

# VEGETABLE CROPS HOTLINE

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

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## IN THIS ISSUE

- **FUSARIUM WILT OF WATERMELON TRANSPLANTS**
- **SCOUTING REPORT**
- **MELCAST Update**
- **FOOD SAFETY CONSIDERATIONS DURING CROP ESTABLISHMENT**
- **WHERE TO GET WATER TESTED FOR MICROBIAL QUALITY**
- **GRANTS FOR RENEWABLE ENERGY AND ENERGY EFFICIENCY**
- **PACKINGHOUSE FOOD SAFETY WORKSHOPS IN JUNE**
- **INDIANA VEGETABLES IN THE 2012 AG CENSUS**

### FUSARIUM WILT OF WATERMELON TRANSPLANTS

- (Dan Egel, [egel@purdue.edu](mailto:egel@purdue.edu), 812-886-0198) - Recently I observed watermelon transplants still in polystyrene trays that had symptoms of wilt and dieback. When the lower stem (hypocotyl) was sliced longitudinally, a discoloration could be seen in the vascular tissue on either side of the stem. In one case, the stem just below the seed leaves had a large external lesion that did not extend to the soil surface. Figures 1 and 2 show watermelon seedlings from an earlier outbreak of Fusarium wilt.

I have isolated a Fusarium wilt fungus from the seedlings in question. The isolated fungus along with the symptoms observed confirm the diagnosis of Fusarium wilt of watermelon.

Watermelon transplants that are suspected of having Fusarium wilt should not be planted in the field. Seedlings with severe symptoms will quickly die and the Fusarium fungus may survive in field soil indefinitely. It is possible that apparently healthy seedlings may develop Fusarium wilt in the field after planting.

The fungus that causes Fusarium wilt may survive on used transplant trays and contaminated tools from the field. It is also possible that the Fusarium fungus can survive on seed. Fusarium wilt does not spread from plant to plant.

This year, Proline 480 SC® is labeled for Fusarium wilt of watermelon. The label states that the product should be applied through drip irrigation. It is unlikely that any product will help severely affected seedlings.



**Figure 1.** Watermelon transplant with Fusarium wilt while still in transplant tray. (Photo by Dan Egel)



**Figure 2.** Lesion on stem (hypocotyl) and wilt of true leaves caused by Fusarium wilt of watermelon. Note pink fungus growing on stem. (Photo by Shubin Saha)



**SCOUTING REPORT** - (Dan Egel, [egel@purdue.edu](mailto:egel@purdue.edu), 812-886-0198) - Aphids were observed on peppers in a high tunnel at the Southwest Purdue Agriculture Center (see Figure 3). Several plants were affected, primarily along the western wall where the sides have been open during the last week. Our records indicate that aphids were observed on peppers in our high tunnel last year at almost the same date.

Seed corn maggots (see Figure 4) were reported on watermelon in the Elkhart area. Damage was estimated at about 20%. Since the weather has been colder in this northern portion of the state, seed corn maggot activity is more likely.



**Figure 3.** Aphids on peppers in high tunnel at Southwest Purdue Ag Center. (Photo by Dan Egel)



**Figure 4.** The lower stem (hypocotyl) of this cantaloupe plant has been shredded by one or more seed corn maggots like the one visible on the stem. (Photo by Dan Egel)



**MELCAST Update** - (Dan Egel, [egel@purdue.edu](mailto:egel@purdue.edu), 812-886-0198) - In the Vegetable Crops Hotline issue number 580, I introduced **MELCAST** for 2014. In that article, I explained how **MELCAST** could be used to schedule fungicides for cantaloupe and watermelon crops for the management of foliar diseases. Since that time, there have been some changes to **MELCAST** that are de-

scribed below.

**MELCAST** for 2014 will work the same as described earlier, but there are some additional features this year. Along with the Environmental Favorability Index (EFI) values for cantaloupe and watermelon, growers will now be able to see the accumulated precipitation data, the high temperature and the growing degree-days (for field corn). These additional data columns can be accessed by clicking on the individual site closest to the field of interest (see Figure 5). Access the **MELCAST** site on the Internet by using [MELCAST.info](http://MELCAST.info). The newsletter **MELCAST Update** will start next week. The toll free number to access **MELCAST** data is now working 800-939-1604.

Thanks to Kyle Purple, IT Specialist with the Botany and Plant Pathology Department at Purdue University for working to get the new **MELCAST** site up and working. As always, if you have questions, contact Dan Egel.

**EFI Values for  
IN-SW PURDUE AG CENTER**

Date mm- dd	Muskmelon EFI	Watermelon EFI	Total Precip	High Temp	Total GDD
05-13	19	38	2.26	77	220
05-12	15	32	1.73	81	203
05-11	13	24	1.54	82	178
05-10	10	17	0.76	77	156
05-09	6	9	0.52	76	136
05-08	0	1	0.05	84	117
05-07	0	0	0	83	92

\* GDD and Precip data begins on April 30, 2014

[Back a Week](#)

[State Summary for IN](#)

**Figure 5.** Screen shot of data available when one MELCAST site is selected-in this case, the Southwest Purdue Ag Center.



#### FOOD SAFETY CONSIDERATIONS DURING CROP

**ESTABLISHMENT** - (Scott Monroe, [jmonroe@purdue.edu](mailto:jmonroe@purdue.edu), 812-254-8668) - Planting season is one of the most stressful times of the year. Growers face potential challenges from weather, labor issues, equipment, and many other factors beyond their control. Stressful and busy times like planting season are also times when we tend to get distracted, and lend themselves to the accidental introduction of foodborne pathogens. Growers are reminded that remaining vigilant during planting and transplanting can reduce the risk of foodborne pathogens being introduced into the crop. The following are steps growers can take at the beginning of the season to help produce a safe, high-quality crop at the end of the season:

- Make sure all workers have been trained in, and understand, basic farm sanitation. Taking a few minutes at the beginning of the season to make sure all workers know proper handwashing techniques and farm policies will go a long way in preventing contamination of seed, plants, and crops.



- At a minimum, workers should wash their hands prior to handling any seed or transplants. Hand-washing before beginning work and after breaks, eating, smoking, or using the restroom will decrease the risk of introducing pathogens.
- Seeds and transplants should be minimally handled. Seeds going from the bag or can directly into the planter pose the least amount of risk for contamination. The more seed is handled, the more chance for introduction of a foodborne pathogen.
- Be aware of surroundings. Make sure that loads of plants are staged in appropriate locations prior to transplanting. Transplants should not be staged near dusty roads, pastures containing livestock, or animal production facilities. Ideally, transplants should be loaded and taken directly to the field for transplanting and not allowed to sit for extended periods of time.
- Water used for transplanting should meet EPA recreational water standards. This means only using water from a known source that has been tested. Filling transplanters from the first available source (i.e. a pond or ditch) in order to save time is not recommended. Where transplanters are concerned, if a known water supply is not available onsite, it is best to use a tank and transport water to the site.
- All planting and transplanting equipment should be cleaned prior to use. Transplanter tanks and other high-moisture areas are excellent areas for foodborne pathogens to become established and multiply. When possible, transplanting equipment should also be cleaned periodically during the season.

Remember, small steps taken at the beginning of the season go a long way towards preventing problems during harvest!



#### WHERE TO GET WATER TESTED FOR MICROBIAL

**QUALITY** - (Liz Maynard, [emaynard@purdue.edu](mailto:emaynard@purdue.edu), 219-531-4200) - Water used for drinking, handwashing, cleaning, and postharvest practices should meet microbial standards for potable water. Water used for irrigation on fresh market vegetables should at a minimum meet EPA standards for recreational water use. EPA recreational water standards were updated in 2012 and require average (geometric mean) *E. coli* counts of less than 126 colony forming units (CFU) per 100 ml.

There are private labs throughout the state that conduct microbiological tests on water. A list is available from the Indiana State Department of Health (ISDH) at [www.in.gov/isdh/22450.htm](http://www.in.gov/isdh/22450.htm).

ISDH also conducts these tests. To order a water sample test kit, download the order form linked at [www.in.gov/isdh/24550.htm](http://www.in.gov/isdh/24550.htm), or contact ISDH at 317-

921-5874 or [containers@isdh.in.gov](mailto:containers@isdh.in.gov).

The public or private lab will supply bottles for water samples. The lab will also send instructions for collecting and shipping or delivering the sample. Water samples need to be processed within a certain time frame, so pay close attention to those instructions.

The tests for potable water and recreational water require different procedures in the lab. If the water to be tested will be used only for irrigation, and not for drinking, handwashing, etc., confirm with the lab that they will test using methods for recreational water quality standards.

Information on public water supplies is available in the Indiana Public Water Supply Database ISDH <https://myweb.in.gov/IDEM/DWW/>. This database provides results of the most recent chemical and bacteriological testing conducted as well as contact information.



#### GRANTS FOR RENEWABLE ENERGY AND ENERGY

**EFFICIENCY** - (Liz Maynard, [emaynard@purdue.edu](mailto:emaynard@purdue.edu), 219-531-4200) - The USDA Rural Energy for America Program offers grants for purchase or installation of renewable energy systems. Grants are also available for energy efficiency improvements. Loan guarantees are also available.

Examples of renewable energy projects include: energy produced from biomass; anaerobic digesters using biomass; heat from a geothermal source; solar; wind; and small hydroelectric projects. Energy efficiency projects could include replacing inefficient equipment, insulation, or other improvement identified in an energy audit.

Farmers and rural small businesses are eligible to apply. Grants range from \$1,500 to \$500,000. The deadline for application is July 7. For more information search for REAP at [www.grants.gov](http://www.grants.gov).

Additional resources are available at the Purdue Renewable Energy website <https://extension.purdue.edu/renewable-energy/on-farm-efficiency.shtml>. Chad Martin, Renewable Energy Extension Specialist, is available to assist by conducting an energy audit of your greenhouse or other farm system. Contact him at 765-496-3964 or [martin95@purdue.edu](mailto:martin95@purdue.edu).



#### PACKINGHOUSE FOOD SAFETY WORKSHOPS IN JUNE

Purdue will offer 'Bringing in the Harvest: Preparing for the 2014 Melon Season' at several locations in Southwest Indiana the week of June 9. The workshops will cover food safety in melon packinghouses. Check future issues of this newsletter for more information or contact Scott Monroe at [jmonroe@purdue.edu](mailto:jmonroe@purdue.edu) or 812-254-8668 or 812-249-8666 (cell).



**INDIANA VEGETABLES IN THE 2012 AG CENSUS** - (Liz Maynard, [emaynard@purdue.edu](mailto:emaynard@purdue.edu), 219-531-4200) - Last week the USDA released the 2012 Ag Census results. The numbers show Indiana vegetable acreage ‘in the open’ was up 6% from 2007, for a total of 37,747 acres harvested (see Table 1). Most of the increase was due to processing vegetables, which increased 16% since 2007 to 18,271 acres. The total number of vegetable farms changed little: 1,376 in 2012 and 1,363 in 2007. The number of farms growing processing vegetables increased nearly 25%, to 209 operations.

Vegetable acreage is concentrated in Southwest, Northern, and East Central Indiana, and Jackson County (see Figure 6A). (Acreage for the counties colored gray isn’t shown because there are so few vegetable farms in those counties that showing information might expose information about individual farms, and USDA NASS does not do that.) The map showing numbers of farms (Figure 6B) illustrates that vegetable farms are spread more evenly around the state than is vegetable acreage. Still, as one might expect, counties with more acreage tend to have more farms. The map also shows a concentration of farms in many counties with produce auctions: Elkhart, LaGrange, Adams, Parke, Wayne, and Daviess.

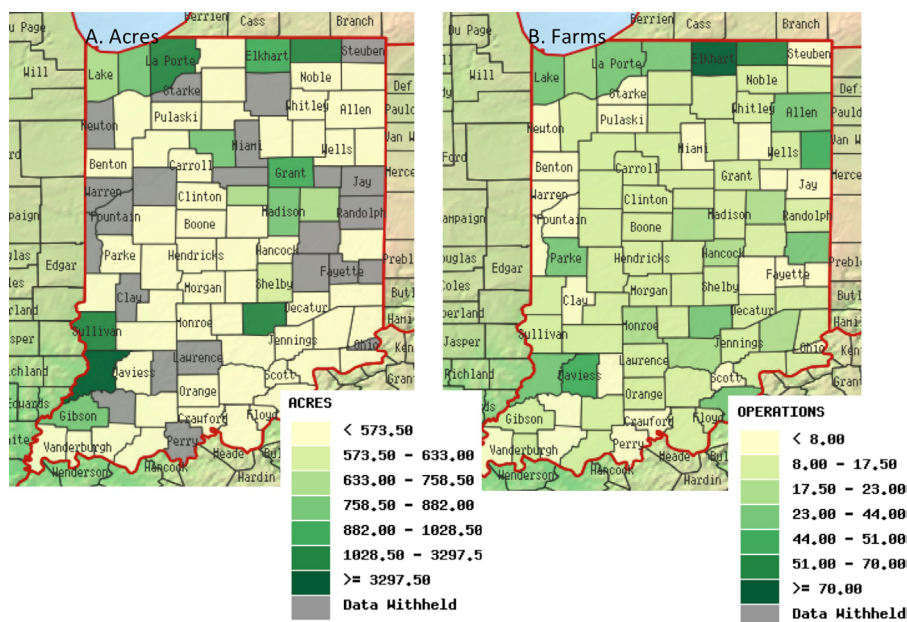
In future articles I’ll report other information about the Indiana vegetable industry from the Ag Census. If there’s something in particular you’d like to know please get in touch. Many private and public organizations use the Ag Census to get a picture of agriculture, and it can be useful to know what picture the Census provides about your industry.

Source for Table and Figure: USDA NASS Quick Stats 2.0. <http://quickstats.nass.usda.gov> Retrieved 5/13/2014.

**Table 1.** Acreage and number of vegetable farms ‘in the open’ in Indiana, 2012 and 2007.

	Acres Harvested		Number of Operations	
	2012	2007	2012	2007
Total	37,747	35,503	1,376	1,363
Fresh Market	19,376	19,707	1,282	1,279
Processing	18,371	15,796	209	169

Source: USDA NASS Quick Stats 2.0. [quickstats.nass.usda.gov](http://quickstats.nass.usda.gov) Retrieved 5/13/2014.



**Figure 6.** A. Harvested vegetable acreage ‘in the open’ by county, Indiana, 2012. B. Operations with vegetables by county, Indiana, 2012.

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