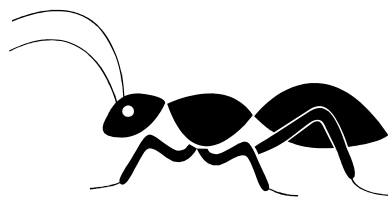


PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

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Ants: Both Friend and Foe

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Ants can indirectly damage agricultural crops by tending hemipteran pests such as aphids and mealybugs. Several ant species collect honeydew, and in return for a reliable food source, protect their hemipteran hosts from predators and parasitoids. Also, ants can damage plants directly by feeding on fruit and plant tissue. Although the presence of ants can exacerbate infestations of hemipterans, they can also play a beneficial role by acting as generalist predators of other insects.

Approximately 1,000 ant species occur in North America, and of these, about 130 can be collected in New Jersey. We estimate that between 10 to 15 species commonly occur in orchards and have collected two species in the genus *Formica*, and a single species in each of the following genera, *Lasius*, *Monomorium*, *Myrmicinae*, and *Prenolepis*.

The **green peach aphid** (GPA), *Myzus persicae* (Sulzer) is a pest of peach and nectarine in New Jersey. It generally is a sporadic pest and can flare up due to the application of broad-spectrum insecticides. Green peach aphid has a complex life cycle. In fall the aphid migrates from summer hosts back on to peach. In spring, eggs that have overwintered near buds hatch, the nymphs develop into stem mothers and several generations develop. Adults and nymphs feed on the underside of foliage causing leaves to curl and turn yellow. Feeding may also occur on flowers and developing fruit resulting in distorted growth. In addition, GPA is a vector of various plant viruses including the **plum pox virus**. The winged form of GPA develops in June and July and the aphid leaves peach to feed on their alternative summer hosts.

In September, we began an experiment at the Rutgers Agriculture Research and Extension Center to determine if ants play a beneficial role in controlling economic populations of GPA. We hypothesize that as GPA migrates back on to peach in the fall, ants prey on adult aphids and/or their eggs, thus reducing spring populations. We will evaluate this experiment next spring.

The **black peach aphid** (BPA), *Brachycaudus persicae* (Passerini) also can cause economic damage to peach and nectarine trees in New Jersey. Black peach aphid feeds on the roots and can cause stunting of young trees. Colonies form in the tree canopy in spring and can cause leaf curling and premature drop, distorted fruit growth, and contamination of fruit with honeydew.

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Innovative "CIG" Orchards - What We Have Learned So Far

Tara Baugher, Ph.D., Regional Horticulture Educator, Penn State Cooperative Extension of Adams County

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Conducting applied research in commercial settings provides many opportunities, and one of our latest efforts in Mid-Atlantic orchards is no exception!

A trans-disciplinary team of Penn State scientists was successful in applying for funding from the USDA-NRCS Conservation Innovation Grant (CIG) program to initiate a project to work cooperatively with growers to develop strategies for retooling fruit enterprises to increase efficiency. Beginning in fall 2006, twelve fruit growers began collaborating with Penn State Extension to conduct two years of sustainable pre-plant site preparations followed in spring 2008 by the establishment of one-acre innovative pilot orchards.

The trial orchards will serve as field laboratories for growers and scientists on new orchard designs for optimizing tree physiology. The plots also will provide field classrooms on innovative conservation practices for the industry at large.

The system model to be tested in the pilot orchards incorporates a number of best management practices. Trees will be trained at very high densities on wire trellises to tall, narrow canopies that harvest optimum sunlight. Interestingly, this new tree design also is very adaptable to new sensor and labor assist technologies.

The well-defined orchard design also presents new opportunities for improved monitoring of weather and pests. As sensor technologies continue to evolve, engineers envision the use of video imaging and wireless sensor networks to enhance early detection of plant disease infection and insect activity.

Labor assist technologies that will be tested in the pilot orchards include semi-autonomous work platforms and new strategies for adjusting crop load. GPS guidance technologies were assessed this spring for increasing accuracy and decreasing labor requirement in laying out uniform orchard rows required for adaptation of precision technologies. These innovations can potentially lead to increased sustainability and energy efficiency.

The grower cooperators have been remarkable in carrying out their roles of efficient and sustainable test plot site preparation, tree planting, trellis construction and overall block management. Now that the blocks are established, the horticulture, nematology and ag economic members of the research and extension team are assessing the environmental and economic benefits of the various sustainable pre-plant strategies growers

utilized based on soil and nematode analyses. Team engineers have developed energy audits to help growers assess fuel consumption, and team entomologists and plant pathologists are working on advanced integrated pest management strategies specific to high density systems.

Here are some of the highlights of research to date:

Labor savings and increased precision with GPS guidance to lay out a new orchard. Grower cooperators reported that when marking off an orchard by hand, it can take more than an hour to lay out the first row, and then each consecutive row must be measured with a marking system or by hand. Using GPS, a tractor with a subsoiler is stopped at the beginning and end of the first row (the "A" and "B" points) and a computer records the location of these two points. From these two points, the computer creates the "AB" line on which all other lines are based. The entire field can be done from this single line, which takes less than ten minutes to set up. In our research trials, rows were marked on 16 ft centers at speeds of 1.2, 2.0 and 3.0 mph and slopes of 0-3%, 8-16% and 16-21%. The average deviation from the row center was 4 inches. There was no difference in accuracy at different speeds, but the system was less accurate (up to a 7 inch deviation) on steeper slopes. The grower case studies and field data indicated significant potential labor savings and precision with GPS guidance.

Environmental and economic benefits of planting a biofumigant rotation crop. Seven growers planted a rapeseed cover crop in 2007, and dagger nematodes were decreased to levels that eliminated the need for pre-plant nematicides. This represented an economic savings of \$215 (Vydate L) to \$925 (Telone C-17) per acre. The environmental impact quotient (EIQ) for a nematicide is over 78, which is 2 to 3 times higher than most pesticides. Pesticide EIQ values are the average of farm worker, consumer, and ecological components (<http://www.nysipm.cornell.edu/publications/eiq>). Root lesion nematodes decreased by an average of 90% in the seven orchards where rapeseed was planted and incorporated. Suppression of root lesion nematodes has been shown to increase early tree growth, which results in earlier fruit production and increased economic return on investment.

Ecological and economic benefits of planting cover crops to increase soil organic matter. The mean increase in soil organic matter where sudan grass, winter rye and/or buckwheat cover crops were planted was 0.5%. This is the equivalent of 7.4 tons of compost per acre per year over five years, an economic benefit of \$1030 per acre based on the costs of compost and application. Research at the USDA Appalachian Fruit Research Station in Kearneysville, WV has demonstrated a positive correlation between early increases in trunk cross-sectional area and soil organic matter, which translates into earlier apple production.

SEE CIG ORCHARDS ON PAGE 3

Ecological and economic benefits of increasing/maintaining optimum soil pH and calcium levels through pre-plant crop rotation and liming practices.

The soil pH in all but one pilot orchard was maintained or improved to the optimum level of 6.5 to 7.0 by pre-plant crop rotation and liming practices. In this range, macronutrients naturally present in the soil become more available, which has obvious economic benefits. Calcium was maintained or improved to optimum levels in all pilot orchards. The CIG growers have a head start on a comprehensive calcium management program to prevent reductions in packout due to cork spot and bitter pit.

Potential energy savings with high density systems.

Alex Leslie, an ag engineering intern from the Penn State Department of Agricultural and Biological Engineering, developed a fuel consumption calculator to help growers assess the amount of fuel used for a high density compared to a conventional block for mowing, spraying and chopping brush. In spite of the increased miles traveled in high density compared to conventional orchards, smaller tractors and implements can result in a 25 to 45% reduction in fuel usage. This energy audit can be accessed at <http://adams.extension.psu.edu/Agriculture/Grower%Resources.htm>.

The project team and grower collaborators are off to a great start with this initiative, thanks to Katy Lesser, Ag Innovations Coordinator, and university and industry support! For more information, please contact any member of the research and extension team – Jim Schupp, Rob Crassweller, Larry Hull, Jim Travis, John Halbrendt, Paul Heinemann, Rich Marini, Katy Lesser or myself.

Submitted by Jerome L. Frecon, Agricultural Agent. □

ANTS FROM PAGE 1

Several ant species in the genus *Lasius* have a close association with hemipterans that spend a portion of their life cycle belowground. The presence of ants such as *Lasius* may increase the potential for economic damage by tending belowground populations and moving aphids in the spring from belowground in to the tree canopy. In spring of 2009, we will conduct experiments to determine what role *Lasius* plays in BPA infestations. If the ant plays a key role, controlling *Lasius* may reduce BPA populations and thus damage.

If you suspect that you have a problem with ants in your orchard or vineyard, please contact your county agent.

¹Oregon State University Mid-Columbia Agricultural Research & Extension Center. □

Snow, Early Cold Temperatures, and Pruning Trees

Win Cowgill, County Agricultural Agent

On October 28 a freak winter storm dumped 6-12 inches of wet heavy snow in northern New Jersey. Since the leaves were on the trees, some towns had extensive damage to trees; electricity was out for up to 6 days in a few areas. Some damage to fruit trees was reported. I had one section of Braeburn on Super Spindle go down as the trellis failed with the snow and fruit load.

We have had mild temperatures this fall but we have had several nights with cold temperatures in the mid twenties. This is a reminder that even with this cool weather no fruit trees should be pruned between September 1 and January 1.

Trees are not able to fully harden off until after the first of the year. Pruning in November and December before trees are fully hardened off predisposes them to winter injury by delaying the onset of full dormancy and reducing their ability to withstand minimum cold temperatures.

FOR MORE PHOTOS SEE PAGE 5



Suncrisp apple tree with 6" of wet snow load on the tree October 28 at the Rutgers Snyder Farm.

November 20 is the Deadline for Fruit Insurance in NJ

Producers growing apples, blueberries, cranberries, and peaches should consider insuring their 2009 crops. The recent Farm Bill has made crop insurance a requirement in order to be eligible for federal disaster payments, so if any crop on a farm is not insured, that producer will not be eligible. If there is no policy available for a specific crop, producers must sign up for the FSA's non insured crop assistance program (NAP) to stay eligible.

Producers interested in crop insurance, or to make changes in existing policies, need to contact an insurance agent quickly, as the enrollment/policy change date is November 20, 2008. A list of agents is available at the RMA website (<http://www.rma.usda.gov/tools/agents/>) or contact your local FSA office for information about NAP. Price elections for 2009 will be \$10.10 per bushel for fresh apples, \$.89 per pound per blueberries, \$.55 per barrel for cranberries, and \$17.75 per bushel for fresh peaches. Crop insurance provides coverage against losses due to damage caused by natural perils and adverse weather conditions such as hail, wind, frost, and drought. Your actual amount of coverage will be determined from your production history and the protection level you select.

The Garden State Crop Insurance Education Initiative is a joint project between Risk Management Agency, United States Department of Agriculture; Rutgers NJAES, Cooperative Extension, and the New Jersey Department of Agriculture. For more information contact Laura Gladney at 1- 800-308-2449, or visit the website at <http://salem.rutgers.edu/Cropinsurance>.

NAP Insurance

The Non-Insured Crop Disaster Assistance Program (NAP) was designed to reduce financial losses that occur when natural disasters cause a catastrophic loss of production or prevented planting of the eligible crop by providing coverage equivalent to catastrophic (CAT) insurance. Statute limits NAP to each commercial crop or agricultural commodity, except livestock, for which CAT is not available.

Submitted by Jerome L. Frecon, Agricultural Agent. □

Calendar of Events`

January 9-11, 2009 - **Southeastern Regional Fruit and Vegetable Conference**, Savannah International Trade and Convention Center, Savannah, Georgia. Registration information at: <http://www.gfvga.org/conferences/2009FVWC/ConferenceMain.htm>. Contact: Georgia Fruit and Vegetable Growers Association, PO Box 2945, LaGrange, GA 30241, Toll Free 1-877-994-3842, Fax (706) 883-8215

January 16-17, 2009 - **Atlantic Coast Agricultural Convention and Trade Show/Mid Atlantic Direct Marketers Association Conference**, Trump Taj Mahal, Atlantic City, NJ. For contact information go to: www.njveggies.org/convention.htm (Tree and Small Fruit Sessions).

January 19, 2009. 9:00 a.m. to 4 p.m. **Intensive Fruit Production – Pruning for Efficiency part of Penn State IN-Depth Fruit School** (Pruning Demonstration for Orchard Employees in Spanish and English 2 pm). Contact PSU of Adams County Cooperative Extension, 670 Old Harrisburg Rd., STE 204, Gettysburg, PA 17325. Phone 717 334-6271.

January 31, - February 4, 2009 - **Annual Conference of the International Fruit Tree Association**, Potsdam/Berlin, Germany. For information go to: <http://www.ifruittree.org>.

February 1-7, 2009 - **North American Farmers Direct Marketing Convention**, Savannah Marriott, Savannah, Georgia. For more information contact 717 694-3596.

February 3-5, 2009 - **Mid Atlantic Fruit and Vegetable Convention and Trade Show**. Hershey Lodge and Convention Center, Hershey, Pennsylvania. Contact Jerry Frecon at 856 -307-6450 Ext 1 or register with NJSHS at www.mafvc.org.

February 4, 2009, 4:15 – 6:30 p.m. - **New Jersey State Horticultural Society Annual Meeting. Part of the Mid Atlantic Fruit and Vegetable Convention and Trade Show**, Hershey Lodge and Convention Center, Hershey, PA. Contact Bill Tietjen, 908-475-6505.

February 10-11, 2009 - **New Jersey State Agricultural Convention**, Crown Plaza Hotel, Cherry Hill, N.J. Contact NJDA at 609-292-3976. □



**Suncrisp apples in snow; Braeburn trellis system falls under weight of snow, October 28, 2008, Rutgers Snyder Research Farm, Hunterdon County, NJ
Photos by Win Cowgill**





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Pesticide User Responsibility: Use pesticides safely and follow instructions on labels. The pesticide user is responsible for proper use, storage and disposal, residues on crops, and damage caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact RCE in your County.

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