

Produce Safety and Pesticide Safety Update

By Londa Nwadike, Patrick Byers, and Juan Cabrera-Garcia

The safety of the produce you grow, as well as the safety of those who grow the produce is always important. University of Missouri (MU) Extension is happy to help produce growers with both of these areas.

Produce safety is important to the buyers of your produce, to ensure that it is meeting market as well regulatory requirements and providing as safe a product as possible. MU Extension can offer a number of different produce safety trainings in your community if you are interested. We can work with you to schedule a time that works for your community. To schedule, please contact Patrick Byers with MU Extension at 417-859-2044 or byerspl@missouri.edu or your local MU Extension personnel.

Contact MU Extension if you are interested in organizing any of the following produce safety trainings:

- FDA Food Safety Modernization Act (FSMA) Produce Safety Alliance (PSA) grower training. This is an 8-hour training that will provide trainees with a certificate from the Association of Food and Drug Officials (AFDO) and will meet FSMA Produce Safety rule training requirements.
- Produce Safety Annual Supervisor training. This is a ~90 minute training that will meet the annual training requirements of the FSMA Produce Safety rule. This training will also provide the latest updates on water quality and other aspects of the produce safety rule, which is useful if you have taken the full FSMA PSA training in the past or if you have not taken the FSMA PSA training yet.
- Good Agricultural Practices (GAPs) food safety plan training. This is a 2-hour training that can be done online or in person. The training covers the record-keeping and documentation required to get USDA GAP certified. This training is also useful even if you are not interested in getting GAP certified as the produce safety record keeping presented is a good idea for any grower to have in place.

Some of you may have heard that in December 2021, the US FDA proposed revised FSMA Produce Safety Rule requirements for water used on produce farms. Those requirements have still not been finalized. However, testing the microbial quality of the water that you use both pre-harvest and post-harvest in your produce operation is still a very good practice and produce safety audits will also require microbial testing. MU Extension is continuing to provide free microbial water testing for Missouri produce growers through October 2024. You can get the test kits from your local public health department and can also return the water samples to your local public health department. Please check with your local public health department to ensure that you get the sample there at the right time of day and ideally on a Monday-Wednesday to be sure that the laboratory accepts and tests the sample.

If a buyer is asking that your produce be GAP certified, the University of Missouri Extension has a program where MU can directly pay the auditor up to half the cost of your USDA or Quality Fresh GAPs audits. You will pay the other half of the audit cost to the audit company. At this point, this program will last until August 2024. If you are interested in this, you can just tell your USDA GAPs auditor that you would like to participate in MU Extension's GAPs cost share program. MU Extension also provides a training on the records required for GAP certification. The next training on that topic is scheduled for Feb 29, 2024 from 12:30-2:30 PM (online).

MU Extension can also help answer any other questions that you may have related to produce safety. Please contact Patrick Byers at 417 859 2044 or mail at 800 S. Marshall St, Marshfield, MO 65706 if you have questions related to produce safety.

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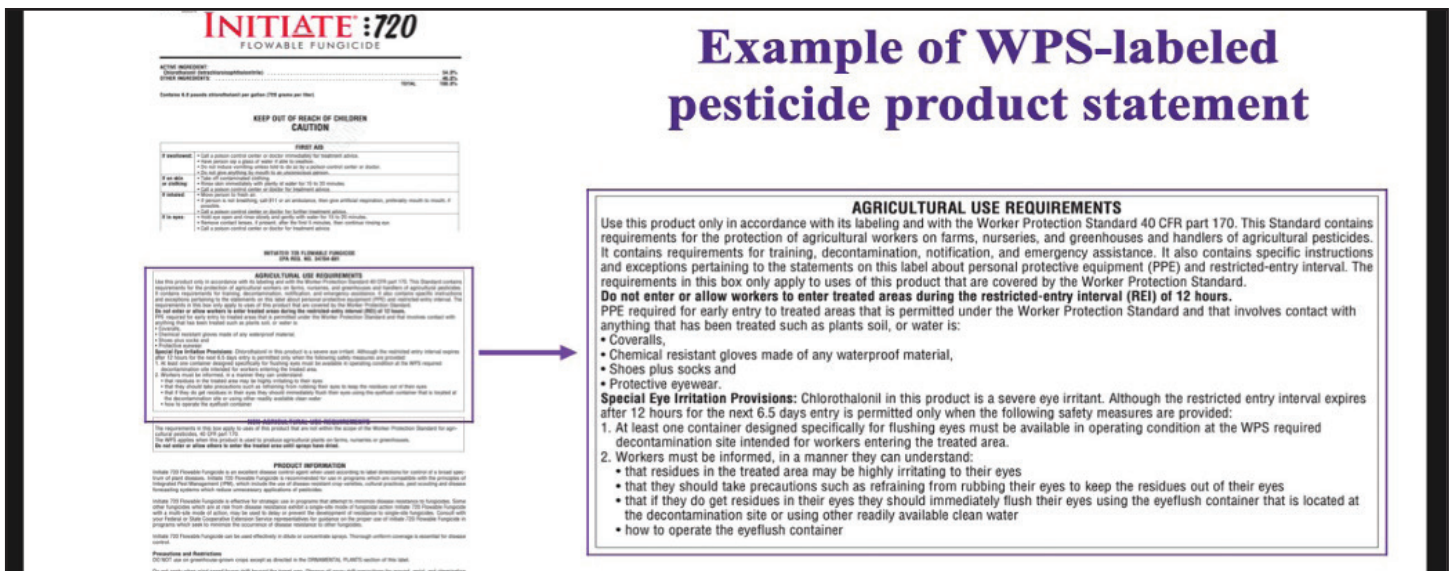


Figure 1 Example of a WPS-labeled pesticide product statement.

MU Extension is working with Kansas State University Extension to offer training courses and technical assistance on the US Environmental Protection Agency (EPA) Worker Protection Standard (WPS) Pesticide Safety regulations. WPS requirements are to protect those people working on your farm from exposure to pesticides that could be harmful to worker health. Farmers must comply with the EPA Worker Protection Standard if all three of the following apply:

- You own or manage an agricultural establishment (i.e., farm, orchards, nurseries, greenhouses, etc.), *and*
- Your work is directly related to producing agricultural plants, *and*
- WPS-labeled pesticides (herbicides, insecticides, fungicides, miticides, etc.) have been applied on your establishment within the last 30 days. WPS-labeled pesticides may be restricted-use pesticides or general-use pesticides. Look for the “Agricultural Use Requirements” box on the pesticide label (figure 1).

This training is important so that agricultural employers – including farms, orchards, nurseries, greenhouses and others – know what is expected of them related to pesticide applications and how to train their workers to be safe with pesticides.

The Worker Protection Standard also includes providing information on what and where pesticides are being used, and what must be done to protect workers from exposure. The protections required include relevant Personal Protective Equipment, how to read and understand pesticide labels, signage and clear safety procedures.

For more information on WPS and upcoming workshops, contact Cal Jamerson of Kansas State University at 913-850-3452 / agri@ksu.edu. The workshops are available for free due to support by grant from the USDA Extension Risk Management Education program.

MU Plant Diagnostic Clinic offers free plant disease diagnostic services

By Peng Tian

To assist in horticulture crop production among Amish and Mennonite communities, the University of Missouri Plant Diagnostic Clinic is offering free diagnostic services from March 1, 2024, to February 28, 2025. The free services include insect identification, weed identification and plant disease diagnosis that detects fungal, bacterial, and viral diseases as well as abiotic factors. Two Regional horticulture field specialists, Dhruva Dhakal and Ramon Arancibia will visit the communities during the auction

days in several counties in central and southwest Missouri beginning May 2024, offering free diagnostic consultation services to growers with inquiries about plant health issues, and collecting samples for further diagnosis by the clinic. The diagnostic reports will be delivered either by mail or physically dropping off by them.

The turnaround time of diagnosis of plant disease is critical. However, many factors can cause the delay of this process, such as the shipment issues, lack of communications, reporting problems, payment processing etc. Therefore, with free services as well as the active involvement of country specialists, the effectiveness of communication between the clinic and growers will rise so that growers can quickly implement the plans and limit the progress of the diseases.

Periodical Cicada Emergence 2024: A Guide for Missouri

By Tamra Reall

Possibly this week, Missouri will witness a natural phenomenon: the emergence of Brood XIX. Brood XIII is also emerging in Northern Illinois and a few surrounding states. Here's what you need to know:

An Uncommon Event

- While periodical cicada emergences don't happen every year, they aren't uncommon. Dual brood emergences are less common. This particular emergence is unique because both 13- and 17-year cicadas will emerge, and they are adjacent broods.
- Brood XIX (a 13-year cicada brood) hasn't emerged alongside Brood XIII (a 17-year cicada brood) since 1803! The next time these two broods emerge together will be in another 221 years.
- Brood XIX is possibly the largest geographically brood, blanketing most of Missouri, and reaching into 15 states. They are likely to start emerging in late April and the adults will be active for about 4-6 weeks.

Understanding Periodical Cicadas

- Periodical cicadas spend most of their lives underground (13-17 years!) emerging to reproduce.
- Periodical cicadas don't bite or sting and are actually a valuable food source for birds and small mammals.
- The buzzing we will hear is the males' synchronized singing to attract mates. It's loud (~100 decibels) and typically fades away at dusk.

Interesting tidbits

- Periodical cicadas are different from annual cicadas. Periodical cicadas have a much longer life cycle, are smaller, black with red eyes, and are only found in the eastern half of the USA.
- Citizen science projects like Cicada Safari and iNaturalist help us learn more about these interesting insects, especially their brood ranges.

Living with periodical cicadas

- Though there will be many cicadas, healthy mature trees will be fine. Flagging (broken twigs at edges of the tree branches) will occur a few weeks after the periodical cicadas disappear.
- Protect young trees (planted within the last 5 years) with cheesecloth or netting with openings no larger than 1/4 inch.
- Pesticides are mostly ineffective and can be harmful to birds and beneficial insects.

Media resources

- Dr. Gene Kritsky (gene.kritsky@msj.edu) provides a press kit with pictures and information that the media can use if they attribute the images correctly: "Photo courtesy of Gene Kritsky, Mount St. Joseph University."
- Press kit: <https://cicadasafari.org/press21.html>

MythBusters

- This isn't the "largest emergence ever." However, Brood XIX is arguably the largest brood geographically and with another brood emerging the same year, there will be a lot of cicadas over a broad geographical area.
- There will not be twice as many cicadas. While there are two broods emerging, their ranges do not overlap except for a small area in Illinois.
- While not occurring often, dual emergences happen occasionally. This specific 17-year and 13-year pairing hasn't occurred since 1803.
- Cicadas are not locusts. Locusts are swarming grasshoppers.

Helpful publications

- Periodical cicadas in Missouri: <https://extension.missouri.edu/publications/g7259>
- The 2024 Periodical Cicada Emergence: <https://cicadas.uconn.edu/>
- Plan ahead to protect young fruit trees...: <https://fff.hort.purdue.edu/article/plan-ahead-to-protect-young-fruit-trees-from-17-year-periodical-cicadas-emerging-in-may/>

Recent articles

- **MU Extension:** <https://extension.missouri.edu/news/billions-of-cicadas-bring-buzzy-magic-to-missouri-in-2024>
- **St. Louis Post Dispatch:** https://www.stltoday.com/there-will-be-bugs-buzz-builds-about-rare-chance-to-see-study-this-years-periodical/article_c6e49586-bc9f-11ee-bf44-c32a1bc95c16.html
- **Kansas City Star:** <https://www.kansascity.com/news/local/article286630085.html>
- **National Geographic:** <https://www.nationalgeographic.com/animals/article/periodical-brood-cicadas-emerge>
- **Smithsonian Magazine:** <https://www.smithsonianmag.com/smart-news/two-broods-of-cicadas-will-emerge-in-the-us-later-this-spring-180984110/>
- **ABC News:** <https://abcnews.go.com/US/cicadas-coming-expect-double-brood-emergence-trillions-breeding/story?id=108856097>

Control

Recommended control options include covering young trees (less than 5 years) and susceptible shrubs with cheese cloth or netting with holes smaller than 1/4 inch when they hear the males start singing. Pesticides are not recommended as they are not effective and can hurt birds and beneficial organisms.

Nematodes in Tomatoes

By Mandy Bish and Jeff Barizon

The University of Missouri SCN Diagnostic Clinic works with farmers to identify nematodes that feed on plants. Nematodes are small, microscopic roundworms, and many of these tiny worms live in the soil and attack plant roots. The root knot nematode is one example that can become a problem in tomato production. The root knot nematode enters the root, and as the population increases, smaller adventitious roots are destroyed. Large galls form on the roots and can be easily seen when plants are dug up (Figure 1). Above ground symptoms include plants that are stunted, grow slowly, and wilt easily. They may appear yellow or pale green. Root knot nematodes do not move far in the soil without human interference. Therefore, injured plants may be observed in only a small area of the field.

The SCN Diagnostic Clinic can confirm the presence of root knot nematode or other nematodes that may infect a crop and are referred to as plant-parasitic nematodes. To submit samples to SCN Diagnostics, collect a sample of at least 1 pint of soil from the problematic area. The clinic will isolate nematodes from the soil and identify the problematic nematodes at \$50 per sample. Infected plant tissue is welcome as well. The clinic is on the University of Missouri Campus at 1054 East Campus Loop, Columbia, MO 65211. Samples can be hand delivered or shipped if necessary. In the latter case, please include a note about the problem and contact information. Contact your local MU Extension Field Agronomy or Horticulture Specialist for more information.



Figure 1 Galls on tomato roots due to root knot nematode infection. (Courtesy Walber Gavassoni)

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