The BLUEBERRY BULLETIN
A Weekly Update to Growers
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Disease and Culture:
Gary C. Pavlis, Ph.D.
Atlantic County Agricultural Agent

Grower visits this week throughout the Hammonton area did not reveal any major problems, though I am seeing more scale damage on the fruit than I've seen in the past. The first picking of Weymouth began on June 14th, and Duke on June 16th. The quality looks very good. I believe the 2006 crop is average in size.

I am seeing plants throughout the New Jersey area with new growth which is very light green and/or reddish green. This is a nutrient deficiency, usually Nitrogen, but is normal at this time of the year. The plants are rapidly growing, and doing so, faster than the nutrients can be taken up. This will clear up as we get closer to harvest and growth slows down.

Sincerely,

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

Editor-Blueberry Bulletin

AT A GLANCE…

Problem – Solution

Cranberry fruitworm, Blueberry leafminer, Leafrollers
- Azinphos-M 50W OR 1.0 to 1.5 lb
- Confirm 2F, OR 8 to 16 fl oz
- Diazinon 50W, OR 2 lb
- Diazinon AG600, OR 25.5 fl oz
- Guthion 50WP, OR 1 to 1.5 lb
- Guthion 2L, OR 2 to 3 pt
- Imidan 70WSB, OR 1.33 lb
- Lannate 90SP, OR 0.5 to 1 lb
- Lannate LV, OR 1.5 to 3 pt
- SpinTor 2SC 4 to 6 fl oz.

Anthracnose
- Abound, OR 6.2 to 15.4 fl oz
- Cabrio, OR 14 oz
- Captan 50WP, OR 5 lb
- Captan 80WP, OR 3.1 lb
- Captec 4L, OR 2.5 qt
- Ziram 76DF 4.0 lb

Blueberry Aphids
- Actara, OR 3.0 to 4.0 oz.
- Diazinon 50W, OR 2.0 lb
- Diazinon AG600, OR 25.5 fl oz.
- Lannate LV, OR 1.5 pt
- Provado 1.6F 3.0 to 4.0 oz.

Blueberry Maggot
- Imidan 70 WSB, OR 1.33 lb
- Lannate LV, OR 0.75 to 1.5 pt
- Malathion 8 Aquamul, OR 1.5 to 2.0 pt
- Sevin 4F 3.0 to 4.0 pt
Leafrollers and Larvae: Larvae are present, but at low numbers. About 4% of shoot terminals sampled show larvae (slightly less than last week). Total injured fruit is showing up in 58% of samples. Please remember that a sample consists of about 200 fruit clusters, and each cluster may contain 10 or more berries, or roughly 2,000 individual fruit. If one berry in one cluster is injured, then that cluster is defined as an injured cluster, so most injury levels are in reality very low. The stated injury level is also total injury, or cumulative, so any injured fruit from the bloom period will also show up in this data. About 8% of samples have over 1% of clusters injured.

Cranberry Fruitworm: While there is no real change since last week in fruit feeding, a few farm locations still had high trap levels. Counts in Atlantic County averaged 2.2 adults per trap, but 3 farms in Burlington County ranged from 50 to 118 adults per trap. This may be indicative of increased feeding damage in the near future.

Aphids: Levels are up slightly this week with 62% of samples being positive and 28% above the 10% infestation level.

Plum Curculio (PC): No adults were seen this week and no fresh injury is present. As injured fruit continue to drop, we should see “less injury” over the next couple of weeks. While we had 38% of samples positive for some level of damage, this represented a decrease over the previous week.

Cranberry Weevil: Weevil activity has declined, but a few adults are being seen in low shoots and tray samples. Old foliar feeding is easy to find in many blocks.

Putnam Scale: Some amount of scale is present on packed berries on several farms. Fruit will have one or a number of gray waxy “dots” on them, about 1/16” in dia. Berries that have scale on them resulted from crawlers settling on the fruit a few weeks ago. Any grower who notes this on fruit, should record which fields the fruit came from, so that bushes can be examined.

Life cycle: Putnam scale is the most common scale in New Jersey blueberries. This insect feeds on the plant sap, reducing plant vigor and fruit yield. Adults appear in late summer, and after they mate, females overwinter on the bush. Adult females, but not males, feed on the bushes and in the spring, mated females lay a mass of eggs under their scale covering. The eggs hatch around mid-May. The immatures are called “crawlers” because they are highly mobile and can move to the leaves and fruit. As they mature, they settle down and start to feed. Adults are protected by a waxy covering while crawlers lack this protection. Scales also secrete honeydew while feeding, which can cause growth of sooty mold.

Control: Good cultural practices are the best method to control scales. Pruning of old dormant canes will prevent populations of this insect from increasing. Chemical control measures should be aimed to the unprotected crawlers and the overwintering stage. To control crawlers, we recommend Esteem 35 WP at 5 oz/A in early to mid May. To control overwintering scales, we recommend Superior oil @ 3 gal/A, lime sulfur @ 5 gal/A, or Esteem 35 WP @ 5oz/A and Superior oil @ 3 gal/A. Oil and lime sulfur, if used for the disease Phomopsis, should not be combined. Sulfur is physically incompatible with superior oils. Treatments are not recommended at the present time.
## Insect Trap Counts

### Blueberry Trap Counts – Atlantic County

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Key: CBFW = Cranberry Fruitworm, RBLR = Redbanded Leafroller, OBLR = Obliquebanded Leafroller, SNLH = Sharpnosed Leafhopper, OB = Oriental Beetle, BBM = Blueberry Maggot
BLUEBERRIES MAY HELP OLD FOLKS KEEP THEIR SMARTS
Ms. Anne Harding

BOSTON (Reuters Health) – A cup of blueberries a day may keep “senior moments” away, new findings suggest.

A team of Massachusetts and Florida researchers has shown that the fruit reduces aging-related damage in rat brains, and can also prevent mental decline in mice genetically engineered to develop Alzheimer’s – like plaques in their brains.

The findings, along with early results from human study, suggest a healthy diet can go a long way toward preventing the mental decline that often accompanies aging. Dr. James A. Joseph of the Center on Aging at Tufts University in Boston and USDA Human Nutrition Research told Reuters Health.

Joseph presented his findings here Monday at the American Chemical Society’s annual meeting.

Cell-damaging products of normal metabolism known as free radicals can injure tissue, an effect known as oxidative damage. Antioxidants – found in several fruits and vegetables, including blueberries – help prevent this damage, which has been implicated in a number of conditions including cancer, Alzheimer’s and heart disease. Oxidative damage is also a factor in aging.

Aged rodents that consumed the human equivalent of one cup of blueberries a day showed less oxidative damage in tissue from two distinct brain regions, Joseph and his team found.

To evaluate whether this effect might extend to behavior, Joseph and colleagues David Morgan, Gary Arrendash and David Diamond from the University of South Florida, put mice through a three-armed maze.

Half of the mice were genetically engineered to develop Alzheimer’s-like plaques in their brains, while the rest were not. In each group, half of the animals were given blueberry-based pellets.

Testing began when the mice were young, before the genetically modified animals had developed plaques. The study lasted a year.

The mice with pseudo-Alzheimer’s that didn’t eat blueberries performed worse and worse on the maze over time. But the genetically modified animals given blueberries showed no decline, they performed just as well as normal mice, even though they still developed plaques.

Joseph said he believes the berries’ brain-protecting power goes beyond its known antioxidant and anti-inflammatory effects. Blueberries seem to “directly influence the way neurons communicate,” he told Reuters Health.

Preliminary results from a new study, he added, show that people who ate a cup of blueberries a day appeared to be protected from aging-related mental decline. Joseph expects the study will be published late this fall.

The next steps, the Boston researcher said, will be to do more tests in transgenic animals, evaluate which chemicals in blueberries find their way into the brain, and study how the fruit might be protecting the brain. Reprinted: Dixie Blueberry News, Georgia Blueberry Growers Association Newsletter, Vol. 2 No. 3.
ANITA’S “ALL THINGS ARE POSSIBLE” BLUEBERRY PIE
By Anita Galletta, Courtesy of the Atlantic Blueberry Co.

INGREDIENTS:
Crust:
1 ½ cups flour
2 tsp. sugar
¼ tsp. cinnamon
¼ tsp. crushed dried peppermint
1/8 tsp. salt
½ cup shortening
1 package (3 oz.) cream cheese
1 large egg
1 tsp. water

Filling:
½ cup sugar
½ cup flour
½ tsp. cinnamon
½ tsp. crushed dried peppermint
¼ cup lemon juice
3 pints of blueberries

PROCEDURE:
Preheat oven to 425 degrees.
Crust:
1) Take a large mixing bowl and combine first five ingredients.
2) Cut in shortening and cream cheese with a pastry blender or two knives until mixture is uniform.
3) Add egg and water to mixture. Blend until dough forms a ball. Divide dough into two equal parts.
4) On a lightly floured surface, roll bottom crust into a circle 1/8-inch thick, and ½-inch larger than an inverted 9-inch pie plate. Gently ease pie crust into greased pie plate, being careful not to stretch the dough. Trim edge even with pie plate.

Filling:
1) Take a 3-quart saucepan and combine the next five filling ingredients and 2 cups of the blueberries.
2) Cook on high, stirring constantly and scraping the sides and bottom of the pan.
3) When mixture begins to boil, reduce heat. Continue to cook over medium heat until mixture is a dark violet color.
4) Remove from heat and gently stir remaining uncooked blueberries into the cooked mixture. Spoon filling into unbaked pie shell.

Top Crust:
1) Roll out top crust the same as bottom.
2) Carefully lift the top crust onto filled pie and trim ½-inch beyond the edge of the pie plate. Fold top edge under crust. Crimp edges or flute as desired.

Bake:
1) At 425 degrees for 30 minutes or until desired browning is achieved.
2) Refrigerate at last two hours before serving.
YIELD: One 9 inch pie.

BLUEBERRY OMELET
Courtesy of the Atlantic Blueberry Co.

INGREDIENTS:
2 eggs
2 Tbs. water
¼ tsp. salt
dash pepper
½ to 1 Tbs. butter
½ cup fresh blueberries or blueberry sauce

PROCEDURE:
1) Mix eggs, water, salt and pepper with fork.
2) Heat butter in 8-inch omelet pan or fry pan over medium-high heat until just hot enough to sizzle a drop of water.
3) Pour in egg mixture.
4) Mixture should set at edges at once.
5) With pancake turner turned over, carefully push cooked portions at edges toward center so uncooked portions flow to bottom.
6) Tilt pan as necessary so uncooked eggs can flow. Slide pan rapidly back and forth over heat to keep mixture in motion and sliding freely. While top is still moist and creamy-looking, fill with warm blueberries.
7) With pancake turner fold in half or roll, turning out onto plate with a quick flip of the wrist.
YIELD: 1 serving.

LEMON-BLUEBERRY CHICKEN SALAD
Courtesy of the National Blueberry Council

INGREDIENTS:
2 cups fresh or frozen blueberries
¾ cup low-fat lemon yogurt
3 Tbs. reduced-calorie mayonnaise
1 tsp. salt
2 cups chicken breasts, cooked and cubed
½ cup scallions, sliced
¾ cup celery, sliced diagonally
½ cup sweet red bell pepper, diced

PROCEDURE:
1) Reserve a few blueberries for garnish.
2) In a medium bowl, combine yogurt, mayonnaise and salt.
3) Add remaining blueberries, the chicken, scallions, celery and bell pepper. Mix gently.
4) Cover and refrigerate to let flavors blend, at least 30 minutes.
5) Serve over endive or other greens and garnish with reserved blueberries and lemon slices, if desired.

YIELD: 4 portions.

DOUBLE BLUEBERRY COOKIE PIE
Courtesy of the National Blueberry Council

INGREDIENTS:
1 package (18 oz.) refrigerated sugar cookie dough, room temperature
1/3 cup all-purpose flour
3 cups fresh or frozen blueberries
3/4 cup sugar
3 Tbs. cornstarch
dash of salt
1 tsp. lemon juice
1 cup heavy (whipping) cream, whipped

PROCEDURE:
1) Preheat oven to 350 degrees.
2) Spray a 9-inch pie pan and small cookie sheet with non-stick cooking spray.
3) In a small bowl, combine sugar, cookie dough and flour until mixed.
4) Remove about a quarter of the cookie dough; cover with plastic and refrigerate for later use.
5) With floured hands, press un-refrigerated dough into bottom and sides of a prepared pan.
6) Place in freezer to firm up, about 15 minutes.
7) Using a slightly floured rolling pin on a lightly floured surface, roll out refrigerated cookie dough to 1/4-inch thick.
8) With a floured cookie cutter, cut out stars or other shapes; place on greased cookie sheet.
9) Bake cookie dough pie crust until golden, about 11 minutes; put stars in the oven for the last 6 minutes. Cool on wire racks.
10) Meanwhile, in a medium saucepan, combine 1 cup of the blueberries, sugar, cornstarch and salt. Stir in 2/3 cup water and the lemon juice.
11) Over medium-high heat, bring to a boil. Boil, stirring constantly, until mixture thickens, crushing blueberries.
12) Stir in remaining 2 cups blueberries; chill.
13) Spoon blueberry mixture into cooled cookie shell. Decorate with the star-shaped cookies and whipped cream.

YIELD: 8 portions.

BLUEBERRY SMOOTHIE
Courtesy of the National Blueberry Council

INGREDIENTS:
2 quarts (2½ lbs.) frozen blueberries, slightly thawed; or 2 quarts fresh blueberries
1 quart pineapple-orange-strawberry juice blend; or pineapple-orange juice
1 quart low-fat vanilla yogurt
8 tsp. sugar

PROCEDURE:
1) In a container of an electric blender, combine blueberries, juice, yogurt and sugar.
2) Blend until smooth, about 1 minute.
3) Serve immediately in tall glasses.
4) Garnish with blueberry skewers spiraled with thin strips of orange peel, if desired.

YIELD: 2 portions.

RED, WHITE & BLUEBERRY POUND CAKE
Courtesy of the National Blueberry Council

INGREDIENTS:
1 package (10 ¾ oz.) frozen pound cake
raspberry-orange Sauce
1 container (8 oz.) whipped cream cheese
3 Tbs. powdered sugar
2 Tbs. orange juice
1 ½ cups fresh blueberries
1 cup sliced fresh strawberries

RASPBERRY-ORANGE SAUCE
3/4 cup seedless raspberry jam
6 Tbs. orange juice

PROCEDURE:
1) Stir together ingredients for Raspberry-Orange Sauce until smooth and set aside.
2) Slice frozen pound cake length-wise into three layers. Arrange single layers on a cookie sheet with the top layer cut-side up.
3) Pierce layers with fork tines and spread each with 2 Tbs. of the Raspberry-Orange Sauce. Let stand 10 to 15 minutes so that the cake absorbs the sauce.
4) Meanwhile, in a bowl stir together cream cheese, sugar and orange juice until well blended.
5) Assemble cake, place bottom layer on a serving plate and spread evenly with 1/3 of the cream cheese mixture. Arrange 1/3 of the blueberries evenly over cream cheese. Drizzle about 1Tbs. Raspberry-Orange Sauce over blueberries.
6) Repeat with center slice of cake.
7) Place final layer cut-side down on top of the other layers. Spread with remaining cream cheese mixture.
8) Decorate cake to resemble an American flag using remaining blueberries and the strawberries.
9) Serve with rest of Raspberry-Orange Sauce.

YIELD: 6 to 8 portions.
BLUEBERRY MUFFINS
Courtesy of the National Blueberry Council

INGREDIENTS:
2 cups flour
2 tsp. baking powder
1 tsp. ground cinnamon
¼ tsp. salt
2 eggs
1 cup milk
¼ cup sugar
½ cup vegetable oil
1 cup fresh or frozen blueberries, thawed if necessary

PROCEDURE:
1) Combine flour, baking powder, cinnamon and salt, mix well.
2) Beat eggs lightly; stir in milk, sugar and oil.
3) Quickly stir egg mixture into dry ingredients
4) Stir in blueberries, carefully.
5) Spoon into greased muffin cups.
6) Bake at 400 degrees for 15-17 minutes.
YIELD: 18 muffins. ENJOY