

RUTGERS

New Jersey Agricultural
Experiment Station

The BLUEBERRY BULLETIN

A Weekly Update to Growers

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CULTURE

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Atlantic County Agricultural Agent

To Mulch or Not to Mulch, That is the Question.

Growers who are planting blueberries on heavier soils than those found in the Pine Barrens of New Jersey realize that highbush blueberries require a soil with a high organic matter content. To that end, the standard recommendation to increase the organic matter of the blueberry planting is to put peat moss or some other composted material in the planting hole to get the blueberry plant off to a good start and to apply a mulch around the base of the plants on a yearly basis to increase the organic matter of the soil. This recommendation along with diligent pH monitoring has resulted in successful highbush blueberry plantings in non-traditional blueberry soils. The use of mulch in blueberry culture is a given on these soils, however, there are good mulches and bad mulches, advantages and disadvantages to mulch and the question is being asked, should growers in New Jersey with classic blueberry soils mulch.

Many different materials have been tested as a mulch around the world. In general, suitable mulches include grass clippings, peat moss, buckwheat hulls, shredded leaves, straw, wood chips, and sawdust. Some of these are better than others however. Peat moss and buckwheat hulls are very expensive. The use of grass clippings has occasionally resulted in phytotoxicity due to

ATA GLANCE...

BLUEBERRY GROWER TWILIGHT MEETING

THURSDAY, April 24, 2014

VARIETY FARMS

548 PLEASANT MILLS RD., HAMMONTON

FOR DIRECTIONS, CALL 609-561-0612

THURSDAY, MAY 22, 2014 @ 5:30PM

ATLANTIC BLUEBERRY CO

7201 WEYMOUTH RD., HAMMONTON, NJ

FOR DIRECTIONS, CALL 609-561-8600

herbicides in the grass. In addition, fresh clippings can raise the temperature of the root zone as they break down. Straw can release nitrate nitrogen and decrease the ammonium form in the blueberry root zone. Lastly, leguminous hay can be bad because it releases nitrogen in the fall which can delay the blueberry plant from entering dormancy. The result is an increase in winter damage. There can be other disadvantages to using mulch in a blueberry field. Mulch ties up Nitrogen, and often plants tested for nitrogen levels via leaf analysis show deficiencies.

The use of mulch often requires an increase in fertilizer application rates. The problem comes in making a guess as to how much to increase the rate. This largely depends on the kind of mulch used and the degree to which it is decomposed. A leaf analysis should give the grower some indication of the amount needed to provide the optimum level of nitrogen.

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In addition to increased nitrogen costs, there are the added costs of the mulch and its' application. The process can be mechanized however such equipment is costly and may not be cost effective for a small operation.

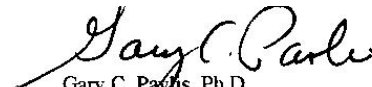
Other problems which have surfaced with mulching are the increased problems with mice and voles. Both find the mulch a very suitable place to live and they can damage blueberry plants.

Lastly, the problem of scab beetles increases when mulch is used, again because mulch is very suitable for their life cycle. Farms that experience Japanese, Oriental or Asiatic Beetle grub problems must realize that the problem may become worse with the use of mulch.

That's all the bad news. There are many advantages of using mulch in a blueberry planting. I have already mentioned that mulching increases the organic matter of the soil and blueberries thrive when the organic matter is high. Mulch also lowers the root zone temperature in the summer and keeps the roots warmer in the winter. Both are excellent for healthy roots. The increase in organic matter also results in an increase in soil moisture which is beneficial in times of drought.

I have been skeptical about New Jersey growers using mulch. I really couldn't see the reason given the added costs and all the disadvantages listed above. After all, our soils have all the characteristics needed by highbush blueberries, low pH, high organic matter, well drained, etc. However, after looking at the soil analysis results over the last 10 years I realize that our soils have changed. We fertilize with 10-10-10 which contains nitrogen in the ammonium sulfate form. Years of using this form drives the pH down. So soils that were historically 4.5 are now 3.5. The pH must be adjusted to the correct range. In addition, I have noticed that due to our practice of roto-tilling the middles for weed and pest control, we have lowered the organic matter levels in the soils. The use of mulch may very well be a good practice in New Jersey. I would just warn growers to be aware that there are pluses and minuses to mulching.

Sincerely,



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

Editor - Blueberry Bulletin
GP/slp

Insects

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

Mr. Dean Polk, IPM Agent – Fruit

Cranberry Weevil: Scouting done late last week and early this week showed increased activity of cranberry weevil. An average of 3 weevils per bush was seen on one farm with a high count of 4 weevils per bush. This is very close to a treatment threshold, and with

warmer weather more activity is expected. Therefore growers may to treat if seeing increased activity. Bees will likely be coming in before the end of the week in some areas. If you are doing your own scouting, use a 10 bush sample, and inspect 20 blossom clusters per bush. Examine 5 clusters on each of 4 shoots per bush. Sampling is done from the mid to upper areas of each bush. Data from each site is a composite from the data collected on all 200 clusters (about 2,000 estimated fruit), but is divided by 10 bushes for an average per 20 clusters. Most varieties

range from 10 + berries per cluster, so a simple percentage of infestation may be calculated when needed. The percent of injured blossom clusters is reported. A blossom cluster is rated as injured if at least one blossom in the cluster has a weevil puncture. Treatment thresholds are set at 5 weevils per bush or 20% of blossom clusters (at least 1 injury or puncture per 5 clusters) with reported injury.

Plum Curculio (PC): If historically you have high populations of PC and would like to use Rimon, we recommend using Rimon this week before you place bees in your fields.

Use of Rimon against PC

We have tested a *preventive PC control using Rimon (novaluron) pre-bloom*. Rimon is a chitin inhibitor. It affects larval development but also has transovarial activity. Thus, eggs can become sterile when adults ingest Rimon-treated plants. Rimon does not control adults; thus, you might still need a post-bloom application. Rimon needs to be ingested by adults. It needs to be applied right before bloom. Rimon does not have direct toxicity to adult bees but if it gets on pollen it can be carried to the hive and affect the brood. Based on our data, 25 oz/A of Rimon at 25 gal/A works best. Rimon applied to young foliage causes **phytotoxicity**. Based on our observations plants grow out of this but growers should be aware of these effects.

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 noticed that in the absence of fruit, adults feed on blueberry flowers (petals). Females lay eggs in the fruit causing crescent-shaped oviposition scars (see Picture 4). 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.



Picture 4 shows an adult PC and the crescent-shaped scar on fruit caused during oviposition (Photo by D. Polk)

Scouting and Control. To monitor PC populations, scout for the semi-circular scars on the fruit. 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. Control methods target the immature and adult stages. Rimon can be used before bloom to prevent fruit infestation. Rimon affects female oviposition behavior and egg and larval development. Chemical controls targeting the adults should be applied soon after bees are removed. Post-bloom control options include Avaunt, Danitol, Brigade, Mustang Max, and Imidan.

Frequently Asked Questions on Plum Curculio

Why is PC a problem now?

PC has historically been considered an occasional pest in blueberries in New Jersey. Over the past 10-15 years more early varieties have been planted. Long term trends seem to be to plant more Duke. Duke is likely to have more infested fruit than later varieties (Bluecrop and Elliot). It thus becomes a contamination risk for early varieties.

Why is PC a problem during bloom?

PC is active before bloom (right now!) and populations peak during bloom. Different blueberry varieties bloom at different times, which extend the bloom period to several weeks. Females oviposit on young berries while blossoms are still open and other fruit is still setting. Early varieties like Duke are often picked while the larvae are still developing inside the fruit, and before the fruit drops. Later varieties are picked after any infested fruit drop to the ground with matured larvae.

Why is this not a problem in other crops?

While PC is a pest on other crops, such as apples, other crops do not have this long, extended bloom period. This makes blueberries unique when managing this pest.

Can I control this pest during bloom?

We do not have good control measures for PC that are not harmful to bees and that can be

used during bloom. Thus, for now, avoid any treatments during bloom.

What can I do to prevent berries to get infested?

We have tested a *preventive control using Rimon (novaluron) pre-bloom*. Rimon is a chitin inhibitor. It affects larval development but also has transovarial activity. Thus, eggs can become sterile when adults ingest Rimon-treated plants. Rimon does not control adults. Thus, we might still need a post-bloom application.

When should I use Rimon?

Rimon needs to be ingested by adults. It needs to be applied right before bloom.

Can Rimon harm the bees?

Rimon does not have direct toxicity to adult bees but if it gets on pollen it can be carried to the hive and affect the brood.

What Rimon rate/volume works best?

Based on our data, 25 oz/A of Rimon at 25 gal/A works best.

Any phytotoxicity concerns?

Rimon applied to young foliage causes **phytotoxicity**. Based on our observations plants grow out of this but growers should be aware of these effects.

Stinger Controls Difficult Composite and Legume Weeds in Blueberries

Brad Majek, Specialist in Weed Science, Rutgers University, April 22, 2014

Stinger has been labeled for weed control orchards for years, and now has a label for use in blueberries. The weeds controlled fall into two botanical plant families, composites and legumes.

Common composite weeds found in our orchards include Canada thistle and other thistles, goldenrod species, aster species, common dandelion, mugwort (wild chrysanthemum), horseweed (marestail or stickweed), and ragweed species. Legume weeds include vetch species and clover species.



Mugwort is also called wild chrysanthemum due to the scent when the leaves are crushed.

The maximum labeled rate of Stinger per application is one-third of a pint per acre (0.125 lb ai/A), and the maximum rate per year application is two-thirds of a pint per acre (0.25 lb ai/A), but the rate needed varies, depending on the target species. Two fluid ounces per acre (0.047 lb ai/A) will control seedling annual weeds such as common ragweed and annual vetch. Three to four fluid ounces per acre (0.070 to 0.094 lb ai/A) are needed to control perennial clover species, horseweed, and groundsel. Most other susceptible perennial weeds require the full rate of one-third of a pint per acre (0.125 lb ai/A).

Optimum results controlling deep rooted and hard to control perennial weeds, including Canada thistle, perennial asters, goldenrod species, and mugwort (wild chrysanthemum) will be obtained if the Stinger application is split. Apply Stinger at the rate of one third of a pint per acre after blueberry bloom, in late April when the weed is emerging. Some weeds can “survive” for months on established existing foliage even though Stinger suppresses all new growth. Tank-mix with Gramoxone to increase the spectrum of weeds controlled and kill existing foliage of perennial asters, goldenrod species and mugwort. Some weeds, especially mugwort, can “survive” for months on established existing foliage even though Stinger suppresses all new growth. Be sure to spray adjacent sod and tilled row middles as well as the weed free strip under the blueberries. Mark the treated rows.



Deep rooted perennials like Canada thistle and goldenrod require multiple Stinger applications.

The application of Stinger timed to match the emergence of the perennial weed in the spring coincides with the time of year when the carbohydrate food reserves in the plant are at the lowest point. Treatment at this time reduces the weed's chance of recovery and survival.

Apply another one third pint of Stinger to the marked rows, or sections of rows immediately after harvest in mid-summer. No growth of the target weed may be observed at the time of the second application. Spray the second application even though no growth of the target weed is evident. The second application is essential for the elimination of the hard to kill established perennial weeds. If the second application is skipped, expect to see the weed re-emerge in late August or September. Time all applications to maintain a 30 day PHI (PreHarvest Interval).

Stinger is both a postemergence foliar absorbed herbicide and a residual herbicide. The initial twisting and curling observed after application to susceptible species is due to the foliar absorption. Control of established perennials is due to residual Stinger in the soil which prevents re-growth from the roots. In certain species such as mugwort, Stinger prevents re-growth but does not kill the mature leaves. The plant will survive unless another herbicide such as Gramoxone or glyphosate is used to defoliate the plant.

Do NOT apply Stinger in a hand held sprayer used to "spray until wet". Stinger is a residual herbicide that must be applied on a rate per acre basis. When treating "patches" of perennial weeds, apply the recommended rate per acre with a calibrated sprayer. Treat ten to fifteen feet beyond the weed "patch" on all sides. Spray the sod or row middles adjacent to the weed "patch" in the row.

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If you have any comments about this newsletter, please make them in the space below and mail to:

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I would like to see an article on the following subjects: _____

I would like to comment on the following articles: _____

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