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Peach

✔ Oriental Fruit Moth (OFM): The first of two full insecticide covers for OFM control should be applied between 4/9 to 4/14 in southern counties, and about 7 to 10 days later in central counties. A biofix was just set for northern counties for April 8. A second full insecticide cover should be applied between 350-375 DD. Degree timings are updated below.

<table>
<thead>
<tr>
<th>County / Region</th>
<th>1st Spray Date</th>
<th>2nd Spray Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monmouth – Central</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunterdon – Northern</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

✔ Green Peach Aphids (GPA): Aphid activity has been observed in a only a few blocks currently. Growers can self monitor by collecting a handful of blossoms and opening them to see if any aphids are inside. Beating trays may also be used. See last week's newsletter for more information.

✔ Tarnished Plant Bugs and Stink Bugs (TPB and SB (native sp.): This is the time of the season when treatments are also targeted for these two pests. Growers who have experienced past problems have either had weedy ground covers and/or had plantings with considerable wooded borders. Catfacing insects were present in orchards and active in the heat of last weekend. Where hedgerows, weeds, and woods are near peach trees, growers should be particularly mindful of catfacing insect control.

✔ Flower Thrips: Although early thrips injury is sometimes seen on both peaches and nectarines at harvest, they are generally considered more damaging to nectarines. No thrips have been observed in southern counties as of this date.

✔ Plum Curculio: This is one of the main insect targets at petal fall to shuck split. It can also be active for several weeks following shuck split. The best materials include Imidan and Avaunt, followed by Actara and high rates of pyrethroids or premixes that contain pyrethroids. No activity has been seen in commercial blocks to date. While OFM sprays can coincide with PC coverage, the timing is more precise (see above).

SEE IPM ON PAGE 2
Blossom Blight and Scab: The current weather pattern has not been favorable for blossom infections. Constriction cankers look very similar to blossom blight at this time, and have been observed in susceptible varieties, sometimes at high levels. Maintain coverage with effective blossom blight fungicides at this time. Once shuck off begins growers can begin a sulfur based program. This does not apply to blocks known to have peach scab inoculum. In these blocks growers should continue a Captan based program until at least third cover. Other scab materials include Bravo, Gem and Quadris. The active ingredient in Quadris that is effective for scab is the same a.i. as in Abound. Therefore, don’t use this around apples, or in the same sprayer as is used for apples.

Bacterial Spot: Treatments using copper formulations or terramycin (oxytetracycline) should be included in cover sprays starting at petal fall to shuck split. Terramycin formulations have limited residual activity, and are thought to have as much as 24 hours “back-action”. Terramycin works best when applied as dilute as possible and under slow drying conditions. Reduce copper rates if spraying concentrate or if applying in hot weather. See the production guide for recommended materials and rates.

Apple

Apple Scab: The dry weather has encouraged the maturation of ascospores on the overwintered leaves on the ground. Rebecca Magron’s spore count on April 9 showed 18 mature spores released over 30 minutes. Given the prolonged dry period, these spores will continue to mature, and any significant wetting period that is long enough to cause scab infection could be very severe, releasing significant amounts of inoculum to cause severe scab infections. Therefore coverage is very important at this time of year, although no scab symptoms have been noted to date. For the Upper Deerfield Station near Bridgeton, the NEWA scab model predicts that most ascospores are mature and ready to be released. The following is quoted from the scab model calculation on the NEWA web site:

“The Ascospore Maturity model predicts that 95% of the spores are matured. At this point, essentially all ascospores will be released after a daytime rain of greater than 1/10 inch with temperature above 50°F.”

Cedar Apple Rust: This disease is also a concern at this time of year. If using the strobilurin fungicides, Flint and Sovran, remember that they are not particularly effective for rust control. The best rust control materials continue to be the SI materials like Indar, Rally, Inspire, Procure and Vintage. Made sure to combine these materials with another fungicide for resistance management. Inspire Super is already a combined package.

Fire Blight: Blossom sprays using antibiotics should be applied on a 3-7 day schedule or anytime temperatures are 65° F or above and the relative humidity is 60% or above. Growers should rotate streptomycin with oxytetracycline to manage resistance. Growers using Apogee for fireblight suppression should continue antibiotic programs, especially where late blossoms persist. Refer to the production guide for recommended materials and rates.

Plum Curculio (PC): PC adults usually move into orchards during bloom and begin oviposition sometime after petal fall. This is a key insect target from petal fall through mid June, with peak activity usually occurring from mid May through early June, but will likely be earlier this year.

Pear

Pear Psylla: See the Tree Fruit Production Guide for Psylla recommendations at petal fall. Recent work at Cornell indicates that Surround applied @ 50#/ac at the Dormant, White Bud, and Petal Fall stages effectively manages early season populations. This program is followed by a season long program of 1% oil applied at 150 GPA at no more than 2 week intervals effectively suppresses summer populations while also controlling pear rust mite and San Jose scale. Note that oil should be applied at temperatures less than 80 deg F. to prevent russetting and phytotoxicity. Also note that oil may defoliate some Asian pear varieties. Neonicotinoids should be avoided any time significant bloom is present in the orchard. This is especially true if SI fungicides are also to be used. Recent research has shown a strong synergism that increases bee toxicity when certain SI fungicides are tank mixed with certain neonicotinoid insecticides. With later use of neonic, their effectiveness can be increased with the addition of 1 qt. of summer oil/100gal.

Scouting Calendar

The following table is intended as an aid for orchard scouting. It should not be used to time pesticide applications. Median dates for pest events and crop phenology are displayed. These dates are compiled from observations made since 1995 in Gloucester County. Events in northern New Jersey should occur 7-10 days later.
### Pest Event or Growth Stage

<table>
<thead>
<tr>
<th>Pest Event or Growth Stage</th>
<th>Approximate Date</th>
<th>2012 Observed Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4” Green Tip Red Delicious</td>
<td>March 27 +/- 10 Days</td>
<td>March 19</td>
</tr>
<tr>
<td>Tight Cluster Red Delicious</td>
<td>April 8 +/- 10 Days</td>
<td>March 26</td>
</tr>
<tr>
<td>Oriental Fruit Moth Biofix</td>
<td>April 8 +/- 10 Days</td>
<td>March 20</td>
</tr>
<tr>
<td>Pink Peach (Redhaven)</td>
<td>April 10 +/- 9 Days</td>
<td>March 19</td>
</tr>
<tr>
<td>Pink Apple (Red Delicious)</td>
<td>April 13 +/- 11 Days</td>
<td>April 5</td>
</tr>
<tr>
<td>Full Bloom Peach (Redhaven)</td>
<td>April 16 +/- 7 Days</td>
<td>March 26</td>
</tr>
<tr>
<td>Green Peach Aphid Observed</td>
<td>April 16 +/- 16 Days</td>
<td>March 29</td>
</tr>
<tr>
<td>Oriental Fruit Moth – 170 DD target</td>
<td>April 19 +/- 12 Days</td>
<td>April 9</td>
</tr>
<tr>
<td>Full Bloom Apple (Red Delicious)</td>
<td>April 20 +/- 9 Days</td>
<td>Not yet observed</td>
</tr>
<tr>
<td>Petal Fall (Redhaven)</td>
<td>April 21 +/- 9 Days</td>
<td>Not yet observed</td>
</tr>
<tr>
<td>Petal Fall (Red Delicious)</td>
<td>April 27 +/- 13 Days</td>
<td>Not yet observed</td>
</tr>
<tr>
<td>Shuck Split (Redhaven)</td>
<td>April 29 +/- 7 Days</td>
<td>Not yet observed</td>
</tr>
<tr>
<td>Tufted Apple Bud Moth Biofix</td>
<td>May 4 +/- 10 Days</td>
<td>Not yet observed</td>
</tr>
<tr>
<td>Plum Curculio Oviposition Begins</td>
<td>May 5 +/- 16 Days</td>
<td>Not yet observed</td>
</tr>
<tr>
<td>Oriental Fruit Moth – 375 DD target</td>
<td>May 10 +/- 10 Days</td>
<td>Current Forecast – April 29</td>
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<tr>
<td>Codling Moth Biofix</td>
<td>May 14 +/- 16 Days</td>
<td>Not yet observed</td>
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### Blueberry

- **Cranberry Weevil (CBW):** Temperatures have been cooler over the last week, and flowers are slightly advanced. Weevil activity is lower with 25% of our samples positive for weevil activity, and just under 1% of the samples over treatment threshold. Much of the decrease is likely due to the significant treatments going on over the past 10 days.

- **Plum Curculio (PC):** We saw a slight increase in PC activity this past week, but only 2 PC adults were picked up in sampling.

- **Lepidoptera or worm larvae:** Only 1 spanworm has been seen in all of the beating tray sampling for the week. This is under 1% positive samples. No other lep. larvae were seen in sampling. Redbanded leafroller adults have started to fly. See trap counts below.

### Tree Fruit Insect Trap Captures

#### Trap Counts – Southern Counties

<table>
<thead>
<tr>
<th>Week ending</th>
<th>STLM</th>
<th>TABM-A</th>
<th>CM</th>
<th>AM</th>
<th>OFM-A</th>
<th>DWB</th>
<th>OFM-P</th>
<th>TABM-P</th>
<th>LPTB</th>
<th>PTB</th>
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#### Trap Counts – Northern Counties

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<th>Week ending</th>
<th>STLM</th>
<th>CM</th>
<th>TABM-A</th>
<th>AM</th>
<th>DWB</th>
<th>OBLR</th>
<th>OFM-P</th>
<th>TABM-P</th>
<th>LPTB</th>
<th>PTB</th>
<th>BMSB</th>
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### Blueberry Insect Trap Captures

#### Atlantic County

<table>
<thead>
<tr>
<th>Week Ending</th>
<th>CBFW</th>
<th>RBLR</th>
<th>OBLR</th>
<th>SNLH</th>
<th>Or. Beetle</th>
<th>BBM</th>
<th>BMSB</th>
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<tr>
<td>4/7</td>
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#### Burlington County

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<tr>
<th>Week Ending</th>
<th>CBFW</th>
<th>RBLR</th>
<th>OBLR</th>
<th>SNLH</th>
<th>Or. Beetle</th>
<th>BBM</th>
<th>BMSB</th>
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<tbody>
<tr>
<td>4/7</td>
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<td></td>
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<td></td>
<td>49</td>
</tr>
</tbody>
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How to Use NEWA Weather/Pest Forecasting Site
Win Cowgill, Agricultural Agent and Jack Rabin, Associate Director of Farm Programs

Visit the NEWA site http://newa.cornell.edu and browse through the materials found on the new Snyder Farm Weather-Pest Forecasting Portal, including instructions in an online slide viewer and a downloadable PDF instruction file as well as an information poster: http://snyderfarm.rutgers.edu/weather-pest-forecasting.html.

Select the weather station closest to you for the latest weather data and forecasts. The weather is drawn from the national weather service NOAA system http://nws.noaa.gov.

Two Labels for Disease Management on Apple, Pear, Peach
Win Cowgill, Agricultural Agent

AgroSource, Inc. is a new company to many of us in this industry, located here in New Jersey. They have available two products important to the tree fruit industry.

Attached with the newsletter, find two labels of their Firewall (Streptomycin product) for apples and pears, and Fireline (their Oxytetracycline product) for apple, pear, and peach.

The company began by focusing on the need by growers for improved bactericide formulations used to combat Fire blight in pome fruit (apples and pears) and Bacterial spot disease in stone fruit (peaches and nectarines) and various bacterial and fungal diseases of vegetables and other crops. AgroSource met this need by developing FireWall 17 WP™ and FireLine 17 WP™. More information and several new technical bulletins discussing their use and resistance management issues can be found on their website http://agrosource.net.

NJAES has a number of faculty and staff knowledgeable and willing to assist growers on the pest forecasting and predictive systems.

- Win Cowgill for apples
- Joe Mahar for vegetables
- Andy Wyenandt for potato and tomato
- Peter Oudemans for small fruit & wine grapes

This team will be providing outreach to apple (and all other tree fruit), grape and vegetable growers through weekly reports, newsletters, and workshops.

NEWA complements and adds value to existing Rutgers IPM scouting and advisory programs - it does not replace them. No NEWA forecasts are available for corn earworm on vegetables, blueberry pests, or peach.

You will find using NEWA worth the effort. Talk to our NJAES ag agents and specialists to learn how to best use this new technology, complementing your farm’s pest management program.
Pollination Limitation of Commercial Blueberry in New Jersey

Rachael Winfree, Ph.D., Assistant Professor, Department of Entomology and Faye Benjamin, Ph.D. Candidate, Graduate Program in Ecology and Evolution

In our previous article for the Plant & Pest Advisory Fruit edition, we described the numerous ways in which pollination has beneficial effects on fruit weight and fruit set in highbush blueberry. In this article, we present the results of an experiment we did in the Hammonton area in 2011 to test for pollination limitation in blueberry. Pollination limitation means a reduction in fruit production caused by insufficient pollination. To test for pollination limitation, we compared fruit set and weight between open-pollinated and hand-pollinated blueberries. The open-pollinated treatment estimates the “baseline” level of pollination received in a given blueberry field, while the hand-pollinated treatment represents a potential maximum amount of pollination. Any difference between the two treatments would suggest that individual flowers have room for improvement between current levels of pollination and a hypothetical maximum level of pollination. In our study, we found that both fruit weight and fruit set increased with hand-pollination, indicating that there is some pollination limitation in highbush blueberry, at least when measured at the flower scale.

Methods

We did our research at 16 conventionally-managed highbush blueberry (Vaccinium corymbosum) fields in southern New Jersey. All study fields were monoculture stands of either “Duke” or “Bluecrop” cultivar. We conducted our experiments with previously unpollinated flowers. On the day before each experiment, we visited each blueberry field and haphazardly chose 18 clusters of flowers, each on a different bush, within two adjacent crop rows. We enclosed these clusters with pollinator exclusion mesh. On the next day, when new flowers had opened, we assigned these unpollinated flowers to one of two treatments, either open or hand pollinated. Open-pollinated (OP) flowers were left open to the ambient levels of pollination in the field. Hand-pollinated (H) flowers had their stigmas saturated with pollen collected from other bushes within the same field.

All berries were then allowed to ripen for 42 days (+/- 1 day) and were then harvested and brought into the lab. As our measure of fruit set, we used the number of berries produced per cluster, divided by the number of flowers in that cluster that were used in the experiment. To measure fruit weight, we weighed each berry to an accuracy of 0.001 g on the same day of collection. Fruit weight data were analyzed using a logistic regression with a binomial distribution, with farm as the random effect. Fruit weight data were analyzed with a general linear model, also using farm as a random effect.

Results

We report results for a sample size of 421 berries. 218 berries were from 86 clusters of hand-pollinated flowers, and 203 berries were from 80 clusters of open-pollinated flowers. For both cultivars, fruit set was significantly greater in hand-pollinated flowers than in open-pollinated ones. Across all farms, Bluecrop had 88% fruit set in hand-pollinated flowers, compared with 77% in open-pollinated clusters (p = 0.01). Duke had 92% fruit set in hand-pollinated flowers versus 83% fruit set in open-pollinated flowers (p=0.03) (Figure 2). Both cultivars also had significantly heavier berries with hand pollination. For Bluecrop, mean +/- SD hand-pollinated berry weight was 0.68 g (+/- 0.25 g), versus 0.46 g (+/- 0.22 g) for open pollinated flowers. For Duke, mean hand-pollinated berry weight was 1.03 g (+/- 0.25 g), versus 0.86 g (+/- 0.27 g) for open pollinated (Figure 1). A significant difference in average berry weight was found between open-pollinated and hand-pollinated berries in both Bluecrop (t = 4.2629, p < 0.0001) and Duke (t = 2.3626, p = 0.02). Thus, our results for both fruit set and fruit weight suggest that higher production might be achieved with increased pollination levels.

Discussion

Our results indicate that at the scale of the individual flower/berry, blueberry production benefitted from supplemental pollination: our hand-pollinated treatments had improved fruit set and fruit weight compared to our open-pollinated flowers. What is not clear from this experiment is whether these improvements translate to a bush-level or field-level increases in productivity. Supplemental pollination on a small number of flowers may stimulate the bush to shunt additional resources to those well-pollinated flowers, resulting in larger berries. In a flower-level experiment, such a result would be incorrectly interpreted as pollination limitation, whereas in reality it was just the plant preferentially maturing the fruits that were better pollinated at the expense of other fruits. However, if pollination is truly limiting fruit production at the bush level, fruit production would also increase with supplemental pollen applied to the entire plant. We hope to address whether increased pollinator abundance affects yield at the field level in a study using supplemental honeybee hives, to be completed in 2013.

See Berry Weight and Fruit Set Charts on page 6
Figure 1: Average berry weights for open-pollinated and hand-pollinated flowers for cultivars Bluecrop (left) and Duke (right). Black bars represent median berry weight; boxes represent first and third quartiles, and whiskers represent 95% confidence interval.

Figure 2: Average probability of fruit set in cultivars Bluecrop (left) and Duke (right). Black bars represent median probabilities; boxes represent first and third quartiles, and whiskers represent 95% confidence interval. The probability of fruit set in hand-pollinated flowers was effectively 1 for both cultivars.

Calendar of Events

April 11, 2012  5:30 pm – 8:45 pm, 1st North Jersey Twilight Fruit Meeting for Commercial Fruit Growers – Rutgers Snyder Farm, Pittstown, NJ, Sponsored by Rutgers Coop. Ext. NJAES. For Commercial Fruit Growers only. Pesticide Credits will be issued.

April 12, 2012  5:30 pm – 8:00 pm, Twilight Fruit Growers Meeting – Adams/Franklin Counties- Bream & Bear Mtn. Cold Storage, 685 Carlisle Rd., Bigler, PA. Contact Tara Baugher tab36@psu.edu. 717-334-6271.

April 18, 2012  7:15 pm – 9:30 pm, Evening Fruit Meeting - Gloucester County Office of Government Services-Auditorium, 1200 North Delsea Drive, Clayton, NJ, Sponsored by NJAES, 856-307-6450, ext. 1. Pesticide Credits will be issued.


April 28, 2012  10:00 am – 4:00 pm, Ag Field Day at Rutgers Day – George H. Cook Campus, New Brunswick, NJ. For more information: http://agfieldday.rutgers.edu.

May 8, 2012  1:00 pm, Twilight Meeting for Fruit Growers, Lancaster/York Counties – Lancaster/York Co. Contact Tim Elkner, 717-394-6851, fax: 717-394-3962, tee2@psu.edu.

May 9, 2012  3:00 pm – 5:00 pm, Twilight Meeting for Fruit Growers, Adams County-McClea's Orchard, 104 W. Guernsey Rd. Biglerville, PA. Contact Tara Baugher 717-334-6271, tab36@psu.edu.

May 24, 2012 Twilight Meeting for Fruit Growers, Southeastern, PA., Contact Rick Kaufmann, 610-378-1327, fax: 610-378-1327, rsk5@psu.edu.

See Calendar on page 7
1st North Jersey Fruit Meeting
Wednesday, April 11, 2012
6:00 p.m. – 8:30 p.m.
Rutgers Snyder Farm
140 Locust Grove Road
Pittstown, NJ 08867

Meeting will be held rain, snow or shine

6:00 p.m. Orchard Tour - Leaves promptly at 6:00 p.m.
Freeze Damage to Fruit Crops - Win Cowgill, Area Fruit Agent
How to tell freeze damage to flower bud in the field

- Observe Two and Five Year Old Plantings of Upright Growth Habit Peaches
- Controlling Top Growth of Apples in High Density Plantings
- Observe NC-140-Apple Rootstock Trials
- Observe 3 -Tall Spindle Apple Plantings and Trellis Systems - Planted at 3’ x 10” 950 trees/Acre in 1, 3 and 5th Leaf

Update on Pesticide Regulations for 2012 - Peter Nitzsche, Agricultural Agent of Morris County
Insect Control Update with Focus on BMSB – Dean Polk, Statewide IPM Agent
Brown Marmorated Stink Bug Control Strategies

North Jersey Tree Fruit IPM Scouting Update - Dr. Atanas Atanassov, North Jersey Fruit IPM Program Assoc.

7:00 p.m. return inside
Fruit Disease Management Update and New Fungicide Labels - Dr. Norm Lalancette, Specialist in Tree Fruit Pomology
Residual Herbicide Options for Tree Fruit for 2012 - Dr. Brad Majek, Specialist in Weed Science
Crop Insurance Update - Dave Lee, RCE of Salem County
Chemical Thinning Update with Plant Growth Regulators - Win Cowgill
Apogee for Fireblight Control - Win Cowgill

Program questions contact Win Cowgill, cowgill@aesop.rutgers.edu or 908-788-1339
Pesticide recertification credits awarded at the end of the program
Registration Donation: $10.00 at the door.
Please RSVP to Diana Boesch at 908-788-1339 or boesch@njaes.rutgers.edu.

Directions to Snyder Farm: http://snyderfarm.rutgers.edu/directions.html.

Calendar from page 6
May 29, 2012 Blueberry Twilight Meeting – Philip E. Marucci Center for Blueberry & Cranberry Research, 125a Lake Oswego, Chatsworth, NJ. Sponsored by Rutgers Coop. Ext. NJAES. Contact Gary Pavlis, 609-625-0056.

June 5, 2012 6:30 pm – 8:30 pm, Twilight Meeting for Fruit Growers, Catoctin Mt. Orchard, Thurmont, MD. Contact Tara Baugher 717-334-6271, tab36@psu.edu.
PLANT & PEST ADVISORY

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David Schmitt, Program Associate (856-307-6450)

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Jack Rabin, Associate Director for Farm Services, NJAES
Cindy Rovins, Agricultural Communications Editor

Pesticide User Responsibility: Use pesticides safely and follow instructions on labels. The pesticide user is responsible for proper use, storage and disposal, residues on crops, and damage caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact RCE in your County.

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