NEW YORK BERRY NEWS
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DECEMBER 8, 2011

Cornell University
College of Agriculture and Life Sciences

New York Berry News

Cornell University Berry Team

Inside this issue:

New 'Herriot' Strawberry – Tough Plant, Tasty Fruit

GENEVA, N.Y. – With high yields, good disease resistance, eye-appeal and a mild flavor with pineapple overtones, 'Herriot' is a sweet option for growers.

"'Herriot' is one tough plant," says Courtney Weber, the berry breeder in the Department of Horticulture at Cornell University who developed the variety. "Many of our trials are in the worst possible soil conditions, and 'Herriot' is always one of the last varieties standing. And it tastes good too!"

The new variety's features include:

High yields. In trials and with commercial growers in New York, Massachusetts, Illinois, Minnesota and Ontario, 'Herriot' yielded as much as 60 percent more than 'Jewel', the predominant mid-season variety for perennial matted-row production that was also developed by Cornell. In trials at the New York State Agricultural Experiment Station, Geneva, N.Y., 'Herriot' harvest consistently begins two days before 'Jewel' with yields greater than or equal to that variety most years.

Beautiful berries. 'Herriot' produces large (up to 25 grams, averaging about 11 grams), heart-shaped, shiny red berries with a bright green calyx. "'Herriot' really draws the eye because of the nice shine on the fresh berries," says Weber. "That makes them very attractive to farm-stand and pick-your-own customers." Fruit is generally larger and more uniform than 'Jewel'. Flavor is sweet

Upcoming Berry Events

December 13- 15, 2011. *New England Vegetable and Fruit Conference*. Radisson Hotel, Manchester, NH. For more information: Kristen Castratoro, Phone: 401 874-2967, e-mail: kcas@uri.edu or http://www.newenglandvfc.org/.

January 16-18, 2012. *North American Raspberry & Blackberry Conference,* Kalahari Resort, Sandusky, OH, in association with the Ohio Produce Growers and Marketers Congress. For more information, call 919-542-4037, email info@raspberryblackberry.com, or visit www.raspberryblackberry.com.

January 24 - 26, 2012. *Empire State Fruit and Vegetable EXPO and Direct Marketing Conference. OnCenter,* Syracuse, NY. Berry session Thursday 1/26/12. More details forthcoming.

January 31 – February 2, 2012. *Mid-Atlantic Fruit and Vegetable Convention,* Hershey, PA. For more information call William Troxell at 717-694-3596 or visit http://www.mafvc.org.

February 6-8, 2012. *NASGA Annual Meeting and Conference,* Harrah's Las Vegas, Las Vegas, NV. For more information visit http://www.nasga.org or call Kevin Schooley at the NASGA office 613-258-4587.

February 18 to 22, 2012. *7th International Strawberry Symposium*. Beijing, China. http://www.iss2012bjchina.org.cn.

February 29 to Mar 2, 2012. *US Highbush Blueberry Council Spring Meeting,* Sheraton Fisherman's Wharf, San Francisco, CA. For more information: http://www.blueberry.org/calendar.htm#Meetings

New 'Herriot' Strawberry (continued)

and mild with light pineapple overtones.

Disease resistance. 'Herriot' shows good resistance to common leaf diseases, and holds up well to summer renovation, allowing for wider adaptation to variable soils. In Geneva, 'Herriot' blooms in mid-May, avoiding most damaging frosts.

The variety is named for the British author, James Herriot, one of Weber's favorites.

Weber's small fruits breeding program at Cornell is focused on developing improved strawberry and raspberry varieties for New York growers. Previous releases from Weber's program – including 'L'Amour' and 'Clancy' strawberries and 'Prelude', 'Encore', and 'Crimson Giant' raspberries – have shown wide adaptation throughout New England, the Mid-Atlantic States and the Midwest, as well as temperate regions of Europe.

Growers interested in trying 'Herriot' in 2012 can purchase plants from the licensed nurseries Krohne Plant Farms (www.krohneplantfarms.com, 269-424-5423) and Daisy Farms (www.daisyfarms.net, 269-782-6321).

Spanish-Speaking Employees Have a Lot to Learn at the 2012 EXPO Fruit, Berry, and Vegetable Programs

The big news this year is that the 2012 Empire State Fruit and Vegetable Expo and Direct Marketing Conference will include for the first time two Spanish educational sessions to be held on Thursday January 26 at the Oncenter in Syracuse, NY. These sessions are focused around the theme of "**Work Smarter Not Harder**" and will provide DEC credits for those attending one or both sessions. Major topics will cover the fundamentals of plant physiology, pruning, production economics, marketing, good agricultural practices, plant pathology, and emergency planning. The Spanish program will be taught by six fluent Spanish speakers - 5 from Cornell University and one invited economist from Washington State University.

We encourage you to train your Spanish-speaking employees, get them acquainted with other employees from across the state, let them learn more about the science of agriculture and enjoy a break away from the farm during January 2012. Vegetable, field crop, and orchard farms are by their nature very work intensive and therefore need a well-trained and dedicated workforce to guarantee the highest quality products for their customers.

M. Miranda Sazo (Fruit Extension Specialist, CCE Lake Ontario Fruit Program) and ten Spanish-speaking employees from Mexico as photographed after finishing a Honeycrisp harvest at an orchard located in Alton, Wayne County, NY on Sept. 21 2011.

So are you committed to growing vegetable, field, and fruit products with a well-trained labor force? If you are, send your Spanish-speaking employees to be trained in the fundamentals of vegetable and fruit production in NY State.

Spanish Session 1 "Work Smarter Not Harder"
Thursday, January 26, 2012 - Room 3

8:30am. Anuncios y Firma Para Obtener Créditos (Announcements and DEC credit sign-up) – Mario Miranda Sazo, CCE Lake Ontario Fruit Program

8:35am. Entendiendo la Poda de Arboles Frutales (Understanding Pruning of Fruit Trees) – Terence Robinson, Cornell University

9:15am. Buenas Prácticas Agrícolas (Good Agricultural Practices) – Steve McKay, Cornell University

10:00am. ¿Qué Hay de Nuevo con la Industria? (What's New From Industry?)

10:10am. ¿Cómo el Ambiente en el Invernadero Afecta las Enfermedades de Vegetales? (How Greenhouse Environment Affects Vegetable Diseases?) – Judson Reid, CCE Cornell Vegetable Program

10:50am. Costos de Producción en Arboles Frutales ¿Qué Hemos Aprendido? (Fruit Production Costs – What We Have Learned?) – Karina Gallardo, Washington State University

11:30am. Adjourn & Visit Trade Show

The Empire State Fruit & Vegetable Expo
Growing for the Health of New York

Spanish Session 2 "Work Smarter Not Harder"
Thursday, January 26, 2012 - Room 3

12:30pm. Anuncios y Firma Para Obtener Créditos (Announcements and DEC credit sign-up) – Mario Miranda Sazo, CCE Lake Ontario Fruit Program

12:35pm. Póda de Arboles de Manzanos en Vertical Axe y Tall Spindle (Pruning of Vertical Axe and Tall Spindle Apple Trees) – Terence Robinson, Cornell University

1:00pm. Entendiendo el Ciclo de Vida de Un Arbol Frutal (Understanding the Life Cycle of A Fruit Tree) – Mario Miranda Sazo, CCE Lake Ontario Fruit Program

EXPO Spanish Session *(continued)*

1:25pm. ¿Qué Hay de Nuevo con la Industria? (What's New From Industry?)

1:35pm. Marketing de Frutas y Vegetales (Marketing of Fruits and Vegetables) – Sandra Cuellar-Healey, Cornell University

2:00pm. Como Planificarse Para Una Emergencia (Emergency Planning) – Mary Jo Dudley, Cornell University

2:30pm. Adjourn to trade show ice cream social

For more information about the 2012 EXPO, contact the NYS Vegetable Growers Association at (315) 986-9320, or email Jeanette Marvin, executive secretary and expo director, at jmarvin@rochester.rr.com. Check out the Expo online at www.nysvga.org.

You're Invited! NYS Ag Society's 180th Agricultural Forum

Growing into the Future: Successful Farm Business Transitions

Approximately 500 attendees are expected at the Holiday Inn, Syracuse/Liverpool on Thursday, January 5th, 2012, for the New York State Agricultural Society's 180th Annual Agricultural Forum, "Growing into the Future: Successful Farm Business Transitions", co-sponsored by the New York State Department of Agriculture and Markets.

With five times as many farmers age 65 and over as there are 35 and younger, successful farm business transitions are critical to the future of New York agriculture.

Understanding that a successful transition involves more than just the mechanics of a business transfer is key. This year's speakers and farmer-panel will address their experiences with management and interpersonal issues, communication styles, and avoiding potential pitfalls in order to successfully navigate farm business transitions.

Keynote speaker Dave Specht, known as "the Family Businessman", is a leading authority on the unique complexities of family-owned businesses; his work was recently featured in *Farm Journal*, *Nebraska Famer Magazine*, *Bloomberg Businessweek*, *Family Business Magazine* and *The New York Times*. Jennifer Voss, Business and Family Management Consultant, will moderate discussions as four groups of farmer- panelists share their thoughts on Growing into the Future: Successful Farm Business Transitions.

Other conference highlights include recognition of Businesses of the Year, Bicentennial Farm Families, Agricultural Journalism Awards, FFA Chapter of the Year, Ag Promotion Awards, and the Society's lifetime of Distinguished Service Citation. All meals, breaks and 180th anniversary reception feature New York produced food and beverages, and allow time for networking with exhibitors and attendees. Following the evening banquet, New York State Agriculture Commissioner, Darrel Aubertine, will present the State of the State's Agriculture Address.

Also, on the evening prior to the Forum (Wed. January 4th), the Friends of the Witter Agricultural Museum will hold their annual meeting; Harvey Skeele will show a presentation on the History of Hill n' Dale Family Farm. Following the Witter meeting, Cornell University College of Agriculture and Life Sciences will host a reception and panel discussion, "Leadership and Innovation in a Challenged Economy".

All are invited to the New York State Agricultural Society's Agricultural Forum and special pre-forum events. **Early registration is strongly encouraged, and discount applies for Forum registrations received before December 21st.** For meeting details or to register online, visit www.nysagsociety.org.

New York State Agricultural Society

Blueberry Growers Winter Meeting

January 12, 2011, 9:00-11:00 a.m. Candor Ambulance Hall, Candor, NY

Southern Tier Berry Growers are invited to this Cornell Cooperative Extension farmer-to-farmer meeting, January 12, 2012, in Candor, Tioga County, NY. Think back over the past season's successes and challenges, and come ready chat. , and get a heads up about spotted winged drosophila, an invasive insect pest that has the potential to change how we grow fruit.

Greg English-Loeb, Cornell berry entomologist, will give a presentation about the spotted winged drosophila, and we have applied for 1 DEC pesticide recertification credit (Categories 1A and 22). Also bring pictures and descriptions of your favorite pieces of equipment that make your lives as berry growers a little easier, and be ready to share labor-saving tips. Growing berries is a labor-intensive business, but don't do more hand work than you have to!

Class costs $10/person or $15/farm, and includes breakfast. Please pre-register so we can prepare food and hand-outs. To register and for questions, contact CCE Tioga, 607-687-4020, or Molly Shaw meh39@cornell.edu.

Beginning Farmer Online Marketing Course Offered

Online Course in Marketing for Beginning Farmers Offered This Winter Through Cornell University

The Beginning Farmer Project at Cornell University is offering an online course series in marketing strategy for new and start-up farmers. The online course is designed to help farmers better understand how to price products, position yourself in the growing "buy local" marketplace, online and physical location sales, as well as guerrilla marketing tactics.

Webinars
The bulk of the course happens on students' own time, with discussions, readings, and assignments in a virtual classroom. There will be weekly webinars to allow farmers to learn from outside presenters, ask questions, and collaborate with other participants and the instructors. **Webinars will be from 7-8:30 p.m. EST on Wednesdays Jan. 4-Feb. 8.** Webinars will be recorded.

Target Audience
New farmers with 1-3 years of farm experience and serious aspiring new farmers who have already explored the basics of marketing and are ready for a more formal marketing strategy.

Course Objectives
This course will help farmers:

- Link your farm's mission and vision to your commercial goals and marketing strategy
- Understand the key elements of a solid marketing plan
- Understand and use effective marketing strategies
- Understand and use various pricing strategies with your products
- Create a multi-tiered marketing strategy incorporating traditional and guerrilla marketing tactics

Qualifying for Loans
Students that successfully complete the course are eligible for borrower training credits through the USDA New York State Farm Service Agency. Borrower training credits may help farmers improve eligibility for a low-interest beginning farmer loan though the USDA Farm Service Agency. For more information, visit http://www.fsa.usda.gov/FSA/webapp?area=home&subject=fmlp&topic=bfl

Instructors
Laura Biasillo is an Ag Educator with Cornell Cooperative Extension of Broome County. Rebecca Schuelke Staehr is an agricultural consultant and owner-operator of Cayuga Pumpkin Barn in Cayuga, NY.

Course Outline

Week 1: Navigating the online classroom, introductions and welcome to course Topic(s) Covered: Introduction to Marketing; Mission Statement, Goals & Overview of Market Channels (retail, wholesale, etc...

Week 2: Marketing Strategy - Where Do I Fit in this "Buy Local" market?
Topics Covered: Who are your customers? How Do They Get Their Information? How Do You Access Them?

Beginning Farmer Online Marketing Course Offered *(continued)*

Week 3: Expense Budgets - How Much Should I Charge (or How Much Does It Really Cost Me to Produce This Product?)
Topics Covered: Sales Tactics, Expenses (real & perceived), Promotions (incl. point of purchase), Pricing

Week 4: Marketing Tactics
Topic(s) Covered: Low-Cost, No-Cost, Cooperation and More

Week 5: Tying it all Together: Implementation of Marketing Tactics, Pricing and Local/Global Economy

Week 6: Overview of Marketing Plan

Cost and Registration
Course fee is $175. Students are not eligible for college credit. To register, go online: http://nebeginningfarmers.org/online-courses/register-for-upcoming-courses/.

USDA News

USDA Proposes Improvements to Help Deliver Disaster Assistance More Quickly to Producers

Proposed Rule Aims to Streamline Disaster Designation Process

WASHINGTON, Nov. 10, 2011 – U.S. Department of Agriculture (USDA) Farm Service Agency (FSA) Administrator Bruce Nelson today announced that USDA is accepting comments on a proposed rule to streamline the process for its Secretarial Disaster Designation, allowing farmers and ranchers devastated by natural disaster to obtain assistance faster. The improvements outlined in the proposed rule aim to cut the time to make a disaster designation by as much as 70 percent. Designating disaster counties is a key step to authorizing disaster assistance for some of the programs administered by USDA. Disaster assistance provides support to American producers as part of the farm safety net. USDA believes that a strong farm safety net is important to the vitality of American agriculture.

"America's farmers and rural communities are vitally important to our nation's economy, producing the food, feed, fiber and fuel that continue to help us grow," said Nelson. "Therefore, it's crucial that we help farmers remain productive through difficult times. When disaster strikes, this proposal will help us provide assistance more quickly, streamlining processes from six steps to two. That's the kind of improvement we need to make."

A natural disaster designation makes all qualified farm operators in the designated areas eligible for a variety of assistance from USDA, including low interest emergency (EM) loans and the Supplemental Revenue Assistance Program (SURE). The Secretary of Agriculture is authorized to designate disaster counties to make disaster assistance programs available to farmers and ranchers.

Currently, designations require a state governor or Indian tribal council to initiate disaster designation through a formal request of the Secretary. The process has been in place for more than two decades and regulations have not been substantively revised since 1988. Streamlining the process from six steps to two will enable USDA to help those in need in an expedited manner, allowing farmers and ranchers devastated by natural disaster to obtain emergency loans faster than before. Additionally, the proposed rule can help to ensure all eligible disaster counties receive a designation.

The proposed rule for Secretarial Disaster Designations:

- Streamlines the USDA Secretarial designation process from a six-step process to a two-step process.
- Expedites and simplifies the disaster designation process for severe drought occurrences by using the U.S. Drought Monitor as a tool to automatically trigger disaster areas with no further documentation.

Removes the requirement that a request for a disaster designation be initiated by a state governor or Indian tribal council. Note: This rule still allows a state governor or Indian tribal council to request a Secretarial Disaster Designation.
The proposed rule, which is contained in the Federal Register dated Nov. 14, 2011, at http://www.regulations.gov, has a 60-day comment period. Comments on the proposed rule must be submitted no later than Jan. 13, 2012, to be considered.

For information about FSA and its programs, visit a local FSA county office or go to www.fsa.usda.gov.

NASGA News

North American Strawberry Growers Annual Meeting and Conference – Final Program
February 6-8, 2012, Harrah's Hotel and Casino, Las Vegas, Nevada

Monday February 6, 2012

3:00 PM	NASGA Board of Directors Meeting, Parlour B
3:30 PM	NASG Research Foundation Meeting, Parlour C
6:00 – 9:00 PM	Registration
7:00 – 9:00 PM	Reception Presentation by Lassen Canyon Nursery, Las Vegas Room

Tuesday February 7, 2012

General Session	*Tahoe Room*
7:30 AM	Registration
8:30 AM	How strawberry varieties have changed over the last century and what can we expect in the future? - *Marvin Pritts, Cornell University*
9:00 AM	Grower Profile: Four Corners Farm, *Bob Gray, VT*
9:45 AM	Managing the New UC Day Neutral Cultivars - *Kirk Larson, University of California*
10:15 AM	Break
10:45 AM	Extending the Strawberry Season with Low Tunnels - *Kim Lewers, USDA- ARS*
11:15 AM	Spotted Wing Drosophila – A New Challenge for the Berry Industries - *Rufus Isaacs, Michigan State University*
11:45 AM	NASGA Annual General Meeting and Lunch, Las Vegas Room
1:45 PM	Panel: Trends in Strawberry PYO and Marketing
2:45 PM	Northern Variety Update - *Jim Luby, University of Minnesota*
3:15 PM	Break
3:45 PM	Grower Profile: Polter's Berry Farm - *Steve Polter, Fremont, OH*
4:15 PM	Black Root Rot Management Update - *Marvin Pritts, Cornell University*
7:00 PM	Meet at Carnival Court for Socializing and Networking
	*Silent Auction – Laughlin Room

Wednesday February 8, 2012

7:00 AM	Nurseryman's Breakfast Meeting, Studio 1
8:00 AM	New Pest Management Tools for Insects and Mites - *Rufus Isaacs, Michigan State University*
8:30 AM	Soil Conditioning - *Mark Hutchinson, University of Maine*
9:00 AM	Grower Profile: Unger Farms, *Matt Unger, Cornelius , Oregon*
9:45 AM	Social Media Introduction - *Will Heeman. Heeman's Strawberry Farm, London, ON*
10:00 AM	Break
10:30 AM	General Session or Social Media Workshop

Social Media Workshop (limited spaces available), Las Vegas Room

10:30 AM	Introduction to social media, covering the bases. Whether someone is starting out, wanting to understand the little things they might have missed when beginning with social media or wants a refresher on how to post and how to navigate Facebook and Twitter.
12:00 PM	Lunch
1:30 PM	Part 2 is focused on new developments in social media on key channels, understanding how they will change/improve our reach with consumers and how to better understand our audience. Look at reading analytics, third party applications and how to increase engagement with your audience

General Session

10:30 AM	Rotating with Cover Crops Improves June Bearing Strawberry Production and Soil Quality - *Dennis Portz, Iowa State University*
11:00 AM	Organic Production Strategies - *David Handley, University of Maine*
11:30 AM	High Tunnel and Field Production Systems for Day-Neutral Strawberries in Eastern North America - *Gail Nonnecke, Iowa State University*
12:00 PM	Lunch – Las Vegas Room
1:30 PM	Making Quality On-Farm Compost - *Mark Hutchinson, University of Maine*
2:00 PM	Grower Profile: Heeman's Strawberry Farm, *Florence and Rudy Heeman*
2:45 PM	Break

Registration Form
North American Strawberry Growers Association
2012 Annual Meeting and Conference
Harrah's Las Vegas, Nevada
February 6-8, 2012

All meetings and functions will be held at **Harrah's Las Vegas**
Hotel Reservations – Cut-Off Date – Monday January 22, 2012 - Each individual guest must make their own reservations by calling 888-458-8471. They must identify themselves as members of the NASGA Annual Meeting group code SHNAS2. Room Rate Information - $39.00 Single/Double – plus state and local taxes

NASGA Registration
30 Harmony Way, Kemptville, ON K0G 1J0; Canada
Phone: 613-258-4587; Fax: 613-258-9129; Website: www.nasga.org Email: info@nasga.org

Name: _____
(As you would like it to appear on your badge)

Additional Registrants: _____

Company/Affiliation: _____

Address (including zip or postal code)
_____

Phone: _____ Fax: _____ E-mail: _____

REGISTRATION FEE – NASGA MEMBER
Early Bird Registration (Postmarked by Jan 16, 2012)..... _____ @ $225.00 = $_____
Late Registration (After Jan. 16, 2012)..... _____ @ $275.00 = $_____

REGISTRATION FEE – NON-Member of NASGA
Early Bird Registration (Postmarked by Jan 16, 2012)..... _____ @ $325.00 = $_____
Late Registration (After Jan 16, 2012)..... _____ @ $375.00 = $_____

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NASGA MEMBERSHIP FEES

Business Membership

New Member: $85 for USA, Canada and Mexico ☐ $95 for other countries ☐ $_____
Rejoining (member in 2008-2010) $175 for USA, Canada and Mexico ☐ $190 for other countries ☐ $_____

Individual Membership (Research, Extension, Student)

$55 for USA, Canada & Mexico ☐ $65 for other countries ☐ $_____

All Fees in US Funds **TOTAL**..... $_____

PAYMENT INFORMATION – MC, VISA or Check Check # _____ Amount $_____

Credit Card #_____ Exp. Date _____ *CVV Number _____
*(3 Digit Code of Back of Credit card)

Name on Card _____ Signature _____

Billing Address **(including zip code)** _____

NASGA News (continued)

3:15 PM Round Tables – Choose 3 of 5 (30 minutes each)

1. Cover Crops, Compost and soil Conditioning – Mark Hutchinson, Dennis Portz
2. Insect and Mite Management – David Handley
3. Tunnel Production – Kim Lewers, Gail Nonnecke
4. Marketing Ideas – Leona Staples
5. Strawberry Varieties – Nate Nourse, Jim Luby, Kirk Larson

5:00 pm Adjourn

7:00 pm Meet at Carnival Court for Socializing and Networking

Thursday February 9, 2012

NARBA News

North American Raspberry & Blackberry Growers Annual Meeting and Conference—Final Program

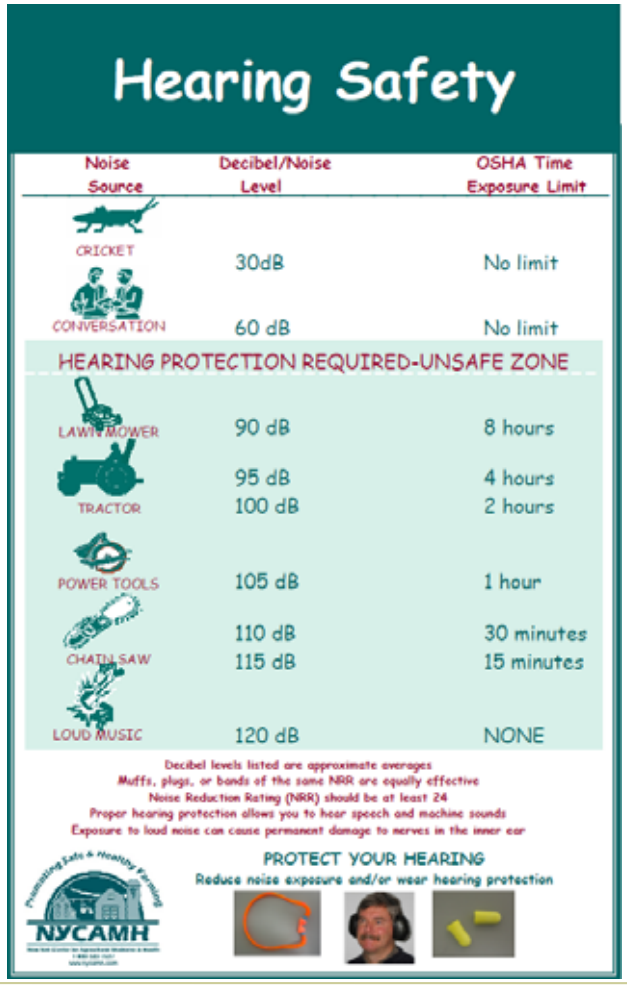
January 16-18, 2012. Kalahari Resort, Sandusky, OH, in association with the Ohio Produce Growers and Marketers Congress.

For more information: call 919-542-4037, email info@raspberryblackberry.com, or visit www.raspberryblackberry.com.

SUNDAY, January 15		
7:30	NARBA Hospitality Room, Hotel Room 1504	--
MONDAY, January 16		
8:00 -9:00	Welcome & Grower Spotlight: Moreland Fruit Farm (Cypress) – *Fred Finney*	--
9:00-9:45	Health Benefits Research with Bramble Fruit (Cypress) – *Tong Chen, Joseph Scheerens*	
10:00-11:15	Keynote Presentation: Making Food Safety Work for You & Your Wallet (Indigo Bay)	--
11:30-1:30	A Blackberry Breeder's Thoughts on How to Grow the Fresh Blackberry Industry & NARBA Annual Meeting & Luncheon (Ends at 1:30 PM) (Cypress) – *John R. Clark*	--
		--
1:30 -2:45	Maintaining Fruit Quality: Post Harvest Chilling for Small Growers (Cypress) - *Joseph Scheerens, Bruce Smith, John Wilhoit*	--
	Bramble Plant Nutrition (Cypress) – *Eric Hanson*	
4:30-5:45 PM	Solving the Labor Dilemma (Cypress) - *Frank Gasperini, Bruce Smith*	
6:00-7:00 PM	7 PM Bramble Growers Dutch Treat Dinner, The Reserve Restaurant	--
Evening	NARBA Hospitality Room	

NARBA News *(continued)*

TUESDAY, January 17		
8:00 -9:15 AM	Growing Blackberries in Colder Areas (Cypress) - Steve Bardenhagen, Richard Barnes, Brett Rhoads	8 AM-12 PM Fundamentals of Raspberry & Blackberry Production Workshop (Ends at 12 PM) (Mangrove) – *Pam Fisher, Cathy Heidenreich, Courtney Weber, Eric Hanson, TBA*
9:15-10:45 AM	Facing Challenges in Raising Brambles (Cypress) - *Steve Finney, Mike Pullins, Randy Roush*	
10:45-12:00 PM	Trends & Progress in Raspberry & Blackberry Breeding (Cypress)	
12:00 -1:15 PM	Lunch on own & trade show	
1:15 -2:30 PM	Exploring Mobile High Tunnels (Cypress) - *Bryan Butler*	1-5 PM Workshop: New Paths for Red Raspberry Genetics (Mangrove) - *Catherine Daniels, Chad Finn, Patrick Moore, JD Swanson*
2:30 -4:00 PM	*Trade show only*	
4:00-5:00 PM	Bramble Pest & Disease Hot Topics (Cypress) - *Bryan Butler, Mike Ellis*	
5:00-6:30 PM	5:00-6:30 OPGMA Congress Reception (Grand Hall)	
6:30 – 8:00 PM	Dinner on your own	Red Raspberry Workshop Working Group (Banyan) – *Catherine Daniels*



Ontario Berry Growers Association – Ontario Fruit and Vegetable Convention Berry Program

Tuesday, February 21, 2012 – Embassy Suites, Niagara Falls

9:00 am	Introducing Summer Evening – A New June Bearing Strawberry Selection	Dr. Adam Dale, University of Guelph
9:15 am	Grower Profile – Avonmore Berry Farm	David and Pam Philips Avonmore, ON
10:00 am	Virus Diseases in Strawberry and Raspberry	Pam Fisher, OMAFRA
10:30 am	BREAK	
11:00 am	Innovation and Project Results for Raspberries in California	Mark Bolda, University of California Cooperative Extension, Santa Cruz
11:30 am	The Do's and Don'ts with Herbicides in Strawberry Plasticulture	Kristen Callow OMAFRA, Ridgetown
12:00	OBGA Annual Meeting & Lunch 12:00 – 1:30 pm	
1:40 pm	New Regulation 119/11 - Implications for labeling and packaging berry crops	Suzete Moniz, OMAFRA, Guelph
2:00 pm	Employee Recruiting and Management	Michelle Herrle Herrle's Country Farm Market
2:45	How to put your dayneutrals to bed for the winter and other recent research results	Becky Hughes, University of Guelph
3:15 pm	Round Table Discussions	Join 3 of the 5 discussions 30 minutes per round
	1. Food Safety Audits and Traceability – What you need to know	Colleen Haskins, OMAFRA, Guelph
	2. Labeling and Packaging Regulations	Suzete Moniz, OMAFRA
	3. Wildlife Management	Mike Gatt
	4. Employee Recruiting and Management	Michelle Herrle Herrle's Country Farm Market
	5. Dealing with Charitable Donations	Paul Ralph, Cedar Hill Farm Alf Krause, Krause Berry Farms
4:45 pm	Adjourn	
7:30 pm	OBGA social time and refreshments	

Ontario Berry Growers Association – Ontario Fruit and Vegetable Convention Berry Program

Wednesday, February 22, 2011 – Scotiabank Convention Center, Niagara Falls

9:30 am	Why Raspberries Like Tunnels	Dr. Adam Dale, University of Guelph
10:00 am	Marketing and Promotion Opportunities for Berries	Jennifer VanDeVelde, Wholesome Pickins
10:30 am	Managing Wildlife on the Farm	Mike Gatt, Ministry of Natural Resources
11:00 am	Management of Nematodes in Berry Crops (with or without fumigants)	Dr. George Bird, Michigan State University, Michigan
11:30 am	Farm Profile – Krause Berry Farms	Alf Krause Krause Berry Farms, Langley, BC
12:15 - 2:00	Lunch & Trade Show	
2:00 pm	National Berry Marketing Initiative Update	Karen Fenske, StratPoint Solutions, Vernon, B.C.
2:30 pm	California Strawberry Production and Innovations	Mark Bolda, University of California Cooperative Extension, Santa Cruz
3:00 pm	Biology and Management of Spotted Wing Drosophila in Berry Crops	Rufus Isaacs Michigan State University
3:30 pm	Managing Black Root Rot in Strawberries	Michael Celetti, OMAFRA, Guelph

ONTARIO BERRY GROWERS ASSOCIATION
30 Harmony Way, Kemptville, ON, K0G 1J0
Phone 613 258-4587 Fax 613-258-9129
Email: info@ontarioberries.com Web: www.ontarioberries.com

Tuesday February 21, 2012
Embassy Suites Fallsview, Niagara Falls

Hotel rate is $125 plus applicable taxes. Call 1-800-420-6980. Please refer to "Ontario Fruit & Vegetable Convention" rates.

OBGA 2012 CONFERENCE REGISTRATION

NAME _____

ADDRESS _____

TOWN _____

PROVINCE _____

POSTAL CODE _____

PHONE NO. _____

MEMBERS	QTY	EACH	COST
Received by February 15, 2012		$60.00	
Late Registration		$80.00	

NON-MEMBERS	QTY	EACH	COST
Received by February 15, 2012		$85.00	
Late Registration		$105.00	
		HST (13%)	
		AMT DUE	

PRE-PAYMENT DETAILS
(TO BE PROCESSED Feb/08)

CHEQUE ENCLOSED ☐

VISA ☐

CARD NUMBER _____

EXPIRY DATE MTH ☐ YEAR _____

SEND THIS FORM ALONG WITH PAYMENT TO:
ONTARIO BERRY GROWERS ASSOCIATION
30 HARMONY WAY, KEMPTVILLE, ON K0G 1J0
FOR INQUIRIES, CALL 613-258-4587 or FAX Registration to 613-258-9129

On the Organic Side...

On the Organic Side...

Integrated Management of Small Fruit Diseases – An Introduction – *Mike Ellis and Mizuho Nita, Ohio State University*

Our apologies - this article should have accompanied last month's article, "Cultural Practices for Disease Control in Organic Strawberry Production Systems" but was inadvertently omitted.

Disease management strategies are very similar for both organic and conventional small fruit production systems. In both systems it is important to develop and use an integrated disease management program that integrates as many disease control methods as possible, the more the better. Major components of the disease management program include: **use of specific cultural practices; developing knowledge of the pathogen and disease biology, use of disease resistant cultivars, and timely application of organically approved fungicides or biological control agents or products when needed.** Most disease control methods or strategies are identical for both conventional and organic production systems. Perhaps the greatest difference between organic and conventional production systems is that organic growers are not permitted to use synthetic "conventional" fungicides. If disease control materials are required in the organic system, growers are limited to the use of "inorganic" fungicides such as sulfur (elemental sulfur and lime-sulfur) or copper fungicides (Bordeaux mixture and fixed copper products). In addition, there are several new "alternative" disease control materials and biological control products that are currently available and are cleared for use in organic production.

There are several problems associated with the use of these inorganic fungicides and "alternative" products in small fruit disease control programs. Among the most important are 1) **Phytoxicity**, which is the potential to cause damage to foliage, fruit set and fruit finish (this is a concern primarily with copper and sulfur fungicides); and 2) **their limited spectrum of fungicide activity**, which means they may not be capable of providing simultaneous control of the wide range of fungal pathogens that can cause economic damage to the crop. For example, sulfur is highly effective for controlling powdery mildew on most fruit crops, but provides little or no control of most other diseases. In a climate like the Northeast, environmental conditions during the growing season are generally very conducive (warm and wet) to the development of several important diseases, insect pests and weeds. Limitations in relation to which pesticides may or may not be used, present the organic grower with some unique and very demanding challenges. Whereas the use of various cultural practices and disease resistance will be the "back bone" of the organic disease management program, the limited use of organically approved pesticides or biocontrol agents will probably be required at times.

Identifying and Understanding the Major Small Fruit Diseases

It is important for growers to be able to recognize the major small fruit diseases. Proper disease identification is critical to making the correct disease management decisions. In addition, growers should develop a basic understanding of pathogen biology and disease cycles for the major strawberry diseases. The more you know about the disease, the better equipped you will be to make sound and effective management decisions. The following literature contains color photographs of disease symptoms on strawberries, as well as information on pathogen biology and disease development:

Strawberry Diseases

Strawberry Production Guide - This is a very comprehensive book covering most phases of strawberry production. It can be purchased from: Northeast Regional Agricultural Engineering Service, 152 Riley-Robb Hall, Cooperative Extension, Ithaca, NY 14853. Phone: 607-255-7654.

Compendium of Strawberry Diseases - Published by the American Phytopathological Society, 3340 Pilot Knob Rd., St. Paul, Minnesota 55121. Phone: 612-454-7250 (1-800-328-7560). This is the most comprehensive book on strawberry diseases available. All commercial growers should have a copy.

Bramble Diseases

It is important for growers to be able to recognize the major bramble diseases. Proper disease identification is critical to making the correct disease management decisions. In addition, growers should develop a basic understanding of pathogen biology and disease cycles for the major bramble diseases. The more you know

About the Author:

Mike Ellis is professor of plant pathology at Ohio State University. In addition to his responsibilities in research and teaching Mike is a State Extension Specialist with The Ohio State University Extension. It is his duty to provide the most reliable and current information available on diagnosis and control of fruit crop diseases to Ohio fruit growers and other interested clientele.

On the Organic Side...(continued)

about the disease, the better equipped you will be to make sound and effective management decisions. The following literature contains color photographs of disease symptoms on brambles as well as in-depth information on pathogen biology and disease development. These publications also contain excellent color photographs and information about insect pests as well.

Compendium of Raspberry and Blackberry Diseases and Insects Published by the American Phytopathological Society, 3340 Pilot Knob Rd., St. Paul, MN 55121. Phone: 612-454-7250. (1-800-328-7560). This is the most comprehensive book on bramble diseases and insects available. All commercial growers should have a copy.

Bramble Production Guide This is a comprehensive book covering most phases of bramble production. It can be purchased from: Northeast Regional Agricultural Engineering Service, 152 Riley-Robb Hall, Cooperative Extension, Ithaca, NY 14853. Phone: 607-255-7654.

Blueberry Diseases

Compendium of Blueberry and Cranberry Diseases - Published by the American Phytopathological Society, 3340 Pilot Knob Rd., St. Paul, Minnesota 55121. Phone: 612- 454-7250 (1-800-328-7560). This is the most comprehensive book on blueberry diseases available. All commercial growers should have a copy. The following information gives a description of symptoms, causal organisms, and control of the most common blueberry diseases in the Midwest.

Highbush Blueberry Production Guide - This is a very comprehensive book covering most phases of blueberry production. It can be purchased from: Northeast Regional Agricultural Engineering Service, 152 Riley-Robb Hall, Cooperative Extension, Ithaca, NY 14853. Phone: 607-255-7654.

Brambles: Production, Management and Marketing Bulletin 783 of Ohio State University Extension, can be obtained from Ohio State University Extension Publications Office, 385 Kottman Hall, 2021 Coffey Rd., Columbus, OH 43210-1044. Phone 614-292-1607

Integrated Management of Strawberry Diseases

The objective of an integrated disease management program is to provide a commercially acceptable level of disease control on a consistent (year-to-year) basis. This is accomplished by developing a program that integrates all available control methods into one program. An effective disease management program for strawberries must emphasize the integrated use of specific cultural practices, knowledge of the pathogen and disease biology, disease resistant cultivars and timely applications of organically approved fungicides or biological control agents, when needed. In order to reduce the use of fungicides to an absolute minimum, the use of disease resistance cultivars and various cultural practices must be strongly emphasized. Many strawberry varieties adapted to the Midwest have good resistance to a number of important diseases. This is generally not the case with other small fruit crops. In strawberry, the use of disease resistant varieties is especially important for organic production.

Integrated Management of Bramble Diseases

An integrated disease management program for controlling raspberry and blackberry diseases integrates the use of all available control methods into one program. The use of organically approved fungicides or biological control agents for control of several important diseases can be a major part of the overall disease management program, but the use of various cultural practices is perhaps even more important in obtaining effective disease control. An effective disease management program for brambles must emphasize the integrated use of specific cultural practices, knowledge of the pathogen and disease biology, disease resistant cultivars, and timely applications of organically approved fungicides or biological control agents or products when needed. The objective of the disease management program is to provide a commercially acceptable level of disease control on a consistent (year-to-year) basis, with minimal fungicide use.

Integrated Management of Blueberry Diseases

In relation to disease control, blueberries have the greatest potential for organic production. The lack of wild relatives of blueberry in much of the Midwest provides a degree of isolation from some of the more damaging diseases. In addition, blueberry plantings in states like Ohio are often scattered and somewhat isolated. Several commercial plantings in Ohio that are 15 to 20 years old have never received a fungicide application, yet have been very productive. However, if diseases such as mummy berry and anthracnose are introduced into the planting, they can be very destructive. For the most destructive blueberry diseases, organic fungicides are of little value once the diseases are established in the planting.

As with all crops, the development and use of an integrated disease management program will be essential to the organic production of blueberries. The objective of an integrated disease management program is to provide a commercially acceptable level of

ON THE ORGANIC SIDE... (continued)

disease control on a consistent (year-to-year) basis. This is accomplished by developing a program that integrates all available control methods into one program. An effective disease management program for blueberries must emphasize the integrated use of specific cultural practices, knowledge of the pathogen and disease biology, disease resistant cultivars and timely applications of organically approved fungicides or biological control agents, when needed. In order to reduce the use of fungicides to an absolute minimum, the use of disease resistant cultivars and various cultural practices must be strongly emphasized.

(Excerpted and reprinted with permission from: OSU Organic Small Fruit Disease Management Guidelines .)

Focus on Food Safety

Food Safety Instruction - New Guidelines For Food Marketers

Each year, thousands of people report illness from food borne pathogens. Many of these are caused by critical breakdowns in processing and preparing food products for sale to consumers. While farmers remain conscientious about their role in maintaining food safety, a new set of guidelines for farmers, and other direct marketers of food products has been developed and will be presented to Cooperative Extension educators throughout the state.

The Good Agricultural Practices (GAPs) program has provided clear cut guidelines for farmers to follow in production and post-harvest handling to minimize the risk for contamination. Farmers following these guidelines will have a safe product to bring to market. But there are no standards or guidelines concerning retailing venues where farmers sell their products direct to consumers. How do we maintain environments that enhance the safety of the foods being sold?

The Farmers Market Federation of NY and Cornell Cooperative Extension of Jefferson County received a Federal State Marketing Improvement Program (FSMIP) grant from USDA AMS to develop a set of guidelines for farmers and farmers market managers to follow to ensure that foods being sold in various farm direct marketing outlets will be protected from potential contamination and be safe for consumers. The guidelines present recommended actions to take to minimize the risks of contamination in the retail setting. Looking at such factors as product, display, animals in the marketplace, vendor hygiene, consumer contamination and other factors, the guidelines will help farmers recognize the potential risks and provide recommendations to minimize those risks. They are based on sound science, compliance with current food safety regulations and ease of farmer implementation and intended to enhance the quality of local agriculture as well as consumer awareness and safety.

To assist farmers in utilizing the guidelines, the project team has developed a full curriculum for Cornell Cooperative Extension Educators and other farm service providers to use in local workshops to train farmers and market managers in assessing the risks in their retail operations and adopting guidelines that will minimize those risks. The curriculum covers farmers markets, Community Supported Agriculture (CSA), on-farm markets, agritourism, direct delivery and crisis communications. The curriculum can be found at the Farmers Market Federation of NY website, www.nyfarmersmarket.com. There is no fee for download and no restrictions on who may download, only that you provide a name and email address to allow the project team to follow up.

The Farmers Market Federation and CCE Jefferson County will be hosting a series of "train-the-trainer" workshops to introduce CCE Educators and other farm service providers on the use of the curriculum. Learn how you can help the farmers in your county and region to develop a plan to keep their foods safe in their direct marketing enterprises, keeping their customers safe and ensure the reputation and vitality of their farm operation. The first of these workshops will be held via webinar December 8, 2011 from 11am to Noon; and again on December 16, from10am to 11am. To register, email Diane Eggert @deggert@nyfarmersmarket.com.

Farmers are encouraged to contact their county Cornell Cooperative Extension office. Ask when they will be offering the "Food Safety at Direct Marketing Venues" workshops and encourage them to participate in the train the trainer webinars. The workshops will help you keep your customers safe and your farm secure.

For more information, contact Amanda Rae Root at arr27@cornell.edu or Diane Eggert at deggert@nyfarmersmarket.com.

Cornell University
Cooperative Extension

USDA

Attention Vegetable and Fruit Growers:

FARM FOOD SAFETY TRAINING WITH GAPs

Register Now – Space is Limited!

Two Day Training – January 4-5, 2012

Registration/Coffee @ 8:30, Program runs 9-3:30 both days, Lunch included

Location: LIVINGSTON COUNTY HIGHWAY FACILITY
4389 GYPSY LANE, MT. MORRIS, NY 14510

Cornell Cooperative Extension, The Cornell Vegetable Program, the Lake Ontario Fruit Team, the Cornell National GAPs Program, and the New York State Department of Agriculture and Markets will be running a series of Good Agricultural Practices (GAPs) trainings for 2012. The first will be held in Mt. Morris (Livingston County). This is for those farmers who are being required by buyers to provide third party verification of their food safety practices and for farmers thinking about moving in this direction, with Federal Food Safety Legislation a reality in the very near future. The workshops are being partially funded by a grant from the Genesee Valley Regional Marketing Authority, along with Smith-Lever grant "Creating a comprehensive state-wide GAPs food safety education program". In addition, funding to support the participation of NYS Department of Agriculture and Markets Auditors and the distribution of GAPs educational materials comes from a Specialty Crop Block Grant to NYS from the USDA.

The first day will focus on the details of what GAPs is, how it works, and what it means for your farming operation. The second day will be devoted to helping you write a food safety plan as required for audit certification or if you just want to have one for yourself to implement on your farm. A laptop computer is required for the second day. If you need to borrow one, please let us know ahead of time (check off on registration form below) so we can have one available. In addition, if you have a person from your farm who has better computer skills, you can bring them for day 2. It is strongly recommended that you attend day 1 in order to begin writing your food safely plan on day 2. Pre-registration is advisable because space is limited for the second day.

Cost: $100 for two days for one farm member $20 per additional member for both days.

Note: This is **a 3-day training** - the first 2 days on January 4 & 5, and the third is TBA, attendance optional during the growing season on a participant's farm (mock audit).

For directions to the Mt. Morris training, and the other trainings dates/locations/ this winter, please go to **the GAPs event calendar :** http://www.gaps.cornell.edu/eventscalendar.html

Pre-registration is recommended by January 2. If your registration is not received by our office by January 2 and you still are interested in attending the trainings, please call Craig Kahlke. The registration fee of $100 for the two days is to cover materials, lunch, breaks, and other costs of the programs. A private consultation at your farm costs $100/hour, so this is a huge value. If you are bringing another person from your farm on either or both days, please add $20 to cover the cost of lunch and refreshments.

Call or email Craig Kahlke (Fruit team) at 585-735-5448, cjk37@cornell.edu, or Robert Hadad (Vegetable team) at 585-739-4065, rgh26@cornell.edu, or Dave Thorp (CCE-Livingston) at 585-658-3250, dlt8@cornell.edu for questions or for more information.

Please send registration form and check payable to: "Cornell Cooperative Extension"
Attn: Kim Hazel, 12690 NYS Rt 31, Albion, NY 14411.

$100.00 - 2 day total 1 person
$120.00 - 2 day total to add another person from your farm for Days 1 & 2

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Registration Form for the Mt. Morris Food Safety Training with GAPS –Jan 4-5

Laptops required for day 2 (January 5) only, it is recommended you bring a computer-savvy person from your farm on day 2.

Check here **if you need a laptop** _______ - there are loaners available. A portable USB flash drive will be provided loaded with all the necessary forms and information to continue to complete the food safety plan started at the training.

Name(s)____

Business Name____

Address____

Phone______________________

Fax_______________________Email______________________

Space is limited, so mail your forms and payment in today.

Focus on Pest Management

Spotted Wing Drosophila – What We Learned in 2011 - *Kathy Demchak, Penn State Senior Extension Associate, kdemchak@psu.edu; Alex Surcică, Penn State Extension Educator, Alex.Surcica@psu.edu; and Dave Biddinger Penn State Senior Research Associate, djb134@psu.edu*

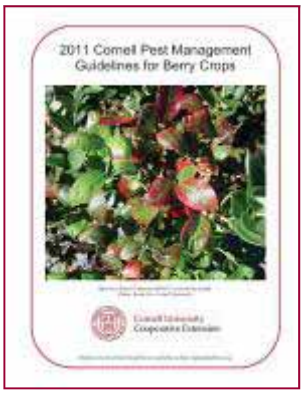
Though many of us expected to find spotted wing drosophila (SWD) in Pennsylvania in 2011, the widespread occurrence and sheer numbers found during the fall in some locations were surprising. Because of high SWD infestations, some growers gave up on harvesting fall raspberries and day-neutral strawberries. The problem was probably made worse by drenching rains from Hurricanes Irene and Lee which ruined berries that were then left in the field. SWD and other vinegar flies multiplied in the unharvested fruit, which then resulted in more SWD to infest ripening fruit that otherwise could have been harvested later. Fortunately, SWD populations were relatively low this year until fall. The concern for next year is that we don't yet know how well SWD will survive the winter here, so we don't how many will be present at the beginning of the growing season next spring.

So, where was SWD found in PA in 2011? Essentially, in every thin-skinned fruit crop in which we looked, except for spring strawberries. Personnel in the Entomology Department (D. Biddinger and post-doctoral scholar Neelendra Joshi) set out traps in various crops in south central PA, and tracked movement among crops. Within individual locations, which crops had the highest populations may have depended on what other fruit choices were available. High populations were found in cherries, fall raspberries, and blackberries, with lower populations found in blueberries. High numbers were also found in grapes in some instances, though in the Pacific Northwest (D. Walsh, personal communication). SWD larvae in fruit were not as big of an issue in grapes as in some other crops. With the help of extension educators and growers, by the end of the growing season, we had set out traps for SWD in 16 counties in PA, and found it in all 16. That's hardly comforting. Surprisingly, high numbers were still trapped in fruit plantings in October from which fruit had been harvested for months. We also learned that it is easier, when examining specimens, to have them in vinegar or alcohol rather than on sticky cards.

During the process of trapping for SWD, most people setting out traps noticed that a number of other vinegar or fruit flies had spots on their wings. These could be differentiated from SWD by certain characteristics. The additional species of vinegar flies that people were finding fell into 3 different genera. For comparison, Photo 1 below is a male SWD, *Drosophila suzukii*. Note the large black spot on each wing that is just a little forward of the wingtip. An additional defining characteristic of male SWD is two black bands on each front leg. Photo 2 is of a male fruit fly from a different genus (*Scaptomyza*), and was found in large numbers in strawberry plantings that had straw between the rows. This nearly put some of us in a panic at first glance, but it is not a pest of fruit crops. It feeds on decomposing straw or damaged and unmarketable fruit. Photo 3 is also a species from a different genus (*Leucophenga*) and it is known to feed on fleshy fungi.

The problems some growers experienced with SWD made apparent the fact that we either need to better understand and monitor for SWD, or face challenges when producing thin-skinned fall fruit crops. Fortunately, along with Bryan Butler from the University of Maryland, we secured funding from the NE-IPM Center through an Urgent IPM Grant, which will allow us to continue monitoring efforts for SWD in PA and MD next summer, produce a series of factsheets for growers, and present information on this pest at meetings this winter. The first factsheet in this series will focus on differentiating SWD from other species that are similar in appearance. Additional factsheets will cover information on monitoring and management. The complete series of factsheets will be posted on the Web and will also be made available at winter meetings.

Earlier articles on SWD monitoring and management were included in the Fruit Times (http://extension.psu.edu/fruit-times/news/2011) in May and August, with an additional article appearing in the Vegetable and Small Fruit Gazette in September (http://extension.psu.edu/vegetable-fruit/newsletter/2011-issues/the-vegetable-small-fruit-gazette-september-issue/view). Information on



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 *(continued)*

SWD from the NE-IPM program can be found at http://www.northeastipm.org/about-us/publications/ipm-insights/spotted-wing-drosophila-in-the-northeast/.

Photo 1. Male Spotted Wing Drosophila. Note spot on each wing and 2 black bands on each front leg. Note that coloration on abdomen is in solid bands. (Photo by Alex Surcică).

Photo 2. Male *Scaptomyza* specimen. Spot is at very tip of wing, and there are no black bands on the front legs (Photo by Alex Surcică).

Photo 3. Male *Leucophenga varia* specimen. Wing spots are further forward and are smaller than on SWD. Abdomen has spots, not bands. (Photo by Alex Surcică).

(Reprinted with permission from: The Penn State Extension Vegetable and Small Fruit Gazette, Vol. 15, No. 12, December 2011.)

Focus on Pest Management *(continued)*

Winterizing Your Sprayer - *Christina Curell, Michigan State University Extension*
Now is the time to get your sprayer properly winterized and ready for next spring.

All summer you have diligently maintained, calibrated and cleaned out your sprayer. Good winterizing and storage of your sprayer can ensure that next year when you pull it out of your shop it will function properly. Here are a few tips that you can use to make winterizing easy.

Rinse
Prior to storing a sprayer for the winter it needs to be thoroughly rinsed of all pesticide residues. It is better to rinse the sprayer several times with a small amount of clean water than to fill it up only once. Dispose of the rinsate in a field that has proper setbacks from all water sources. Do not allow the rinsate to accumulate into puddles. It is preferable to rinse the sprayer on an impervious surface where the rinsate can be collected and taken to a Clean Sweep site. At this time make sure that all water is drained out of the sprayer so no damage is caused by water freezing. Once the inside of the tank is cleaned out do not forget about the outside of the sprayer. The outside should be rinsed with clean water and if at all possible on an impervious surface and the rinsate collected. Always remember to read the label of the pesticide used and use appropriate personal protective equipment when cleaning.

Clean
Once you have the tank properly rinsed the next step is to decontaminate it. You can purchase commercial cleaning agents or you can clean your system with some common household products. For a chart of the product and amount that you should use consult **"Maintenance, Cleaning and Storage of Ground Sprayers"** Montana State University Extension Bulletin number MT198917AG. Remember to run the cleaning solution through the entire system including agitation and return lines. Rinse clean water through the system after it has been thoroughly cleaned opening up the nozzles and running the water until only clean water is coming out.

Maintenance
Now that your sprayer is rinsed and cleaned carefully inspect the system making note of any maintenance concerns and repairing them. Look at nozzles, screens, hoses, valves, pumps, boom, as well as the tank. Now is a good time to check for tank integrity. See How to check poly tank condition using three different methods. Now is also the time to make any modifications that you need to make. Please remember that even though the system has been cleaned you still need to be cautious and wear all labeled personal protective equipment.

Storage
The final step is to properly store the system. Any removable parts should be removed to ensure that there is no damage during storage. For example nozzles, filters, tips, check valves, screens, pressure gauges. If at all possible store these in an area that will not freeze. Clean filters with soapy water before storage. The last step is to circulate antifreeze throughout the system including the boom's hoses. Cap the boom nozzles, one or two nozzles may need to be left open to ensure total circulation remember to cap them when the system is filled, to make sure that antifreeze is in the entire system.

Your system is now ready for storage. If you have foam markers and flow meters don't forget to clean these also. To clean them follow the manufacturer's suggestions. For more information please consult **"Maintenance, Cleaning and Storage of Ground Sprayers"** Montana State University Extension Bulletin number MT198917AG.

This article was published on MSU Extension News for Agriculture. For more information from MSU Extension, visit http://news.msue.msu.edu.

Disease Snapshot - *Kerik Cox, Cornell University*

Disease Name: Strawberry Anthracnose

Cause: *Colletotrichum fragariae, C. acutatum, C. gloeosporioides*

When to watch for it: Bloom to harvest

First line of defense: Cultural controls such as the use of low-nitrogen fertilizers and avoiding excessive and overhead irrigation are effective. Harvesting frequently to remove overripe fruit and removing infected fruit during harvest also lessens the incidence of post-harvest infections.

Summary: Phytophthora root rot decline in raspberries will begin in the spring as the soil warms and plants begin to put out new growth. Unlike Anthracnose can be caused by several species of Colletotrichum that can infect and rot leaves, stems, petioles, and fruit. The earliest infections typically target the flowers and can occur any time after the bud emerges in the spring. This infection often kills the flower and can be mistaken for fertilizer burn.

Early infections on green fruit appear to be water soaked spots, which later develop into firm, dark rounded sunken lesions. Infections are usually more severe on mature fruit, and lesions can expand to encompass the entire fruit and sporulate profusely with orange to salmon-colored conidial masses. Spore production, release, and infection are hastened by warm, humid weather, and are optimal at 90°F.

The best control is to prevent establishment into new areas by planting anthracnose-free tissue culture stock.

Should anthracnose become established, limit the amount of nitrogen, remove and destroy infected plant parts, and apply protective fungicides.

Water Works!

New Irrigation Planning Checklist - *Lyndon Kelley, Michigan State University Extension*

When planning a new irrigation system for your farm a little organization can help avoid mistakes. The following check list has been collected from several well-seasoned irrigators and irrigation sale people.

Irrigation water requirements - Is water available in the quantities needed to irrigate? In Michigan and Indiana evaporation and plant water use from the soil are between 0.25" and 0.30" for several days each summer, systems that can provide 5 gal/acre irrigated will meet the 0.25"/day. Seven gal/acre irrigated is needed to provide 0.30" water requirements. This capacity will be require 24 hours per day 7 days per week continued pumping in time of drought.

Ground water availability - Irrigation is not profitable without a reliable and adequate source of water. Nearby large volume irrigation, municipal or industrial wells are an excellent source of water availability. Well drillers familiar with large volume wells in your area are also excellent resources. Michigan has available groundwater mapping tools that can help evaluate potential water withdrawal sites.

Surface water availability - Is surface water available in dependable large volumes? Surface water quantities need to be available at the time of maximum irrigation, often late July early August. This is the season the surface waters are near their lowest. Make sure to evaluate available flow the summer before you start irrigating. In most areas you may not delete stream flow to the extent that it negatively impacts neighbors or the environment. If not, consider part of the water of the states, drainage ditches flow, may be depleted. Remember there can be major contamination challenges impacting food safety in using surface water for vegetable irrigation and cooling.

Water Works! (continued)

Water rights and regulation - Make sure you understand your rights and obligation to use water in your State. Example: Michigan operates as a riparian state for surface water use allowing only the property with legal description adjacent to the surface water to receive the water, but well water may be transfer between properties. For information on Michigan water rights see this guide produced by Michigan State University (MSU) Extension. Indiana information on groundwater availability can be found at Indiana's Department of Natural Resources website.

Water registration - Irrigation water use almost always is considered a large volume water use (capacity to pump > 70 gal. /min). In both Indiana and Michigan new installations require a registration. In Indiana this is handled by Indiana DNR.

In Michigan you will need to work through the Michigan Water Withdrawal Assessment Tool to determine if your proposed water use is likely to cause a negative environmental impact. At the end of the process you will either be able to register online or may be required to request a site specific review by Michigan Department of Environmental Quality (MDEQ). MDEQ site specific reviews may result in allocation of the water resulting in registration or the opportunity to bring together all large volume water users in the watershed to negotiate reducing use by existing water users to allow allocations for a new water use. For information on Michigan's water use registration process review irrigation fact sheet #7. Indiana information on groundwater availability can be found at Indiana's Department of Natural Resources website.

Options for sharing irrigation equipment - Irrigation systems are very scale dependent. Sharing the irrigation expense by jointly investing with a neighbor often leads to a configuration which is better and is more cost effective. For more information on split irrigation cost between neighbors see irrigation fact sheet #10.

Map your irrigation ideas - Acquire an aerial map of all the land in question for your irrigation projects. Excellent maps and tools are available from Google maps and others or your local USDA Farm Service Agency paper map and a pencil/compass will work. Identify large spaces of land you have available that are adjacent to or may share water sources. Identify major excavation needs such as woodlot or fence line removal. Identify drainage ditch and wet areas that will require modifications for the system to cross.

Power sources - Identify available power sources – a three phase power line in close proximity (1/2 mile or less) to potential water source(s) is the cheapest. Liquid fuel storages located near wells and surface water pose potential environmental risks, along with higher equipment, maintenance and fuel cost, leaving engine power as a second choice for most situations.

Get multiple bids - Use irrigation professionals to your advantage. Take your best ideas to at least two irrigation sales/design people. Many will have access to excellent mapping and planning software tools, plus they will have far more experience than most producers in irrigation system design. Compare potential designs on a cost per irrigated acre basis (for an average years irrigation). This process will help equalize investment in equipment with energy cost and labor. Example work sheets are available under the irrigation cost section of this MSU Extension website.

Irrigation economics - Make sure irrigation will pay. Think in terms of increasing your average net income per acre after you have covered the additional irrigation related bills. To receive good outcomes, expect to provide good estimates of increased fixed and variable costs. Figuring this out in advance of the investment is detailed, but is well worth the time. An excellent tool to assist in evaluating the economic feasibility of a proposed project is the Capital Investment Model developed by MSU Educator Roger Betz.

About the Author: Lyndon Kelley has served as an Irrigation Educator for MSU and Purdue Extension for the past three years working in the areas of irrigation management and water policy.

Lyndon is a twenty-three year member of MSU Extension staff, serving 12 years as an Ag/Natural Resource Agent in the heavily irrigated St. Joseph County Michigan followed by five years as the Southwest Michigan District Groundwater Agent.

With twenty two years of irrigated corn, seed corn and soybean irrigation experience Lyndon has learned to look for maximum return from the least amount of water and expense needed.

Water Works! (continued)

Crop rotation and tillage preferences - Among the traditional crops, commercial corn and alfalfa have shown the greatest economic advantage to irrigation. Small grains and soybeans have offered some of the lowest returns from added investment in irrigation. Changes in crop rotations often result from adding irrigation. Although it is not always the case, a smaller proportion of irrigated fields are managed using no till systems then non-irrigated fields. Excessive corn residue produced on irrigated fields might be part of the reason.

Specialty/vegetable crop options - Indiana and Michigan's irrigated land is dominated by contracted specialty crops like vegetable and hybrid seed corn production. The reduced risks offered by sandy soils for early planting, less delays after rain for field work, low to no flooding injury potential coupled with the removal of drought stress entice the high dollar invested seed and vegetable crops to the area. These options and conditions are not available everywhere in Michigan and Indiana. Avoid the idea that "if you build it they will come". Do your homework and identify what options are realistically available and feasible for your operation.
Match your farming/family goals to your irrigation ideas - If you think you have a difficult time getting away for a summer vacation now, adding irrigation will greatly increase the required summer labor and cut free time. Capable irrigation labor is hard to find. Misjudging your available labor and management time needs towards completing irrigation can lead to a disaster.

Good irrigation planning can set your direction for a profitable and efficient irrigation future - For more irrigation design and management information visit our website.
T
his article was published on MSU Extension News for Agriculture. For more information from MSU Extension, visit http://news.msue.msu.edu.

Blueberry Variety Review — Dr. Courtney Weber, Cornell University

The most critical aspect of establishing a healthy berry planting is obtaining high quality planting stock that has a vigorous root system and is free from disease and insect pests. The plants should be obtained from a reputable nursery that participates in a certification program to ensure plants are free from diseases such as viruses and root diseases. Mother plants or stock plants derived from tissue culture for starting propagation fields provide the best source of disease and pest free plants. Plants should be ordered well in advance of planting to ensure an adequate supply the desired varieties and plant sizes.

Blueberry nursery plants come in a variety of types (bare root, container grown, tissue culture) and sizes (rooted cuttings, tissue culture plugs, and 2-3 year old plants). Larger plants will mature and produce a crop sooner than smaller plants. Container grown plants may have some advantage to bare root plants, especially if planting is delayed in the spring because they withstand temperature and moisture fluctuations better. However, shipping of containerized plants is more expensive and they may require root pruning if they are root bound when they arrive.

Several characteristics should be considered when selecting varieties including harvest season, yield, fruit quality, hardiness, growth habit, vigor, and disease resistance. The plants go dormant in late fall and over winter in the field. Storing capacity varies greatly among varieties but is considerably higher for blueberries than most other berries. The market has also shifted towards larger fruit for various reasons including greater consumer appeal and increased harvest efficiency, but there is a good market for small "wild type" blueberries from low bush types. Most of the processing market is machine-harvested fruit and some fresh market fruit is sorted from machine harvested lots as well.

Variety Descriptions

Early Season

Bluetta is very hardy but has small dark berries that are difficult to machine harvest and somewhat unattractive in the fresh pack. The large scar on the berry is also a problem. This variety has a weak growth habit and must be pruned carefully to maintain vigor and yield. Winter hardy to -35°C.

Duke is considered the best early season cultivar available. It has late bloom that avoids many frosts and still produces an early crop. The fruit size and quality is very good but the flavor can be bland if picked late. It can be machine harvested. Frost tolerance and winter hardiness is good. Winter hardy to -25°C.

Hannah's Choice produces medium large fruit with high sugar content. The fruit is firmer with better flavor than Duke. Yields are moderate.

Spartan fruit is firm and very large with very good flavor. A late bloom date avoids many frosts, but it still produces a large, early crop. It does best on ideal sites but performs poorly in soils that have to be highly amended for blueberries. It harvests well mechanically and has some resistance to mummy berry. It requires cross pollination for best yields. Winter hardy to -25°C.

Mid-Season

Berkley berries are light blue, firm and very large with very good storage capacity. Fruit flavor is fair. Winter hardiness is moderate. The bush is moderately tall and spreading and suitable for machine harvesting. Care should be taken in pruning to maintain bush shape. Winter hardy to -25°C.

Bluecrop is the most widely planted mid-season cultivar in the world. It produces high yields of medium sized, firm fruit with good flavor. It is hardy in all but the coldest sites and can be machine harvested. The canes tend to be weepy so care should be taken to maintain the shape. It has very good disease resistance. Winter hardy to -25°C.

Bluejay has an upright open growth habit that grows rapidly. It produces moderate crops of medium sized, high quality fruit that can be machine harvested and ships well. It is resistant to some viral diseases and moderately resistant to mummy berry. Winter hardy to -25°C.

Blueray is also a widely planted mid-season cultivar. Fruit size is very good with good flavor and high yield potential. Extra pruning is

Blueberry Variety Review *(continued)*

needed with this spreading bush, as canes tend to weep due to heavy bearing. It has very good winter hardiness. Winter hardy to -25°C.

Cara's Choice produces medium sized fruit with 30% more sugar than Duke and Bluecrop. The fruit can hold on the plant for an extended period before harvest. The bush is low to moderate in vigor. Yields are moderate compared to Bluecrop.

Chippewa is a very winter hardy half-high variety that is productive with large firm fruit. Winter hardy to -35°C.

Draper produces a concentrated harvest between Duke and Bluecrop that can be machine harvested, even for fresh market. The flavor is very good with good hardiness.

Northland is very winter hardy. It is an extremely productive half-high type with medium sized, dark, soft fruit. It can reach 1.25 m tall and produces many canes, which require heavy annual pruning. Winter hardy to -35°C.

Patriot is winter hardy but frost sensitive due to early bloom. The fruit is large and firm with a small blossom scar. Full ripeness is needed for good flavor and sweetness. The bush is small to medium and grows slowly but is still productive. It must be pruned hard for large fruit and be fully ripe for best flavor. Suspected susceptibility to tomato ringspot virus has limited its use in recent years, but it is more tolerant to heavier soils than most varieties. Winter hardy to -25°C.

Sierra is productive and has large firm berries that can be machine harvested. It has a medium sized bush and is less hardy than other cultivars. Winter hardy to -25°C.

Toro is a productive cultivar with large fruit that ripen uniformly. The clusters tend to be tight which makes picking harder. The canes tend to be too upright and thick. Competes with Bluecrop, which may be somewhat better in quality. Winter hardy to -25°C.

Rubel is a wild selection that can be grown for the natural foods market. The fruit is small, firm and dark like low bush varieties. The flavor is fair and yields are moderate. It has very good winter hardiness. Winter hardy to -35°C.

Late Season

Aurora is the latest variety available, producing 5 days after Elliot. The fruit is very firm and stores well. It colors early and can be tart if picked too soon. The fruit size is large with very good yield.

Bluegold produces medium sized berries with small, dry blossom scars. It has good flavor and firmness. It is a low growing bush with many branches and very good hardiness. Winter hardy to -25°C.

Brigitta produces large, firm, flavorful fruit that stores well. It is vigorous but can be less hardy because it grows late into the fall. Excess nitrogen will make this worse. It is susceptible to Phomopsis. Winter hardy to -25°C.

Chandler produces very large berries with good flavor. It has a long ripening season over 6 weeks, which is better for hand harvesting. The bush is vigorous with a slightly spreading habit that can reach 1.5 to 2 m high. Winter hardy to -25°C.

Elliott is a very late season berry with very good shelf life, 30-45 days in a modified atmosphere. The fruit is large and firm but can be tart because it turns blue before ripe. It is a good producer. The bush has an upright habit and forms a dense center that should be pruned to promote air movement. Winter hardy to -25°C.

Jersey is an old (1928) cultivar that is adapted to a wide soil range. It has high yields of machine harvested fruit but the berries are small and soft. The bush has an upright habit and forms a dense center that should be pruned to promote air movement. Winter hardy to -35°C.

Liberty produces fruit approximately 5 days before Elliot with better flavor. The plants are vigorous and upright with good hardiness. The fruit has very good storage capacity.

Winter Mulch for Strawberries– Sonia Schloemann, University of Massachusetts

An important fall job in commercial strawberry production is mulching. Strawberries are commonly grown in cold climates, such as the northern US and Canada, but the strawberry plant itself is actually quite vulnerable to cold injury. Research has shown that, without mulch, strawberry crowns can suffer damage at temperatures below 12°F and unprotected strawberry plants can suffer desiccation damage from drying winter winds. A protective mulch can protect strawberries from cold by providing insulation, and from desiccation by providing a barrier against drying winds. Mulches will also protect plants from injury caused by soil heaving, which results from freezing/ thawing cycles during the winter. So, a key to consistent quality strawberry production in cold climates is in protecting the plants from severe temperatures or temperature swings through the practice of mulching.

Production systems can also affect the need for mulching. Plants on raised beds, for example, are more vulnerable to cold and desiccation injury than plants in level plantings, especially in locations that are exposed to strong winter winds. Annual production systems, such as fall planted plasticulture, may utilize less hardy or disease susceptible cultivars. As we will see, mulching practices must adapt to these new systems.

When should the strawberry grower plan to apply mulch? Research suggests that a good timing guide is to apply mulch after three consecutive days with a soil temperature of 40°F or below. This soil temperature usually occurs after multiple frosts, and when the plants have slowed growth in response to cooler temperatures. It is best to apply mulch before the soil freezes solid. In New England mulches are applied in late November.

What is a good mulch material? The traditional mulching material for strawberries in New England is straw. Straws from wheat, rice, oats, or Sudan grass work well. Straws coarser than Sudan grass are not recommended. Straw should be clean, free from weed seed, and contains a minimum of grain seed. Strawberry growers can produce their own straw, often cutting the straw before the grain seed is viable. Store straw for mulching in a dry area. Occasionally, grain seedlings can become a weed problem the following spring; an application of sethoxydim will give good control.

How much mulch should be applied? A traditional, level matted row planting will require 2.5 to 3 tons of straw per acre for a 2 to 3 inch deep mulch, or about 300 small bales of average weight. Raised bed plantings and sites with strong wind may require twice this amount for adequate coverage.

How is the mulch applied? Smaller plantings may be mulched by hand by shaking out the bales of straw over the row. Larger plantings often use bale choppers to break up the straw bales and distribute the straw over the bed. Choppers are available for both small bales and large round bales.

How and when is the much removed? In the spring, when plants begin to show growth under the winter mulch (new green tissue), the mulch should be raked off the rows to allow sunlight to penetrate and reach the foliage. Delaying removal will delay plant growth and flowering and may reduce yield. Mulch can be raked off by hand with ordinary yard rakes in smaller plantings. In larger plantings, various mechanical tools are available ranging from modified hay rakes and tedders to equipment specifically designed for the purpose.

Floating row covers as mulch. These covers are composed of a plastic such as polypropylene, spun- bonded into a fabric that is permeable to light, air, and water. Research and growers' experiences demonstrate that these covers are useful for winter protection of strawberry plantings. While floating row covers are available in several weights, only the heavier weights are recommended for winter protection. At present a widely available weight recommended for winter strawberry protection is 1.25 oz/yd^2 (42 g/m^2). A variety of fabric widths are available, with common widths ranging from 15 feet to 60 feet. This mate-

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Winter Mulch for Strawberries– Sonia Schloemann, University of Massachusetts

rial currently costs about 4 cents per square foot. With proper care, this heavier fabric should last 3-4seasons. Floating row covers are widely used to protect annual plasticulture plantings.

Row covers are best applied on still days. Be sure to line up sufficient labor to place the row cover. If possible, use wider widths for more efficient application. The row cover edges must be anchored, as must areas where two covers overlap. A variety of methods are used to anchor the edges. Edges may be anchored with posts, rocks, or tube sand. The edges may also be covered with soil.

Once the mulch is in place, the job is not done for the winter. Monitor the planting frequently. If straw has blown off areas, replace at once. Watch the edges of row covers, and adjust anchors if needed. Repair any rips or holes as soon as possible.

Any reference to equipment or product brand names does not constitute endorsement over like products or equipment.

The Hype on Haskaps– Cathy Heidenreich, Cornell University

There's a lot of interest these days in one of the newest names in small fruit crops, "Haskaps". What follows is an introduction to Haskaps and their commercial production, which continues to be molded and fine-tuned even as this article is written. If you are interested in diversifying your operation, consider getting in on the ground floor of this new crop. Haskaps may be just the small fruit to give a new twist to your commercial berry operation marketing plan

Learn to grow Haskaps using existing varieties but expect major improvements in the next few years as new varieties are released with hybrid vigor, improved traits and season extension potential (early, mid, late season ripening).

Haskaps and honeyberries are members of the honeysuckle family (Caprifoliaceae). Plants described by these names belong to the same genus and species, *Lonicera caerulea,* says Dr. D. L. Barney from University of Idaho, but they each belong to different subspecies. Honeyberries, he indicates, generally belong to the subspecies *kamtshatica, edulis, boczkarnikovae* or *altaica*. These are referred to as the Russian types. 'Haskap', Dr. Barney reports, is the name used in Japan and refers to the *L. caerulea* subspecies *emphylocalyx*, or what are referred to as the Japanese form of these plants.

A circumpolar species, *L. caerulea* and its subspecies are described as very hardy plants with the ability to survive extremely cold winters. They are reported to withstand winter temperatures of -53°F (-47 °C) and their open flowers to withstand temperatures as low as 19 °F (-7 °C) without injury. Haskaps and honeyberries are the earliest to fruit each season, usually in early to mid-June – even earlier than strawberries.

L. caerulea is found growing both low lying wet areas and high mountain areas. It is native to the northern boreal forests of North America, Europe, and Asia. Haskaps and honeyberries are found in the southern reaches of Siberia and the north of China, Hokkaido Island, Japan, and as far as the Kuril Islands north of Japan. Russia, China and Japan have histories of human use of this fruit dating back hundreds of years.

L. caerulea and its subspecies are known by several common names. "Haskap" *(Haskappu, Hascap, Hascup*) is the ancient Japanese

The Hype on Haskaps– (continued)

name for the Ainu people from Hakkaido Island who recorded its use in their culture. Other names include Blue honeysuckle (Russian 'zhimolost'), Honeyberry (trademarked by Jim Gilbert, Oregon), Sweet berry honeysuckle and Swamp fly honeysuckle along with others.

Haskaps and honeyberries are upright to somewhat spreading to drooping shrubs ranging in height from 4.5 to 8 feet. They are similar in form and growth habit to highbush blueberries. Plants are covered with an abundance of small (3/4") cream-colored to light yellow flowers during March and April (Oregon). These are followed by bright blue, oblong to variously-shaped berries ½ to ¾" in length. Fruits are high in vitamin C and antioxidants. Flavor varies across genotypes from bitter, very sour, slightly sour, neutral, mild, to tart-sweet. New varieties are being selected for tart-sweet flavor. Seeds are very small and not noticeable while eating fruit.

The remainder of this article will focus specifically on Haskaps developed from crosses of the various subspecies of *L. caerulea* for the purpose of commercial production in Canada and the US through ongoing breeding programs at the Universities of Saskatchewan, Oregon, and Idaho.

Commercial Production

Interest in commercial production of *L. caerulea* spurred Siberian horticulturalists to make collections of wild specimens and begin breeding programs throughout much of the former Soviet Union during the 1950's. One such extensive collection is housed at the Vavilov Institute in St. Petersburg. About the same time ornamental varieties were being bred and released from the research station in Beaverlodge, Alberta, Canada. These ornamental releases however, had very unappetizing fruit and were quickly dismissed as having any commercial fruit production potential in North America.

Japan began a program to domesticate the fruit in 1967. Plants were collected from the wild and evaluated for their commercial production potential. Selections were distributed to growers in Hakkaido and a cooperative was formed to market fruit and processed products. This industry has declined in recent years due to prohibitive costs of hand harvesting. Small acreage farms and lack of mechanical harvesters further added to the decline.

Dr. Maxine Thompson of Oregon State University and Mr. Jim Gilbert of One Green World Nursery, Oregon were instrumental in re-animating interest in this crop in North America, insisting flavorful versions of the plant were to be found in both Japan and Russia. Dr. Thompson collected specimens from the wild in Japan in 2000 and began making selections and crosses as part of her new Haskap breeding program at OSU. Mr. Gilbert collected and began selling Russian cultivars from his One Green World nursery, notably 'Blue Belle' and 'Berry Blue'.

In the late 1990's Dr. Bob Bohr of University of Saskatchewan also began a breeding program, starting with the 4 varieties available from One Green World Nursery. By 2008 the Saskatchewan breeding program housed one of the most diverse collections of this plant material in the world including 35 named Russian cultivars, 70+ Japanese type selections, 6 Kuril Island types, 600 accessions from boreal Canadian forests in Saskatchewan, as well as hundreds of seedlings from the Oregon breeding program. The collection also includes 8,000 seedlings from controlled crosses made on site in 2008.

Evaluation of collections from Siberia and northern China indicated they generally did not perform well in the US and Canada. These plants had very short dormancy periods, bloomed very early, lost their leaves in early fall, and were noted to suffer from winter dieback. Japanese accessions however proved superior in performance and fruit quality and were selected to serve as the basis for commercial breeding efforts in all 3 breeding

Haskaps at a Glance

USDA zone 2. Fruiting depends on availability of pollinators when plants are blooming. Late blooming varieties may be more suitable for warmer climates.

Cold hardy to -55 F, blossoms withstand 20 F.

Grows in most soils and at a wide range of pH levels (5-8.5)

Grows in sunny or shady locations. Bears best in full sun in the North, needs some protection from sun in the South.

50+ year lifespan

Requires proximity to another unrelated honeyberry plant for best pollination by bees

Disease and pest resistant, great for organic production

Produces 7-10 lbs. of berries per plant after 5 years (berries grow on year old wood)

First fruit of spring (prior to strawberries)

Higher level of antioxidants than blueberries

Winter Mulch for Strawberries– *Sonia Schloemann, University of Massachusetts*

programs.

Site Selection and Preparation

Haskaps are very tolerant in terms of soil types and pH, growing in soils ranging from heavy clays to light sandy loams. Soil pH ranges from 5 to 8.5 are acceptable. While found growing in wet lowland areas in the wild, Haskaps perform best on well-drained soils. They also do best o soils with high organic matter content.

Plant Selection

Currently, most commercial production is being done with the varieties listed below from the University of Saskatchewan breeding program:

Varieties

Variety	Attributes/Suggested use(s)	Average Fruit Weight (g)	Plant height	Characteristics	Harvest
'Tundra'	Commercial growers – machine harvest and sorting, IQF	1.49	5 to 6.5 ft (1.5 to 2m)	Long flat, bullet shaped fruit; sweet tangy taste; dry scar. Large-fruited, firm.	Mid-late June
'Borealis'	U-Pick, home gardeners; not suited for IQF	1.62	5 to 6.5 ft (1.5 to 2m)	Short, flat boxy shaped fruit; sweet tart taste; wet scar. Largest fruit size, best tasting, not as firm.	Mid-late June
'Indigo Yum' (formerly 9-92)	Commercial growers – similar to 'Tundra'.	1.29	5 to 6.5 ft (1.5 to 2m)	Long, flat oval shaped fruit; sweet tangy taste; dry scar	Mid-late June
'Indigo Gem' (formerly 9-15)	Processed products	1.30	5 to 6.5 ft (1.5 to 2m)	Robust short, oval shaped fruit; sweet tart taste; slightly chewy; dry scar. Not suitable for fresh fruit.	Mid-late June
'Indigo Treat' (formerly 9-91)	Commercial	1.41	5 to 6.5 ft (1.5 to 2m)	Flat cylinder shaped fruit;	Mid-late June
'Honey Bee'	U of S pollinator option; could be a companion variety when hand picked	Not available	5.75 to 7.4 ft (1.75 to 2.25m)	More tart than other U of S varieties but less tart than most Russian Pollinators; stems often remain on fruit when picked.	Mid-late June
'Berry Blue'	Russian Pollinator	Smaller than U of S varieties	5.75 to 7.4 ft (1.75 to 2.25m)	Tube shaped fruit, not as sweet as U of S varieties, high yielding.	Mid-late June

Propagation

Haskaps may be propagated by softwood or hardwood cuttings, crown division and/or tissue culture. Seed propagation is suitable for breeding purposes only;.

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Plant Establishment

Planting

U-Pick Operations: Between-row spacing 8 to 10 ft depending on equipment size to be used in planting maintenance; in-row spacing 4.5 to 6 ft. Commercial operations (machine harvest) between-row spacing 16 ft; in-row spacing 3 ft.

Transplants should be planted a couple inches deeper than original depth to compensate for possible heaving and/or to establish a deeper root system to encourage shoot growth. **To till or not to till**

Plants may be set in conventionally prepared soil or strip or zone-tilled into strips between grass alleys. They can also be planted using a tree planting machine or be hand planted directly into sod.

Nutrient management

As Haskaps are a relatively new crop it is not likely many testing labs will have specific preplant soil amendment or post-plant fertilizer recommendations to offer. As Haskaps are more closely related to tomatoes and potatoes than other fruit crops, it has been suggested a tomato recommendation may be used for both. Follow tomato pre-plant recommendations for soil amendment prior to planting. Post-plant fertilizer should be applied in spring only. Japanese growers use composted manure for this purpose.

Irrigation

Heavy watering a few times during the first few years after planting is recommended to promote deep root growth. Additional irrigation may be needed on sandier soils, or during hottest weeks of summer.

Pollination

Haskaps are self-incompatible and at least 2 varieties are needed for good pollination. The 2 varieties need to be of different genotypes, but also need to bloom at the same time. 'Berry Blue', a Russian variety, is recommended as a pollinator for the new U of S varieties mentioned above. There is also a brand new pollinator recently released from the U of S breeding program 'Honey Bee'. Dr. Bob Bors of University of Saskatchewan suggests 3 possible planting schemes for maximizing pollination. In each case variety X is planted next to a pollinator P.

2 varieties equally desirable (X, P)

X	P	X	P
X	P	X	P
X	P	X	P
X	P	X	P
X	P	X	P
X	P	X	P

Variety X more desirable than pollinator P

X	P	X	X	P	X
X	P	X	X	P	X
X	P	X	X	P	X
X	P	X	X	P	X
X	P	X	X	P	X
X	P	X	X	P	X

Pollinator P not very desirable as compared to Variety X

X	X	X	X	X	X	X	X	X
X	P	X	X	P	X	X	P	X
X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X
X	P	X	X	P	X	X	P	X
X	X	X	X	X	X	X	X	X

Both honey and bumblebees acts as Haskap pollinators

Pruning

Train Haskaps in a manner similar to that used for highbush blueberries, saskatoons or dwarf sour cherries. Prune out older branches when bush gets too dense taking care not to remove more than 25% of a bush at a time. Recommended pruning time is late winter or early spring.

Pest Management

Weeds

In-row weed management: Weeds should be kept away from young plants until the shrubs are well established.
If using plastic mulch, cut holes, don't leave v-flaps – the flapping may damage young stalks. Wood chips are also an option. Note: Most Haskaps are highly susceptible to glyphosate herbicides; herbicide drift may cause excessive damage to plants.

Between-row weed management: grass row middles are recommended where adequate moisture is available. In dry areas, grass-free

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alleys are recommended to reduce competition for moisture.

Diseases
Leaf blight (*Insolibasidium deformans*) is the reported to be a disease of note in Haskap production; the disease is widespread in North Central and Northeastern states. Powdery mildew may also be a problem but generally appears in late July after harvest; varieties vary in susceptibility to this disease. Botrytis fruit and plant infections may sometimes be a problem with these plants during extended period of wet weather.

Insects
Aphids (causing leaf curl on young leaves) and scale insects (causing cause serious loss of vigor and eventual plant death) are the most troublesome insect pests reported for Haskaps. Other insect pests reported for Haskaps. Include various species of tortricid leaf rollers, a chafer and a root weevil.

Wildlife
Birds (especially Cedar Waxwings) love these berries. They also deposit unwanted weed seeds in planting areas. Netting is the best method to minimize bird damage in Haskap plantings. Use netting with 1/2" crosswires to prevent birds from getting tangled in the netting.

Deer and rabbits have been reported to nibble on young shrubs. Moles and voles may also be an issue

Other problems
Wind Damage: Winter damage may result from desiccation due to direct exposure to prevailing winds (west, north). Strong winds may also shake off ripe berries, which normally stay attached for an extended time. Windbreaks are advisable to minimize wind effects on plantings in areas with high winds.

Harvest

Plants begin fruiting on year old wood within 1 year of planting. Fruit weight ranges from 0.94 to 1.32 g per berry. Production may reach 0.7 to 1.1 lb. fruit per plant within 3 years and 4.4 to 11 lb. per plant at maturity (4 - 5 yrs.). Well-maintained plantings may remain productive 25 to 30 years or longer.

Harvest begins in the PNW around the 2nd or 3rd week of June. Berries are not fully ripe until purple throughout; if berries are purple outside but still green inside they are not ready for harvest. Fruit may hang and remain harvestable on bushes for several weeks, depending on weather conditions during harvest.

Fruit may be hand-picked, shaken or machine harvested. Hand-harvest is recommended for fresh fruit and wine production where a high quality product is preferred. Fruit may be shaken off into upturned umbrellas or other small plant fruit shaker equipment.

Initial trials at the University of Saskatchewan indicate a Joanna mechanical harvester originally developed in Poland for harvest of black currants is probably the most suitable for Haskap harvest. The machine harvests half the row at one pass. Its sideways structure allows harvest of branches a low a 1 ft off the ground; a very important feature when harvesting Haskaps. It also causes less damage to the fruit as the drop to the conveyor belt is 1.5 ft vs. 1 to 6 feet for upright harvesters. In addition, fruit loss due to mechanical harvest is 5% for the Joanna vs. 10% or more for upright harvesters.

Marketing

Fruit may be eaten fresh or frozen. Berries are well-suited for processing uses as well. Value-added Haskap products include candies, baked goods (cakes, tarts, bars, and muffins), condiments (jams, jellies, canned fruit, syrups, and toppings), beverages (juice and juice concentrates, soda pops, wines, tea), dairy products (ice creams, yogurts) and other products (chewing gum, gelatins, noodles).

Reports indicate Haskap wines are similar to those produced with cherries or grapes. The wine has a rich burgundy color with perhaps 10 to 15 times more concentrated color than cranberry.

Economics

For information on economics of Haskap production see the following: "Haskap Structure and Revenue Model". (LeHave Forests, 2011) http://www.haskapnovascotia.com/docs/financialmodel.pdf.

Winter Mulch for Strawberries– *Sonia Schloemann, University of Massachusetts*

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(Source for above photos: http://www.prairieplant.com/haskap-blue-honeysuckle.html)

More Haskap Resources:

Nurseries

Prairie Plant Systems, Inc. 306-975-1207, pps@prarieplant.com or http://www.prairieplant.com/haskap-blue-honeysuckle.html
Haskap Central http://www.haskapcentral.com/
Honeyberry USA http://www.honeyberryusa.com/
LaHave Forests http://www.lahaveforests.com/organic-agriculture/haskap-berry.html
Végétolab, Inc. http://www.vegetolab.com/index.php?lg=en

Grower organizations

Haskap Canada Association http://www.haskap.ca/
Haskap Association of Nova Scotia http://www.haskapnovascotia.com/

Links

Haskap Breeding Program at the University of Saskatchewan http://www.fruit.usask.ca/haskap.html

(Photos Dr. Bob Bors, Assistant Professor, Department of Plant Sciences, University of Saskatchewan)

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