Dzuik, Shimek, White

Potato Inspection *Unit*

OVERVIEW

Mike Horken, Supervisor

MISSION STATEMENT
To oversee the maintenance and the increase of quality seed stock by inspection of tubers at shipping point for processing, inspection of tubers at shipping point for fresh and seed, and inspection, testing and certification of seed potatoes, and to provide assistance in disease and pest control by enforcing the particular regulations.

The Minnesota Potato Program headquarters in East Grand Forks (EGF) provides potato inspection as a service to the Minnesota potato industry.

FAST FACTS OF 2009

- Two staff was certified to perform Good Handling Practices (GHP) and Good Agricultural Practices (GAP) audits for the department.
- Three staff was certified to perform phytosanitary inspections and issue federal phytos using the new PCIT online program.
- Acreage for field inspection fell slightly, to appoximately 7,700 acres.
- Changes to the rules governing seed potato certification were submitted to the seed potato industry and forwarded for legislative action. These proposed changes were indicated by national disease tolerance concerns and made to promote a higher and more uniform standard.
- A database was developed for printing potato plant health and phytosanitary certificates, reducing the time spent on writing certificates and searching for the necessary details.
- Michael Bothum received his 25-year service award.

PROGRAM SUMMARY FROM 2009

Post-Harvest Test – Oahu, Hawaii

Late primary virus infection is symptomless, the reason tuber samples are planted in November in Hawaii and evaluated in January in what is called the winter test or post-harvest test. This test is done on submitted seed lot samples representing lots of seed commercially available in the following crop year. Most states provide winter testing as part of their certification process. Potential symptomless varieties are tested serologically for Potato Virus Y (PVY) and/or Potato Leaf Roll Virus (PLRV) using ELISA tests –Hawaii has proven to be a reliable and economical location for the post-harvest testing.

Tables 1 and 2 show the results for 2008 and 2007.

Table 1. Winter Test Crop Year 2008 by Seed Class

LOT INFORMATION						
Class	**Entered**	**Passed**	**Failed**	**Passed**	**Failed**	**2007 Passing**
N	26	12	14	46%	54%	97%
G1	16	10	6	63%	37%	93%
G2	32	26	6	81%	19%	83%
G3	71	47	24	66%	34%	48%
G4	53	29	24	55%	45%	56%
G5	26	6	20	23%	77%	58%
C	23	10	13	43%	57%	15%
PF2	2	2	0	100%	0%	75%
F1	3	1	2	33%	67%	0%
TOTALS	**252**	**143**	**109**	**57%**	**43%**	**60%**

Table 2. Winter Test Crop Year 2008 by Seed Class

ACRES INFORMATION						
Class	**Entered**	**Passed**	**Failed**	**Acres Passed**	**Acres Failed**	**2006 Passing**
N	5.05	3.95	1.10	78%	22%	99%
G1	73.70	44.70	29.00	61%	39%	91%
G2	1,267.50	1,172.00	95.50	92%	8%	94%
G3	1,675.00	1,180.00	495.00	70%	30%	29%
G4	854.10	376.00	478.10	44%	56%	57%
G5	372.00	63.00	309.00	17%	83%	66%
C	452.30	142.00	310.30	31%	69%	27%
PF1	0.00	0.00	0.00	0%	0%	0%
PF2	5.00	5.00	0	100%	0%	75%
F1	10.10	0.10	10.00	1%	99%	0%
F2	0.00	0.00	0.00	0%	0%	
Totals	**4,714.75**	**2,986.75**	**1,728.00**	**63%**	**37%**	**55%**

Research

The University of Minnesota Potato Breeding and Entomology Programs under the direction of Dr. Christian Thill and Dr. Ted Radcliffe continue to conduct research trials in Hawaii. Advanced potato line selections are inoculated with Potato Virus Y and Potato Leaf Roll Virus and evaluated for disease expression. Clones that show latent symptoms to diseases are generally not acceptable to the industry. The entomologists continue to look at different levels of aphid transmission and new and existing insecticide products and rates. These efforts are done in collaboration with the Potato Inspection Unit.

Tuber Inspection of Processing Potatoes

In 2009 the harvest lasted eight weeks. In Park Rapids, 38 temporary staff were hired as Agriculture Technicians for the period of the harvest.

Tuber Inspection of Fresh and Seed Potatoes

The samples taken and submitted in 2009 for total tuber inspection that were done through the EGF and Park Rapids staff represent about 9.5 million cwt.

The inspection season of seed potatoes starts soon after the harvest is done, increasing from December on, peaking just before planting time in April and May, and then slowing down in June. The seed potato grade is a Minnesota grade, enforced by USDA-licensed MDA inspectors according to USDA interpretations and definitions. Seed potatoes are not considered certified unless they have undergone a final shipping point inspection. Shipping point inspections in Morrison, Lake of the Woods, Kittson, Marshall, Polk and Red Lake Counties are done by staff in the East Grand Forks office. Clay County is serviced from the office in Baker. Faribault and Freeborn Counties are usually serviced by staff from the St. Paul office.

The East Grand Forks staff also receives potato tuber samples from crop insurance adjusters to determine the percentage of rot or freezing. Information as to the causal organism, such as pink rot, black leg, soft rot leak is given, when symptoms are obvious.

Staff of the East Grand Forks office has also been asked by the Minnesota Certified Seed Potato Growers Association to evaluate tuber samples from the yield survey of the National Agricultural Statistics Service of the USDA.

Seed Potato Certification and Inspection

Applications for seed potato inspection were made for 7,717.72 acres.

Seed potato fields in 2009 were in Lake of the Woods, Roseau, Kittson, Marshall, Polk, Red Lake, Norman, Clay, Wilkin, Crow Wing, Morrison, Wadena, Faribault and Freeborn Counties.

Field Inspections

The number of acres that passed inspection in Minnesota in 2009 was 6,108.44 acres. The primary reason for acres being rejected was mostly by infection with Potato Virus Y (PVY) and acres being withdrawn from certification that were re-directed for processing markets.

The seed potato field inspections start in June and continue until mid-September. Each lot entered is inspected three times during the growing season. The first two inspections are primarily looking for virus diseases, varietal mixture

Table 3 shows the acreages and the changes in varieties grown as seed potatoes in the state.

Table 3. Acreages and Varieties Grown

Variety	2009 Acres Entered	2009 Acres Certified	2009 Acres Entered	2008 Acres Certified
Agata	0.01	0.01	0.01	0.01
All Blue	2.13	2.13	2.02	2.02
All Red			1.00	1.00
Allianz	0.01	0.01	0.01	0.01
Alpine Russet	0.01	0.01		
Ampera	0.01	0.01		
Anoka			5.00	5.00
Anuschka	0.01	0.01	0.01	0.01
Arcona			0.01	0.01
Atlantic	74.00	74.00	121.00	121.00
Augusta	1.31	1.31	0.01	0.01
Austrian Crescent	0.01	0.01		
Banana	0.01	0.01	0.01	0.01
Bannock Russet	0.01	0.01	0.01	0.01
Belana				
Bellarosa	0.01	0.01	0.01	0.01
Bellinda	0.01	0.01		
Blazer Russet	0.01	0.01	0.01	0.01
CalWhite	104.14	104.14	64.02	64.02
Canela			0.01	0.01
Caribe			0.01	0.01
Cascade	190.00	190.00	176.51	176.51
Castile	0.01	0.01		
Century	0.01	0.01		
Chieftain	295.23	295.23	286.22	286.22
Classic Russet	0.01	0.01		
Clearwater	0.01	0.01		
Dakota Crisp	69.70	69.70	44.00	44.00
Dakota Diamond	0.01	0.01	44.71	44.71
Dakota Jewel	0.01	0.01	0.51	0.51
Dakota Pearl	128.63	128.63	120.02	120.02
Dakota Rose	672.51	140.91	682.61	533.61
Early Ohio			0.01	0.01
Elfe	19.70	19.70	15.01	15.01
Europrima			0.01	0.01
Exempla	0.01	0.01		
Fontaine	0.01	0.01		
French Fingerling	0.02	0.02	0.01	0.01
Gemchip	0.01	0.01	0.01	0.01
Gemstar	34.00	34.00		
Goldrush	50.21	50.21	18.21	18.21
Irish Cobbler	12.12	12.12	26.04	5.04
Ivory Crisp	0.22	0.22	0.01	0.01
Jacqueline Lee			0.01	0.01
Jelly	0.01	0.01	0.01	0.01
Katahdin	2.01	2.01	6.00	6.00
Kennebec	176.13	159.13	240.01	240.01
LaRatte	0.01	0.01		
La Tona	0.01	0.01	0.01	0.01
Laura	0.01	0.01	0.01	0.01
Ludmilla	0.01	0.01		
Markies	0.01	0.01		
Mazama			0.01	0.01
Melody	0.01	0.01		
Milva	27.01	0.01	31.00	31.00

Monticello	0.01	0.01		
Mountain Rose	1.00	1.00		
Natasha	0.01	0.01	0.01	0.01
Nicola			0.01	0.01
Norchip	77.00	77.00	102.20	102.20
Norland, Dark Red	791.52	791.22	825.09	809.09
Norland, Nebraska	39.00	39.00	116.00	116.00
Norland, Red	978.79	627.59	759.20	759.20
NorValley	25.00	25.00	63.00	63.00
Onaway	0.02	0.02		
Premier Russet	118.01	0.01	0.01	0.01
Princess			0.01	0.01
Purple Majesty	6.00	6.00		
Purple Peruvian	0.01	0.01	0.01	0.01
Ranger Russet	25.01	25.01	18.00	18.00
Red LaSoda	270.14	270.14	374.24	374.24
Red LaSoda - NY	63.71	63.71		
Red Pontiac	137.40	137.40	73.16	52.16
Red Sunset	0.01	0.01		
Red Thumb	0.01	0.01		
Romera	0.01	0.01		
Rosara	0.01	0.01	0.01	0.01
Rose Finn Apple	0.01	0.01	0.01	0.01
Russet Burbank	2,222.74	2,222.74	2,432.02	2,432.02
Russet Norkotah	22.09	22.09	10.10	10.10
Sangre	79.00	76.00	77.20	77.20
Satina	16.01	16.01	1.01	1.01
Shepody	106.01	106.01	93.01	93.01
Silverton	0.01	0.01	0.01	0.01
Superior	8.00	8.00	5.00	5.00
Tachapi	0.01	0.01	0.01	0.01
Umatilla Russet	527.01	0.01	754.31	144.31
Ute Russet	0.01	0.01	0.01	0.01
Viking	66.00	63.00	43.00	43.00
Yukon Gem	0.01	0.01	0.01	0.01
Yukon Gold	152.94	151.94	208.82	208.82
A 0008-ITE	0.01	0.01		
A 096164-1	0.01	0.01		
A 96104-2	0.01	0.01		
A 96814-65LB	0.01	0.01		
AOND 95249-1Russ	0.01	0.01	21.51	21.51
C095051-7W	0.01	0.01	0.01	0.01
Eo1/152/117	0.01	0.01		
Eo1/181/153	0.01	0.01		
Eo2/05/8	0.01	0.01		
FL Varieties	94.00	94.00	97.00	97.00
MSL 228-1	0.41	0.41	0.01	0.01
ND 2225-1R	29.80			
ND 4659-5R	0.72	0.72		
ND 8555-8R	0.41	0.41	0.01	0.01
NDTX 4271-5R	0.01	0.01	6.71	6.71
PA 99N2-1	0.01	0.01		
PA 99N82-4	0.01	0.01		
W 2133-1	0.01	0.01		
Totals	**7,717.72**	**6,108.43**	**7,973.42**	**7,156.42**

Potato Cyst Nematodes in the US

The find of PCN in Idaho, Quebec and Alberta have required broader involvement of the Plant Protection Division of the MDA. The potato inspection staff in East Grand Forks is now working closely with staff in St. Paul, taking measures to protect the industry and keep markets open through survey and certification of growing areas. Staff is currently sampling and reviewing soil samples collected from potato fields in 2009. If weather holds, we will collect around 4,918 five-pound samples representing 4,277 certified seed acres and 641 commercial acres.

Cooperation with USDA-APHIS

Seed potato certification is a state's responsibility. For export purposes, negotiations are hindered by the fact that the country has so many different state seed potato certification programs. Because the blanket quarantine for potatoes will not be maintained by the USDA, security for the potato industry is based on specific quarantine issues at the border. This can only be done when there is a national overview of seed potato certification. To that effect, the National Potato Council and the National Potato Board have developed a proposal for a memorandum of understanding (MOU) between the state departments of agriculture and the USDA-APHIS. This MOU has been five years in the making. After Geir Friisoe, Director of the Plant Protection Division, became chair of the working group of the National Plant Board, states were more involved. Minnesota was one of the first states to sign this MOU, which is not yet adopted.

Advisory Committees

The members of the Minnesota Certified Seed Potato Growers Association Board are the Seed Potato Advisory Committee. They met three times with the director or the assistant director of the Plant Protection Division during the past year to discuss staffing, an increase in fees and measures to be taken concerning the possible impact of potato cyst nematode on the potato industry in the state. However, Field Inspection Fees and Shipping Point Fees were not increased this year. The board members expressed their concern about the disastrous consequences for an area where a quarantine nematode such as PCN is found.

OUTREACH COMPLETED IN 2009

Seed Potato Directory

The details for the seed potato directory have been provided to the Minnesota Certified Seed Potato Growers Association, which published it in October. It is distributed nationwide and in Canada and is displayed at booths at in-state and out-of-state conventions in Orlando, FL, in January, Moses Lake, WA, and Grand Forks, ND, in February, and Detroit, MI, in December. This directory along with other publications and agricultural related links can be found on this website: www.mnseedpotato.org.

Post-Harvest Test Booklet

The results of the post-harvest test are provided to the Minnesota Certified Seed Potato Growers Association, which distributes it as a booklet to seed potato growers and seed potato certification offices. This information is also on their website: www.mnseedpotato.org

Newsletter

Under the promotion program, managed by the Northern Plains Potato Growers Association, a Minnesota seed potato newsletter is distributed annually with material about amended regulations, proposed surveys and national and international issues.

PROGRAM PLANS FOR 2010

- The MDA staff will continue with cyst nematode extractions in the East Grand Forks facility and survey sampling of fields.
- The post-harvest test results will be communicated to the industry by mid-January 2010.
- Applications for field inspection are expected to be sent out in May.
- Although seed potato shipping point inspections have started, an increase in number of inspections begins in December and increases in January; most shipping point inspections for seed potatoes are expected to in March.
- Evaluations for crop insurance and the statistical yield survey are expected to be done again this fall and winter.
- The tuber inspection for processing potatoes is requested again and happens during the storage season on an as needed basis until the fall campaign starts again in full force.
- Emerging issue. The potato cyst nematode is a concern in the state for potential impact on markets. The potato inspection staff is assisting and prepared to assist other Plant Protection Division staff in carrying out the necessary surveys to keep markets open. The absence of soybean cyst nematode is also a certification need for potatoes moving to Canada. All growers who market their potatoes to Canada now must have a field survey to certify those acres as being free of SCN and PCN.

PROGRAM STAFF

Mike Horken, Program Supervisor/Shipping Point Supervisor

Jackie Anderson, Office/Administrative Specialist, Intermediate

Darrell Anderson, Seed Potato Specialist

Michael Bothum, Plant Industry Inspector 2

Eric Byre, Plant Industry Inspector 1

James Horton, Plant Industry Inspector 2

Perry Paschke, Plant Industry Inspector 2

Charles Steinke, Plant Industry Inspector 2

Left to Right: Anderson, Steinke, J. Anderson, Paschke, Horken, Byre

Seed and Noxious Weed *Unit*

OVERVIEW

Stephen Malone, Supervisor

Seed Regulatory Mission Statement
To inspect seed marketing facilities, sample seed, review advertisements, and take appropriate enforcement action in order to provide effective and uniform administration of the seed law and rules resulting in protection for consumers within the state and a fair and competitive marketplace for seed labelers to operate in.

Noxious Weed Program Mission Statement
To provide the initial training for county agricultural inspectors, maintain the state's noxious weed lists in order for county and local governments to be able to administer and enforce the noxious weed law resulting in protection for landowners in the state from the spread of noxious weeds. The noxious weed program is in a fluid status following the passage of some new and revised statutes in 2009, as well as personnel reassignments within the department. Those changes will be addressed in a separate chapter. The degree and exact configuration of the noxious weed program as it is reintroduced into the unit is still to be determined.

FAST FACTS FOR 2009

- Cross-training with Nursery Inspection & Phytosanitary Certification staff on certification issuance and proper seed sampling technique has benefited the work of both units and provides a working model for cross-utilization of division staff from different units with similar clientele and operational procedures.
- Our representation at the Association of American Seed Control Officials (AASCO) annual meeting in Scottsdale, AZ, in July was important due to small number of states represented.
- Represented AASCO as an instructor at the 2009 Basic Inspector Training Seminar in Denver, CO, in September.
- Attendance at the annual meeting of the Tri-Societies annual Pittsburgh, PA, in November as Chair-Elect of Crop Science Society of America (CSSA) division C-4 representing Seed Physiology, Production & Technology.

- Initial training for 8 new County Agricultural Inspectors (CAIs) conducted in St. Cloud in February. Field staff continues to foster strong working relationships with CAIs in most counties.
- Public outreach efforts included participation at the Minnesota Department of Agriculture (MDA) booth FarmFest, the Minnesota Crop Production Retailers (MCPR) short course, contributions to the American Seed Trade Association (ASTA) Seed Retailers Guide, state-wide press releases on legal seed sales and seed complaints, and regular articles in the Minnesota Crop Improvement Association (MCIA) quarterly newsletter.
- Continued improvement in compliance with Minnesota's variety labeling and brand identification enforcement effort in soybeans; gaps and needs in corn identified more clearly.
- Public web page URL simplified to http://www.mda.state.mn.us/seed

PROGRAM SUMMARY FROM 2009

Seed Permits

Currently, there are 254 permanent seed permit holders. Permanent permit holders pay permit fees based on the total tonnage and kinds of seed sold in the state on a semi-annual basis. There were eight fewer than in 2008, the losses due to consolidation of several companies and one seed company going out of business. For 2009, there are 286 annual permit holders, five more than in 2008. These firms must renew their permits on a calendar year basis. Their fees are based on annual dollar amount of seed sales in the state, or a minimum $50 fee. The new firms were flower and vegetable seed companies who supply seed to home gardeners, but some annual permit holders are suppliers of agricultural seed with a small presence in the state.

Brand Registrations

In 2009, there were 457 brands registered by 35 companies. This is about the same number of companies, but about 20 more brand names compared to 2008. In general, the number of companies registering brands each year had been trending downward as companies discontinued the practice in favor of simply stating the variety name on the seed label as they are required to do in other states where they do business. This apparently simplifies things for their supply chain personnel. Further, consolidation in the seed industry eliminated some companies that previously registered brands. We may have leveled off at the number of companies that find brand registration advantageous.

Seed Sampling

Unit staff and County Agriculture Inspectors collected 1,527 official seed samples in 2009. Although fewer than the 1,793 collected in 2008, this number is within historical norms for Minnesota. Further, compared to other states in the North Central region, we remain one of the more active seed control programs, based on the number of samples collected yearly. Most samples were collected as part of routine seed inspection of seed processing, warehouse, or retail facilities as well as samples collected specifically as part of active investigations or complaints. Apparent violation notices were issued on 151 samples or 9.88% of samples. Violations were issued for non-compliance on factors that would be likely to affect the performance of the seed lot compared to label claims. These include out-of-tolerance or below-standard percent germination, percent pure seed, percent inert matter, percent weed seed, excess restricted noxious weeds or the presence of prohibited noxious weeds.

Inspection Emphasis and Trends

In general, our sampling and inspection program is designed to provide a representative picture of the seed quality and level of compliance across the state. Our four field staff inspectors are strategically located to provide direct coverage to approximately 22 counties each. This includes the duties of inspecting and sampling seed facilities in those counties themselves, following up on complaint or investigatory needs, and also coordinating the seed sampling and inspections performed by CAIs in most counties. Each inspector has the responsibility for creating a general plan each year to cover his district. District plans are coordinated and modified based on statewide needs.

Lawn & Turf Grass Mixtures

In 2009, we placed additional emphasis on lawn and turf grass seed. This is a market segment where we frequently see out-of-date seed and excessive weed seed. In particular, mixtures of lawn seed products are more common sources of problems. Using our own fact sheets as well as the ASTA Guide for Seed Retailers, we targeted local hardware stores and "big box" locations. This document was several years in the making, includes input from our staff, and most importantly provides detailed information to these retailers on compliance with state officials and their suppliers. A shipment of several pallets of seed shipped in certified seed bags with token labeling was discovered by MDA and MCIA inspectors. The issue was identified and corrective action taken by the offending firm.

Token labeling is common in the shipment of large wholesale shipments. It is permitted under certain conditions by the Federal Seed Act (FSA). Traditionally the Minnesota Seed Law has been interpreted to prohibit this practice, which creates a competitive disadvantage compared to out-of-state firms. We have taken the position to allow token labeling as long as the provisions of the FSA are met pending further discussion with the Seed Program Advisory Group and legal advice. This would pertain only to shipments destined for mixing operations. Any single kind of seed sold would require complete labeling. Certified seed must meet all certification tagging requirements to maintain its certified status. This involves a limited number of firms within the state and we will monitor this situation closely in 2010 to ensure compliance by those firms.

Brand/Variety Identification

Based on the level of brand/variety identification compliance that we saw in 2008, we placed less emphasis on soybean sampling for this purpose. We are shifting our focus on the branding issue to corn. A similar shift in emphasis is occurring in other states and at the Federal level as recognition of many years of neglect of the naming practices is being realized. When an alternative to the original name or hybrid code designation is used, the new name is considered a brand. The fact that it is corn and not soybeans does not matter. Corn, however, is a more complex situation because sometimes companies license parent lines instead of established hybrids, theoretically producing their own new unique hybrid. The extent of exclusivity between genetics providers and seed companies is considered highly confidential proprietary information and therefore extremely difficult to monitor with limited time and resources to monitor detailed records.

Selling Seed by County

For agricultural seed, the Minnesota Seed Law requires a net weight statement on each container label, with an exception for hybrid corn, which may be labeled as to count in lieu of a weight indication. There is some renewed interest in marketing soybeans by count, and the supply chain technology may now be sophisticated enough to make this work for some companies. Based on current law, soybean containers would be required to have a net weight statement, but there would be nothing to prohibit a truthful seed count in addition. This is the exact situation in corn for states that do not have an exemption like ours. The response from industry in having to include the net weight was not objectionable.

In early January, a proposed rule was announced by an agricultural official in Iowa that the tolerances for determining a legally acceptable count should be the 1.5% tolerance dictated by the National Institute of Standards and Technology

(NIST). Via several in-person and conference call meetings, industry representatives and seed regulatory officials have opposed this move. The NIST standards are designed for manufactured products, such as ball bearings. Further, the sampling and testing procedures to determine compliance under those NIST standards are unclear and appear to be impractical for seed. It is generally understood that the tolerances and testing procedures described by the Association of Official Seed Analysts (AOSA) would be more manageable for seed work by both industry and regulatory entities, since they are designed to account for the natural variability in within seed lots and substantial inherent differences between seed kinds. Currently, we do not routinely perform checks on seed counts. However, we are working with the MDA seed lab on obtaining the necessary equipment to conduct the AOSA procedures and to determine the proper fit for this step in the sample analysis/regulatory workflow.

Investigations

2009 was a relatively quiet year for complaints and strange cases. Below are brief descriptions of three:

- A commercial pumpkin grower filed a complaint concerning an ornamental pumpkin known as a "bat-wing" because of the pattern of light and dark colors on the fruit. Unfortunately, we were unable to provide a conclusive answer to the grower because the seed was over a year old and were only able to obtain about 10 seeds. The case and the sample were forward to the Federal Seed Branch because it involved an out-of-state firm, and they would more likely be able to do a definitive varietal determination.

- A case involved a small seed company who was using misprinted bags. These were purchased from the printer at a significantly reduced price. However, this practice placed the seed company in potential contractual problems because he had products in bags with incorrect patent language, guaranty information, and incorrect logos from licensing companies. The firm will be using plain brown bags going forward.

- We continue to watch for and order removal or correction of ads in local "shopper" papers advertising cheap seed or "grain" that seems to be more likely seed. Rye seed for fall planting is the most common.

Cooperative Efforts

We continue to work closely with seed regulatory officials from neighboring states. We were able to assist South Dakota officials in investigating an alleged mislabeling situation involving a Minnesota firm. We will continue to work with the firm to get those relatively minor issues corrected on future bag design. The Wisconsin Department of Agriculture has assisted us in follow-up on outstanding violations issued to Wisconsin firms.

We continue to work closely with North Dakota officials concerning sales of PVP-protected varieties of wheat, barley, and beans as seed often moves quickly and frequently across the Red River. In most cases, protected varieties must be sold as a class of certified seed. Failure to do so or misrepresentation of certified status could result in a Federal violation. We investigated a possible case of the sale of some misidentified Lacey barley. We determined that we did not have sufficient evidence available to clearly prove a violation under Minnesota law. However, we have turned over documents collected to the Federal Seed Branch along with some additional information from our North Dakota counterparts for investigation under the Federal Seed Act.

The PowerPoint program based on the Association of American Seed Control Official's (AASCO) seed sampling handbook was completed and presented to the association at their winter meeting in Tampa, FL, in February 2008. Edits based on feedback were incorporated, and the final version was delivered to the association at the annual meeting in July 2008 held in Nashville, TN. The program was used for the first time in January 2009 for our own division program where Nursery Inspection and Export Certification staff were trained in AASCO-recognized seed sampling procedures. Seed staff was also trained more extensively in phytosanitary regulations. It has been used subsequently in refresher training programs in other states and, on a national level, at the BITS (Basic Inspector Training Seminar) co-sponsored by the seed, feed, and fertilizer control officials organizations held this year in Denver, CO. The BITS session was team-taught by Steve Malone and David Buckingham from Kentucky.

The program has been distributed to all state seed control programs in good standing with AASCO. It is expected that the training materials will be used not only in training state staff, but seed company staff as well. Adequate training of seed company personnel in proper seed sampling is an important component in any future process-verified or audit-based regulatory programs.

Ongoing efforts to promote proper labeling for seed destined for state agency use has progressed significantly in the past two years. We have worked extensively with MnDOT and the Board of Soil and Water Resources on revisions of their project specification guidelines to require properly labeled seed.

Seed Program Advisory Group (SPAG)
The Seed Program Advisory Group met in March, August, and December. The December meeting is scheduled to be held at the MCIA headquarters as we have been trying to move the meetings to different locations.

A new member, Bob Zelenka, was added to SPAG. He represents the Minnesota Grain & Feed Association for the state's elevator operators. In addition, a new member representing the CCAs will be added once a representative has been chosen.

Two other groups have replaced representatives on the board. Cal Spronk from Edgerton has replaced Tony Ziller as the representative of the Minnesota Soybean Growers, and Larry Pedelty of Chatfield now represents the Minnesota Crop Production retailers. We look forward to the contributions of the new members.

Personnel Changes
The year 2009 marked the first year since 1978 that Chuck Dale was not involved in the Minnesota seed control program. Chuck's retirement in early January came as a surprise to some, both within and outside MDA, but he was able to exit in his own style. Our challenge beginning in 2009 was to build on the tough but fair regulatory style that is Minnesota's reputation in the industry.

Steve Malone, previously Agricultural Consultant in the St. Paul office, served as interim supervisor of the unit before being promoted to the role in August. Steve was on medical leave following surgery in October and on restricted work allowance for most of the remainder of the year. Don Opdahl coordinated field staff to cover necessary St. Paul office meetings and miscellaneous needs during that time.

Kevin Ballman was promoted to Agricultural Advisor in May and completed his 90-day probationary period for that promotion in August. With that appointment, all four of our field staff are now working at the Advisor level. This allows for significantly more autonomy state-wide in managing day-to-day activities within each district but also with similar productivity expectations.

Duane Munter was recognized for 25 years of service to the MDA. He has been a field staff member involved in a myriad of department programs and district configurations through those years.

PROGRAM PLANS FOR 2010

- Continue to stay abreast of developments in USDA-AMS Process Verified Program related to seed or that could be adapted into a future audit-based program for sampling and/or seed testing.

- Update Unit's "Standard Operating Procedures" manual for seed law enforcement to reflect any needed changes brought about by the development of the PPD's "Investigative Guidelines." In addition, there are some needed updates related to coding and tracking of inspection documents to reflect upgraded procedures.

- Continue the current seed law enforcement and compliance program at current levels in terms of sampling and inspection intensity with focus areas as previously discussed recognizing that the participation of CAIs may continue to decline due to budget considerations.

- Implement registration system for identification codes as provided for in Minnesota Statutes, Section 21.82, subd. 2 (i) which would allow identification of initial labelers by AMS number or a state-issued code. An AMS number is a code issue by USDA-AMS (Agriculture Marketing Service) to identify interstate shippers and is commonly used in the seed industry.

- Work with Laboratory Services Division to streamline sample workflow through the spring season and establish plans for replacement of experienced RSTs as they retire in the next few years.

PROGRAM STAFF

Stephen Malone
Position: 2009-present, Unit Supervisor
Previous Experience: 2007-2009, Agricultural Consultant, MDA; Seed Treatment Technology Manager, Syngenta Crop Protection; Development Scientist, RiceTec, Inc.; Assistant Professor of Biology, University of West Alabama; Visiting Assistant Professor of Biology, Georgia Southern University; Postdoctoral Research Associate, Purdue University and USDA-ARS.
Education: B.S. in Agronomy, University of Arkansas, 1982; M.S. in Crop Science, University of Arkansas 1983; Ph.D. in Crop Production and Physiology, Iowa State University, 1989.

Kevin Ballman
Position: 2000-present, Agricultural Advisor
Previous Experience: Agricultural Education Teacher, Maple River and Gibbon/Fairfax/Winthrop Schools; Turf Management, Turf Tech; Crop Management Specialist, Farmland Industries.
Education: B.S. in Agricultural Education and Agronomy, University of Wisconsin River Falls.

Robbin Lucker
Position: 1979-present, Office and Administrative Specialist Senior
Previous Experience: Minnesota Department of Agriculture.
Education: Graduate, Johnson High School; St. Paul Vocational/ Technical Institute.

Duane Munter
Position: 1984-present, Agricultural Advisor
Previous Experience: Regulatory Specialist, MDA; General Manager, Fosston Farmer's Cooperative Elevator.
Education: Graduate, Fosston High School

Don Opdahl
Position: 1991-present, Agricultural Advisor
Previous Experience: Manager, Agronomy Department, Prairie Land Cooperative; Field Agronomist, Land O' Lakes; Crop Consultant, Central Minnesota
Education: B.S. in Agriculture, North Dakota State University.

Jeff Siira
Position: 1995-present, Agricultural Advisor
Previous Experience: Regulatory Specialist, MDA; Research Technician, Pioneer Hybrid International.
Education: B. S. in Crop and Weed Science, North Dakota State University.

Left to Right, Front row: Siira, Munter; Back row: Opdahl, Lucker, Malone, Ballman

NEW PROGRAM CREATED

The Minnesota Department of Agriculture, in close partnership with counties and townships, has administered the state Noxious Weed Law for many years. The program has undergone many changes and improvements over the years. In 2002, faced with serious budget constraints much of the funding for the state program was lost, and many of the mandated state oversight responsibilities were removed from the statute. During the 2008 legislative session, the MDA was asked to convene an advisory committee to resolve enforcement and implementation issues in the Noxious Weed Law and to respond to additional proposed changes to the law. A diverse committee representing agricultural, county, environmental and regulatory representatives was formed. After many months of work and considerable negotiation, nearly 100% consensus was reached by the group. An initiative to introduce the new revised law was brought forward by The Nature Conservancy with broad support from the committee. With a few minor changes, the newly revised Noxious Weed Law was passed by the 2009 legislature and signed into law by the governor. Passage of this new law mandated many new responsibilities to the department and became the foundation for the creation of the Noxious and Invasive Weed Program.

OVERVIEW

The MDA's Noxious and Invasive Weed Program was established in 2009. This program assists land managers with identification and management of noxious and invasive weeds. Statewide, it also coordinates and implements the following:

- Oversees the Minnesota Noxious Weed Statutes.
- Assists counties, townships, and landowners with noxious weed management.
- Evaluates and implements biological control for terrestrial weed species.
- Provides education, training, and outreach for professional and private land managers.

FAST FACTS FROM 2009

- The Noxious and Invasive Weed Program is formed.
- Presented summary information regarding revisions by the 2009 legislature to the MN Noxious Weed Law at the MN Association of County Agricultural Inspector's annual meeting.
- Attended and presented noxious weed enforcement information at 25+ local government meetings.
- Developed an online resource center for the Noxious and Invasive Weed Program: www.mda.state.mn.us/en/plants/pestmanagement/weedcontrol.aspx
- Assisted local weed enforcement authorities with 100+ noxious weed complaints this past growing season.
- Provided many plant identifications for private citizens and government authorities.
- Assisted landowners with developing management plans for weed issues impacting their properties.
- Assembled participants for the newly created MN Noxious Weed Advisory Committee, established by the 2009 legislature to assist the Commissioner of Agriculture with issues regarding noxious and invasive weeds in Minnesota.
- Assisted Board of Water and Soil Resources staff with the 2009 RFP for Cooperative Weed Management Area Grants.
- Conducting research on plumeless thistle management with Detroit Lakes Wetland District, U.S. Fish and Wildlife Service. This research examines various relationships between clipping plants with a wet-blade mower, seed-feeding biological control agents, and plant competition from re-established native species.

- Collected data for ongoing Canada thistle biological control and spotted knapweed integrated pest management research projects.
- Collected and distributed to new sites:
- Over 750,000 leafy spurge biocontrol beetles.
- 12,600 spotted knapweed biocontrol seedhead weevils.
- 830 root weevils.
- Populations of three potential tansy biocontrol agent species were collected in Germany, Russia, and Ukraine.
- Management plans were created and initiated for two early detection invasive plant species: narrowleaf bittercress and meadow knapweed.

PROGRAM SUMMARIES FROM 2009

General

In 2009, the Minnesota State Legislature made major revisions to the state's Noxious Weed Law. Among other revisions to existing statutes, three new sections were added to the law: Section 18.89 – Noxious Weed and Invasive Plant Species Assistance Account, Section 18.90 – Noxious Weed and Invasive Species Grant Program, and Section 18.91 – Noxious Weed Advisory Committee. Due to these changes, the MDA created the Noxious and Invasive Weed Program (NIWP) to oversee the revised Noxious Weed Law.

Anthony Cortilet and Monika Chandler were transferred from the MDA Weed Integrated Pest Management Project to oversee the duties of the newly formed NIWP. Anthony and Monika bring over a decade of weed management experience and relationships with local governments, state and federal agencies, and university extension personnel and researchers. Anthony oversees the weed law and the development of the Noxious Weed Advisory Committee that will assist the Commissioner of Agriculture with making informed social and scientific decisions regarding noxious and invasive weeds. Monika coordinates weed biological control projects for spotted knapweed, leafy spurge, and common tansy and facilitates early detection efforts for invasive species new to Minnesota. They will continue to work closely with researchers and land managers to develop sound strategies for managing weeds statewide.

The initial focus of the NIWP was on building the noxious and invasive weed management infrastructure specified in statute. Revisions to the Noxious Weed Law were presented to counties and local governments in a series of meetings. An online resource center was developed to help local governments and citizens understand these revisions. Due to the important role that the Noxious Weed Advisory Committee will play in many aspects of the revised Noxious Weed Law, the NIWP is working hard to finalize this committee and have it operational by the beginning of 2010. The NIWP is also developing an educational campaign that will focus on providing training, outreach, and tools that will help landowners/managers, weed inspectors, and extension educators understand the Noxious Weed Law, identify target weeds, learn fundamental weed management concepts, and find resources to aid in combating noxious and invasive weeds. Also, the NIWP has assisted cooperative weed management areas throughout the state with their management plans and outreach.

Biological Control

Leafy spurge, *Euphorbia esula*

Leafy spurge biocontrol went well this season. The MDA coordinated the collection and distribution of leafy spurge beetles (*Aphthona lacertosa* and *A. nigriscutis*). Spurge biocontrol is highly effective. Adult beetles are collected and then released at new sites in June. The adult females lay eggs at the new sites, the eggs hatch, and larvae tunnel into the spurge roots where they feed and overwinter. Larval feeding damage can kill spurge plants. If the adult beetle density is very high, then adult beetle feeding damage can also kill spurge plants.

Over 750,000 spurge beetles were collected and distributed to new sites. Cooperators participated in collections and facilitated distribution. Big Stone, Carlton, Chippewa, Clearwater, Cottonwood, Crow Wing, Hennepin, Kittson, Lyon, Mille Lacs, Norman, Pope, Redwood, Stearns, Steele, Swift, Traverse, and Wright County Agricultural Inspectors distributed beetles to both public and private land sites. United States Fish and Wildlife Service, The Nature Conservancy, and DNR also distributed beetles to both public and private land sites. The Mn/DOT, Three Rivers Park District, and Woodland Nature Center distributed beetles to public land sites. The White Earth Reservation started many new spurge biocontrol sites.

The biggest push was to hit hard the metro-area roadside spurge with beetles. Necessary practices such as road construction and mowing create disturbed conditions for spurge to thrive and facilitate the spread of spurge seed to uninfested areas. Since there is so much road work and maintenance in the metro, this area has the highest concentration of spurge in the state. Over 200,000 beetles were released at 68 sites in the metro with the goal of decreasing metro roadside spurge within 4 years.

Spotted knapweed, *Centaurea stoebe* ssp. *micranthos*

Spotted knapweed is spreading quickly in Minnesota. The MDA weed biocontrol program responded by facilitating the distribution of bioagents to new areas of infestation. Successful spotted knapweed biocontrol depends on a synergistic benefit of utilizing both seedhead (*Larinus minutus* and *L. obtusus)* and root (*Cyphocleonus achates*) weevils. The seedhead weevil adults lay their eggs on the flowers. The larvae hatch and consume the developing seed. A single larva destroys the seed production for a flower. Over time, seedhead weevil densities can reach levels that prevent most seed production. Knapweed reproduces by seed and is a short-lived perennial so infestation density decreases with limited seed production.

In contrast, the root weevils can directly kill spotted knapweed plants. The weevil larvae feed and develop in the knapweed taproot then chew a large exit hole in the root and climb through the soil to the surface. The root weevils consume knapweed resources, physically damage the roots, and expose the roots to plant pathogens. With this bioagent combination, spotted knapweed density decreases quickly at small sites like the one below. Larger sites take longer before there is a visible knapweed decrease.

Many agencies participated in collecting and distributing 12,600 seedhead weevils and 830 root weevils. Carlton, Clearwater, Douglas, Mille Lacs, Pine, Ramsey, Red Lake, Rice, St. Louis, Winona County Agricultural Inspectors, DNR, Mn/DOT, and United States Fish and Wildlife Service distributed knapweed weevils to both public and private land sites throughout the state.

Spotted knapweed bioagents will find and move to new infestations as they advance. Bioagents were released along invasion fronts in southeast and southwest Minnesota. The goal was to reduce knapweed density and proliferation by establishing bioagent populations in these areas. Many agencies worked together to identify and map the infestations, collect and release the bioagents, and inform herbicide applicators so that they can protect the bioagents.

Development of biological control for common tansy, *Tanacetum vulgare*

Common tansy is an invasive weed that is spreading in Minnesota. It overtakes desirable vegetation, resulting in loss of plant diversity and habitat degradation. Current control methods are inadequate. This project researches the development of biological control for cost-effective and sustainable tansy management and is a joint United States and Canadian effort. Monika Chandler is the US project coordinator. Field surveys for bioagent candidates and host-specificity tests are done overseas by CABI Europe - Switzerland.

Many insect bioagent candidates are identified. Populations of a defoliating beetle, *Cassida stigmatica*; a stem-mining weevil, *Microplontus millefolii;* and a root- and shoot-boring beetle, *Phytoecia nigricornis*, were collected during spring survey trips to Germany, Russia, and Ukraine. Lab and greenhouse rearing method development and host-specificity testing continued for *C. stigmatica*, a flower- and stem-mining moth, *Isophrictis striatella*; and a root-boring beetle, *Longitarsus noricus*.

Early Detection

The MDA responded to reported infestations of narrowleaf bittercress, *Cardamine impatiens*, and meadow knapweed, *Centaurea* x *moncktonii*. Both species are aggressive and problematic in other states and are spreading in Minnesota. The MDA provided management options for narrowleaf bittercress and documented a fall treatment of the primary infestation. Treating this infestation required the cooperation of the City of St. Paul Park, the National Park Service, Fortin Consulting, and the MDA. The MDA is also compiling information on satellite infestations and will provide management information to the land managers. The MDA, Mn/DOT, and private landowners are cooperating to delineate and treat meadow knapweed infestations in St. Louis and Koochiching Counties. Outreach efforts on meadow knapweed yielded reports of two previously unknown infestations.

OUTREACH COMPLETED IN 2009

Presentations

- Changes to the MN Noxious Weed Law 2009: Presented at 25+ meetings to MN counties, townships, cities, state and federal agencies, and conservation organizations.
- Noxious Weed Identification: Presented at 12+ MN county and township meetings.
- "Biology and Management of Spotted Knapweed": Presented at MN 7+ CWMA and Mn/DOT meetings.
- "Weed Management Basics" and "Weed Survey Results and Watch Lists": Presented at three meetings.
- "Biology and Management of Common Tansy": Presented to land managers from multiple agencies in Arden Hills, MN.
- "Invasive Plant Biocontrol": Presented to land managers from multiple agencies in St. Joseph, MO..

Publications

- R. Roehrdanz, D. Olson, G. Fauske, R. Bourchier, A. Cortilet, and S. Sears. 2009. "New DNA markers reveal presence of Aphthona species (Coleoptera: Chrysomelidae) believed to have failed to establish after release into leafy spurge." Biological Control (49). pp. 1-5.
- Wrote two sections of Board of Water and Soil Resource's online "Minnesota Wetland Restoration Guide." One section is about general invasive plant biological control and the other section includes detailed spotted knapweed identification and management information.

Miscellaneous

- Creation and completions of the Noxious and Invasive Weed Program website: www.mda.state.mn.us/en/plants/pestmanagement/weedcontrol.aspx
- Changes to the Noxious Weed Law 2009: Summary distributed to counties, townships, cities, state and federal agencies, and conservation organizations.

PROGRAM PLANS FOR 2010

- Develop an action plan for the Noxious Weed Advisory Committee.
- Continue developing outreach materials for the NIWP web site.
- Conduct annual training for new County Agricultural Inspectors.
- Conduct annual cooperative weed management workshops – Spring 2010.
- Build more relationships with local governments, state and federal agencies, neighboring states, and university researchers.
- Implement an educational campaign for noxious and invasive weeds.
- Collect data for ongoing weed research projects.
- Coordinate leafy spurge and spotted knapweed bioagent distribution.
- Continue field surveys and host-specificity testing for tansy biocontrol candidates.
- Establish a protocol for early detection of invasive weeds.

PROGRAM STAFF

Monika Chandler
Position: 2000 – Present, Research Scientist, Biological control of weeds
Previous experience: 1996-1999, Research Assistant, University of Minnesota
Education: M.S. in Applied Plant Sciences, University of Minnesota; B.S. in Biochemistry/Cell Biology, University of California at San Diego

Anthony Cortilet
Position: 2009-present, Research Scientist – Noxious and Invasive Weed Unit
Previous experience: 1997-2009 - Research Scientist, Coordinator – Weed Integrated Pest Management Program, MDA Agricultural Development Division; 1990-1997 – Iowa Purple Loosestrife Biological Control Research Coordinator
Education: M.S., 1995-1997 Agronomy (Weed Science), Iowa State University; B.S., 1989-1994, Fisheries and Wildlife Biology, Iowa State University

Left to Right, Chandler, Cortilet