

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

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CULTURE

Dr. Gary C. Pavlis, Ph.D.

Atlantic County Agricultural Agent

Visits to numerous farms over the last couple of weeks have inspired me to address the subject of blueberry field establishment. Most of the problems I have encountered are not due to a disease or insect but due to faulty establishment practices that occurred years before the problems arose. I believe part of the problem in our immediate Atlantic and Burlington County area is that we believe that the soil conditions are perfect for blueberries and so no pre-plant modifications need to be done. It is true that the highbush blueberry industry started here because the climatic and soil conditions in the Pine Barrens are ideally suited to this crop, namely light, well-drained, acid soils with high organic matter content. But the reality is that not all sites are perfect for blueberries without any modification.

Site Preparation – The recurring problems I see of poor soil drainage, low organic matter, a hardpan, and less than optimum pH must be addressed pre-plant. Blueberries require a high soil organic matter and a pH of between 4.5 and 5.0. Virgin soils in the Pine Barrens can have an organic matter percentage as high as 15%. Soil tests of current blueberry farms are showing many OM percentages at less than 1%. This is due to our cultural practices. We use herbicides under our bushes and roto-till our row middles. This keeps any vegetation from growing thus there is no break-down of plant tissue added to soil. Even though these soils were at a high OM level 25 years ago, it is almost all gone now. As a result, many farms

now mulch their plants which is an advisable practice.

For new plantings a pre-plant soil test to determine pH is critical. Lime application to increase the pH or sulfur to decrease the pH should be applied at least a year before plants are put in the ground. A visit to the Cape-Atlantic Conservation District office to review the site's soil drainage is advisable before plants are put in the ground. Soil drainage is very hard to change after the planting is established. Failure to address poor soil drainage results in root rot problems such as phytophthora. A cover crop such as buckwheat should be seeded the year before blueberry planting. Once incorporated, the soil OM and over-all soil structure will be greatly improved. This should be followed up with a sub-soiling of the field using a 3-shank ripper followed by multiple passes of a single shank ripper to a depth of at least 18 inches to break any hard pan that is present. I have seen multiple cases in which the blueberry root system cannot penetrate the hardpan which results in a root system that only has a depth of 4-6 inches. The consequences of this shallow root system are often not seen until the plant tries to ripen a crop after the second or third season. By that time it is too late to make any modifications. In addition, the plant and labor costs have been expended on a field that will never produce a good crop and often dies once the crop is set.

Planting – There continues to be some confusion about the most efficient method for

planting blueberry plants. The most important decision to make at this stage of establishment is what to put in the planting hole and what not to put in the planting hole. The ideal addition to the soil is peat moss at about a gallon per plant. This is an expensive practice thus other forms of OM are appropriate but they must be thoroughly composted. If the material can be still identified as leaves, chips etc, it should not be put in the hole. Of course, the pH of this material should be checked. Using PA mushroom soil with a pH of 8.2 will result in a blueberry planting that will never survive the first summer. Raw wood chips results in a planting that never grows because all the water and nutrients that are applied are used by the soil's micro-organisms to break down the chips, not grow the plant. Raised beds are the norm for blueberry plantings because the

raised beds help prevent saturated soils, reduce compaction, and improve drainage. Lastly, the recommendation has always been to remove the flowers the first two years after planting. This is most easily done by clipping off the top few inches of the plant before planting. The second year it is advisable to hand-strip the flowers off. I have seen some growers cut the plants to the ground after the first year in the belief that this will develop the root system. This is an erroneous belief. The plant needs leaves to produce the carbohydrates needed to grow the plant. Eliminating the leaf buds stunts the plants growth.

In conclusion, the mad dash to get a blueberry planting established must be tempered with the reality that this is a perennial crop that should be in the ground for many, many years. A productive, high yielding planting is only possible if establishment is done with the above factors in mind.

INSECTS

Dr. Cesar Rodriguez-Saona, Extension Specialist in Blueberry Entomology, Rutgers University

Mr. Dean Polk, IPM Agent – Fruit

Ms. Carrie Denson, IPM Program Associate – Fruit

General Insect Control and New and

Renewed Labels: Late last week we obtained the Section 24C renewal for the high rate of Gowan Malathion 8F. The specifics of the label renewal are as follows:

GOWAN MALATHION 8 FLOWABLE, EPA Reg. No.010163-00021 is a federally registered fungicide that is currently registered for use in NJ. The Special Local Need (SLN) granted NJ under FIFRA Section 24(c), as Amended, for the Gowan Company, LLC's pesticide product **GOWAN MALATHION 8 FLOWABLE, EPA SLN NJ-130003 (Reference EPA Reg. No.010163-00021)** for the control of Spotted Wing Drosophila (SWD) on blueberries expired as of December 31, 2016. The

pesticide active ingredient is malathion, at 70.5 % by weight, containing 8 lbs. of malathion per gallon of product. The new SLN label extends the SLN registration for one year, with a new expiration date of December 31, 2017. The new SLN label carries a REI of 12 hours, a max. high rate of up to 2.5 pts / acre, and the following restrictions:

- The maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
- Do not exceed a total maximum use rate of malathion from all sources of 5 lbs ai per acre per year.
- Do not apply within 1 (one) day of harvest.

- Do not apply within 25 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, streams, marshes, natural ponds, estuaries, and commercial fish ponds).and a label mitigation to include a buffer zone of 25' from an aquatic habitat.

The rate of malathion @ 2-2.5 lb ai per acre MUST be used if you are to attain SWD control with malathion. The lower rates are not as effective. Other brands also have the Section 24C label which are good for this growing season. Malathion is the ONLY insecticide that can be used for the Canadian market that also has a 1 day PHI.

Imidan (Phosmet): Several growers have asked about the use of Imidan (phosmet) and how its use relates to Canadian exports. Imidan is labeled in Canada for use on highbush blueberry. However the label as well as the MRL is different in Canada compared to the US. The US label allows 1.33 lb/A, applied a maximum of 5 times with a 3 day PHI. The Canadian label allows 1.43 lb/A (calculated equivalency of 1.6 kg/H), applied a maximum of 2 times with a 15 day PHI. US blueberry growers can use about 2.5 times as much Imidan for domestic markets as Canadian growers can use. The resulting Canadian MRL is 50% of what is allowed in the US. Therefore in order to safely export to Canada, growers must adhere to the US label for the individual application rate of 1.33 lb/A, but apply a maximum of 2 times with a 15 day PHI. DO NOT use this product for any Duke plantings intended for export at this time.

Spotted Wing Drosophila (SWD): Spotted Wing Drosophila is still the key pest to control, so growers should choose materials primarily based on SWD control. SWD adult males are being captured in numerous locations, with numbers about the same as the previous week. DO NOT assume that 'Duke' can escape infestation this year, especially 2nd and 3rd pickings. Our traps are placed in 'Bluecrop' plantings simply to maintain the trap location for the entire season, but adult flies are attracted to the

fruit as it starts to turn blue. Duke remains very susceptible now, and for the remainder of Duke season. Other later varieties like Bluecrop, Draper and Elliott will be more susceptible, since the SWD population will be higher as they ripen.

Aphids: Aphid populations have increased since last week. Populations are still low on most farms, but if you have over 10% of terminals infested, then treatment is suggested. DO NOT use Assail as your only insecticide at this time, since it can be weak on higher SWD populations. If you elect to use a neonicotinoid like Assail for aphid control, you should follow with a material for SWD. Other choices for both aphids and SWD include the use of Lannate or Exirel.

Blueberry Maggot (BBM): The first BBM adults were captured in the Hammonton area yesterday, 6/13. With the presence of SWD, no growers are on the trap-based Canadian export protocol. Therefore, this first capture will initiate the regular controls that are required for Canadian exports. With the repeated use of insecticide for SWD, the BBM population should remain very low. All materials that control SWD also control BBM, with the possible exception of Delegate, which is still OK for low populations. Given the regular use of other products, there should be no BBM issues seen with rotated use of Delegate. If you are trapping for BBM adults, adult flies appear with a wing pattern illustrated in Figure 1.



Figure 1. Blueberry maggot adult fly on trap (photo – Nick Freeman).

Oriental Beetle (OB): Oriental beetle adults started to emerge last week, with average trap captures in the single digits. Populations should rapidly increase over the next several weeks. Growers who are using Admire Pro for OB treatment need to apply the product (or generic) @ 7-14 oz/A with a 7 day PHI. This material will control early stage larvae, so **MUST BE APPLIED BEFORE** mid July in order to be effective. The material must be pushed below the soil surface where grub larvae are located and out of direct sunlight. Therefore

the application needs to be followed with .5 to 1" of irrigation or precipitation within 24 hr, or be chemigated in.

Life cycle. OB completes a single generation per year. Adults (see picture) start to emerge in early June, and flight peaks in early July. Females lay eggs in the soil at the base of bushes. Most larvae reach first and second instars by the end of July. Third-instars (see picture) appear by the end of August, they remain in the soil during winter, resume feeding the following spring, and enter the pre-pupal stage in late May.



OB adult



OB 3rd instar larva

Monitoring. Japanese beetle sex pheromone traps (Trécé, Adair, OK), baited with septa lures containing the sex pheromone are used to monitor OB populations and initiation of male flight (see picture).



Japanese beetle trap used for monitoring OB populations

Control. Admire Pro (imidacloprid) (4.6 lb ai/gal) is recommended to manage OB grubs infesting blueberries in New Jersey. Other formulations are also available in generic brands. Most of these are 2 lb ai/gal. These

include Alias, Nuprid, Couraze, and others. Imidacloprid is most effective if targeted against early instar grubs. It should be applied in June to mid-July, at least 7 days before the first picking, or applied as a post harvest material.

Grubs should be targeted at their youngest stage or as they hatch and are at the 1st and 2nd instars, and while still close to the soil surface. Imidacloprid has little effect on 3rd instars and older larvae. Older 3rd instars start to appear by early to mid August. Therefore, applications should be made well in advance of that date. Applications will degrade if exposed to the sun. Therefore, imidacloprid should be immediately irrigated into the soil to form a layer of insecticide just below the soil surface. Imidacloprid has a long residual activity (>100 days) as long as the insecticide is not exposed directly to the sun. Applications for early varieties like Weymouth can be made immediately after the last picking. If Duke picks by the 3rd week of June, then application should be conducted during the 2nd week of June or after harvest, between mid to the end of July. Applications for Bluecrop are recommended 7 days before the first picking, in late June or early July. Similarly, applications for late season varieties like Elliott should be conducted no later than end of July. Imidacloprid is most effective when applied as eggs hatch and grubs are still near the soil surface. Please read and follow all the conditions and restrictions on the container label for these insecticides. Remember to irrigate the field with at least .5 to 1" of water immediately after application. If the soil is dry, then also water just previous to

application. Begin applications late in the evening hours because this insecticide is sensitive to breakdown by UV radiation. No more than one application of Admire Pro can be used per season. However, Admire Pro (and other generics) may be used in the same field as long as the total a.i. applied does not exceed 0.5 lb/A.

Oriental Beetle Mating Disruption

As an alternative to insecticides, we recommend the use of mating disruption for oriental beetle control. Dispensers (see picture), containing the oriental beetle sex pheromone, are now available to growers. These dispensers are being sold by AgBio:

Mr. Jan Meneley, Ph.D.
AgBio Inc.
9915 Raleigh St.
Westminster, CO 80031
www.agbio-inc.com
ph 303-469-9221
fx 303-469-9598

To use, simply attach the dispensers to a lower blueberry branch at a density of 20-40 dispensers per acre in a grid pattern, depending on the size of the area to be treated. Please see label for information on restrictions, spacing, timing, etc. Below are instructions on how to space the disruptors through blueberry fields.



Retrievable AgBio dispensers

Blueberry Trap Counts

Atlantic County

Week Ending	Cranberry Fruitworm	Plum Curculio	Oriental Beetle	Spotted Wing Drosophila ♂
5/6				
5/13	.083			
5/20	.28	2.4		
5/27	.56	2.8		
6/3	0.24	0.33		0.74
6/10	.33	0	4.9	0.79

Burlington County

Week Ending	Cranberry Fruitworm	Plum Curculio	Oriental Beetle	Spotted Wing Drosophila ♂
5/6				
5/13	.33			
5/20	.14	7		
5/27	.43	12		
6/3	0.857	2		2.46
6/10	0.18	0	1.08	1.83