

FANCY FRUIT

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July 1, 2021

A Newsletter for Commercial and Advanced Amateur fruit growers.

In This Issue

- Crop Conditions
- Storm tracks favor some parts of Indiana skipping others
- Indiana Horticultural Society Field Day, July 27 2021
- Indiana Pesticide Clean Sweep Project
- Eastern Viticulture & Enology Forum: Grower & Winemaker Town Hall- July 13th 3-5 PM
- Throughout Indiana orchards
- Extension Events



Grape – fruit growing and approaching veraison

Crop Conditions

(Peter M Hirst, hirst@purdue.edu, (765) 494-1323)



Blackberry – fruit starting to ripen



Apples – fruit growing well

Storm tracks favor some parts of Indiana skipping others

(Beth Hall, hall556@purdue.edu)

As we welcome July, Indiana seems to be in a very wet phase. Or, at least part of the state has been. The jet stream – a narrow band of fast-flowing air near the altitudes where commercial jets fly – naturally meanders in a north-south-north ribbon around the hemispheres. Typically, these “ribbons” also shift eastward as they are meandering. However, recently that eastward shift has seemed to stall more than usual, causing hot dry conditions in the western US while pulling up moist air from the Gulf of Mexico into the eastern half of the US. Storm systems track along with the location of the jet stream, so any slight stalling in its eastward migration seem to cause excess rainfall in one part of Indiana while the other part of the state stays dry. Looking over the past several months, if not into last summer, these storm tracks have seemed to

favor southern Indiana, leaving northern counties getting less precipitation than normal. However, the past week or so has shifted these storm tracks to the north (Figure 1) bringing some areas 4"-6" above average rainfall, leaving the southern counties dry. This has helped to eliminate abnormally dry conditions within the northern counties, but several central and southern counties are still in abnormally dry conditions according to the US Drought Monitor (Figure 2).

Things will clear up across the state for most of the next week, and then wet conditions are expected to return by the end of next week. The July outlook issued by the national Climate Prediction Center is slightly favoring above-average temperatures and precipitation. However, how much falls and when will be driven by those storm tracks. At this time, there is a slight risk of heavy precipitation falling across Indiana from July 8-10, 2021.

With respect to temperatures, June was a relatively normal month. There were certainly periods of above normal and below normal temperatures, but when averaged over the entire month, those extremes seemed to wash out. This meant that modified growing degree day accumulations are still lagging behind average amounts in the southern part of Indiana, and are slightly ahead of average in the northern counties (Figure 3). Figure 4 shows a comparison of 2021 accumulated modified growing degree days around the state compared to recent years.

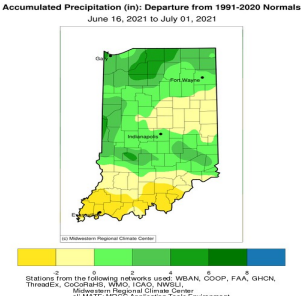


Figure 1. Precipitation departures from normal for the last few weeks in June.

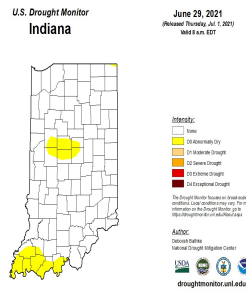


Figure 2. US Drought Monitor status for Indiana as of data through June 29, 2021.

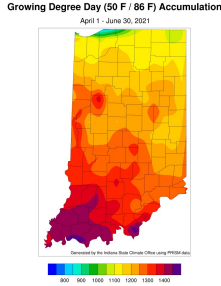


Figure 3. Modified growing degree day accumulations from April 1 to June 30, 2021.

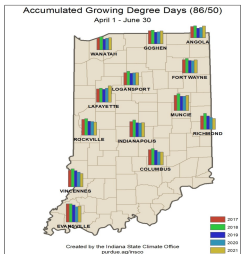


Figure 4. Comparison of 2021 modified growing degree day accumulations from April 1 – June 30 to the past four years.

Indiana Horticultural Society Field Day, July 27 2021

(Peter M Hirst, hirst@purdue.edu, (765) 494-1323)

Indiana Horticultural Society Field Day, July 27 2021

Hosted by:
Wea Creek Orchard
5618 South 200 East
Lafayette, IN 47909

The morning schedule is focused on soil health and is organized by the Pence Agronomy Group.

The afternoon session concentrates on fruit (and pumpkins).

Growers are welcome to attend all parts of the program of interest to them.

Wea Creek Orchard

Wea Creek Orchard was established by The Kirkham family in 2008 on land that has been in the family since 1855. During that time, 7 generations of their family have raised sheep, cattle, pigs and now apples, peaches and pumpkins on the land.

The first tree planting at the farm was 340 apple trees and 60 peach trees. Since that initial planting in 2008, they have added about 200 trees every other year. They currently have about 5 acres of apples, 1 acre of peaches and 12 acres of pumpkins (and about 40 sweet cherry trees). All the produce is sold at the farm, through U-pick and a market in an old bank barn on the property. One of the successful new additions have been sunflowers sold for \$1/stalk at the farm.

Hosting events such as festivals and weddings has become an important part of the farm business. The Kirkhams have also been involved in farm to school initiatives.

More information available at:

<https://www.weacreekorchard.com>

Attendance

The entire program is free and open to all who are interested. Lunch will be available from a number of food trucks on-site, and ice-cream will be available in the afternoon.

Schedule: July 27, 2021 (subject to change)

8:00 am. Coffee and donuts

8:30 am. Program starts – cover crops and soil health

11:30 – 12:00 pm Lunch on premises

12:00 Welcome and farm overview

12:30 – 12:50 pm Pumpkins and weed management. Liz Maynard and Stephen Meyers

1:00 – 1:20 pm Pollinators – speakers TBD

1:30 – 1:50 pm Pollination – Khalil Jahed

2:00 – 2:30 pm Break – ice cream

2:30 – 2:50 pm Best practices for social media. Ariana Torres

3:00 – 3:20 pm Young tree management. Tristand Tucker

3:30 – 3:50 pm Apple orchard systems. Peter Hirst

Wea Creek Orchard is a small orchard, but they are doing a number of innovative things that many will find interesting and informative. After the last year of virtual meetings I think many of us are welcoming the opportunity to meet together in person. There will be ample opportunities for informal discussion among growers. We look forward to seeing many growers face-to-face again.

Indiana Pesticide Clean Sweep Project

(Miranda Purcell, mrpurcel@purdue.edu)

WHAT: An Indiana Pesticide Clean Sweep Project designed to collect and dispose of suspended, canceled, banned, unusable, opened, unopened or just unwanted pesticides (weed killers, insecticides, rodenticides, fungicides, miticides, etc.) is being sponsored by the Office of Indiana State Chemist (OISC). This disposal service is free of charge up to 250 pounds per participant. Over 250 pounds there will be a \$2.00 per pound charge. This is a great opportunity for you to legally dispose of unwanted products at little or no cost. All public and private schools, golf courses, nurseries, farmers, ag dealers, cities, towns, municipalities and county units of government or others receiving this notice are

eligible to participate.

WHEN: 9:00 am to 3:00 pm Local Time

WHERE:

August 17, 2021: Elkhart County Solid Waste,
59530 County Rd 7, Elkhart, IN

August 18, 2021: Fountain County Fairgrounds,
476 US Hwy 136, Veedersburg, IN

August 19, 2021: Knox County Fairgrounds,
11728 IN-67, Bicknell, IN

August 24, 2021: Harrison County Fairgrounds,
341 S Capitol Ave, Corydon, IN

August 25, 2021: Union County Co-Op, 101 W.
Campbell St, Liberty, IN

August 26, 2021: Hendricks County Fairgrounds,
1900 E Main St, Danville, IN

HOW: Complete the enclosed Pesticide Clean Sweep Planning Form to the best of your ability. Mail, fax or e-mail the completed form to Nathan Davis at 765-494-4331 or cleansweep@groups.purdue.edu no later than Fri., August 6, 2021. Then bring your labeled, leak free and safe to transport containers to the collection site. DO NOT mix materials. In case of an emergency, you should bring with you a list of products you are carrying and a contact phone number.

COVID-19 Guidelines: When you arrive to drop off materials please stay in your vehicle and a team member will check you in. We will be unloading one vehicle at a time to maintain physical distancing.

*NOTE: OISC reserves the right to cancel this Pesticide Clean Sweep Project if there is not adequate demand. Participants submitting the enclosed planning form by August 6, 2021 will be contacted immediately if cancellation is necessary.

For more information:

https://www.oisc.purdue.edu/pesticide/clean_swe

[ep.html](#)

Eastern Viticulture & Enology Forum: Grower & Winemaker Town Hall- July 13th 3-5 PM

(Miranda Purcell, mrpurcel@purdue.edu)

Indiana was one of the most represented states on last month's call- thanks to all who participated!

Join us on Tuesday July 13th from 3-5 PM to talk about crop load management, canopy management, pest management, nutrient management, mechanization of vineyard operations.

[Register here](#), and [pre-submit questions here](#) (by July 6th).

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 **Cornell AgriTech**
New York State Agricultural Experiment Station

 **VIRGINIA TECH**

 **PennState Extension**

Eastern Viticulture and Enology Forum

Grower and Winemaker Town Hall: Questions From the Field and Cellar

In collaboration with viticulture and enology extension programs at: Ohio State University, University of Maryland, Rutgers University, North Carolina State University, University of Georgia, University of Tennessee, Mississippi State University, Texas Tech, Texas A&M, Colorado State University, New Mexico State University, University of Nebraska, Iowa State University, Purdue University, University of Minnesota, Michigan State University, and University of Wisconsin

Regional viticulture and enology specialists will present a Grower and Winemaker Town Hall virtual meeting series to give seasonal updates and answer pre-submitted and live questions from grape and wine industry stakeholders.

The structure of these meetings depends

on pre-submitted questions. Use this [link to pre-submit questions](#) for viticulture and enology specialists to answer live during the meeting. Please feel free to submit questions related to any topic by July 6th.

But please see below for the topic area suggestions for the July 13th meeting.

Viticulture focus area: **post-fruit set to veraison** (crop load management, canopy management, pest management, nutrient management, mechanization of vineyard operations)

Enology focus area: **primary fermentation** (harvest decisions, fruit chemistry analysis, and fermentation options, e.g. non-Saccharomyces yeast, strain selection, ambient ferments)

There will be a total of four town hall meetings throughout the growing season.

Meetings will be held from 3PM to 5PM on the following Tuesdays: July 13th, August 10th, and September 7th. The first two meetings will be hosted by Cornell University and the second two meetings will be hosted by Penn State Extension.

Register using this [link](#) and choose your breakout room (viticulture or enology) for the July 13th meeting. After registering, you will receive a confirmation email containing information about joining the meeting.

–[Cain Hickey](#), [Beth Chang](#), and [Tim Martinson](#)

Eastern Viticulture and Enology Forum Hosts

Throughout Indiana orchards

(Janna L Beckerman, jbeckerm@purdue.edu, (765) 494-4628)

Throughout Indiana orchards, Phytophthora root and crown rot continues to be a major cause of tree death (Fig. 1), and losses in small fruit, as well (Fig. 2). The disease is caused by the several members of the genus *Phytophthora*, and

includes (but is by no means limited to) the following species): *P. cactorum*, *P. citricola/plurivora*, *P. megasperum*, *P. drechsleri*, *P. cambivora*, and *P. cryptogea*. These *Phytophthora* species belong to a group of organisms known as the water molds. It is important to note that these aren't true fungi like apple or peach scab, or powdery mildew. Therefore, fungicides used to control other problems in the orchard (Topsin M, Nova, Orbit, Dodine, etc.) will not control this problem.

This year may be worse than most for Phytophthora showing up in the orchard, due to a combination of freezes and some really wet weather. Take special care scouting the low-lying areas of the orchard, particularly those orchards (or blocks) with heavy, poorly drained soils.

Symptoms

The aboveground symptoms of a Phytophthora root and crown rot are remarkably vague. Plant growth slows compared to healthy, uninfected plants (Fig. 1,2). This can be determined by examining the growth of terminal bud scars to see if a reduction in shoot growth has occurred. The first symptoms to appear in the spring are delayed bud break, followed by leaf discoloration, and twig dieback. Additional symptoms appear on the foliage, with leaves wilting, yellowing, and falling off prematurely. Margins may brown and resemble scorch. Margins of leaves may brown in the summer (termed marginal leaf burn or scorch). In severe cases, the tree leafs out, and then dies when the first bit of heat or drought hits or around harvest (Fig. 3). If the infected trees survive the growing season (many leaf out and die at the first hint of drought), they show symptoms of leaf and bark discoloration and premature leaf drop in the fall.

The most obvious symptom found on affected trees is a partial or complete girdling of the crown or trunk (Fig. 4). The crown appears

cankered, and if the bark is removed, a reddish discoloration is often seen below. Careful examination of the large roots reveals reddish brown, water-soaked areas of necrotic tissue located at the base of the root where it attaches to the rootstock. Examination of the smaller roots reveals few healthy, white roots, an absence of root hairs, or dark brown, reddish brown, soft roots. The entire underground portion of the stem is usually water-soaked and brown, and the necrotic area usually extends upward to the graft union.

Disease cycle

Phytophthora overwinters in the soil as oospores. In the presence of water and warmer temperatures, germinating oospores develop sporangiophores. These sporangiophores produce free-living zoospores that swim to suitable hosts in the presence of free water. Free soil moisture allows sporangiophores to form within hours and motile zoospores to be released soon after, in as little as 10 to 60 minutes. Therefore, poorly drained soil or wet sites favor the disease. Zoospores infect feeder roots just behind the root cap, and are also attracted to sites of injury. Infection can result in collar rot (infection above the graft union), crown rot (infection of the lower trunk and root bases), and/or root rot (infection of the lateral and fibrous root system). Oospores can also germinate and directly invade host tissue. Any injury to the root and crown provide easy access for *Phytophthora*. Soil pH plays little role in this disease.

Disease management- cultural

Crown rot prevention is difficult and eradication almost impossible in low-lying, poorly drained sites. Thus, in the future and whenever possible, avoid planting orchards in heavy, clay soils that drain poorly, and thereby favor infection by *Phytophthora*. In less than optimal sites, choosing

the right rootstock is essential to disease management. That said, it is difficult to make absolute statements regarding rootstock resistance and susceptibility because there are several different species of *Phytophthora* that attack apple roots, and little work has been done looking at individual *Phytophthora* species and rootstocks. Of the rootstocks preferred by growers, none are completely resistant to crown rot. The most resistant rootstocks are M.4 and B.9, and M.9; the most susceptible root stocks are reported to be M.7, MM.104, and MM.106, with M.2 and MM.111 being somewhat intermediate in resistance, meaning they can be infected by crown rot under favorable conditions, but may be acceptable for well-draining sandy soils.

For the home or small orchard, remove the soil from the base of the tree if the tree has not yet been completely girdled and allow to dry—Drying can stop crown rot from progressing further. Home remedies such as packing wounds or cankers with soil, thereby keeping the wounds moist, is one of the worst things you can do in this instance!

Control weeds around the trunk of apple trees as weeds can serve as alternate hosts for *Phytophthora spp.* Care should be taken when using herbicides to prevent drift from damaging tree crowns and visible roots, particularly in young (less than 7 years) trees. As any injury can serve as a site of infection, care should be taken when using a weed whip or with any sucker removal. Finally, reduce nitrogen application of infected trees as excess nitrogen suppresses plant defense—and actually prevents the tree from fighting off the infection.

Disease management-Chemical

For bearing apples, apply Aliette or other phosphorous acid derivatives as a cover spray on a 30-60 day interval when conditions favor

disease development. These fungicides are truly systemic (the fancy pants word is 'amphimobile'), meaning product applied to the leaves will be taken to the roots; product drenched on the roots will spread via the xylem throughout the plant. These are the only fungicides that function in this way!

Under moderate disease pressure, apply 6-8 applications at 2.5 lbs per acre on a 30 day interval, or use 5 lb per acre 2-4 times at on a 60 day interval. The phosphorous acid fungicides are quickly translocated from leaves to the root system, and they are very effective for controlling Phytophthora. Young trees at risk should be protected, as these can be quickly girdled by root rot and are of particular concern (regardless of the variety or rootstock), as are any orchards on MM.106 or M.26 rootstocks, due to their susceptibility to this disease.

Numerous phosphorous acid derivatives (ProPhyt, Rampart, Phostrol, Agrifos, etc) are available. I've used Aliette on both ornamental and fruit crops with good results; I've gotten similar results with Agrifos (on apples) and Rampart (on a lot of ornamental crops), as well.

If you have a crop and want to include Aliette or a PAD, combine it with captan since the phosphorous acid derivatives (PAD) provide no fruit rot control. As we have already entered the period where these diseases are a growing concern, application of a PAD + captan would be a good strategy to start your summer disease control program, assuming you have fruit. You could switch to captan + Topsin-M in your next spray, or just continue with the PAD + captan combination.

For nonbearing infected trees, in the fall, Ridomil can be applied as a drench around the trunk (best for preventing crown and collar rot) or as a banded treatment within the drip line (best for root rot). A Ridomil drench can be applied in the

early spring before growth begins, or in the fall after harvest but before the ground freezes. Ridomil and Aliette rates can be found in the Midwest Fruit Pest Management Spray Guide.

Stone fruit are susceptible to Phytophthora, as well. For new plantings, make the first application 2 weeks after planting. Additional applications should be made at 2-3 month intervals or to coincide with periods most favorable for root, crown, or collar rot development (like now). For established plantings, the application should be made in spring before the plants start growth. Additional applications should be made at 2-3 month intervals or to coincide with periods most favorable for root, crown, or collar rot development(now).

Note: Do not dip roots of trees in, or spray bare roots with, solutions containing Ridomil. Do not apply to stressed trees.



Figure 1. Apple with Phytophthora root and crown rot. Photo by Janna Beckerman



Figure 2. Blueberry with Phytophthora root rot. Photo by Jay Pscheidt.



tree. Photo by Mike Ellis.

Figure 3. The stress of fruting can cause Phytophthora-infected trees to die. Photo by Janna Beckerman.



Figure 4. Infection at the rootstock-scion junction by Phytophthora resulted in the death of this

Extension Events

(Lori K Jolly-Brown, ljollybr@purdue.edu)



Small Farm Education Field Day July 29th, 2021
at the Purdue Student Farm.

Small Farm Education Field Day Webinar Series
August 2, 4, 6, 9, 11, 13, 2021.

REGISTER TODAY:

<https://www.purdue.edu/hla/sites/studentfarm/events/>

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