NEW YORK BERRY NEWS
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Cornell University
College of Agriculture and Life Sciences

New York Berry News

Cornell University Berry Team

Inside this issue:

What We Learned on a Trip to the Dean's Office

Dale Ila Riggs, Chair, NYS Berry Growers Association

On April 1st, most of the Board members of the Berry Growers Association and our Executive Secretary, Paul Baker, traveled to Ithaca to meet with Dean Kathryn Boor, the newly appointed Dean of the College of Agriculture and Life Sciences at Cornell. Dean Boor graciously gave us an hour of her very busy day to meet with us to learn about the berry industry in NYS and what issues face berry growers, and discuss how the Berry Growers Association and Cornell can work together for mutual benefit.

As I write this, April 1st was a long time ago, before planting, pruning, seeding, harvesting, and other field work became all consuming. But maybe that's better as it filters out all the "interesting" information and leaves the bare bones message that I brought home. And that message is this. Like the rest of the state, and many families throughout the U.S., the College of Agriculture and Life Sciences at Cornell is in the midst of very difficult financial times. Cornell no longer receives enough money from the state to even cover the salaries of Cornell faculty on state funds. Think about that. Not even enough money to pay the people that are on the payroll for state supported positions. Faculty members must come up with dollars for every operational expense they have – phone lines, research supplies, travel in state and out of state, technician salaries and benefits; every single item they need to run a program. In some departments, they even have to cover the cost of office supplies. That would be like you hiring an employee, telling them what their salary and benefits package is, and then telling them that they have to cover all the costs for them to do their job. That from their own pocket, or other means, they would need to buy diesel to run the tractor, purchase tools they need, buy supplies for your roadside farm stand, pay the telephone bill, and if they were a harvest supervisor, pay your field crew who harvests the crop.

To the credit of the Cornell faculty and staff, they have stepped up to the plate and met the challenge. They have found grant dollars and some other funding sources to keep operating their research and education programs. But every time a faculty or staff member gets a grant, they are *contractually obligated* to fulfill the terms of that grant. That means time spent on a grant project is time spent NOT doing something else, like NOT working on the Cornell Recommends, NOT doing a field trial in a growers field, or NOT traveling to a grower meeting to update us on the latest knowledge they've gained from their research.

The implications of this are pretty easy to figure out. If the berry industry in NYS wants to make sure that faculty and staff are able to keep working on issues that are important to NYS berry growers, we need to support them. We need to support them not only with in-kind contributions of land and time to take care of field trials, or hosting or speaking at educational meetings, but with cold, hard cash.

In January, when the Board met with faculty and staff at Geneva, they suggested that it would be very helpful if the Berry Growers could come up with $5,000 to $7,000 to pay for a summer technician to collect data from the research plots that are related to berry production. We are half way to meeting our goal. For those of you that are reading this and are not yet members of the Berry Growers Association, please go to www.hort.cornell.edu/grower/nysbga/membership.html to download a membership form and send it to Paul Baker today. Or Paul will be happy to mail a hard copy of the

Upcoming Berry Events

June 9-10, 2011. *Comprehensive Elderberry Workshop &Farm Tour 2011.* Presented by River Hills Elderberry Producers American Legion & Eridu Farms, Hartsburg, Missouri. Advance Registration by June 1 - $25 - includes lunch & snacks. Camping available - Live Music after Farm Tour. For more information go to www.riverhillsharvest.com or call 573-999-3034 or 573-424-9693 for details.

August 16-17, 2011. *North American Strawberry Growers Annual Summer Tour*, Boston, Massachusetts. See news brief that follows for details.

August 2011. *High Tunnel Berry Production Workshop*. Radisson Hotel, 700 Elm Street, Manchester, New Hampshire. More information: 3200 or suzanne.hebert@unh.edu.

October 11, 2011. *Southern Tier Commercial Berry Growers Workshop*, Belfast Fire Hall, Belfast, NY. Pre-registration required; to register contact Colleen Cavagna at 585-268-7644 ext. 12 or email cc746@cornell.edu. **Deadline for registration: Oct. 3rd, 2011.**

October 16-19, 2011. *ISHS Symposium on High Tunnel Horticultural Crop Production*, Ramada Inn and Conference Center, State College, PA. For more information contact Michael Orzolek at (814) 863-2251 or mdo1@psu.edu or visit http://horticulture.psu.edu/cms/ishs2011/.

NYS Department of Ag and Markets News

GOVERNOR CUOMO ANNOUNCES UNANIMOUS SENATE CONFIRMATION OF DARREL AUBERTINE AS COMMISSIONER OF AG & MARKETS

April 5, 2011. Governor Andrew M. Cuomo today announced that the State Senate unanimously Darrel J. Aubertine as Commissioner of the Department of Agriculture and Markets.

"Darrel is intrinsic to the reinvention and reopening of New York as a destination for good jobs and growth," Governor Cuomo said. "Darrel's expertise on agricultural matters and his tireless advocacy for farmers in the state legislature is unmatched. I thank Senators Skelos, DeFrancisco, Alesi, Ranzenhofer and Ritchie for ushering this nomination to confirmation."

Department of Agriculture and Markets Commissioner Darrel Aubertine said, "New York's diverse agricultural industry and vast marketplace requires responsible oversight and advocacy – roles I am proud to take on. Governor Cuomo's vision of creating greater access to locally produced farm and food products sets the stage for a resurgence of our economy and offers hope for farming communities across the state. I look forward to working with our agricultural partners to help our farmers and industry flourish."

Darrel J. Aubertine most recently served as State Senator of the 48th Senate District in Central and Northern New York, which is comprised of Oswego, Jefferson and part of St. Lawrence counties. He served as chair of both the Senate Agriculture Committee and the Rural Resources Commission, and as the ranking majority member and vice chair of the Energy & Telecommunications Committee. Before joining the Senate in 2008, Mr. Aubertine represented the 118th Assembly district in the New York State Assembly for five years, where he served as the chair of the Commission on State-Local Relations. From 1996-2001, he was a member of the Jefferson County Legislature and was elected to chair in 1998. Mr. Aubertine's career in government began in 1994, when he served as a member of the Cape Vincent Town Council.

Since 1971, Mr. Aubertine has owned and operated the sixth-generation heritage Triple-A Farm in Cape Vincent, for which he purchased a plot of land while still in high school. Mr. Aubertine has been a member of numerous cooperatives and organizations, including the Cape Vincent Milk Producers, Allied and Eastern, Agway, St. Lawrence County Farm Bureau, the New York State Farm Bureau, and the Dairy Herd Improvement Association.

Senator Patty Ritchie, Chair of the Senate Committee on Agriculture, said, "I'm confident that together will be able to help insure that the Department of Agriculture and Markets works as a partner with our farm families to help revitalize the upstate economy. Commissioner Aubertine will be able to help me look out for the needs of our neighbors and friends across the state and in St. Lawrence, Jefferson and Oswego counties."

Senator Tim M. Kennedy, Ranking Member of the Senate Committees on Agriculture and Commerce, Economic Development and Small Business, said, "With the nomination of Darrel Aubertine, farmers can trust that they have someone looking out for them at the head of the Department of Agriculture and Markets – someone who as a seventh-generation farmer uniquely understands the agriculture community. At a time when New Yorkers are hungry for job creation and economic development, Ken Adams is an excellent choice to take the helm at the Empire State Development Corporation. Steering New York along the road to recovery will not be an easy task, but with Commissioner Adams's and Commissioner Aubertine's tested and proven abilities, we will develop and enact the right policies to rebuild our state's economy by creating jobs."

Dean Norton, President of the New York Farm Bureau, said, "NYFB welcomes Darrel Aubertine as the new Commissioner at the Department of Agriculture and Markets. Farmers and our organization have had a great relationship with him through the years, and look forward to his leadership at a critical time in the food and agriculture sector in New York. NYFB is pleased to see his enthusiasm for the opportunities in agriculture today and looks forward to working with the Commissioner and Governor Cuomo in the years to come."

David J. Skorton, President of Cornell University, said, "During his long career in public service, Darrel Aubertine has proven that he understands the needs of our state's agriculture industry, is more than willing to work across the political aisle, and is a strong advocate of the role higher education plays in helping New York build a brighter future. I look forward to working with Commissioner Aubertine as we face the challenges and the opportunities ahead."

NYS Department of Ag and Markets News (continued)

COMMISSIONER SCHEDULES WORK GROUPS FOR 2012 FARM BILL

Five Meetings Scheduled to Identify, Discuss Priorities for the Federal Farm Bill

New York State Agriculture Commissioner Darrel J. Aubertine today announced a series of discussions with stakeholders to address various components of the upcoming Farm Bill. For five weeks, starting April 29th, the Commissioner will meet with invited guests and the public to discuss and prioritize New York's areas of concern and interest with the Farm Bill that will be reauthorized in 2012.

"One of my first priorities as Commissioner is getting to work early on the federal Farm Bill, which is scheduled for reauthorization in 2012," the Commissioner said. "Due to the comprehensive nature of this legislation, a systematic "early and often" approach to determining policy objectives is necessary. Therefore, starting next week, I will be assembling a series of meetings with industry stakeholders to discuss each title of the bill individually. I hope that this approach can more swiftly and effectively address the needs and concerns of New York's farm and food sectors as a whole."

Each work group will meet from 10:00 am to 12:00 noon in the Bistro of the Arts and Home Building at the New York State Fairgrounds in Syracuse. At the start of each session, invited stakeholders will have an opportunity to present their ideas for that particular title in the Farm Bill. Those ideas will be used to garner discussion with a panel of subject-matter experts. Members of the public are also invited to participate and will have the opportunity to submit written questions during the session. Following are the dates and titles for each scheduled work group.

- Friday, April 29, 2011 - Conservation Title
- Thursday, May 5, 2011 - Rural Development, Forestry & Energy Titles
- Friday, May 13, 2011 - Horticulture & Organic Agriculture Title
- Friday, May 20, 2011 - Nutrition Title
- Friday, May 27, 2011 - Commodities Title (including Milk Pricing)

The scheduled work groups are open to the public. Because space is limited, the Department is requesting those interested in attending to RSVP by the Wednesday prior to the meeting by calling 518-457-8876.

Once the sessions are completed, the information gathered will be compiled into a working document that the Commissioner will use to communicate New York's positions on federal agriculture policy. He will also be working with neighboring states to develop northeastern positions on agriculture.

The Federal Farm Bill is negotiated every six years and sets the parameters for America's agriculture, nutrition, forestry and conservation policies. It provides nutrition assistance to millions, strengthens America's energy independence, and builds our rural communities. A successful Farm Bill helps keep America's agriculture sector the world's leader in efficiency and productivity. New York's 36,000 farm families depend upon the Farm Bill to help keep New York a leading state in the dairy, apple, vegetable and wine industries.

COMMISSIONER AUBERTINE ANNOUNCES $500,000 FOR NY SPECIALTY CROPS

$80,000 Max per Research & Education Project; Proposals Due May 23

New York State Agriculture Commissioner Darrel J. Aubertine today announced the availability of $500,000 in federal funds to enhance the competitiveness of New York specialty crops, which include fruits, vegetables, maple, honey and horticulture crops grown in New York State. The Department is seeking research and grower education focused projects that must have general applicability and statewide significance to the State's specialty crop industry.

"Rather than receive traditional farm subsidies like other commodities receive, the specialty crop industry - fruits, vegetables and flowers, as well as maple syrup and honey –has a competitive program that provides support for projects that will have widespread impact on the industry. As a result, this program will create effective partnerships, foster innovation, increase efficiencies and reduce costs, thereby leading to increased sales and improving the economic position of many of New York's farms – a priority of Governor Cuomo's."

The purpose of New York's Specialty Crop Block Grant Program is to enhance the competitiveness of New York specialty crops. There is a total of $500,000 available through this RFP. Projects must solely enhance the competi-

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NYS Department of Ag and Markets News
(continued)

Deadline for

Specialty Crop Block

Grant Applications

May 23, 2011

tiveness of New York specialty crops and benefit the industry, rather than an individual product or entity. Government organizations, not-for-profits, and educational institutions are eligible to receive funding, starting at $30,000 per project up to a maximum of $80,000.

Based on input collected from stakeholders in the State's specialty crop industry, priority will be given to projects that have a research and grower education focus that leads to the production and manufacturing of safe, high quality fresh and/or value-added specialty crop products. Examples include, but are not limited to addressing native and exotic pest and disease threats; extending New York's growing season through new technologies or improved management practices; developing new seed varieties for optimal performance under New York State conditions; or implementing effective food safety controls.

Applications for the 2011 Specialty Crop Block Grant Program must be received by the Department by May 23, 2011. A copy of the RFP can be found at http://www.agmkt.state.ny.us/RFPS.html or by contacting the Department at nyspecialtycrops@agmkt.state.ny.us.

Specialty crops are defined by USDA as fruits and vegetables, tree nuts, dried fruits, horticulture and nursery crops (including floriculture), herbs and spices. A detailed list of commonly recognized specialty crops is provided in the RFPs and at http://www.ams.usda.gov/AMSv1.0/scbgp.

New York State produces a wide range of specialty crops that include fruits and vegetables, wine, maple syrup, horticulture and nursery crops. Specialty crops generate $1.34 billion annually in New York and make up one-third of the State's total agricultural receipts. They also rank high nationally in both production and economic value. For example, New York is the leading state in the nation for cabbage; second for apples; third for grapes, cucumbers, cauliflower and maple syrup; and fourth for tart cherries, pears, snap beans and sweet corn.

COUNCIL ON FOOD POLICY COMMENTS ON SCHOOL MEALS PROPOSAL

Commissioner is Encouraged with USDA's Proposed Rules, Makes Recommendations

New York State Agriculture Commissioner Darrel J. Aubertine, who also serves as Chair of the New York State Council on Food Policy, issued his comments and recommendations on USDA's proposed rules to revise the meal patterns and nutrition requirements for the National School Lunch Program and the School Breakfast Program.

On behalf of the New York State Council on Food Policy, Commissioner Aubertine said, "In general, we are very encouraged to see the proposed increases in the amount of fruits, vegetables and grains in the meal patterns. As a strong agricultural state, we hope to continue meeting those needs with locally grown products to the maximum extent possible. Ensuring that all New Yorkers, and especially children, have access to affordable, nutritious foods is a key tenet of the New York State Council on Food Policy. Thus concern exists that some requirements may have unintended and substantially damaging effects on school food service personnel's ability to operate, and causing the most needy of children to not have access to federal meal programs."

The proposed rules by USDA would increase the availability of fruits, vegetables, whole grains, and low-fat or fat-free fluid milk in schools; reduce the levels of sodium and saturated fat in meals; and help meet the nutrition needs of school children within their calorie requirements.
The Council's comments and recommendations address proposed rules including limiting starchy vegetables in school lunches that may impact a school food service director's ability to serve a fresh ear of New York State corn in the same week as New York State potatoes and peas. The Council also comments on the proposed new milk standards for school meal programs that may impact the availability of appropriate local milk products in the timeframe suggested. A copy of the Council's full recommendations can be found at www.nyscfp.org.

The mission of the New York State Council on Food Policy is to develop food policies that will increase adequate access to affordable, nutritious, local and safe food for all New Yorkers, especially for children, seniors and other at-risk populations; and to protect and expand agricultural food production in the State.

USDA News

USDA NRCS ORGANIC FUNDING STILL AVAILABLE FOR NEW YORK ORGANIC PRODUCERS

Apply by May 20, 2011 for consideration under this application period

April 12, 2011. Syracuse, N. Y - USDA's Natural Resources Conservation Service (NRCS) today announced another funding opportunity for certified organic producers and those transitioning to organic production to implement resource conservation practices on their agricultural operations. While applications are accepted on a continuous basis, the cutoff date for this application period is set for May 20, 2011.

Fiscal year 2011 marks the third year of USDA's Organic Initiative and in New York, up to $775,000 is available to help producers plan and install conservation practices that address natural resource concerns in ways that are consistent with organic production. For example, conservation practices might include planting cover crops, establishing integrated pest management plans, constructing seasonal high tunnels, or implementing nutrient management systems consistent with organic certification standards.

Eligible producers include those certified through USDA's National Organic Program, those transitioning to certified organic production, and those who meet organic standards but are exempt from certification because their gross annual organic sales are less than $5,000.

Organic Initiative funding is provided through NRCS' Environmental Quality Incentives Program (EQIP). Beginning, limited resource, and socially disadvantaged producers may obtain additional assistance.

Producers interested in applying for EQIP Organic Initiative funding must submit applications through their local NRCS Service Center, which can be located online at http://offices.sc.egov.usda.gov/locator/app?state=NY.

Additional information is available online at www.ny.nrcs.usda.gov.

USDA RURAL DEVELOPMENT INVITES APPLICATIONS FOR RENEWABLE ENERGY AND ENERGY EFFICIENCY PROJECTS

Agricultural Producers in Non-rural Areas are Now Eligible, Funding May Be Used for Flex-Fuel Pumps

April 14, 2011, Washington, D.C. – Agriculture Secretary Tom Vilsack today invited agricultural producers and rural small businesses to apply for loans and grants to implement renewable energy systems and make energy efficiency improvements.

"Biofuels and other renewable energy sources present an enormous economic opportunity for rural America and the rest of the nation," Vilsack said. "President Obama and I recognize that we need to win the future by implementing a long-term strategy to meet our country's current and long-term energy needs. The funding I am announcing today will help make America's farmers, ranchers and rural businesses more energy efficient."

USDA is providing funding for up to $61 million in guaranteed loans and $42 million in grants through the Rural Energy for America Program (REAP). Funds are available to help agricultural producers and rural small businesses develop renewable energy systems, make energy efficiency improvements and conduct studies to determine the feasibility of renewable energy systems.

Today USDA issued a rule to clarify that the definition of renewable energy systems in REAP includes flexible fuel pumps, sometimes referred to as "blender pumps." This clarification is intended to provide fuel station owners with incentives to install flexible fuel pumps that will offer Americans more renewable energy options. The Obama administration has set a goal of installing 10,000 flexible fuel pumps nationwide within 5 years.

The rule also makes the following clarifications:

- Grants are available for audits of energy improvements and studies to determine the feasibility of renewable energy systems; and
- Agricultural producers in non-rural areas are eligible for REAP assistance. Small businesses must still be located in rural areas. This clarification makes REAP eligibility requirements consistent with those of other USDA energy programs.

Since Rural Development's renewable energy and energy efficiency programs were launched in 2003, they have played a key role in helping more than 6,000 local businesses create jobs and make energy efficiency improvements. Under REAP, local businesses receive assistance to deploy wind, solar and other

Rural Energy for America Program (REAP)

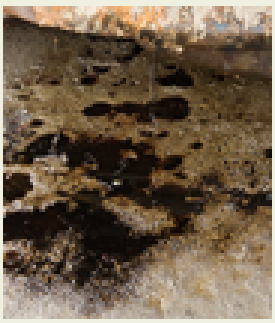
deadlines:

June 15, 2011

and

June 30, 2011

USDA News (continued)



NY NRCS

Oil Spill Prevention Program

Sign-up deadline

June 3, 2011

NY NRCS

Micro-irrigation Program

Sign-up deadline

May 20, 2011

forms of renewable energy. For example, Pagel Ponderosa and partner business Dairy Dreams in Kewaunee County, Wis., used REAP funds to help purchase and install anaerobic digesters. Both businesses use the energy generated from their digesters to run their operations and sell excess power back to the grid. The two digesters have become so successful that along with two wind farms operating in the county they are generating enough electricity to support all of the county's 8,900 households.

The deadlines for submitting completed REAP applications are June 15 and June 30, depending on the type of project to be funded. For information on how to apply for assistance, contact your local USDA Rural Development office or see page 20943 of the April 14 Federal Register: http://edocket.access.gpo.gov/2011/pdf/2011-8456.pdf. A list of USDA offices is available at http://www.rurdev.usda.gov/StateOfficeAddresses.html.

USDA, through its Rural Development mission area, administers and manages housing, business and community infrastructure and facility programs through a national network of state and local offices. These programs are designed to improve the economic stability of rural communities, businesses, residents, farmers and ranchers and improve the quality of life in rural America. Rural Development has an existing portfolio of nearly $149 billion in loans and loan guarantees. Visit http://www.rurdev.usda.gov for additional information about the agency's programs or to locate the USDA Rural Development office nearest you.

USDA NEW YORK OFFERS FARMERS SECOND OPPORTUNITY FOR FUNDING OIL SPILL PREVENTION

Funding period is now open for applications received by June 3, 2011

Syracuse, N. Y., May. 6, 2011- USDA's Natural Resources Conservation Service (NRCS) in New York is piloting a Conservation Activity Plan (CAP) to assist farmers in meeting revised regulations by the Environmental Protection Agency (EPA) intended to prevent fuel and oil spills on their operations. This is the second opportunity in 2011 for farmers to address oil spill prevention. Funding is provided through the Environmental Quality Incentives Program (EQIP).

The program is designed to help farmers that have above ground petroleum storage tank facilities with the capacity to store more than 1,320 gallons of fuel meet EPA regulations in two ways. The EPA requires farms storing more than 1,320 gallons to have a Spill Prevention Containment and Countermeasure (SPCC) plan. If the plan calls for an upgrade of a fuel storage NRCS may assist in a payment for the upgrade.

For those farm operations that have more than 10,000 gallons of fuel, oil and lubricants, NRCS will provide up to $1,880 for the development of the SPCC plan. The plan will be developed by an engineer that has registered with NRCS as a Technical Service Provider and possesses the technical knowledge, skills and abilities to complete all facets of the plan. Farms with less than 10,000 gallons can prepare the SPCC plan by following the template at: http://nmpf.org/files/file/SPCC-Plan-Template-Final-Sept-20-2010-FORM.pdf. For those operations where the SPCC plan shows an inadequate Agricultural Secondary Containment Facility, NRCS may provide a payment to assist in the installation up to $10,000.

The program's second funding period is now open for applications received by June 3, 2011. Additional information is available online at www.ny.nrcs.usda.gov/programs/spcc/. Applications can be submitted at your local USDA Service Center. The address and phone number for your local Service Center can be found online at http://offices.sc.egov.usda.gov/locator/app?state=NY.

SIGN-UP NOW UNDERWAY FOR MICRO-IRRIGATION CONSERVATION SYSTEMS

Syracuse, N. Y., May. 6, 2011- USDA's Natural Resources Conservation Service (NRCS) is accepting applications from New York farmers to implement micro-irrigation conservation systems for crops. Although signup is continuous, applications received through May 20 for the Agricultural Management Assistance (AMA) Program will be considered in the next funding round. Funding for this program is authorized through the Food, Conservation and Energy Act of 2008 (Farm Bill).

The AMA program in New York is focused on improving irrigation efficiency for cropland to include micro-irrigation, pipeline, pumping plant, and irrigation water management. This program

USDA News

focuses on making irrigation systems more water efficient with the conversion of existing irrigation systems to micro-irrigation as a priority. Another of the primary goals of AMA is to assist agricultural producers in mitigating risk through production diversification or installation of conservation practices. AMA applicants will compete for funds through a statewide funding pool, and must apply by May 20 to be considered for funding.

Applications for AMA are competitive and are ranked based on national and state identified natural resource priorities and their overall benefit to the environment. Interested landowners can apply for the program at the local USDA-NRCS office. The address and phone number for your local Service Center can be found online at http://offices.sc.egov.usda.gov/locator/app?state=NY. Additional information about the AMA program is available online at www.ny.nrcs.usda.gov/programs/.

ANNUAL UPDATE FOR USDA NATIONAL FARMERS MARKET DIRECTORY BEGINS DIRECTORY USED FOR MAPS, APPS AND STATS ABOUT FARMERS MARKETS

April 18, 2011, Washington, D.C. – The U.S. Department of Agriculture's Agricultural Marketing Service (AMS) is opening the updating process for the USDA National Farmers Market Directory, the official count of the nation's farmers markets. For the first time this year, the directory will also track farmers markets with multiple locations and operating days.

"The USDA National Farmers Market Directory not only counts, lists and maps the country's more than 6,100 farmers markets, it is also a fantastic resource for those interested in local food production, small producer success, and public policy about regional food systems," said Agriculture Secretary Tom Vilsack. "In addition to helping people find the closest farmers market, the farmers markets listed in this directory are included in maps, mobile apps and other stats. We hope that all managers ensure their markets are included so that no farmers market misses out on this opportunity."

All of the information in the directory relies on input from farmers market managers in the field. USDA urges all market managers to update their listings in time for the summer farmers market season. Farmers market managers can update their market listings at www.usdadirectoryupdate.com.

The National Farmers Market Directory will be periodically updated over the summer as farmers market managers continue to submit their listings to USDA's database. Farmers market managers who are able to update their listing by May 1 will be able to find their markets on the directory by mid-July. The complete directory will be released in time for National Farmers Market Week, August 7-13.
Since 1994, USDA has counted the number of operational U.S. farmers markets. During that time the number of farmers markets listed in the USDA National Farmers Market Directory has skyrocketed from 1,755 to 6,132. The directory captures information about where and when farmers markets operate, if they participate in federal nutrition benefit programs, and detailed information about their seasonality and location.

In the first quarter of 2011, the USDA National Farmers Market Directory had more than 65,000 Web page views. The directory has been featured as part of the CNN/Foursquare "Healthy Eating Badge" campaign, and on www.data.gov as part of the federal government's commitment to open government. Data from the directory is also being used by www.RealTimeFarms.com and other organizations mapping and analyzing the farmers market sector.

USDA is an equal opportunity provider, employer and lender. To file a complaint of discrimination, write: USDA, Director, Office of Civil Rights, 1400 Independence Ave., S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD).

Join US At The 2011 NASGA Summer Tour

The 2011 NASGA Summer Tour will be held out of the Boston, Massachusetts area. The tour dates will be August 16th and the 17th. Massachusetts has the highest sales of produce at the farm gate in the country so we will be sure to see some fabulous farms and markets.

The Hotel Tria www.hoteltria.com is the host hotel for the tour. It is located in the heart of Cambridge Massachusetts; providing easy access to all of Boston's main activities and points of interest. The rooms contain flat screen televisions with satellite cable channels, a mini refrigerator, wired and wireless internet, and digital climate control of your room. Complimentary breakfast is included, as well as an evening reception on the evening of August 15th. There is a Starbucks and Whole Food's Market located adjacent to the hotel. The bus will pick us up and drop off at the Hotel Tria.

Reservations can be made by calling reservations at 617.491.8000 or toll free at 866.333.TRIA.

All guests must reference the group name **"North American Strawberry Growers Association"** to receive the discounted group rate of $139.00

Day 1 Tuesday August 16th
The first stop on the tour on August 16th will be **Marini's Farm**. This farm is located in Ipswich Massachusetts, and has been around for three generations. Marini's Farm has several greenhouses, a nursery and a farm stand. Strawberry and blueberries are only two of the many crops produced at Marini's Farm. Richardson's Dairy Products, local bakery's, Danver's Butchery Meats and a variety of specialty food items are also sold at the Marini's Farm Stand.

Cider Hill Farm is the next stop on day 1 of the tour, and it is located in Amesbury Massachusetts. Cider Hill Farm has a large diversity of home-grown produce; including strawberries, blueberries and raspberries. They also offer a selection of herbs and flower baskets. A large farm store is located on the farm, which provides an opportunity for customers to purchase produce, bakery items, honey, candy, crafts, gifts and cider.

Parlee Farms is located out of Tyngsboro Massachusetts, and contains almost 100 acres of scenic farmland along the Merrimack River. They produce pick your own strawberries, blueberries and many other types of fruit and vegetables. The farm also contains a farm stand that provides already picked fruit and vegetables, potted flowers, apple cider, bakery items and their very popular donuts!

The final stop on day 1 of the tour is at **Verrill Farm**, located in Concord Massachusetts. This farm is open daily, year round and offers many different festivals and events. It also has a farm stand which features farm-grown produce such as strawberries, and food prepared in the stand kitchen; such as soups, baked goods and award winning pies.

Day 2 Wednesday August 17th
On the second day of the tour, August 17th, the first stop will be at **Wards Berry Farm**, in Sharon Massachusetts. Since 1982, Jim & Bob Ward have offered fresh picked fruits and veggies for sale at their roadside stand. Baked goods, breads, cheeses, jams, fruit baskets, and plans are some of the many other products that Ward's Farm has to offer. Ward's Berry Farm has pick your own strawberries, blueberries and raspberries for all customers to enjoy!

Spring Rain Farm is the second stop on day 2 of the tour, and it is located in East Taunton Massachusetts. It contains 112 acres of farm land, where you can explore cranberry bogs and pick your own strawberries.

Four Town Farm is located in Seekonk Massachusetts, growing a wide array of produce such as strawberries and blueberries. The farm offers pick your own produce, a farm stand and beautiful flower gardens.

The final stop of the 2011 NASGA Summer Tour is at **Foppema's Farm** in Northbridge Massachusetts. They offer a diverse array of fruits and vegetables, including raspberries, strawberries and blueberries. Every year they try and something new for the customers to try, such as Japanese eggplant, peach and nectarine trees.

For more information visit the NASGA website at www.nasga.org or call Kevin Schooley at 613-258-4587.

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Overview of the Raspberry and Blackberry Industry

Although raspberries and blackberries are grown in many states, three states-- Oregon, Washington, and California -- account for most of U.S. production for both fresh market wholesale and processing. But the bramble industry is more than that: NARBA's membership, for example, includes growers in 34 states and 8 Canadian provinces. Many of these growers produce for local markets and sell their fruit directly to consumers at the farm, at retail markets, as Pick-Your-Own, or to local stores and restaurants. They also process their fruit into jams, wines, and other products for direct sale to consumers or wholesale to stores.

In general, growers in cooler climates concentrate on raising raspberries, while blackberries are mostly grown in the Pacific Northwest and the South. Newer varieties and production methods, however, are extending the range of both types.

World figures: World production of raspberries is 911 million pounds (2002 FAO). Raspberries are produced in 37 countries worldwide on about 184,000 acres. Production has increased 38% since 1992, due to the combined effects of a 20% increase in acreage and a 15% increase in yield. Average yields are about 5000 lbs/acre, ranging from less than 1500 to about 9000 lbs/acre. The FAO does not keep separate statistics on blackberries. Assuming that blackberries are half of the fruit in the lumped FAO category reported as "Berries NES", a crude approximation would be about 704 million lbs of blackberry worldwide.

The U.S. is the third largest raspberry producer in the world, but only 15% of its domestic demand for raspberry fruit is met by production in the U.S. Imported raspberry fruits have averaged from 4,500 to 6,300 tons per year since 1997 (FAO, 2002). Most imports are arriving from Canada in July and August, and Mexico and Chile from November through May (USDA, 2002). Production of raspberries and blackberries in the U.S. is increasing.

Statistics for blackberry and raspberry production and crop value (in Oregon, California, and Washington only) are available from the USDA - National Agricultural Statistics Service. The table below summarizes 2002 figures.

Crop	Production (millions lbs)	Yield (lbs/ acre)	Area (acres)	Value ($ millions)	Leading states
Blackberry & hybrids	56.0	---	8370	25.5	1. Oregon
(all)	33.0	7040	4600	13.7	2. California
Marion	8.0	6420	1200	2.4	
Evergreen	5.0	3740	1410	3.5	
Boysen	0.3	4330	60	0.2	
Logan	9.0	8550	1100	5.8	
Other					
Red Raspberry	114.0	8160	14,200	85.0	1. Washington 2. California 3. Oregon
Black raspberry	3.0	2650	1100	1.2	1. Oregon

Processing: Many products use raspberry and blackberry fruit. Here's the breakdown of how raspberries and blackberries are used in processing:

Product	Percentage of crop (processed)
Preserves, jam, jelly	40
Bakery products	25
Individually quick-frozen berries	18
Juices, extracts	7
Ice cream, yogurt	5
Canned berries	5

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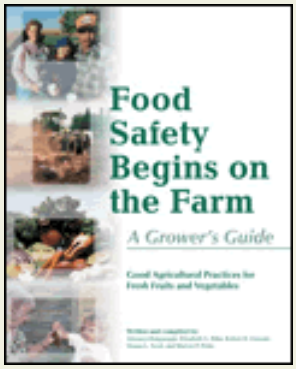
GAPsNET

Good Agricultural Practices Network for Education and Training



Focus on Food Safety

Focus on Food Safety
Produce Safety Alliance Recruits Members for Working Committees, Launches Website

John Carberry
Cornell University

April 1, 2011. The Produce Safety Alliance (PSA) today announced the official launch of its website (www.producesafetyalliance.cornell.edu) and issued a call for farmers, researchers, state officials, produce industry experts and others interested in produce safety to join an Alliance working committee. The committee members will assist in the development of a national Good Agricultural Practices (GAP's) education curriculum focused on understanding and implementing fresh fruit and vegetable food safety practices.

The Alliance is a broad-based partnership charged with developing a national education and training program for farmers, packers, and regulatory personnel of fresh produce in anticipation of a new produce safety rule from the U.S. Food and Drug Administration (FDA). It is housed at Cornell University's National GAPs Program and is funded by the U.S. Department of Agriculture (USDA) and the FDA.

The Alliance has created ten working committees, each focused on a specific aspect of produce safety, ranging from production and post-harvest handling issues related to risk assessment and preventive practices through food safety plan writing to certification-related activities.

"It is in our best interest to cast a wide net to encourage broad participation in order to obtain the best information, scientific knowledge, and in-the-field experience available to inform these efforts," said Betsy Bihn, project director of the Alliance. "The website is one key information and outreach vehicle, but it is our intention to use various communications channels to inform and engage all interested stakeholders".

"By collaborating with other experts in the field, the Alliance will review existing GAPs educational and instructional materials, seek to identify and fill any areas where information is lacking, and then develop and continuously update multi-formatted education programs on food safety, as well as how to co-manage for food safety and environmental concerns."

Working committees will select a chair that will then serve on a Steering Committee for the Alliance. The Alliance's steering committee will play a leading role in bringing forward recommendations to the Alliance's Executive Committee on curriculum content as well as what education and outreach materials will be most effective in assisting farmers and packers in establishing or upgrading food safety systems for their operations.

The Alliance is governed by an Executive Committee which includes members from Cornell University, the Association of Food and Drug Officials, the National Association of State Departments of Agriculture, the FDA, USDA's Agricultural Marketing Service, and USDA's Natural Resources Conservation Service. The Executive Committee is charged with ensuring that educational outreach materials will be used in an effective and efficient manner. "There is no more fundamental function of government than protecting consumers from harm, which is why food safety is one of USDA's top priorities," said Deputy Secretary of Agriculture Kathleen A. Merrigan. "The Alliance will bring a wide range of voices to the table and use that information to develop a valuable curriculum for fresh fruit and vegetable food safety practices. I encourage all interested parties to assist in these efforts as we move forward."

"The Alliance has set an ambitious agenda," said Michael R. Taylor, the FDA's Deputy Commissioner for Foods. "Tapping into the expertise and experience of farmers, researchers, and food safety professionals for these working committees will be key to its success."

To ensure the widest possible level of participation each working committee will meet by teleconference on a regular basis as set by that working committee.

Individuals interested in joining a PSA working committee can download a membership form from the Alliance website at http://producesafetyalliance.cornell.edu/working.html. For those without computer access, they can request a membership form by calling 315 787 2625 or writing to Betsy Bihn, 630 W. North Street, Hedrick Hall-NYSAES, Geneva, NY 14456.

"We encourage all those with expertise and knowledge in the produce food safety area to come forward and assist in these efforts as it will lay the foundation for the Alliance's

Focus on Food Safety (continued)

GAPS Educational Materials Conference to be held in June in Orlando, FL," said Bihn. "During the conference, the Alliance will review existing materials, determine where new or additional materials are needed, and begin developing those materials. We encourage participation in this process."

To view a complete list of working committees and details on the scope of work of each committee, visit http://producesafetyalliance.cornell.edu/working.html.

On the Organic Side...

NRCS Announces Opportunity for Organic Producers to Implement Conservation Practices

Contact: Sylvia Rainford, 202-720-2536

WASHINGTON, April 11, 2011 – USDA's Natural Resources Conservation Service (NRCS) Chief Dave White today announced another funding opportunity for certified organic producers and those transitioning to organic production to implement resource conservation practices on their agricultural operations.

While applications are accepted on a continuous basis, the cutoff date for this application period is set for May 20, 2011.

"Organic growers continue to express interest in program support to implement conservation practices," White said. "This additional opportunity will allow more producers to get assistance in protecting the natural resources on their land and creating conditions that help foster organic production."

Fiscal year 2011 marks the third year of USDA's Organic Initiative. Up to $50 million is available this year to help producers to plan and implement conservation practices that address natural resource concerns in ways that are consistent with organic production. For example, conservation practices might include planting cover crops, establishing integrated pest management plans, constructing seasonal high tunnels, or implementing nutrient management systems consistent with organic certification standards.

Eligible producers include those certified through USDA's National Organic Program, those transitioning to certified organic production, and those who meet organic standards but are exempt from certification because their gross annual organic sales are less than $5,000.

Organic Initiative funding is provided through NRCS' Environmental Quality Incentives Program (EQIP), a voluntary conservation program that promotes agricultural production and environmental quality as compatible national goals. The 2008 Farm Bill provided assistance specifically for organic farm operations and those converting to organic production.

Under EQIP Organic Initiative contracts, NRCS provides financial payments and technical assistance to help producers implement conservation measures in keeping with organic production. Beginning, limited resource, and socially disadvantaged producers may obtain additional assistance. The 2008 Farm Bill limits EQIP payments for organic operations to $20,000 per year per person or legal entity, with a maximum total of $80,000 over six years.

Producers interested in applying for EQIP Organic Initiative funding must submit applications through their local NRCS Service Center, which can be located through the Web site at http://offices.sc.egov.usda.gov/locator/app?agency=nrcs.

TUNNEL TALK

Reducing Moisture in High Tunnel Systems

Jeff Kindhart, University of Illinois Cooperative Extension, (618-695-2770; jkindhar@illinois.edu)

One of the most common complaints of growers using high tunnels is excessive moisture inside the tunnel, especially during the early part of the growing season. When there is high moisture inside the high tunnel, there are commonly increased dis-ease problems. The lack of supple-mental heat makes this problem much more difficult to handle in high tunnels than in heated greenhouses. Here are some of the strategies that may be used in a grower's effort to minimize excessive moisture in the high tunnel during the early growing season.

Proper site selection is most important. Set the high tunnel on a ridge crest where possible and avoid sites that are lower than the surrounding terrain.

Address drainage issues. The impermeable cover of the high tunnel results in a high volume of water shed which falls along the sides. The design of the structures makes guttering impractical. Therefore, it is critical that earth be sloped away from the baseboards. This will be part of the directives for those using the NRCS program. Additionally, when two houses are sited near each other, there must be extra effort to address drainage issues between the two tunnels. Some growers use French drains to address drainage requirements while others use drain-age tile. Care must be taken to avoid creating erosion problems in efforts to improve drainage.

Keep water from running in from outside the tunnels. This may re-quire the development of diversion ditches or channels and may involve additional needs for drain tile.

High tunnels must have adequate ventilation. This can be managed to help reduce humidity levels (moisture) within the house. By using several cycles of opening and closing, moisture levels can be reduced. This is similar to the technique used in greenhouses. In the greenhouse, growers reduce humidity levels by drawing in cold air (typically in the evening). As the air is heated by the furnace in the greenhouse it becomes lower in humidity. This allows the air to pick up additional water from the plants, media, etc., in the greenhouse. After the now heated air becomes higher in humidity, it is in turn exhausted from the greenhouse and new cold air is drawn in, and in turn heated and the cycle is repeated. A few cycles per night over a couple of nights nearly always dries down even the wettest greenhouse. Since there is no supplemental heat source in a high tunnel, we modify this technique by venting the house as soon as it gets warm in the morning which results in cooler air being drawn in. The tunnel is then reclosed and allowed to re-heat. This can be done two or three times each morning and will help dry down the house.

Employ the use of circulation fans. The use of fans (typically 4 or 6 for a 96' structure) can help in keeping the plants drier and also helps make the air throughout the house more uniform. This makes the method above more effective.

Use a wetting agent. If a grower is having problems with water dripping down onto the crop from the poly-ethylene covering, there are wetting agents which can be purchased and sprayed onto the covering. These will result in the water running down the covering and being shed to the hip board rather than dripping down onto the crop. *(Source: Illinois Fruit and Vegetable News, Vol. 16, No. 20, March 7, 2011)*

Movable High Tunnel at PSU Horticulture Research Farm

Mike Orzolek, Penn State Horticulture, mdo1@psu.edu.

We have finished construction of a 30' X 48' movable high tunnel from Four Seasons Tools on a 162' long track. This unit sits on a V-track that is well attached to the soil with fifty-four 3' rebars driven into the soil. The high tunnel is than anchored to the V-track to stabilize the tunnel during high wind events (greater than 60 mph). Because there are 3 distinctive growing areas along the 162' track, we will be planting blueberries (variety-Chandler) at the south end of track, apricots at the north end of the track and tomatoes in the middle. The high tunnel ends were designed so that the high tunnel could be moved from an annual to a perennial crop when the perennial crop needs protection from environmental stress, especially frosts and low temperatures in the spring. Apricots will produce flowers early in the spring which is when the high tunnel will be moved over the trees until fruits are formed and chance of frost has passed. The high tunnel will be moved to the blueberry crop in late May when flower buds start to break and flower and fruit production is initiated. In addition to helping maintain a more optimum environment for fruit production, the high tunnel will help prevent loss of fruit due to birds. Finally in late fall (September), the high tunnel will be moved to a late crop (planted in late June) of tomatoes that will be harvested through October.

We have also constructed an 18' x 36' movable high tunnel from Rimol greenhouse on a 80' long track. This high tunnel is anchored to the soil so that it doesn't move or lift off the track during high wind events. The 80' long track will allow for 2 distinctive growing areas along the track and will probably plant late peppers and broccoli. The most critical feature of a movable high tunnel is easy end wall removal to facilitate movement of the high tunnel from annual to perennial horticulture crops. Movable high tunnels will allow for multiple crop production with one high tunnel. The two movable high tunnels at the Center for Plasticuture's High Tunnel Research and Education Facility

TUNNEL TALK–(continued)

at the Horticulture Research Farm at Rock Springs can be visited anytime during the year. (*Source: Penn State Extension Vegetable and Small Fruit Gazette, Volume 15, Issue 5, May 2011)*

COMPREHENSIVE ELDERBERRY WORKSHOP & FARM TOUR 2011

Presented by River Hills Elderberry Producers ~

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Friday, June 10 — *American Legion & Eridu Farms*

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Presentations

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Camping available - Live Music after Farm Tour
For more information go to www.riverhillsharvest.com
or call 573-999-3034 or 573-424-9693 for details

RIVER HILLS HARVEST

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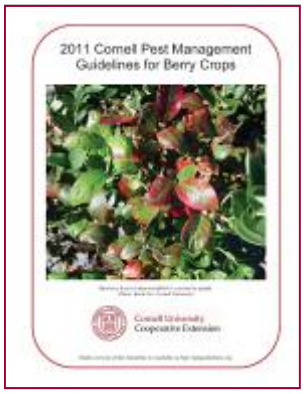
Funds for this project provided by Missouri Dept of Agric. & USDA Specialty Crop Block Grant Program.



PIMS

Product, Ingredient, and Manufacturer System:

http://pims.psur.cornell.edu/

OMRI

http://www.omri.org/omri-lists

Berry Diagnostic Tool

http://www.fruit.cornell.edu/berrytool/

Focus on Pest Management

Pesticide Update

Callisto Approved in NYS on Black and Red Raspberries and Blackberries

Laura McDermott, Capital District Vegetable and Small Fruit Program

The herbicide Callisto has just been approved for NYS use in black raspberry, red raspberry and blackberry as a pre-bloom, post-directed spray only. The bramble crops join high and low bush blueberry and lingonberry on the label, but keep in mind that usage is limited to the pre-bloom stage as illegal residues may occur if you use it after that time. In low bush blueberries, Callisto may only be applied in the non-bearing year.

Callisto can be used to control broadleaves, especially lambsquarters, pigweed, galinsoga, nightshades and offers a bit of control on crabgrass. It can be applied up to a rate of 6 oz/A with that being the annual limit, and can be applied in split applications that are 14 days apart.

Callisto should be applied before weeds exceed 2" in height. Obviously the trick here would be to make those limitations work for you within the confines of the weather.

Care should be taken to choose crop oil concentrates that do not injure berry crops, but including one at a 1% rate would help.

(Reprinted from Capital District Vegetable and Small Fruit Program Weekly Update, Volume 3 (1), April 20, 2011.)

Trac Software Now Available

Juliet Carroll, NYS IPM Program

Trac Software version 2011 files can now be obtained from the Cornell Center for Technology and Enterprise Commercialization (CCTEC). Find out how to obtain Trac Software at http://www.cctec.cornell.edu/express%20licensing/software/tracsoftware/index.php.

Trac Software is now longer-lasting.
Trac now has an open ChemTable (no password). This means the software never goes out-of-date, because you update the ChemTable. Complete instructions on how to do this are included in the Trac Software Manual and in the software itself, along with a sample 2010 ChemTable.

Bugs were fixed.
All the reported bugs people found in the 2010 version were fixed and Excel compatibility issues addressed.

Trac Software now comes in two releases, for ".xls" and ".xlsm" Excel compatibilities.
Make sure you obtain the correct Trac Software release for your Excel version:

Microsoft Windows, .xls versions, "compat"
Excel 97 (version 8.0) included in Office 97 (for x86 and Alpha).
Excel 2000 (version 9.0) included in Office 2000
Excel 2002 (version 10) included in Office XP
Office Excel 2003 (version 11) included in Office 2003

Microsoft Windows, .xlsm versions
Office Excel 2007 (version 12) included in Office 2007
Excel 2010 (version 14) included in Office 2010

Apple Macintosh, .xls versions, "compat"
Excel 8.0 (part of Office 98)
Excel 9.0 (part of Office 2001)
Excel 10.0 (part of Office v. X)
Excel 11.0 (part of Office 2004)
Excel 12.0 (part of Office 2008) – Visual Basic not included, will not run Trac Software

Apple Macintosh, .xlsm versions
Excel 14.0 (part of Office 2011)

Tech support.
Still available at jec3@cornell.edu

Focus on Pest Management (continued)

Disease Snapshot- Kerik Cox, Cornell University

Disease Name: Blueberry Shock

Cause: Blueberry Shock Ilarvirus (BlShV)

When to watch for it: Bloom to fruit maturity

First line of defense: Remove and destroy affected plantings before bloom. Do not plant adjacent to infected fields.

Summary: Blueberry shock is named for a symptom of blueberry shock ilarvirus (BlShV). Flowers and young developing leaves on plants infected with BlShV will rapidly blight at bloom, hence the "shock" designation. Bloom time symptoms will look similar to those of the blueberry scorch virus (BlScV), except that infection is less likely to be immediately lethal to the plants. In fact, infected bushes can experience a flush of growth later in the season and look perfectly normal except that there is often no fruit because the flowers were killed. Moreover, symptoms may only persist for a few years and infections may become quiescent. At this time, the planting is still infectious, and can still transmit the disease to neighboring blocks. This is especially the case since the virus is carried in the pollen and vectored by bees during pollination. Hence, it's important to remove BlShV infected plantings before bloom. As with other viruses, it's important to only plant certified virus-free stock and avoid planting new blocks near infected fields.

Where do the Insects go in Winter? – Greg Loeb, Cornell University

It's been a long winter in the Northeast and a fairly cold one. Kind of snowy too. One question I often get is what does this type of winter mean for insects? Does it mean insect pests will not be too bad for the 2011 field season? Probably not! Insects in our part of the world have evolved various physiological and behavioral mechanisms to survive the cold winters. Some insects like spittlebugs spend the winter as eggs at the base of plants such as strawberry. The blueberry maggot fly spends the winter as a pupa in the soil under bushes while the cranberry fruitworm overwinters as a full-grown larva in debris. The tarnished plant bug spends the winter in hedgerows and leaf litter as an adult.

Although certainly some insects perish over the winter, and probably more deaths occur in extra cold winters where snowfall is below normal (snow provides insulation that helps protect insects and plants), sufficient numbers usually survive to the new growing season.

This brings up a related question I often get. If populations the previous season were high for a particular insect, does that mean we can expect high populations again this year? We know for many diseases, if there is a lot of inoculum (overwintering stage of the pathogen) from last season, you should be extra vigilant this year. In other words, there is a pretty strong correlation between amount of disease last year and this year.

A similar correlation exists for some insect pests, but the relationship is not as strong. The environmental conditions during the spring and summer of the current season are probably bigger factors in determining whether it's a good or a bad year for insect pests than the abundance the previous field season. Hot and relatively dry seasons like 2010 are typically good for insects (not so much for diseases) while a cool and wet year like 2009 is not so good for insects (but ideal for many diseases).

The bottom line, therefore, is that you can't really rely on what happened during the winter or last season (or the Farmer's Almanac for that matter) to predict what kind of insect pest problems you will face this year. These factors probably play a role, but to be safe, you need to **monitor your fields** during the current season and make management decisions accordingly.

Blueberry Maggot pupae

(Photo courtesy Michigan State University)

Review of Arthropod Pests of Small Fruit Crops-Early to Mid-Season

Greg Loeb, Cornell University

Spring Pests of Small Fruit Crops

Management decisions for arthropod pests begins in earnest as the temperatures increase and the growing season gets under way. Before reviewing the list of spring time **potential** arthropod pests for each of the major berry crops in NY, I want to summarize some changes in chemical control options included in the 2011 version of the Pest Management Guidelines for Berry Crops.

A couple of changes for synthetic pyrethroids have occurred in the last year or so. **Danitol 2.4 EC** [fenpropathrin] has an updated and expanded label as of June 2010 that now includes brambles and gooseberries for control of Japanese beetle and spider mites (twospotted spider mite and European red mite). Note also that Danitol 2.4 EC has a 2ee label expansion for control of brown marmorated stink bug, a new invasive pest of various fruit and vegetable crops, for bushberries and strawberries. **Brigade WSB** [bifenthrin] has a relatively new supplemental label that includes bushberries (blueberry, currant, elderberry, gooseberry, huckleberry) for control of an assortment of insect and mite pests. Note that **Brigade EC** is also labeled for several small fruit crops in NY. A relatively new class of insecticide, anthranilic diamides, has come on the market recently. These reduced-risk insecticides have some contact activity, but work best when ingested. They are particularly effective against Lepidoptera pests, although some of our trials indicate activity also against Japanese beetle. **Altacor** [chlorantraniliprole] is labeled for use on caneberries and gooseberries with raspberry crown borer the target pest. **Coragen** [same active ingredient as Altacor] is labeled for use on strawberries with Japanese beetle as the main target pest. Note that neither Altacor or Coragen are allowed to be used on Long Island at the present time. A new miticide called **Portal** [fenpyroximate] has a supplemental label for use on strawberries for twospotted spider mite and cyclamen mite. Finally, the organophosphate insecticide **Lorsban Advanced** [chlorpyrifos] has been labeled for use in NY on strawberry for control of strawberry bud weevil and has also received a 2ee label expansion for brown marmorated stink bug on strawberry.

Blueberries

A number of species of **scale insects** feed on the twigs of blueberry and can greatly reduce plant vigor. Look for the hard-covered female scale on small branches early in the spring. A dormant oil (2-2.5%) applied at bud swell, but before the first leaf stands out, can be effective in reducing scale populations.

Fig 1. Damaged blueberries caused by cranberry fruitworm.

Cranberry fruitworm and **cherry fruitworm** are the main blueberry arthropod pests in the spring and early summer. These moths overwinter as fully-grown larvae. They pupate in the spring and begin flying in late May and early June (around the time of flowering). Egg laying begins at around petal fall with eggs being placed at the base of newly set fruit. A sex pheromone is available to monitor the flight activity of adult cranberry fruitworm and cherry fruitworm (Great Lakes IPM, www.greatlakesipm.com, 989-268-5693). Two applications of an insecticide such as the selective insect growth regulator Confirm [tebufenoxzide] or the broad-spectrum organophosphate Guthion, starting at petal fall and 10 days later, is required for sites with heavy pressure. Research in New Jersey indicates that in areas of moderate pressure, one application 5 to 7 days after petal fall provides as good control as two applications. Keep in mind that most of the insecticide options for these lepidopteron pests are not safe for bees and should not be applied during bloom. A few are safe (e.g. Confirm and *Bacillus* thuringiensis). Organic options for chemical control of cranberry fruitworm include *Bacillus* thuringiensis and the spinosad Entrust.

Other pests to keep an eye out during the first part of the season are **plum curculio** (notice crescent-shaped scar created from egg-laying on young fruit), **leafrollers** (larvae make shelters by silking together terminal leaves), and **blueberry tip borer** (larvae bore into stem causing shoot tips to die back). See the guidelines for control options.

Raspberries

There are a number of potential pests of raspberries to be concerned with during this time period (early pre-bloom to postbloom). Be on the alert for feeding damage from the adult **raspberry fruitworm** (a beetle, light brown in color) on foliage and fruit buds. The larvae of this beetle pest feed inside flower buds and young fruit. Adult feeding damage on foliage creates a skeletonized appearance somewhat similar to the feeding damage caused by larvae of **raspberry sawfly** (pale green caterpillar-like body with many long hairs). Both the fruitworm and the sawfly appear during the pre-bloom period. Carbaryl [Sevin] is labeled for both of these pests and the timing is similar as is Spintor [spinosad] or Delegate [spinetoram].

Tarnished plant bug (TPB) is another potential problem for raspberry growers during the period from bloom to harvest. Both the adults and their nymphs can cause deformed fruit, although the deformities are not as obvious in raspberries as in strawberries where TPB is also an important pest (see below). We do not have a good estimate of the economic threshold for TPB in raspberries but a rough guide would be 10 to 20% of canes infested with adults or nymphs. Carbaryl, Assail SG [acetamaprid] and several natural pyrethrins are labeled for

Review of Arthropod Pests of Small Fruit Crops-Early to Mid-Season *(continued)*

control of TPB on raspberry. Malathion can be effective against TPB, but I have yet to find a product registered in NY with plant bug on the label for caneberries. Note that weedy fields aggravate TPB problems.

Fig 2. Adult eastern raspberry fruitworm.

Raspberry cane borer and related beetle species make their appearance during this period. The adults emerge in the spring, mate and start laying eggs. Larvae bore into canes and during the season and for some species, the next season. They cause injury and death to canes and potentially entire crowns. The best time to kill adults is during the late pre-bloom period (for summer-bearing raspberries), although there are no insecticides specifically labeled in NY for control on raspberry cane bore. Admire Pro [imidacloprid] is a systemic insecticide applied through a drip system that is labeled for a related borer species, red-necked cane borer that is found in NY. As an alternative to insecticides for raspberry cane borer, during the season remove wilted shoot tips below the girdled stem (two rows of punctures around an inch apart) where the egg of the raspberry cane borer has been placed. Also, during the dormant season remove and destroy canes with swellings.

During the spring and into the summer you may find two species of aphids that attack raspberries, **large raspberry aphid** and **small raspberry aphid**. Feeding damage by aphids causes leaf curling and reduced growth of shoots. The more important injury comes from viruses transmitted by the aphids (raspberry mosaic virus by the big aphid and raspberry leaf curl virus by the small aphid). This can be a particular problem for nursery plants. Malathion 57 EC, Assail SG, and Provado 1.6F [imidacloprid] are some of the insecticides labeled for aphids on caneberries.

Fig. 3. White stippling damage on raspberry leaves caused by twospotted spider mites.

Finally, I should mention **twospotted spider mite (TSSM)** as a potential pest. These tiny spider-like arthropods can become very numerous on foliage, causing white stippling on leaves. They seem to be most problematic in dry sites and/or in mild growing areas such as the Hudson Valley and Long Island and generally we do not see serious injury until later in the season. In high tunnels, however, TSSM can show up early. There is a miticide registered in NY for control of TSSM miticide registered in New York for control of TSSM (Savey DF [hexythiazox]. Savey DF is relatively soft on beneficial mites. It mainly affects eggs and immature mite stages so generally should be applied before populations build to large numbers. Two pyrethroid insecticides (Danitol 2.4 EC and Brigade WSB, are also labeled for TSSM on brambles. Note these broad-spectrum materials will also kill beneficial mites. Predatory mites can also provide control of TSSM. These beneficial mites are frequently naturally present in raspberry fields, especially where few broad-spectrum insecticides are used, but can also be purchased from a supply house. In high tunnels, a release of predatory mites at the first sign of damage, is often effective. Several species have been used in high tunnels with success including *Neoseiulus fallacis* and *Neoseiulus californicus*.

Strawberries

During the pre-bloom period the **strawberry bud weevil (clipper)** is the main arthropod pest to watch out for. In recent years we have learned that many strawberry cultivars, such as Jewel and Seneca, can tolerate a fair amount of bud loss from this pest, although at sufficient densities, it can still be a problem. As a rough rule of thumb, treat for clipper when you observe more than one clipped primary or secondary flower bud or more than 2 tertiary buds per truss, on more than one truss per foot of row. Note that once flowers are open they are no longer at risk from clipper. Clipper often is a more severe problem along borders of plantings, near woods. Lorsban, Brigade WSB and Danitol 2.4 EC are labeled for clipper in New York.

Fig. 4. Adult tarnished plant bug on ripe strawberry.

Also during the pre-bloom period (and extending through harvest and sometimes after renovation) **twospotted spider mite** can be a problem in some plantings. Look for whitish or yellowish stippling on leaves. Current threshold is 5 mites per leaf or about 25% of leaflets have at least 1 mite. This is likely a conservative threshold for a healthy planting. There are several compounds labeled for mites on strawberries in New York: Vendex [hexakis], Agri-mek [abamectin], Savey, Zeal (etoxazole), Kanemite [acequinocyl], Acramite [bifenazate], Portal, Danitol and Brigade. Danitol and Brigade are hard on predatory mites. Agri-mek label calls for 2 applications, 2 weeks apart.

Review of Arthropod Pests of Small Fruit Crops-Early to Mid-Season *(continued)*

For all these materials, coverage is very important, especially on the underside of leaves.

Tarnished plant bug (TPB) is the key insect pest of strawberries during bloom to near harvest. Both adult bugs and the nymphs cause injury (deformed fruit) but nymphs are probably of the greatest concern for June-bearing cultivars. The economic threshold is half a nymph per flower cluster (you sample by tapping cluster over a white plate and counting nymphs that fall off). It is worth sampling for this pest on a regular basis since it varies in population size from place to place and from one year to the next. Spraying a pesticide when nymph counts are below threshold costs you money and can kill beneficial arthropods unnecessarily. Good weed management can help reduce problems with TPB.

Cyclamen mite is a potentially serious pest that seems to be a growing problem for strawberry growers. The mites get active in the spring with populations peaking after bloom. The mites like to feed on young leaf tissue (just as the leaves are unfolding). The mites themselves are difficult to see without a good hand lens . Cyclamen-damaged leaves tend to be stunted and crinkled. Some cultivars (e.g. Cabot) seem particularly prone to cyclamen mites. Prior to bloom or after renovation are good times to treat for this pest. Thionex 3 EC [endosulfan] is labeled for use against cyclamen mites, but is in the process of being phased out by EPA. As noted above, a 2ee label exemption for use of Portal on strawberry for cyclamen mites has been recently granted. Use lots of water for thorough coverage.

Fig. 5. Cyclamen mite adults, immatures and eggs.

Spittlebug starts appearing on leaves, stems, and flowering racemes about bloom and extending into harvest. They overwinter as eggs in the soil and hatch out as temperatures rise in the spring. The nymphs crawl up the plant and begin feeding on the xylem tissue (the water conducting vessels of the plant). There are not a lot of nutrients in xylem and therefore nymphs need to process a lot of sap, extracting the few nutrients out for their use and excreting the remaining water. This water is frothed into white spittle, which helps protect the nymphs from desiccation and natural enemies. You can often find several nymphs within a spittle mass. Feeding by spittlebugs, if extensive, can stunt plants and reduce berry size. Perhaps more importantly, the spittle masses are a nuisance to pickers. Threshold for spittle bug masses is 1 mass per foot row. Thionex, Brigade, Danitol, Assail and Provado are labeled for use against spittlebugs. Weedy fields tend to have more problems with spittlebugs.

Currants and Gooseberries

Over the past few years we have been seeing a fair amount of leaf cupping caused by the **Currant aphid**, especially on red currant plants. In addition to leaf cupping, rounded galls form on the top side of the leaves in response to the presence of aphids in pockets on the underside. An economic threshold for currant aphid has not been worked out. Malathion, Provado, Assail, Brigade and several pyrethrin insecticides are labeled for currant aphid on currants.

Imported currant worm (ICW), when present, can cause considerable injury to foliage. The adult, which becomes active in the spring, is wasp-like in appearance (indeed its in the wasp group, but part of a primitive line called sawflies that are herbivorous as larvae). Eggs are laid along the midrib or on the undersides of the leaves. Larvae of the first brood appear in spring, shortly after leaves are out. They initially feed in colonies but as they become larger, feed singly. A second brood of larvae is produced in early summer and in some years a partial third brood is produced later in the summer. Malathion is labeled for use against ICW.

Fig. 6. Leaves of red currant with currant aphid damage.

Another currant and gooseberry pest to be on the look out for in the spring is the **currant borer**. A relative of the raspberry crown borer, the adult moth has clear wings, blue-black body with yellow markings resembling a wasp. The adult emerges in the spring, mates and begins laying brownish eggs on the bark of canes. After hatching, larvae burrow into canes and begin feeding within the pith. Danitol is labeled for currant borer control, targeting the adults and young larvae. Also, removal of weak canes in the spring and fall will help keep populations down.

Other pests that might be observed attacking currants and gooseberries in the spring to early summer include the **currant stem girdler** (lays an egg in shoot tips and then girdles stem below) and **gooseberry fruitworm** (larvae feed inside young fruit, sometimes weaving portions of stems together with silk).

Could There Be Mummyberry in 2011?

Kerik Cox, Cornell University

In 2009, we had a surprising number of mummy berry disease outbreaks in NY. There was considerable rainfall and some fairly long wetting periods during the late spring and summer months that year. In 2010, the early season was so dry that growers managing mummy berry were successful with even minimal efforts, and mummy berry appeared to be gone for good in many operations Unfortunately, 2011 is shaping up to a similar year of cool weather and long wetting periods, and mummy berry could bounce back in plantings even with a imperceptible amount of carry over inoculum from 2010. As leave buds break and begin to flush, it's important to be prepared.

The mummy berry disease cycle can be stopped at two places: the mummy (Fig. 1), and the leaf strikes (Fig. 2). Because elimination of flowers is not an option for blueberry producers, fungicides are the most logical means of killing mummy berry spores and leaving pollen grains unaffected. Unfortunately, the spring rains can wash off fungicide residues and cause strikes to sporulate with increase abundance. In order to give fungicides a chance, one must try to reduce the numbers of spores available to infect flowers by targeting the mummies and protecting young leaf tissue. In operations that were greatly impacted by mummy berry in 2009 there will simply be too many mummies for fungicides to prevent leaf and subsequent flower infection. However, the pressure in 2010 was lower, and if you are vigilant, a fungicide program should keep your operation clean in 2011.

In order reduce the number of mummy berries with apothecia at leaf bud break there are a few options. One option is the use of urea fertilization. This typically involves the application of a high rate of urea (200 lbs/A) to the planting floor to burn apothecia after emergence. This option is high risk because apothecia emerge over a fairly long period and the application would have to be timed just right to affect the majority of apothecia. An alternative is to try a lower rate (40 lbs/A) application of feed grade urea to the row middles and area under the bush. This should be done before leaf bud break and as soon as you can get the spray equipment into the field again. This practice is meant to enhance microbial degradation of the mummies instead of burning the apothecia, which is why the application needs to be made as soon as possible in the spring. It may be a little late to try this in some cultivar plantings this spring.

Another option is the use of fresh mulch to cover mummy berries and smother emerging apothecia. Applying 2-3 inches of mulch as soon as the possible this spring should be sufficient to cover mummies and prevent apothecia from emerging. The mulch helps to increase the distance that emerging apothecia would need to extend to eject spores and limits light exposure, which is needed to stimulate germination of apothecia on mummy berries. If your operation had a serious mummy berry problem in 2009 and you have mulched beds, it might be time to remove the existing mulch (despite labor intensity), and re-mulch beds. Once mummy berry becomes established in existing mulch, it may persist for several years. Similar to established mummy berry in mulch beds, moss can be an extremely favorable ecosystem for mummy berries, providing moisture and organic matter. Moreover, moss protects mummy berries from exposure to detrimental environmental conditions and management practices. Although moss can be a nice feature in pick your own blueberry operations it can be a serious problem if mummy berry becomes established. In these instances, the moss should be removed manually by removing the sod on which it is established. There are chemical means of the killing moss, but these means must be repeated on a yearly basis, and often provide limited success.

Figure 1. Mummyberry mummies with apothecia

Figure 2: mummyberry shoot strike

Could There Be Mummyberry in 2011? (continued)

Once the best efforts are made to reduce inoculum, a regular program of fungicides aimed at protecting emerging leaf and flower tissue should be implemented, especially in plantings with a history of the disease. The chemical management program should be started when the first variety is showing ¼" of green tissue on leaf buds, and end when the latest flowering variety is at 50% petal fall. Fungicide applications should be made prior to rain events and re-applied on 10-14 day interval unless the planting receives more than 2" prior to the end of the interval. There are several excellent mummy berry fungicides, but one of the best fungicide programs consists of applying Indar 2F (6 fl oz/A) alternating with Pristine (20 oz/A) or Switch 62.5 WG (14 oz/A). These materials will not only help control mummy berry, but also control the majority of other fungal diseases of blueberry such as anthracnose and *Botrytis*.

If you had mummy berry in 2009, you should consider practicing all of the recommended cultural and chemical management practices even if there was no mummy berry in 2010. If you do not implement the inoculum reduction practices on annual basis, you can easily overwhelm the ability of your fungicides to control the disease, especially in the current season. Although mummy berry disease often appears to become established "out of the blue", it actually becomes slowly established over time. Mummy berry can take several years of proactive management to eliminate. If you've never had mummy berry, and did not have mummy berry in 2010, it is not necessary to implement the cultural and chemical management practices. However, it will be important to begin scouting for mummy berry strikes around bloom in 2011 to ensure that mummy berry doesn't get established is this quite favorable season.

PROPER PRUNING PROFITS NYS BLUEBERRY GROWERS – Kara Lynn Dunn

Sometimes the best practice is not a new application but rather a return to diligent attention to good old-fashioned horticulture.

As a result of a two-year project requested by the New York Berry Growers Association and Cornell Small Fruit Program, and funded by the New York Farm Viability Institute, a focus on proper pruning has helped Reeves Farms and other NY blueberry growers.

"We see the dividends of every-year pruning practices in our planting, in the markets and in our income," says Andy Reeves, who runs a 350-acre multi-crop farm in Baldwinsville (near Syracuse) with brothers Brian and Mark.

Pruning Reeves Farms' three acres of organically-grown blueberries takes four men about 43 hours on average every spring.

"The best cost investment we can make in our blueberry crop is in training our employees on proper technique and in the time they spend pruning," Andy says. "We do not cut corners on the labor for pruning."

The annual pruning plan at Reeves Farms follows Cornell University guidelines and leaves the best two canes from each year up to eight-year-old canes. Project leader Dr. Marvin Pritts, chair of Cornell's Horticulture Department, says, "Up to twenty percent of older wood can be removed without impacting yield."

Pritts and his project team held 60 workshops across New York State on pruning, weed control and pest management in 2008-2010. More than 110 commercial growers attended training on how proper – and annual - pruning encourages upright growth and discourages pests and disease.

The technique cuts carefully-selected canes close to the ground to reduce disease buildup in cane stubs, opens the bush canopy to air and sunlight allowing faster drying of fruit and leaf surfaces, and removes canes that rub on other canes reducing risk of cankers.

Pritts says, "The value of pruning every year was being overlooked because the cost of neglecting it is not immediately seen. Yearly pruning helps manage pests, fruit load and quality; ensures stable production from year to year; and spreads costs throughout the life of the planting."

Andy Reeves says, "The regular attention we give to pruning pays off in larger and sweeter berries that our buyers are happy to purchase through our wholesalers, retailers, and grocery chains, and at our farm market."

Andy also compliments his workers, 92 percent of whom returns year-to-year.

"The same workers trim, pick and pack the berries every year. They understand the production process from start to finish and have taken ownership of it," Andy adds.

"I come by the planting at lunch hour and see the workers voluntarily checking the crop and pushing the straw mulch used for weed control back in around the base of the berry bushes."

The crew prunes canes that overhang alleyways so they can easily mow between rows.

"When we hosted a project field day on improving production efficiencies, everyone commented on how neat and clean our plantings are,"

PROPER PRUNING PROFITS NYS BLUEBERRY GROWERS (continued)

Andy says.

"We are fortunate to have Cornell's expertise and the New York Farm Viability Institute's funding available to help us keep New York's agricultural industry strong," Andy adds.

Berry Extension Support Specialist Cathy Heidenreich says interest in producing New York berries is on the increase.

"In addition to working with established growers, 562 potential growers attended a three-hour introduction to commercial berry growing held at 20 locations across the state and 82 of those attending indicated they would create new plantings by 2011," Heidenreich says.

Those interested in berry production can contact Heidenreich at mcm4@cornell.edu and sign up for the New York Berry News, celebrating its 10th anniversary this year.

(This article first appeared in the March 2011 American Agriculturist.)

Kara Lynn Dunn is a freelance writer/editor and a published author working from her farm in Mannsville, NY. She is the publicist for the Northern New York Agricultural Development Program and coordinates a series in American Agriculturist for the NY Farm Viability Institute. She can be reached at 315-465-7578, karalynn@gisco.net.

Pollinating Highbush Blueberries

Rufus Isaacs, Michigan State University

Investment in this critical component of blueberry production is essential for profitable yields.

May 3, 2011. Highbush blueberries require pollination for ensuring that flowers present at bloom turn into large, harvestable berries later in the season. Without good pollination, highbush blueberry bushes may provide some harvestable fruit but it will be much less than could have been produced. By planning ahead for how fields will be pollinated, growers can help ensure they receive the expected return on their investments in land, bushes, and other management inputs.

Given the high per-acre input costs of blueberry production, spending money to ensure high levels of pollination makes sound business sense. Other things being equal, well-pollinated fields have larger berries, higher yields, and more even ripening than fields with sub-optimal pollination. This article focuses on pollination of northern highbush blueberry, Vaccinium corymbosum, which is the species grown in northern states and provinces.

Across Michigan's blueberry industry, most pollination is by honey bees that are brought to fields in hives. Bumble bee colonies can also be purchased for placement in fields, and there are many other wild native bee species that nest in and around crop fields. By combining these pollinators into an Integrated Pollination Management strategy, the risk of poor pollination may be minimized.

Pollen is moved by bees

For pollination to occur, sufficient blueberry pollen must be moved from the male part of flowers (anther) to the female part (stigma) while the flowers are receptive. Bees are responsible for this movement of pollen, so blueberry pollination depends on having enough bees active in the field during bloom to deliver pollen. Each flower must be visited once by bumble bees or most native bees or three times by honey bees to grow to maximum size. There can be 10 million flowers per acre, so there is a lot of work to do!

The pollen produced by blueberry flowers is relatively heavy and doesn't waft on the wind. It is held inside the flower by salt shaker-like structures called anthers until bees visit. They may release the pollen by jiggling the flower with their legs, as is the case for honey bees. Bumble bees and some other native bees are better adapted to release the pollen using a vibration behavior. As the bees move from flower to flower, pollen grains are deposited on the tip of the stigma. Once compatible pollen is deposited on the stigma it germinates and fertilizes the ovules which produce the tiny seeds. Fertilized seeds stimulate berry growth, leading to larger berries.

Before planting: parthenocarpy, self-compatibility, and inter-planting

Northern highbush cultivars have some degree of parthenocarpy, producing berries even without pollen deposition. However, these berries will be small, slow to ripen, may drop off, and most would not be considered marketable (see photos below). Many popular northern highbush blueberry cultivars are self-fruitful, meaning they can be fertilized by pollen of the same cultivar. This is one reason why solid blocks of Bluecrop are highly productive. In other cultivars, such as Nelson, cross pollination (from another cultivar) is essential for full pollination and yield, achieved by bees moving pollen between cultivars as they fly from row to row. In this situation, planting fields with alternating blocks of co-blooming and compatible cultivars ensures cross-pollination. While alternate rows of two compatible cultivars would be the best for cross-pollination in this situation, alternating blocks of up to 10 rows will allow exchange of cross-compatible pollen. There is a range of dependence on cross pollination across highbush blueberry cultivars, so before selecting cultivars and their planting arrangement, growers should check the level of self-fruitfulness with the nursery.

Using Honey Bees

Wait until bloom has started to bring in bees. Flowers of blueberries are generally less attractive to honey bees than other flowers due to the relatively low nectar reward. Because of this, it is best to bring in bees once the crop has started to bloom so that bees forage more on blueberries than other flowers. If brought in too early, bees may learn to forage elsewhere reducing their focus on your crop fields. Under warm spring conditions, highbush blueberry flowers are viable for three to four days after the flowers open, so move bees into blueberry fields after 5 percent bloom but before 25 percent of full bloom.

Renting healthy colonies

If you are renting honey bee hives, you should expect to receive healthy and vigorous bees. A healthy colony contains around 30,000 worker honey bees and will have six frames of brood. Having weak hives will affect how much pollination the fields receive, so it is worth taking time to ensure you have strong hives. If you suspect weak colonies, talk to your beekeeper about getting additional hives or replacing them. One strong hive of 40,000 bees will provide better pollination than two 20,000 bee hives.

Pollinating Highbush Blueberries (continued)

One way for growers to ensure they receive strong colonies is to establish a pollination agreement that lays out the grower's expectations. This can include the strength of the colonies and how quickly the colonies will be taken out of the field after bloom.

Stocking densities

Feral colonies of honey bees and abundant native bee populations used to contribute to blueberry pollination. However, mite pests have decimated the numbers of feral honey bee colonies, and many farms do not provide enough habitat for native bees to survive in high abundance. This makes fruit production more dependent than ever on managed bees, so it is important to stock fields with sufficient bees to supply enough visits to flowers. Research and experience in blueberries has shown variation across northern highbush cultivars in their needs for bee pollination (Table 1). If fields are managed for maximum production and have higher flower densities and yield, increased levels of honey bee stocking may be needed. While Table 1 shows 2.5 hives per acre for Jersey and Earliblue, some growers are using even greater stocking to ensure good pollination even if spring weather is cool and there are only a few good days for honey bee activity. A good rule of thumb is that you'll need 4 to 8 honey bees per bush in the warmest part of the day during bloom to get blueberries pollinated.

Table 1. Recommended stocking density of honey bees for highbush blueberry pollination (from Pritts & Hancock)

Variety	Honeybee hives/acre
Rubel, Rancocas	0.5
Weymouth, Bluetta, Blueray	1.0
Bluecrop	1.5
Elliot, Coville, Berkeley, Stanley	2.0
Jersey, Earliblue	2.5

Hive placement

If possible, place the colonies in sheltered locations with the entrances facing east. This will encourage earlier activity as the hive warms in the morning sun. Hives should be spread out around the farm to maximize floral visitation, with a maximum of 300 yards between hives.

Using bumblebees

Bumble bees are very efficient at pollinating blueberry, with activity at lower temperatures than honey bees, faster visits to flowers, and higher rates of pollen transfer per flower visit. A bumble bee species native to eastern North America, Bombus impatiens, has been reared for use as a crop pollinator. Our recent evaluations with this species in commercial Jersey fields found they provided comparable yield and fruit set when compared with honey bees. These insects are available commercially and can be shipped directly to the farm. Koppert is one supplier based in Michigan that provides the bees in Quads, each containing four colonies housed within a weather-proof box. One Quad per acre is a good starting density if using bumblebees alone, but growers may also purchase bumble bees to integrate with honey bees, thereby diversifying pollination sources. This approach should help ensure movement of pollen between flowers during conditions that are unsuitable for honey bees.

Rearing bumble bees takes time so orders should be made 14 to 16 weeks in advance to guarantee delivery. Place Quads through the farm and away from honey bee hives. A door on the box of the Quads can be used to collect the bees and move them during spraying, plus they can be moved to later blooming cultivars and crops providing greater flexibility than honey bee colonies.

Native pollinators

In our recent studies at MSU, over 150 native (wild) bee species were found in Michigan blueberry fields. About ten of these were suffi-

Pollinating Highbush Blueberries (continued)

ciently abundant during bloom and carried enough blueberry pollen to be considered valuable crop pollinators. Most of these are solitary ground-nesting digger bees in which the female bee tunnels into the soil, lays an egg in a side tunnel then collects pollen that is placed in a ball next to the egg as food for the larva. This process is repeated multiple times for the many eggs that the female bee lays. These bees need undisturbed soil and have been seen nesting underneath blueberry bushes in the weed-free strip. Other native bees such as bumble bees are active through the whole season. These species also need undisturbed soil to nest in abandoned rodent burrows or grass tussocks, but they will also use old mattresses, compost piles, and other protected sites with small entrances.

In small blueberry fields surrounded by diverse landscapes, native bees can provide the majority of pollination. However, as blueberry farm size and intensity increase, the high abundance of flowers and the small amount of natural area results in too few native bees for full pollination, and so growers rent honey bees. Still, by creating bee habitat that includes a mix of plants that bloom before and after blueberries growers can help support native bees as part of an Integrated Pollination Management strategy.

For more on native plants to support pollinators, visit www.nativeplants.msu.edu. Every little bit of habitat will help, so consider this a long-term process of building bee habitat back into the farm landscape. Currently, the Farm Service Agency is providing a generous cost share for growers in West Michigan counties interested in establishing pollinator habitat in their farms. See your local FSA or NRCS office for details of the SAFE Program for Pollinators. Other programs are available that can also help support improvement of habitat for bees on farmland.

Pest management during pollination

To protect pollinators, do not apply broad-spectrum insecticides when blueberry flowers are open. By monitoring for pest problems carefully before and during bloom, growers can help minimize the need for pest control. If an insecticide application is necessary during bloom, the compounds that are least toxic to bees should be used with careful observation of the pollinator restrictions on the label. Two insecticides that can both be applied during bloom for control of moth larvae in blueberry are products containing Bacillus thuringiensis (Bt) (e.g. Dipel, Javelin), and the insect growth regulators Intrepid and Confirm. Inform the beekeeper two to three days before application so that precautions can be taken to minimize bee exposure. Make applications when bees are not foraging: late evening application is better than morning application because the insecticide has time to be absorbed and for the residue to dry before bees are active. Dust formulations should be avoided because particles can be picked up easily by the bees' hairy bodies. More information and a list of chemicals with their toxicity to bees is available from a recently-updated extension bulletin from Oregon State University at extension.oregonstate.edu/catalog/pdf/pnw/pnw591.pdf.

Summary

Pollination is an essential component of growing blueberries, and high levels of fruit set and getting large evenly ripening berries requires bees to deposit enough pollen on stigmas during bloom. Most of this is done by honey bees currently, while there are other managed and wild bees that can contribute to pollination. As with pest management, reliance on one strategy may not be the most sustainable approach, so diversifying pollination sources can spread risk to ensure consistent pollination and profitable yields every year.

(Reprinted from: Michigan State University Extension News, May 3, 2011.)

Blueberries: Making a Superb Fruit Even Better!

Stephanie Yao

When U.S. Department of Agriculture botanist Frederick Coville started the world's first successful blueberry breeding program, did he envision it would grow into the multi-million dollar industry it is today? Maybe. But a century later, thanks to dedication by Coville, collaborator Elizabeth White, and other USDA and university scientists, blueberries are the second most popular berry consumed in the United States.

A member of the genus *Vaccinium,* blueberries are related to many commercially important and popular fruit species, like cranberry, lingonberry, and huckleberry. Blueberries are mainly native to North America and are lauded for their health benefits.

Coville began researching blueberries in 1906, when he started a series of experiments to learn fundamental facts about them, thinking they might be suitable for cultivation. Coville found that blueberries and many other plants require acid soils to grow, a fact not known to horticulturists prior to his experiments.

After a few years of study, Coville published in 1910 the first bulletin outlining how to successfully grow blueberries from seed to fruit. White, whose family at that time had a successful cranberry farm in New Jersey, helped Coville acquire some of the best wild blueberry plants to use as parents in his breeding experiments.

In 1911, Coville made the first cross of wild blueberry germplasm that eventually led to the release of several blueberry cultivars—ancestors of cultivars currently grown throughout the world—marking the beginning of USDA's current breeding program.

Throughout the years, notable Agricultural Research Service blueberry breeders George Darrow, Donald Scott, and Arlen Draper have made significant contributions to the advancement of blueberries. Today, 100 years after Coville made his first successful cross; ARS researchers throughout the country continue the longstanding goal of improving blueberries so consumers can enjoy them for many more centuries to come.

Blueberries are popular and versatile—you can put them in or on almost anything. But the berry would not be where it is today without the efforts ARS researchers. Today, ARS scientists are busy solving growers' problems with blueberry disease, firmness, split-

Plant geneticist Mark Ehlenfeldt (left) and plant pathologist James Polashock examine blueberry plants and collect data on mummy berry fruit infection to evaluate resistance. **(D2182-1)**

Mitigating Mummy Berry Blight and Fruit Rot

Geneticist Mark Ehlenfeldt and plant pathologist James Polashock are researching mummies—mummified blueberries, that is, which got that way because of a disease. The scientists are with the Genetic Improvement of Fruits and Vegetables Laboratory in Beltsville, Maryland, and are stationed at the Philip E. Marucci Center for Blueberry and Cranberry Research and Extension in Chatsworth, New Jersey. One of ARS's flagship locations for blueberry research, Chatsworth houses the largest collection of potted and in-ground blueberry cultivars in the world.

In addition to releasing improved blueberry varieties, the researchers focus on screening for disease resistance, and mummy berry is one of the most important blueberry diseases in North America.

"Mummy berry is caused by the fungus *Monilinia vaccinii-corymbosi*," says Polashock. "It occurs almost everywhere blueberries are grown and affects all cultivated species, including highbush, lowbush, rabbiteye, and some wild species."

Mummy berry disease is unique because it occurs in two distinct phases. During the blighting phase, small, cup-shaped structures bearing fungal spores sprout from mummified berries concealed in leaf litter on the ground. Wind spreads the spores to blueberry plants, infecting the newly emerging shoots and leaves. A second phase of spores, produced on blighted tissue, is carried by bees to the flowers, beginning the fruit-rotting stage. During this phase, the fungus fills the inside of the blueberry as it grows and causes it to shrink, shrivel, and turn whitish—hence the mummy reference. The mummified fruit drops to the ground and overwinters, waiting to begin the process again in the spring.

In an effort to mitigate this disease, Ehlenfeldt, Polashock, plant pathologist Allan Stretch (now retired), and statistician Matthew Kramer undertook two long-term, simultaneous studies examining cultivar response. The first study, published in the scientific journal *HortScience,* sought to predict cultivar resistance and susceptibility to both phases of the disease. The scientists examined more than 90 blueberry cultivars over 9 to 12

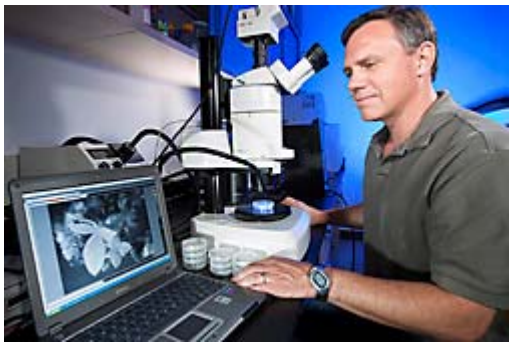
Blueberries: Making a Superb Fruit Even Better! (continued)

more than 90 blueberry cultivars over 9 to 12 years.

"We found that disease response had significant and large genotype-by-environment interactions," explains Ehlenfeldt. "This means that the 2-3 years of data typically used for publication aren't enough to reliably estimate disease resistance. Breeders should be evaluating resistance for 8 years to get a good estimate of cultivar response to this disease." The researchers found an important predictor of blighting to be either the average amount of precipitation at the end of January or rain frequency at the end of March. The average high temperature in late February was predictive for the fruit-infection phase.

Despite predictions of needing 8 years to estimate disease resistance, a second study, also published in *HortScience,* analyzed data from 125 cultivars tested for 2 -6 years for resistance to the blighting phase and 110 cultivars tested for 2-5 years for resistance to the fruit-infection stage. Using innovative statistics developed by Kramer, the researchers were able to rank resistances among the wide range of cultivars. "For breeding, one often needs only to know which cultivars are the most resistant on a relative basis," says Ehlenfeldt. They found several cultivars, such as 'Brunswick' and 'Bluejay', to be resistant to both phases of mummy berry infection.

"Ultimately, documentation of resistance to each phase will help growers select which cultivars to plant," says Ehlenfeldt. "This will also help breeders develop strategies to produce cultivars with superior resistance."



James Polashock screens blueberry tissue cultures for plantlets that have transformed, or changed, their genetic makeup. These plantlets are easy to identify because they express a green fluorescent protein and glow under UV light in the procedure being used. In these transformed plantlets, the genes that respond to the fungus that causes mummy berry are likely to provide clues to resistance to the disease. **(D2181-1)**

Preventing Fruit Splitting

The Thad Cochran Southern Horticultural Laboratory in Poplarville, Mississippi, joined ARS's blueberry research program in the 1970s. Led by horticulturist James Spiers (now retired), the program was started after the region's tung oil industry collapsed because of competition from imported petroleum and a devastating blow from Hurricane Camille in 1969. "Rabbiteye blueberries are native to the Southeast," says Spiers. "ARS has also introduced a southern highbush blueberry to the region. Combined, the two blueberry species have proven to be a viable specialty crop for this area."

Horticulturist Donna Marshall measures blueberry firmness to determine the correlation between fruit firmness and susceptibility to fruit splitting.

So far, Poplarville scientists have released 15 cultivars for growers in the Southeast. But that's not all they do. The researchers also focus on solving problems growers face, such as rain-induced fruit splitting.

"Splitting and cracking occur in southern highbush and rabbiteye blueberries if they receive preharvest rainfall when fully ripe or approaching ripeness," explains horticulturist Donna Marshall. She works with Spiers, geneticist Stephen Stringer, and University of Southern Mississippi associate professor Kenneth Curry on this problem. "Researchers have studied rain-induced splitting in cherries, grapes, and tomatoes, but it hasn't been explored in blueberries."

Splitting can be mild, in the form of a shallow crack in the skin, to severe, such as deep wounds that penetrate the pulp. But regardless of severity, all splitting renders the fruit unmarketable. Growers in Mississippi and Louisiana have reported as much as 20 percent crop loss on highly susceptible cultivars. That amounts to losses of $300 to $500 per acre.

The researchers examined several aspects of fruit splitting in three studies published in *HortScience*. In the first study, published in 2007, the researchers developed a laboratory method to model rain-related splitting in blueberries. Many breeders throughout the country are using this method to more vigorously screen cultivars and selections for splitting susceptibility. The results from field and laboratory tests showed that the rabbiteye cultivar 'Premier' had the lowest incidence of splitting, while widely grown cultivar 'Tifblue' exhibited a high incidence of splitting.

Marshall and colleagues also investigated the correlation between splitting susceptibility and fruit firmness. Laboratory and field tests proved that, in general, firmer fruit has a higher tendency to split. But one selection, named "MS614," exhibited extreme firmness and splitting resistance. The results, published in 2008, suggest that breeders who select for firmness may inadvertently also be selecting for split-

Blueberries: Making a Superb Fruit Even Better! (continued)

ARS researchers in Corvallis, Oregon, are developing and improving blueberries for the Pacific Northwest. Shown here are Elliott blueberry plants in full bloom. **(D2195-2)**

ting. But the laboratory screening method Marshall and colleagues created has helped remedy this problem.

The most recent study, published in 2009, evaluated water-uptake thresholds in split-resistant Premier and split-susceptible Tifblue fruit at all stages of development. The researchers harvested and weighed the fruit, then soaked it in distilled water at room temperature for 24 hours. They found that Premier absorbs more water than Tifblue yet remains intact and experiences minimal splitting.

"Through our studies, we've shown that splitting is a cultivar-specific problem," says Marshall. "But there are still questions, such as what is going on at the cellular level that allows a cultivar to stay intact? With further research, we hope to find the answer."

Generating Genomic Tools for Blueberry Improvement

Geneticists Chad Finn, with the ARS Horticultural Crops Research Unit, and Nahla Bassil, with the ARS National Clonal Germplasm Repository—both in Corvallis, Oregon—are developing and improving blueberries for the Pacific Northwest. Although Corvallis is the most recent ARS location to conduct blueberry breeding, Finn and Bassil are playing an important role in a nationwide, multi-institutional project aimed at developing genomic tools to help improve blueberries.

Close-up of blueberry flowers. **(D2195-3)**

Fruit cluster of Draper, a cultivar released by Michigan State University and named in honor of Arlen Draper, a long-time blueberry breeder with ARS in Beltsville, Maryland. **(D2195-1)**

Funded by the Specialty Crops Research Initiative, the project is led by fellow ARS geneticist Jeannie Rowland in Beltsville, Maryland, and involves several university and international collaborators. Finn and Bassil are working with Michigan State University professor James Hancock in developing a genetic map for highbush blueberry.

"We are currently testing plants made from a cross between the northern highbush cultivar Draper and the southern highbush cultivar Jewel at various locations across the country where blueberry is grown," says Finn. "Our task is to compare the performance of each plant in the field. For the next couple of seasons, we will evaluate the plants for chilling requirement, cold tolerance, and fruit-quality traits."

In the lab, Bassil is processing leaf samples to extract DNA and genotype the plants. The researchers will then merge the field and lab data to determine whether genetic markers that predict a plant's performance can be identified. Bassil is also helping to develop genetic markers and following them through mapping populations and wild blueberry populations for genetic diversity studies.

The new tools, once available, should make blueberry breeding and cultivar development far more efficient. By **Stephanie Yao,** formerly with ARS

This research is part of Plant Genetic Resources, Genomics, and Genetic Improvement (#301), Plant Diseases (#303), and Crop Production (#305), three ARS national programs described at www.nps.ars.usda.gov.

To reach scientists mentioned in this article, contact Robert Sowers, USDA-ARS Information Staff, 5601 Sunnyside Ave., Beltsville, MD 20705-5129; (301) 504-1651.

Blueberries: Making a Superb Fruit Even Better! (continued)

Blueberries of the World Housed in Unique Collection

Blueberries from throughout the United States—and more than two dozen foreign countries—are safeguarded at America's official blueberry genebank. Located in Corvallis, Oregon, this extensive living collection includes domesticated blueberries and their wild relatives, carefully maintained as outdoor plants, potted greenhouse and screenhouse specimens, tissue culture plantlets, or as seed.

The genebank's purpose is to ensure that these plants, and the diverse gene pool that they represent, will be protected for future generations to grow, study, improve, and enjoy. Plant breeders, for example, can use plants from the collection as parents for new and even better blueberries for farm or garden.

Blueberries and several other berries are among the fruit, nut, and specialty crops housed at what's officially known as the ARS National Clonal Germplasm Repository-Corvallis. The repository is part of a nationwide, ARS-managed network of plant genebanks.

Likely the most comprehensive of its kind in the world, the blueberry collection nevertheless continues to expand, according to research leader Kim E. Hummer. Some acquisitions, referred to as "accessions," are donations from breeders. Others are acquired through collecting expeditions, which have taken plant explorers to, for example, Russia, China, Ecuador, and Japan, as well as throughout the United States.

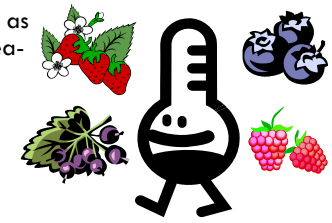
"We have focused on collecting blueberry relatives that may have immediate use for U.S. breeders," says Hummer. "For example, we've acquired native species of wild blueberries from the Pacific Northwest that bear fruit with pigmented flesh, or pulp. Some breeders are trying to breed some of these species into the familiar highbush blueberry that has a white interior. If breeders can put color on the inside of berries through crossbreeding the internal-color berries with the highbush plant, they may be able to produce a blueberry that gives fuller color to processed blueberry products, such as jams, jellies, juice, and dried or frozen fruit."

Other prized specimens at the genebank may someday become landscaping favorites. "We have *Vaccinium praestans,* or redberry Kraznika, from Russia, China, and Japan," says Hummer. "It's low growing and is called 'rock azalea' in Japan. This red-fruited berry plant is suitable for northern latitudes and would be an interesting and attractive ground cover that comes complete with edible fruit."—By **Marcia Wood,** Agricultural Research Service Information Staff.

Kim E. Hummer is with the USDA-ARS National Clonal Germplasm Repository, 33447 Peoria Rd., Corvallis, OR 97333; (541) 738-4201.

*(**"Blueberries: Making a Superb Fruit Even Better!"** was published in the **May/June 2011** issue of Agricultural Research magazine.)*

MAY BERRY BAROMETER – Cathy Heidenreich, Cornell University



Heavy April showers brought more than May flowers, causing delays in completion of winter pruning as well as spring planting. Growers across the state have been unable to get into fields to do early season berry work.

Water-laden soils are also making early pest management applications difficult if not impossible. Many were unable to get delayed dormant applications on in bushberry and caneberry plantings for canker management. Early season weed management applications have been delayed significantly.

Strawberry growers with a history of leaf spot diseases were sometimes unable to get applications on in a timely fashion and those who did were unable to re-cover plantings after torrential downpours washed off existing residues. Areas where standing water occurred in plantings may have provided opportunity for root rot issues to develop later in the season.

We will need to keep close track of what's happening in the field to offset some of these difficulties as the season progresses.

On another front, we are back on track this season in terms of degree day accumulations, compared to last year's 2-week earlier season for most berry crops. Notwithstanding, keep your weather eyes open as we are under the gun for possible frost damage in strawberries and blueberries in the coming weeks.

ALL BERRY CROPS:

Frost protection – We are at risk from now through the end of the month with blueberries and strawberries, especially if we get any sudden warm ups. **REMINDER:** Growers with NAP insurance should call in/report even *possible* cold/frost damage losses to FSA within 7 – 10 days of occurrence to qualify.

Fertilization – Now is the time for the first of 2 split applications on blueberries, raspberries and Ribes.

Water management - Irrigate as needed to maintain 1-2" water per week.

Weed management – Complete early season applications as weather permits. Record efficacy of any pre-emergent applications. Scout for newly emerging weeds.

Pest management

Review last year's pest management notes to know what pests you may expect and when to watch for them. Set up monitoring systems as needed: sticky cards, traps, etc.

Scout! Record pest frequency and locations.

If you see problems developing, check out the newly revised and expanded berry diagnostic tool for help in identifying the culprits:

See Cornell Pest Management Guidelines for Berry Crops for management options for various pests.

A pest to keep an eye out for is new to our region. Brown Marmorated Stinkbug has been reported and confirmed in several areas of the state in recent months. Significant damage to tree fruit, berries, vegetables and soybeans have been recorded in surrounding states, as well as nuisance reports from homeowners. For more on this pest:

STRAWBERRIES:

Established plantings:

Frost protection –For an excellent overview of frost protection in strawberries see: http://www.omafra.gov.on.ca/english/crops/facts/frosprot_straw.htm. **NOTE:** Frost injury on blossoms and frequent rains are a set up for Botrytis fruit rot (gray mold) in strawberries. Growers should be taking every precaution to protect open blossoms and fruit from infection. Angular leaf spot outbreaks are also a possibility with extensive use of overhead irrigation.

Weed management – Poast or Select for perennial grasses; Stinger for dandelions and thistles; Prowl H20 for banded applications between rows. Hooded or shielded applications of Gramoxone Inteon or Chateau to row middles; do not apply after fruit set. Follow any special instructions when making applications (gal/acre, psi, shielded application only, etc.). Remember to include any adjuvant (s))) listed on the label.

Disease management

Leaf spot diseases – Conditions have been very favorable for disease development already this season. If you had problems with leaf diseases last season early season applications should be made.

Gray mold (Botrytis) - Protection of blossoms is critical in gray mold management. While excellent gray mold protection is generally obtained with 2 fungicide sprays eat early bloom (10-20%) and 10 days later, any occurrences of early season frost and/or continued rains may make continued fruit protection prior to harvest highly desirable.

Leather rot –Leather rot could become an issue with a lot of water standing in the fields. If you have past history of this disease in your planting consider foliar sprays of Aliette, Agri-Phos or Phostrol (similar to Aliette) should provide control. Dr. David Handley of University of Maine recommends a spray during bloom and fruit development.

Anthracnose – This disease may occur on both green and ripe fruit, but is most common on ripe fruit following periods of warm, wet weather. Monitor fields for the presence of anthracnose, particularly if favorable weather conditions exit. **Note**: Fungicides will not stop an infection once it has begun. In fields with a previous history of the disease a protective fungicide

MAY BERRY BAROMETER –(continued)

schedule is recommended.

Arthropod pest management (insects and mites)

Bud weevil (clipper) – Adults puncture blossom buds while feeding and deposit eggs in the nearly mature buds. Buds are then girdled so they hang by a mere thread or fall to the ground. Injury is most likely along field edges or when fields border woodlots or other suitable sites for adult overwintering. Suggestion action threshold is more than one primary or secondary flower bud or more than 2 tertiary flower buds clipped per truss, or more than one injured truss per foot or row.

Tarnished plant bug –Cooler weather may have slowed development slightly. Scout for these any time from just before blossoms open to harvest. Strike flower clusters over a white paper plate. Suggested action threshold is 0.5 nymphs per cluster or 4 out of 15 clusters with 1 or more nymphs.

Spittle bug - This insect also appears around bloom, leaving frothy white masses on stems and leaves. These masses harbor nymphs which pierce stems and suck plant juices. Extensive feeding may lead to plant stunting and reduced berry size. Damaged leaves appear crinkled and darker green than healthy leaves. Spittle masses are a great nuisance to pickers. Suggestion action threshold is one spittle mass per sq. ft. of row.

New plantings:

Plant establishment

Wherever possible, avoid planting until soils have had time to dry out (5-7 days for most soil types). Irrigate after planting to settle soil around roots.

Runners need good soil contact to root. Keep the 18" planting strip weed free by hand weeding or using cultivation equipment for good runner establishment. Direct runner plants from aisles back into planting row area. Remove blossoms as they open to encourage good plant establishment and growth.

Remove flower clusters and blooms as they emerge to promote good plant establishment.

Disease management

Monitor new plantings for leaf spot, especially if overhead irrigation is in use. If disease is detected protectant sprays should be considered if conditions are favorable for subsequent disease development.

Arthropod pest management (insects and mites)

New plantings should also be monitored for white flies and two-spotted spider mites.

BLUEBERRIES:

Established plantings:

Frost protection – For a review of critical temperatures: http://web1.msue.msu.edu/vanburen/crtmptxt.htm and a discussion of overhead irrigation for blueberry frost protection: http://web1.msue.msu.edu/vanburen/bbsprink.htm.

Weed management –Gramoxone Inteon or Scythe before new cane emergence. Follow any special instructions when making applications (gal/acre, psi, shielded application only, etc.). Remember to include any adjuvant(s) listed on the label. Hand-weed in row, mow row middles and borders.

Disease management

Mummyberry – This could be a banner year for mummyberry disease problems, given the recent rains. Plantings with a history of this disease should already be implementing a protective spray program for blossoms. Plantings without previous history of disease should be monitored for signs of primary infection (shoot blight phase). Infected leaves and shoots wilt, turn violet brown, and die. Grayish masses of spores may be evident along midribs of blighted leaves. If shoot blight is detected in your planting, protection of blossoms is essential. *A mummyberry article by Dr. Kerik Cox in this issue provides more details.*

Blossom blight – Recent wet weather may trigger outbreaks of blossom blight. These may have several causes. If you have a history of this disease you may want to consider protectant sprays when rainy, foggy weather prevails during pre-bloom and bloom.

Arthropod pest management (insects and mites)

Cranberry and cherry fruitworms –Adult moths appear during late May to early June. Use pheromone traps to monitor adult flight activity and aid in timing of applications. For more information on fruitworms see: http://www.fruit.cornell.edu/Berries/bbpdf/bbfruitworm.pdf.

New plantings:

Plant establishment

Gently rub off emerging flower buds between the palms of the hands to promote good plant growth and establishment.

Weed management

Devrinol may be applied for weed management before seedling weeds emerge. Till or water in within 24 hours. Hand weeding and mulch within row for weed management.

MAY BERRY BAROMETER – (continued)

RASPBERRIES AND BLACKBERRIES:

Established plantings:

Weed management –Aim, Gramoxone Inteon or Scythe before new cane emergence. Can suppress primocanes. Hand-weed in row, mow row middles and borders.

Arthropod pest management (insects and mites)

Raspberry fruit worm – Watch for raspberry fruit worm adults (small light brown beetles) in early May when they begin feeding on young leaves and buds. Adults skeletonize leaves and hinder fruit development. Small larvae feed inside flower buds and then bore into young fruit, causing them to dry up or decay and fall off. These pests are especially a problem in weedy fields. Protectant applications should be made as soon as damage is detected in early spring (just before blossoms open).

Raspberry sawfly –Sawfly larvae are ¼" pale green worms that feed on the outer edges of leaves, chewing out irregular holes and sometimes skeletonizing leaves. These insects are also active in early May; products are often effective against both insects; see labels for details.

New plantings:

Weed management – Apply Devrinol after planting before seedling weeds emerge. Till or water in within 24 hours. Follow any special instructions when making applications (gal/acre, psi, shielded application only, etc.). Remember to include any adjuvant (s) listed on the label. Use mulch in-row for 1st year on lighter soils. . Hand weed in-row on heavier soils.

CURRANTS AND GOOSEBERRIES:

Established plantings:

Pollination – Wild bees and other insects are efficient pollinators but cannot always be depended upon due to fluctuating population numbers. Where bee activity is less than desired, honeybees can be moved in quickly and in large numbers. Hives should be set at about 25% bloom at a density of 1-2 hives per acre. Locate hives in the centers of fields. Mow weed and ground cover flowers before introducing bees.

Weed management – Gramoxone Inteon or Scythe before new cane emergence.

Arthropod pest management (insects and mites)

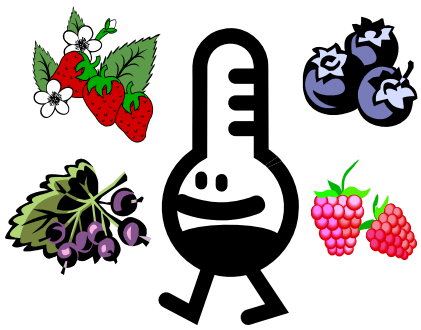
Currant aphid – This aphid is most commonly seen on red and white currant, and sometimes gooseberry. Infested leaves are cupped, galled, distorted and discolored. Honeydew secreted by aphids covers foliage and fruit with a sticky coating.

Gooseberry fruit worm – adults lay eggs in flowers of gooseberries, currants and Jostaberries. Larvae burrow into berries, weaving portions of stems together with silken webbing.

Imported currant worm – Worms of this pest feed first in colonies then singly, voraciously stripping plants of foliage. Up to 3 generations a season may occur if weather conditions are favorable. Sprays should be applied as soon as worms appear. Although these larvae resemble other lepidopteran worms they are not related and **cannot** be controlled with BT.

New plantings:

Weed management - Hand-weeding or spot applications to control weeds.



Weather Notes

NEW YORK CROP WEATHER SERVICE NOTES

Week ending April 24th: A rather cool and unsettled period across the state with periods of showers and ample cloud cover as a series of storm systems impacted the region through most of last week. However, by Friday a large Canadian high pressure system settled across the entire region with below normal temperatures but dry weather. Another storm system approached to start the holiday weekend with more clouds and periods of rain.

Week ending May 1st: A mild, stormy and very wet week occurred across New York State. Mainly light precipitation fell across the state on Sunday as a frontal boundary stalled just south of the state. This boundary then lifted north as a warm front Tuesday into Wednesday bringing very mild temperatures with highs reaching the 80's in many areas but also very heavy rain and severe weather which lasted through Thursday when a cold front moved across the state with very strong winds behind the front across the western half of the state. Severe thunderstorms produced damaging winds ad tornadoes across the state during the mid week period and the heavy rain resulted in record flooding in some areas. Only the southeast corner of the state escaped the heavy rain and rainfall totals in those areas were generally under half an inch. Drier and cooler weather prevailed on Friday and Saturday as high pressure moved into the state. Temperatures for the week averaged around 10 degrees above normal while precipitation averaged 2 to 4 times the normal rainfall for the week with the greatest amounts falling from the Great Lakes, Mohawk Valley and upper Hudson Valley Climatic Divisions northward.

Strawberry plants looked good coming into the delayed spring in Albany County, no blooms yet.

Week ending May 8th—The week began with high pressure across the region on Sunday allowing for dry conditions. However, a frontal system approaching the state began to spread showers across western areas by Monday. This led to a period of steady rainfall for Tuesday into Wednesday, as a wave of low pressure moved along the slow moving frontal boundary. With the ground already saturated due to heavy rainfall from the previous week, some flooding continued mainly across northern and eastern New York. A few scattered rain showers continued for Thursday as an upper level trough remained over the region. Most areas remained dry for Friday. Another weak upper level disturbance moved across the region for the weekend which allowed for a few additional light rain showers and isolated thunderstorms for Saturday. The week began with temperatures rather close to seasonal averages for Sunday and Monday. Daytime temperatures were even above normal in eastern and southern areas for Tuesday ahead of the approaching storm. However, with the steady rainfall, many areas saw daytime temperatures below average for Wednesday. With the upper level trough overhead, temperatures remained cool for Thursday. Overnight lows were chilly for Thursday and Friday mornings and a few places saw areas of frost develop especially for northern, central and eastern parts of the state. Both maximum and minimum temperatures returned to near normal levels for Friday and Saturday.

Strawberry fields were blooming and some early varieties were close to full bloom in Long Island.

Weather Data for Week Ending Sunday, April 24, 2011

Station	Temperature (°F)				Growing Degree Days Base 50° 1/			Precipitation (Inches) 1/			
	High	Low	Avg	Dep. from Norm	Week	Season	Dep. from Norm	Week	Dep. from Norm	Season	Dep. from Norm
Hudson Valley											
Albany	57	27	46	-4	4	33	+17	0.96	0.26	3.37	+0.98
Glens Falls	55	24	43	-4	0	24	+16	1.03	+0.33	2.57	+0.22
Poughkeepsie	62	27	48	-2	8	41	+15	0.82	-0.02	4.34	+1.62
Mohawk Valley											
Boonville	53	25	37	-7	0	6	-1	1.95	+0.90	5.07	+1.34
Champlain Valley											
Plattsburgh	55	30	42	-4	0	11	+1	1.01	+0.31	3.01	+0.79
St. Lawrence Valley											
Canton	57	25	39	-6	0	6	-1	1.31	+0.61	3.84	+1.59
Massena	64	24	42	-4	4	21	+13	0.54	-0.09	4.12	+2.00
Great Lakes											
Buffalo	67	31	43	-5	6	36	+20	1.75	+1.05	4.12	+1.85
Wales	67	27	42	-4	5	21	+14	1.91	+1.01	4.44	+1.39
Niagara Falls	70	30	43	-6	7	33	+15	1.52	+0.76	3.83	+1.28
Rochester	70	30	44	-5	7	40	+21	2.30	+1.67	4.16	+2.09
Watertown	65	25	42	-4	3	21	+13	1.19	+0.57	3.83	+1.85
Central Lakes											
Dansville	72	29	46	-3	14	45	+28	1.51	+0.81	3.25	+1.01
Geneva	68	31	44	-4	4	21	+7	2.09	+1.39	4.08	+1.77
Honeoye	69	27	44	-4	7	29	+14	2.05	+1.35	4.00	+1.65
Ithaca	72	27	43	-3	5	20	+10	1.08	+0.38	5.10	+2.79
Penn Yan	68	28	45	-3	9	32	+18	1.15	+0.45	3.26	+0.95
Syracuse	70	30	46	-3	12	47	+30	2.58	+1.79	5.08	+2.41
Warsaw	65	27	40	-5	3	13	+8	2.65	+1.82	5.18	+2.47
Western Plateau											
Angelica	67	28	43	-1	5	20	+16	1.76	+1.08	5.09	+2.86
Elmira	73	24	46	-2	12	31	+19	0.99	+0.36	3.45	+1.33
Franklinville	71	26	42	-2	6	19	+16	2.15	+1.37	5.00	+2.38
Jamestown	73	30	44	-2	9	26	+19	2.26	+1.35	5.36	+2.31
Eastern Plateau											
Binghamton	69	29	43	-4	4	18	+8	1.09	+0.32	4.72	+2.25
Cobleskill	68	26	42	-4	1	11	+3	1.23	+0.46	3.11	+0.48
Morrisville	67	26	40	-6	0	7	+1	1.48	+0.71	5.79	3.36
Norwich	70	25	42	-5	4	19	+11	1.36	+0.56	4.88	+2.23
Oneonta	68	26	43	-2	3	15	+8	1.40	+0.56	4.39	+1.67
Coastal											
Bridgehamton	61	36	50	+2	7	13	+4	0.06	-0.85	2.65	-0.54
New York	66	40	52	-2	24	59	+5	0.83	-0.08	4.49	+1.48

1/ Season accumulations are for April 1st to date. Weekly accumulations are through 7:00 AM Sunday Morning. Data courtesy NY NASS.

Weather Data for Week Ending Sunday, May 1, 2011

Station	Temperature (°F)				Growing Degree Days Base 50° 1/			Precipitation (Inches) 1/			
	High	Low	Avg	Dep. from Norm	Week	Season	Dep. from Norm	Week	Dep. from Norm	Season	Dep. from Norm
Hudson Valley											
Albany	84	37	59	+9	67	100	+62	1.29	+0.59	4.66	+1.57
Glens Falls	80	35	56	+8	46	70	+46	2.20	+1.46	4.77	+1.68
Poughkeepsie	84	37	62	+11	88	129	+76	0.47	-0.43	4.81	+1.19
Mohawk Valley											
Boonville	75	35	52	+7	32	38	+20	4.10	+3.05	9.17	+4.39
Champlain Valley											
Plattsburgh	78	32	55	+7	40	51	+25	2.62	+1.95	5.63	+2.74
St. Lawrence Valley											
Canton	76	34	52	+5	27	33	+13	2.40	+1.70	6.24	+3.29
Massena	77	34	54	+7	34	55	+31	1.12	+0.51	5.24	+2.51
Great Lakes											
Buffalo	82	38	57	+7	56	92	+56	1.62	+0.92	5.74	+2.77
Wales	82	35	54	+7	40	61	+40	2.00	+1.16	6.44	+2.55
Niagara Falls	82	35	55	+5	44	77	+36	1.30	+0.60	5.13	+1.88
Rochester	81	37	55	+5	46	86	+43	1.53	+0.90	5.69	+2.99
Watertown	83	31	53	+5	42	63	+40	1.73	+1.11	5.56	+2.96
Central Lakes											
Dansville	84	41	58	+9	61	106	+68	1.25	+0.59	4.50	+1.60
Geneva	79	41	55	+6	44	69	+36	2.35	+1.65	6.43	+3.42
Honeoye	80	38	56	+7	48	79	+45	1.43	+0.74	5.43	+2.39
Ithaca	83	37	56	+8	52	72	+46	2.21	+1.51	7.31	+4.30
Penn Yan	81	39	56	+7	49	81	+48	2.50	+1.80	5.76	+2.75
Syracuse	82	41	59	+9	65	112	+71	3.49	+2.72	8.57	+5.13
Warsaw	79	34	53	+7	37	50	+34	1.41	+0.64	6.59	+3.11
Western Plateau											
Angelica	80	38	55	+9	45	65	+50	2.20	+1.57	7.29	+4.43
Elmira	83	36	57	+8	50	81	+51	3.19	+2.53	6.64	+3.86
Franklinville	80	38	53	+8	32	51	+40	1.03	+0.26	6.03	+2.64
Jamestown	81	33	54	+8	40	66	+47	0.89	-0.01	6.25	+2.30
Eastern Plateau											
Binghamton	81	40	57	+8	55	73	+46	3.84	+3.07	8.56	+5.32
Cobleskill	80	35	55	+8	41	52	+29	2.63	+1.86	5.74	+2.34
Morrisville	79	38	55	+7	44	51	+32	1.86	+1.09	7.65	+4.45
Norwich	83	35	55	+8	46	65	+41	2.71	+1.88	7.59	+4.11
Oneonta	83	35	56	+9	44	59	40	3.38	+2.49	7.77	+4.16
Coastal											
Bridgehamton	75	41	59	+9	62	75	+50	0.29	-0.62	2.94	-1.16
New York	80	50	62	+7	88	147	+53	0.64	-0.27	5.13	+1.21

1/ Season accumulations are for April 1st to date. Weekly accumulations are through 7:00 AM Sunday Morning. Data courtesy NY NASS.

Weather Data for Week Ending Sunday, May 8, 2011

Station	Temperature (°F)				Growing Degree Days Base 50° 1/			Precipitation (Inches) 1/			
	High	Low	Avg	Dep. from Norm	Week	Season	Dep. from Norm	Week	Dep. from Norm	Season	Dep. from Norm
Hudson Valley											
Albany	75	32	55	+2	44	144	+72	0.75	+0.03	5.41	+1.60
Glens Falls	71	29	52	-1	26	96	+46	1.05	+0.28	5.82	+1.96
Poughkeepsie	78	37	56	+2	45	174	+81	0.79	-0.19	5.60	+1.00
Mohawk Valley											
Boonville	64	33	47	-2	5	43	+8	1.70	+0.71	10.87	+5.10
Champlain Valley											
Plattsburgh	69	37	51	-2	21	72	+21	2.34	+1.71	7.97	+4.45
St. Lawrence Valley											
Canton	69	32	49	-2	15	48	+5	1.49	+0.81	7.73	+4.10
Massena	72	32	52	+1	30	85	+36	0.95	+0.39	6.19	+2.90
Great Lakes											
Buffalo	64	39	50	-3	17	109	+42	1.29	+0.62	7.03	+3.39
Wales	63	35	48	-3	10	71	+27	1.49	+0.68	7.93	+3.23
Niagara Falls	65	38	51	-3	15	92	+17	1.20	+0.52	6.33	+2.40
Rochester	67	39	51	-3	23	109	+30	0.83	+0.23	6.52	+3.22
Watertown	71	29	49	-3	14	77	+31	1.21	+0.64	6.77	+3.60
Central Lakes											
Dansville	69	36	52	-2	27	133	+63	1.27	+0.64	5.77	+2.24
Geneva	67	40	51	-2	20	89	+25	1.37	+0.72	7.80	+4.14
Honeoye	67	34	50	-3	16	95	+30	1.32	+0.69	6.75	+3.08
Ithaca	66	32	49	-3	16	88	+37	0.87	+0.17	8.28	+4.57
Penn Yan	67	40	51	-2	19	100	+36	1.16	+0.51	6.92	+3.26
Syracuse	72	41	54	+1	38	150	+73	1.19	+0.44	9.76	+5.57
Warsaw	61	35	46	-4	6	56	+21	1.40	+0.63	8.54	+4.29
Western Plateau											
Angelica	65	35	49	-1	11	76	+42	1.31	+0.71	8.60	+5.14
Elmira	68	34	50	-3	18	99	+40	0.53	-0.15	7.17	+3.71
Franklinville	64	31	47	-2	5	56	+30	1.83	+1.06	7.86	+3.70
Jamestown	65	34	49	-1	11	77	+39	1.99	+1.14	8.24	+3.44
Eastern Plateau											
Binghamton	67	36	51	-2	20	93	+39	2.36	+1.64	10.92	+6.96
Cobleskill	72	39	52	+2	28	80	+33	1.06	+0.29	6.80	+2.63
Morrisville	66	34	48	-3	12	63	+21	1.05	+0.28	8.70	+4.73
Norwich	70	33	49	-3	12	77	+28	1.70	+0.88	9.29	+4.99
Oneonta	73	38	52	+3	24	83	+42	1.80	+0.86	9.57	+5.02
Coastal											
Bridgehamton	69	35	54	+2	34	109	+58	0.24	-0.67	3.18	-1.83
New York	71	47	59	+2	66	213	+63	0.50	-0.41	5.63	+0.80

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New York Berry News is a monthly commercial berry production newsletter provided by Cornell Berry Team members.

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What We Learned on a Trip to the Dean's Office

–(continued from page 1)

membership form to you.

Paying for the expertise and knowledge provided by our land grant faculty and staff needs to be a shared responsibility between the direct beneficiaries (growers) and indirect beneficiaries (residents of New York State). In the past, New York State covered almost all of these costs. But times change, and if growers do not step in to pick up the slack, we will either not have the expertise available, or the expertise that is available will not be used for direct grower contact and benefit. Those willing to pay for the time (other countries, granting agencies, consulting agencies and the like) will get the time spent by our faculty and staff.

The Board is also working on a longer term plan that we hope will bring in dollars to be used for research in a longer term sustainable way. Dean Boor is very supportive of our efforts and as those plans develop further, we will keep you updated. We appreciate the time that Dean Boor spent with us. She is very supportive of grower groups – she grew up on a dairy farm in New York – but unfortunately, times are difficult, and I especially appreciate her straight forward approach to these difficult times. Groups that help themselves will come out ahead of those that don't. Let us make the Berry Growers Association be one of those groups that gains support and expertise, rather than losing what we currently have.