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 2022 Commercial Blueberry Pest Control Recommendations for New Jersey is available on njaes.rutgers.edu*

BLUEBERRY CULTURE

Dr. Gary C. Pavlis, PhD.
Atlantic County Agricultural Agent

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.

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.

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

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

Cooperative Extension of Atlantic County

PEST MANAGEMENT

Blueberry Insects

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

Leps (Lepidoptera larva – green fruitworms, leafrollers, spanworms, spongy (= gypsy moth): During this past week scouting, Lep larvae averaged an increase to 0.05 larvae per bush (or 100 blossom clusters), with a high of 0.4. These were primarily green fruitworm and still reflect low numbers. However, this past week scouting for spongy (= gypsy moth) numbers increased, and averaged 0.44 larvae per bush, with a high of 5. Having these types of numbers addresses an issue for treatment. The combined treatment level for all Lep larvae (worms), including spongy moth, is 1 larva per 100 flower clusters.

With the current state of honey bee health, it is to everybody's advantage to make any pest treatments with as little impact on bees as possible. Try to stick with using any of the B.t. formulations when treating worms/Lep larvae. Since B.t.s work best on small larvae, it is not unreasonable to slightly decrease the treatment threshold if it means staying with a B.t. material. Other materials like Intrepid, an insect growth regulator, and Delegate/Entrust (can only be used at night), will work on larger larvae, but may have a negative impact on certain honey bee life stages. Most spongy moth larvae are blown into the fields from surrounding wooded borders. Therefore, the recent windy weather has likely helped cause an increase in these counts over 5/8-9.

Cherry Fruitworm (CFW): Adults are active and laying eggs. Any B.t. materials applied for spongy moth caterpillars will help control newly hatched cherry fruitworm larvae. There is no trap threshold that can be used as a guide for treatment, and CFW is only being seen at a few locations. Low levels of infested berries were seen in 2021, so growers should be aware that this can be a pest. Cherry fruitworm larvae are usually active about 7-10 days before cranberry fruitworm, which is usually treated as soon as the bees come out.

Cranberry Fruitworm (CBFW) and Cherry Fruitworm (CFW) Traps: Trap counts in both Atlantic and Burlington County have been very minimal for the past few weeks for CBFW. However, CFW trap counts have increased over the past few weeks. No larvae have been seen since they are starting to hatch, and numbers are low.

Insect Sampling Count Summary:

	Leafroller/Tray		Spongy Moth/Tray		Plum Curculio		Thrips	
	Avg	Max	Avg	Max	Avg	Max	Avg	Max
4/30	0.03	0.2	0	0	0	0	0	0
5/7	0.05	0.4	0.44	5	0.06	0.3	0	0

	CBFW AC		CBFW BC		CFW AC		CFW BC	
	Avg	Max	Avg	Max	Avg	Max	Avg	Max
4/8	0	0	0	0	0.1	1	0.25	1
4/14	0	0	0	0	0	0	0	0
4/20	0	0	0	0	0.2	1	0	0
4/29	0.1	1	0	0	0.9	3	0.25	1
5/7	0	0	0	0	7.1	15	4.5	15

DISEASES

Mr. Dean Polk, IPM Agent – Fruit
Ms. Carrie Mansue Denson, IPM Program Associate – Fruit

Anthracnose: remains the principal disease to control. As the temperatures warm up, and the weather pattern dries, Botrytis rot should be less of a problem. However, temperatures in the high 60's to mid 70's with prolonged wet weather can still provide favorable conditions when bloom is present.

Diseases: Anthracnose, Botrytis, Leaf Drop

By Peter V. Oudemans, Ph.D.
Professor and Extension Specialist
Plant Pathology

Blueberry pollination is progressing despite frosts, rain and high winds. Weather forecasts continue to predict cool temperatures with some rain showers. For the next two weeks we will continue to focus on **Anthracnose. But what about Botrytis**? The good thing is that the normal anthracnose program is suppressive to botrytis and we should see signs of the disease if it is going to ramp up. So far the IPM program has not reported any sightings of the disease.

For **Anthracnose** management, the key is to maintain yours scheduled fungicide applications. The bloom period is the most critical timing for anthracnose management. Protectant fungicides such as Ziram are effective and it is my experience that Ziram provides a longer residual period and a 14-day interval is reasonable. Fungicides such as Pristine, Switch or Luna etc. are effective for protecting against Botrytis but can be limited on anthracnose.

Leaf drop should be on your radar now. Materials such as Proline, Quash or Quadris Top are effective against leaf drop which will require your attention by next week.

Scouting for signs of Botrytis. Look for these telltale symptoms. Sporulation on the berry or blossom. Leaf lesions with blossoms stuck to them and fruit rot symptoms

Dodder Biology and Management in Highbush Blueberry

Thierry Besançon PhD, Rutgers Extension Weed Science Specialist

Dodder is the name of several annual parasitic plant species (*Cuscuta* sp.) that infest many crops, ornamental, and native plants. Parasitized plants progressively become weaker, have reduced yields, and will eventually die. Infected blueberry bushes are also more susceptible to diseases and insect problems.

Identification and Life Cycle

Dodder on blueberry bush.
Hammonton, NJ, June 2020

Dodders are easily identified by their thread-like, yellow-orange stems that will cover infested plants and form a very dense spaghetti-like net. Dodders lack roots and leaves and are deprived of chlorophyll (hence the need for obtaining water and carbohydrates from the parasitized plants).

Dodder produces large amount of seeds that will germinate in spring (April-May) at or near the soil surface when soil temperatures reach about 60°F. They will produce a slender twining stem that will rapidly attach to suitable host plants.

Dodder will extract carbohydrates by producing specialized structures called haustoria that will penetrate the stems or leaves of the host plant. Soon after attaching to the host plant, dodder will break its connection with the soil, while the upper part of the stem will grow rapidly and start forming a dense mat of intertwined stems. If the dodder seedlings are unable to attach to a host plant within a couple of days after germination, they will die.

Dodder seeds and recently emerged seedling in a blueberry field. Hammonton, NJ, May 2022

Management

Effective management of dodder can only be achieved when combining preventive, cultural, mechanical, and chemical control strategies. Because dodder seeds can remains viable for several years (up to 20 years depending on dodder species and environmental conditions), the primary goal of a dodder management program should be to prevent dodder seed production.

⇨ **Prevention**. Inspect and remove seeds from clothing and equipment before moving from infested to "clean" areas. Scout field regularly in spring for detecting small infestations, and manually remove emerged plants before they start producing seeds by mid-summer. Keep track of previous know infestations by mapping infested areas for monitoring them in future

years. Dodder seedlings are difficult to find, but if you see them before they attach to a host, remove them by cultivation or hand pulling. Any portion of a dodder plant removed from blueberry bushes should be placed in plastic bags , and dispose in the trash.

American burnweed
(Erechtites hieraciifolius)
parasitized by dodder.
Chatsworth, NJ, August 2021

⇨ **Cultural and Mechanical Control**. Many summer broadleaf weed species can be hosts of dodder. For example, dodder has be found in New Jersey on American burnweed, goldenrods, asters, bindweeds, and common lambsquarters. Good control of annual broadleaf weeds in dodder-infested areas will help preventing dodder to find alternative hosts. Light surface cultivation of the soil or close mowing with a weed trimmer at the time of dodder emergence and **before** it starts attaching to blueberry plants can help controlling it. If you find dodder soon after it has attached itself to a blueberry bush, prune the infected portion of the bush 1/8 to 1/4 inch below the point of attachment (otherwise the dodder can regrow from haustoria left attached to the host plant). Pruning bushes is generally of little benefit unless dodder is confined to one or two branches that you can remove without destroying or disfiguring the entire blueberry plant. In case of severe infestation, dig up and remove blueberry bushes from infested areas to prevent regrowth of new canes to which dodder may attach.

⇨ **Chemical Control**. Where dodder has been a persistent problem, apply preemergence herbicides (e.g., Casoron or Kerb) before dodder seed germinates. Herbicides should be applied within 10-14 days of early seedling emergence, so that the chemical is present when peak germination occurs. Be aware that excessive amounts of irrigation water following preemergence herbicide application may adversely affect the herbicide activity.

Quinstar can be used during the preemergence and postemergence phase. Time preemergence QuinStar (12.6 fl oz/A) application at the end of dormancy, prior to budbreak. A second application may be made at the time of dodder emergence before its starts colonizing blueberry bushes. Always add nonionic surfactant to be 0.25% of the spray solution, or crop oil

Remaining dodder stem and flowers in winter on a blueberry bush.
Hammonton, NJ, February 2021

concentrate at 2 pints per acre. Apply no more than 2 applications per year, with a minimum of 30 days between applications. Quinstar will also control a wide range of annual grasses, broadleaf weeds, rushes, and sedges in blueberry with an excellent margin of crop safety

Dr. Thierry Besançon, Extension Weed Science Specialist, Rutgers University
Ms. Carrie Mansue Denson, IPM Program Associate – Fruit

Horseweed (marestail): rosettes of plants that emerged last fall and that have not been controlled with a postermergence herbicide in early spring will start bolting soon and may already be too large for effective control with paraquat. Consider using clopyralid (Stinger) for controlling horseweed before it starts bolting. Stinger should be applied no earlier than one week after bloom and no later than 30 days before harvest. For non-bearing plantations, mesotrione (Callisto) is another option for effective marestail control.

Yellow nutsedge: emergence was noted over the last two weeks along drip tape irrigation as preemergence herbicides are easily leached by continuous watering. Consider using sulfentrazone (Zeus XC) or halosulfuron (Sandea) for controlling emerged nutsedge at the 2-4 leaf stage (now). Both herbicides will also help extending residual weed control from early spring preemergence herbicide applications. Zeus can only be used in fields established at least for 3 years and Sandea in fields established at least 1 year. Rutgers field trials have demonstrated higher and more consistent nutsedge control with halosulfuron than with sulfentrazone.

Goldenrod: goldenrod have started emerging in late April and are now between 1 and 5 inches tall. Apply clopyralid (Stinger) in spring after spring growth is 10 inches tall at most, but before the shoots become too tall for good coverage with the spray solution. Stinger should be applied no earlier than one week after bloom and no later than 30 days before harvest. A second application in late summer will be necessary for effective control of these perennial species. Paraquat or glufosinate will only provide temporary control of goldenrods as new shoots will emerge later in spring from rhizomes.