RUTGERS
New Jersey Agricultural Experiment Station

The BLUEBERRY BULLETIN

A Weekly Update to Growers
Dr. Gary C. Pavlis, County Agricultural Agent
6260 Old Harding Highway, NJ 08330
Phone: 609/625-0056 Fax: 609/625-3646 Email: pavlis@njaes.rutgers.edu
June 15, 2009 **Vol. XXV, No. 12**

At a glance. Insect and disease problems that should be considered this week.

PEST/DISEASE	WEEK OF JUNE 14	WEEK OF JUNE 22
Anthracnose Abound or Ziram	Continue anthracnose schedule on susceptible cultivars.	Continue anthracnose schedule on susceptible cultivars.
Blueberry Maggot See list	Monitor traps 2X/week Treat by Friday to Monday 6/22 if on a calendar schedule. Don't spray if monitoring and nothing is found.	Monitor traps 2X/week. Treat if needed.
Aphids Imidacloprid (Provado etc.), Assail, Actara, or Lannate for suppression of low populations	Monitor and treat if over 10% of terminals infested.	Monitor and treat if needed.
Oriental Beetle Imidacloprid (Admire Pro and generics)	Monitor fields with Japanese beetle can traps, baited with OB pheromone. Treat if needed.	Continue monitoring, and treat if needed.
Putnam Scale Esteem or Diazinon	If crawlers are present, then treat with Esteem or Diazinon.	If crawlers are present, then treat with Esteem or Diazinon (1 application only).

Culture:

Dr. Gary C. Pavlis
County Agricultural Agent

Harvest 2009: Harvest has begun in the Hammonton area. Some growers started as early as Saturday, the 13th, some on Sunday and some on Monday. A few growers are waiting for the berries to color up a little more. The quality looks very good, flavor is very mild, but the size is excellent because as anyone in New Jersey is aware, the blueberry plants have not been under any water stress for the last couple of weeks. It remains to be seen how big the 2009 crop is. My guess is that it is average in size at best. Some fields are off due to a combination of lack of pollination and cold damage. Growers may notice plants that have a lower percentage of ripe fruit than other plants nearby. The 'Duke' plants that I have seen like this also have smaller leaves which are less green and can be spotted from a distance. I dug up a couple of these plants on Tuesday and once again found grubs. Since we are already harvesting 'Duke', it might be a good idea to strip these plants of any fruit to decrease the stress on the plant. Letting a root damaged plant carry a full

load of fruit will in most cases be the end of that plant by the end of the year.

Sincerely,

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

Editor – Blueberry Bulletin
Blueberry Bulletin – Editor
GP/sp

****

INSECTS

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

Blueberry Maggot (BBM): The first adult fly was seen in traps on Friday June 12 in Burlington County. There was also one report of a single fly capture in the Hammonton area on Thursday June 11. All growers should be concerned about BBM, but growers who plan to export to Canada, and who are on a calendar spray schedule need to treat for BBM within 10 days of the first adult capture in the state, or by Monday June 22. Growers who are on a trap-based or IPM method of BBM management, need to treat within 10 days of the first fly capture on their farm, or within a production area on that farm. This has been as much as a month later on some monitored farms or not at all in some production areas on those farms. See below for more on the life cycle, monitoring, and treatment options.

Life Cycle. There is one generation per growing season. BBM overwinters in the soil below blueberry bushes enclosed in a brown puparium buried one to two inches deep in the soil. Pupae lay dormant until environmental conditions become suitable to emerge as adults (early through mid-June). Peak emergence and migration from wild hosts continues from mid-July through mid-August. Female blueberry maggot flies do not begin laying eggs until 10 days after emergence, typically corresponding to when the blueberry fruit turns blue. Adult females live for about 30 days, feeding on nectar, dew, and honeydew. Female flies lay one egg per berry under the fruit skin, which hatches in five to seven days. Maggots feed for about three weeks inside ripening and harvested fruit. The full-grown larva is about 7/16 to ½ inch long and white. The body is tapered, with an indistinguishable head at the narrow end. As the larvae mature, infested fruit become soft and watery, and drop to the ground. The cycle is perpetuated for the following year as larvae then pupate in the soil under the bushes from which they have dropped. Pupae may remain in the soil for up to 2 to 3 years.

Monitoring and Management. Determining the onset of adult fly activity is essential to the control of BBM as protective sprays must be applied in the 7 to 10 day period before oviposition begins. Regular monitoring of blueberry maggot emergence is done with yellow baited sticky traps. A trap and lure system has been developed that increases blueberry fly capture. Pherocon AM yellow sticky boards baited with ammonium acetate work effectively in monitoring blueberry maggot flies. Traps should be hung in a "V" orientation within the top 6-8" of the bush canopy, not above it, with the yellow surface facing down. Sometimes this means cutting away a little foliage so it doesn't stick to the trap. If the trap is hung above the foliage then fewer to no maggot flies will be caught. The traps should ideally remain open at a 90º angle. As the trap gets wet, it looses form and gets heavier. Use of a # 14 or 12 wire in place of the plastic coated wires that come with the traps

will help maintain proper orientation and shape. Traps should be placed at least a week before first flies are expected to emerge (early June). Traps should also be changed every 2 weeks, since the ammonium acetate will volatilize off the traps. Place traps on field borders near wooded areas, with a few traps in the field interior.

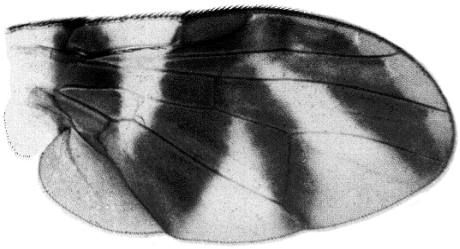
Blueberry Maggot Insecticide Options

Material	Rate/A	REI	PHI	Rating
Diazinon 50W	1 lb	5 days	7 days	G
Guthion 50W	1 lb	7 days	7 days	E
Imidan 70WSB	1.33 lb	24 hr	3 days	E
Lannate 90SP	1 lb	48 hr	3 days	G
Malathion 8	1.5 pt	12 hr	1 day	G
Sevin 80WSP /4F	1.5 lb / 3 pt	12 hr	7 days	G
Asana XL	8 oz	12 hr	14 days	G
Danitol	10 2/3 – 16 oz	24 hr	3 days	G
Provado 1.6F	3–4 oz	12 hr	3 days	G
Actara	4 oz	12 hr	3 days	G
Assail 30SG	4.5–5.3 oz	12 hr	1 day	G
Spintor 2SC	6 oz	4 hr	3 days	F
Surround	25 lb	4 hr	day of harvest	suppression
Entrust	2 oz	4 hr	3 days	suppression
GF120	20 oz	4 hr	day of harvest	F

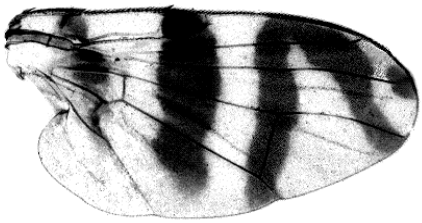
E=excellent, G=good, F=fair, suppression=suppression only
Lannate is not labeled in Canada and should be minimized or avoided if exporting berries
Assail, Provado, Actara, and SpinTor are reduced-risk/OP replacement products
Surround, Entrust, and GF120 are organically-approved insecticides

Adult identification. Proper identification of the BBM flies is important. There are several flies that resemble and may be confused for BBM adults. The BBM adults are identifiable by the characteristic solid "W" or "M" shape mark on their wings. In most cases, this looks identical to apple maggot but assume that if it is in a commercial blueberry field, then it is BBM. See illustrations (on following page) from Carroll et al. (2002).

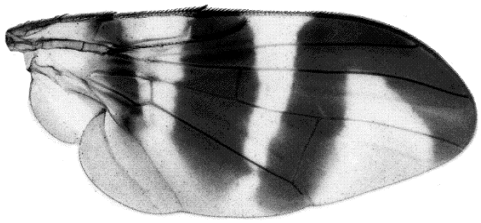
(continued on next page)



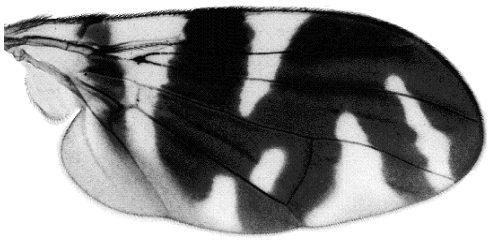
Rhagoletis mendax
Blueberry Maggot



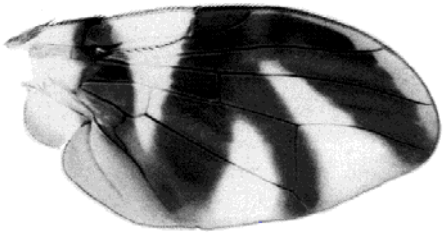
Rhagoletis cingulata
Cherry Fruit Fly



Rhagoletis completa
Walnut Husk Fly



Rhagoletis fausta
Black Cherry Fruit Fly



Rhagoletis pomonella
Apple Maggot

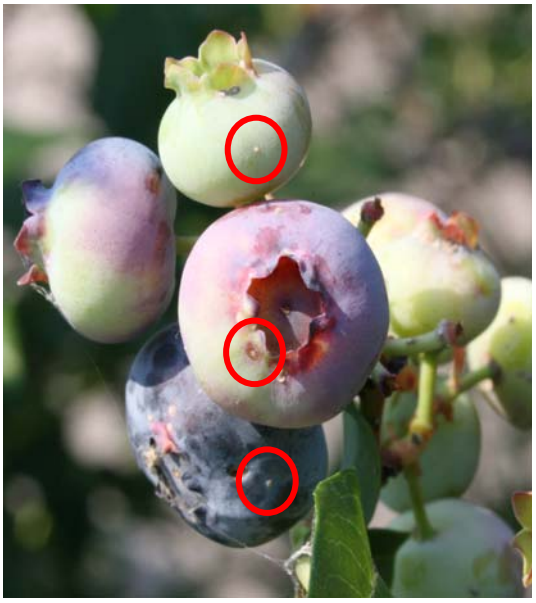
Rhagoletis ribicola
Dark Currant Fly

From: L.E. Carroll, I.M. White, A. Freidberg, A.L. Norrbom, M.J. Dallwitz, and F.C. Thompson (2002 onwards). Pest Fruit Flies of the World: Identification, Descriptions, Illustrations, and Information Retrieval. Version: 8th August 2002. http://www.sel.barc.usda.gov/Diptera/tephriti/pests/adults/'. Dallwitz (1980) and Dallwitz, Paine and Zurcher (1993, 1995, 2000)

Aphids: Populations are somewhat larger this week with 93% of samples positive and 53% above the 10% infestation level. Provado and other neonicotinoids have been very effective where used.

Putnam Scale and Scale Fruit Injury: Now that we have some fruit color, scale presence is easy to spot. It appears as a tiny, cream colored pinpoint mark on the surface usually surrounded by a pale halo (see Photo). Several Duke blocks have been seen with infestations under 1%. While 1% may sound like a small number, it is not small when it comes to scale infestations. Given past experience, any time that scales show up on the fruit, it is indicative of larger infestations on the canes that are simply moving out towards the ends of the canes, 'finding' fresh wood to infest. By the time these first crawlers settle down on the

fruit, the crawler emergence is well established. Our scale crawler traps show that this pest is currently active and can therefore be affected by a target spray. Use either Esteem or Diazinon (1 application per season only) where scale is present. Make sure to use as much volume as possible when treating scale. Concentrate sprays and aerial applications are a waste of time and money.



Maturing blueberries showing freshly settled scales (circled).

Plum Curculio (PC): No adults have been seen since the last newsletter. About 56% of fruit samples were positive for any amount of injury and only 2% have been above the 1% field damage level. At this point, all injury is old, and larvae are either maturing inside berries, or the berries with large larvae are starting to drop. However, since 'Duke' harvest has started, you should be aware that infested berries will make their way across the packing line. Anything that can be done to eliminate this fruit from the pack will help.

Leafrollers and Other General Leps: About 5% of beating tray and shoot samples were positive for larvae. Several of these were leafminer larvae, but because they do not infest the fruit, they pose no threat to fruit quality at the present time. Very high populations later in the season, may get into machine harvested fruit trays and have to be removed.

Cranberry Weevil: No significant increase in foliar feeding has been seen in the past week. This insect is not a pest at this time, and while some summer feeding on the foliage is present, levels are very low and are of no consequence.

Anthracnose: While the recent weather conditions have increased the chances of anthracnose infection, no fruit infections have been seen this past week. See disease section for more information.

INSECT TRAP COUNTS

Blueberry Trap Counts – Atlantic County

Week Ending	CBFW	RBLR	OBLR	SNLH	Or. Beetle	BBM
4/5		19.9				
4/12		55.1				
4/19		72.0				
4/25		69.4				
5/2		71.6				
5/9	.009	43.6				
5/16	0.07	7.9	0.00			
5/23	0.2	1.6	0.02			
5/30	0.1	0.3	9.6			
6/6	0.2	5.8	19.5	0.4		
6/13	0.03	39.4	18.8	0.4		0.00

Blueberry Trap Counts – Burlington County

Week Ending	CBFW	RBLR	OBLR	SNLH	Or. Beetle	BBM
4/5		9.3				
4/12		22.6				
4/19		19.2				
4/25		25.1				
5/2		38.0				
5/9	.1	16.2				
5/16	0.1	3.4	0.0			
5/23	0.2	0.4	1.3			
5/30	0.7	0.0	6.5			
6/6	1.9	0.5	20.4	2.7		
6/13	0.3	16.4	20.1	4.5	15.0	0.07