VEGETABLE CROPS HOTLINE

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

Issue: 672
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In This Issue

Protect Early Planted Warm-Season Vegetables from Low Temperatures

(Wenjing Guan, guan40@purdue.edu, (812) 886-0198)

Two types of injury on young warm-season vegetable plants are caused by low temperatures: frost/freezing injury and chilling injury.

Frost/freezing injury occurs when temperatures drop below 32°F. Ice formation in plant tissue cuts cell membranes. When the tissue thaws, the damage results in fluids leaking from the cell, causing water soaked damage. Frost/freezing injury is detrimental to warm-season vegetables, such as melons, cucumbers, tomatoes, peppers, and beans. To avoid damage, the best way is to plant warm-season vegetables later in the spring, after the last frost has passed. However, weather is difficult to predict, and there is a growing trend of planting early to achieve early harvests. For the early planted warm-season vegetables, here are a few suggestions that may protect plants from low temperature damages.

Covering. The idea of covering the seedlings is to create a microclimate around plants. Because the heat accumulated in soil irradiate back at night, covering maintains heat around the plants, and creates a few degrees higher temperatures around young seedlings. Prevent covering materials from directly contacting plants. Using wire hoops create low tunnels and cover with thick fabric row cover for effective frost protection. If it is in the open-field, it is important to seal the edges of the cover to avoid blowing winds. In large-scale production, low tunnels that are covered with clear plastic are used for early planted cucurbit plants in southern Indiana (Figure 1). On smaller scales, farmers may cover individual plants with styrofoam cups or plastic nursery pots. Styrofoam cups can be secured in position in the hole in plastic mulch. I also saw a field with young tomato plants covered with 1 gallon nursery pots and secured with a stone on top.

Windbreaks. Windbreaks play an important role in modifying microclimate. Daytime and nighttime temperatures downwind and near the ground, up to three feet high, tend to be several degrees warmer than unsheltered areas. Soil temperatures also tend to be several degrees warmer in a sheltered area as humidity levels in sheltered areas increase to contribute to conservation of soil moisture and attract more heat. Windbreaks are used on many vegetable production systems, and it is essential in watermelon production in southern Indiana. Winter rye cover crops or other small grain are used as the windbreaks. The winter rye may be sown in broadcast in the fall as a cover crop. Then tilled in spring for the watermelon crop, and strips of rye covers are left as windbreaks. Alternatively, strips of rye were planted in fall. The general idea is to space windbreak 12 ft apart for every foot in height of the windbreak. If the rye is 4 ft tall, rye strips are typically spaced around 50 ft apart. For early planted field, windbreaks are spaced closer, success was achieved by using rye strips between every bed of watermelons.

Figure 1. Early planted watermelons covered with low tunnels. Note the rye

strips were planted between every bed of watermelons.

Hardening. Hardening is the process of exposing transplants growing in greenhouse environment to outdoor conditions. The process induces plants to accumulate carbohydrates, thicken cell walls, and trigger root development. It helps plants withstand low temperatures, and have less damage under chilling condition. Hardening typically start 1-2 weeks before transplanting. Move plants outdoors when temperatures are at least 45-50°F, and gradually increase the amount of time plants are exposed to outdoor conditions.

Deep planting. The benefit of planting seedlings deeper in the hole is to prevent plants from having wind damage. This strategy can also help with preventing plants from low temperature damages. We saw this effect on cucurbit plants. Plants have a higher chance to survive when hypocotyls are buried in the soil, leaving leaves and growing points exposed above the soil. In this case, even leaves are damaged by the cold air, as long as growing point survives, plants may still recover. While if hypocotyls are above soil line, plants have little chance to survive if freezing damage occurred on the stems.

Figure 2. The hypocotyl of a cucumber plant was damaged by low temperatures.

Other considerations. For the earliest planted field, chose the field with the lightest soil as they warm up quickly. Avoid areas with frost pockets and shade. Lay beds and black plastic mulch as early as possible. The plastic should have excellent contact with the soil to help warm up soil. Firm beds and tight plastic help.

Strawberry Cold Protection Made a Difference

(Wenjing Guan, guan40@purdue.edu, (812) 886-0198)

Spring weather is unpredictable. One of the major risks associated with strawberry production is cold damage in the spring. Open strawberry flowers can not tolerate temperatures lower than 30°F, popcorn stage flowers and tight buds may tolerant temperatures low to 26 and 22°F, respectively. If strawberries are in the early blooming stage, the damage might be delayed harvest. However, if strawberries are in full blooming stage, low temperatures may cause dramatic yield loss. This is because inflorescences are initiated at day length <14h (June-bearing cultivars). If all the flowers were killed by low temperatures before setting fruit, there would be no more flowers for the year.

In this article, we update the cold damage that happened last week on plasticulture strawberries in Vincennes, IN. Figure 1 is the recorded temperatures (°F) at the height of strawberry canopies from 2:00 pm Apr. 13— 1:00 pm Apr. 18. Temperatures dropped below 30°F and lasted for about 8 hours on the night of Apr. 15. The lowest recorded temperature was 24.5°F (Figure 1). Not surprisingly, the temperature killed all open blooms. Some 'popcorn'-stage flowers were killed by the low temperatures (Figure 2).

Row cover (1.5 oz/sq) was used for cold production. Under row covers, temperatures were about 30 °F on the coldest night. Very few strawberry flowers were damaged under row covers. The cold protection strategy successfully saved open strawberry flowers during this frost event.

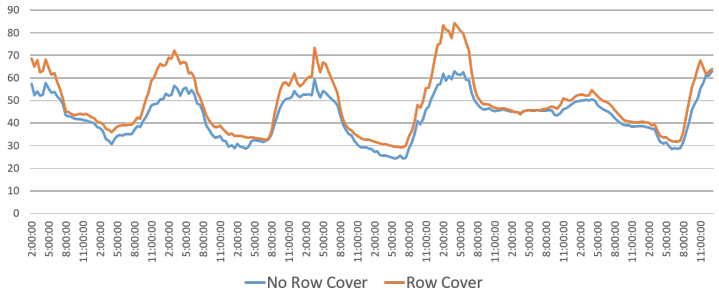


Figure 1. recorded temperatures (°F) at the height of strawberry canopies from 2:00 pm Apr. 13— 1:00 pm Apr. 18.

Figure 2. Cold damage on 'Popcorn' stage strawberry flowers.

Annual Plasticulture Strawberry Update at Southwest Purdue Agriculture Center

(Wenjing Guan, guan40@purdue.edu, (812) 886-0198)

At Southwest Purdue Agriculture Center in Vincennes, IN. We are conducting trials to evaluate annual plasticulture strawberry production systems. Here are the updates of strawberries from different production systems.

In a high tunnel, harvest of fall-planted strawberries started in early April. Cultivars Sensation, Radiance, Ruby June were early cultivars; followed by Beauty, Fronteras. So far, Radiance led the

yield. Chandler, San Andreas, Camarosa, Liz and Camino Real were relatively later cultivars.

In the open field, most cultivars of fall-planted strawberries were in full bloom. As mentioned in the article *Strawberry Cold Protection Made a Difference*, they are susceptible to frost damage. Cold protection is critical for them at this stage. Row cover was successfully used to protect the flowers from frost damage last week.

Day-neutral strawberry cultivars planted on March 9, 2020 established well. Plants were slightly larger under low tunnels. Frost happened last week killed most of the initiated flowers that might delay spring harvest. Instead of starting harvest in middle May as observed in 2019, the harvest may not start until the last week of May or early June. The following video provides updates on plant performance in this week.

Strawberry Observations from an Entomologist

(Laura Ingwell, lingwell@purdue.edu, (765) 494-6167)

This winter-spring has been my first excursion into growing strawberries in a high tunnel. It didn't take much for our own Wenjing Guan to convince me to plant some; who doesn't love to eat fresh strawberries? We planted them back in October and I just peeked at them every couple of weeks throughout the winter, looking for hungry herbivores wanting to share the impending treats. There were spider mites at first (Figure 1) and we made a few releases of the predatory mites *Phytoseiulus persimilis* and sachets containing *Amblyseius (Neoseiulus) Californians*.

Figure 1. Two-spotted spider mites on strawberry leaves (above) and under a microscope camera (below).

This spring, when the weather started warming up and the extra cover was lifted inside the tunnels we found less mites, almost none at all at this point, but an explosion of aphids (Figure 2) and an increasing presence of whiteflies (Figure 3). The whiteflies take a bit more patience to locate, but now that I know they are there I shake the plants to dislodge them while I am conducting my surveys. The aphids, in such high numbers, are easy to spot by looking for the shiny honeydew excretions on the row covers (Figure 4). While I wait patiently for some commercially-purchased lacewing larvae to arrive to help control the aphid populations, I am enjoying watching syrphid fly larvae feast on them (Figure 5). For now, I will continue to monitor the whiteflies and begin to enjoy the tasty fruits of my labor.

Figure 2. Heavy aphid infestation of the buds of strawberries in a high tunnel.

Figure 3. A whitefly on strawberries in a high tunnel.

Figure 4. Honeydew residue from aphid infestations on plastic mulch. An indication of the pest, inhabiting the underside of the strawberry leaves.

Figure 5. A syrphid fly larvae feasting on aphids in a developing bud (above) and under a microscope (below).

Canada thistle

(Stephen Meyers, slmeyers@purdue.edu, (765) 496-6540)

Spring is here and with it comes the emergence of weeds- especially problematic perennials like Canada thistle (Figure 1). Below is some information about Canada thistle and methods to manage it. Keep in mind two things: 1) many of these strategies will work for other perennial weeds, and 2) management of perennial weeds often requires persistence and an integrated approach.

Figure 1. Overwintered Canada thistle shoots emerge in April in central Indiana.

Scientific name: *Cirsium arvense* (L.) Scop.

Legal status: Canada thistle is considered a noxious weed in 46 states including Indiana. It is a non-native invasive species from Europe, and landowners with Canada thistle on their property are obligated to take measures to control it.

Growth habit: Deep-rooted and colony-forming perennial. Plants form a low-growing rosette in the spring prior to bolting in mid-to-late May.

Reproduction: By seeds carried up to 1/2 mile by wind and through adventitious shoots that develop from root buds.

Control: Often multiple types of control measures are needed. Consider a combination of the following:

- Exclusion and sanitation: Avoid spreading thistle roots, shoots, and seeds by cleaning tillage and mowing equipment between fields. Control Canada thistle in roadsides, field roads, and fencerows. Use tested seed. If you bring hay on-farm, use a reliable source.
- Crop rotation: Crop rotation can be a good option for controlling problematic weeds in vegetables. Rotate to row crops or other vegetable crops that are more competitive and have registered and effective herbicides.
- Herbicides: There are essentially two herbicide strategies. Many herbicides registered in vegetable crops may burn back the top growth of the weed, but do very little to suppress the extensive root system. This type of herbicide application is sometimes referred to as a “chemical mowing”. A second option is to use effective systemic herbicides. Two with good efficacy are glyphosate (ie. Roundup) and clopyralid (ie. Stinger). At the moment, clopyralid is labeled for use in these crops: beet, broccoli, Brussels sprouts, cabbage, cauliflower, collards, kale, kohlrabi, mint, mustard greens, spinach, sweet corn, Swiss chard, turnips, and turnip greens. With the exception of glyphosate-resistant sweet corn, its use in vegetables is limited to preplant burndown and some directed or spot-applications. For instructions on how to use each, consult the *Midwest Vegetable Production Guide* (https://mwveguide.org/) and the product label.
- Mowing: Mowing just before flower buds open can stop the development of Canada thistle seeds. However, timing is critical as viable seeds can be produced within 8 to 10

days after flowers open. Using multiple mowings, one at bud stage and one targeted toward fall regrowth, will help deplete root energy reserves.

- Cultivation/plowing: Use caution when using tillage around Canada thistle. Standard, light tillage will cut the roots into fragments and move them throughout the field. Tillage is not a stand-alone treatment. If tillage is used as the primary method of control, it should be done often and deeply to deplete root reserves. Do not use tillage prior to applying systemic herbicides, which could reduce their efficacy.
- Cover crops: There is some evidence that shows cover crops can be useful for suppressing Canada thistle growth. Cool-season crops like cereal rye can be planted in the late summer/early fall and will compete with Canada thistle as it emerges in spring. Warm-season cover crops used to suppress Canada thistle include sorghum-sudangrass and buckwheat (Figure 2). Sorghum-sudangrass has the added advantage that it benefits from mowing, whereas mowing is detrimental to Canada thistle.

Figure 2. Buckwheat can be used as a summer cover crop to suppress Canada thistle and other weeds.

- Biological controls: There are limited options. Although some insects feed on foliage, stems, crowns, and developing seeds, control is often highly variable. Delayed tillage and no-till have the added benefit of keeping seeds at or near the soil surface where they can be consumed by birds, rodents, and insects.

Uncertain Climate Outlook for May

(Beth Hall, hall556@purdue.edu)

The Climate Prediction Center's outlook for May is dominated by uncertainty regarding both temperature and precipitation (Figure 1). The computer models could not settle on a consistent pattern for either above- or below-normal temperatures for the month and precipitation outlooks are only slightly confident that there will be above-normal precipitation in southern Indiana. Shorter-term outlooks through mid-May are predicting increasing confidence for continued below-normal temperatures but very little guidance regarding precipitation.

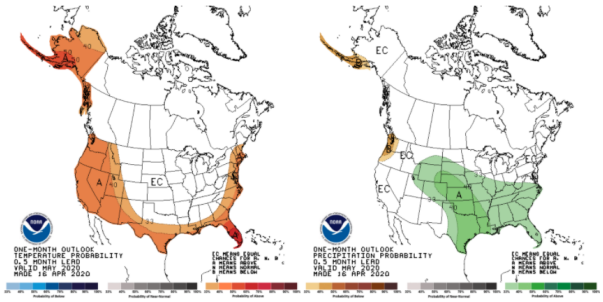


Figure 1. Climate outlook for May. Temperature (left); Precipitation (right). Shading indicates the probabilistic confidence for above- or below-normal conditions.

Climatologically speaking, there is less than a 10-percent chance that a hard freeze (at or below 28°F) is still likely to occur aside from the northeastern counties in Indiana (Figure 2). However, forecasts are predicting above-freezing overnight lows for this region, so the threat of any expansive, hard freeze is minimal.

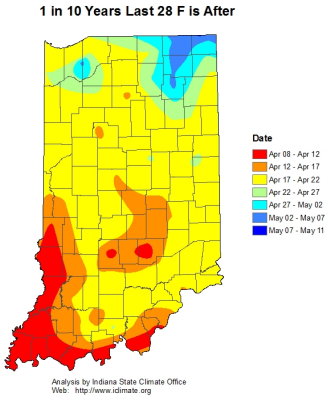


Figure 2. Map showing the approximate date when climatologically there was only a 10% chance that a hard freeze would occur later.

With the recent cold temperatures, modified growing degree-day (https://www.agry.purdue.edu/ext/corn/news/timeless/HeatUnits.html) accumulations have slowed. As of April 20, 2020, GDDs are running 20 to 45 units below normal (Figure 3).

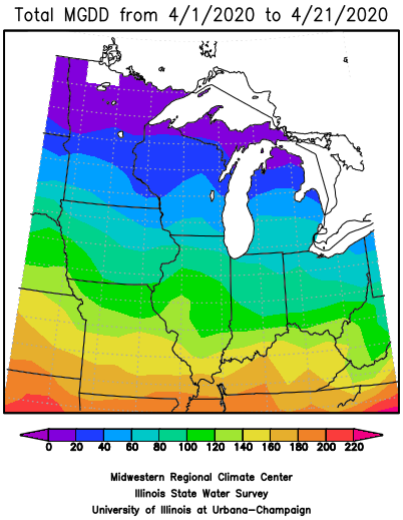


Figure 3. Average accumulated modified growing degree days since April 1, 2020.

Enjoy the warmer and drier conditions when they come. This seems like a relatively typical spring in Indiana.

Answer to Question from Last Issue (4-9-2020)

(Liz Maynard, emaynard@purdue.edu, (219) 548-3674), (Elizabeth Long, eylong@purdue.edu, (765) 796-1918), (Amanda J Deering, adeering@purdue.edu) & *(Rod Williams, rodw@purdue.edu)*

Answers to the 4-9-2020 *What's That?*

Q.Who is resting in this tray of cucumber seedlings that is on the floor in a high tunnel?

A. American Toad.
Learn more from the one-pager from NH Public Broadcasting Service here, or the book Frogs and Toads of Indiana from Purdue Extension, and hear the breeding call here from Purdue Forestry and Natural Resources (FNR). School children at home? Check out the amphibian curriculum from Purdue FNR.

Q. Aid to pest management?

A. American toads eat insects (both beneficials and pests), spiders, earthworms, slugs, and other invertebrates. It's hard to say whether they would make a real difference in cucumber pest management in a high tunnel. Our entomologist's best guess is probably not.

Q. Food safety concern?

A. A toad could be a food safety issue. Toads and other amphibians can be a source of contamination, e.g. *Salmonella*. This early in the production cycle the recommended action would be to remove the toad and manage the environment to reduce attractive habitats for toads.

Comments:

- *Cute!*

Question of the Issue (4-23-2020)

(Dan Egel, egel@purdue.edu, (812) 886-0198)

1. What caused the water-soaked stem of this watermelon transplant?
A-damping-off
B-gummy stem blight
C-Lightening strike

2. Is this problem likely to spread to other transplants?

3. Will this problem likely spread in the field?

Safety for Farm Children During COVID-19 Stay-at-Home Orders

Bill Field, Extension Safety Specialist, Liz Maynard, S.G. Ehlers and E.J. Sheldon

Recent data indicates a decline for Indiana's frequency of farm-related fatalities involving children. However, the current stay-at-home order in response to the COVID-19 pandemic means more children are currently on farms or more regularly working them — which can potentially increase their exposure to farm workplace hazards.

A silver lining of farming families spending more time together is the opportunity to educate children about the farm workplace and establish a culture of safety.

It is advised that guardians devote pertinent attention when supervising children working on farms and assign tasks that are both safe and age-appropriate.

The National Children's Center for Rural and Agricultural Safety and Health has identified five strategies (summarized below) to keep youth safe and healthy on a farm.

Do Not Bring Young Children Near Tractors / Self-Propelled Equipment

Facing daycare limitations and school closures, a farmer may be tempted to invite children to the field as an extra rider or have them sit and play nearby during work. Data shows that putting children in these circumstances can have tragic results.

Tractor accidents account for 40 percent of America's farm-related deaths to youth under 15. It is advised that farmers keep young children away from tractors and self-propelled equipment — including skid-steer loaders and lawn mowers.

Keep Young Children Away from Certain Farm Areas

Any farm contains hazards for young children who lack either the judgment or physical development to estimate the potential for danger.

Keep young children away from areas of a farm where equipment operators may not see them, as well as the following areas:

- Grain and feed storage bins
- Silos
- Manure storage sites
- Chemical storage and mixing facilities
- Livestock breeding areas (especially those with bulls)
- Front-of-shop and/or high-traffic locations

When possible, establish safe play areas for young children that are separate from any work space.

Assign Age-Appropriate Tasks

Children develop at different paces, and any farm work assigned to them should match their physical and intellectual abilities. Consider the following when assigning tasks:

- How long will the task take?
- How much physical strength is required?
- How much supervision is necessary?

When assigning tasks to teenagers, remember to take their individual experiences and judgment skills into account.

For more information on age-appropriate tasks, visit the Cultivate Safety website.

Ensure a Safe Workplace for Children and Everyone

It's easy for adults to take for granted workplace areas that could be dangerous to young children or even to less-experienced workers. Now is the time to conduct a farm safety inventory using a tool available on Purdue Extension's INPREPared website.

The form offers step-by-step instructions for a thorough, walk-around farm inspection, documentation for potential hazards, and suggestions on ways to address any hazards. (If the form doesn't exactly match your farm, use it as a guide to tailor your own form.) Consider involving the entire family in this activity to encourage a culture of farm safety.

Train Younger Workers Responsibly

Unrealistic expectations of children working on a farm can lead to situations of frustration, property damage, injury or worse. Use this time to train children accordingly and in alignment with age-appropriate responsibilities.

It is also essential to serve as a good role model, as children will emulate behaviors they see. Show them how to conduct themselves. Demonstrate safe work practices for them to follow — including proper hygiene and best practices for food safety.

For more information on training young workers, see the Occupational Safety and Health Administration's resources for young workers and youth in agriculture, or read Basic Principles for Training Teens (available in English and Spanish).

Again, the silver lining as we all adjust to stay-at-home measures is that children can learn more about farm safety and responsibly contribute to farm work. At the same time, guardians can evaluate and establish their role in creating a culture of farm safety. Protecting everyone will make it easier for farm families to emerge from these uncertain times with their health intact and a readiness to succeed in the future.

Additional Resources

- INPREPared offers a comprehensive Online Agricultural Safety & Health Resources Guide under its Educator / Trainer Resources section.

- The Gearing-Up-4-Safety curriculum helps youth aged 14-19 meet federal training requirements for agricultural employment. Presented by Purdue University's Department of Agricultural Sciences Education and Communication, the curriculum includes 14 PowerPoint presentations with instructor notes, case studies, a glossary and student activity sheets.

For more information contact Bill Field, (765) 494-1191.

Be Careful When Employing Youth to Do Farm Work This Spring – Know the Laws

Bill Field, Extension Safety Specialist & IN-PREPared (S.G. Ehlers, Ph.D., & E.J. Sheldon, M.S.)

With schools closing early due to COVID-19, some youth have become available for full- and part-time employment. Farm operators, however, need to remain mindful that the employment of youth under the age of 16 to work in agriculture is regulated by Federal Wage and Hour Laws. Youth ages 14 and 15, specifically, can perform certain farm tasks, not classified as hazardous, provided the work does not interfere with school (including completing online schooling) and appropriate wages are paid. Some of the tasks that are allowable include:

- Hand pruning Christmas trees
- Mowing lawns
- Picking berries
- Operating a tractor, including garden tractor under 20 h.p.

- Loading and unloading small hay bales from wagons
- Painting, but not over 20 feet from the ground
- Setting fence posts and repairing fences.

Some tasks are recognized as particularly hazardous for youth and either cannot be performed by youth under the age of 16 at any time, or only after having first received special training.

Prohibited tasks include:

- Operating specialized machinery such as earth moving equipment, forklifts, potato combines, or chain saws
- Working with bulls, boars, stud horses, sows with suckling pigs, or cows with newborn calves present
- Working in woodlots to harvest timber
- Working over 20 feet from the ground on scaffolding or ladders
- Working inside agricultural confined spaces, included silos, grain bins, and manure pits
- Transporting, transferring or applying anhydrous ammonia

In some cases, youth ages 14 and 15 may be employed to operate a tractor over 20 PTO horsepower, or operate certain types of other farm machinery, but ***only*** after completing an approved training course (see **www.agsafety4youth.info** for more details).

Employees found hiring youth to perform farm tasks considered hazardous can be fined. There have been cases in which farmers have spent time in jail due to the death of an under-aged worker performing prohibited tasks.

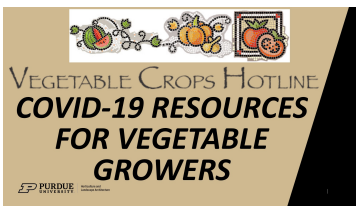
For more information on tasks that young workers can legally perform on the farm and which are specifically forbidden, contact the local office of the State Department of Labor and check out the resources available from Purdue University's website **www.agsafety4youth.info**. This site also provides excellent training resources for young and beginning workers.

It should be noted that the restrictions to the employment of youth on farms do not apply to a youth employed by his or her parent or guardian on farms owned by the parent or guardian. Once a youth reaches the age of 16, there are no age-related legal restrictions on employment in production agriculture.

For more information contact Bill Field, (765) 494-1191.

COVID-19 Resources for Vegetable Growers (4-23)

(Liz Maynard, emaynard@purdue.edu, (219) 548-3674) & (Wenjing Guan, guan40@purdue.edu, (812) 886-0198)



New 4-23-2020: Safety for Farm Children During COVID-19 Stay-at-Home Orders; Be Careful When Employing Youth to Do Farm Work This Spring – Know the Laws

What is new? (4-23-2020)

Safety for Farm Children During COVID-19 Stay-at-Home Orders
https://extension.purdue.edu/INPREPared/wp-content/uploads/2020/04/COVID-and-Farm-children.docx

Be Careful When Employing Youth to Do Farm Work This Spring – Know the Laws
https://extension.purdue.edu/INPREPared/wp-content/uploads/2020/04/Be-Careful-When-Employing-Youth-to-do-Farm-Work---Know-the-Laws1.docx

Here are the categorized information resources

Financial

SBA Help for Small (and Family) Businesses, Purdue Institute for Family Farms (4/16)
https://ag.purdue.edu/agecon/fambiz/Documents/SBA_Help_for_Small_Businesses.pdf

COVID-19 Affected Business and Employee Resource Guide from Sen. Braun (3/27)
https://www.braun.senate.gov/sites/default/files/2020-03/Senator%20Mike%20Braun%20COVID-19%20Affected%20Business%20and%20Employee%20Resource%20Guide_0.pdf
Information about the Coronavirus Aid, Relief, and Economic Security (CARES Act); the Families First Coronavirus Response Act; and Small Business Economic Injury Disaster Loans (EIDL).

SBA COVID-19 DISASTER LOANS FOR INDIANA SMALL BUSINESSES (3/19)
Apply : https://disasterloan.sba.gov/ela/
Instructions:
https://disasterloan.sba.gov/ela/Documents/Three_Step_Process_SBA_Disaster_Loans.pdf

Production

A Guide for Community Gardens During the COVID-19 Pandemic (3/25)
https://extension.purdue.edu/article/36666

Purdue Crop Chat Podcast Episode 2, COVID-19 Implications (3/25)
https://www.hoosieragtoday.com/purdue-crop-chat-podcast-episode-2-covid-19-implications/

Labor and Family

Be Careful When Employing Youth to Do Farm Work This Spring – Know the Laws (4/23)
https://extension.purdue.edu/INPREPared/wp-content/uploads/2020/04/Be-Careful-When-Employing-Youth-to-do-Farm-Work---Know-the-Laws1.docx

Safety for Farm Children During COVID-19 Stay-at-Home Orders (4/23)
https://extension.purdue.edu/INPREPared/wp-content/uploads/202

0/04/COVID-and-Farm-children.docx

H2A https://www.farmers.gov/manage/h2a
Temporary final rule to change certain H-2A requirements to help U.S. agricultural employers (4/16)
https://www.usda.gov/media/press-releases/2020/04/15/dhs-and-usda-move-protect-american-farmers-and-ensure-continued
H2A Update: Waiver of in-person interview requirements for certain H-2A and H-2B visa applicants. (3/27)
https://travel.state.gov/content/travel/en/News/visas-news/important-announcement-on-h2-visas.html

Interim Guidance for Businesses and Employers to Plan and Respond to Coronavirus Disease 2019 (COVID-19) from CDC (3/24)
https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-business-response.html

OSHA Guidance to Help Prevent Worker Exposure to COVID-19 (3/19)
https://www.osha.gov/SLTC/covid-19/controlprevention.html

U.S. Dept. of Labor – COVID-19 and the American Workplace. (3/27)
https://www.dol.gov/agencies/whd/pandemic

Food Safety and Sanitation

Please check Safe Produce Indiana for more updated information related to food safety

FDA Q&A regarding food safety and the coronavirus disease. Updated questions including: *How do I maintain social distancing in my food production/processing facility?*; What do I need to do if a worker in my farm has tested positive for COVID-19? (4/07)
https://www.fda.gov/food/food-safety-during-emergencies/food-safety-and-coronavirus-disease-2019-covid-19

FDA food safety recommendations for producers and restaurant owners (3/19)
https://extension.purdue.edu/article/36599

USDA Temporarily Extends Expiration Dates for Some Good Agricultural Practices, Domestic Origin Verification, Plant Systems Audit Program Certifications (3/31)
https://content.govdelivery.com/accounts/USDAAMS/bulletins/283fd87

Indiana State Dept. of Health – Food Safety Guidance (update 4/6)
English:
https://coronavirus.in.gov/files/IN_COVID-19_FoodGuidance_4.6.20.pdf
Spanish:
https://coronavirus.in.gov/files/IN_COVID-19_FoodGuidance_03.31.20_version%20nueva.pdf

Indiana Registered Disinfectants for Use Against COVID-19 (4/13)
https://www.oisc.purdue.edu/pesticide/pdf/covid-19_disinfectants_041320.pdf

EPA List of Disinfectants for COVID-19 (3/19)
https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2

A Guide to Cleaning, Sanitizing, and Disinfecting for Produce Farms, from Univ. Vermont (3/31)
https://blog.uvm.edu/cwcallah/2020/03/30/clean-sanitize-disinfect/

Build Your Own Handwashing Station, Rutgers (3/31)
https://onfarmfoodsafety.rutgers.edu/wp-content/uploads/2020/03/Build-Your-Own-Hand-Washing-Station.pdf

Food Safety and Sanitation Resources from NCSU (3/25)
https://foodsafety.ces.ncsu.edu/covid-19-resources/
Simple 2-page, large-font materials about food safety and sanitation. Social media images. Spanish and English.

Markets/Marketing

A Guide to Alternative Delivery Systems for Local Producers During the COVID-19 Pandemic (3/24)
https://extension.purdue.edu/article/36645

Ag Economist weighs in on impacts of COVID-19 on food markets (3/24)
https://extension.purdue.edu/article/36559

A guide for local producers to navigate the COVID-19 outbreak (3/19)
https://extension.purdue.edu/article/36549

A guide for farmers' markets to navigate the COVID-19 outbreak (3/19)
https://extension.purdue.edu/article/36616

A consumer guide to buying from local farmers during the COVID-19 outbreak (3/19)
https://extension.purdue.edu/article/36596

USDA – if you wish to provide suggestions (3/25)
For solutions to feeding children impacted by COVID-19, email feedingkids@usda.gov.
For solutions impacting America's food supply chain and other logistical complications, email foodsupplychain@usda.gov.
(from
https://www.usda.gov/media/press-releases/2020/03/17/usda-working-private-sector-response-covid-19)

Resources from Trade Associations, etc.

Farmers Market Coalition Resource Page – includes examples of practices across the country (3/27)
https://farmersmarketcoalition.org/covid-19-crisis-farmers-market-new-guidelines/

Hoosier Young Farmers Coalition Resources Page (3/25)
https://www.hoosieryfc.org/resources.html

Supporting the Supply Chain During COVID-19 from United Fresh Produce Association (3/25)
https://specialtyagriculture.secondstreetapp.com/api/message_contents/1749388/2077401/A3D52D2F-6160-4476-9816-EC3EB82F2DE3

Agency and Organization Updates

Indiana State Chemist and Seed Commissioner COVID-19 Adjustments Update (4/16)
https://www.oisc.purdue.edu/pesticide/pdf/covid-19_adjustment_update_041620.pdf

Key Sites – General

Coronavirus and USDA Service Centers (3/24)
https://www.farmers.gov/coronavirus

Indiana Disaster Prep from Purdue Extension (3/19)
https://extension.purdue.edu/INPREPared/coronavirus/

Indiana State Dept. of Agriculture (3/24)
https://www.in.gov/isda/3555.htm

Indiana State Dept. of Health (3/19)
https://www.in.gov/coronavirus/

U.S. Centers for Disease Control (3/19)
https://www.cdc.gov/coronavirus/2019-nCoV/index.html

U.S. FDA (3/19)
https://www.fda.gov/emergency-preparedness-and-response/mcm-issues/coronavirus-disease-2019-covid-19

World Health Organization (3/19)
https://www.who.int/emergencies/diseases/novel-coronavirus-2019

Please let us know of other resources we should publicize, or information you need and can't find

USDA Service Centers are Open for Business by Phone Appointment Only

USDA is open for business. Our team is continuing to provide the best customer service we can while also prioritizing the health of our employees, the health of our customers, and the health of our partners. USDA's Service Centers are open in Indiana by phone appointment only. While our program delivery staff will continue to come into to the office, they will be working with our customers by phone, by email, and using other online tools whenever possible.

To learn more about USDA programs and the Department's response to the Coronavirus visit farmers.gov/coronavirus or www.rd.usda.gov/coronavirus.

To locate your local Service Center, visit farmers.gov/service-locator.

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