

# VEGETABLE CROPS HOTLINE

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



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## Considerations for Fruit and Vegetable Growers Related to Coronavirus & COVID-19

(Wenjing Guan, [guan40@purdue.edu](mailto:guan40@purdue.edu), (812) 886-0198)

Dear Vegetable Crops Hotline readers,

Firstly, I want to let you know the status of a few Purdue Extension Events related to fruit and vegetable growers. That PSA Grower Training in LaGrange County that was planned on March 20 was canceled due to concerns about the spread of coronavirus (COVID-19). A Strawberry Workshop that planned to be held in May at Southwest Purdue Agricultural Center may need to be canceled or delayed. We will let you know the decision soon. The Hydroponic Workshop that was planned to be held in June or July at West Lafayette, and the Small Farm Education Field Day that planned to be held on July 30 at Purdue Student Farm, West Lafayette, do not expect changes at this point. We will keep you posted about the details of our coming events.

Meanwhile, please read the article below about what you should know and how to be prepared about the coronavirus situation. Another article from Purdue Extension [Planning for the Unexpected: Human Resource Risk and Contingency Planning](#), may also be helpful.

The following article was originally published by the University of Vermont Extension at <https://blog.uvm.edu/cwcallah/2020/03/13/considerations-for-fruit-and-vegetable-growers-related-to-coronavirus-covid-19/>

## Background

COVID-19 is the disease caused by the SARS-CoV-2 virus ("the novel coronavirus"). Symptoms include fever, cough, and shortness of breath,

and may appear 2-14 days after exposure. While the majority of COVID-19 illnesses are mild, it can result in severe and fatal illness, particularly in the elderly and among those with severe underlying health conditions. Federal and State agencies are working hard to better understand the virus, how to control its spread, and how to treat those infected. One of the key things we can all do is to limit and slow the spread of COVID-19 to provide time for this understanding to develop and to not overwhelm the medical system. Much more information is available at the [CDC Situational Summary page](#).

## What should growers do?

1. **Stay Away from Produce if Sick** – If someone is sick, they should be nowhere near fruit and vegetables that others are going to eat. This is likely already part of your farm's food safety plan and policies, but this is a good reminder to emphasize and enforce the policy. Make sure employees stay home if they feel sick and send them home if they develop symptoms at work. Consider posting signs asking customers not to shop at your farm stand if they have symptoms.
2. **Practice Social Distancing** – By putting a bit more space between you and others you can reduce your chances of getting ill. This might mean limiting or prohibiting farm visitors or reducing the number of off-farm meetings you attend in person. Avoid shaking hands and other physical contact. This also reduces the risk of your produce coming into contact with someone who is ill before it heads to market.
3. **Wash Your Hands** – Reinforce the importance of washing hands well when arriving at work, when changing tasks (e.g. moving from office work to wash/pack), before and after eating, after using the bathroom, before putting on gloves when working with produce, and after contact with animals. Soap + water + 20 seconds or more are needed to scrub all surfaces of your hands and fingers thoroughly. Then, dispose of paper towels in a covered, lined trash container.
4. **Cleaning, Sanitizing, and Drying** – Viruses, in general can be relatively long-lasting in the environment, and have the potential to be transferred via food or food contact surfaces. In this early stage, there is no indication that this virus has spread via food of any type. However, there's no better time than the present to review, improve, and reinforce your standard operating procedures for cleaning, sanitizing, and drying any food contact surfaces, food handling equipment, bins, and tools. Remember, cleaning means using soap and water, sanitizing is using a product labeled for sanitizing, and drying means allowing the surfaces to dry completely before use.
5. **Plan for Change** – Many produce farms are lean operations run by one or two managers and a minimal crew. Do you have a plan for if you become severely ill? How do things change if

half your workforce is out sick? More business and labor planning guidance is available at the [Cornell Agricultural Workforce Development site](#)

## What Should Markets and Farmers Markets Do?

1. **Everything Above** – Growers, retail food market owners, and farmers market managers should do all the things above. Does your market have a hand washing station? More guidance for food and lodging businesses is available from the [Vermont Department of Health](#). [See also [Indiana Department of Public Health information about coronavirus](#)]
2. **Communicate with your Customers** – Consider reaching out to your customers and recommend they stay home if they are ill. Have you informed your customers about any changes in your hours or policies?
3. **Consider Alternative Delivery** – Some markets are taking this opportunity to launch pre-ordering and electronic payment options to enable social distancing at market. Some markets are moving to a drive-through pickup option.
4. **Reinforce the Health Benefits of Fruits and Vegetables** – We're fortunate to have so many growers who do a great job with storage crops and winter production. This means our community has access to fresh fruits and vegetables that are important to their immune systems at this time of need. Be sure to promote the nutritional value of your products! But, keep in mind that promotion of your products should be within reason. Avoid making overly broad or unsupported health claims. Fresh produce contains many minerals and nutrients important for immune health which may reduce the severity and duration of an illness. **Fun Fact:** Pound for pound, that storage cabbage in your cooler has as nearly as much vitamin C as oranges.

## New Searchable Midwest Vegetable Production Guide

(Dan Egel, [egel@purdue.edu](mailto:egel@purdue.edu), (812) 886-0198)

One concern for every vegetable grower is finding solutions to pest management problems quickly. An example would be anthracnose of watermelon. You recognize the disease or you have had it officially diagnosed. Or perhaps you anticipate this disease every year and want to start applications of a fungicide early in the season. Where do you find recommended products and application details?

For years, vegetable growers have reached for the *Midwest Vegetable Guide for Commercial Growers* (known in Indiana as the ID-56). This annually updated guide includes disease, insect and weed recommendations as well as detailed info about such subjects as food safety, soil fertility and organic production. Starting in 2020, growers may choose to reach for their phones instead of a hard copy. While the hard copy is still available at the same \$15 price, the guide is now searchable from data phones, tablets, laptops and desktop computers. Read on for details.

To use the new online version of the ID-56, go to the URL [mwveguide.org](http://mwveguide.org). There you will find a choice of 'pick my crop', 'pick my pest' or 'pick my control measure' (Figure 1). Most searches will start with crop. For example, type in watermelon or select watermelon from the drop-down menu. Then click next.

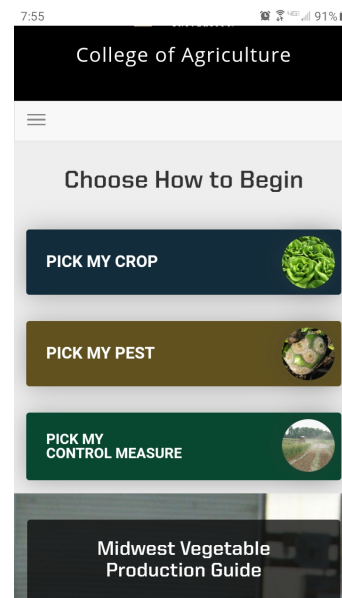


Figure 1: When viewed on a data phone, the home screen to the Midwest Vegetable Production Guide will look like this.

You will then be asked to choose a pest. Either type in anthracnose or choose it from the drop-down menu.

When you click next, you will be given a list of pest control measures. The screen shot below is a partial list.

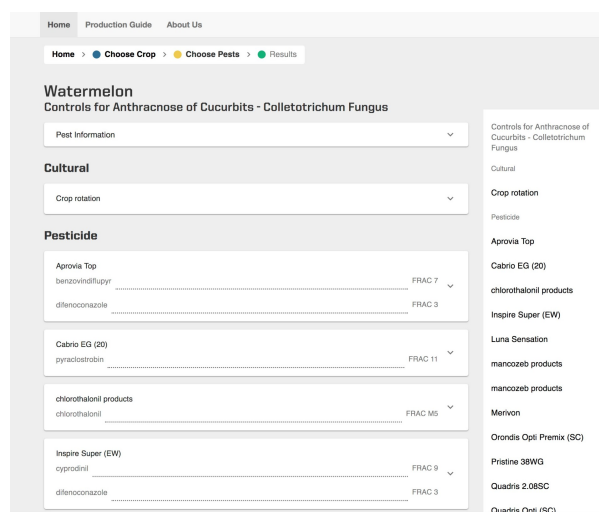


Figure 2: Screen shot of partial list of controls for anthracnose of watermelon from the MW Vegetable Production Guide.

Note by clicking the pest information or product information boxes, they will expand. When expanded, the pest information includes important biology information. The Cabrio information, when expanded, includes application rates, restricted-entry interval (REI) and pre-harvest interval (PHI).

Quadris 2.085C azoxystrobin	FRAC 11
Quadris Opti (SC) azoxystrobin	FRAC 11
chlorothalonil	FRAC M5
Quadris Top (SC) azoxystrobin	FRAC 11
difenoconazole	FRAC 3
Tanos (DF) cymoxanil	FRAC 27
famoxadone	FRAC 11
Topsin (70WP) thiophanate-methyl	FRAC 1
Topsin 4.5FL thiophanate-methyl	FRAC 1
Zingl chlorothalonil	FRAC M5
zoxamide	FRAC 22

**Export Options**

EXPORT AS .PDF

Figure 3: Screen shot of partial list of products showing the 'EXPORT TO PDF' button.

When the orange 'show more' button is clicked, additional information about Cabrio is shown such as greenhouse use and bee precaution information.

At the completion of each search, an orange button at the bottom of screen will appear that says 'EXPORT AS .PDF'. The resulting PDF can be saved and printed (Figure 3).

Many more types of searches can be conducted. For example, it is possible to search by multiple pests for the same crop or enter a product plus crops to find possible uses of a product.

If you have further questions, please contact Dan Egel, (812) 886-0198; [egel@purdue.edu](mailto:egel@purdue.edu)

We thank the following organizations for financial help: a grant from the North-Central IPM Center provided to the Great Lakes Vegetable Working Group; a grant from the MSU Extension Agriculture and Agribusiness Institute Project GREEN Research Fund; a gift from the Michigan Vegetable Council; a gift from the Indiana Vegetable Growers Association; a gift from the Kansas Vegetable Growers. In addition, we thank the following individuals for entering information into the new format: Elizabeth Maynard, Marissa Schuh, Michael Reinke.

## Overwintering Pests

(Laura Ingwell, [lingwell@purdue.edu](mailto:lingwell@purdue.edu), (765) 494-6167)

As you prepare to fill your high tunnels and greenhouses or even field plots, take a close peek at the weeds in your area. There can be some sneaky pests that have overwintered on the plant material in and around your farm. In high tunnels in particular, I have recently found overwintering populations of two spotted spider mites and a variety of aphid species. Before you put those tender little transplants into these environments, be sure to get rid of the straggling weeds and insects. Remove the plant material, move it away from your growing space, and allow some down time before you move the new crops in. Aphids and mites can not survive without living plant material. They will not overwinter in the soil, they need to be feeding on active growing plant material.

Happy growing season!



Figure 1. Bird cherry oat aphid and two spotted spider mites overwintering on weeds.



Figure 2. An aphid that has been parasitized by a wasp. The wasp will emerge from the swollen body.



Figure 3. Two spotted sider mite adults and eggs.



Figure 4. A snapshot of the weeds hosting these and other insects in the high tunnel.





Figure 5. Henbit infested with aphids and a syrphid fly larvae (predator). Photo by John Obermeyer.

## The Utility of Yellow Sticky Cards

(Laura Ingwell, [lingwell@purdue.edu](mailto:lingwell@purdue.edu), (765) 494-6167)

While not a new technology, I thought it timely to talk about the use of yellow sticky cards as a monitoring tool. These cards will not manage insect pests in your crops, but can be a very valuable monitoring tool in high tunnels and greenhouses. Many of the insect pests that migrate into our crops move on wind currents (aphids and mites for example) or the people working in these spaces. Strategically placing sticky cards around the borders of a planting, where they can intercept wind currents, or along high traffic areas, is a great strategy for monitoring early signs of infestations.

### Considerations:

1. The industry has come to the consensus that yellow sticky cards are the best tool. There is no need to invest in cards with other colors.
2. Some cards also contain pheromones, an added chemical to attract a particular pest. For general monitoring this is not necessary. For targeting some specific pests, they can increase the catch (apple maggot fruit fly for example).
3. Consider the pest you are monitoring for in terms of placement. Most pests are detected best with a vertical placement of the card, at canopy height. If you are targeting fungus gnats, which emerge from the growing media, place them horizontally over the media.
4. Look at the cards on a weekly basis, at least. The more often you check them, the more time you have to react to what you are seeing.
5. Start the season with fresh cards and replace them often.

Identifying the critters that get stuck to sticky cards can be challenging. If you are ever in doubt, send the card or pictures to the Purdue [Plant and Pest Diagnostic Laboratory](#).

To reiterate, yellow sticky cards are not a management tool, but rather a very handy monitoring tool. With frequent checking, you can detect pest infestations early, prior to observable populations or symptoms on the host plant. This can aid you in management decisions and provide time to implement biological control, which can be more effective when pest populations are low.

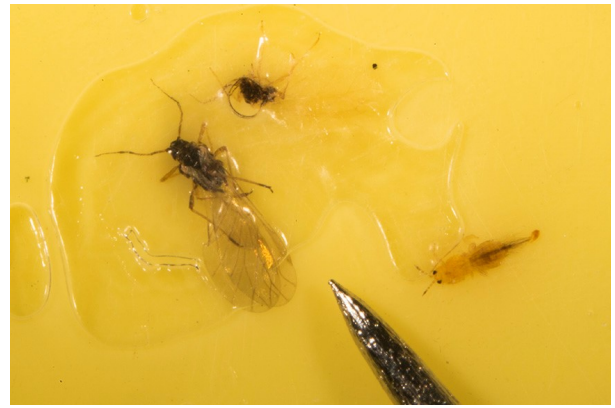


Figure 1. Winged aphids and thrips on a yellow sticky card. Photo by John Obermeyer.



Figure 2. Spotted wing drosophila on a yellow sticky card. Photo by John Obermeyer.



Figure 3. Corn rootworm adults on yellow sticky card. Photo by John Obermeyer.

## Vegetable Transplant Care Translates into Early Yield Differences

(Liz Maynard, [emaynard@purdue.edu](mailto:emaynard@purdue.edu), (219) 548-3674), (Wenjing Guan, [guan40@purdue.edu](mailto:guan40@purdue.edu), (812) 886-0198) & (Petrus Langenhoven, [plangenh@purdue.edu](mailto:plangenh@purdue.edu), (765) 496-7955)

We know from published research that the health and quality of a vegetable transplant affects how it will establish, grow, and yield in the field. Our recent work comparing tomato and cucurbit seedling growth in different organic growing media and with and without added fertilizer has provided some good examples of this. See [Vegetable Crop Hotline](#)

issues 653 and 668 for descriptions of media. Tomatoes flowered and set fruit earlier, and had greater early yield when the seedlings were grown in a media that sustained good growth (Figure 1), or if in a media with low fertility but were provided additional nutrients from solid or liquid fertilizer (Figure 2).

What does this mean for transplant producers? Plan to provide nutrients the seedlings need, either pre-mixed in the growing media or by adding fertilizer. Among the media for organic production that we tested, additional fertilizer was most beneficial to those media that did not contain compost. If the seedlings run out of nutrients during production, provide more –but take time to verify that lack of nutrients is the problem, and not an issue with media pH, root disease, or other problems. A variety of nutrient sources are suitable for transplants. Choose one that works with the production system, water, and growing media in your operation. Below are details about what we used in the trials, but that information is not meant to be a recommendation.

The fertilizers used in these trials were either mixed into the growing media before seeding, spread as a top-dressing as seedlings emerged and after a few weeks of growth, or applied periodically with irrigation. We used just one rate for each fertilizer and so can't say for sure what the optimum rate would be for each growing medium. We did see increases in media salinity with fertilizer, and that was associated with delayed germination in some media, suggesting that the rates we used were too high. The dry fertilizer was Sustane 5-2-4, used at a rate of 25 lb./cu.yd. I would not recommend incorporating this much prior to seeding for transplant production. Top-dressing half that rate after emergence seemed to be ok if evenly spread across the flats, but I am not ready to recommend that. The liquid was Envirokure 3-2-3, mixed to a concentration of 500 ppm nitrogen (N) (2.25. fl. oz. per gallon of water), and applied several times during production. We did observe some leaf burn if solution was not rinsed off leaves, and this product increased media pH. Typically fertilizer solutions for transplants contain 75 to 200 ppm N, so I expect a lower rate could be used with success.

These results are a reminder that paying attention to transplants can pay off later in the season, especially when early yield is important. Managing transplant growth is a balancing act to achieve a plant that is growing well with a well-developed root system: not so large or flimsy that it will get damaged in the transplanting process, and not so small, restricted in growth, or hardened off that its development in the field delays yield. High nitrogen fertilization and increasing moisture amounts promote top growth over root growth. The ideal transplant can look different in terms of size, developmental stage, and degree of hardening, depending on the production system. In any situation providing seedlings with adequate nutrients is important for a productive transplant.

Please let us know if you find this article helpful! Respond to a quick survey at [https://purdue.ca1.qualtrics.com/jfe/form/SV\\_54rCQ6xW3w7ZcXz](https://purdue.ca1.qualtrics.com/jfe/form/SV_54rCQ6xW3w7ZcXz)

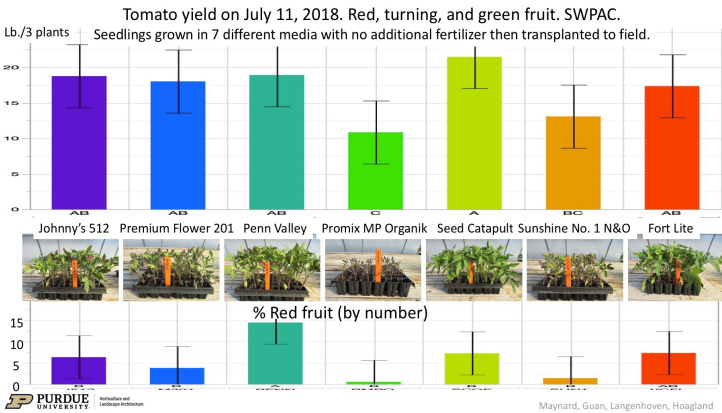


Figure 1. Early tomato fruit harvest and percent of fruit that are red from plants grown in seven different growing media and then transplanted to the field with no additional fertilizer. Yield in lb./3 plants includes all red, green, and turning fruit on plants. Bars with labeled with the same letter do not differ significantly based on Fisher's protected LSD. Error bars represent ± 95% confidence interval. Photos by W. Guan.

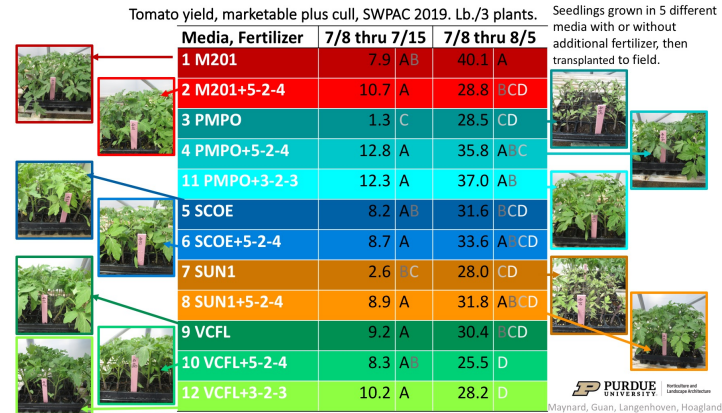


Figure 2. Tomato yield (marketable plus cull fruit) for plants grown in five different growing media with or without additional fertilizer, and then transplanted to the field. Growing Media: M201=Premium Flower 201. PMPO=Promix MP Organik. SCOE=Seed Catapult. SUN1=Sunshine No. 1 N&O. VCFL=Fort Lite. Fertilizer: 5-2-4=Sustane 5-2-4. 3-2-3=Envirokure 3-2-3. Means within a column followed by the same letter do not differ significantly based on Fisher's protected LSD. Photos by W. Guan.

## Proper Watering Prevents Problems with Fungus Gnats

(Clifford Sadof, csador@purdue.edu, (765) 494-5983)

When houseplants and garden seedlings are kept too wet, roots can rot and the fungus that grows in the soil can feed fungus gnats. For houseplants, fungus gnats are usually just a nuisance. When growing seedlings or in a greenhouse adults can spread fungal diseases to flowers. Larvae can spread fungal diseases when they feed on roots.





Figure 1. Adult gnats are attracted to fungus in the soil. Photo by Whitney Cranshaw, Colorado State University, Bugwood.org.



Figure 2. Eggs laid by fungus gnats hatch into long translucent maggots with black heads that thrive in moist soil.



Figure 3. When abundant, larvae will feed on plant roots and can spread disease. Photo by Penn State University Dept Plant Pathology Bugwood.org.

*Where to fungus gnats come from?* Fungus gnats can get in the home when plants are brought in from outside, or when transplanting plants with infested potting soil.

*How do you manage fungus gnats?* Avoid overwatering your plants. Plants need less water in cloudy days in winter and spring. As such, it is easy to overwater plants if you water by the calendar. It is better to check your plants to see if they need water by touching the surface to see if it is dry. After you water, do not let plants sit in a pan of water. Letting the soil dry between watering will reduce fungus and the rate of population growth. Insecticides are rarely needed for houseplants. Numerous options are available for greenhouse professionals.

Reference for Professionals

Massachusetts Greenhouse Pest Guide  
<https://greenhousepestguide.umass.edu>

## Cladosporium of Spinach

(Dan Egel, [egel@purdue.edu](mailto:egel@purdue.edu), (812) 886-0198)

While many growers use high tunnels to extend the growing period for warm-season crops such as tomatoes or cucumbers, it is also possible to grow cool-season crops such as spinach well into winter. The winter over much of Indiana has been rather mild; spinach and other cool-season crops should be doing well. However, disease and insect pests may be a problem.

In the first week of March, I observed leaf spot on spinach growing in a high tunnel (Figure 1). Note that the lesions occur on a cluster of plants indicating possible spread of a fungus. A closer look shows that the center of the lesion may be dark with fungal sporulation (Figure 2). I was able to confirm the disease as *Cladosporium* leaf spot of spinach.



Figure 1: Lesions of *Cladosporium* of spinach on a cluster of plants in a high tunnel.



Figure 2: Lesions of *Cladosporium* of spinach are often dark from the growth of the pathogen.

Little is known about the biology of the fungal pathogen. However, the

disease is favored by rainy or at least moist weather. The pathogen may be seedborne. I have found no information about the temperature at which the disease is favored; I was surprised by the presence of the disease when it was snowing outside the high tunnel. However, it is possible that the lesions caused by the disease were present on the leaves and yet the pathogen may not have been active. *Cladosporium* probably survives for a period in crop residue; therefore, crop rotation should help to reduce disease severity.

There is also not much information about possible control measures. Use seed that has been tested for *Cladosporium* and other pathogens and/or treat seed in hot water or bleach. Overhead irrigation may increase the severity of the disease. The Northeast Vegetable Guide lists Lifegard® at first true leaf stage or after thinning. Many copper products are labeled for spinach however, I can find no copper products that list *Cladosporium* leaf spot. Plus, many copper products warn that leaves may be spotted by copper. Lifegard® is listed by the Organic Materials Review Institute (OMRI) and therefore may be certified in most organic schemes. Some copper products may be OK to use organically.

It is not clear how important *Cladosporium* leaf spot will be in spinach production in Indiana.

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## A Look at the New Closed Transfer System for Paraquat-Containing Herbicides

(Stephen Meyers, [slmeyers@purdue.edu](mailto:slmeyers@purdue.edu), (765) 496-6540)

In the October 2019 issue of the *Vegetable Crops Hotline*, I referenced the new regulatory changes to herbicides containing the active ingredient paraquat. One of the new requirements is for closed system packaging. To quote the Environmental Protection Agency (EPA):

“New closed-system packaging (is) designed to prevent transfer or removal of the pesticide except directly into proper application equipment. This will prevent spills, mixing or pouring the pesticide into other containers or other actions that could lead to paraquat exposure.”

Earlier this month I had a chance to see one of the ways chemical companies are complying with the new regulation.

At the Weed Science Society of American Annual Meeting, Syngenta presented their closed packaging and transfer system. It contains a closed system cap that cannot be removed or opened by hand (Figures 1 and 2). In order to remove herbicide from the container, the cap must be connected to an adaptor (Figure 3) which can be attached to the mix bowl, eductor tank, or spray tank. The adaptor will be distributed through chemical company representatives and chemical retailers.



Figure 1. A closed packaging and transfer system.



Figure 2. A closed packaging and transfer system.



Figure 3. An adaptor can be attached to the mix bowl, eductor tank, or spray tank



The process of using the new closed transfer system:

- Remove the dust cap (Figure 1).
- Invert the jug and place it onto the adapter (Figure 4).
- Rotate the jug clockwise to start the flow of herbicide.
- Regulate flow by how much the jug is turned: counter-clockwise to slow flow, clockwise to speed it up.
- Once the desired amount of herbicide has been dispensed, turn the jug counter-clockwise and remove it from the adapter.
- When the entire contents of the jug have been emptied into a tank, the jug can be rinsed by attaching a hose to the rinse port on the side of the adapter. The adapter is designed to prevent back-flow.



Figure 4. Invert the jug and place it onto the adapter

The side of the jug has volume marks that can be read in both the upright and inverted positions (Figures 5 and 6).



Figure 5. The side of the jug has volume marks that can be read in both the upright and inverted positions



Figure 6. The side of the jug has volume marks that can be read in both the upright and inverted positions

It is expected that all non-bulk paraquat containers less than 120 gallons will be in closed system packaging by fall of 2020. Start planning now to be prepared to implement the new closed transfer systems into your farm operation.

To see a video demonstration of the closed transfer system, feel free to visit the Syngenta webpage at:

<http://www.syngenta-us.com/herbicides/gramoxone-sl-3.0>

## Watermelon Fertility and Irrigation Management

(Wenjing Guan, [guan40@purdue.edu](mailto:guan40@purdue.edu), (812) 886-0198)

Dear Watermelon Growers,

At our past winter technical meeting, several growers suggested fertilizer recommendations need to be reevaluated for watermelon production in our area. This suggestion is timely and critical. We plan to initiate a project for the 2020 watermelon production season to reevaluate the fertility and irrigation practices used in Indiana. We will identify 7-10 watermelon fields with different irrigation and fertility practices. We will collect soil samples and plant tissue samples at different crop growth stages. Lab results will be shared with growers immediately after they are received. Growers who wish to closely watch the nutritional status of the watermelon plants may want to take this free opportunity. As part of this project, we will collect information about fertilizer and irrigation application, and approximate yield of the evaluating field from growers. Summarized results of this project will be shared at the next Southwest Indiana Vegetable and Melon Growers meeting with approval from participating growers. No growers' names or the location of the field will be disclosed.

If you are interested in participating this project, please contact Wenjing Guan at [guan40@purdue.edu](mailto:guan40@purdue.edu) or call Southwest Purdue Agricultural Center Office (812) 886-0198 by April 15, and let us know your answer for the following questions:

- 1. Location of the field (for example, Oaktown, Decker, etc. )**
- 2. Which of the production practices best describe the field(s). If you have multiple fields you would like to participate in this study, please indicate all that apply.**



- A. Plastic covered beds **without** irrigation; fertilizers only applied preplantly and broadcast
- B. Plastic covered beds with **drip irrigation**; fertilizers only applied preplantly and broadcast
- C. Plastic covered beds with **central pivot** irrigation; fertilizers only applied preplantly and broadcast
- D. Plastic covered beds with drip irrigation; fertilizers are preplant and **partially** applied through **fertigation**
- E. Plastic covered beds with drip irrigation; fertilizers are **exclusively** applied through **fertigation**
- F. Fertilizers are banded applied preplantly
- G. Sidedress fertilizers may be applied
- H. Foliar fertilizers may be applied

### 3. What is the best way to contact you?

Thank you very much for your interest in participating in this study. Please do not hesitate to contact Wenjing Guan ([guan40@purdue.edu](mailto:guan40@purdue.edu)) if you have any questions.

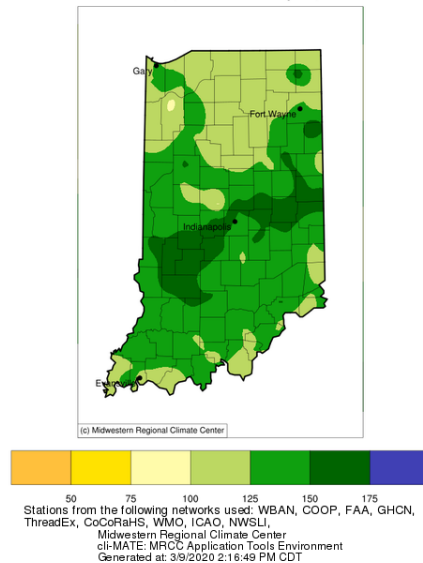
## The Winter in Review with a Spring Outlook

(Beth Hall, [hall556@purdue.edu](mailto:hall556@purdue.edu))

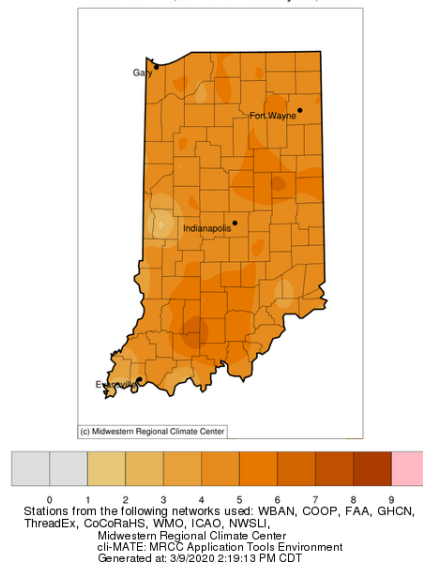
Meteorological winter (December-February) is finally over and we can start looking forward to spring. Across Indiana, winter brought above average precipitation (*Figure 1*), though below average snowfall. The temperatures were slightly above normal (2°F-6°F; *Figure 2*) with no record-breaking cold periods. Since there were so few colder-than-normal periods, the overwintering of pests and therefore increased pest populations will be a concern for this 2020 growing season.

Forecasts for the next several weeks are showing high confidence for above-normal precipitation and temperature. This pattern is currently projected to continue throughout the March through May 3-month period, and there is strong consensus across the climate community that the rain will not be as impactful as it was in 2019. Computer models are providing guidance that around 2 inches more than average are likely in southern Indiana decreasing to only one-half inch more than average in the northern counties. The 1981-2010 climate normal for March-May ranges from 10 inches (north) to 15 inches (south) across the state. Therefore, these projected outlooks are predicting precipitation to range from 105-113 percent of mean. For comparison, the 2019 March-May period had precipitation that ranged 125-175 percent of mean.

Accumulated Precipitation (in): Percent of 1981-2010 Normals  
December 01, 2019 to February 29, 2020



Average Temperature (°F): Departure from 1981-2010 Normals  
December 01, 2019 to February 29, 2020



## Defining Your Dreams

(Renee Wiatt, [reneewiatt@purdue.edu](mailto:reneewiatt@purdue.edu)) & (Maria Marshall, [mimarsha@purdue.edu](mailto:mimarsha@purdue.edu))

"If you don't know where you are going, you'll end up someplace else."  
– Yogi Berra

No matter what your business does or who it serves, the business (and its employees) need goals and objectives. Yogi Berra sums it up best – you need to have a target or you'll never make it there. Goals are general and can help to shape where you are going, where objectives should be concise and explain how you will get there. Action plans can subsequently be established to break down each objective into small, manageable projects (normally taking no longer than a week each to complete). Goals and objectives give you something to work towards, complete with timelines and metrics. When defining goals and objectives, make sure that they are SMART – **s**mart, **m**easurable, **a**ction-oriented, **r**ealistic, and **t**imely. You can set goals, objectives, action plans, and associated timelines and metrics related to personal matters, business matters, professional matters, management succession, and ownership succession.

**Example: Differentiating between smart and non-smart**

## goals/objectives

Personal non-smart goal: I want to lose weight.

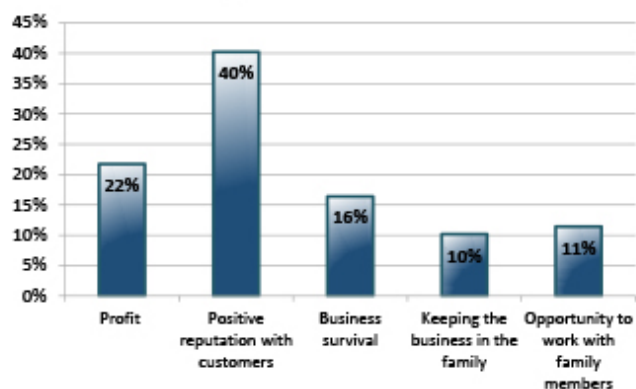
Personal smart goal: I will lose 20 pounds by the end of the year via eating 5 salads a week and working out for 30 minutes a day, 3 times a week.

Professional non-smart goal: I will grow our business.

Professional smart goal: I will grow the business by acquiring 3 new clients in the next 2 months, by maintaining the current client base, asking clients for referrals, and increasing the business' social media presence.

Discussing goals takes time; the first goals discussion that you have may just be a fact-finding mission. Be realistic with your expectations; do not expect everyone in the business to have aligned goals. Some individuals may focus more on financial goals such as profit and others may focus on non-financial goals such as family harmony and keeping the business in the family. Farm and family businesses who were interviewed in the 2012 Family Business Succession Survey (FBSS) found that between businesses, the primary goal of the business varied. In Graph 1, it is represented that 40% of businesses responded that a positive reputation with customers was their primary business goal. It is thought that all businesses are profit maximizers, but the graph represents that non-financial goals trump financial goals among farm family businesses.

**Primary Goal of the Business**



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Even though different ideas of primary business goals may emerge though different perspectives in the farm and family business, try to come to a consensus on 4-5 goals for the business. Be sure to identify the time required to accomplish each task and objective. Set deadlines, both for short-term and long-term goals and place them in order of nearest deadline to stay on track. Tracking your progress can help you to maintain your momentum. Consider using a simple calendar, app on your phone, or reminders on your computer to stay on track. Remember, "If you don't know where you are going, you'll end up someplace else."

References:

Lusk, C. and Marshall, M.I. 2005. How to Use Goals to Achieve Business Success: First Steps for New Entrepreneurs. *Purdue Extension Publication ID-726*. Purdue University.

[https://ag.purdue.edu/agecon/fambiz/Documents/how\\_to\\_use\\_goals\\_achieve\\_business\\_success.pdf](https://ag.purdue.edu/agecon/fambiz/Documents/how_to_use_goals_achieve_business_success.pdf).

Marshall, M.I. 2004. Defining Your Business Through Goals and Objectives: First Steps for New Entrepreneurs. *Purdue Extension Publication ID-727*. Purdue University.

[https://ag.purdue.edu/agecon/fambiz/Documents/defining\\_your\\_businesses\\_through\\_goals\\_and\\_objectives.pdf](https://ag.purdue.edu/agecon/fambiz/Documents/defining_your_businesses_through_goals_and_objectives.pdf).

Sethi, R. (no date). How to set SMART Goals (and win BIG this year). Accessed at:

<https://www.iwillteachyoutoberich.com/blog/smart-objectives/> on January 2