PURDUE EXTENSION

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Crop Conditions

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

Spring is here and we continue to watch our fruit crop progress in Lafayette. Grapes have 10-16 inch shoots. Apples are at 16 millimeter. Pawpaws have green fruit. Black raspberries are in bloom. Black Currant have green fruit. Strawberries have both blooms and green fruit.



Grapes- 10-16 inch shoots



Apples- 16mm



Pawpaws- Green fruit



Black raspberries - In bloom



Black Currant- Green fruit



Strawberries - Green fruit and blooms

Indiana Climate and Weather Report- 5-20-2019

(Austin Pearson, pearsona@purdue.edu)

So far for the month of May, temperatures across the state vary by nearly 2°F above normal in the southeast and almost 3°F below normal in the extreme northwest. Similarly, the same trends can be seen in the Modified Growing Degree Days as they are based on temperature (Fig 1).



Fig 1: Modified Growing Degree Days



Fig 2: May Precipitation Deviation from Normal

The main story continues to be the precipitation for most of the state. Since January 1, precipitation is between 3 to 9 inches above normal in spots. Adding observed near normal to slightly above normal precipitation for the month in some areas is really delaying folks in the agriculture industry (Fig 2). Looking at the short term outlook from the Climate Prediction Center (Fig 3 & 4), much of the state has above normal chances for seeing above normal temperatures and precipitation over the 6 to 10 day and 8 to 14 day outlooks. Our active weather pattern doesn't look to change at least within the next couple of weeks. One good thing is that temperatures look to rebound to the 70s and 80s which may help with the drying process. Any windows that do open for agricultural activity appear to be limited in the short term.



Fig 3: 6-10 Day Temperature Outlook https://www.cpc.ncep.noaa.gov/



Fig 4: 6-10 Day Precipitation Outlook https://www.cpc.ncep.noaa.gov/

Spring Planted Day-neutral Strawberry Update

(Wenjing Guan, guan40@purdue.edu)

With the support of the Purdue Extension AgSeed Program, we are currently evaluating different production systems for growing strawberries in an open-field with plastic cultural systems for our area at Southwest Purdue Agricultural Center in

Vincennes, IN.

A day-neutral strawberry cultivar evaluation trial was established in the Spring of 2019. The evaluated cultivars include Portola, Evie-2, Mara Des Bois, Albion, Seascape, San Andreas, Monterey, and Tribute. Bare-root plants purchased from Nourse Farm and Indiana Berry were planted on black plastic mulch on Mar. 22. Cultivar Portola was planted on Apr. 10 due to back-order. Each of the eight cultivars were grown either with a retractable low tunnel system or without it (Figure 1).



Figure 1. Spring planted day-neutral strawberries with and without a retractable low tunnel system

Although strawberries were planted this spring, most cultivars started to bloom toward the end of April. Removing runners started in early May. During the week of May 13, harvest started on the early cultivars: Tribute, Mara Des Bois, then followed by Evie-2 and Albion. The majority of the harvested berries have high quality. Plants grown under retractable low tunnels in general developed more foliage, and started harvest about a week earlier than plants grown without the low tunnel (Figures 2 and 3).



Figure 2: Eight day-neutral strawberry cultivars grown under retractable low tunnel systems (picture was taken on May 20)



Figure 3: Eight day-neutral strawberry cultivars grown in the open-field (picture was taken on May 20)

What we have learned so far is that for the extended harvest of day-neutral strawberries, planting them as early as possible could lead to a decent spring harvest depending on the cultivar. Newly planted strawberry plants can with stand below frost temperatures. Actually, as they were planted in March, there were a few nights temperatures were below 30°F, with the lowest recorded temperature at 26°F. No cold damage was observed on these plants. The only cultivar that was poorly established was Portola, and this was likely due to uneven irrigation when they were planted in April.

The retractable low tunnels enhanced strawberry growth and advanced the harvest time with accumulated heat. It worked well in the spring. Starting this week, we plan to open the low tunnels and close them when it rains. The idea now is to keep the plant canopy and berries as dry as possible in order to reduce disease pressure.

Looking forward, we estimate the spring harvest will end when temperatures exceed 85 to 90°F, as the high temperatures inhibit further flower bud formation and reduce fruit quality. The harvest should continue in the fall. Locally grown strawberries are a popular produce in the local food market. Although growing dayneutral strawberries in the open-field condition may not be a profitable business for larger vegetable and fruit growers due to the extended but relatively small harvests. Growing dayneutral strawberries could be a potential opportunity for small and diversified farmers. Please stay tuned for our update of this trial, as well as evaluations of more strawberry production systems in southern Indiana.

Disease Management

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

Apple Disease Management

Constant rain has resulted in a great scab season. Again. Keep in mind that infection develops really slowly under these (mostly) cool, wet conditions. This means symptoms from primary infection may have just started to be visible and that we are already going into secondary infection even as primary infection continues. With the constant rain, and infection, I want to warn people from thinking 'Fungicide resistance!', as opposed to what really happened—heavy rains that washed off any trace of fungicide, plus a long, cool wet infection period that delayed symptom development. Hopefully, everyone was able to get into their orchard and get their applications on to protect against scab, powdery mildew and rust. And of course, bitter rot.



Fig. 1. Missed applications can result in serious scab. Photo by Janna Beckerman.

Black Knot

Prune out, remove or dispose of any and all visible black knot galls. Sanitation is a cornerstone of management! Ascospores of the black knot fungus, Apiosporina morbosa, are being released with right now a peak time throughout the state. For those not at shuck split, continue using chlorothalonil (FRAC Code M5). After shuck split, rotate with Indar (fenbuconazole, FRAC Group 3), Topsin-M (thiophanate methyl, FRAC Code 1), captan (FRAC Code M), and Pristine (FRAC 11+7). Many of the fungicides labeled to control brown rot will also control black knot.



Fig. 2. Black Knot. Photo by Janna Beckerman.

Grapes Disease Management

With all this wet weather, grapes will require continued protection against Phomopsis and against black rot. Preventing foliar disease by these fungi reduces the likelihood of fruit infections. Mancozeb and captan are both very effective and provide excellent protection early in the season. Protectant fungicides like these must be applied to shoots and leaves before inoculation and infection by spores. During rain, fungicides will wash off. A simple rule of thumb is that for every inch of rain, a 50% loss of fungicide occurs. Keep in mind that Mancozeb protects against early downy mildew infection as well. This approach saves the use of systemic fungicides until later in the season, when issues of canopy growth may prevent you from obtaining ideal coverage, and give you the protection you need in places the sprayer can't reach.



Fig. 3. Black rot on grape foliage. Photo by Janna Beckerman

Eastern Flower Thrips in Strawberries

(Ricky E Foster, fosterre@purdue.edu)

I received a report this week from a strawberry grower that overnight he went from no eastern flower thrips to an average of 15 thrips per bloom. Eastern flower thrips are an occasional pest of strawberries. They are attracted to and feed on flowers, with the result being leathery fruit or fruit that fail to ripen. This problem occurs every year at low levels but has not been serious in recent years, with the last serious problem in 1994. The numbers reported would indicate the possibility of serious problems this year. Eastern flower thrips do not overwinter in Indiana and must migrate northward each year on winds from the South. It is likely that thrips migrate on the same winds that move potato leafhoppers, so if you see leafhoppers there is a likelihood that thrips will also be present. Eastern flower thrips are very tiny, 1/16 inch long, so they are barely visible with the naked eye. I encourage all strawberry growers to be scouting for thrips in their blooms now. There are a couple of ways to sample for them. My favorite is to pick a flower and swish it around in a vial of alcohol. You can also shake the flowers over a white piece of paper or plate. If you find 2-10 thrips per flower,

you should probably treat. Brigade and Danitol will provide excellent control and Entrust and Radiant will both provide good control. All of these products are moderately or highly toxic to pollinators that will be visiting your flowers, so you should treat as early in the bloom period as possible and apply the insecticides in the evening after pollinators have left the field.

Events

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

June 1, 2019 Vintage Indiana Military Park, Indianapolis, IN Contact Katie Barnett, barnett6@purdue.edu http://www.indyinternational.org/

20th Celebration of Indiana Wines. 11:00am VIP entrance, 12(noon)-6pm regular admission entrance. Vintage Indiana Wine Fest is the BIGGEST annual celebration of delicious wines produced only in Indiana! We're dedicated to celebrating not just the wine, but the spirit of Indiana winemakers; the only winemakers in the world capable of blending Hoosier hospitality into every bottle. This year's festival features nearly 30 Indiana wineries, plus a ton of live entertainment, food and shopping experiences! Get to know Hoosier winemakers from all over the state as they gather in Indianapolis

June 27, 2019 Southwest Purdue Ag Center Field Day

Southwest Purdue Ag Center

Contact Barb Joyner, **joynerb@purdue.edu** Horticultural related topics include: Organic Tomato Production, High Tunnel Grafted Cucumber & Specialty Melon Production, Applying IPM Principles across Cropping Systems to Increase Insect Pollination and Profitability, Annual Strawberry Production. A meal will be included, and PARP classes also will be available after lunch. To register, email joynerb@purdue.edu, call 812-886-0198, or go online at

https://purdue.ca1.qualtrics.com/jfe/form/SV_8pn F8z1CwygIrGI by Monday, June 17.

July 9, 2019 Turf & Landscape Field Day Daniel Turf Center, West Lafayette, IN

https://turf.purdue.edu/field-day.html

The Purdue Turf and Landscape Field Day is an annual one-day event with the objective of providing professional turf and landscape managers exposure and educational opportunities with the latest research and technical resources. The Field Day features research tours, afternoon workshops on current topics, and a tradeshow with over 40 exhibitors displaying equipment and turf and landscape products.

July 18, 2019 Meigs High Tunnel Field Day Purdue Meigs Farm

https://purdue.ca1.qualtrics.com/jfe/form/S V_0HXQwDluRiOnwAB

Contact Lori Jolly-Brown,

mailto:ljollybr@purdue.edu

The field day at Meigs Horticulture Farm, presented by the Horticulture Department and the Department of Entomology, will focus on high tunnel production of cucurbit crops. It will feature tours of conventional and hydroponic high tunnel cucumber and melon production. The use of insect-exclusion screens to control cucumber beetles and bacterial wilt will be on display in the conventional high tunnel systems. Vegetable grafting and future research in tomato systems will be presented. Attendees will also have an opportunity to discuss current challenges and future directions of research areas for high tunnel production systems.

August 1, 2019 Small Farm Ed Field Day Daniel Turf Center, Purdue Student Farm https://purdue.ca1.qualtrics.com/jfe/form/S

V_3qQfl05iryF3COp

Lori Jolly-Brown, ljollybr@purdue.edu

The Small Farm Education Field Day presented by Horticulture & Landscape Architecture will have classroom educational sessions at the Daniel Turf Center followed with lunch catered by Juniper Spoon at the Purdue Student Farm. Tours, workshops and vendors!

Rototiller vs. power harrow demonstration High tunnel tomato and pepper product

Solar dryers for post-harvest processing of fruits, vegetables

Wash pack demonstration

Food safety plans and certification process for gardeners

Dynamic enterprise budgets

Scheduling crops in high tunnels

Cover crop choices

Soil restoration in urban farms

September 5, 2019 Hydroponics & Greenhouse workshop

Purdue University, Deans auditorium, HLA greenhouse

Contact Lori Jolly-Brown, **Jjollybr@purdue.edu** Participants will learn about optimal conditions for growing hydroponic lettuce, including nutrient recipes, production systems, artificial lighting practices and optimal temperatures for lettuce. Workshop attendees will also have the opportunity to tour the department's greenhouse and hydroponic facilities where several hands-on activities will take place. Krishna Nemali, professor of controlled environment agriculture, will lead the workshop. Nemali's research centers on enhancing sustainable growing practices in controlled environments, like greenhouse and indoor vertical farms.

October 17, 2019 Indiana Flower Growers association conference Purdue University, Daniel Turf Center Contact Lori Jolly-Brown, ljollybr@purdue.edu Horticulturists and greenhouse operators will have an opportunity to network with industry experts and Purdue Extension specialists. Educational sessions to include technology and automation, electrical conductivity sensors, marketplace opportunities, greenhouse production, worker production standards, as well as networking with other flower growers across the state.

February 11-13, 2020 Indiana Horticultural Congress

Indianapolis Marriott East Hotel:

Contact Lori Jolly-Brown, **Jjollybr@purdue.edu** https://www.inhortcongress.org/

The Indiana Horticultural Congress, presented by Purdue University, is an educational meeting designed to meet the needs of fruit, vegetable, wine, organics, greenhouse, high tunnel, specialty crop growers and marketers in Indiana and surrounding states. Over 500 registrants and more than 70 vendors attend each year.

February 11-13, 2020 Indiana Green Expo Contact Brooke Ponder, bponder@purdue.edu Indiana Convention Center, Indianapolis, IN Indiana's largest, most comprehensive green industry event of the year! Offering over 75 educational seminars plus a Spanish track, certification opportunities, in-depth workshops, numerous CEUs and CCHs to be earned, and a two-day trade show! It is the policy of the Purdue University that all persons have equal opportunity and access to its educational programs, services, activities, and facilities without regard to race, religion, color, sex, age, national origin or ancestry, marital status, parental status, sexual orientation, disability or status as a veteran. Purdue is an Affirmative Action Institution. This material may be available in alternative formats. 1-888-EXT-INFO Disclaimer: Reference to products in this publication is not intended to be an endorsement to the exclusion of others which may have similar uses. Any person using products listed in this publication assumes full responsibility for their use in accordance with current directions of the manufacturer.

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