PENNSYLVANIA
VEGETABLE GROWERS

NEWS

September 2016 / Volume 39 Number 9

for the commercial vegetable, potato and berry grower

Pennsylvania Receives $6.3 Million to Implement Produce Safety Rule

Pennsylvania's produce growers will receive valuable assistance in meeting expectations under the Food and Drug Administration's (FDA's) Food Safety Modernization Act (FSMA) thanks to a $6.3 million grant awarded to the state's Department of Agriculture, Governor Tom Wolf announced today.

"Pennsylvania received a sizable share of this FDA funding, which will prove vital in implementing outreach to our entire produce industry," said Governor Wolf. "We produce a variety of fruits, mushrooms, and vegetables, grown by a diverse group of farmers, many of whom are part of the plain sect community. Our prior history with most of these growers in performing voluntary audits has built a rapport and trust that is critical in order to move forward in implementing these important safety standards. These relationships are an example of government that works."

FDA FOOD SAFETY MODERNIZATION ACT

The funding, spread across five years, gives the department resources to implement a produce safety system, develop and provide education and outreach, and to develop programs to address the specific and unique needs of the growers in Pennsylvania's farming communities.

The cooperative agreement comes after the development of the FSMA Produce Safety Rule, which establishes science-based minimum standards for the safe growing, harvesting, packing, and holding of fruits and vegetables grown for human consumption. Pennsylvania was one of 42 states to receive a portion of the $21.8 million in total funding.

The Department currently provides voluntary GHP/GAP (Good Handling Practices/Good Agricultural Practices) audits to growers who need a third-party inspection to meet market demands for food safety and quality. The FSMA inspections will expand this to all non-exempt growers across Pennsylvania.

"We have been working on a plan to implement FSMA for more than a year and a half," said Agriculture Secretary Russell Redding. "We've been reaching out to growers, giving them the heads-up and addressing their concerns since before the rule was finalized in November 2015. These new resources will help us to implement that plan to ensure producers and growers understand this new system for keeping our food supply safe."

The cooperative agreement will allow the department to triple staffing in the Bureau of Food Safety and Laboratory Services Fruit and Vegetable Division to nine full-time staff. Current staff and newly-hired staff will be trained before they can perform audits and inspections. They will also work with Penn State Extension staff to educate growers and ensure compliance.

Producers will first be audited, where department staff will review the facility and work with producers to identify any corrections and improvements that need to be made in order to pass the FSMA inspection. Staff will return later to perform the official inspection on the facility.

"FSMA is a giant step to further improve the safety of our food supply," said Redding. "Pennsylvania's producers take this commitment seriously and because of that we all benefit."

For more information, visit www.eatsafepa.com.

State Places 38 Counties Under Drought Watch/Warning

The Pennsylvania Department of Environmental Protection has declared that 38 counties are facing drought condition due to dry weather and high temperatures.

DEP officials have placed Potter County in a Drought Warning with the following counties in Drought Watch: Armstrong, Bedford, Berks, Blair, Bradford, Cameron, Carbon, Centre, Chester, Clarion, Clearfield, Clinton, Cumberland, Dauphin, Elk, Forest, Fulton, Huntingdon, Indiana, Jefferson, Juniata, Lawrence, Lebanon, Lehigh, Lycoming, McKean, Mercer, Mifflin, Northampton, Perry, Philadelphia, Schuylkill, Snyder, Sullivan, Tioga, Union, and Venango.

The hot weather and lack of rainfall has resulted in low stream flows and reduced groundwater levels. There's been a rainfall deficit of as much as 6 inches throughout June and July, DEP officials said.

"A number of public water systems have already instituted voluntary and mandatory water restrictions to preserve their drinking water supplies," DEP Acting Secretary Patrick McDonnell said.

A drought watch calls for a voluntary 5 percent reduction in non-essential water use. A drought warning calls for a voluntary 10-15 percent reduction in water usage. Drought emergencies can result in mandatory restrictions in non-essential water usage.

PVGA member Jon Blass, who grows potatoes and other crops in Potter County, said farmers have seen sparse rainfall throughout the summer months.

"We've had two inches of rain on our farm since the 12th of June," Blass said in early August.

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State Places 38 Counties... *(continued from page 1)*

Blass said he expects the dry weather will cause smaller potatoes, and anticipates reduced yields in green beans. The county's higher elevation and relatively cool nights has helped reduce further problems, he said.

"My father said we could grow a crop of potatoes up here just on the dew alone, but I didn't want to test that theory completely," he said. "We don't get too excited about droughts up here, but this is going a bit to the extreme."

*From the **Pennsylvania Agricultural Alliance Issues Update,** Penna. Farm Bureau, September 2016, and the Pennsylvania Department of Environmental Protection Drought Report of September 20, 2016.*

PVGA Members Named Master Farmers

Seven Pennsylvanians have been named 2016 Mid-Atlantic Master Farmers, including PVGA members, David Masser and Julie Masser Ballay. The award program, which began in 1927, is given to recipients based on the success of their farm operation and their involvement in the industry. The award is co-sponsored by Cooperative Extensions in the Mid-Atlantic region, including Pennsylvania, along with American Agriculturalist magazine.

David and Julie, who are brother and sister, are taking on roles in their family's successful potato growing and packaging business in Schuylkill County. Their parents, Keith and Helen Masser, were named Master Farmers in 1998. David and Julie are using their college degrees in engineering and business to good use at the family-owned business, which grows, packages and ships potatoes. The Masser family operates Keystone Potato Products and Masser Logistic Services. They are also part of the national Fresh Solutions Network, a market development consortium of eight potato and onion farms. David is president of SMI—the farm's parent company—and chairs the Fresh Solutions Network. Julie serves as SMI's vice president and chief finical officer where she oversees the financial, food safety and human resources division. She serves on the Schuylkill/Carbon Farm Bureau board of directors and on the American Farm Bureau Federation's food safety issues advisory committee.

*From the **Pennsylvania Agricultural Alliance Issues Update,** Penna. Farm Bureau, September 2016.*

Save the Dates

MID-ATLANTIC
fruit & vegetable convention

January 31 to February 1, 2017

*The **Pennsylvania Vegetable Growers News** is the official monthly publication of the Pennsylvania Vegetable Growers Association, Inc., 815 Middle Road, Richfield, PA 17086-9205*
phone and fax - 717-694-3596, email - pvga@pvga.org website - www.pvga.org

Our Mission:
The Pennsylvania Vegetable Growers Association serves Pennsylvania's commercial vegetable, potato and berry growers through education, research, advocacy and promotion.

Our Vision:
The Pennsylvania Vegetable Growers Association will be the driving force in ensuring the furture viability of the commercial vegetable, potato and berry industries in Pennsylvania.

Inquiries about membership, this publication or advertising rates should be directed to William Troxell, Executive Secretary, at the above addresses.

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USDA Announces $36.5 Million for Specialty Crop Research and Extension Projects

Agriculture Secretary Tom Vilsack announced 19 grants totaling $36.5 million for research and extension to support American farmers growing fruits and vegetables, tree nuts, dried fruits, horticulture and nursery crops including floriculture. The grants are funded through the U.S. Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA) Specialty Crop Research Initiative, authorized by the 2014 Farm Bill.

"America's specialty crop farmers face many challenges ranging from a changing climate to increasing production costs. Investing in cutting edge research helps uncover solutions to keep their operations viable and ensures Americans have access to safe, affordable and diverse food options," said Vilsack. "The universities, state departments of agriculture and trade associations that partner with USDA address challenges at the national and local levels to help sustain all parts of America's food and agriculture system, whether the farms are small or large, conventional or organic."

USDA's Specialty Crop Research Initiative (SCRI) develops and disseminates science-based tools to address the needs of specific crops. The funded projects address research and extension needs that span the entire spectrum of specialty crops production from researching plant genetics to improving crop characteristics; identifying and addressing threats from pests and diseases; improving production and profitability; developing new production innovations and technologies; and developing methods to respond to food safety hazards.

Abstracts for this year's funded projects can be viewed on NIFA's reporting website at http://cris.nifa.usda.gov/cgi-bin/starfinder/0?path=fastlink1.txt&id=anon&pass=&search=%28GC=SCRI%29%20AND%20%28IY=2016%29&format=WEBTITLES GIY. Here is a list of the vegetable and small fruit related projects.

Scientists at USDA's Agricultural Research Service in Beltsville, Md., will use one of these grants to develop new mechanisms to improve food safety and prevent pathogen contamination of fresh and fresh-cut produce at retail. USDA consistently conducts and funds food safety research to generate real-world results for both government and the private sector. Read more about how USDA's food safety improvements over the past seven years are leading to a safer food supply at www.medium.com/usda-results.

To date, NIFA has awarded almost $400 million through the SCRI program. Previously funded projects include a Virginia Polytechnic Institute project that will help producers reduce pathogens in their water recycling systems, and implement best irrigation practices for improving horticultural profits. A Michigan State University project is helping growers better manage pollinators such as native bee and honey bee populations to improve their specialty crop yields.

NIFA invests in and advances innovative and transformative initiatives to solve societal challenges and ensure the long-term viability of agriculture. NIFA's integrated research, education, and extension programs, supporting the best and brightest scientists and extension personnel, have resulted in user-inspired, groundbreaking discoveries that are combating childhood obesity, improving and sustaining rural economic growth, addressing water availability issues, increasing food production, finding new sources of energy, mitigating climate variability and ensuring food safety.

To learn more about NIFA's impact on agricultural science, visit www.nifa.usda.gov/impacts, sign up for email updates, or follow us on Twitter @usda_NIFA, #NIFAimpacts.

Title	Investigator	Institution	
PLANNING TO INCREASE THE PRODUCTIVITY AND COMPETITIVENESS OF SUSTAINABLE STRAWBERRY SYSTEMS	Rom, C. R.	UNIVERSITY OF ARKANSAS	$50,000
IDENTIFYING PHENOTYPES, MARKERS, AND GENES IN CARROT GERMPLASM TO DELIVER IMPROVED CARROTS TO GROWERS AND CONSUMERS	Simon, P.	AGRICULTURAL RESEARCH SERVICE	$3,694,012
NAVIGATING THE TRADE-OFF BETWEEN PEST MANAGEMENT AND POLLINATOR CONSERVATION IN CUCURBITS	Kaplan, I.	PURDUE UNIVERSITY	$3,673,611
FOOD SAFETY INNOVATIONS AND PREVENTIVE CONTROLS DURING FRESH AND FRESH-CUT PRODUCE WASHING, PACKING, AND RETAIL DISPLAY	Luo, Y.	AGRICULTURAL RESEARCH SERVICE	$3,683,590
DEVELOPING A PREDICTIVE-MODEL-BASED MANAGEMENT SYSTEM FOR FRUIT DISEASES OF BLUEBERRY	Schilder, A.	MICHIGAN STATE UNIV	$48,558
DEVELOPING AN EASTERN BROCCOLI INDUSTRY THROUGH CULTIVAR DEVELOPMENT, ECONOMICALLY AND ENVIRONMENTALLY SUSTAINABLE PRODUCTION AND DELIVERY	Bjorkman, T.	N Y AGRICULTURAL EXPT STATION	$2,019,142
MANAGEMENT OF BROWN MARMORATED STINK BUG IN US SPECIALTY CROPS	Walgenbach, J. F.	NORTH CAROLINA STATE UNIV	$3,717,519
GROWING NEW ROOTS: GRAFTING TO ENHANCE RESILIENCY IN U.S. VEGETABLE INDUSTRIES	Louws, F.	NORTH CAROLINA STATE UNIV	$3,276,666
DEVELOPMENT OF A UAV PLATFORM-BASED MULTI-SENSOR SYSTEM FOR EARLY DETECTION AND MONITORING OF POWDERY AND DOWNY MILDEW IN CUCURBIT CROPS	Fiorentini, L.	OHIO STATE UNIVERSITY	$35,250

NEWS

National News Briefs

USDA To Start Work on GMO Labeling Standards

Now that President Barrack Obama has signed a bill calling for the establishment of biotechnology labeling on food products, regulators are starting the task of writing those standards. The new law requires the U.S. Department of Agriculture to establish food labeling standards for products with ingredients derived by biotechnology such as genetically modified organisms (GMOs). While the bill will require mandatory disclosure, it preempts state-by-state labeling laws, which could have caused higher food prices and consumer confusion.

Officials at the USDA have started laying the framework for establishing those labeling standards. That process will have several opportunities for public input, said Andrew Walmsley, director of Congressional relations for the American Farm Bureau Federation. Farm Bureau will be providing comments to the USDA, he said.

"We will see the USDA move pretty quickly on this before the administration change," he said. "The USDA has started the regulatory process, and they have a working group together that is examining the law and determining the next steps."

The law, which received bipartisan support, gives food companies several choices for how to label GMO products, including a symbol, a digital link or electronic disclosure through technology such as quick response (Q.R.) codes that consumers can scan with smartphones. Farm Bureau supported the legislation in part because it preempts state laws, like Vermont's, and avoids a confusing patchwork quilt of standards that food companies would have to meet. In addition, the law exempts meat and dairy and products such as soup where meat is a primary ingredient.

*From the **Pennsylvania Agricultural Alliance Issues Update,** Penna. Farm Bureau, September 2016.*

Farmers Union Presents: Growing for the Future

Growing for the Future is a unique online, interactive virtual conference focused on beginning farmer and rancher issues, including: mentorship, business planning, USDA programs, student loans, land tenure, food safety, women and veterans in farming, conservation and much more!

The conference is completely online, and features farmer-to-farmer webinars, live Q & A, a discussion board, a resource center and free giveaways! Register now for free to join us in December 5 to 8, 2016, from 5:00 to 8:00 p.m. for this unique opportunity! For more information go to http://nfu.org/growing-for-the-future.

Drones Ready to Fly for Agriculture

The Federal Aviation Administration released its final rule for small unmanned aircraft, commonly known as drones, which will pave the way for their use commercially. Drones have a number of practical applications for farmers including crop scouting and monitoring. "Drones have the potential to provide farmers and ranchers with more timely and detailed scouting information," said RJ Karney, director of Congressional relations for the American Farm Bureau Federation. "It also allows farmers to catch potential problems before they develop into catastrophic issues, and thereby optimizing yields, lowering the environmental impact and also providing greater efficiency." The FFA rules will allow commercial operators to charge for using drones as part of agriculture. The FFA has also developed rules for operators of drones, including the height they are allowed to fly, hours of operation and privacy concerns. Farm Bureau is working with FAA officials on developing a webinar that will allow farmers to ask questions of the FAA and gain a greater understanding of the rules surrounding drone usage.

*From the **Pennsylvania Agricultural Alliance Issues Update,** Penna. Farm Bureau, September 2016.*

Late Season Management of Invasive Palmer Amaranth and Waterhemp Weeds

Late season attention to controlling invasive weed species in corn and soybeans can be effective in limiting the amount of seed that can grow next season. Palmer Amaranth and Waterhemp are invasive species in Pennsylvania and can pose serious threats to crop yields. The weeds are now identifiable as they climb above the soybean canopy. These pigweeds are known to be herbicide resistant and large, mature plants are harder to kill. The weeds that are harvested with the crop and ensiled may reduce the viability of the seed. Alternative control measures include walking fields to pull the plants by hand and bagging which can be burned or buried. In specialty crops, mow the fields after harvest to limit seed production. Every effort must be made to prevent the spread of weed seed beyond the current infestation.

*From the **Pennsylvania Agricultural Alliance Issues Update,** Penna. Farm Bureau, September 2016.*

Poll Shows Strong Support For Trade Pact

A new poll from Morning Consult shows the majority of voters favor fair-trade deals. The poll, conducted in August, shows 57 percent of voters have a favorable view of "fair trade" and that 50 percent of respondents said they would support the Trans-Pacific Partnership if it provides new overseas markets for U.S. farm products. That support is something that candidates should keep in mind, according to the American Farm Bureau Federation. "Most Americans support free trade, and most farmers do too," American Farm Bureau Federation President Zippy Duvall said. "Exports account for almost a quarter of American farm receipts, so opposing fair trade agreements like TPP doesn't make a lot of sense to rural America." The Morning Consult poll shows that voters are more likely to support the Trans Pacific Partnership after learning more details on the deal. Fifty-two percent said they would be more likely to support the deal after learning the trade pact would increase net farm income by $4.4 billion and increase annual income in the United States by $131 billion. "Most trade deals start out with loud opposition, only to fade away once the details become known," Duvall said. "We are convinced TPP is no different: The more people know, the more they will support this vitally important agreement."

*From **Farm Bureau Express,** Penna. Farm Bureau, August 26, 2016.*

New Apple Variety Resists Browning

New apple varieties which include Arctic Fuji, Artic Granny and Artic Golden have been developed to resist browning from biting, bruising or cutting and are scheduled to be on the market by the fall of 2017. The non-browning trait has been produced through biotechnology. The USDA Animal and Plant Health Inspection Service has determined these varieties of apples offer the same safety for consumers as conventional apples. The new varieties of Artic apples will increase consumption and reduce waste.

*From the **Pennsylvania Agricultural Alliance Issues Update,** Penna. Farm Bureau, September 2016.*

NEWS

State News Briefs

DEP, Conservation Districts, Begin Farm Visits

Pennsylvania's state and local agencies will begin a more concentrated program of farm inspections in the Chesapeake Bay Watershed. Visits by the Department of Environmental Protection and conservation district staff will focus on verifying whether farms have developed and are following their plans for erosion and sedimentation control and manure management. DEP officials have started the process of notifying some farmers and landowners by mail of impending visits. The visits are part of a revised strategy by DEP for improvement of water quality in the Bay. The state's "reboot" strategy is being driven by the federal Environmental Protection Agency, which is claiming that Pennsylvania is behind in meeting nutrient reduction goals in the watershed. Officials inspecting farms will focus on whether the farm is meeting the requirements for management plans required under state law. That includes a written soil conservation plan, along with a manure management plan for animal farm operations and farms that generate or use animal manure. Compliance of farms with state planning requirements has been part of the state's strategy for the bay cleanup since 2011. PFB has serious concerns with the EPA's approach in cleaning the Chesapeake Bay Watershed, including a model used to determine the amount of nutrients reaching the bay. That's why Pennsylvania Farm Bureau partnered with Penn State on a best management practices survey, conducted this spring. Once those results are compiled, they will be shared with the appropriate state and federal agencies. PFB wants to make sure that the men and women of agriculture are not unduly burdened during the Chesapeake Bay cleanup. Some farmers may not have put the conservation plans and manure management plans they are following in a written document, as the law requires. Help is available for farmers who need to update or write their conservation plans. Contact your local conservation district, or National Resource Conservation Service, for more information.

*From **Farm Bureau Express,** Penna. Farm Bureau, August 26, 2016.*

Allegheny County Educator Named Teacher of the Year

Lisa Klipa returned from her first Educator's Ag Institute with a renewed focus.

Klipa, who teaches at a private Christian school in Allegheny County, scrapped her previous classroom theme after attending the institute in 2015. Instead, she converted her theme for her fourth-grade students to agriculture and incorporated a number of lesson plans that she learned at the institute. Klipa's dedication to promoting agriculture education led her to being named the 2016 Teacher of the Year by the Pennsylvania Friends of Agriculture Foundation, which organizes the institute. As part of the award,

Klipa will have the chance to attend the 2017 National Ag In the Classroom Conference.

Students in Klipa's class had the chance to adopt a calf, and receive updates through the farmer about the calf's development. In addition, students learned about the PA Preferred program, traced their Easter meal back to a farm and developed a schoolwide poll about favorite farm animals. Klipa said it was the resources provided at the Educator's Ag Institute that made lesson planning so easy.

"I integrated agriculture into our existing curriculum very easily," she said. "The information and supplies I got from the Ag Institute were great resources to reinforce my existing lessons."

The biggest lesson that Klipa wanted her students to understand is the source of their food, and help realize the work that goes into getting food into grocery stores and restaurants. In addition, she specifically taught lessons on local foods, using the PA Preferred program and trips to nearby farms.

*From the **Pennsylvania Agricultural Alliance Issues Update,** Penna. Farm Bureau, September 2016.*

Pennsylvania Hits Another Farmland Preservation Milestone

Pennsylvania has hit another milestone in preserving farmland by enrolling its 5,000th farm in the nation's leading land preservation program. The Pennsylvania Department of Agriculture added 26 new farms to the state's Farmland Preservation Program, bringing the total number of farms enrolled to 5,003. Agriculture officials celebrated with an event in Bird-in-Hand, Lancaster County, on one of the farms recently enrolled. Since the program began in 1988, the state has preserved 525,000 acres of farmland. "Preserving Pennsylvania's best farmland is an investment in our heritage, in our economy, in our ability to sustain ourselves, and in our environment," said Agriculture Secretary Russell Redding. Pennsylvania is also increasing the amount of funding it will use for farmland preservation in the coming fiscal year. The state's latest budget gave an additional $5 million for farmland preservation from cigarette tax revenue. It brings the total funding for farmland preservation to $36 million.

*From the **Pennsylvania Agricultural Alliance Issues Update,** Penna. Farm Bureau, September 2016.*

Applications Are Now Being Accepted for REAP

The Pennsylvania Resource Enhancement and Protection Program (REAP) offer up to 50% to 75% of project costs in the form of State tax credits up to $150,000.00 per agricultural operation. Eligible projects include implementation of BMP practices that include cover crops, writing conservation and nutrient management plans, purchasing of certain types of equipment and other projects. Applications for proposed projects began to be accepted on August 15, 2016 and will continue until the funds are exhausted. Projects that have been completed are also eligible to be claimed under REAP. The local conservation districts can be contacted for further details on the program.

*From the **Pennsylvania Agricultural Alliance Issues Update,** Penna. Farm Bureau, September 2016.*

Taking a Regional Approach to Agriculture Workforce Development

It's no secret that agriculture is a growing career field. But at the same time, many sectors of agriculture are facing a shortage of qualified workers—from equipment technicians to herd managers—who can step into those vacant positions.

Officials in Northwestern Pennsylvania are trying to take a regional-based approach to examine what agriculture will need to find qualified workers now and in the future.

Albert "Chip" Abramovic, a Venango County Commissioner and Farm Bureau member, is organizing a committee of agriculture businesses and farmers to talk about workforce development and potential solutions. Abramovic, who serves on the regional Northwest Workforce Investment Board, said he has noticed a lack of specific workforce training for agriculture workers. And that seems to be a common theme around the state when talking with other county commissioners. Abramovic said

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he wants to make sure every portion of agriculture is represented when talking about workforce development, from seed sales to timber harvest.

"When I bring up this topic, some people assume we are just talking about milking and cutting hay. Agriculture is a lot more than that," he said. "I want to make sure we have the golf courses represented, the wine industry, farms, timber companies and equipment dealers. I want to make sure the whole process from start to finish is represented."

Eventually, Abramovic wants to start an Agriculture Workforce Council made up of counties in Northwestern Pennsylvania. That could open up the possibility of grant dollars dedicated to worker training, he said. But the first step is getting a committee together of various sectors of the agriculture economy to discuss needs and solutions.

After initial meetings, Abramovic said he wants to forward that information to state officials to identify solutions and develop a roadmap of how to deliver agriculture specific workforce development on a regional approach. Regional, rather than statewide, solutions make sense for agriculture because different regions of the state have commodity-specific needs, Abramovic said. Abramovic said he hopes to start meeting with agriculture businesses leaders this fall to start the process of establishing the Agriculture Workforce Council.

*From the **Pennsylvania Agricultural Alliance Issues Update,** Penna. Farm Bureau, September 2016.*

Two PFB Members Participating in Rural Entrepreneur Challenge

Two Pennsylvania Farm Bureau members are vying in the Rural Entrepreneurship Challenge for the chance to win a share of $145,000 to fund their projects. Glen Cauffman of Perry County and Cory Mowrer of Chester County are hoping to be one of 10 finalists named nationally for the challenge, which is sponsored by the American Farm Bureau Federation. The Rural Entrepreneurship Challenge seeks to highlight the innovation occurring in rural America. Top 10 teams will be announced in October. Six semi-finalists teams will each receive $10,000 and four teams will advance and compete for $85,000. Those final four teams will compete at an event during AFBF's 98th Annual Convention and IDEAg Trade Show in Phoenix, Arizona, January 7-9, 2017.

Here's a look at the two Pennsylvania businesses competing in the Rural Entrepreneurship Challenge.

Glen Cauffman - Cauffman operates Pure American Naturals, which builds consumer awareness of the source of the fiber used in clothing. Cauffman, who runs a goat and sheep farm, is partnering with other farmers to promote their farming practices to consumers who want to know more about their fiber sources. At the same time, they are looking to build demand for sheep and goat fiber products with consumers and the fashion industry. Farmers working with Pure American Naturals must meet certain standards for animal care and best management practices of their farm.

Cory Mowrer - Mowrer and his family own a beef farm in Chester County. They have partnered with the growing craft beer and local brewery movement to take spent brewers grain as a feed for their cattle. The cattle are able to "recycle" a product that would otherwise be put in a landfill, while the cattle receive a quality source of feed. Mowrer has been approached by breweries in the area to serve his beef on their menus. He is hoping to expand his herd to meet the growing demand, while continuing to partner with local breweries.

To learn more about the teams competing visit: https://app.reviewr.com/farmbureau/showcase//Rural2017.

*From the **Pennsylvania Agricultural Alliance Issues Update,** Penna. Farm Bureau, September 2016.*

Two Pennsylvania Fire Companies Win Grain Rescue Tubes, Training

Two Pennsylvania fire companies are receiving grain rescue tubes and a training program through a grant program sponsored by Nationwide. The Carsonville Fire Department in Halifax, Dauphin County and Sipesville Volunteer Fire Department in Sipesville, Somerset County, will receive their tubes and training in September. They are two of 19 fire companies in 14 states that are receiving the grain tubes.

"For the third straight year, Nationwide is bringing awareness to preventable grain bin entrapments and deaths through Grain Bin Safety Week," said Nationwide Agribusiness President Brad Liggett. "Grain bin accidents can tragically impact individuals, families and entire communities. Accident prevention means everyone working together — and Grain Bin Safety Week provides a forum for the agricultural community to help keep people safe."

Nationwide and other agriculture businesses partner on Grain Bin Safety Week to promote safety on farms and commercial grain facilities. In addition, those companies hold the Grain Bin Safety Week Contest, which awards the rescue tubes based on applications from fire companies. As part of the application process, fire companies are asked to describe how they would share the tube and training with other fire departments. For more information visit: www.ws4u.com/home/audience/farmers-ranchers/safety/grain-bin-safety-week.

*From the **Pennsylvania Agricultural Alliance Issues Update,** Penna. Farm Bureau, September 2016.*

GENERAL

Where to Find 2 Updated Posters to be Displayed at Your Farm Business

James Harvey

Employers must often keep up with a variety of required government posters at their orchards, farms, or other places of business which can be daunting at times. Earlier this month, the U.S. Department of Labor changed two posters that employers are required to post in the workplace.

Every employer must post the Fair Labor Standards Minimum Wage poster (see https://www.dol.gov/whd/regs/compliance/posters/flsa.htm), which explains the act. The poster must be hung in a place where employees can easily read it. In addition, the labor department has updated the Employee Polygraph Protection Act (see https://www.dol.gov/whd/regs/compliance/posters/eppa.htm). This poster must also be displayed in a location where all employees can read it. New copies must be used. To find copies of the poster, go to the hyperlinks with each poster title (above), or visit the US Department of Labor at www.dol.gov, and search for both posters by name.

A Note on Private Poster Services

Private poster services can be helpful by selling a grower a large poster that contains either all possible state required labor posters or all of the Federal required labor posters in one large format. Some growers like this service because it relieves them of the responsibility of keeping up with poster revisions.

Unfortunately, buying from a poster service each year can be expensive especially when you consider that these posters do not change all that often. To add insult to injury there are a few poster services that might use dubious sales tactics like appearing to be a government agency and use drop boxes in that state's capitol to give them a state capitol address. We've have even been told that sales staff might threaten a grower that they will send out an "inspector" if they do not buy their poster.

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GENERAL

On the Road- New Morning Farm

Elsa Sanchez, Thomas Ford and William Lamont

New Morning Farm is a certified organic diversified vegetable farm on 95 acres of land in Hustontown in southern Huntingdon County. Of the 95 acres, 30 to 45 are in vegetable production. Jim Crawford has been farming here for 40 years and farmed in another location for the five years before that. His farming career sprung out of being a serious gardener. We had the opportunity to spend a morning with Jim and senior apprentice Jennifer Glenister.

Before the tour started we had an excellent discussion about how having enough farm labor is one of the biggest problems for horticultural operations, in particular vegetables. New Morning Farm employs twenty-five workers: 12 are in an apprenticeship program—college graduates seeking farming experience, three are in the H-2A program and come from Jamaica, and the rest are local hourly labor.

Photo: William Lamont

Jim mentioned advantages and disadvantages to each labor pool. The most efficient labor in terms of production per hour are the H-2A workers. While efficiency is lower for the apprentices, they are more knowledgeable about farming practices and are the decision makers on the farm. For the local labor, four people return every year and new people fill the remaining positions. Jim tries to keep workers employed year round. To do this

Quarter cords of firewood sold at the markets. Photo: William Lamont

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Where to Find... *(continued from page 9)*

So how can a grower keep up with the all the various posters? It's easier and cheaper than you think. For those of you with internet access you can simply go to the Pennsylvania Labor and Industry website at http://www.portal.state.pa.us/portal/server.pt?open=514&objID=553565&mode=2 Check once or twice a year to see what posters apply to you and what you need at your operation. You can download and print any of these for free or you can call the number on that website (717-783-8794) and they will send you that poster for free.

If you want to do the same thing with the Federal Department of Labor posters you can go directly to the Federal Department of Labor website at http://www.dol.gov/oasam/boc/osdbu/sbrefa/poster/matrix.htm. If you have questions regarding the Federal posters call 1-866-487-2365. If you have questions regarding the Federal OSHA posters or want to order one free call 1-800-321-6742. To check on the latest revision date just click on the link for that poster and the latest revision date will be there.

Please note that there has been a revised OSHA poster in the past year so it would pay to access their website or call the 800 number to check on recently revised posters.

The typical labor law poster that you buy to cover all labor law posters will probably not include the EPA Worker Protection Standard poster but Pennsylvania growers can get those for free by contacting Jim Harvey, Penn State WPS Specialist by email at jdh18@psu.edu or by calling 814-863-8214. Posters will also be available at booth 133 in the main exhibition hall at the Mid Atlantic Fruit and Vegetable Convention. We also plan on having copies of other labor required posters there.

Mr. Harvey is with Penn State Extension at University Park. From the ***Vegetable, Small Fruit, and Mushroom News,*** *Penn State Extension, extension.psu.edu/plants/vegetable-fruit/news, August 25, 2016.*

GENERAL

On the Road... *(continued from page 10)*

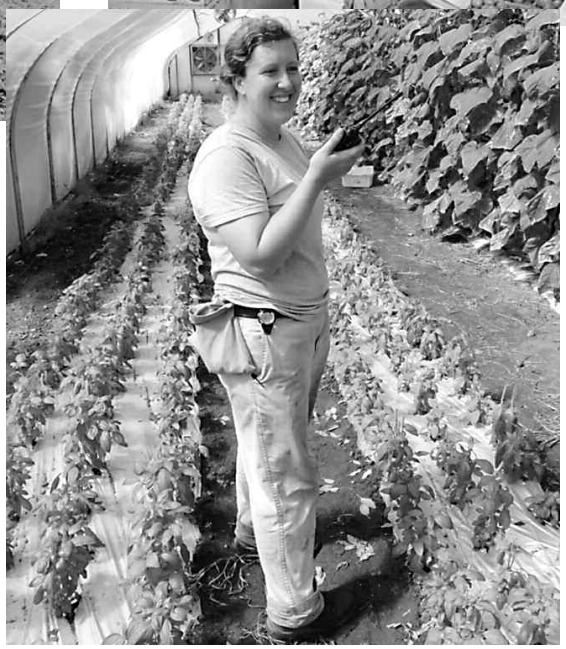
he has two winter markets and also sells firewood. Labor issues coupled with regulatory issues are severe enough that Jim sees it as an impediment to new people entering farming of operations. Especially to someone not having land resources available to them.

10-row rotational units with permanent grass strips in between. Photo: William Lamont

The farm in organized into 10 row rotational units separated by permanent grass strips. Rows may or may not have plastic mulch depending on the crop grown. Additionally, crops are grown in four high tunnels. Crops grown include various herbs, cucumbers, tomatoes, celery, celeriac, leeks, sweet corn, baby corn, potatoes, eggplant, onion, garlic, peppers, and squashes. Produce is also purchased from and sold to Tuscarora Organic Growers Cooperative (TOG) to meet the demand in their markets.

About a third in volume or a quarter in sales of the harvest is sold wholesale to TOG. The remainder goes to four farmers markets in the summer and two in the winter in Washington, D.C. At these markets people are willing to pay premium prices for quality local produce. Jim has established a network of local goods that he purchases to

Jennifer Glenister and Jennifer Landry, both apprentices, in a tomato cooler. Photo: William Lamont



Jennifer Glenister in the cucumber and basil high tunnel. Communication with walkie-talkies keeps all employees informed. Photo: William Lamont

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GENERAL

On the Road... *(continued from page 11)*

expand his offerings at the market and includes items like bread, fruit, and chicken. Jennifer said, "Jim's attention to marketing built the farm." The packing shed was buzzing with activity getting ready for the next day's market (Saturday). We saw people grading tomatoes and packaging cucumbers and basil. The packing area included seven coolers set at varying temperatures to keep crops at the peak of freshness.

With the exception of one tunnel for European and slicing cucumbers and sweet basil, the high tunnels are not used to produce crops in the summer. The focus for high tunnel production is fall, winter, and spring. In one tunnel clear plastic was being used to solarize the soil as a way to manage weeds. To do this the soil was saturated with water, a plastic sheet was placed over the soil, and periodically checked to make sure soil

Soil solarization in a high tunnel. Photo: William Lamont

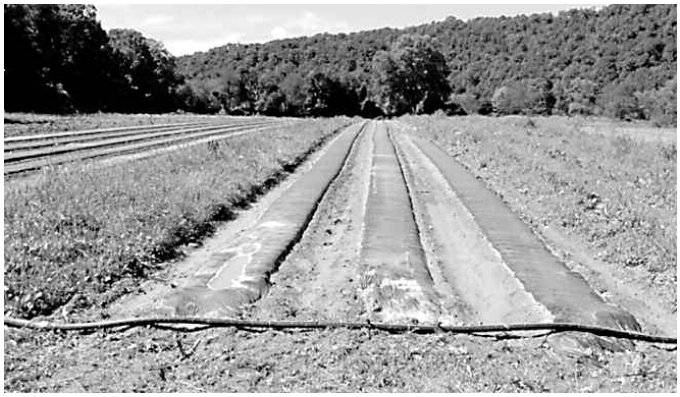
New Beiler's high tunnel under construction. Photo: William Lamont

was still wet. They will keep the plastic in place for about 2 weeks. Because they've had several overcast days, they were going to keep the plastic in place longer. After solarization, a lettuce crop was scheduled to be planted.

In another tunnel, a cover crop of field peas and oats was established. Every year, they try to have 25% of the farm in cover crops. A new tunnel using a Beiler's greenhouse structure was being constructed. A thick layer of insulation was placed at the baseboards. In the past overwintering lettuce has been difficult and hopefully this will improve lettuce production.

In one field black plastic had been laid over raised beds with drip irrigation in

Field peas and oats cover crop in a high tunnel. Photo: William Lamont



Field peas and oats cover crop in a high tunnel. Photo: William Lamont

preparation for planting garlic. Using a water wheel planter, garlic cloves will be set. Then, the plastic will be removed. This method was used to manage early weeds and aid in planting cloves with the water wheel. Straw mulch will be placed between rows for weed management.

For weed management in tomatoes, first black plastic and drip irrigation tape is placed on raised beds. Then a cover crop is planted between rows, for example Ladino clover and oats. Tomato transplants are planted up to 1 month later. In another field we saw tillage radishes. Over the winter the tillage radish

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On the Road... (continued from page 12)

is killed by low temperatures and provides early season weed management as well as soil improvement. They also use a hillside cultivator for between row weeds.

Jennifer Glenister and Tom Ford admiring part of the garlic harvest. Photo: William Lamont

Jim said that this is the driest year that he's ever experienced. Despite that he didn't see any produce that looked drought stressed. Drip irrigation and a traveling gun are the key to maintaining crop quality. Water is pumped at seven or eight different locations from a river that runs a mile along the property. A well is used for high tunnel crops.

A field of tillage radish. Photo: William Lamont

Even though plastics mulches, drip irrigation, row covers, low tunnels and high tunnels are important technologies used in vegetable farming, the disposal of these plastics continues to be an issue to be dealt with successfully.

Thank you to Jim Crawford for allowing us to visit his farm and also for an engaging and wide ranging conversation on the state of vegetable farming. Also, thank you to Jennifer Glenister

Plastic ready for disposal at the landfill. Photo: William Lamont

for taking the time to provide us with a tour of the farm and for sharing her expertise. It was also great seeing Jennifer Landry, an excellent former employee at the Penn State High Tunnel Research and Education Facility.

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Dr. Sanchez and Dr. Lamont are with the Department of Plant Science at Penn State Univ. while Mr. Ford is with Penn State Extension in Cambria Co. *From the* ***Vegetable, Small Fruit, and Mushroom News,*** *Penn State Extension, extension.psu.edu/plants/vegetable-fruit/news, August 24, 2016.*

GENERAL

A High-Tunnel That is Easy to Move and Easy to Keep in Place

Matt Kleinhenz

The Vegetable Production Systems Laboratory (VPSL) at The OSU-OARDC in Wooster, Ohio, partners with companies, organizations, agencies, and others to develop and test products, tools, and processes that help vegetable growers. Our most recent collaborations in-clude providing in-put on and a site for testing of a type of high tunnel de-signed to be moved and secured in place easily and reliably. We discussed this type of tunnel with Rimol Greenhouse Systems, Inc of Hooksett, NH beginning in 2011 and one was installed at OARDC in August 2014. The 30 ft x 48 ft, double-layer, and semi-automated "Moveable Feast" tunnel at OARDC is one of several being tested in the U.S. and the only one currently in Ohio. In our experience, the tunnel can be secured in place very reliably but also moved very easily, an important combination in moveable tunnels. Using only a few hours, people, and hand tools, we moved the tunnel to other nearby sites in August of 2015 and 2016.

Between moves, however, the moveable tunnel was as secure as nine stationary tunnels at the same location. The picture of the tunnel included here was taken shortly before it was moved on August 24, 2016. Note that the removable panels and doors in the endwalls allow the tunnel to clear raised beds. Also, the solar panel charges a battery that powers a control board and inflation fan; internal sensors monitor temperatures and the control board regulates the endwall vents and sidewall curtains, automating much of the high tunnel's ventilation. The tunnel is moved with wheels and hand tools, requiring little strength or time. Also, the tunnel cane be used on sloped terrain. Four ground anchors and four posts keep it in place when needed. Pictures of each step in the move are available at our Facebook (https:// www.facebook.com/155936034478066/photos/?tab=album&album_id=294878683917133) and website (http://u.osu.edu/vegprolab/photo-gallery/moveable-feast-high-tunnel/). Overall, how can a moveable tunnel help? Covering and exposing specific soils, crops, and spaces for specific periods gives growers options mostly unavailable with stationary tunnels. These options increase rotation, soil management, and space utilization opportunities, all of which can enhance disease, pest, and fertility management, and profit potential, perhaps especially in small to midscale operations.

*Dr. Kleinhenz is with the Department of Horticulture and Crop Science at The Ohio State University and can be contacted at 330-263-3810 or kleinhenz.1@osu.edu. From **VegNet,** The Ohio State Univ. Extension.*

Drainage Around High Tunnels is Important

Matt Kleinhenz

An article about drainage in a dry year may seem strange. Hopefully, though, it will help prepare for the inevitable.

Eventually, it will rain in more places than it has this season. Also, if model-based forecasts are correct, when it rains, it is likely to rain buckets, not arrive slowly over a long time. Heavy rains on dry, hard ground can cause all sorts of trouble, even for high tunnel growers. Maybe, especially, for high tunnel growers because a flooded tunnel can be difficult to overcome.

Generally, the only water we want in a high tunnel is the water put there by irrigation. Yet, a simple calculation tells us that a 1-inch rainfall on a 30 ft x 96 ft high tunnel equals about 0.6 gal per sq. ft. and a little more than 1,700 gallons overall.

All that water comes to within inches of the edge of the tunnel (baseboards) but, hopefully, none of it enters the tunnel. Snow to liquid water ratios are also important to high tunnel growers, particularly ones with fall-to-spring business. Snowmelt must be diverted but that may rely nearly entirely on surface drainage when upper levels of the soil are frozen. Recent research places typical snow to liquid ratios for Ohio between 12 and 14 (i.e., 12 inches of snow releases 1 inch of liquid water). Either way, heavy rain and/or snowmelt on frozen ground may be the worst case scenario. Planning for it can be useful.

Unwanted water entering the tunnel slows business operations, promotes weed growth, and increases humidity (raising disease potential). It may also lower crop quality. High tunnels are supposed to be used to help avoid all these conditions and

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This Isn't Your Father's Cereal Rye

Zachary Larson

Rye on tomatoes. Photo: Lee Stivers

Cereal rye is widely used due to its ability to establish late in the season and can still be successfully established in most of the state into October. In dry years when lower than expected yields result in un-captured soil nitrogen, N-scavenging plants such as cereal rye can be especially important in consuming excess nutrients and releasing them the following spring. However, the traditional seeding rate of 2 bu./ac. should be more closely reviewed, with spring management objectives helping to determine seeding rates.

Determining your ideal rate

Know your seeds per pound - A study rye of planting dates at the Big Flats (NY) Plant Materials Center showed seeds per pound for rye varied from under 12,000 to over 33,000 based on the cultivar. Assuming traditional small grain seeding rates of 1.5 million viable seeds per acre and a germination of 85%, pounds of seed per acre would vary from 53 to 147 to hit the 1.5 million seed mark. While many older cultivars may have been accurately planted at 2 bu./ac., knowing your rate of seeds per pound and the germination rate of the seed can better help determine how many total pounds should be hitting the field.

Drilling cereal rye after corn harvest. Photo: Andrew Frankenfield

Follow traditional seeding rates for late planting and early termination - The traditional seeding rate of 1.5 million viable seeds/ac. is still a good starting point for establishing adequate ground cover when rye is planted later in the fall or northern areas of the state where little fall growth is expected. This is particularly true when termination is performed well ahead of planting when plants are younger and shorter. So if you're managing rye for winter cover and are terminating early, you may only need to consider seeding at rates of less than 2 bu./ac. when your number of seeds per pound is above 16,000.

Less may be more if you're applying manure - A study of three rye planting rates and three poultry litter rates in Pennsylvania and Maryland showed that poultry litter application had an effect on rye biomass while planting rate had relatively little effect. In this case biomass yields were similar at seeding rates of 80 and 186 lbs./ac. when litter was applied. So for those applying manure to rye this fall or in the spring, a lower planting rate may be acceptable for achieving high forage yields, providing erosion control and meeting soil health objectives.

More may be more if you're looking for weed control - The same study showed that the increase in seeding rates from 80 to 186 lbs./ac. resulted in greater weed control when the rye cover was rolled and crimped. This was likely due to increased ground cover early in the season owing to greater plant density. A commonly accepted target for good weed control from rolled and crimped rye is 7,000 to 8,000 lbs./ac. of dry matter, which

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VEGETABLE PRODUCTION

Moisture Can Trigger Outbreaks of *Phytophthora* Crown and Fruit Rot

Thomas Ford

In some areas of Pennsylvania were expected to see the remnants of tropical storm Hermine. Heavy rainfall may spark an outbreak of *Phytophthora* Crown and Fruit Rot in some of the poorer draining fields in the state.

Phytophthora Crown and Fruit Rot is caused by the oomycete, *Phytophthora capsici.* This organism thrives when air temperatures are between 77° and 830°F and when there is abundant rainfall to aid the swimming zoospores in their infection of susceptible plants.

As I travel throughout, Pennsylvania I see how well our pumpkin growers have expertly managed the yearly onslaught of diseases like Powdery mildew, Scab, *Alternaria,* etc. in their pumpkin and cucurbit crop fields. The most recent outbreak of *Phytophthora* Crown and Fruit Rot that I dealt with was in 2008. Central PA pumpkin growers felt that they were on their way to an above average year when a series of torrential rain events fueled by tropical moisture hit the area.

Heavy rainfall increases susceptibility to Phytophthora capsici. Photo: Tom Ford

While none of the fields were completely flooded, growers did note standing water in some sections of their fields. Within days, growers noticed white mycelial growth on a few pumpkins and before a week had past the growers were watching helplessly as *Phytophthora* Crown and Fruit Rot

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This Isn't Your Father's... *(continued from page 15)*

Cereal rye in the fall. Photo: Andrew Frankenfield

can be achieved with 1.5 million viable seeds per acre, with planting dates as late as mid-October depending on location and termination date in the spring. However, it should be noted that rolled and crimped rye may not supress all weeds and that follow up treatments may be needed later in the growing season.

Higher rates may not be necessary if soil health is your objective - For those looking to use a late terminated rye cover as a means of maintaining living roots throughout the year and improving soil structure, higher seeding rates may not be as important. Veteran no-tillers that use rye as a soil health tool may go as low as 30 to 60 lbs./ac, although due to smaller seed sizes some may still be planting close to 1 million seeds per acre. Those that plant at lower rates cite reduced input costs, improved light penetration and airflow to the soil surface resulting in quicker drying in the spring and ease of planting when going into a standing cover crop, commonly referred to as "planting green".

So before the drill hits the ground this year, determine what your objectives are and what seed you intend to plant. Depending on your rotation, need for spring forage and manure application practices, you may even want to use multiple planting rates. By considering your needs and resources now, you can better obtain the ideal cover crop stand when spring rolls around.

Mr. Larson is with Penn State Extension. From the ***Vegetable, Small Fruit, and Mushroom News,*** *Penn State Extension, extension.psu.edu/plants/vegetable-fruit/news, September 14, 2016.*

Moisture Can Trigger... (continued from page 16)

Photo: Tom Ford

Photo: Tom Ford

spread like a wildfire across their fields leaving a wake of rotting pumpkins and dying vines.

Growers who have pumpkins growing in poorly drained fields should consider applying a tank-mix of fixed-copper (at labeled rates) with fungicides like Revus, Presidio, Forum, or Tanos when conditions favor disease development.

If your area is expected to be pounded with tropical moisture this weekend, I would treat prophylactically for this disease to protect your crop before the rain hits.

The fungicide Ranman can also be used to suppress this disease in pumpkin fields, but it cannot be combined in a tank-mix with a fixed copper due to a potential conflict between the recommended surfactant for Ranman and copper. Growers should alternate fungicides with different modes of action or FRAC codes to minimize the chances for fungicide resistance.

Fields where *Phytophthora* Crown and Fruit Rot has been detected should be rotated away from susceptible crops for a minimum period of three years. Susceptible crops include tomatoes, eggplant, pepper, lima beans, snap beans, and other cucurbits.

*Mr. Ford is with Penn State Extension in Cambria Co. From the **Vegetable, Small Fruit, and Mushroom News,** Penn State Extension, extension.psu.edu/plants/vegetable-fruit/news, September 2, 2016.*

VEGETABLE PRODUCTION

Identifying Grassy Weeds on Vegetable Farms

Emelie Swackhamer

Grassy weeds often infest fields. Management practices for grassy weeds vary depending on which grassy weed you are trying to control.

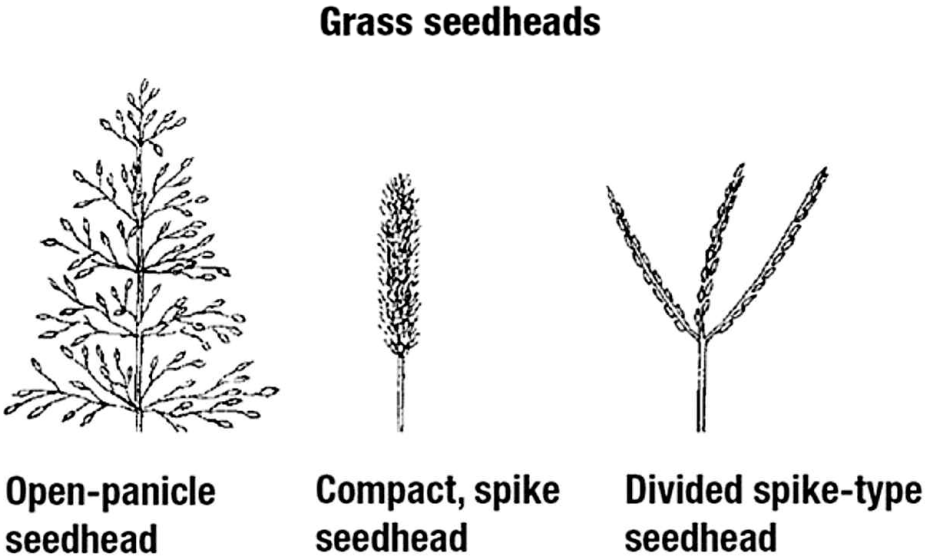
For example, annual grasses such as crabgrass may be controlled with frequent cultivation or by using registered pre-emergence herbicides. Infestations of perennial grassy weeds like quackgrass can be made worse if the field is tilled, and pre-emergence herbicides will not kill the perennial plants. These are two common grassy weeds, but there are others.

So, what should you do if you find a grassy weed invading your farm? The first step is to identify it. Then, you can get specific recommendations for the grass you are dealing with. To identify a grass we use many different pieces of information. Overall color, growth habit and appearance are important, but honestly, the grasses look a lot alike especially when they are young or mowed.

First try to determine if is a clumping or a spreading type of grass. Are the leaves folded or rolled in the bud? Next, look for structures called auricules and ligules, which are part of the grass leaf.

These are hard to see, and magnification really helps.

Try to find young emerging leaf tips to determine the shape of the end of the young leaf tip. One additional piece of information that can really help is the seedhead. When grasses go to seed, the appearance of the seedhead is very distinctive and can be used to confirm the identification.



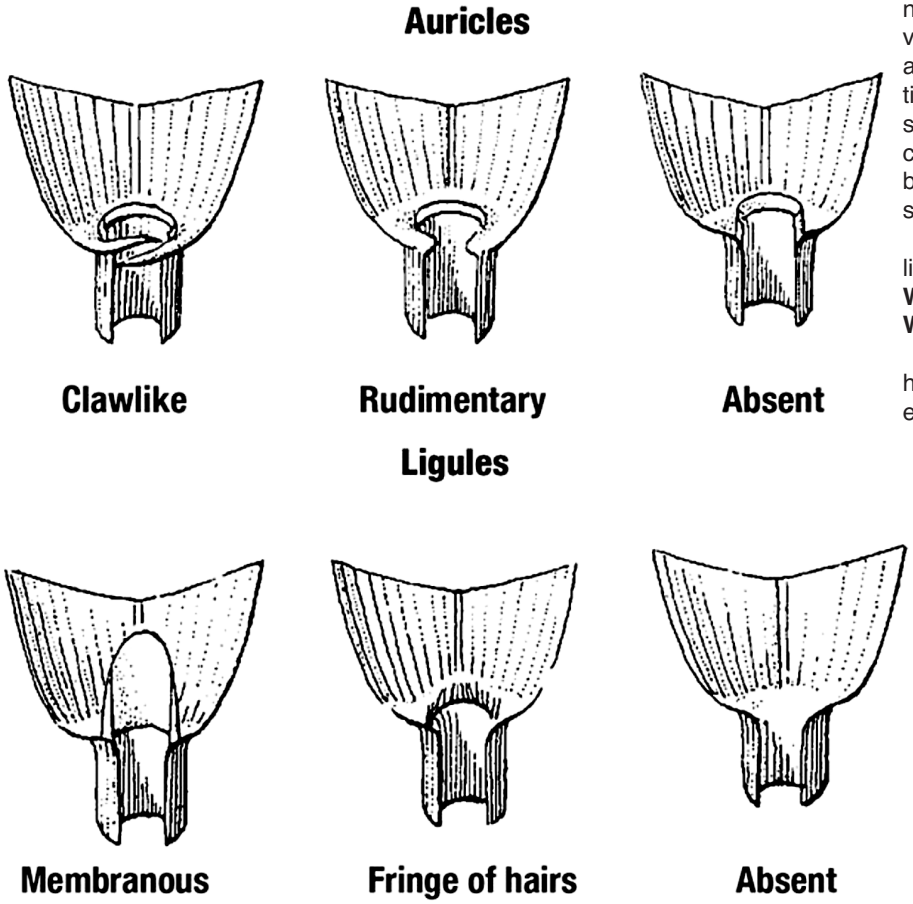
If you can, allow a small patch of your grassy weed to mature enough to form a seedhead. It is important though, to not let the seedhead mature enough to spread new viable seed into your field. When you've gathered all this information, try to match it up with descriptions of grasses in textbooks or on extension websites. You will start to become familiar with the characteristics of the grasses you've identified and begin to recognize them in their different growth stages throughout the year.

More information is available from these publications:

Weed Descriptions: Grasses and Grasslike Weeds

(Penn State Univ)
http://plantscience.psu.edu/research/centers/turf/extension/ factsheets/weed-management/grasses

Grass Identification Basics (Michigan State Univ.)
http://store.msuextension.org/publications/AgandNatural Resources/MT201402AG.pdf.



Ms. Swackhamer is with Penn State Extension in Lehigh Co. From the ***Vegetable, Small Fruit, and Mushroom News,*** *Penn State Extension, extension.psu.edu/plants/vegetable-fruit/news, July 29, 2016. http://vegnet.osu.edu/newsletter, Vol. 23, No. 23, Sept. 6, 2016.*

Harlequin Bugs and Blister Beetles Damaging Late Summer Vegetables

Gerald Brust

This has been a tough growing season for most of our vegetable crops. Some crops were planted late and had problems setting fruit later on in the summer heat while others that were planted on time were two to three weeks ahead of harvest schedule. Some crops have done OK and a few have done well, but most others have suffered due to the weather. Late summer/early fall crops are not fairing much better. I have received several reports of mysterious feeding on plantings of tomatoes and carrots, and reports of damage by pests that were easily seen, because there were so many of them. In many of the cases it was probably two common late summer pests: the blister beetle and Harlequin bugs.

Blister Beetles (family Meloidae)

Blister beetles are commonly seen in fields starting in late June going through the fall. There seems to be a great deal of them this year feeding on just about every new and even old vegetable planting. Adult blister beetles vary in color and size. Most are one-half to one inch long with long, soft bodies and wide heads. The area between the head and the body is narrow and looks like a neck. The wing covers are leathery with the abdomen often times extending beyond the end of the wings (Fig. 1). The legs are relatively long for the body size. The beetles come in a variety of dark or bright colors that are variegated, striped or flat. Striped blister beetles are shades of gray and brown with yellow stripes running lengthwise on its wing covers. Others are gray to black with a gray or white margin around each wing (Fig. 1).

Adults begin laying eggs in the spring and continue through most of the season. Females will lay one to two hundred very small eggs just beneath the soil surface. White larvae hatch from these eggs in about two weeks and have relatively long legs which they use to find their main prey–grasshopper eggs (so the larvae are beneficial, while the adults are a pain). Most larvae will go through 4-5 instars but some go through 6-7. Adults emerge from the pupae stage after ten days.

If you look up blister beetles most of the literature deals with the beetles as a threat to horses and livestock. The beetles secrete and contain within them a blistering chemical called catharidin. Catharidin is toxic if ingested and it persists in dead beetles long after the hay they infested was dried and baled. Horses are particularly susceptible to the poisoning. Humans who ingest the beetle can suffer severe damage to the urinary tract and gastrointestinal lining.

Blister beetles will feed on just about any plant: tomato, potato, eggplant, peppers and other solanaceous vegetables as well leafy greens. Often times in late summer, they arrive in swarms, seemingly overnight and can feed heavily on plants and then just as suddenly disappear — often leaving growers perplexed as to what came in and did the feeding damage. A beetle will feed for a time and then usually move on to another spot not causing a great deal of damage unless there are a significant number of them or they stay in one place for an extended period of time. Covering plants with a row cover or with kaolin clay (product called Surround) BEFORE the beetles start to feed has worked pretty well, but the row cover or clay must be applied before they start to feed. If applied after they are found feeding it is not as effective. Pyrethroids also will work well if beetles are directly contacted.

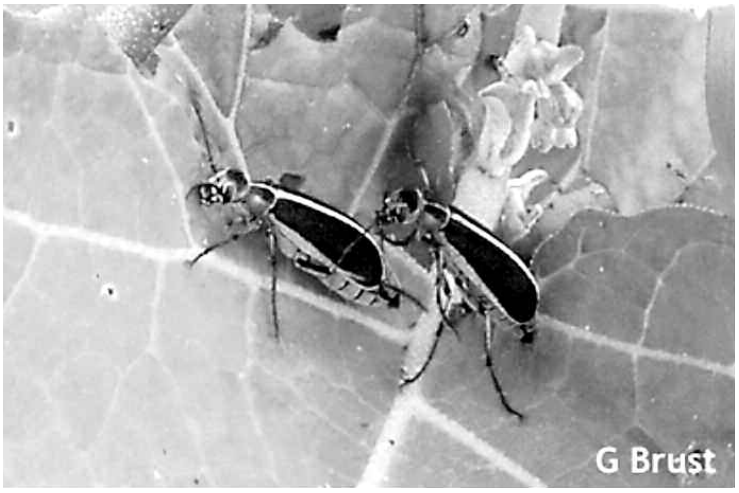


Figure 1. Two adult Margined blister beetles Epicauta funebris

Harlequin Bugs (Murgantia histrionica)

Adult harlequin bugs are red- or orange-and-black-spotted bugs about 3/8 of an inch long, with flat, shield-shaped bodies (Fig. 2). Nymphs are similar in general color and shape to the adults (Fig. 3). The eggs of harlequin bugs are distinctive and look like no other stink bug eggs—or anything else. The eggs look like tiny white barrels standing on end, typically in a double

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Fall Control of Perennial Weeds

Mark VanGessel

Fall is often the best time and the most convenient time to treat most perennial weeds because it is the time that plants are best able to move the herbicide to the roots where it will have the greatest benefit. When considering fall weed control, the emphasis should be on what the patch of weeds will look like next spring or summer, not the amount of dead stems this fall. Also, it is important to consider that a fall application will not eradicate a stand of perennial weeds; the fall application will reduce the stand size or the stand vigor next spring. Fall applications of glyphosate is the most flexible treatment for most perennial weeds such as bermudagrass, Canada thistle, common milkweed, common pokeweed, dock, hemp dogbane, horsenettle and johnsongrass. Rates of 1 to 1.25 lb acid per acre are consistently the most economical (or about 1.5X the normal use rate for annual weeds). Dicamba (Banvel) at 2 to 4 pints is also labeled for artichoke, bindweeds, dock, hemp dogbane, horsenettle, milkweeds, pokeweed or Canada thistle. Planting small grains must be delayed after dicamba application 20 days per pint of dicamba applied. Fall herbicide applications should be made to actively growing plants. It is best to spray prior to mowing the corn stalks and allow plants to recover after harvest. Allow 10 to 14 days after treatment before disturbing the treated plants. If fall applications are delayed, remember weed species differ in their sensitivity to frost; some are easily killed by frost (i.e. horsenettle) others can withstand relatively heavy frosts. Check the weeds prior to application to be sure they are actively growing.

Dr. VanGessel is the Extension Weed Specialist at the Univ. of Delaware. From the Weekly Crop Update, Univ. of Delaware, Vol. 24, Issue 25, Sept. 9, 2016.

Harlequin Bugs... *(continued from page 19)*

Figure 2. Harlequin bug adult

Figure 3. Harlequin bug nymph and damage-white spots.

row (Fig. 4). Twelve to eighteen eggs are usually laid together in one batch on the underside of the leaves of the host plant. Each egg is marked by two broad black stripes near the ends of the "barrel" (egg) with one black spot in the middle of the egg and a black mark on top of each egg. Harlequin bugs over winter as adults (rarely large nymphs) in old cabbage stalks or any other crop debris.

Plants commonly attacked by harlequin bugs include crucifers such as horseradish, cabbage, forage radish, collards, mustard, Brussels sprouts, turnip, kohlrabi and radish. If these are not available hungry bugs will feed on tomato, potato, eggplant, okra, bean, asparagus, beet, weeds, and even fruit trees and field crops. The harlequin bug feeds by injecting salivary secretions into plants that liquefy plant tissue so they can ingest it. This feeding at first results in white spots (Fig. 3) and then progresses to browning, wilting and eventual death of the plant. New plantings of crucifers can be heavily attacked in the spring but more commonly in the fall and this is what I have heard about and seen happening in several areas of Maryland. As with blister beetles, harlequin bugs can be managed by using a row cover or kaolin clay BEFORE they show up and start feeding. Once they start feeding these two controls do not work very well. Pyrethroids will reduce the damage, but there is often a 7-day pre-harvest interval (phi) with many of the chemicals depending on what the crop is. So be sure to check the label to find the correct phi for the product you are using on the particular crucifer you are using it on.

Dr. Brust is the IPM Vegetable Specialist at the Univ. of Maryland. From the ***Weekly Crop Update,*** *Univ. of Delaware, Vol. 24, Issue 25, Sept. 9, 2016.*

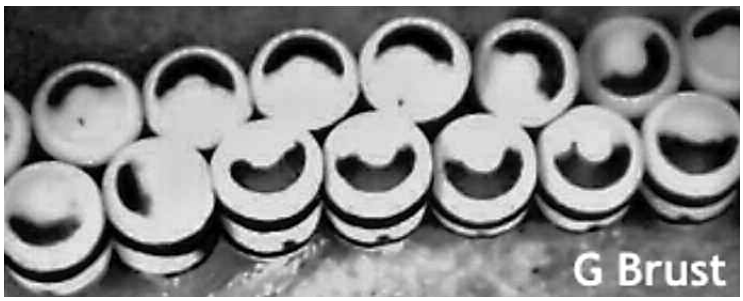


Figure 4. Harlequin bug eggs

Cole Crops Affected by Heat, Uneven Moisture

Gordon Johnson

September-maturing cole crops have been negatively affected by the high August and September temperatures and uneven moisture (dry to wet). While cabbage, kale, and collards can tolerate high temperatures; Brussels sprouts, broccoli, and cauliflower are more sensitive to excess heat. These three crops do best under moderate and even temperatures and even water supplies. They do not develop properly when temperatures are in the 90s.

In broccoli, we are seeing knuckling, that is the uneven development of the crown leading to a bumpy appearance and looser head. This reduces the grade and price potential. In Brussels sprouts high temperatures have caused sprouts to be very loose, elongated and unmarketable. In cauliflower we are finding ricing, purpling, and loose curd.

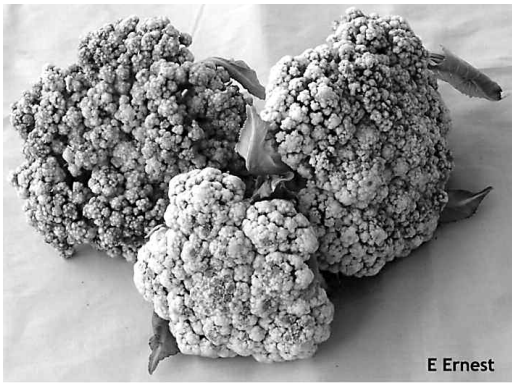
The following are some other disorders that can be prevalent when cole crops are exposed to uneven moisture and excessive heat.

Tipburn of Cauliflower, Cabbage, and Brussels Sprouts - This problem can cause severe economic losses. Tipburn is a breakdown of plant tissue inside the head of cabbage, individual sprouts in Brussels sprouts, and on the inner wrapper leaves of cauliflower. It is a physiological disorder which is associated with an inadequate supply of calcium in the affected leaves, causing a collapse of the tissue and death of the cells. Calcium deficiency may occur where the soil calcium is low or where there is an imbalance of nutrients in the soil along with certain weather conditions. (High humidity, low soil moisture, high potash and high nitrogen aggravate calcium availability). Secondary rot caused by bacteria can follow tipburn and heads of cauliflower can be severely affected. Some cabbage and cauliflower cultivars are relatively free of tipburn problems.

Cabbage Splitting - Cabbage splitting can develop when moisture stress is followed by heavy rain. The rapid growth rate associated with rain, high temperatures and high fertility cause the splitting. Proper irrigation may help prevent splitting and there are significant differences between cultivars in their susceptibility to this problem.

Lack of Heads in Broccoli and Cauliflower - During periods of extremely warm weather (days over 86°F and nights 77°F) broccoli and cauliflower can remain vegetative (does not head) since they do not receive enough cold for head formation. This can cause a problem in scheduling the marketing of even volumes of crop.

Cauliflower Purpling - The market demands cauliflower which is pure white or pale cream in color. Heads exposed to sunlight develop a yellow and/or red to purple pigment. Certain varieties such as Snow Crown are more susceptible to purple off-colors, especially in hot weather. Self-blanching varieties have been developed to reduce problems with curd yellowing. For open headed varieties, the usual method to exclude light is to tie the outer leaves when the curd is 8 cm in diameter. Leaves may also be broken over the curd to prevent yellowing. In hot weather blanching may take 3 to 4 days, but in cool weather, 8 to 12 days or more may be required. Cauliflower fields scheduled to mature in cool weather (September and October) that are well supplied with water and planted with "self-blanching" cultivars will not need tying. Newer orange cauliflower and green broccoflower varieties are being planted. They are less susceptible to off-colors but still can develop purpling under warm conditions.



Purpling in cauliflower

Cauliflower Ricing - "Riciness" and "fuzziness" in cauliflower heads is caused by high temperatures, exposure to direct sun, too rapid growth after the head is formed, high humidity, or high nitrogen. "Ricing" is where the flower buds develop, elongate and separate, making the curd unmarketable.

Development of Curd Bracts in Cauliflower - Curd bracts or small green leaves between the segments of the curd in cauliflower is caused by too high of temperature or drought. High temperatures cause a reversion to vegetative growth with production of bracts on the head. In a marketable cauliflower head, the individual flower buds are undeveloped and undifferentiated.

Loose Heads in Cauliflower, Loose Sprouts in Brussels sprouts and Premature Flowering or Knuckling in Broccoli - Loosely formed curds in cauliflower can be due to any stress

(continued on page 22)

Watermelon Rind Necrosis

Gordon Johnson

I recently cut open a watermelon from a late-planted trial and found symptoms of watermelon rind necrosis (also known as internal rind necrosis or bacterial rind necrosis). In my career, I have seen this disorder or disease only two times where significant numbers of melons were affected.

Watermelon rind necrosis is characterized by the presence of a corky, red to brown layer of dead tissue that occurs on the inside of the rind of affected fruit but that does not extend into the fruit flesh. Early stages of rind necrosis can be noticed as small discolored water soaked areas in the rind. Rind necrosis can be found in immature fruit as well as mature fruit.

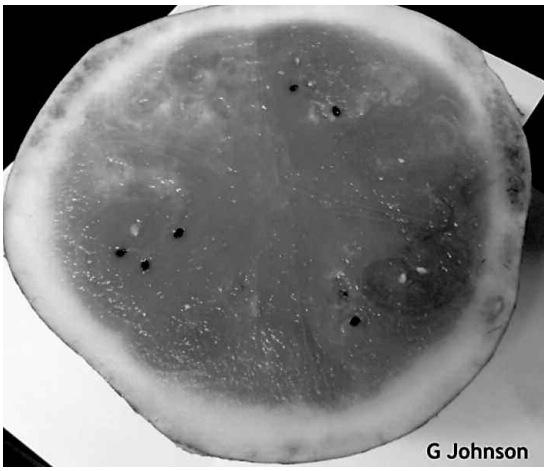
Presence of a few melons with watermelon rind necrosis (WRN) can cause rejections of the whole load as not saleable. In the US the disorder shows up sporadically but can affect significant acreage (Florida and Georgia had problems in 2011 and 2012).

Over the years plant pathologists have been able to isolate a number of different bacteria from necrotic areas in the rind and in some literature the disorder is often called bacterial rind necrosis. However, no one bacteria has been identified as the specific causal organism.

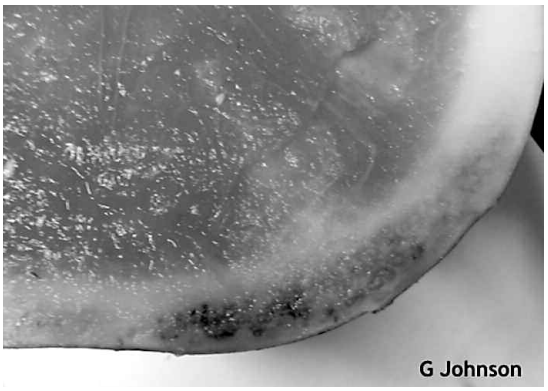
Bacteria can be isolated from healthy watermelon rinds and reside there without causing disease. The current theory of how WRN develops is that stressful environmental conditions trigger a hypersensitive response in the fruit rind to resident bacteria and cells near bacterial populations die; however, this has not be verified experimentally. There is some evidence that water stress may be involved and some association with abnormally shaped melons (prominent lobes).

In the 2011-12 "outbreaks" in Florida and Georgia, severity differed by variety. For example in one area the seedless varieties Gypsy, Melody, and Bold Ruler as well as the seeded pollenizer Sweet Harmony had much higher severity than Crunchy Red (seedless) and Mardi Gras (seeded). Unfortunately, because the disorder cannot be established in controlled trials, the susceptibility of many newer varieties is still unknown.

*Dr. Johnson is the Extension Fruit and Vegetable Extension Specialist at the Univ. of Delaware. From the **Weekly Crop Update,** Univ. of Delaware, Vol. 24, Issue 26, Sept. 16, 2016.*



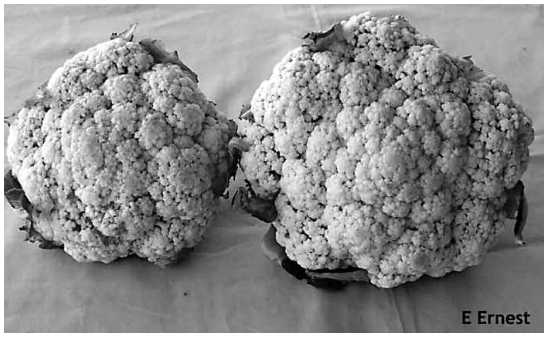
Watermelon Rind Necrosis (variety Fascination)



Closeup of necrotic area in watermelon rind

Cole Crops Affected... *(continued from page 21)*

"Riciness" in cauliflower



"Fuzziness" in cauliflower

Knuckling, loose heads and discoloration in broccoli

that slows growth making them small or open. Fluctuating temperatures and moisture will also cause less compact growth. In contrast, excess vegetative growth caused by excessive nitrogen can also cause loose heads in cauliflower and broccoli. Knuckling in broccoli is uneven growth in the crown leading to a bumpy appearance. Premature flowering and open heads in broccoli can be brought on by high temperatures. High temperatures can cause loose sprouts in Brussels sprouts.

*Dr. Johnson is the Extension Fruit and Vegetable Extension Specialist at the Univ. of Delaware. From the **Weekly Crop Update,** Univ. of Delaware, Vol. 24, Issue 27, Sept. 23, 2016.*

Downy Mildew of Brassicas

S.B. Scheufele, M.B. Dicklow, R. Hazzard

With cool nights and cooler daytime weather on the horizon, incidence of brassica downy mildew (*Hyaloperonospora parasitica*) may start to increase. We see the most damage from this pathogen in spring and fall when conditions are cool, and have seen a few samples come into the lab over the past few weeks. Occurrence of this disease seems to be increasing, perhaps in part because unlike other downy mildews, the pathogen produces oospores and can therefore survive in the soil without a host present—other downy mildews do not produce oospores and cannot persist in soil without a host.

Symptoms of brassica downy mildew on seedling leaf top and bottom. Photo: S.B. Scheufele

Brassica downy mildew affects nearly all cultivated brassicas and brassica weeds. It affects all plant parts, including foliage, stems, heads, and roots, and may become seed-borne. Plants can be infected at any stage of growth. Disease development is favored by cool, moist conditions, whether moisture is from rain, dew, or fog. Infections that occur early in a crop life cycle may be latent or dormant, only showing symptoms later in the season when conditions in the field are again favorable.

Symptoms: On seedlings, bright yellow, irregularly shaped spots appear on leaves. These yellow lesions have networks of black spots or lines throughout, looking almost like a web. Under cool, moist conditions you may see white cottony growth on the undersides of leaves. Yellowed leaves may drop. On older plants, these irregular yellow spots will become tan or gray papery patches. In cauliflower, dark gray spots may appear on the curd and, when cut open, gray streaking is noticeable on the branches beneath the florets. In broccoli, there may be no spots on the head but gray streaks may form beneath the beads, running all the way back to the main stem. In cabbage, black spots may be evident on the exterior of the head, or internal darkening and purplish spots may occur if the infection becomes systemic and the pathogen is able to move from the lower leaves into the stem and head. Turnip or radish roots may develop internal, irregularly shaped brown or black discoloration extending from the crown downward. In advanced stages, the skin becomes rough and the root may split open, which can be confused with symptoms of Rhizoctonia root rot. Disease can spread in storage and also may allow for entry of secondary rot pathogens.

Disease Cycle: Downy mildew overwinters as thick-walled resting spores, called oospores, in crop and weed residues or in the soil. The pathogen may also overwinter in winter-sown host crops. When infested seed is planted, the plants may be systemically infected. The pathogen may survive in a latent state within these asymptomatic, systemically infected plants and become active when environmental conditions favor disease development. Secondary spread of the pathogen occurs by asexual spores (sporangia), which are produced when there is abundant moisture on leaves provided by dew, drizzling rain, or heavy fog. Sporangia carried on air currents and on wind-blown rain germinate on leaves and produce new infections. Sporulation, germination, and reinfection can occur in as few as four to five days.

Management: Destroy infested crop residue as soon as possible after harvest. A two-year rotation away from brassicas is an important management step, and be careful to keep brassica weeds out of infested fields during that time as well. Start with disease free seed—ask your seed supplier if the lot has been tested for downy mildew or hot water treat your seeds. Scout seedlings in the greenhouse and try to maintain low humidity. In the field, lower leaf wetness periods and humidity in the plant canopy by increasing spacing, controlling weeds, planting in the direction of prevailing winds, and planting in areas that get full sun. Chemical control of downy mildew is possible; research by Chris Smart and Holly Lange of Cornell University has shown that chlorothalonil, mancozeb, fluopicolide, and copper can be effective, while plant defense-inducing products such as acibenzolar-S-methyl were not effective in downy mildew control. Some crops and cultivars are more susceptible than others, though the relative susceptibilities of crops and varieties has not been studied. Many universities and seed companies report that introduction of resistant cultivars is imminent, but none are currently available.

Ms. Scheufele, Ms. Dicklow, and Ms. Hazzard, are with the Univ. of Massachusetts Extension. *From the **Vegetable Notes for Vegetable Farmers in Massachusetts,** Univ. of Mass. Extension, Vol. 28, No. 22, September 15, 2016.*

POTATO PRODUCTION

Best Management Practices for *Dickeya* in 2017 Potato Crop

Nathan Kleczewski and Andrew Wyenandt

Avoid purchasing varieties (with lot numbers) which are known to have *Dickeya* from any source.

Do not purchase seed from those growers/brokers with a known history of *Dickeya.*

Do not rely on Blackleg tolerance levels reported on the North American Seed Health Certificates or the Florida Test results for presence of *Dickeya* in ANY seed lot from ANY source.

Request PCR testing for *Dickeya dianthicola* from supplier (directly from grower/or broker) using an independent lab. Reject any load if no *Dickeya* test results are available or those seed lots that have tested + for Dickeya.

All equipment during seed piece cutting needs to be disinfested on a regular (daily) basis, and/or disinfested between lot numbers and/or varieties. Quaternary ammonium is a good option for this purpose.

Fields with a known history of *Dickeya* should not be planted back into potato for at least 3 years or longer.

Avoid planting brassicas and onions in potato rotations, especially in fields with history of *Dickeya.* This includes cover crops containing brassicas.

Wash/dump water needs to be displaced in an area away from packing shed, particularly those sheds near any production field or source of ground water that may be used for irrigation.

Culled potatoes need to be dumped away from any production field, source of ground water, or any area where contamination of equipment may occur.

Rogue or volunteer plants appearing in fields with known *Dickeya* infestation the previous year or any prior year need to be removed, and/or sampled and tested if "Blackleg" symptoms are present.

There is no chemical control for *Dickeya.* Copper sprays, etc. will not help with controlling this disease.

All potato growers with fields with *Dickeya*-suspect symptoms need to be sampled and tested during the growing season.

Any grower which rejects a load of seed for suspect *Dickeya* should report information to your local Extension Agent, specialist, or Potato Growers Association.

Sample and re-test truckloads of seed potato for *Dickeya* once delivered. All results should be reported to your local Extension Agent, specialist, and/or Potato Growers Association.

All growers are encouraged to report every variety, lot number (North American Seed Cert), field (general) location, and testing results each spring so *Dickeya* can be tracked and that this information be publically available to all potato growers in and out of the state.

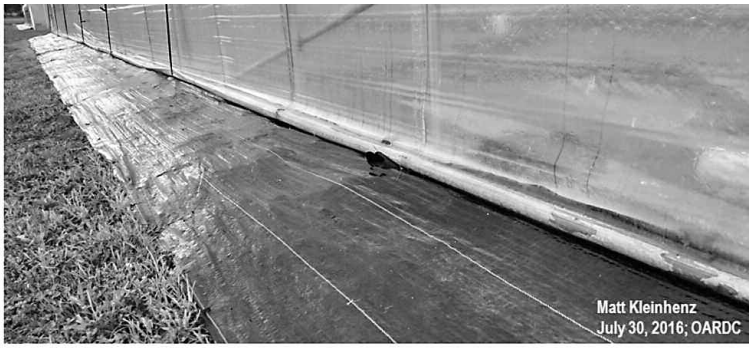
Growers using surface water (pond or stream) should are encouraged to do monthly water testing for *Dickeya,* especially if water source is near a field with known *Dickeya* infestation.

Dr. Kleczewski is the Extension Specialist in Plant Pathology at the Univ. of Delaware and Dr. Wyenandt is a Specialist in Vegetable Pathology at Rutgers Univ. From the ***Weekly Crop Update,*** *Univ. of Delaware, Vol. 24, Issue 27, Sept. 23, 2016.*

Drainage Around...

(continued from page 14)

provide other benefits. So, adequate drainage in and around tunnels is very important. Over the years, it has become clear that inadequate drainage outside tunnels has hampered business based on what happens inside them. Droughty periods may be ideal times to improve drainage around tunnels. Many steps can be taken to insure that drainage around (away from) tunnels is adequate. Grading during site preparation, subsurface systems (tiling), surface grading, and other ways can be used alone or in combination based on the characteristics of the site, the high tunnel-based operation, and farm resources. An inexpensive, straightforward, and helpful approach is shown in the picture. It moves water away from the tunnel during the heaviest events while also controlling weeds around the clock. Still, it is not a substitute for preparing the site many feet away from the tunnel properly since water must move and stay away from the tunnel for it to remain dry and productive. Contact Matt Kleinhenz (ph. 330.263.3810; kleinhenz.1@osu.edu) or see our Facebook (https://www.facebook.com/pages/The-OSU-Vegetable-Pro duction-SystemsLaboratory/155936034478066) for more information.



Moving water away from high tunnels quickly and without causing other trouble is important, especially when a lot of water is near their sidewalls (e.g., during heavy rain or snowmelt). Multiple steps can be taken to drain areas around high tunnels effectively. Steps differ in drainage capacity, and resources needed for setup and maintenance. Here, with tunnels between crops, soil was banked against the sidewalls then covered with nylon-based fabric (ground cover). On July 30, 1 inch of rain fell in less than 75 minutes at the site and no water entered along the edge of the tunnels. That is an improvement over previous experiences at the site.

Dr. Kleinhenz is with the Department of Horticulture and Crop Science at The Ohio State University. From ***VegNet,*** *http://vegnet.osu.edu,The Ohio State Univ., Vol. 23, No. 17, August 9, 2016.*

Extending Your Strawberry Season with Day-Neutral Varieties

Gordon Johnson

Plasticulture strawberry planting season is quickly approaching. Growers seeking to extend their strawberry seasons should consider planting a portion of their area to day-neutral varieties. Day-neutral strawberries start fruiting 12-14 weeks after planting and have the potential to give late fall as well as early April through July production. Currently, the three varieties that have shown the most potential for extended production on Delmarva are Seascape, San Andreas, and Albion.

Albion, in particular, has shown great flexibility for season extension. It is very flexible on when it is planted in the late summer or early fall. August plantings will yield some late fall production, particularly in high tunnels. While much less productive in the main Chandler season in the spring, it has some unique properties that make it valuable to growers. First, it will give some early production, ahead of Chandler. Second, even though production is lower, it produces evenly over an extended period of time from April through early July. In general it will give 5-6 weeks more production than Chandler. It is a large, firm berry that, while not as sweet early in the season, has good quality in May and June. Because plants are smaller and there are fewer berries per plant, it should be planted at a higher density than Chandler. Research has shown that planting three rows per plasticulture bed with two drip tapes provides the best yields.

Early August plantings of San Andreas will yield more fall production than Albion and San Andreas has comparable yields to Chandler in the spring with continued production through June. Both Albion and San Andreas have good quality and are firm berries that will stand up to regional shipping.

Seascape has been around for a long time and was the first of the larger sized day-neutral berries to show commercial potential in our area; however, Seascape has a softer berry and does not ship well so is best adapted to U-pick and local sales. Some growers in the region have had luck growing Seascape with multiple spring plantings spaced about three weeks apart from March through June giving summer and fall sales. Both Albion and San Andreas can also be planted in the spring for extended summer sales. Production in the heat of July and August will decline or stop unless there is a cool summer.

Because these day-neutral varieties keep blooming throughout the season, it is critical to maintain fertility, particularly with nitrogen, potassium, and calcium through fertigation. Over-fertilization with nitrogen will produce excess runners that will have to be removed and that will reduce productivity and under-fertilization with nitrogen will also limit production. Disease management is also critical because these varieties bloom for an extended season. Gray mold fungicide sprays must be applied regularly throughout the extended seasons.

Dr. Johnson is the Extension Vegetable and Fruit Specialist at the Univ. of Delaware. From the ***Weekly Crop Update,*** *Univ. of Delaware Extension, Vol. 24, Issue 23, August 26, 2016.*

Southeast Strawberry Expo & Trade Show

The Southeast Strawberry Expo and Trade Show will be held November 7 to 9, 2016, at the Hilton North Raleigh/Midtown in Raleigh, North Carolinia. It will include an all day farm tour, two days of educational talks and opportunities to talk to other growers and industry experts. There is a large trade show with industry members ready to speak with you about your strawberry growing needs. For more information or to register, visit www.ncstrawberry.com.

BERRY PRODUCTION

What To Do If You Find Spotted Lanternfly

Emelie Swackhamer

The spotted lanternfly is an invasive insect that was first found in Pennsylvania in 2014. This insect is a potential threat to several important crops including grapes, peaches and timber trees. Many sites within the infested area have high populations of spotted lanternflies. Every landowner who effectively uses control measures will help to reduce the potential for this insect to spread to new territory.

Spotted lanternfly adults on Ailanthus. Photo: Emelie Swackhamer

As of September 13, 2016 confirmed populations of the spotted lanternfly are known to exist in only the following Pennsylvania municipalities:

Berks County: Alsace, Amity, Colebrookdale, District, Douglass, Earl, Hereford, Longswamp, Oley, Maxatawny, Pike, Rockland and Washington townships and the boroughs of Bally, Bechtelsville, Boyertown, Kutztown, Lyons, Saint Lawrence, and Topton.

Bucks County: Milford Township and Trumbauersville Borough.

Chester County: South Coventry Township.

Lehigh County: Upper Macungie, Lower Macungie and Upper Milford Townships, and the boroughs of Alburtis, Emmaus and Macungie.

Montgomery County: Douglass, New Hanover and Upper Hanover townships and the boroughs of East Greenville, Pennsburg, Red Hill and West Pottsgrove.

<u>If you find a spotted lanternfly in a municipality where it is not known to exist</u> - You should try to capture it and put it into a vial filled with alcohol to kill and preserve it, or at least take a good picture of it. Report it to the Pennsylvania Department of Agriculture (PDA) by emailing to: badbug@pa.gov or call the Invasive Species Hotline at 1-866-253-7189. Your discovery could add additional municipalities to the quarantined area.

<u>If you find spotted lanternfly in a municipality where it is known to exist</u> - You should try to kill it. This insect is considered a threat to crops and many people are working to try to prevent it from spreading. Soon the females will begin to lay eggs. Each female will lay up to 100 eggs or more this fall, so by destroying even one female, you are reducing the potential population for the future.

In the late summer and fall, the spotted lanternfly prefers feeding on Ailanthus altissima, commonly known as the "Tree of Heaven." They can be found feeding on other plants and trees, but if you have *Ailanthus altissima,* you should start searching for spotted lanternfly on those trees.

Information on how to identify *Ailanthus altissima* and how to control it is available at https://pubs.ext.vt.edu/420/420-322/420-322.html

The spotted lanternfly is not known to bite humans. You can kill spotted lanternflies mechanically, by swatting or crushing them. However, when you threaten them, they are able to quickly jump far away from you, so mechanical control is not easy to achieve.

<u>Are there any natural enemies of the spotted lanternfly?</u> - Birds don't seem to like to eat them, and researchers have not found predatory or parasitic insects that are making a great impact on the population yet. Over time, natural enemies often do find invasive insect species, but for now this does not seem to happening on a level that is making a difference.

<u>Can you kill spotted lanternfly using pesticides?</u> - In Pennsylvania, pesticide regulations require that a product may only be used according to the directions on the label. The label must list the site (or location) where a pesticide (in this case an insecticide) may be used. There are insecticides available with labels that list ornamental trees as an allowed site. It is legal to use them on ornamental trees, including Ailanthus altissima, to try to kill insects, including the spotted lanternfly. You can check at your garden center to see what they offer. Some of these products may be more effective than others, so you should take note if the product you tried works well or not.

<u>Things to consider before you purchase an insecticide</u> - In some infested properties there are thousands of spotted lanternflies and many of them are very high up in trees. It will be difficult to reach the insects with a small can of spray or even a backpack sprayer. In this case you might consider hiring a professional tree care service to do the application.

Also, when the canopy of a tree is sprayed, the insecticide can come into contact with beneficial insects including pollinators and other creatures. People are looking for more specific approaches to pest management to minimize off-target exposure. This type of strategy is known as Integrated Pest Management (IPM). The PDA has been using an IPM strategy for spotted lanternfly infestations, and landowners may consider using the same IPM strategy on their properties, or hiring a professional service to do it.

<u>IPM strategy for the Spotted Lanternfly</u> Locate *Ailianthus altissima* trees on the site. For reasons not understood, spotted lanternfly seem to prefer some individual *Ailanthus altissima* trees over others. Try to identify the specific *Ailanthus* trees that are most attractive to the insects, based on how many are feeding on them.

Destroy approximately 90% of the *Ailanthus altissima* trees, leaving only a few that are most attractive to the insect. They will serve as "trap" trees. It is recommended that you try to kill all the female *Ailanthus altissima* trees, because they produce seed and contribute to the spread of this invasive tree.

Be careful handling *Ailanthus altissima* wood, leaves and branches. Chemicals in the sap of this tree can cause headaches, nausea and possible heart problems. Wear gloves and protect yourself from exposure.

When you cut down *Ailanthus altissima* trees, they will sprout profusely from the stumps and can grow back in a few years. Because they regenerate so easily, it is recommended that you treat the stumps with an herbicide to kill them and prevent them from sprouting new shoots.

Herbicides that are labelled for this use usually contain one of the following active ingredients triclopyr, dicamba, imazpyr or glyphoshate. Use the herbicide carefully and according to direc-

(continued on page 27)

What To Do If... (continued from page 26)

tions on the label. Alternative methods for using herbicides to kill *Alianthus altissima* trees include foliar sprays, basal bark applications and a method called frill application or "hack and squirt".

The Penn State Extension publication—Herbicides and Forest Vegetation Management, has more information about these methods. Whichever method you choose, remember that you will have dead *Ailanthus* trees which may eventually have to be removed.

Treat the remaining *Ailanthus altissima* trees with a systemic insecticide that will move throughout the tree. The insecticide must be applied according to the label and at the right time of year for the trees to absorb it. When spotted lanternflies feed on correctly treated trees, they will die. Systemic insecticides that are labelled to treat ornamental trees usually contain the active ingredients dinotefuran or imidacloprid. The PDA is using dinotefuran in their IPM strategy.

Treating only a few trap trees with a systemic product can reduce the amount of insecticide released into the environment and may help conserve beneficial insects.

Avoid spreading the spotted lanternfly - It is important for landowners in the affected area to avoid spreading the spotted lanternfly. One good practice is to avoid parking your vehicle under trees because spotted lanternflies that are living in trees will lay eggs on the cars underneath.

Spotted lanternfly egg mass. Photo: Emelie Swackhamer

Inspect items, including the wood from killed Ailanthus trees, and destroy any living spotted lanternflies or egg masses before you move them out of the area. If you must move items from inside the affected area, complete this checklist to be in compliance with the quarantine.

For requirements for handling brush and yard waste, see http://www.agriculture.pa.gov/Protect/PlantIndustry/spotted_lanternfly/Documents/The%20Spotted%20Lanternfly%20and%20Handling%20Yard%20Waste.

For more information about the biology of the spotted lanternfly, most current distribution, volunteer opportunities, quarantine regulations and compliance, see http://www.agriculture.pa.gov/Protect/PlantIndustry/spotted_lanternfly/Pages/default.aspx.

Ms. Swackhamer is with Penn State Extension in Lehigh Co.

*From the **Vegetable, Small Fruit, and Mushroom News,** Penn State Extension, extension.psu.edu/plants/vegetable-fruit/news, August 18, 2016.*

Equipment

MIST SPRAYERS – Swiharts, Quinter, Kansas, offers a complete line of low volume mist sprayers. They work excellent for spraying vegetables, vineyards, orchards, Christmas trees, nurseries, cattle, chicken houses, etc. Swiharts offer FREE SHIPPING! References available in your area. For a free brochures, call 800-864-4595 or go to www.swihart-sales.com

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