

EXECUTIVE DEAN  
OF AGRICULTURE AND NATURAL RESOURCES

Report to the New Jersey State Board of Agriculture  
December 2010

*NJAES Research on Brown Marmorated Stink Bug in New Jersey*

The brown marmorated stink bug (BMSB), first discovered in Allentown, Pennsylvania, in the mid 1990s has since spread to 26 states, including New Jersey. Native to Japan, China, and Korea, this pest has caused significant damage in its adopted homeland in a diverse range of crops such as peaches, apples, pears, and soybeans.



Adult male stink bug

Not only does the pest feed on a wide range of crops, it is known to cause damage at every growth stage. According to **Dean Polk** (fruit integrated pest management coordinator, **Rutgers Fruit Research and Extension Center** in Cream Ridge, NJ), "No other pest we know of has that broad a range of what it will feed on."

In 2009, stink bugs caused severe fruit damage in the tree fruit growing regions in Virginia and West Virginia. In 2010, there was again widespread damage to tree fruits in these two states, but the damage had also expanded into New Jersey, Pennsylvania, Maryland, and Delaware. For the first time, BMSB damage was reported in peppers, tomatoes, grapes, field and sweet corn, and soybeans. In New Jersey, several pepper growers reported up to 75% damage in their crop. Similar levels were seen in peaches and nectarines.

The **New Jersey Agricultural Experiment Station (NJAES)** has been studying the basic biology of this insect since 2004 in an ongoing effort to monitor and manage the impact of this pest on the agricultural sector. Several NJAES faculty are involved in projects that cover a wide range of crops. **Gerald Ghidiu** (extension specialist in vegetable entomology, **Rutgers Agricultural Research and Extension Center**, in Bridgeton, NJ) and **George Hamilton** (extension specialist in pest management; chair of the **Department of Entomology**) are developing management strategies targeting peppers. Hamilton and Polk are conducting similar work in tree fruit. Since the stink bug's impact on blueberries only manifested itself late in the 2010 growing season, Polk and **Cesar Rodriguez-Saona** (assistant extension specialist in entomology, **Philip E. Marucci Center for Blueberry and Cranberry Research and Extension** in Chatsworth, NJ) will concentrate their research efforts in the 2011 growing season. **Daniel Ward** (assistant extension specialist in pomology) and Rodriguez-Saona will conduct research in grapes, as research shows that as few as 10 stink bugs per bin is enough to taint wine. The research conducted by these NJAES



Stink bugs swarming on a peach

research conducted by these NJAES

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researchers includes field trials to identify appropriate insecticides in peppers, grapes, and tree fruit; development of monitoring methods and programs; and the development of “attract and kill” strategies to reduce the impact of the invasive brown marmorated stink bug on New Jersey’s agriculture.



Stink bug damage to an Asian pear

Growers are also encouraged to monitor crops closely and report infestations of the insect at an interactive [website](#) launched in 2004. The site, which also tracks reports of BMSB infestations by homeowners, received about 2,800 notifications in 2008, growing to 3,200 notifications in 2009, and 3,500 in 2010—about 10,000 notifications altogether since the launch of the site.

formed the Brown Marmorated Stink Bug Working Group, led by Hamilton and Tracey Leskey of the USDA Agricultural Research Service Appalachian Fruit Research Station. So far, members of the working group have secured \$90,000 in competitive USDA funding to develop management strategies for the BMSB, with a potential of \$10 million in grants by the end of January 2011. The

In 2009, in response to the multi-state invasion of stink bugs, researchers from all the affected states in the Northeast and Mid-Atlantic region anticipated New Jersey share is approximately \$2.7 million.



**George Hamilton** monitors stink bugs in his lab at the Department of Entomology

In an indication of the seriousness of the threat posed by this invasive species, the USDA has formed a BMSB Section 18 Working Group whose task is to identify new compounds that can be employed in the fight against BMSB should currently labeled products prove ineffective. The USDA working group has partnered with the Environmental Protection Agency, industry officials, and grower groups with the aim of submitting regional section 18 petitions for the approval of new stink bug control compounds prior to the start of the 2011 growing season. Hamilton and Polk represent NJAES on this important federal working group.

## Spotlight

### Organic Vegetable Weed Control Training at Snyder Farm

In September, the Snyder Farm conducted a hands-on training program addressing organic vegetable weed control, attended by over 50 organic vegetable farmers and agricultural educators. Funded by the USDA Northeast Sustainable Agriculture Research and Education (NE-



Snyder Farm Manager **Edwin Dager** (in red shirt, gesturing towards table) instructs participants on an array of manually operated weeding tools



A participant demonstrates an Eco-weeder, a 3-point hitch, power take-off, driven tractor-mounted cultivator tool for removing weeds between plants laid out in a row

SARE) program, the training involved two daylong sessions on integrated organic vegetable weed management for agricultural educators from New Jersey, Delaware, and Maryland, with the goal of equipping the educators with the tools to train farmers who grow organic vegetables. The program, which involved demonstrations of specialized tractors, cultivating, spray, planting, and tillage equipment, provided an integrated approach to successful weed control and vegetable production.

Several tractor mounted implements, previously demonstrated in the educational video "*Vegetable Farmers and Their Weed Control Machines*," were used to demonstrate precision cultivation, highlighting the benefits of soil cultivation and its impact on water infiltration and soil erosion.

Pre-established plots of varying periods of soil disturbance at different points in the growing season were employed by Snyder Farm staff to demonstrate the dynamics of weed-seed dormancy and germination, vegetable bed preparation, and stale seedbed techniques. Trainers also demonstrated several techniques to kill weeds at various stages of growth, including hand hoeing, flame weeding, and precision application of Organic Materials Review Institute (OMRI) herbicides.

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The impetus for the organic vegetable weed control program grew out of the need for educational programming on controlling weeds in horticultural crops. In preparing a proposal to the USDA NE-SARE for a weed control demonstration program, the Snyder Farm cited a University of Vermont fact sheet that identified the control of weeds in horticultural crops as among the



A Williams cultivator removing weeds from a vegetable plot

more challenging aspects of crop production: "Many organic vegetable growers consider weeds to be their primary pest problem." The New Jersey Department of Agriculture's own inspection reports note the prevalence of weed management issues. The Michigan Organic Food Alliance and Michigan State University survey of 112 organic farmers reported, "[w]hen looking at production, the most important issue for different types of growers is weed control."

The outcome of the demonstration and training in multiple weed control strategies for vegetable production will be measured over three years. The first year entailed curriculum

development, land preparation, and equipment accumulation. The second year focused on developing and conducting the training program, which included a pre- and post-training survey of participants to measure program impact. The agricultural educators who took part in the September training will be asked to provide documentation on the impact on the farmers they plan to train in organic vegetable weed control methodologies. In addition, educators will receive follow-up communication through email, encouraging them to participate in farmer outreach programs through organizations such as state Cooperative Extension and the Northeast Organic Farming Association. Year three will focus primarily on survey feedback on training and outreach in order to document the effectiveness of the overall training program.

According to **John Grande** (director, Snyder Farm), "There was some limitation to the two daylong sessions with respect to comprehensively addressing each weed management system, especially by crop, but the broader overview of management systems and how they interact was the hallmark of the demonstration program."

## *Faculty and Staff Activities and Accomplishments*

**Brian Schilling** (assistant extension specialist, Agricultural, Food, and Resource Economics) presented a recently accepted State Emergency Operations Plan Incident Annex, "Maintaining Private Sector Capabilities for Feeding Impacted Populations," at a meeting of the New Jersey Domestic Security Preparedness Task Force's Infrastructure Advisory Committees on September 23. In collaboration with the New Jersey Food Council, Schilling was charged in 2008 by the New Jersey Office of Homeland Security and Preparedness with developing a process for identifying, communicating, and addressing critical needs of private sector food distribution industries to ensure continued operational status during an emergency. The Incident Annex, authored by Schilling and **Lucas Marxen** (research analyst, Food Policy Institute), details operational

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guidelines to support private sector food distribution capabilities during a large-scale emergency. It also provides geographic information on the location of critical food distribution infrastructure statewide.

**Nicholas Polanin** (agricultural and resource management agent, Somerset County) hosted and facilitated the Southern Regional Advanced Master Gardener Training at the Rutgers Cooperative Extension of Ocean County in Toms River, NJ. Close to 100 Rutgers Master Gardener volunteers attended the training event, which featured presentations on soil tilling and health, common diseases of home garden vegetables, identification and control of termites, and invasive plants in home gardens and landscapes. Presenters included **Daniel Kluchinski** (chair, Agricultural and Resource Management Agents), **Andy Wyenandt** (specialist in plant pathology), **Sabrina Tirpak** (principal lab technician, Plant Diagnostic Lab), and Louise Wootton from Georgian Court University in Lakewood, NJ.

## *Mark Your Calendars!*

### **Rutgers North Jersey Ornamental Horticulture Symposium**

**WHEN:** January 4, 2011, 8:30 a.m. to 3:30 p.m.

**WHERE:** Dragonetti Auditorium, County College of Morris, Randolph, NJ.

**WHAT:** Three-day symposium sponsored by Rutgers Cooperative Extension and The County College of Morris.

**MORE INFO:** Contact Peter Nitzche, 973-285-8307.

### **2011 Mid-Atlantic Nursery Trade Show**

**WHEN:** January 5–7, 2011, 9 a.m. to 5 p.m.

**WHERE:** Baltimore Convention Center, One West Pratt Street, Baltimore, MD

**MORE INFO:** Visit <http://www.mants.com/>.

### **2011 Atlantic Coast Ag Convention and Trade Show**

**WHEN:** January 11, 2011.

**WHERE:** Trump Taj Mahal, 1000 Boardwalk at Virginia Avenue, Atlantic City, New Jersey.

**WHAT:** Three day conference sponsored by the Vegetable Growers' Association of New Jersey, Inc., Rutgers Cooperative Extension, and the New Jersey Department of Agriculture.

**MORE INFO:** Melvin Henninger, 732-932-9711, ext. 120.

### **Pepper Advisory Council**

**WHEN:** January 20, 2011, 9:30 a.m. to 3 p.m.

**WHERE:** Rutgers Agricultural Research and Extension Center, 121 Northville Road, Bridgeton, NJ.

**WHAT:** Round table discussions featuring research conducted in 2010 and research needs for 2011.

**MORE INFO:** Contact Wes Kline, 856-451-2800, ext. 1, [wkline@njaes.rutgers.edu](mailto:wkline@njaes.rutgers.edu).

This report is produced by the Office of Communications. For information or to provide comments, please contact Paula Walcott-Quintin at [quintin@aesop.rutgers.edu](mailto:quintin@aesop.rutgers.edu) or 732-932-7000, ext. 4204.

