RUTGERS
New Jersey Agricultural Experiment Station

The Blueberry Bulletin

A Weekly Update to Growers

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- *Visit the Blueberry Bulletin webpage at njaes.rutgers.edu/blueberry-bulletin*
- *The 2020 Commercial Blueberry Pest Control Recommendations for New Jersey is available on njaes.rutgers.edu*

BLUEBERRY CULTURE

Dr. Gary C. Pavlis, Ph.D.
Atlantic County Agricultural Agent

The season is progressing in spite of the extreme variations of weather we are experiencing. Bloom has begun in many fields and leaf expansion has followed. In a previous newsletter I talked about the fact that an overwhelming number of farms had deficiencies in Copper and Iron. The best time to remedy this situation is in the spring when leaf expansion has occurred since foliar applications of these micro-nutrients are the most efficient way to get the nutrient into the plant. The chart below is a guide to micro-nutrient application.

RUTGERS New Jersey Agricultural Experiment Station **Micro-nutrients sources and rates**

Nutrient	Product	Method	Rate
Boron	Solubor20	Foliar	1.5lb./A
Boron	Solubor20	Ground	5lb./A
Boron	Borax11	Ground	10lb./A
Copper	Cu chelate	Foliar	Label Rate
Iron	Fe chelate	Foliar	Label Rate
Mn	Mn chelate	Foliar	Label Rate
Mn	Mn sulfate	Foliar	2 lb./A
Zn	Zn chelate	Foliar	Label Rate

Cooperative Extension of Atlantic County

Lastly, with bloom commencing, frost damage is always a possibility. Most blueberry fields today do not have over-head sprinklers to protect the bloom from the cold. As most fields have gone to trickle irrigation there is the thought that not much can be done. Actually it has been shown that if a field is watered during the day there is less damage that occurs that evening from the frost. This is because a moist soil will absorb the heat from the sun and give it up during the evening. Exactly how much protection is given will depend on numerous factors such as the soil type, presence of mulch, amount of heat absorbed, weed residue etc. But I believe it is worth the effort.

I feel with all the restrictions that we are all dealing with I want to make sure I am as accessible as possible to you growers for any inquiries that you may have. Usually growers would call my office and my secretary would relay the message to me. The Atlantic County office is on a very trimmed down schedule because of the Corona virus so I believe it would be more efficient if growers would call me directly. As a result I am giving you all my cell number which you can call whenever you have a question. My cell number is 609-226-4373.

BLUEBERRY INSECT

Dr. Cesar Rodriguez-Saona, Extension Specialist in Blueberry Entomology, Rutgers University
Mr. Dean Polk, IPM Agent – Fruit
Ms. Carrie Denson, IPM Program Associate – Fruit

We're in Bloom: As we enter bloom and bees come in (Figure 1), we are focusing on disease incidence and disease control. So far there have been no obvious signs of twig blight or Botrytis. Hopefully most growers were able to get an Anthracnose application on just before the bees came in. If the weather remains cool, and especially if we experience rains during cool weather, growers will need protection from Botrytis as well.

Working Around the Bees (repeated from last newsletter)- For those who can, spraying at night or after dusk prevents the bees from coming in contact with fresh spray droplets. With some pesticides, exposure to dried residue is much easier on the bees than exposure to fresh droplets. Research on how this applies to fungicides is ongoing.

Figure 1. Honey bee on blueberry blossoms.
Try to spray at night while bees are in the field.

Leps and Other 'Worm' Larvae: Various leafrollers and other 'Lep larvae' or worms, can sometimes be a problem during bloom. While we have observed a few spanworms, levels have been minimal, so no treatments are needed.

Cranberry Weevil (CBW): CBW has decreased and is not a problem, nor should it be for the remainder of the season.

Plum Curculio (PC): PC adults are out and will be active for the remainder of bloom (Figure 2). The first PC adult was found on **Wednesday 4/15**. During cool weather they will not be too active, but like us, they like it warm. This just reinforces the idea that many of you will need to treat for this insect as soon as the bees come out. Ironically, the more good weather we have for pollination and bee activity, then the more active the PC are.

Life Cycle. In New Jersey, PC completes a single generation a year in blueberries. This insect overwinters as an adult in leaf litter. Adults become active during bloom and feed on young fruit just after bloom, causing feeding scars. We have observed that in the absence of fruit (i.e., this time of year), adults feed on blueberry flowers (petals). Females lay eggs in the fruit causing crescent-shaped oviposition scars. White maggot-like larvae develop inside the fruit (one larva per fruit). Feeding by the larvae causes fruit to develop prematurely and fall off the bush. Mature larvae exit the fruit to pupate in the ground, and become an adult in July and August. If berries are picked before they drop, larvae can contaminate harvested fruit.

Scouting and Control. Two methods can be used to monitor PC populations at this time of year. Adults can be monitored using beating tray samples to calculate the number of adults per bush. Alternatively, black pyramid traps baited with the PC aggregation pheromone (grandisoic acid) and the fruit volatile benzaldehyde can be placed in blueberry fields. For information and to purchase these traps and lures please visit http://www.agbio-inc.com/plum-curculio.html.

Figure 2. Plum curculio adult.

Sampling should be biased towards field edges or infields that border woods and hedgerows. PC infestations are more common in weedy fields and those with sod middles. This pest is more of a problem on early maturing varieties. No threshold has been established, so treatment is mainly based on past history and an estimate of damage to fruit. No treatment is recommended for this insect at this time of year.

Insect Incidence					
Week Ending	% Bud Feeding		CBW Adults/Bush (Beating Tray)		Leps./Bush (Beating Tray)
	Avg	Max	Avg	Max	Avg
3/27	12.8	40	0.68	8.3	.01
4/3	0	0	0.8	7.6	0.0
4/11	0	0	2.06	19.6	0.003
4/18	-	-	-	-	0.01

HANDLING COVID-19
PRODUCE FARMS AND PACKINGHOUSES

While there is no evidence that the COVID-19 virus is a food safety concern, it is a worker health concern as it spreads via close person-to-person contact or by contact with contaminated surfaces. Food does not appear to be a likely cause of COVID-19 transmission, but many of the same practices used to prevent foodborne illness on foods should still be used to reduce the likelihood of COVID-19 contamination on fresh produce and the risk of COVID-19 spread among farm and packinghouse workers.

COMMUNICATION TO WORKERS

- Educate workers on COVID-19 symptoms, how it spreads, and how to reduce the spread of the disease. Instruct workers to stay home if they are sick (coughing, sore throat, fever, diarrhea, vomiting, etc.).
- Some employees may need reassurance that they will not be punished for missing work due to illness, while others may be unwilling to miss a paycheck due to illness. Have a plan and communicate in advance for how you will address these individuals (paid sick leave, etc.)
- All employees must wash their hands with soap and water for 20 seconds, frequently throughout the day. This includes when they arrive to work, before handling food, after breaks/using the restroom etc.

DISINFECTING EQUIPMENT, TOOLS AND SURFACES

During COVID-19 or any other outbreak situation, increase routine cleaning and disinfecting frequency in order to protect the health of workers. Disinfecting routines also need to include administrative offices, food trucks and break areas that are not generally included in day-to-day cleaning.

- Cleaning and disinfecting are two separate steps and should be done in order. Cleaning removes dirt and soil and often requires the use of a soap/detergent and water. Disinfecting uses a chemical to inactivate virus the surface.
- Shared tools should be cleaned and disinfected between uses by a different employee.
  - CDC is recommending use of disinfectants on the EPA list found at: go.ncsu.edu/epacovid-19
    - Note: this list is based on current data, but compounds have not been validated for inactivation of the virus causing COVID-19
  - Bleach may be used to disinfect surfaces, but the concentration is higher for COVID-19 than for everyday sanitation: 5 tablespoons bleach per gallon of water
- Clean harvest baskets, bags, aprons, knives, etc. after each use. Wash fabrics with a detergent in hot water, and apply a disinfectant to nonporous surfaces. See CDC guidelines on laundry go.ncsu.edu/cdclaundry
- Disinfect frequently touched surfaces, including door handles, steering wheels, keyboards, touch screens, etc. throughout the day.

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Updated March 26, 2020

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HANDLING COVID-19
PRODUCE FARMS AND PACKINGHOUSES

HYGIENE AND PERSONAL PROTECTIVE EQUIPMENT

- Hand sanitizing stations should supplement but not replace handwashing. Consider having sanitizer available for harvest or packing crews.
- Discourage employees from sharing phones, tools, utensils, vehicles, etc.
- Single-use gloves should be provided to all workers handling food and should be changed when contaminated (e.g. when hands touch skin or the ground). When gloves may interfere with a worker's ability to do their assigned task (e.g. harvesting, applying stickers, etc.), handwashing or hand sanitizer should occur frequently.
- Some workers may prefer to wear masks while working in close proximity with others. Masks should be allowed but not required, and workers should be instructed on how to wear them properly to prevent illness or injury.

DISTANCING AND COHORTING

- Instruct workers to keep 6 feet away each other. Limit one employee per vehicle at a time, and instruct drivers to disinfect frequently touched surfaces within the vehicle before their shift ends.
- When physical distancing is not an option, consider dividing workers into cohorts that only work with members within that cohort for the duration of the outbreak.
    - For example, divide your packing crew into two groups that only show up for their groups designated shift. Have the first shift clean and sanitize their works areas and equipment at the end of their shift, and give a buffer of 15 to 30 minutes between the end of the first shift and beginning of the next shift to ensure employees are not in contact with each other during shift changes.
- Smaller operations may want to consider having designated harvest and packing crews, the members of which never cross paths during the work day. Employees in the same household should be assigned to the same crew or cohort. Cohorting reduces the risk of losing your entire workforce, such as may happen if an employee that works at the same time as all of your other employees tests positive for COVID-19.

MONITORING EMPLOYEE TEMPERATURES

Consult with your attorney before you start a program monitoring employee temperatures. Depending on your state, taking employee temperatures may be a HIPAA (Health Insurance Portability and Accountability Act) violation. Additionally, the act of taking employee temperatures may increase the likelihood of disease spread if thermometers or personal protective equipment are not used or sanitized properly between employees.

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