

Supporting Fruit Production

OHIO FRUIT NEWS

Research and Recommendations from Experts at The Ohio State University

January 2024

EPA Review of Thiram, Ferbam, and Ziram

By Melanie L. Lewis Ivey, Associate Professor, Extension Fruit Pathologist, Department of Plant Pathology

In December 2023, the Environmental Protection Agency (EPA) proposed an interim decision for the registrations for thiram, ferbam and ziram. Despite updates and recommendations for ziram, presented during the public comment period for the 2021 proposed interim decision, changes were not made to the previous risk picture and proposal.

Thiram, ferbam and ziram are critical to the successful management of fruit diseases and the prevention of fungicide resistance development. Final decisions on the proposed interim decisions are scheduled for April-June 2024. An open 60-day public comment period is planned for the beginning of 2024. Once the comment period opens, comments can be submitted on-line or by mail. Open comment periods are announced at www.epa.gov/pesticide-reevaluation.

Representatives from the EPA have emphasized that without new data or significant numbers of comments, the proposed interim decision on these products is unlikely to change.

The EPA will only announce final changes to the registrations of all pesticides through the “[Bulletins Live – 2](#)” website. However, the OSU Extension Specialty Crop Team will make every effort to keep fruit producers in the state updated.

The EPA docket number and a summary of the risks of concern and proposed mitigation for each fungicide is provided in this article.



Figure 1. Peach leaf curl is most effectively controlled using Ferbam or Ziram. *Image courtesy of K. Peter, Penn State University.*

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Thiram

Docket EPA-HQ-OPP-2015-0433

Risks of Concern: There are risks of concern for “fish (both freshwater and estuarine/marine), aquatic invertebrates, mammals, terrestrial invertebrates, birds, and aquatic and terrestrial plants.” In addition, there are “exposure concerns to occupational handlers and post application risks”.

Proposed Mitigation: To address the risks of concerns for thiram the following mitigation strategies were proposed.

- Cancellation of all non-seed treatment uses such as strawberries, peaches, non-bearing trees, shrubs, nursery stock, ornamentals.
- Cancellation for all commercial seed treatment uses.
- Only on-farm seed treatment for liquid formulations and use of a PF10 respirator for some crops (snap bean, rice, soybean, and wheat).
- Limit animal repellency use in nursery settings (ornamentals, vegetables, trees, container stock) to 84178-1 only. This product is also registered for other use sites and those uses must be removed from the label. Applications must be made with a manually pressurized handgun. All other

products must remove their animal repellency use from the label.

Ferbam

EPA-HQ-OPP-2015-0567

Risks of Concern: There are risks of concern for “fish (both freshwater and estuarine/marine), aquatic invertebrates, mammals, terrestrial invertebrates, and birds.” In addition, there are “exposure concerns to occupational handlers and occupational post application risks for workers”.

Proposed Mitigation: To address the risks of concerns for ferbam the following mitigation strategies were proposed.

- Cancellation of all uses on apple, pear, citrus, mango, and cranberries.
- Restrict the application method to only be applied by a mechanically pressurized handgun on peach and nectarine for dry flowable formulations and require the use of a PF50 respirator.
- Only dormant period applications for peaches and nectarines.

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Grower's Corner

I want to grow elderberries, but I'm concerned about diseases. What diseases affect elderberry?

Elderberries are generally hardy plants, but they are susceptible to diseases. Some common diseases that may affect elderberries include powdery mildew, canker diseases such as *Botryosphaeria*, *Nectria* and *Diaporthe*, anthracnose (fruit and leaves), *Alternaria* leaf spot and fruit rot, tomato ring spot virus, cherry leaf roll virus, and bacterial leaf spot. However, the most common disease in our region is rust. To manage and prevent diseases, it's important to practice good sanitation practices, provide proper spacing between plants for adequate air circulation, avoid overhead irrigation, and remove wild elderberry and sedges (for rust prevention) from around the planting. Additionally, applying fungicides for the fungal diseases as preventive measures may be helpful.



Elderberry rust on wild elderberry. Photo courtesy of J. Chatfield, OSU Extension.

Ziram

EPA-HQ-OPP-2015-0568

Risks of Concern: There are risks of concern for “fish (both freshwater and estuarine/marine), aquatic invertebrates, mammals, birds, and terrestrial invertebrates”. In addition, there are “dermal and inhalation exposures to occupational handlers, post-application occupational risks (dermal), and bystander (non-occupational) risks to adults (dermal) and children (combined dermal and incidental oral)”.

Proposed Mitigation: To address the risks of concerns for ziram the following mitigation strategies were proposed.

- **Cancellation of all uses on all crops.**
- Cancellation of uses for paint preservatives.
- Engineering controls for the non-paint materials preservative uses.
- Reducing the maximum application rate in all ziram-preserved building materials.
- Limiting application to the dry-end of the paper preservation process.

EPA “Bulletins Live! 2” Website

This new website is a searchable database that will provide updates regarding mitigation strategies in response to the Endangered Species Act and special label requirements. The database is searchable by location and EPA registration number. (EPA Reg. No). The EPA registration number appears on the first page of the label of all registered pesticides sold in the United States.

This link will take you the Bulletins Live! 2 website. www.epa.gov/endangered-species/bulletins-live-two-view-bulletins or you can use the QR code provided.



What is New with Fresh Produce Safety Regulations?

By Melanie L. Lewis Ivey, Associate Professor, Extension Fruit Pathologist, Department of Plant Pathology

The production of fruit and vegetables is water intensive. Water is used for irrigating crops, applying nutrients and pesticides, preventing frost damage, moving produce, and washing and cooling produce. Water used in agriculture is a potential source of foodborne pathogens. The FDA developed standards for agricultural water used on farms, which are published in the [Produce Safety Rule](#). Agricultural water (Subpart E in the Produce Safety Rule) is defined as water used in the "growing, harvesting, packing, or holding of covered produce". The goal of the agricultural water standard is to ensure that agricultural water is “safe” and “of adequate sanitary quality for its intended use”.

Grower concerns about the complexity and feasibility of meeting the standards for agricultural water has resulted in revisions and proposed revisions since the Produce Safety Rule was first enacted in 2011. A summary of the status of standards and compliance for agricultural water, as of January 2024 is provided in this article.



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Fresh fruit and vegetables that are consumed raw are covered by the Produce Safety Rule.

PREHARVEST AGRICULTURAL WATER

Preharvest agricultural water is water that is used for growing activities (other than sprouts) including irrigation, fertigation, application of crop protectants, and frost protection. The rule for preharvest water is currently under review and compliance has been delayed until after the proposed revisions have been finalized. Until the proposed changes to the standards for agricultural water used for preharvest activities are finalized producers should follow the microbial criteria and testing requirements in the final [Produce Safety Rule](#) (2015 provisions).

- Water must be safe and of adequate sanitary quality for its intended use.
- Water systems must be inspected at least once annually at the beginning of the growing season and must be adequately maintained.
- Surface water:** Twenty (20) samples must be taken in the first year (baseline) and then tested five times every year thereafter. Water must meet a microbial standard of a geometric mean of 126 cells of generic *Escherichia coli* (an indicator of fecal contamination) or less in 100 ml of water.
- Ground water:** Four (4) samples must be taken in the first year (baseline) and then tested once every year thereafter. Water must meet a microbial standard of a geometric mean of 126 cells of generic *Escherichia coli* or less in 100 ml of water.
- Public water source:** Water from a public water supply does not need to be tested but the farm must keep documentation showing that the water meets microbial standards.
- All water test results must be documented

If a water source fails, the microbial standard corrective actions must be implemented before the water can be used on the crops. Examples



Water used for growing activities must meet a microbial standard of a geometric mean of 126 cells of generic *Escherichia coli* or less in 100 ml of water.

of corrective measures include allowing time for potentially harmful microorganisms to die off between irrigation/crop protection sprays and harvest or treating the water with approved methods.

POSTHARVEST AGRICULTURAL WATER

Postharvest agricultural water is water that is used during harvest and post-harvest activities. This includes water used to wash or cool produce, apply crop protectants, and clean food contact surfaces. For agricultural water used during harvest and postharvest, enforcement dates for all business sizes began in January 2023.

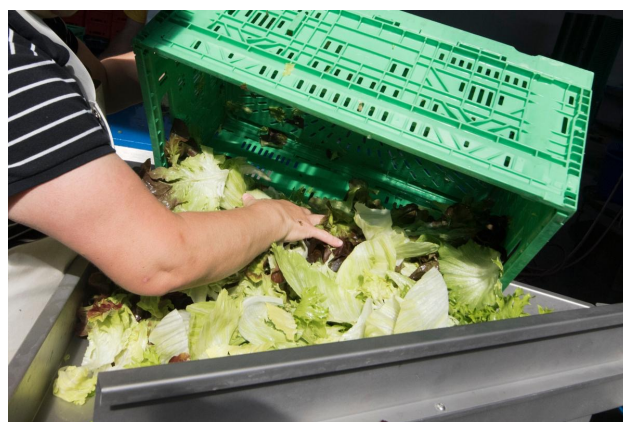
- Water must be safe and of adequate sanitary quality for its intended use.
- Water systems must be inspected at least once annually at the beginning of the growing season and must be adequately maintained.
- Surface water:** Untreated surface water must NOT BE used.
- Ground water:** Untreated ground water must be sampled four times in the first year (baseline) and then tested at least once

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every year thereafter. Water must meet a microbial standard of no detectable generic *Escherichia coli* (an indicator of fecal contamination) in 100 ml of water.

- **Public water source:** Water from a public water supply does not need to be tested but the farm must keep documentation showing that the water meets microbial standards
- All water test results must be documented.

If a water source fails, the microbial standard growers must immediately stop using the water and corrective actions must be implemented. Four new water tests must be performed before water use resumes.



Water used during harvest and post-harvest activities must meet a microbial standard of **no detectable** generic *Escherichia coli*.

2023 Fruit Disease Diagnostic Report

By Melanie L. Lewis Ivey, Associate Professor, Extension Fruit Pathologist, Department of Plant Pathology; Dr. Francesca Rotondo – OSU Plant and Pest Diagnostic Clinic, Director.

In 2023, the Fruit Pathology and Plant Disease Diagnostic Clinic diagnosed 95 (75 physical and 20 digital) fruit and nut samples (Figure 1) from 25 counties in Ohio. Like 2022, most of the samples were small fruit (including grape), while the remaining were tree fruit or nut. We did not receive any hop samples in 2023. Fungal diseases represented 54% of the diagnoses, followed by abiotic injuries (26%) insect related injuries (9%) and bacterial diseases or diseases caused by *Phytoplasma* (9%) (Table 1, page 7). Nearly all the samples in 2023 arrived in good to excellent condition, allowing us to complete the diagnosis. Information on collecting, holding, and sending fruit samples to the lab for diagnosis are available at the Fruit Pathology or OSU Plant and Pest Diagnostic Clinic website. You can also call or email the labs to get assistance.

Neopestalotiopsis disease of strawberry was reported again this year, making this the third year this new disease has been observed by producers in the state. This disease has been consistently linked back to nursery plugs.

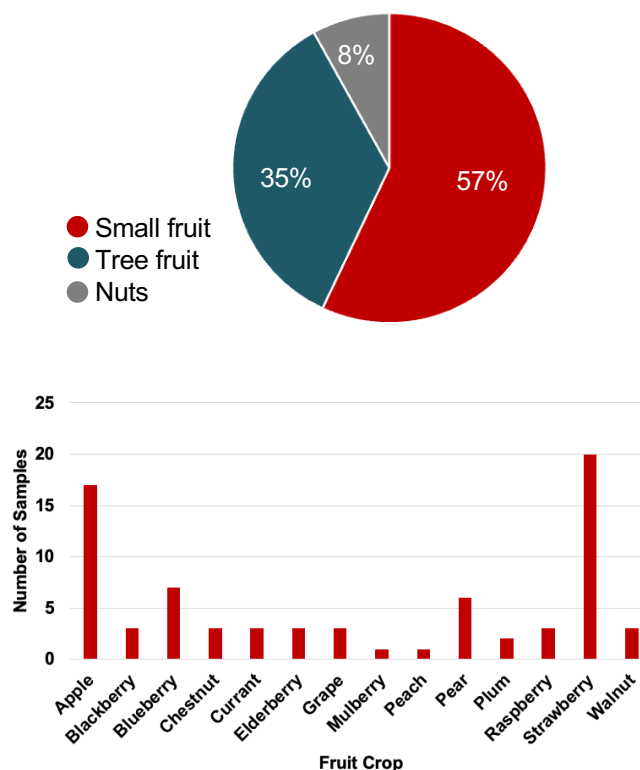


Figure 1. In 2023, 75 physical fruit or nut samples were submitted for diagnosis.

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Before planting, growers should segregate plants with typical leaf lesions that resemble *Neopestalotiopsis* disease (Figure 2) and send samples to the OSU Plant and Pest Diagnostic Clinic in Wooster, OH for confirmation. Plants confirmed to have *Neopestalotiopsis* disease should not be planted. Other diseases of strawberry that were diagnosed include anthracnose crown rot, *Phytophthora* crown and root rot, and leaf scorch.



Figure 2. Leaf symptoms of *Neopestalotiopsis* disease on strawberry.

One of the more interesting diseases identified in 2023 was **Entomosporium leaf spot** on pear. This disease is caused by the fungus *Diplocarpon mespili* and is common on numerous woody ornamentals and fruit trees. Symptoms vary depending on the host. On pear, leaf spots are small, circular and have an oily appearance. On the fruit, the spots are circular with brown centers and a red halo (Figure 3A). On peach, the spots are circular with a dark red center and red halo (Figure 3B). As the disease progresses raised spore producing structures form in the center of the spots. We also diagnosed **European pear rust** on pear. This fungus (*Gymnosporangium sabinae*) causes bright orange spots on the upper surface of the leaves. In addition to the pear, the fungus requires junipers to complete its life cycle.

This year we received three black currant samples from Lake county. With the introduction of white pine blister rust resistant varieties there is a growing market for black currants again in the United States. **Currant cane blight** (also called *Botryosphaeria* canker) is a common disease of currant. The leaves of infected canes

turn yellow and wilt (Figure 4) in the spring and summer. The disease causes the canes to become weak making them more susceptible to drought and winter injury. Pruning out diseased canes in the late fall is recommended to prevent buildup of inoculum going into the next season.

Although we did not receive any hop samples in 2023, producers are encouraged to submit samples for diagnosis. Halo blight is an emerging disease in the state, and we would like to determine how prevalent it is in Ohio hop yards. For commercial producers there is no fee for hop samples.

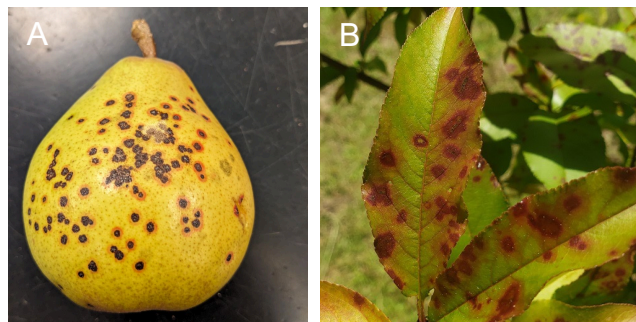


Figure 3. Symptoms of *Entomosporium* leaf spot on pear fruit (A) and peach leaves. Image B is courtesy of the LSU AgCenter.



Figure 4. Symptoms of currant cane blight. Notice the yellow wilted leaves on the canes.

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Crop (No. Samples)	Diagnosis	County
Apple (17)	Abiotic (temperature related) Bitter rot Fire blight Marssonina leaf blotch Plum Curculio White Rot	Holmes, Medina, Wayne
Blackberry (3)	Abiotic Blackberry wasp gall	Columbiana, Warren
Blueberry (7)	Abiotic (undetermined) Phytoplasma Phytophthora root rot	Lake, Mahoning, Morrow, Wayne, Warren
Chestnut (3)	Diplodia canker Oak wilt	Carroll
Currant (3)	Cane blight	Lake
Elderberry (3)	No pathogen detected	Athens
Grape (3)	Abiotic (undetermined) Ripe rot	Belmont, Welmont
Mulberry (1)	Botryosphaeria canker	Franklin
Peach (1)	Powdery mildew	Wayne
Pear (6)	Cicada damage Fire blight Entomosporium leaf blotch European pear rust	Cuyahoga, Columbiana, Morgan
Plum (2)	Abiotic (undetermined) Alternaria leaf spot	Wayne
Raspberry (3)	Glyphosate damage Nutritional disorder	Hardon, Summit, Wayne
Strawberry (20)	Anthrachnose crown rot Phytophthora crown and root rot Black root rot Leaf scorch Neopestalotiopsis disease Nutritional disorder Cold injury	Columbiana, Geauga, Greene, Hamilton, Holmes, Morrow, Portage, Richland, Ross, Summit, Van Wert, Washington, Wayne
Walnut (3)	Anthrachnose	Franklin

This research was partially supported by the 2023 Ohio Small Fruit and Vegetable Research and Development Program.



Nectria canker is caused by an opportunistic fungus (*Nectria* spp.) of fruit trees that invades leaf scars, pruning wounds, and damaged fruit spurs. The fungus survives in old bark cankers and produces masses of bright coral/orange spores during fall rains. The spores are splash or wind dispersed through the canopy and orchard. Nectria canker generally has minor impact on the tree and can be prevented by using best pruning and harvest practices. Prune out infected shoots on cool, dry days. At harvest minimize scarring on fruit spurs. Chemicals are not recommended on mature trees. However, fungicide applied to the bark on nursery stock can reduce the number of new infections. *of Images courtesy of D. Rosenberger, D. Strickland, and K. Cox, Cornell University.*

Grower Resources:

- OSU Fruit Pathology website (u.osu.edu/fruitpathology)
- OSU Plant and Pest Diagnostic Clinic website (ppdc.osu.edu or 330-263-3650)
- OSU Extension Fruit, Vegetable & Specialty Crop News (<https://u.osu.edu/vegnetnews/>)
- OSU Fruit and Vegetable Safety website (<https://producesafety.osu.edu>)
- OSU Fruit and Vegetable Pest Management website (entomology.osu.edu)
- OSU Bramble: Production Management and Marketing Guide (Bulletin 782) (extensionpubs.osu.edu)

CFAES Upcoming Events-2024

Greenhouse Management Workshop – January 25-26 [link here](#)
 Ohio Ecological Food and Farm Association Conference – February 15-17 [link here](#)
 New Applicator Training Webinar – February 7 [link here](#)
 Ohio Commercial Pesticide Recertification Conferences – February 14 and 22 [link here](#)
 Ohio Wine Conference Preview – February 18 [link here](#)
 Ohio Wine and Grape Conference – February 19-20 [link here](#)
 New Applicator Training In-person – March 20 [link here](#)
 Planning for the Future of Your Farm Workshop – April 4 [link here](#) or call Greg Myer 515- 695-1311
 New Applicator Training Webinar – April 10 [link here](#)
 New Applicator Training In-person – May 15 [link here](#)

*Contact your county Extension office to register for events by phone.

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