Vegetable Crops Hotline

A newsletter for commercial vegetable growers prepared by the Purdue University Cooperative Extension Service

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IN THIS ISSUE

Welcome to 2016 Season from the New Vegetable Crops Hotline's Editor - (*Wenjing Guan, guan40@purdue.edu, 812-886-0198*) - Welcome to a new year of the *Vegetable Crops Hotline*! Starting with this issue, I will be the new editor of VCH newsletter. If you do not know me yet, I am the horticulture specialist located at Vincennes, IN. I am excited to work more closely with VCH. I also feel responsible to continually provide you with a great newsletter. As always, our goal is to provide timely information that is useful for Indiana vegetable growers. If you have any suggestions, comments, or just want to share your experience with us about VCH, please do not hesitate to contact me at 812-886-0198, or email at **guan40@purdue.edu**.

Taking the opportunity, I would like to thank you for your unconditional support of VCH. Without your support, it is impossible for us to put everything together. I would also like to thank Liz Maynard for her years of dedicated service to VCH as an editor. What you did not see from the front is her years of work on every single detail of the newsletter. Dan Egel and Rick Foster provided many of the articles, their work always keep us on top of controlling vegetable diseases and pests. I also appreciate the work from all of the other authors who provide us guidance on various aspects in vegetable production.

Vegetable Crops Hotline website has a new look. You can still find all the previous articles published in VCH. Articles will be posted timely, not just when an issue is compiled. A hard copy of this first issue of the year is sent to all who subscribed in 2015 as well as new subscribers for 2016. Members of Indiana Vegetable Growers' Association (IVGA) receive the Hotline at no extra charge. If you wish to continue to receive future copies by US mail, renew your Hotline subscription or IVGA membership for 2016. When an issue is published we will email an announcement to everyone who has provided us with an email address.

As usual, if you aren't able to access the links we provide in the VCH articles, please contact us or a local extension office to request a hard copy of the information.

Hope everyone has a happy and productive season.

Weather Update Winter 2016 - (*Hans Schmitz, hschmitz@purdue.edu, 812-385-3491*) - Winter is coming to a close in about a month, and the coldest of the days should be behind us at this point. Here in Indiana, El Nino usually points to a warmer, drier kind of winter. With the past El Nino being considered one of the strongest on record, how much did the warm Pacific Ocean affect Indiana?

The temperature and precipitation graphs around the state look somewhat similar to Figure 1 (Columbus) and Figure 2 (Lowell).

High temperatures generally trended unseasonably warm right around the winter holiday, December 23 or 27, and around February 2. During both periods, record warm temperatures were set depending on location within the state. The southwestern portion of the state had a four day record shattering streak of warm temperatures, while the more impressive warmth was experienced in February at some more northern locations (see Figure 2).

Going around the state, high temperatures this winter varied from 70°F in Evansville to 64°F in Fort Wayne, with Lowell and Columbus falling in line at 66 and 68°F, respectively. Low temperatures over the winter so far have varied from 8°F in Evansville to -3°F in Lowell,

generally on either side of the precipitation event on January 16. None of the low temperatures this year have been very close to record-setting. For December and January, average temperatures around the state varied from 5.4 to 6.5°F above 30 year normal, with the state average running just under 6°F above normal. For an El Nino year, this kind of warmth falls in line well with our expectations.

While we would expect drier than usual conditions during an El Nino year, this expectation has not been the reality. The multiple one inch or greater precipitation days have skewed our average to wetter than average across the state. Far southeastern Indiana comes in the driest, at 96% of normal precipitation for December and January and a total value of 6.46 inches. Meanwhile, West Central Indiana received 145% of normal precipitation with 7.89 inches across the two months. For the vast majority of precipitation events, location in the state was not consequential for the occurrence of precipitation but amount was highly variable by location. For instance, the rain or snowfall around the December 28 timeframe was fairly consistent in occurrence from Figure 1 to Figure 2, but the amount of total precipitation varied significantly across sites.

Heading into the growing season, our past winter has likely not affected pest or weed pressures significantly differently than in previous years. Chilling hour accrual was much less than normal in December but colder temperatures in January have helped considerably. El Nino weakening is expected, with transition back to ENSO-neutral conditions in late spring or early summer. Until that time, under El Nino conditions, we expect near normal temperature patterns with normal to slightly drier conditions, particularly for Southern Indiana in March and Central Indiana in May. To analyze this data for yourself, head out to **agclimate4u.org** and check out the Climate Patterns Viewer Decision Support Tool on their web site.

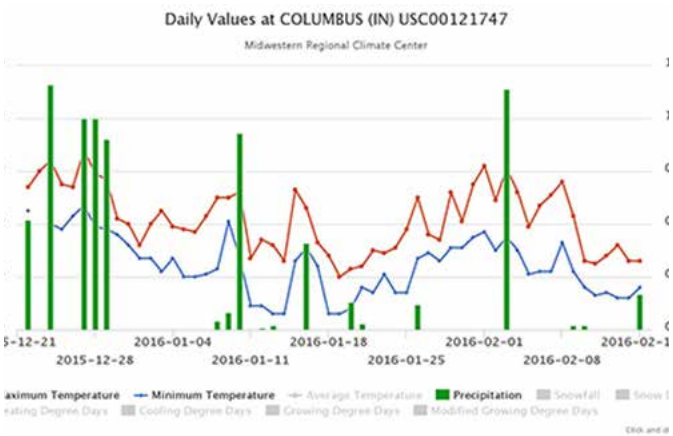


Figure 1. Maximum and minimum temperatures and precipitation at Columbus, IN

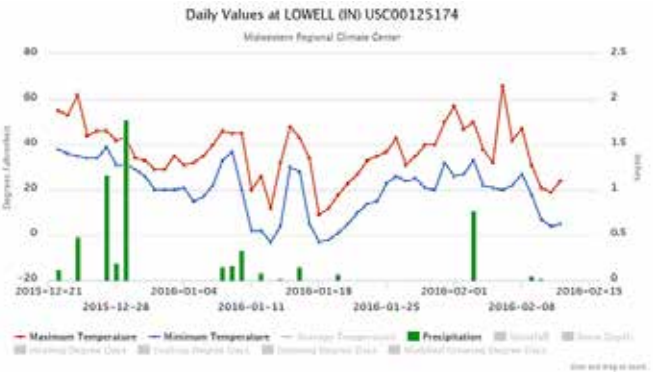


Figure 2. Maximum and minimum temperatures and precipitation at Lowell, IN

Powdery Mildew of Cucurbits – (*Dan Egel, **egel@purdue.edu**, 812-886-0198*) - The last two summers, I have had pretty good fungicide trials for powdery mildew of pumpkin. Since all of the products trialed are now labeled or close to being labeled, I thought it was time to share this information with vegetable growers of Indiana.

First, a bit of background about this disease. In Indiana, powdery mildew affects primarily pumpkin and cantaloupe. The disease is easily recognized by the talc-like lesions on both sides of the leaf. (This article will help with diagnosis. **https://ag.purdue.edu/arp/swpap/VeggieDiseasesBlog/Lists/Posts/Post.aspx?ID=29**) If left uncontrolled, the disease can cause loss of foliage, loss of yield and lower quality fruit.

The fungus that causes powdery mildew, *Podosphaera xanthii*, does not require leaf wetness for infection of leaves, only high humidity. The optimum temperature for disease development is 68 to 81°F. *P. xanthii* may survive in crop residue as a resilient fungal structure, but the disease is so easily windborne, that crop rotation is not always a practical control measure.

Fortunately, commercial varieties of pumpkin and cantaloupe exist with partial resistance to powdery mildew. Most growers, however, find it necessary to apply systemic fungicides to manage powdery mildew, even when using partially resistant varieties. The two trials I describe below use a susceptible variety of pumpkin, *Gold Challenger*, to assure plenty of disease.

In 2014, all of the fungicides used resulted in significantly less powdery mildew than the untreated check (see Figure 1). Fontelis® alternated with Bravo Weather Stik® and Vivando® used alone (Silwett® is a wetting agent) did not control powdery mildew as well as any of the other fungicide treatments. The best fungicide treatments were Luna Experience® (check to see whether Luna Experience® is labeled on cantaloupe and pumpkin-this label is due to be announced any day) alternated with Quintec®, Vivando® alternated with Merivon®, Aprovia Top® at 8.5 fl. oz per acre alternated with Quintec®, Aprovia Top® at 10.5 fl oz. per acre alternated

with Quintec® and Fontelis® alternated with Quintec® (no statistical difference between these treatments). The untreated check had significantly fewer pumpkins than any of the fungicide treatments.

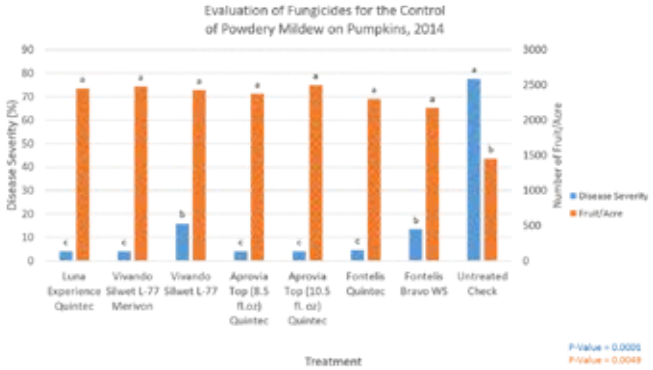


Figure 1. Fungicide pumpkin powdery mildew trial conducted at the SW Purdue Ag Center in 2014. Blue bars represent powdery mildew disease severity in percent. Orange bars represent yield in numbers. Bars of the same color with the same letter are not significantly different (alpha=0.05, LSD).

The primary lessons for the 2014 trial may be summarized as follows:
Untreated, powdery mildew may cause loss of yield in pumpkins, at least with susceptible varieties.

While Bravo WS®, common name chlorothalonil, is useful against a broad range of diseases as a preventative fungicide, this product is not systemic. Therefore, it is not a good rotational product for powdery mildew.

In 2015, the untreated check had more powdery mildew than any other treatment except for Pristine® (see Figure 2). This may indicate that the powdery mildew fungus has developed resistance to the two active ingredients in Pristine®: pyraclostrobin, FRAC group 11, and boscalid, FRAC group 7 (FRAC stands for Fungicide Resistance Action Committee. Each FRAC group represents a different fungicide mode of action.)

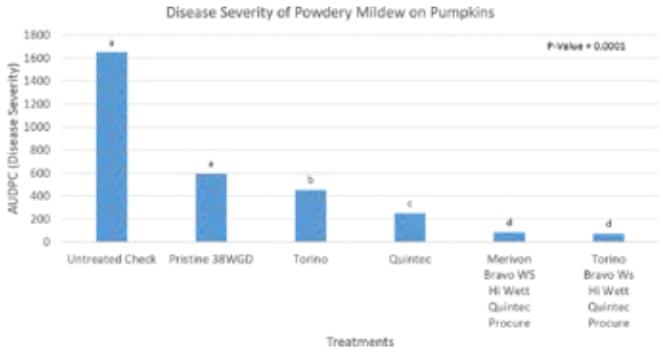


Figure 2. Fungicide trial for pumpkin powdery mildew conducted in 2015 at the SW Purdue Ag Center. Bar represent powdery mildew disease severity in AUDPC (Area Under the Disease Progress Curve). Bars with a different letter are not significantly different (alpha= 0.05 LSD).

The next step down for fungicide efficacy in the 2015 trial, was Torino® (used alone) which had significantly better control than Pristine®, but not as effective as any of the other treatments. Quintec® used alone was better than Torino®, but not as good as the two remaining alternations.

The treatments that resulted in the least amount of powdery mildew in 2015 included either Torino® or Merivon® alternated with Quintec® and Procure® (Bravo WS® was tank mixed with Merivon®, Torino® and Quintec®). There were no yield differences in 2015, however, there was some interesting differences in handle quality due to powdery mildew severity (see Figure 3). At harvest, approximately 4 inches of the stem next to the fruit (the handle) were removed, weighed and dried for 48 hours at 110°F and weighted again. From this data the percent dry matter in the handles were calculated. There was no difference in percent dry matter in pumpkin handles between fungicide treatments. However, the untreated check had a lower dry matter percent than any of the fungicide treatments. Presumably, the reason percent dry matter was less in the untreated check is that powdery mildew caused fewer carbohydrates (photosynthates) to be translocated from the leaves to the handles.

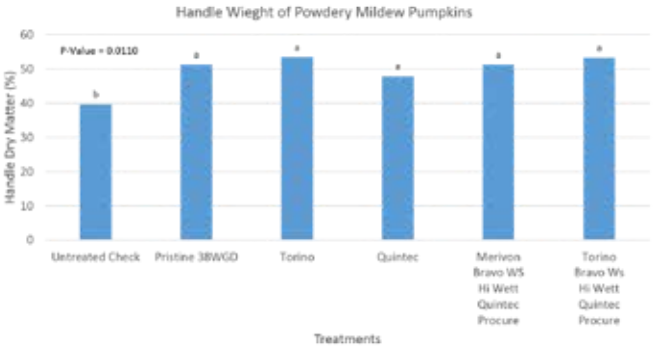


Figure 3. Fungicide trial for pumpkin powdery mildew conducted in 2015 at the SW Purdue Ag Center. Bar represent dry matter percent in pumpkin handles. Bars with a different letter are not significantly different (alpha= 0.05 LSD).

The take home for the 2015 trial could be summarized as:

Pristine® may not be an effective management tool for powdery mildew of cucurbits in Indiana anymore. The best fungicide treatments may be those that alternate fungicide modes of action such as the two in 2015 that utilize Torino® or Merivon® with Quintec® and Procure®.

Even if yield is not directly affected by powdery mildew, fruit or handle quality may be affected as observed in this study.

Although Quintec® is not a systemic product, this

product may become redistributed around the leaf by vapor action. This product, in a proper alternation with other products using a different FRAC code, has proven to be effective. Merivon®, a relatively new product with a novel mode of action, appears to be effective for powdery mildew plus it is labeled for other diseases as well. Torino® appears to be a good powdery mildew product if alternated with another product.

For experimental purposes, not all treatments described here alternate fungicides with different FRAC groups or MOA's. However, growers should know the FRAC groups for each of their fungicides and plan on a fungicide alternation between FRAC groups. Such an alternation will help to reduce the chance of creating fungi with resistance to one or more FRAC groups. Plus, as seen here, alternating between fungicide FRAC groups often results in better disease control.

For further information, contact the author or the *Midwest Vegetable Production Guide for Commercial Growers*, the 2016 version is now on-line at **mwveguide.org**.

This article also appears in the blog **veggiediseases-blog.org**.

Organic Powdery Mildew Control - (*Dan Egel, egel@purdue.edu, 812-886-0198*) - In a separate article in this issue, I discussed management of powdery mildew with conventional fungicides. Here I would like to talk about powdery mildew management of cucurbits with organically approved products. I will describe two studies, one with all organically approved products and a second with a combination of organic and conventional products. All studies were conducted at the SW Purdue Ag Center (**https://ag.purdue.edu/arp/pac/Pages/swpac-home.aspx**) in Vincennes, IN.

The organic products discussed are defined as organic since they appear on the Organic Material Review Institute (OMRI, **http://www.omri.org/**). There are other certifying agencies. Be sure to check with your certifying agency before using any fungicide product. As an example, the Champ DP® product used in 2010 is listed by OMRI as approved. However, Champ WP® is not.

In the 2010 study shown below, zucchini of the variety Raven F1 were planted in the certified organic plot managed at the SW Purdue Ag Center. Organic products were applied using a CO_2 backpack sprayer from 22 Jul to 31 Aug. Each product was applied one time per week except for Oxidate® which was applied twice weekly. The reason Oxidate® was applied twice a week is that the active ingredient, hydrogen dioxide, has little or no residue to remain on the plant surface after the product has dried.

Only the Champ® and Milstop® treatment had significantly less powdery mildew than the untreated check (see Figure 1). The Oxidate® and Serenade Max® treatments were not significantly different than the untreated check.

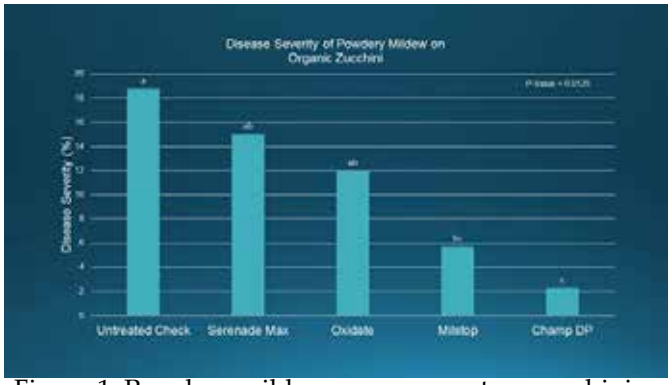


Figure 1. Powdery mildew management on zucchini with organic products. Treatments with a letter in common are not significantly different at the 5% level (LSD).

By the criteria used in most agricultural trials, there was no significant difference in total yields. However, for the yields of 1 Sep, there were differences at the 10% level (most agricultural studies require differences at the 5% level). On 1 Sep, the Champ® treatment had 1,525 fruit per acre, significantly more than the Milstop®, Oxidate® or the untreated check. The Champ® and Serenade Max® treatments were not significantly (data not shown).

The copper product, Champ DP®, outperformed all the other organically certified treatments in this trial. It is important to note that the Oxidate® treatment did not match the Champ® treatment even when applied twice a week. While Oxidate® can disinfest the surface of plants, the absence of any residue makes it an inferior treatment in this situation.

The second figure is from a cantaloupe study in 2012. The study was conducted in a conventional plot. Fungicides were applied with hollow cone nozzles with 30 PSI using a 3-point hitch one row sprayer. Saf-T-Side® and Nordox® are both organically certified. Nordox® is a cuprous oxide (copper) product. Saf-T-Side® contains petroleum oil. The trial is published here, **https://www.plantmanagementnetwork.org/pub/trial/pdmr/volume6/abstracts/v027.asp**.

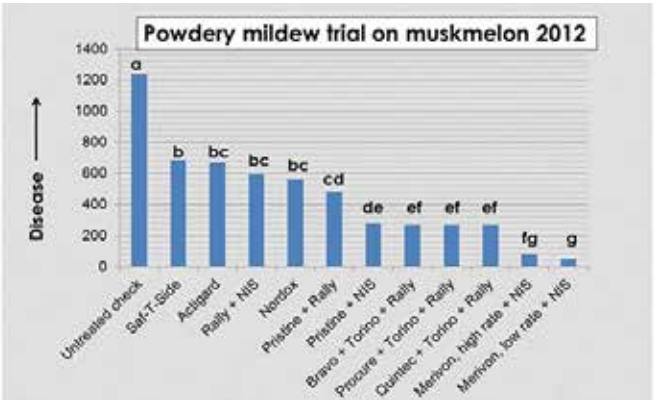


Figure 2. Management of powdery mildew of cantaloupe with organic and conventional products. Note that two products separated with a '+' are alternated with each other. Treatments with a letter in common are not significantly different at the 5% level.

All of the treatments had significantly less powdery mildew than the untreated check. The disease levels of the Saf-T-Side® and Nordox® treatments were not significantly from each other; the Nordox® disease level was not different from the Rally® or Pristine/Rally® treatments. The remaining treatments: Bravo®/Torino®/Rally®, Procure®/Torino®/Rally®, Quinec®/Torino®/Rally® and two rates of Merivon® all had significantly less powdery mildew than the organic treatments or the untreated check.

The untreated check was not significantly different in yield in lb/A than any other treatment except the Merivon® low rate (data not shown). The low rate of the Merivon® treatment had significantly higher yield than the untreated check or the Actigard® treatment. The latter treatment had the lowest yield of any treatment, significantly less than any treatment except the untreated control.

Lessons to be learned from the 2012 trial includes:

- The two organic treatments, Saf-T-Side® and Nordox®, had significantly lower powdery mildew levels than the untreated check and not significantly different than the Actigard® or Pristine®/Rally® treatment.
- Actigard®, if used all season long, may reduce marketable yield and is not an effective powdery mildew product.
- As noted in my previous blog, Pristine® may not be an effective powdery mildew product in Indiana anymore.
- The treatments with 3 products in alternation and the two Merivon® treatments managed powdery mildew well.

As always, please don't hesitate to contact me with any questions or concerns.

This article also appears in the blog **veggiediseases-blog.org**.

Vegetables: An Overview of Production and Economic Significance in Indiana – (*Petrus Langenhoven, **plangenh@purdue.edu**, 765-496-7955*) - In December 2015 I presented a talk at the Certified Crop Advisors Conference in Indianapolis titled 'Specialty Crops of Indiana'. The information gathered for the talk was so interesting that I thought I would share it with all the Vegetable Crops Hotline readers as well.

Data Sources. Information used to compile this article has been derived from the USDA National Agriculture Statistical Service 2012 Census of Agriculture, the 2014 Crop Values Summary, the 2014 Horticulture Specialties Census, and reports from the Economic Research Service.

National Statistics. In 2012, the production of vegetables in California contributed 26% to the total national acreage, followed by Idaho and Washington each at 8%, Florida and Wisconsin tied at 6%, Minnesota at 5%, and Michigan at 4%. Nationally it was estimated that 2.5 million acres of vegetables, potatoes and melons were harvested for sale, totaling $11.8 billion. In 2014, the value of production increased to $13.1 billion, of which 83% was fresh market vegetables. When potato ($3.85 billion) and sweet potato ($0.7 billion) are added, the total value of production increased to $17.6 billion. Nationally, the Top 5 vegetable crops for fresh market and processing, in terms of production value, are potato, lettuce (head, leaf and romaine), tomato, sweet corn, and onion.

Import and Export. The U.S. is a net importer of fresh vegetables. For example, in 2014, we imported $6.7 billion of fresh vegetables but exported only $2.4 billion. Import demand for fresh vegetables is driven to a large extent by off-season consumption during the cold weather months, when production locally is seasonally low. Exports are higher during March to July and are mainly driven by juice, frozen, prepared and preserved vegetables and seed ($3.7 billion). Our biggest import source and export destination are Mexico (69%) and Canada (77%), respectively.

Indiana Statistics. Even though Indiana is considered one of the most important agricultural states in the country, it imports approximately 90% of its food crops, estimated at $14.5 billion, from other states (Indiana Grown Initiative, 2015). In 2012, Indiana contributed less than 1% to the total national vegetable acreage. The estimated commercial vegetable crop value was estimated at $99.1 million in 2014, up from $89.8 million in 2012. The vegetable crop value is about 1.3% of the value of all principle crops (includes field and miscellaneous crops, fruits and nuts and commercial vegetables) grown in Indiana. The value of vegetables, potatoes, melons and sweet potatoes sold, as a percent of the total market value of agricultural products sold, was the highest in Knox and Lawrence counties, followed by Sullivan and Floyd.

In 2012, Indiana planted 49 different types of vegetables and melons, and harvested 37,747 acres of vegetables, potatoes and melons, compared to our surrounding states Michigan (158,661 acres), Illinois (71,946 acres), Ohio (35,556 acres) and Kentucky (7,474 acres). Tomato is the biggest crop in Indiana (10,410 acres) followed by sweet corn (6,050 acres), watermelon (5,498 acres), snap beans (3,901 acres), potatoes (3,539 acres), pumpkin (3,518 acres), cucumber and pickles (1,535 acres), and muskmelon and cantaloupe (1,189 acres). A big amount of the vegetables grown in Indiana are for processing. In fact, an estimated 96% of the tomato crop is for processing; and between 70 to 90% of the potato, snap bean, and cucumber and pickle crops are processed. However, only 18% of the sweet corn crop is processed.

Indiana has a very small high tunnel and greenhouse vegetable and herb production base. In 2012, the value of sales per square foot for tomato was $4.46, and for other vegetables and herbs $5.21, compared to $10.29 for vegetable transplants. Between 2007 and 2012 there was a significant increase (93%) in the high tunnel and

greenhouse vegetable and herb production area. This was mainly led by a 227% increase in the production area for tomatoes. Similarly, the area devoted to the production of vegetable transplants increase by about 66%. However, in 2014, it was estimated that 270 acres of land was dedicated to high tunnel and greenhouse crop production (all crops). Of that, only 27.8 acres were devoted to food production in 2012. In terms of our surrounding states, Ohio has the largest acreage (39.3) of high tunnels and greenhouses devoted to food production followed by Michigan (30.6 acres), Kentucky (21.9 acres) and Illinois (18.1 acres).

General. The local food movement has significantly impacted Indiana's vegetable industry in a very positive way as consumer demand for local vegetables has increased. This increased demand for local production has become mainstream and caused larger regional and national grocery chains to purchase from local farmers. Although there may be a debate about what is local, it does not diminish the fact that Indiana is centrally located to major populations in Chicago, New York City, Cincinnati and more. Good soils, an abundance of water and the proximity to diverse and large markets put Indiana in an ideal situation to increase its vegetable production acreage. The production acreage has already increased by about 2,200 acres between 2007 and 2012. Other technologies such as high tunnels and greenhouses can further increase the supply of vegetables well into the winter.

The Produce Rule is Here! - (*Scott Monroe, jsmonroe@purdue.edu, 812-886-0198*) - In November 2015 the Food and Drug Administration (FDA) published the final version of *Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption*, otherwise known as the Produce Rule, in the Federal Register. Sixty days later, in January 2016, the rule became law. The Produce Rule is one of several new regulations mandated by the Food Safety Modernization Act (FSMA), which was signed into law in January 2011.

I have had many growers ask whether or not they are covered by this new rule. FDA has put out an excellent flow chart to help determine coverage. It can be found online at **http://www.fda.gov/downloads/Food/GuidanceRegulation/FSMA/UCM472499.pdf**. When determining coverage, there are some key questions that growers should ask:

What is the value of my produce sales? Growers whose **produce** sales have averaged $25,000 or less for the past three years are not covered by this rule.

What crops am I growing? FDA has listed several crops that are rarely consumed raw. Examples of these crops are winter squash and potatoes. These crops are exempt from coverage.

What is the value of all my food sales? Growers whose total **food** sales (including agronomic crops and livestock) have averaged $500,000 or less over the past three years may receive a qualified exemption.

How am I marketing my crops? In order to receive a qualified exemption, over one-half of food sales must be to a qualified end user, defined as the end consumer or a restaurant or retail food establishment located in the same state or the same Indian reservation that produced the food or not more than 275 miles from the farm that produced the food.

Am I producing any crops for personal consumption? Crops grown for personal consumption (i.e. not for sale into the public food supply) are not covered by the Produce Rule

Am I producing crops for processing? Crops grown for processing receive a qualified exemption, although certain conditions must be met to insure that crops are, in fact, being processed in a manner that adequately reduces pathogens.

Growers should remember that regardless of whether or not they are covered by the Produce Rule, there is never an exemption from liability. All growers who sell produce into the public food supply face the same liability, regardless of Produce Rule coverage, should the unthinkable happen and a foodborne illness outbreak is traced to their farm. As a result, all growers are reminded to use Good Agricultural Practices in the upcoming season as a means of reducing the risk of a foodborne pathogens contaminating produce on their farm.

FoodLink is NOW READY for Your Use - (*Roy Ballard, rballard@purdue.edu, 317-462-1113*) -

- *How many times have you had to explain to a customer how to select, prepare or store a product that you have grown and are offering for sale?*
- *Did you ever wonder if more shoppers might buy your product if they had a clear understanding of how to prepare it?*
- *How many of us would buy a kohlrabi if we never learned how to prepare one in a manner that our family would enjoy?*

Many of today's shoppers are making purchasing decisions based on convenience and a lack of knowledge about how to select and prepare traditional fresh produce.

If we expect this generation of shoppers to buy what we are growing we need either a lot of time and patience to help them one at a time as we encounter their questions in the marketplace and/or we need tools so the shopper can educate themselves at the point of purchase (your market) or the point of use (their kitchen).

FoodLink, a ***FREE*** tool developed by a team within Purdue Extension to help you do exactly this…to help your customer choose ***YOUR*** high quality fresh Indiana products over lesser choices that take their dollars away from the farm and perhaps out of state and may have less nutritional quality than your fresh farm products.

FoodLink provides vendors (YOU) access to materials that include Quick Response (QR) codes that are unique to each of over 40 common Indiana fruits and vegetables from Asparagus to Zucchini and even Honey!

Depending on which crops you are marketing at any given time, simply make the appropriate QR code available to the shopper to scan from their smart phone and allow them to use the clear concise information that immediately appears at their fingertips to make the decision that is right for them and their families.

Even if you personally do not use a smartphone or know how to open a QR code, statistically, 87% of women shoppers with children have a smart phone and they use them to access information that impacts their purchasing!

This code driven tool will provide immediate access to the user about proper food selection, use, preparation, pairings, storage and a variety of other quickly accessed information including quick and easy recipes that will encourage the incorporation of fresh fruits and vegetables into the diets of Hoosier families. The tool will address the needs of not only home shoppers but also those of institutional buyers with recipes suitable for not only a family of four but groups of 400.

Codes can be reproduced and placed on signage-large or small, physically on larger produce (melons and pumpkins etc.), on clothing (aprons, shirts, hats etc.), on boxes used for wholesale shipments and many creative ways that we have yet to identify.

For more information about how to access and use ***FoodLink*** resources in your farm marketing activities, please contact Roy Ballard, Purdue Extension educator, ANR, Hancock county by calling 317-462-1113 or by e-mail at **rballard@purdue.edu**.

The growing season will soon be here and the marketing season soon follows…Please take a few minutes to take a look at the ***FoodLink*** website at **www.purdue.edu/*FoodLink*** to see if it might have benefit to you.

You may enroll your farm market in ***FoodLink*** now to receive periodic updates and to access free marketing materials while supplies last. There is NO COST to use ***FoodLink***!

Note... ***FoodLink*** will continue to evolve and improve based upon feedback... Recipes and additional content will be added over the coming weeks. Your feedback is welcome anytime**.**

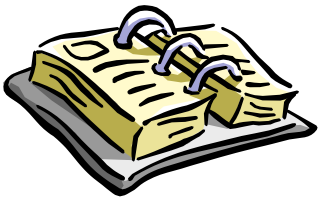
FoodLink

Survey about the Use of Manure and Compost

- (*Michael J. O'Donnell, **modonnel@purdue.edu**, 765-747-7732; Wenjing Guan, **guan40@purdue.edu**, 812-886-0198*) - If you are an organic grower and use manure and compost, you might be interested in spending a few minutes to participate in this survey conducted by University of California-Davis, The Organic Center and Organic Trade Association. The purpose of the survey is to characterize the use of manure and compost based soil amendments. Results from the survey will be used to study the use of untreated manure and compost in organic agriculture and the impacts of those practices on food safety. The survey can be found at **https://www.surveymonkey.com/r/manurefoodsafety**.

Correction of the 2015 Cantaloupe Variety Trial Report in Southwest Indiana

If you received a hard copy of the *Midwest Cantaloupe Variety Trial in Southwest Indiana-2015* at the Southwest Indiana Melon and Vegetable Growers Technical meeting in December, 2015, please note there was a mistake in Table 3, the firmness and fruit size columns. The corrected version of this report is available at **https://ag.purdue.edu/hla/fruitveg/MidWest%20Trial%20Reports/2015/02-01_Guan_Cantaloupe.pdf**. We are sorry for the confusion.



Upcoming Events

2016 Indiana Small Farm Conference
Location: Danville, Indiana
Date: March 3 to 5, 2016
Keynote speaker of this year's conference is Mary Dee Berry the executive director of The Berry Center, and Ben Hartman the author of *The Lean Farm*. More information regarding registration, conference schedule, as well as directions and lodging is available at **https://ag.purdue.edu/extension/smallfarms/Pages/default.aspx**.

Southwest Indiana Melon & Vegetable Growers Meeting
Location: French Lick Resort and Casino, 8670 W. State Rd. 56, French Lick, IN 47432
Date: March 4, 2016
Registration and viewing of commercial exhibits will begin at 8:30 A.M. Eastern Standard Time. The educational program begins at 9:00 A.M. Details of the program are available at **https://www.facebook.com/SWPurdueAgCenter/**. Lunch, which will be available with the $15 registration, will be from 11:45 until 1:15 P.M. The afternoon educational program has been approved for Private Applicator Recertification Program (PARP) credit and commercial pesticide credits have been applied for. Please bring $10 for the PARP program. If you have questions or want to RSVP, please contact Barb Joyner or Dan Egel at 812-886-0198 or email **joynerb@purdue.edu**. Please RSVP by February 25, 2016.

Food Safety for Market Growers
Location: Webinar
Date: March 8, 2016, 6:00 P.M. - 8:00 P.M.
More information please contact Scott Monroe at 812-886-0198 or email at **jsmonroe@purdue.edu**.

Michiana Vegetable & Fruit Growers Meeting
Location: Elkhart County 4-H Fairgrounds, 17746 County Rd 34, Goshen, IN.
Date: March 9, 2016
This day-long (8:00 A.M. to 4:00 P.M.) event will feature a trade show and educational sessions. It will also count as a Private Applicator Recertification Program. The registration fee is $30. Additional attendees from the same operation may attend for $15/person. The registration fee includes handouts and lunch. PARP credit is an additional $10. Registration deadline for the event is March 2. Details of the education program can be found at **https://extension.purdue.edu/noble/pages/article.aspx?intItemID=13927**. Registration and for more information, please contact John E. Woodmansee at 260-636-2111, email: **jwoodman@purdue.edu**, or your local agriculture and natural resource extension educators.

Starlight Vegetable Growers Meeting
Location: Joe Huber Family Farm and restaurant. 2421 Engle Rd., Borden, IN 47106
Date: March 10, 2016
This year the topics presented will be "Vegetable Growers and Pollinators", "How Fungicides Work: Vegetable Style", and "Bee Aware". The program fee for this event is $10 per person. Please pre-register by March 2. Registration and dinner will be from 5:30 P.M. to 6 P.M., followed by the program. PARP credit is available with additional $10. Commercial Pesticide CCH's in category 1 can also be earned by participants that attend this program. Please note that if inclement weather prevents this event from happening on March 10, it will be rescheduled for March 17. If you have any questions please contact Gina Anderson, Floyd County ANR/CD Extension Educator at 812-948-5470 or email at **gmanders@purdue.edu**.

2016 Greenhouse Tomato Short Course
Location: Eagle Ridge Conference Center, 1500 Raymond Lake Road, Raymond, Mississippi
Date: March 1 and 2, 2016
Topics include greenhouse system, greenhouse design and engineering, alternative heating options, marketing, budget, plant nutrition, alternative crops, water sanitation and pest management. Early registration is $175, due by February 20. On-site registration is $200 per person. More information is available at **http://greenhousetomatosc.com/**.

2016 Vegetable Crops Hotline Subscription Form

The *Vegetable Crops Hotline* newsletter provides the commercial vegetable grower with timely information about disease, insect and weed pests, fertility practices, post-harvest problems, pesticide label changes, meetings and much more. Each year, the Hotline is published 12 times during the growing season (April - September) with off-season issues in February, March and November.

Again this year, in addition to receiving the regularly scheduled *Hotline* issues, subscribers may also receive the ***Vegetable Crops Hotline - Bulletin*** either by email or FAX. This will require that subscribers to the 2016 *Hotline* indicate how they want to receive the bulletins. The *Bulletin* articles will also appear in the next regularly scheduled *Hotline* issue along with other pertinent articles written by the Purdue staff.

To subscribe, please fill in your name and address below, and send this form and a check for $15.00 made payable to **Purdue University** to:

Vegetable Crops Hotline Subscription
Southwest Purdue Agricultural Program
4369 N. Purdue Rd.
Vincennes, IN 47591

Indiana Vegetable Growers Association members are automatically signed up for the *Vegetable Crops Hotline* at no additional charge.

_____Yes, I would like to subscribe to the 2016 *Vegetable Crops Hotline*. Enclosed is a $15 check made payable to **Purdue University.**

Mail to: Vegetable Crops Hotline Subscription
Southwest Purdue Ag Program
4369 North Purdue Road
Vincennes, IN 47591

*****(Please complete the following)*****

Name: _____

Address: _____

City:_____State:_____Zip Code: _____

Phone:_____(home) and/or_____(work)

If you would like to receive email notification when ***Vegetable Crops Hotline Issues and Bulletins*** are published, please give us your email address or visit **lists.purdue.edu/mailman/listinfo/vch** to sign up: email address._____

If you want the occasional ***Hotline Bulletins*** by fax, please include your FAX number (with area code): _____

Indiana Vegetable Growers Association

Membership Renewal/Application

Benefits of IVGA Membership:

- Midwest Vegetable Production Guide for Commercial Growers, (ID-56) (new edition usually available in Jan.)
- Vegetable Crops Hotline subscription
- Listing in IVGA Directory of Wholesale Vegetable Producers (optional)
- Your web site linked on www.ivga.org
- Corporate members: logo included on corporate members page at www.ivga.org
- Network with other vegetable growers
- Support education and research to improve vegetable production and marketing in Indiana

To renew or join, correct or fill out the form below and send in with your check payable to IVGA. Memberships run January - December. If you have already renewed for the current year, but haven't provided the information requested below, please check here ___, and complete and return this form so we have your current information.

Your contact information below will be printed in the membership directory that is sent to members only. It will also be used to mail you the Vegetable Crops Hotline, to fax or e-mail the Hotline Bulletin, and for IVGA correspondence.

Name: _____

Company: _____

Address: _____

City, State, Zip: _____

Tel: _____ Fax: _____

Email: _____

Web: _____

ID-56 Delivery: Where will you pick up your copy of the ID-56 or should we mail it to you?
___IHC (Indiana Hort Congress),
___IVGS (Illiana Veg Growers Symposium)
___SW Ind. Melon and Veg. Meeting
___Starlight Veg Meeting
___Please send by mail
___I do not want a copy of the ID-56

Would you like to receive **free subscriptions** to trade magazines that may be offered to IVGA members?
___Yes ___No

Check here if you want to receive the **Vegetable Crops Hotline by Email ONLY** (no hard copy) ___

Membership Type:
___Regular, $40.00/year
___Industry/Corporate, $80.00/year

Make check payable to:
Indiana Vegetable Growers Association (IVGA).
Return to:
Indiana Vegetable Growers Association c/o Maynard
PO Box 1321
Valparaiso, IN 46384-1321

The IVGA Directory of Wholesale Vegetable Producers will be updated periodically.
___Check here to be included in the directory.
___Check here if information has not changed since previous year OR provide information below.
Contact information for Wholesale Directory, if different from elsewhere on this form:

Name:_____

Company:_____

Address: _____

City, State, Zip:_____

Tel: _____Fax: _____

Email: _____

The wholesale directory is available to anyone who requests it and will be posted on the web. Indicate quantity of each item: S=small quantities; X=wholesale quantities; T=semi truckload quantities.

__apples
__asparagus
__beet
__black- or raspberries
__broccoli
__cabbage
__cantaloupe
__carrot
__cauliflower
__chrysanthemums
__daylilies
__greens (collards, mustard, turnip)
__corn, stalks
__corn, ornamental
__cucumber
__eggplant
__gourds, ornamental
__herbs
__kale
__lettuce
__onions, bulb
__onions, green
__peaches
__peppers, bell
__peppers, hot
__potatoes
__pumpkin
__pumpkin, mini
__radishes
__snap_bean
__spinach or chard
__squash, summer
__squash, winter
__strawberries
__sweet corn, bicolor
__sweet corn, white
__sweet corn, yellow
__tomatillo
__tomato
__turnips
__watermelon

Office Use Only: Check no._____ Check Date_____ Date Rec'd._____ Rec'd. by _____