

VEGETABLE CROPS HOTLINE

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

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<<http://www.btny.purdue.edu/pubs/vegcrop>>

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INDIANA GROWN PROGRAM FROM ISDA - (Liz Maynard)

- There has been talk about an Indiana branding program for fruits and vegetables for many years, so I was excited to hear about the Indiana Grown program recently announced by the Indiana State Department of Agriculture. According to ISDA, the goal of the program is "... for consumers to easily identify, find and buy Indiana grown products. The program encompasses everything from a big farming operation to a small roadside stand." And it's not just for fruit and vegetables. Bedding plants and other flower crops, nursery crops, field crops, forestry products, dairy, eggs, livestock and their products, fish and seafood, and turf are all included.

Members in the program obtain rights to use the Indiana Grown logo on high-quality products grown in Indiana. To join, producers apply to the ISDA using the application available at <http://www.in.gov/isda>. The application fee is \$100 for the first year and \$50 for a renewal application each year.

This looks like a program worth checking out. It would be great to see Indiana Grown logos on Indiana vegetables this season.



NEW FUNGICIDES - (Dan Egel) - This article describes 4 fungicides that have recently been labeled and therefore do not appear in the hard copy of the *Midwest Vegetable Production Guide for Commercial Growers 2012*. The digital version available on-line will be updated. All of the labels listed below describe specific resistant management strategies. However, regardless of how many times the label allows one to repeat sequential applications of a product, I recommend alternating to a product with a different mode of action (MOA) after each application. We don't want to lose any of the products listed below to fungicide resistance.

Fontelis® - This fungicide was developed by DuPont and is labeled on a wide variety of vegetables. The active ingredient is penthiopyrad, a MOA group 7. Labeled vegetable crops include: onions, brassica (cole) crops, cucurbit vegetables (e.g., muskmelons, pumpkins, watermelons), fruiting vegetables (e.g., tomatoes and peppers), leafy vegetables, and root vegetables. Fontelis® has a greenhouse label on both cucurbit and fruiting vegetables (note: separate greenhouse rates are listed).

The label lists the following diseases for cucurbits: Alternaria leaf blight, gray mold, gummy stem blight, powdery mildew and Sclerotinia stem rot. I have experience with Fontelis® on muskmelon and watermelon. It should perform well on gummy stem blight and powdery mildew. However, growers should note that strains of the gummy stem blight fungus that are resistant to the active ingredient boscalid in Pristine® (MOA group 7) will also be able to overcome Fontelis®. Therefore, if applying Fontelis® to a crop that may have gummy stem blight problems, tank mix with another product with a different mode of action. Growers should expect Fontelis® to perform very good to excellent on powdery mildew of cucurbits.

Fontelis® diseases labeled for fruiting vegetables include: early blight, gray mold, powdery mildew, Septoria leaf spot, and anthracnose (disease suppression). I have trialed Fontelis® on tomatoes with early blight - this product performed well.

Luna® products were developed by Bayer; each product contains the active ingredient fluopyram plus a mix partner with a different MOA. Fluopyram is in MOA group 7, however, it doesn't seem to have cross-resistance with other MOA group 7's (more on this later).

Luna Experience® contains fluopyram (MOA group 7) and tebuconazole (MOA group 3). This product is labeled for the watermelon diseases powdery mildew, Alternaria leaf blight, gummy stem blight, belly rot and anthracnose. Although I have not had the opportunity to trial this product, many of my colleagues have. Plus, I have been able to work with this product in the laboratory. Luna Experience® has been able to control strains of the gummy stem blight fungus that are resistant to the active ingredient boscalid in Pristine®. The combination of fluopyram and tebuconazole should perform well on anthracnose as well.

Luna Sensation® is a combination of the active ingredients fluopyram (see above) and trifloxystrobin (MOA group 11). This product is also labeled on watermelon and the diseases include: powdery mildew, Botrytis gray mold, Alternaria leaf blight and anthracnose. Powdery mildew and gray mold are not serious diseases of watermelon in Indiana.

Luna Tranquility® is a combination of fluopyram (see above) and pyrimethanil (MOA group 9). The vegetable portion of the label lists potato and includes the following diseases: early blight, powdery mildew, Botrytis leaf spot and white mold.

Please call Dan Egel at 812-886-0198 if you have any questions about any of these products.



INDIANA NRCS HIGH TUNNEL GRANT Q&A ON APRIL 9 'HIGH TUNNEL CROP TALK' - (Liz Maynard)
- NRCS Conservation Agronomist Tony Bailey will discuss the Indiana NRCS High Tunnel Initiative and answer questions about it during the next High Tunnel Crop Talk on Monday, April 9, at 12:30 Eastern/11:30 Central Time. To participate, dial toll-free 1-866-492-6283. Or, from a high speed internet connection, point your browser to <https://gomeet.itap.purdue.edu/htct/>. Login as a 'guest' by entering your name. When the meeting room window opens on your computer, follow instructions on screen to have the automated system call your phone number so you can hear and be heard. If you participate over the internet you will be able to see images and other resources that may be shared during the call.

This will be the third session of the High Tunnel Crop Talk, which began on March 26 and will continue every other week for the growing season. These discussions hosted by Purdue staff include participants' reports on progress of their high tunnel or greenhouse crops and questions and answers about current production issues. From time to time experts will provide short updates on timely topics. We invite all Indiana growers, educators, researchers, students, and others interested in the topic to join in by following the instructions above. Participants may also share images

of crops or structures by emailing them to emaynard@purdue.edu by 8:00 p.m. Sunday prior to the call with HTCT in the subject line. During the discussion, photos and other visuals will be viewable in the Adobe Connect meeting room accessible via high-speed internet. A summary of each discussion is posted on the Indiana High Tunnels blog at <http://www.indianahightunnels.blogspot.com/>.

Mark your calendar for these High Tunnel Crop Talk dates through June, 12:30 pm Eastern/11:30 am Central: April 9, April 23, May 7, May 21, June 4, and June 18. Reminders will be published in this newsletter and emailed to Purdue's Fruit and Vegetable email list. To join that list, visit <http://www.hort.purdue.edu/fruitveg/fvmailist.shtml> and click on 'Subscribe/Unsubscribe to the Commercial Fruit and Vegetable Crops mail list!'

High Tunnel Crop Talk is sponsored by the Purdue Dept. of Horticulture and Landscape Architecture and the USDA/SARE Indiana PDP Program. Please contact Liz Maynard for more information, or to suggest specific topics you'd like to hear about on the call.



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PURDUE EXTENSION
Horticulture &
Landscape Architecture

High Tunnel Crop Talk

Every other Monday
12:30-1:30 Eastern/11:30-12:30 Central
Apr. 9, Apr. 23, May 7, May 21, June 4, June 18

1-866-492-6283

<https://gomeet.itap.purdue.edu/htct/>
 Summaries posted at
www.indianahightunnels.blogspot.com
 for more info: 219-531-4200 or emaynard@purdue.edu





MIDWEST COVER CROPS GUIDE - (Liz Maynard) - The *Midwest Cover Crops Field Guide* is a pocket-sized 136-page book filled with profiles of cover crops suitable for use in this region. Eileen Kladviko and Corey Gerber from Purdue Agronomy authored the Guide with other members of the Midwest Cover Crops Council. In addition to information about seeding rates, planting dates and methods, killing methods, and relative benefits for each crop, special considerations for vegetables are included. The relative benefits of each crop are summarized in simple diagrams. I imagine this guide becoming one of the standard references we'll turn to time and again when we need information about cover crops. The Guide costs \$5 and is available from

the Education Store at https://mdc.itap.purdue.edu/item.asp?item_number=ID-433. Or, order by calling the Education Store toll free: (888) EXT-INFO (398-4636, extension 46794). For more information and sample pages, visit <http://www.ag.purdue.edu/agry/dtc/Pages/CoverCropsFG.aspx>.



Figure 1: The cover of the *Midwest Cover Crops Guide* and a page from the oilseed radish section showing notes on use with vegetables. The *Guide* is available from the Education Store.



GETTING TUNNEL TEMPERATURE RIGHT FOR TOMATOES - (Liz Maynard) - Managing temperature in unheated and manually vented tunnels is one of the key challenges of growing tomatoes in tunnels. This article reviews tomato responses to temperature as summarized by J.M. Kinet and M.M. Peet in *The Physiology of Vegetable Crops* (H.C. Wien ed., 1997), and discusses implications for production in tunnels.

For tomato stems and leaves, the main effect of temperature is on rate of growth: the warmer it is, the faster the plant grows, up to an optimum of about 75°, as long as other conditions are satisfactory. Ideally tunnel temperatures would remain around 70-75° for best tomato growth. Below 50°, tomatoes will grow very little. And of course below 32°, depending on conditions, leaves or plants may be killed by freezing. At this time of year temperatures in a tunnel might be too hot or too cold.

When it gets cold, it may be tempting to use a kerosene or propane or other fossil-fuel-based space heater in a high tunnel. Unvented heaters of this type are not recommended in tunnels. Exhaust gases and products of incomplete combustion such as ethylene can injure

tomato plants. Even vented heaters, if not properly installed, vented, and maintained, can lead to air pollution and problems for plants or people. See VCH issues 487 and 474 <http://www.btny.purdue.edu/pubs/vegcrop/index2007.html> for more information on heaters in greenhouses.

To protect tomatoes in tunnels against cold, consider using row covers inside the tunnels. In the long run, if protection is routinely needed year after year, consider changing the planting schedule, installing a heater properly, or making changes to increase heat retention in the structure.

The temperature before tomato plants bloom can influence the number and timing of fruit as well as fruit quality. It is important to reduce exposure to temperatures over 90° by timely venting of tunnels and hoop-houses. Flowers and flower parts on many varieties do not develop properly at high temperatures, resulting in aborted buds or flowers or poor pollination and fruit set. Cloudy weather exacerbates the detrimental effects of high temperatures. These high temperatures are most damaging to flowers soon after the buds are visible. After flowers have opened, the high temperatures are also detrimental to pollination and fruit set.

At the other end of the mercury, cool temperatures about 4 to 5 weeks before flowers open, when flower development has begun but is too small to see, can lead to additional branching on a cluster, more locules inside the tomato fruit, and a higher percentage of catfaced fruit. While additional branches on a cluster may mean more tomatoes, it could also lead to a smaller average tomato size for that cluster. Closer to flowering, after buds are visible, temperatures below 50° can prevent proper pollen development. The result is poor pollination and fruit set.

Growers who manage temperatures in high tunnels to meet the needs of tomatoes will reap rewards of good yield, reduced crop stress, and better fruit quality. It is worth the effort.



CORRECTION TO HOTLINE ISSUE NO. 546 - (Steve Weller) - In the article 'Update on Status of 2,4-D and Dicamba Tolerant Agronomic Crops' in the December issue of the *Vegetable Crops Hotline* (No. 546) Syngenta was incorrectly referred to as a partner with Monsanto; the actual partner is BASF. Also, the dicamba resistant agronomic crop technology should have been referred to as Round-up Ready Flex System™.