

The Blueberry Bulletin

A Weekly Update to Growers

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- ❖ The 2024 Commercial Blueberry Pest Control Recommendations for New Jersey is available on <https://njaes.rutgers.edu/pubs/>

BLUEBERRY CULTURE

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

As the season begins, I thought it would be appropriate to re-run a column written by the late Dr. Polavarapu on chemical compatibility. We never want to repeat the problems we had in 1997.

MIXING INSECTICIDES AND FUNGICIDES: POTENTIAL COMPATIBILITY AND PHYTOTOXICITY PROBLEMS IN BLUEBERRIES

By Dr. Sridhar Polavarapu


Insecticides and fungicides are often used in combination to manage insect and disease problems that occur at the same time. Although tank-mixing of insecticides and fungicides is economical and convenient, this approach may cause severe compatibility and phytotoxicity problems if appropriate chemicals are tank-mixed. It is therefore important to determine if a particular combination of chemicals is compatible and safe prior to large scale application. This is especially necessary for new chemicals and formulations that have not been tested extensively in the field.

Physical compatibility of tank-mix partners can be determined by employing a jar test. Using a gallon jar, add proportionate amounts of each chemical at approximately the same rate as specified on the label to one quart of water. Add wettable powders and water-dispersible granular products first, then liquid flowables and finally emulsifiable concentrates. After thoroughly mixing, allow the mixture to stand for at least 5 minutes. If the combination remains mixed or

can be readily remixed with agitation, the products are physically compatible.

Pesticide mixtures that are physically compatible may still cause crop injury. New chemicals and formulations should always be evaluated for crop safety in a small area, prior to spraying on a larger area. Crop safety should be evaluated by mixing small amounts of tank-mix partners at the appropriate rates and spray volumes with spray equipment that is normally used on the farm. If no symptoms of phytotoxicity (such as necrotic spots or dieback) are evident generally within 24-72 hours after the spray, the combination may be considered safe. In some cases, phytotoxicity may take longer than 72 hours for full expression of symptoms.

During the 1997 season, severe phytotoxicity was observed with combinations of Diazinon and Captan formulations in blueberries. Symptoms of phytotoxicity were evident within 24 hours of the application of Diazinon and Captan mixtures. The phytotoxic symptoms on berries ranged from deep purple blotches to circular depressions, especially where residues have accumulated near the calyx end of the berries. On leaves, brownish purple spots were seen especially on the underside of the leaf surface. f


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PEST MANAGEMENT

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During the week of April 22nd-26th, 85 fields were scouted throughout Burlington and Atlantic Counties.

Leafrollers (LR), Spongy Moth (SM), and Plum Curculio (PC). Leafrollers (LR) and SM numbers were minimal in beating tray sampling. Activity of PC decreased this week, most likely due to the colder temperatures. The week's average for PC counts was 0.03 per bush and a maximum 0.5 per field site. No insecticide treatments should be applied at this time.

Week Ending	LR/Tray		SM/Tray		PC/Tray		Thrips/Tray	
	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum
4/6	.	.	.	.	.	.	.	.
4/13	.	.	.	.	.	.	.	.
4/19	0.01	0.2	0.006	0.2	0.03	0.3	.	.
4/26	0.02	0.3	0.01	0.2	0.03	0.5	0	0

LR = Leafrollers, SM = Spongy Moth, PC = Plum Curculio

Cranberry fruitworm (CBFW) and cherry fruitworm (CFW). Cranberry fruitworm (CBFW) and CFW traps were checked this past week. The number of moths moving into fields is increasing, particularly for CBFW throughout Atlantic (AC) and Burlington County (BC). No treatment is needed currently.

Week Ending	CBFW Traps				CFW Traps			
	AC AVG	AC Max	BC AVG	BC Max	AC AVG	AC Max	BC AVG	BC MAX
4/19	0	0	0	0	0.44	2	0	0
4/26	0.4	3	1	2	0.1	1	0	0

AC = Atlantic County, BC = Burlington County, CBFW = Cranberry Fruitworm, CFW = Cherry Fruitworm

Life Cycle: CBFW completes one generation per year. It overwinters as a fully-grown larva within a cocoon made of silk and soil particles, known as a hibernaculum. Pupation occurs in early spring, with moths beginning to emerge during the second to third weeks of May. Male moths emerge 3-4 days earlier than females. Adults are brownish-gray with a pair of white markings on each forewing (Picture 1).



Picture 1. CBFW adult. Photo by Zsofia Szendrei

The eggs are pale-green, flat, and are usually laid singly, mostly along the inner rim of the calyx cup. Eggs hatch in 5-7 days, and the newly emerged larvae are pale yellowish-green.

Upon hatching, larvae bore into the fruit, typically near the junction of the stem and berry. The larva remains inside a fruit until its contents are consumed, then it moves to another fruit.

A larva may feed on as many as 5-8 berries. Infested berries are contaminated with larval excrement, which can be seen near the entrance hole. CBFW infestations can be recognized by the presence of webbing filled with excrement within berries (Picture 2). Infested fruit prematurely drops. Larvae drop to the ground under blueberry plants beginning in the third week of June and construct a cocoon.

Monitoring: The timing of treatment can be determined based on data collected from pheromone traps. According to a degree-day model from Michigan State University, it takes approximately 85 degree-days from the first male capture (known as the biofix) to egg laying. The number of males captured in the traps offers valuable information on the presence and distribution of CBFW within a field. Typically, traps are positioned at the wooded borders of fields, where CBFW pressure tends to be high. Growers with a history of high CBFW populations



Picture 2. CBFW damage to developing fruit.
Photo Taken By: Zsofia Szendrei

should be particularly vigilant about monitoring. Furthermore, growers can scout for eggs after early fruit set. Detecting larval infestation early in the season can be challenging, but as larvae grow, the increasing number of affected fruits and the presence of frass provide clear indications of infestation.

Control: CBFW can be effectively managed using registered insecticides. The number of required applications varies depending on the population level. When trap counts indicate a high population, an early application of an insect growth regulator (such as Intrepid or Esteem) may be warranted, timed to coincide with the first egg laying and hatching, typically just before the peak flight in New Jersey. This should be followed by a second application shortly after bloom. For post-bloom applications, broad-spectrum materials like Danitol, Asana, or Imidan, or softer alternatives such as Assail, Avaunt, Altacor, Exirel, Verdepryn, or Delegate can be applied 7-10 days following the first application, ensuring honeybee hives are removed to prevent harm to beneficial insects. In cases where trap counts indicate a lower population, a single insecticide application post-bloom may suffice. It's essential to bear in mind that broad-spectrum insecticides can be detrimental to beneficial insects, thus necessitating their application only after honeybee hives have been removed.

POLLINATION – AN UPDATE

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With some of the sunnier days we had this week, honey bees appeared active in the fields. Warmer temperatures are expected next week which should be favorable for bee activity in blooming blueberry bushes (Picture 3).



Picture 3. Blooming blueberry bushes.
Photo by Carrie Mansue.

Peak bloom in Duke is occurring this week in conventional farms, but organic farms peaked last week (Figure 1). As bloom begins to decline, you'll notice fewer blooms on the bushes and an increase in petal drop.

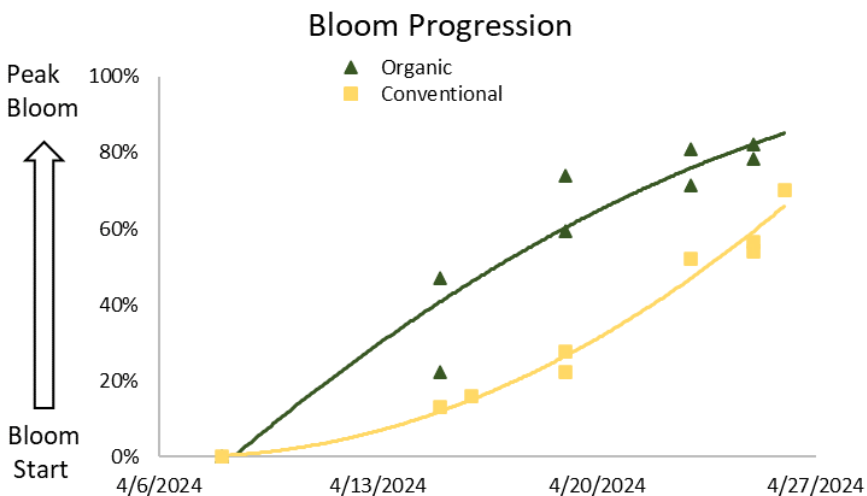


Figure 1. Percent bloom progression in Duke from the start of bloom until now.