Cornell University
College of Agriculture and Life Sciences

New York Berry News

Volume 12, Number 8 **August 19, 2013**

Events Calendar

August 28, 2013, *Aronia Berry Field Day,* 9:30 a.m. – 12 PM, Coldbrook Farm, 16952 E 6000N Road, Momence, IL 60954. Register for this free event by calling University of Illinois Extension, Kankakee County at 815-933-8337 by August 27, 2013. For additional information, please email aronia.us@att.net or jtheu50@illinois.edu or visit www.coldbrookfarm.net.

December 3-6, 2013 – *Joint North Carolina Strawberry Growers Association and North American Strawberry Growers Association Conference,* Sheraton Imperial Hotel, Durham, North Carolina. Workshops on Dec. 3, full-day farm tour on Dec. 4, and educational sessions and trade show Dec. 5-6. For more information, email info@ncstrawberry.com, call 919-542-4037, or visit www.ncstrawberry.com. Exhibitor inquiries welcome.

December 10-12, 2013. *Great Lakes Fruit, Vegetable and Farm Market EXPO and Michigan Greenhouse Growers Expo*. More information: http://www.glexpo.com/.

December 17-19, 2013. *New England Vegetable and Fruit Conference*. More Information: http://www.newenglandvfc.org/.

January 21-23, 2014. *Empire State Producers EXPO*. Save the dates! More information forthcoming.

January 28-30, 2014. *Mid-Atlantic Fruit and Vegetable Convention*. Hershey, PA. Save the dates! More information forthcoming.

June 18-25, 2015 – 11th International Rubus & Ribes Symposium, in Asheville, NC, June 21-25, with preconference tour to farms and research sites June 18-20. More info to come. If you are interested in being a sponsor of this event, contact gina_fernandez@ncsu.edu.

Cornell University
Cooperative Extension
Eastern New York Commercial Horticulture

Visit On-Farm Research Trials to learn Innovative Management Techniques for Spotted Wing Drosophila

Tuesday, September 10th, 2013

Spotted Wing Drosophila management has been a major statewide research and extension focus during 2013, with 2 of the projects located in the Capital District region in eastern NY. Through efforts by local berry growers, including members of the NYS Berry Growers Association, and supported by NY state and federal funding, these projects are advancing our understanding of this invasive pest. Plan to join growers, extension educators, Cornell University research faculty, industry and government representatives for updates on innovative management techniques for SWD.

Locations	Times
Fixed Sprayer System in a High Tunnel Raspberry Planting – *The Berry Patch of Stonewall Hill Farm, 15370 NY Route 22, Stephentown, NY 12168.* This NYFVI funded project examines the effectiveness and labor saving attributes of this mode of pest control when faced with a challenging pest like SWD. Owner Dale Ila Riggs has been a leader in the campaign to secure research funding for SWD. The farm also grows blueberries with bird netting and day neutral strawberries in a high tunnel – all for local markets.	2:00 PM-3:30PM
Travel to 2nd site	3:30 PM-4:00PM
Exclusion Netting and Mass Trapping to Control SWD in Organic Blueberries - *Hay Berry Farm, 1276 Babcock Lake Road, Hoosick Falls, NY 12090*. Lawrie Nickerson was awarded a NE SARE Farmer Grant to evaluate netting as a management tool for SWD. She also looked at weed mat and berry quality in the study. The farm features a SMART NET bird net, deer fencing and a portable hand-washing station to meet U-Pick customer needs.	4:00 PM-5:30 PM

Please register by calling Marcie at 518-272-4210 – there is no fee, but it will help us provide the appropriate number of handouts etc. If you get a machine, leave the number attending, your name and a phone number. **This event will happen rain or shine.**

If you have questions, please contact Laura McDermott: 518-791-5038.

Research Supported by funding from Northeast Sustainable Agriculture Research and Education, and

New York Farm Viability Institute.

25 Years of SARE NORTHEAST SARE Sustainable Agriculture Research & Education

NY farm viability INSTITUTE

FROM THE SWD BLOG… *Juliet Carroll, NYS IPM Program*

Chautauqua County – first report

August 8, 2013. Two male SWD were caught on August 7 in traps set in a red raspberry planting in Chautauqua County by Virginia Carlberg and Elizabeth Burgeson, Chautauqua County Cornell Cooperative Extension. With this report, SWD has been found across New York State, from Suffolk County north to Clinton County, west to Niagara County, and south to Chautauqua County. Sustained trap catch has occurred in the Finger Lakes and Lake Ontario Plains. Fruit infestation is being reported in Long Island and the Hudson Valley. Management tactics for SWD are now critically important. (Accumulated GDD 1458, day length 14:07)

Spotted wing drosophila male caught in a red raspberry planting in Chautauqua County on August 7, 2013.

Monroe County – first report

August 7, 2013. A single male SWD was reared from black raspberry fruit collected from a farm in Monroe County on July 22, 2013 by Debbie Breth, Lake Ontario Fruit Program, Cornell Cooperative Extension. Traps collected this week are currently being processed, though traps set at this farm location have not yet caught SWD. Raspberries are very susceptible to SWD infestation. Oviposition can be identified, with a hand lens, magnifying glass, or microscope, by finding the tiny, white breathing tubes on the fruit surface that are attached to the eggs laid under the fruit skin.

Breathing tubes of SWD eggs as seen (red circles and inset) on blackberry fruit, magnified by a microscope. Faruque Zaman, Suffolk County Cornell Cooperative Extension, found heavy SWD oviposition on blackberry fruit (>50% of fruit examined) collected on Long Island the week of July 15.

Erie County – first report

August 7, 2013. A single female SWD was caught in a trap in Erie County by Sharon Bachman, Erie County Cornell Cooperative Extension, and confirmed by me, Juliet Carroll, NYS IPM Program. The trap was set near brambles. SWD is being consistently caught in traps in many locations in NY underlining the need to establish insecticide programs to protect late summer berry crops from infestation by this invasive fruit fly.

A spotted wing drosophila female that was caught in a trap containing an apple cider vinegar drowning solution, as seen with a dissecting microscope. Note the large, serrated ovipositor.

Orleans County – first report

August 5, 2013. Two male and one female SWD were caught in one out of four traps collected by yours truly on July 30 from a sweet cherry orchard in Orleans County. Traps near a raspberry high tunnel and in a blueberry plantation on the same farm did not have SWD in them. (Accumulated GDD 1475; day length 14:31)

Tioga County – first report

August 2, 2013. SWD were caught in traps collected on July 29 that were set in and near high tunnel raspberries in Tioga County by Kat Loeck, Tioga County Cornell Cooperative Extension, and identified today by yours truly. The finding of 16 females and one male underlines the need to take steps to protect berry crops from SWD infestation. (Accumulated GDD = 1336, day length = 14:29)

Niagara County – first report

July 31, 2013. A single male SWD was caught on July 30 in one of two traps set in a raspberry planting in Niagara County by Juliet Carroll, NYS IPM Program. Traps had been moved from an adjacent, renovated strawberry field to the raspberry planting last week. (Accumulated GDD 1273, day length 14:31)

AG NEWS

Apply Now for a NE SARE Farmer Grant

NE SARE Farmer Grants are for commercial producers who have an innovative idea they want to test using a field trial, on-farm demonstration, marketing initiative, or other technique. A technical advisor--often an extension agent, crop consultant, or other service professional--must also be involved. Projects should seek results other farmers can use, and all projects must have the potential to add to our knowledge about effective sustainable practices.

The proposal deadline for the next round of NE SARE farmer grants is December 2, 2013 with awards announced in March. More information, application forms, instructions and sample budget documents are now available at: http://www.nesare.org/Grants/Get-a-Grant/Farmer-Grant.

Agriculture Secretary Announces Funding to Support Small and Emerging Rural Businesses

July 31, 2013. MEMPHIS, Tenn.,– Agriculture Secretary Tom Vilsack today announced that projects in 30 states and the Commonwealth of Puerto Rico will be funded to support small and emerging rural businesses. The U.S. Department of Agriculture (USDA) remains focused on carrying out its mission, despite a time of significant budget uncertainty. Today's announcement is one part of the Department's efforts to strengthen the rural economy. Rural Business-Cooperative Service Administrator Lillian Salerno made the announcement on behalf of Secretary Vilsack during a visit to highlight the activities of the Memphis Bioworks Foundation, Inc., regarding an ongoing project that was previously announced.

"The Obama Administration has been working to create economic opportunities in rural communities and bring well-paying jobs to the people who live there," Salerno said. "Strategic investments in rural businesses like the ones we are highlighting today not only help to deliver more products and services to local customers, they also contribute to rural revitalization and economic development in the small towns where these businesses are located."

The funding was made available through the Rural Business Enterprise Grant (RBEG) program, which promotes development of small and emerging businesses in rural areas. RBEGs may also be used to help fund distance learning networks and employment-related adult education programs. Eligible applicants for the program include public bodies, nonprofit corporations and federally recognized Indian Tribes. Since the beginning of the Obama Administration, the RBEG program has helped create or save more than 73,000 rural jobs, provided over $170.9 million in economic development assistance, improved manufacturing capability, and expanded health care and educational facilities, and has either expanded or helped establish almost 41,070 rural businesses and community projects.

Salerno visited the Memphis Bioworks Foundation to be briefed on progress of a $45,000 grant that is being used to expand the "Soldier to Civilian" (S2C) project. The S2C project was launched by the Crockett Policy Institute in rural west Tennessee to help veterans returning home find employment, and meet the need for qualified agriculture workers in the area. Memphis Bioworks has teamed with the Institute on the S2C project, and the grant will enable the program to be extended to 110 counties in the Delta areas of Arkansas, Mississippi and Tennessee.

Today's announcement includes a complete listing of the 131 recipients receiving more than $6.5 million in USDA funding. The funding is contingent upon the recipients meeting the terms of the grant agreement.

NY State Recipients:

Recipient	Amount	Description
Philmont Beautification, Inc	$30,000	Funds will be used to renovate a building and convert the space to a year-round farmer's market.
Village of Angelica	$99,000	Funds will be used to renovate and rebuild a village electric substation
Hudson Valley Agribusiness Development Corporation	$60,000	Funds will be used to purchase equipment.
Washington County LDC	$90,670	Funds will be used to purchase equipment for a cheese factory expansion project.

The RBEG program finances a broad range of business projects. For example, last year, USDA provided an RBEG to furnish a conference facility at the new terminal for Kaolin Field Airport in Sandersville, Georgia.

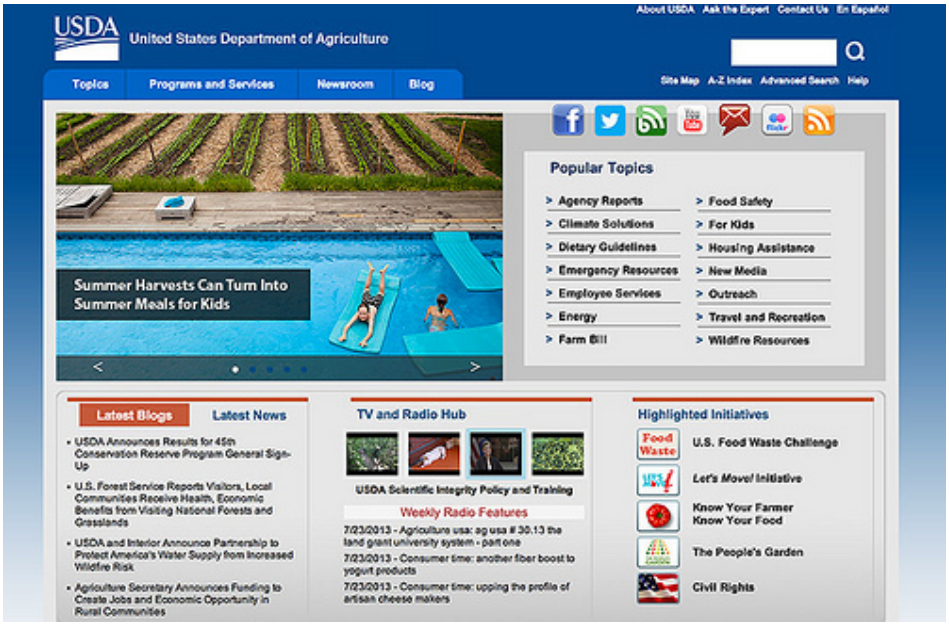
According to Administrator Salerno, today's announcement is another reminder of the importance of USDA programs for rural America. A comprehensive new Food, Farm and Jobs Bill would further expand the rural economy – and she said that's just one reason why Congress must get a comprehensive Food, Farm and Jobs Bill done as soon as possible.

President Obama's plan for rural America has brought about historic investment and resulted in stronger rural communities. Under the President's leadership, these investments in housing, community facilities, businesses and infrastructure have empowered rural America to continue leading the way – strengthening America's economy, small towns and rural communities. USDA's investments in rural communities support the rural way of life that stands as the backbone of our American values. President Obama and Agriculture Secretary Vilsack are committed to a smarter use of Federal resources to foster sustainable economic prosperity and ensure the government is a strong partner for businesses, entrepreneurs and working families in rural communities.

USDA, through its Rural Development mission area, has a portfolio of programs designed to improve the economic stability of rural communities, businesses, residents, farmers and ranchers and improve the quality of life in rural America. USDA has made a concerted effort to deliver results for the American people, even as the Department implements sequestration – the across-the-board budget reductions mandated under terms of the Budget Control Act.

USDA has already undertaken historic efforts since 2009 to save more than $828 million in taxpayer funds through targeted, common-sense budget reductions. These reductions have put USDA in a better position to carry out its mission, while implementing sequester budget reductions in a fair manner that causes as little disruption as possible.

Streamlined Design and New Features for USDA.gov - *Peter Rhee and Bernetta Reese, USDA*
July 24, 2013. Over the past two years, USDA has undergone a major redesign of USDA.gov and most Agency and Office websites. While we've taken major steps to improve the user experience and usability through a streamlined and modern look and feel, we continue to learn and expand on these improvements as we progress through our redesign processes.



exposure for USDA.gov users based on Federal best practices and lessons learned from prior USDA Agency website redesigns. Web and social media analytics also provided key insights to popular content and user preferences, which we continuously evaluate to make adjustments to our digital content.

Enhancements to USDA.gov include:

- Repositioning the homepage photo carousel on the left to optimize content flow and organization
- Placing social media icon links on the top right to maintain consistent navigation across USDA.gov subpages
- A new *TV and Radio Hub* feature on the homepage to highlight USDA's YouTube and Weekly Radio activities
- Expanding our Popular Topics section across two columns for quick and direct access from the homepage
- Two additional graphic badges on the homepage to highlight special programs and initiatives
- Modifications to the overall look and feel to provide a cleaner, less cluttered appearance

Through these enhancements, USDA.gov further extends the OneUSDA vision by incorporating the USDA branding guidelines to our website. We will also work with USDA Agency and Offices to modify their websites to consistently align with these visual standards in the coming weeks.

Following the release of the Digital Government Strategy by the White House in May 2012 — USDA's Office of Communications, Web Communications Division launched a digital content review of the USDA.gov website to revitalize and strengthen its web presence aiming to improve service to the public with high-quality digital government content.

Between 2004 and 2012, USDA published approximately 6,388 web pages, including over 4,000 newsroom pages. Since the launch of the web audit in December 2012, more than 2,000 topic related pages were reviewed and assessed by the web team. Of those pages – over 1,400 were identified as outdated or obsolete and removed from the website, reducing total site content by approximately 25% and topical content by more than 70%.

Improvements were also made to hundreds of pages which included accessibility and usability enhancements and a metrics assessment of all content on the site was conducted. New web measures and best practices have now been implemented to further optimize content and ensure federal guidelines and strategic plans are fully implemented across the site.

In addition, we launched USASearch on the site in January 2013. USASearch is a free search engine tool based on open source technology and is provided by the U.S. General Services Administration (GSA). Since launch we've provided users with a better search experience and enhancements such as:

- Social media integration in search results with Flickr, Twitter, and YouTube.
- Best bets displayed above results with self-selected site content to match search terms.
- RSS feeds included and highlighted in results.
- Type-ahead search suggestions based on commonly used terms.
- Fast and relevant search results returned in less than 400 milliseconds.
- Increased site engagement by bringing together and making multiple web channels, images, and video accessible within search results

With the USASearch tool, we are able to deliver a modernized and customer-centric search experience on USDA.gov. The service has provided significant improvements to our site search technology and the ability to leverage open source technology and seamlessly integrate with other existing platforms and USDA social and multi-media channels across the web.

We are able to fully manage the tool and reduce the amount of resources needed to maintain an enterprise-wide search solution across the Department. Our employees and customers expressed immediate satisfaction. We now have the ability to work with our agencies to further the enhancements provided by this technology and to build upon our total web presence.

FOCUS ON FOOD SAFETY

FDA Extends Public Comment Period 60 Days for Proposed Rules on Preventive Controls for Human Food, Produce Safety

August 8, 2013. FDA today issued Federal Register notices to extend the comment periods on the proposed rules for *Current Good Manufacturing Practice and Hazard Analysis and Risk-Based Preventive Controls for Human Food* and *Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption* 60 days until November 15, 2013. This is the second and final extension of the comment period for these two rules. The extension of the comment period also applies to the information collection provisions associated with the proposed rules.

FDA is taking this action to allow interested persons the opportunity to consider the interrelationships between these two proposals, which were published on January 16, 2013, and the two new proposed rules that published on July 29, 2013, *Foreign Supplier Verification Programs for Importers of Food for Humans and Animals* and the *Accreditation of Third-Party Auditors/Certification Bodies to Conduct Food Safety Audits and to Issue Certifications*.

These four proposed rules are part of the foundation of, and central framework for, the modern food safety system envisioned by Congress in the FDA Food Safety Modernization Act (FSMA).

To learn more about the rules, including how to submit comments electronically:

- Foreign Supplier Verification Programs (FSVP) for Importers of Food for Humans and Animals Proposed Rule
- Accreditation of Third-Party Auditors/Certification Bodies to Conduct Food Safety Audits and to Issue Certifications Proposed Rule
- Current Good Manufacturing Practice and Hazard Analysis and Risk-Based Preventive Controls for Human Food Proposed Rule
- Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption Proposed Rule

For more information:

- Federal Register Notice for Current Good Manufacturing Practice and Hazard Analysis and Risk-Based Preventive Controls for Human Food - Extension of Comment Period
- Federal Register Notice for Standards for Growing, Harvesting, Packing, and Holding of Produce for Human Consumption - Extension of Comment Period

FDA's Proposed Produce Safety Rules—an Interactive Discussion

Wednesday, August 28, 2013 2:00 - 3:00 p.m. Eastern Time

The U.S. Department of Agriculture (USDA) invites you to take part in a free, interactive webinar on the Food and Drug Administration's (FDA) proposed produce safety rules. While USDA has no formal role in the development or implementation of the proposed rules for FDA's Food Safety Modernization Act (FSMA), the Department's Agricultural Marketing Service (AMS) Fruit and Vegetable Program is hosting the webinar as a service to the produce industry.

Michael Taylor, J.D., FDA's Deputy Commissioner for Foods and Veterinary Medicine, will deliver brief remarks on two groundbreaking proposed rules for produce safety and preventive controls for human food under FSMA, with an emphasis on the proposed Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption. The proposed rules were published in the Federal Register on January 16, 2013; the comment period has been extended until September 16, 2013.

Brief formal remarks will be followed by a real-time, interactive question-and-answer session featuring Mr. Taylor and members of FDA's produce safety staff.

This informative session is part of AMS' ongoing webinar series designed for fruit and vegetable growers, packers, shippers, processors, wholesalers, and retailers of all sizes. The webinar is free and available to anyone with Internet access. Registration is required and space is limited. REGISTER HERE: http://bit.ly/17TR8yu

Produce Safety Alliance Update August 12, 2013 - *Gretchen Wall, Produce Safety Alliance Coordinator*

Two New FSMA Rules Released & Comment periods for Produce Safety and Preventive Controls Rules Extended to November 15th, 2013

On August 8th, the FDA issued Federal Register notices to extend the comment periods on the proposed rules for Current Good Manufacturing Practice and Hazard Analysis and Risk-Based Preventive Controls for Human Food and Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption 60 days until **November 15, 2013.**

FDA is taking this action to allow interested persons the opportunity to consider the interrelationships between these two proposals, which were published on January 16, 2013, and the **two new proposed rules** that published on July 29, 2013, Foreign Supplier Verification Programs for Importers of Food for Humans and Animals and the Accreditation of Third-Party Auditors/Certification Bodies to Conduct Food Safety Audits and to Issue Certifications.

The Foreign Supplier Verification Programs (FSVP) and the Accreditation of Third Party Auditors will work together with the standards proposed in January 2013 for produce safety and preventive controls. Comments on the two new proposed rules on the safety of imported food and accreditation of third party auditors are due by November 26, 2013. Please take time to review all of these rules, talk with other growers, and submit your comments!

How to submit your comments for the proposed Produce Safety Rule:

1. Comment electronically at http://www.regulations.gov/#!docketDetail;D=FDA-2011-N-0921

2. Written comments may be faxed to the FDA at 301-827-6870 or you may mail them to:
   Division of Dockets Management (HFA-305)
   Food and Drug Administration
   5630 Fishers Lane, Room 1061
   Rockville, MD 20852

New FDA Fact Sheets Available

In effort to expand its outreach to small and medium size growers, the FDA has released a series of new publications to address questions that have arisen since the proposed Produce Safety rule was issued in January 2013. The new publications focus on key issues such as agricultural water and alternatives and variances to certain provisions in the proposed rule. In addition, a new section entitled "Resources for Farmers" has been created on the FSMA Proposed Rule for Produce Safety page. The FDA Produce Safety Staff plan to release several other fact sheets and resources in the coming months, so stay tuned for more information!

New educational materials available:

- Interview with Michael Taylor, Deputy Commissioner for Foods and Veterinary Medicine
- Fact sheet on Agricultural Water and Diagram: Subpart E
- Fact sheet on Alternatives and Variances
- Commodities Related to Outbreaks Change Frequently

Outbreaks & Recalls

- Approximately 5,400 cantaloupes have been recalled because of a possible health risk to consumers. The produce, which was distributed to small, independent grocers in Michigan July 23-26, has the potential to be contaminated with *Listeria monocytogenes* and should be discarded and not consumed. For more information, visit the FDA recall notice issued on August 6, 2013.

- The investigation of the June Cyclosporiasis outbreak continues with new updates from the CDC on August 9th and FDA on August 6th. As of August 9, 2013, the CDC has been notified of 535 cases of Cyclospora infection from the following 18 states: Arkansas, Connecticut, Florida, Georgia, Illinois, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York (including New York City), Ohio, Texas, Virginia, and Wisconsin. Nebraska and Iowa have performed investigations and based on their analysis, the Cyclospora infections in their states are linked to a salad mix.

Join Us!

Our general listserve is still the best way to stay in touch with the PSA! To sign up, please visit our website at http://producesafetyalliance.cornell.edu/psa.html. Already signed up? Please share this newsletter with friends and colleagues who might also be interested in produce safety.

'Like' the Produce Safety Alliance on Facebook!

In addition to our general listserve, we've finally moved into the 21st century and now have an active Facebook page to get out the latest news related to produce safety and the proposed FSMA regulations! For those of you that prefer to get your bytes of information via social media, check out our newly launched page at https://www.facebook.com/ProduceSafetyAlliance.

As always, please do not hesitate to contact us if you have any questions, comments, or ideas.

Betsy Bihn, PSA Director
eab38@cornell.edu

Gretchen Wall, PSA Coordinator
glw53@cornell.edu

New FSMA Resource for Farmers Now Available

I have a Farm - Does the proposed preventive controls rule affect me? (PDF: 292KB) will help you determine if the proposed rule on preventive controls would apply to your farm. For additional information, see the FSMA Proposed Rule for Preventive Controls for Human Food Factsheet.

TUNNEL TALK

A New Way to Manage Weeds in the Anchor Rows of Tunnels - *Romy Basler and Mark Bolda, University of California Cooperative Extension*

A cover crop can be a useful way to prevent weeds in anchor rows.

July 26, 2013. Cover crops in anchor rows can suppress weed growth and additionally help to minimize soil erosion and nutrient and sediment loss when it rains. Densely planted cover crops can outcompete weed seedlings germinating from the soil and prevent wind-dispersed seeds from reaching the wet soil surface. Have a look at the newly revised weed section in the Caneberries Pest Management Guidelines on the UC IPM web site. *Top right: Weeds growing in anchor row in caneberry tunnel production. Photo courtesy Oleg Daugovish, UCCE.*

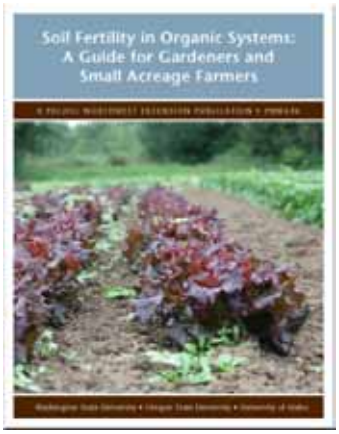
As readers know, tunnels used for caneberry cultivation have the advantage that even when it rains caneberries remain dry which helps with fruit quality and yield. However, during rains, the water drains from the plastic cover of the tunnel and down into rows that contain the anchoring posts of the tunnel structure. The accelerated runoff in these post rows can cause soil erosion, sediment and nutrient loss. As such, the persistent soil moisture in post rows also promotes weed growth. These weeds, while maybe not competing directly with canes, can reproduce and quickly spread into neighboring cane rows.

Bottom right: Cover crop growing in the anchor row in caneberry tunnel production. Photo Oleg Daugovish, UCCE.

Cover crops in the anchor rows are especially helpful when managing weeds that are difficult to control with fumigation because of their hard impermeable seed coats (mallows and filaree), or that have developed resistance to herbicides such as glyphosate and paraquat (hairy fleabane and horseweed).

Cover crops can be managed with mowing or herbicides to avoid seed production. *(Reprinted from: http://ucanr.edu/blogs/strawberries_caneberries/)*

ON THE ORGANIC SIDE…



Publication on Soil Fertility in Organic Systems Released

Pacific Northwest Extension has released a new 19-page publication, *Soil Fertility in Organic Systems: A Guide for Gardeners and Small Acreage Farmers*.

The publication discusses fertilizer formulations, nutrients and nutrient availability, and application practices for common organic products.

A pdf version of the publication is available for download at:
http://cru.cahe.wsu.edu/CEPublications/PNW646/PNW646.pdf

$MONEY TALK$

Editor's note: *Money Talk is a new column that provides news briefs and feature articles on business management and marketing topics of interest to commercial berry growers.*

Be Aware of Child Labor Laws - *Alison De Marree, Lake Ontario Fruit Team*
Please do not allow children to come to work with their parents! Everyone working on your farm must be an employee! Some brief reminders on child labor laws;

- 12 & 13 year olds restricted to hand harvest of fruits & vegetables 4 hours or less per day 7 am to 7pm 6/21 – Labor Day, 9am – 4pm day after Labor Day until 6/20
- Minors under the age of 16 need working papers. Keep a copy of all working papers in your file
- Date of birth of individuals employed at the youth rate; and, for minors under 17 years of age, the name and address of the minor's parent or guardian & Parent's signature needed on some forms
- 14–15 years old need tractor and equipment operating certificate if they are operating a 20 hp tractor, certification is also required for other equipment operation
- Be aware of "Hazardous jobs" those under 16 are NOT allowed to do – this includes spraying, handling pesticides (classified under the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 135 et seq.) as Category I of toxicity, identified by the word "poison" and the "skull and crossbones" on the label; or Category II of toxicity, identified by the word "warning" on the label), using a chainsaw, operating from a ladder at 20 ft of height, connecting equipment to a PTO, forklifts, post hole diggers, circular saws, riding on a tractor as a passenger or helper, Working inside: (1) a fruit, forage, or grain storage designed to retain an oxygen deficient or toxic atmosphere.
- Be aware of Workers Comp Law – your account could be paying for person's lifetime if injury causes percent loss of full use / range of motion.

NY FarmNet presents New Strategies for Farm Succession Planning Conference
September 24-25 NYS Fairgrounds, Syracuse, NY

This isn't your grandpa's farm transfer.

Farm succession now requires legal, tax, and business strategy.

Industry professionals and farmers will offers tips for transferring farm ownership to the next generation at a conference, "New Strategies for Farm Succession Planning," slated for Sept. 24-25 at the New York State Fairgrounds in Syracuse.

"Over the years, the farm transfer process has become increasingly complex. At the same time, farmland values continue to appreciate. These factors make it necessary for farmers to have in place innovative strategies to ensure a successful

transition in ownership and keep the farm in agriculture," said Ed Staehr, executive director of NY FarmNet and a senior extension associate with the Dyson School at Cornell University.

NY FarmNet organized the conference in light of the growing number of requests from farmers faced with how to successfully keep the farm business going under new management of the next generation of operators – from within, and outside, the farm family.

NY FarmNet provides free and confidential technical assistance in farm financial matters, including farm startup, business planning, developing financial statements, debt restructuring, and more. NY FarmNet's personal wellbeing staff helps farmers improve family and business communication skills and address stress, communication, and other concerns.

NY FarmNet is an extension and outreach program of the Charles H. Dyson School of Applied Economics and Management at Cornell University.

The conference provides farm families and their advisors information on developing effective farm business succession plans. Presenters include nationally renowned experts in farm succession planning. Robert Milligan, Senior Consultant with Dairy Strategies/Professor Emeritus Cornell University, and Sharon Danes, Professor and Family Economist at the University of Minnesota, will lead discussions on management and relationship-building relevant to farm succession planning.

Professionals from Farm Credit, Farm Family Insurance, and a leading law firm in succession planning will describe how to develop a plan that works for your farm business, including funding, tax, legal, and insurance strategies.

A multigenerational panel of farmers will share how they implemented succession plans for their farm business.

A significant number of farms now exceed Federal gift and estate tax exemptions. As a result, some farm owners are reluctant to develop a strategy for the next generation to continue farming. In many cases, profitability is not a limiting factor in farm business transferability. Family communication issues between generations are a frequent impediment to successful farm business transfers.

Registration cost is $200 and includes meals and educational material. Registration is due by Sept. 12. For more information, contact 1-800-547-3276 or email aes6@cornell.edu.

Conference sponsorship is available at the following levels:

Patron	Below $500
Pewter	$500 to $999
Bronze	$1,000 to $2,499
Silver	$2,500 to $4,999
Gold	$5,000 to $9,999
Platinum	$10,000 and above

Look for NY Farm Net online at www.nyfarmnet.org, or www.facebook.com/nyfarmnet/.

Draft Agenda
New Strategies for Succession Planning
September 24th

11:00- Noon		Registration
12:00 – 12:45 PM	Lunch	
12:45 PM – 1:00 PM		Welcome
1:00 – 2:00 PM		State of Farm Business Ownership/Need for More Transfers *David Haight, American Farmland Trust*
2:00 PM- 3:00 PM		The Three C's of Farm Family Business Succession: Commitment, Collaboration, and Conflict Management. *Robert Milligan, Senior Consultant Dairy Strategies/ Professor Emeritus Cornell University and Sharon Danes, Professor and Family Economist, University of Minnesota*

3:00 PM – 3:30 PM		Break
3:30 PM – 5:30 PM		The three C's continued *Sharon Danes and Robert Milligan*
6:00 PM	Dinner	
7:00 PM – 8:00 PM		Multigenerational Farmer Panel *Moderated by Robert Milligan and Sharon Danes*

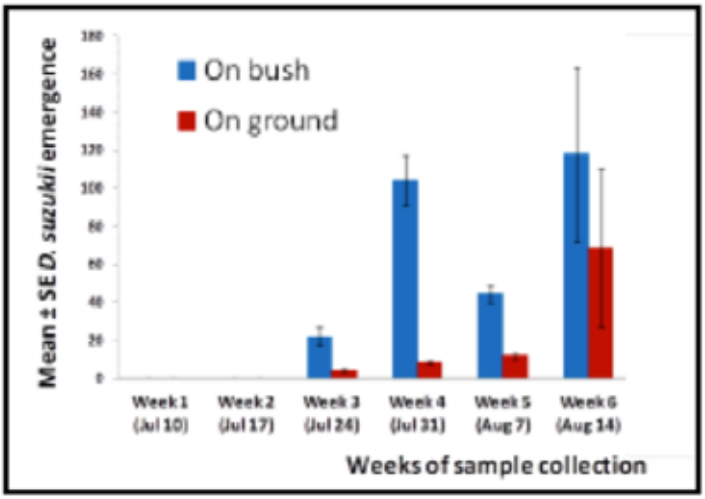
September 25th

7:00 AM – 8:00 AM	Breakfast
8:00 AM – 9:00 AM	Funding Your Farm Business Transfer *Farm Credit*
9:00 AM – 9:40 AM	Legal Strategies for Farm Business Transfer *Jeff Fetter, Scolaro, Schulman, Cohen, Fetter & Burstein*
9:40 AM – 1000 AM	Break
10:00 AM – 10:40 AM	Tax Considerations for Farm Business Transfer *Greg Bouchard, Dyson School*
10:40 AM – 11:200 AM	Utilizing Insurance in Farm Business Transfers *Farm Family Insurance*
11:20 AM - 12:20 PM	Implementing Farm Family Business Succession: Building Trust and Creating Synergy *Robert Milligan and Sharon Danes*
12:20 PM	Lunch

FOCUS ON PEST MANAGEMENT

What Should I Do About the Fallen Blueberries? - *Dr. Cesar Rodriguez - Saona, Extension Specialist in Blueberry Entomology, Rutgers University*

We know that not all fields are being harvested and growers are asking what to do about the blueberries remaining in these fields. Growers are concerned that these berries can become a source for spotted wing drosophila (SWD) oviposition, and thus possibly create a greater problem the following year. Firstly, I need to indicate that we do not know whether this statement is true, i.e., whether fruit remaining in fields will increase the likelihood of higher SWD populations the following year. It is clear that we need to know more about the overwintering biology, behavior, and survival of this fly in our region. One thing that we do know, based on studies we conducted last year, is that SWD will readily oviposit on fallen berries. Our data show that as the season progresses and the number of berries in bushes decreases and the number of berries on the ground increases, there is a likely shift in SWD preference towards those berries on the ground (see graph). So, what can growers do to protect these berries from SWD? After harvest, we do not recommend use of insecticides in these fields. There are a couple of important reasons for this; first, it is expensive and we feel this is a waste of money because we do not know



Our research shows that SWD emergence from berries on the ground increases as the season progresses (red bars).

if applying insecticides after harvest has any benefits, and second, overuse of insecticides will increase the likelihood of resistant SWD populations. Alternatively, disking the row middles to bury infested berries may provide protection against SWD. Our research has shown that burying the fallen berries 5 - 10 cm (or 2 - 4 inches) below ground will likely decrease SWD emergence by 70 - 1 00%. Therefore, adoption of cultural control such as disking might be the most sustainable method to reduce SWD populations in blueberry fields that still have berries after harvest. For this, we suggest blowing the berries from the bushes, crowns, and tops of the rows into the row middles, and then disking these areas to bury the berries. *(Reprinted from: Blueberry Bulletin, Vol. XXIV, No. 17, July 29, 2013)*

Managing Mites in Raspberries and Blackberries - *Rufus Isaacs, Michigan State University Extension, Department of Entomology*

Monitor and manage mites to protect cane health and yield. Predatory mite populations may be down, providing less suppression of pest mites.

August 6, 2013. Most caneberry growers in Michigan have had little need for mite management because of the abundance of predatory mites that keep pest mite populations in check. However, the current increased level of insecticide against spotted wing Drosophila is starting to cause some outbreaks of two-spotted spider mites, and these can compromise raspberry cane health and lead to reduced yield. This is especially likely inside high tunnels that tend to block the immigration of predatory mites.

Two spotted spider mite (TSSM) is the main species of pest mite encountered in Michigan caneberries, and this pest can quickly reach high abundance if the predator mites are not sufficiently abundant to suppress their populations. TSSM can be monitored through the season using a hand lens on 10-leaf samples taken weekly. Look on the underside of the leaves for the small spherical translucent eggs and the stationary/slow-moving immatures or adults of TSSM that have two dark spots in their bodies. In contrast, the predatory mites are light colored and they do not have the dots, and tend to move quickly across the leaf surface. These mites will require a hand lens to see, as the mites are less than a millimeter diameter. A general rule of thumb is that if the predator to pest mite populations are 1:10 or higher, then the predators should keep spider mites in check.

Treatment for two-spotted spider mite is considered unnecessary unless populations reach a threshold of one or more TSSM on 50 percent of the leaves. If predator mites are not present, the pest mite populations can far exceed this threshold. If that happens, growers will notice stippling damage on the leaves as the pest mite populations build. If it gets out of control, there can be severe leaf bronzing. Canes will typically recover from this damage eventually and put out new leaves, but the goal of mite management is preventing that situation from happening in the first place. This can be done through inundative release of predatory mites, but this approach has not yet been well-tested in Michigan farms and the releases are best done when the TSSM population is low and has not yet reached damaging levels.

Maintaining some broad-leaf weed/ground cover can also provide some habitat for predator mites, and this can also provide food for them to persist on. Fields with clean cultivation and completely weed-free management are more likely to experience mite outbreaks.

If chemical control is needed, caneberry growers have a number of miticides registered for use against TSSM. These can be grouped into those products that have activity on the immature and adult mites (Acramite, Kanemite, soaps) and those with activity primarily on eggs and immatures (Savey, Zeal). For growers producing fall red raspberries, it may be important to highlight that Savey can be used when honey bees are active, although we still recommend that applications are done in a way that does not lead to direct application to bees, and so early morning or late evening application is suggested. The insecticidal soaps such as M-Pede, Safer, and other formulations are potassium salts of fatty acids, with activity on eggs, immatures, and adult mites. They have 0 day PHI restrictions and 12 hour re-entry. Soap products require thorough coverage, including on the undersides of the leaves to be effective. Miticides for use in raspberry have 0-3 day preharvest intervals. *(Reprinted from **Michigan State University Extension** news. Dr. Issacs' work is funded in part by MSU's AgBioResearch.)*

CleanSweepNY - Fall 2013 Program

Promoting a Toxic Free Future in New York State

Plans are currently underway for a CleanSweepNY collection which will take place in the fall of 2013. The targeted area will be within NYSDEC's Region 8. This region is made up of Chemung, Genesee, Livingston, Monroe, Ontario, Orleans, Schuyler, Seneca, Steuben, Wayne and Yates Counties.

Details regarding the collection dates and locations will be posted on the CleanSweepNY website at: http://www.cleansweepny.org/ once the information becomes finalized.

CleanSweepNY is an Environmental Benefit Project which was initiated by the New York State Department of Environmental Conservation's Bureau of Pesticide Management and it describes in one word an effort to safely and economically dispose of canceled, unwanted, unusable, or otherwise obsolete pesticides and other chemicals from agricultural or non-agricultural business activities. CleanSweepNY also provides for the disposal of elemental mercury, mercury containing devices such as thermometers, manometers, etc... from schools and other entities.

CleanSweepNY collection events do not target the general public since home and garden pesticides are accepted in Household Hazardous Waste (HHW) collections. Commercially applied or larger quantities of pesticides are usually excluded from local HHW collections. In New York State this fact has created a backlog of demand for safe, legal, and affordable disposal of obsolete pesticide products and other chemicals.

Preregistration is necessary and registration packets will be mailed upon request to those wishing to participate. Registration forms can be requested by calling toll free at 877-793-3769 or by email at info@cleansweepny.org

Due to the low number of metal pesticide containers being turned in and due to the added cost for providing this service, CleanSweepNY will no longer collect for recycling any metal pesticide containers or drums. We apologize for any inconvenience this may bring. This fall collection will be the 15th CleanSweepNY collection event since the program's inception and we look forward to providing these valuable chemical waste disposal services to those such as New York State farmers, certified pesticide applicators, landscapers, school laboratories and others.

New Pesticide Labels Will Better Protect Bees and Other Pollinators

WASHINGTON – In an ongoing effort to protect bees and other pollinators, the U.S. Environmental Protection Agency (EPA) has developed new pesticide labels that prohibit use of some neonicotinoid pesticide products where bees are present.

“Multiple factors play a role in bee colony declines, including pesticides. The Environmental Protection Agency is taking action to protect bees from pesticide exposure and these label changes will further our efforts,” said Jim Jones, assistant administrator for the Office of Chemical Safety and Pollution Prevention.

The new labels will have a bee advisory box and icon with information on routes of exposure and spray drift precautions. Today’s announcement affects products containing the neonicotinoids imidacloprid, dinotefuran, clothianidin and thiamethoxam. The EPA will work with pesticide manufacturers to change labels so that they will meet the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) safety standard.

In May, the U.S. Department of Agriculture (USDA) and EPA released a comprehensive scientific report on honey bee health, showing scientific consensus that there are a complex set of stressors associated with honey bee declines, including loss of habitat, parasites and disease, genetics, poor nutrition and pesticide exposure.

The agency continues to work with beekeepers, growers, pesticide applicators, pesticide and seed companies, and federal and state agencies to reduce pesticide drift dust and advance best management practices. The EPA recently released new enforcement guidance to federal, state and tribal enforcement officials to enhance investigations of bee kill incidents.

More on the EPA’s label changes and pollinator protection efforts:
http://www.epa.gov/opp00001/ecosystem/pollinator/index.html

View the infographic on EPA's new bee advisory box: http://www.epa.gov/pesticides/ecosystem/pollinator/bee-label-info-graphic.pdf

Evaluation Of Exclusion and Mass Trapping as Cultural Controls of Spotted Wing Drosophila in Organic Blueberry Production - *Lawrie Nickerson, Hay Berry Farm LLC, and Laura McDermott, Cornell Cooperative Extension, Eastern New York Commercial Horticulture Program*

This project, supported by a NESARE Farmer grant, seeks to investigate cultural techniques to mitigate damage caused by Spotted Wing Drosophila (SWD), an invasive fruit fly. SWD proved to be unusually damaging to 2012 berry crops in the Northeast. Unlike native species, SWD uses its saw-like ovipositor to deposit eggs in ripening fruit resulting in larvae development inside the berry. Activity of the fruit fly corresponds to the ripening of blueberries, raspberries, day neutral strawberries and a variety of other cultivated and wild hosts. In 2012, levels of infestation ranged from 80-100% of fruit examined with individual fruit infested with as many as 25 larvae.

Traditional IPM approaches have been temporarily abandoned in hopes of controlling SWD populations. A 3-7 day pesticide spray schedule throughout the berry season is currently the recommended management strategy. Organic berry growers are not inclined nor prepared to use insecticides at this frequency, and their customers are particularly concerned about pesticide use. There are very few effective organically approved pesticides available, making it difficult to properly rotate chemicals. This project will evaluate the merits and costs of excluding SWD from a blueberry planting using insect netting. The work will also examine the effect of exclusion when used in conjunction with baited lures designed to trap out the adult insect.

This field trial will examine ProTek Netting with a 1.0mm x 1.0mm mesh as a means of exclusion. Exclusion alone will be one treatment. The second two treatments will combine exclusion with one of two different types of traps – unbaited red plastic cups covered with tanglefoot and the current cider apple vinegar/yeast baited traps. An untreated control will also be evaluated.

The harvested berries will be examined for % SWD infestation and yield as well as fruit quality parameters like berry size and brix. The data collection will continue for 3 weeks with twice weekly harvests. Numbers of trapped adult SWD will also be counted and recorded. Light intensity and temperature under the nets will be compared to the untreated control on a weekly basis.




Blackberry Fruit Quality Issues - *Kathy Demchak, The Pennsylvania State University.*

July 30, 2013. Some blackberry growers, mainly in the southeastern part of the state (Pennsylvania), have noticed fruit quality problems. This article discusses some common blackberry fruit issues.

Right: Symptoms Typical of Severe Anthracnose Infection on Blackberry Photo: K Demchak

Whitening of drupelets on the fruit, mainly on upper surface of the fruit and on the side of the row which receives the most sun, is as you can guess, due to sun exposure. This problem is also frequently seen on red raspberries, and may occur on both crops at the same time. It can occur whether temperatures are high or not, and is often more noticeable following a period of very clear days. There is no cure, and the problem clears up once weather conditions change.

Drupelet reddening, often only apparent after the fruit has been refrigerated, is thought to be related to the fruit basically getting "cooked" when it is on the plant close to harvest time. Apache seems to be especially prone to showing this symptom.

With both of the above physiological problems, drupelets remain full-sized and plump.

Insect feeding, such as from stinkbugs, damages drupelets and may cause their color to lighten. The damaged drupelets occur in a random pattern on the fruit, depending on where the insect stopped to feed, and often eventually collapse.

Anthracnose causes fruit to turn brown and possibly seedy in severe cases, and some or all drupelets on a berry may be affected. If you suspect anthracnose on the fruit, also check the canes for anthracnose lesions and the leaves for spots – if you find numerous lesions, this is a clue that the fruit problem is caused by anthracnose. In severe cases, the cane lesions can cause cane death. If anthracnose lesions are present, fruiting canes should be pruned to the ground right after harvest, pruning stubs should be removed during dormant pruning, and fungicides (see the Mid-Atlantic Berry Guide for materials and timing) applied.

Other issues that affect water translocation can also cause fruit to dry up, including winter injury, mechanical damage, and other cane diseases such as Gnomonia stem canker which may essentially girdle the canes. If the fruit is drying up, the problem may actually be much lower on the plant.

Finally, spotted wing drosophila egg-laying can damage drupelets and cause them to quickly collapse. Spotted wing drosophila numbers are on the rise, and blackberries are among their favorite foods, so be on the lookout. *(Reprinted from: PSU Vegetable and Small Fruit Gazette)*

Bees Exposed to Fungicide More Vulnerable to *Nosema* Parasite - *Kim Kaplan, USDA-ARS News Service*

Exposure to sub lethal levels of fungicides leaves honey bees more vulnerable to Nosema*, according to a new study by ARS and University of Maryland researchers.* ***Image number D2368-2***

July 24, 2013. WASHINGTON—Honey bees that consume pollen that contains amounts of commonly used fungicides at levels too low to cause the bee's death still may leave them more susceptible to infection by a gut parasite, according to U.S. Department of Agriculture (USDA) and University of Maryland research published today in PLOS ONE.

This research complements other recent USDA research into bees, including a comprehensive scientific report on honey bee health issued in May that found multiple factors play a role in honey bee colony declines, including parasites and disease, genetics, poor nutrition and pesticide exposure. The May report specifically highlighted the need for additional research to determine risks presented by pesticides, along with the need for improved collaboration and information sharing.

Researchers from the university and USDA's Agricultural Research Service (ARS) collected pollen samples from honey bees pollinating apples, watermelons, pumpkins, cucumbers, blueberries or cranberries. The scientists then analyzed the pollen to determine how much fungicide, insecticide, miticide and/or herbicide the bees were exposed to while pollinating each of the six crops.

In many cases, the pollen that bees brought back came primarily from plants other than the targeted crop. Some pollen samples contained very few pesticides, but the average number seen in a pollen sample was nine different pesticides, which could include insecticides, herbicides, miticides and fungicides.

Fungicides were the most frequently found chemical substances in the pollen samples. The most common was the fungicide chlorothalonil, which is widely used on apples and other crops. The most common miticide was fluvalinate, which beekeepers use to control varroa mites. Neonicotinoid insecticides were only found in pollen from bees foraging on apples.

"Honey bees that were fed pollen that contained the fungicide chlorothalonil and was collected at the hive entrance were almost three times more likely to become infected when exposed to the parasite *Nosema*, compared with control bees," explained study author Jeff Pettis, research leader of the Bee Research Laboratory in Beltsville, Md. The lab is part of ARS, USDA's chief intramural scientific research agency.

The fungicide pyraclostrobin, which was found less frequently in the pollen samples, also increased bees' susceptibility to *Nosema* infection.

"Our study highlights the need to closely look at fungicides and bee safety, as fungicides currently are considered safe and can be sprayed during the bloom on many crops," said co-author Dennis vanEngelsdorp with the University of Maryland. "We

also need to better understand how pesticides are getting into the hive. Clearly it is not just from collecting pollen from the crops that bees are being used to pollinate."

These findings provide new information useful in understanding the myriad of problems affecting honey bees in the United States, including colony collapse disorder, dwindling honey bee colonies, and other health problems in managed bee colonies, Pettis added.

One unexpected finding was that honey bees collected relatively little pollen from blueberry and cranberry plants, which are both crops that originated in the New World. Despite this lack of pollen collection, researchers know that bees do pollinate these plants. Honey bees were brought to North America from Europe along with Old World crops such as almonds and apples, which co-evolved with honey bees as their pollinators.

A Tale of Three Strawberry Diseases

Editor's note: California strawberry producers have begun to feel the effects of the loss of methyl bromide and other fumigants in strawberry production. Three serious soil-borne diseases, Fusarium Wilt, Charcoal Rot, and Verticillium Wilt, have surfaced as players that may pose major threats to their industry unless successful alternative management strategies are found and implemented. While the fungi causing these diseases in the past have tended to be found in warmer climatic areas than ours (i.e. California, Florida, Australia), it is not beyond the realm of possibility they may find their way here as they have now been identified as also occurring in Europe (most recently France and Spain). Verticillium wilt has been present and more active in NY strawberries in the last few years; the other 2 fungi have yet to be identified as causing strawberry disease in the state. We should be on the lookout for these when symptoms similar to those pictured in the following articles occur.

Fusarium Wilt of Strawberry: Second Soilborne Threat in California - *Steven Koike and Mark Bolda, University of California Cooperative Extension*

August 6, 2013. While the recently detected charcoal rot disease (caused by the soilborne fungus *Macrophomina phaseolina*) was causing collapse of strawberry plants from various parts of California, a second soilborne issue was simultaneously affecting other fields. Fusarium wilt was first confirmed on California strawberry in 2006. Initially found in Ventura County, Fusarium wilt is now present on strawberry in Santa Barbara and Monterey counties. The spread of Fusarium wilt in the state, along with the increasing problems with *Macrophomina*, poses long term threats to the strawberry industry which at present does not have satisfactory plant resistance to both of these pathogens and which is facing a changing future without traditional fumigant products.

Symptoms of Fusarium wilt in strawberry consist of wilting of foliage, plant stunting, and drying and death of foliage (Figure 1). When plant crowns are cut open, internal vascular and cortex tissues are dark to orange brown (Figure 2). Disease is often most severe if the infected plant is subject to stresses such as weather extremes, water stress (shortage of water), poor soil conditions, or heavy fruit loads. In locations where the disease has occurred for more than one season, the patches can be quite large and appear to have spread from the initial problem area (Figure 3). Such patterns are consistent with the spread of a soilborne pathogen. It is noteworthy that in these cases we have never isolated other important, well known pathogens such as *Colletotrichum*, *Phytophthora*, or *Verticillium*. However, it is important to note that Fusarium wilt symptoms are virtually identical to those caused by charcoal rot. To complicate matters further, in some fields we have found both *Fusarium* and *Macrophomina* infecting the same crop. This overlap of symptoms means that growers and field personnel should have plants tested by a pathology lab in order to confirm which soilborne disease they are encountering.

Fusarium wilt is caused by the fungus *Fusarium oxysporum* f. sp. *fragariae*. This pathogen is host specific to strawberry and can only infect this crop. The fungus survives in the soil for long periods by producing resilient, microscopic structures called chlamydospores (Figure 4). The development of Fusarium wilt has also been associated with changes in the practices of pre-plant soil fumigation. The fungus is spread within and between fields mostly by the transport of contaminated soil during soil tillage and preparation operations.

Current management strategies involve the following: (1) Crop rotation. Do not plant strawberry in fields having a known history of the problem and avoid back-to-back strawberry plantings in infested locations. (2) Pre-plant fumigation. This remains a useful tool for managing *Fusarium* and the other soilborne pests, even though bed-applied fumigants may not provide complete control. (3) Avoid stressing the plants. Stress will hasten the development and increase the severity of

symptoms, so use appropriate growing and irrigation practices to reduce stress. Note, however, that even in the absence of stress, infected plants will eventually develop the disease. (4) Sanitation. Growers with *Fusarium* infested fields need to be concerned with limiting the spread of the fungus from infested to clean fields.

Figure 1. Fusarium results in the collapse and death of strawberry plants. Photo Steven Koike, UCCE

Figure 2. Internal crown tissue of strawberry infected with Fusarium will show a dark to orange brown discoloration. Photo Steven Koike, UCCE

Figure 3. Fusarium wilt can affect large portions of a field and cause significant dieback. Photo Steven Koike, UCCE

Charcoal Rot of Strawberry: Increasing Problem in California - *Steven Koike and Mark Bolda, University of California Cooperative Extension*

August 2, 2013. Beginning at least as early as 2005 and continuing through 2013, collapsing strawberry plants from various parts of California have been associated with the soilborne fungus *Macrophomina phaseolina*. The disease, called charcoal rot, appears to be the most important current concern for the industry due to its steady increase over this period of time. Each year finds additional new fields infested, and the disease has now been found in all of the major strawberry producing counties in the state. In 2005-2006, charcoal rot was restricted to southern California in Orange and Ventura counties. Most recently this disease has been confirmed in Santa Barbara, Monterey, Santa Cruz, and Santa Clara counties. The spread of *Macrophomina* to new fields and counties portends that charcoal rot may be a long term threat to the industry which at present does not have satisfactory plant resistance with which to combat the pathogen.

Symptoms of *Macrophomina* infection in strawberry consist of wilting of foliage, plant stunting, and drying and death of older leaves, with the central youngest leaves often remaining green and alive. Plants can eventually collapse and die (Figure 1). When plant crowns are cut open, internal vascular and cortex tissues are dark to orange brown (Figure 2). Disease is often most severe if the infected plant is subject to stresses such as weather extremes, water stress (shortage of water), poor soil conditions, or heavy fruit loads. In locations where the disease has occurred for more than one season, the patches can be quite large and appear to have spread from the initial problem area (Figure 3). Such patterns are consistent with the spread of a soilborne pathogen. It is noteworthy that in these cases we have never isolated other important, well known pathogens such as *Colletotrichum*, *Phytophthora*, or *Verticillium*. However, it is important to note that another recently described disease, Fusarium wilt, is also occurring in the same regions; symptoms of Fusarium wilt are identical to those caused by charcoal rot.

Macrophomina produces numerous tiny, black, irregularly shaped microsclerotia (Figure 4). These microsclerotia are survival structures that allow the fungus to persist for extended periods in the soil. The fungus is spread within and between fields mostly by the transport of contaminated soil during soil tillage and preparation operations. Spread of *Macrophomina* in strawberry fields deals with the same issue of field sanitation that concerns growers of many other commodities. Verticillium wilt (lettuce, strawberry, pepper), clubroot (broccoli, cauliflower), Fusarium wilt (lettuce), Fusarium yellows (celery), and lettuce dieback disease (lettuce) are all problems caused by soilborne pathogens that are spread in infested soil.

Current management strategies involve the following: (1) Crop rotation. Do not plant strawberry in fields having a known history of the problem and avoid back-to-back strawberry plantings in infested locations. (2) Pre-plant fumigation. This remains a useful tool for managing *Macrophomina* and the other soilborne pests, even though bed-applied fumigants may not provide complete control. (3) Avoid stressing the plants. Stress will hasten the development and increase the severity of symptoms, so use appropriate growing and irrigation practices to reduce stress. Note, however, that even in the absence of stress, infected plants will eventually develop the disease. (4) Sanitation. Growers with *Macrophomina* infested fields need to be concerned with limiting the spread of the fungus from infested to clean fields.

Figure 1. Charcoal rot results in the collapse and death of strawberry plants. Photo Steven Koike, UCCE

Figure 2. Internal crown tissue of strawberry infected with Macrophomina will show a dark to orange brown discoloration. Photo Steven Koike, UCCE

Figure 3. Charcoal rot can affect large portions of a field and cause significant dieback. Photo Steven Koike, UCCE

Figure 4. Tiny, black microsclerotia enable the Macrophomina pathogen to survive in the soil. Photo Steven Koike, UCCE

Verticillium Wilt in Strawberries: California 2013 Update - *Mark Bolda and Steven Koike, University of California Cooperative Extension*

August 2, 2013. Verticillium wilt continues to be one of the most potentially damaging diseases caused by soilborne pathogens in strawberries grown in California. Historically *Verticillium* was the primary target against which soil pathogen mitigation, i.e. pre-plant soil fumigation, avoidance and crop rotation, and breeding for plant resistance, in strawberries has been directed.

Verticillium wilt symptoms: Early symptoms consist of stunting, delayed development, and the yellowing of lower leaves. As disease progresses the older leaves wilt, dry up, and become brown; typically the younger, central leaves of the plant remain green until the plant dies and all foliage turns brown (Figure 1). In contrast to Verticillium wilt of other crops such as lettuce, vascular discoloration in strawberry crowns may be subtle or absent (Figure 2). Strawberry disease symptoms can be accentuated if the infected plant is subject to stress such as from environmental extremes or mite infestations.

The Pathogen: *Verticillium* wilt in strawberry is caused by *Verticillium dahliae.* The host range of this pathogen is quite broad, though in recent years researchers have found sub-groups within *V. dahliae* that have preferred hosts and therefore narrower host ranges. For strawberry growers, they should be aware that the *Verticillium* isolates that infect lettuce and artichoke also infect strawberry. Likewise, the strawberry isolates of *Verticillium* can infect lettuce and artichoke. *Verticillium* gets its name from the whorls of spore-bearing branches (phialides) that are visible when the fungus is viewed under a light microscope (Figure 3).

Verticillium forms a survival structure, the microsclerotium, which allows the pathogen to survive unfavorable conditions and persist between host crops (Figure 4). Microsclerotia are dense masses of thick, dark (melanized) cells that form inside host tissues and are released into the soil when crop residues break down and decay. Researchers have developed methods for measuring the population of viable microsclerotia in soils; such measurements (microsclerotia per gram of soil [ms/gram]) can give growers and others an estimate of potential threat to strawberry plantings. Strawberry has a very low threshold tolerance for *Verticillium*. A soil test result of 3 ms/gram likely indicates that some disease may develop on the subsequent strawberry crop. With a soil test result of 10 or more ms/gram, strawberry should probably not be planted unless soil fumigation is planned. The picture below is of a field with an average of 30 ms/gram at the end of July (Figure 5).

Disease Development: *Verticillium* microsclerotia germinate in the soil when activated by exudates from the host plant roots. Once penetrating the plant root, the fungus grows up into the xylem (the water conducting elements of the plant), degrading the cell walls and most likely releasing toxins. This type of colonization is called a systemic infection. Systemic infections interfere with the plant's ability to conduct water. For this reason, infected strawberry plants will wilt during times of high water demand, such as during hot and dry weather, if the plant is improperly (too dry) irrigated, or if bearing a heavy fruit load. Diseased plants that show some dieback symptoms may recover if the stress conditions subside; however, such plants are not likely to be as productive as unaffected, healthy plants.

The pattern and distribution of Verticillium wilt disease in the field can be extremely variable and does not necessarily correspond with low spots, heavy soil, or improperly irrigated areas. In contrast, such field conditions may correspond with patterns of Phytophthora crown rot. Instead, many times Verticillium wilt affected plants can be found distributed all over the field, perhaps as individual plants or as patches of affected plants.

Managing Verticillium in Strawberry:

Plant Breeding for Resistance: Strawberry plants genetically resistant *to V. dahliae* are not yet available commercially. However, resistance should play a big role in the future mitigation of Verticillium wilt in strawberry, though development of completely resistant cultivars has not been easily attained. In a research report (California Agriculture, January/March 2010), it is pointed out that intensive selection for *Verticillium* resistance resulted in a few genotypes that demonstrated a great amount of resistance when inoculated with the pathogen; however, these selections suffered some yield loss under intense disease pressure. Furthermore, these highly resistant genotypes all expressed "substantial deficiencies for horticultural or productivity traits," meaning they weren't producing the quantity or quality of fruit that we have come to expect in California.

Even so, the University of California strawberry breeding program has made significant advances in improving genetic resistance to *Verticillium*. Starting in the late 1980s, less than 40% of the genotypes used in the UC breeding program had moderate tolerance to *V. dahliae*; twenty years later, between 80 and 100% of the genotypes used had such tolerance.

Soil treatments: Soil fumigation with a mix of methyl bromide and chloropicrin is usually recommended for conventional growers, but this plan of action is becoming quite expensive if not impossible under new regulations and limitations. Chloropicrin used alone is successful in disinfesting soils of *Verticillium,* as are mixes of 1,3 – Dichloropropene and chloropicrin (Telone C-35) but generally none of these have been shown to be as effective as methyl bromide and chloropicrin used together in clearing a soil of Verticillium pathogen.

An alternative soil treatment being tested and demonstrated in several commercial fields is anaerobic soil disinfestation (ASD). ASD works by inducing an anaerobic (oxygen-less) condition in soils that are amended with a carbon source. The resulting proliferation of oxygen-consuming microbes shifts the soil ecology and microbial diversity, resulting in suppression of pathogenic organisms. Researchers are continuing to develop and fine-tune this method.

Biofumigation is another soil treatment that can reduce *Verticillium* numbers in the soil. Broccoli crop residues release chemicals that both directly reduce Verticillium propagules as well as affecting the soil microbial diversity, which can suppress the pathogen. While mustards and other cruciferous plants show similar effects, broccoli appears to be one of the best choices for this soil biofumigation treatment. A crop rotation that includes broccoli will have the same suppressive effect, since the harvested broccoli florets are not needed for biofumigation to take place.

Sanitation: Being a soilborne pathogen, *V. dahliae* is readily spread between fields in mud and dirt adhering to equipment and vehicles. Growers should therefore beware of moving contaminated equipment from infested fields into "clean" fields. Because diseased strawberry plants are infested with microsclerotia, strawberry crop residues should not be moved into other fields.

Crop rotation: Crop rotation is a key IPM practice that will help lessen the threat from Verticillium wilt. Consecutive, back-to-back plantings of strawberry are a risky practice if the field has a history of Verticillium wilt and if effective fumigants are not used. Fields which have been recently planted to lettuce, artichoke, and Solanaceous family crops (potatoes, eggplants, and tomatoes) should likewise be avoided if Verticillium wilt has occurred and if soil fumigation is not implemented. Weeds that are hosts of *V. dahliae* may not play a critical role in disease development but should be controlled in any case.

Other alternatives: Another experimental alternative to chemical control is the use of organic substrates, such as coconut peels (coir) or peat moss, which are used as the rooting medium in place of the soil but are kept completely separate from the soil by cloth barriers. The substrates are poured into cloth-lined furrows that are constructed into the beds. The intent of this approach is to create a pathogen-free zone above the field soil. This method is still being tested.

Finally, there are a series of commercially available biological fungicides which purport to competitively exclude pathogenic fungi such as *Verticillium* from the surface of the root, or which produce toxins inhibitory to pathogen growth. These materials likewise still require research and demonstration of efficacy under field conditions.

The above has been a discussion the biology and management of *Verticillium* wilt disease in strawberry. There are pesticides mentioned for the management of *Verticillium* in this article. Before using any of these products, check with your local Agricultural Commissioner's office and consult product labels for current status of product registration, restrictions, and use information. *(The authors thank K. V. Subbarao for assistance with this report.)*

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Figure 1: Brown foliage and plant collapse caused by Verticillium wilt. Photo Steven Koike, UCCE.

Figure 2. Crown of Verticillium-infected strawberry showing lack of internal crown discoloration. Photo Steven Koike, UCCE.

Figure 3. Microscopic view of the verticillate spore bearing structure of V. dahliae. Photo Steven Koike, UCCE.

Figure 4. Culture petri dish showing profuse numbers of black microsclerotia. Photo Steven Koike, UCCE.

Figure 5. Significant dieback in a field highly infested (30 ms/gram) by V. dahliae. Photo Mark Bolda, UCCE.

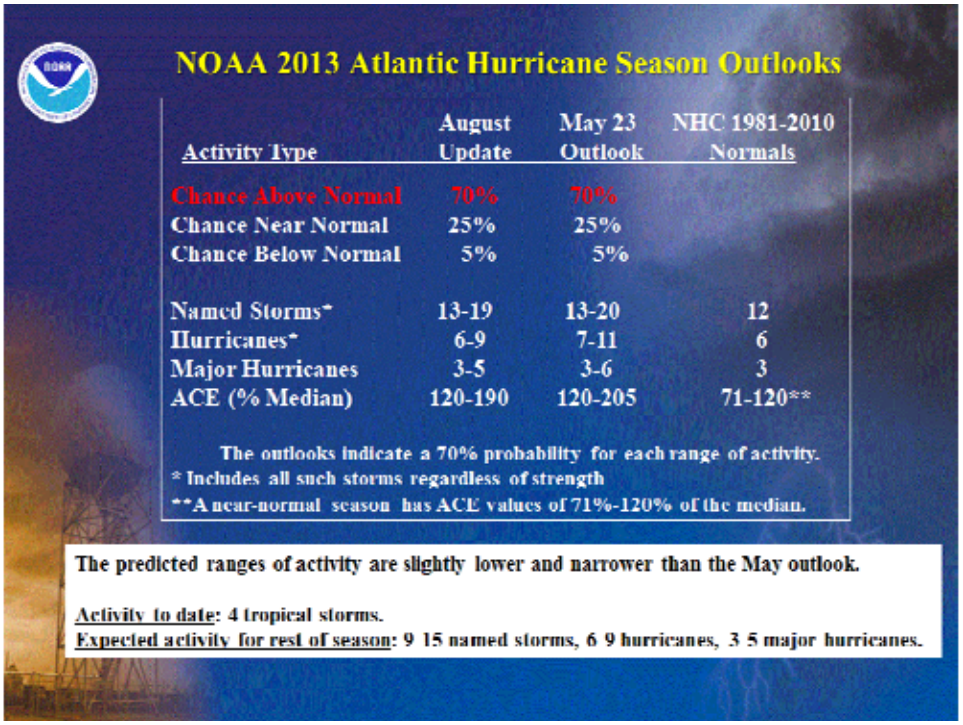
This series of articles was reprinted from the ANR Strawberries and Caneberries blog available free on line at: http://ucanr.edu/blogs/strawberries_caneberries/.)

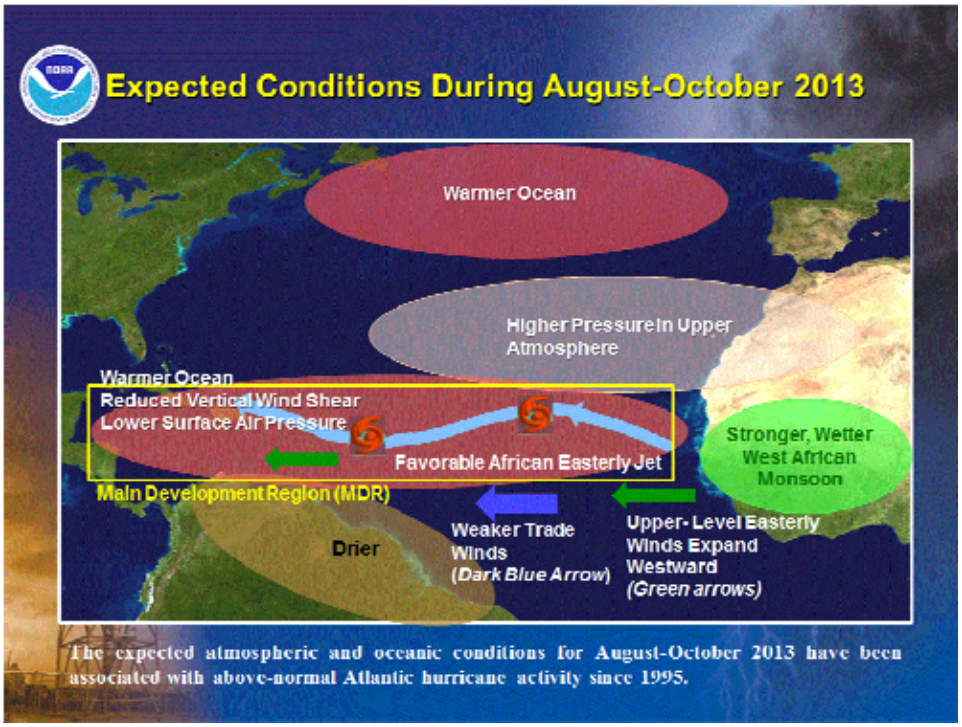
NOAA 2013 Update

Atlantic Hurricane Season Outlook: Summary

NOAA's updated 2013 Atlantic Hurricane Season Outlook continues to call for an above-normal season, with the possibility that the season could be very active.

The outlook (*upper right*) indicates a 70% chance of an above-normal season, a 25% chance of a near-normal season, and only a 5% chance for a below-normal season. See NOAA definitions of above-, near-, and below-normal seasons, which have been slightly modified from previous years. The Atlantic hurricane region includes the North Atlantic Ocean, Caribbean Sea, and Gulf of Mexico.





As predicted in May, atmospheric and oceanic anomalies (*lower right*) across the tropical Atlantic Ocean and Caribbean Sea (called the Main Development Region, MDR) are now conducive to an above-normal Atlantic hurricane season.

These conditions are expected to persist throughout the peak months (August-October) of the hurricane season in association with the tropical multi-decadal signal, which has contributed to the high activity era that began in 1995. This signal is linked to above-average sea surface temperatures in the MDR and to an enhanced West African monsoon, both of which are now in place.

The presence of two named storms in the deep tropical Atlantic during June-July reinforces the expectation for an above-normal season. Historically, years with early-season activity in this region have a high likelihood of being above-normal, with many also being very active (i.e., hyper-active).

A third factor for the season is the likely continuation of ENSO-neutral conditions. There is only a low probability (19%) that La Niña will develop and further enhance the activity, and an even lower probability (8%) that El Niño will develop and suppress the activity.

Based on the current and expected conditions, combined with model forecasts, we estimate a 70% probability for each of the following ranges of activity for the entire 2013 Atlantic hurricane season:

- 13-19 Named Storms
- 6-9 Hurricanes
- 3-5 Major Hurricanes
- Accumulated Cyclone Energy (ACE) range of 120%-190% of the median.

The seasonal activity is expected to fall within these ranges in 70% of seasons with similar climate conditions and uncertainties to those expected this year. These ranges do not represent the total possible ranges of activity seen in past similar years.

The expected ranges are centered well above the official NHC 1981-2010 seasonal averages of 12 named storms, 6 hurricanes, and 3 major hurricanes.

Activity to Date:
Four tropical storms (Andrea, Barry, Chantal, and Dorian) have formed in the Atlantic basin to date, with Chantal and Dorian forming in the deep tropical Atlantic. Significant activity is expected for the remainder of the season, with an additional 9-15 named storms likely, of which 6-9 are expected to become hurricanes with 3-5 reaching major hurricane status.

Changes from the pre-season outlook issued May 23rd:
All of the predicted ranges of activity have been lowered and narrowed slightly from the May outlook. Three reasons for these changes to the ranges are: 1) No hurricanes or major hurricanes formed during June and July; 2) The probability of La Niña developing during August-October is now low; and 3) Many models now have more conservative predictions of hurricane activity.

Hurricane Landfalls:
While NOAA does not make an official seasonal hurricane landfall outlook, the historical likelihood for multiple U.S. hurricane strikes, and for multiple hurricane strikes in the region around the Caribbean Sea, increases sharply for very active (or hyperactive) seasons (ACE > 165% of median). However, regardless of the activity predicted in the seasonal outlook, it only takes one storm hitting an area to cause a disaster. Therefore, residents, businesses, and government agencies of coastal and near-coastal regions are urged to prepare every hurricane season regardless of this, or any other, seasonal outlook. Predicting where and when hurricanes will strike is related to daily weather patterns, which are not reliably predictable weeks or months in advance. Therefore, it is currently not possible to accurately predict the number or intensity of landfalling hurricanes at these extended ranges, or whether a particular locality will be impacted by a hurricane this season.

For more information visit: http://www.cpc.ncep.noaa.gov/products/outlooks/

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