

## Southwest Michigan Field Crops Updates August 1, 2021

Here are updates from the MSU Extension Field Crops team in Southwest Michigan. If you have any items you would like me to include in future email updates—whether events you want others to know about or topics you would like to have addressed—please send me an email or call the office.

### August 17 Field Day Update



The MSU Extension SW MI On-Farm Research Field Day is set for Tuesday, Aug. 17<sup>th</sup> from 8am-1pm. The main focus of the event is to highlight on-farm research projects being conducted in SW MI and provide any early data. However, we will also take this opportunity to present other timely information from MSU Extension educators and specialists.

The event will be held at the Covered Bridge Farm County Park building just north of Centreville—if you’ve never been inside the facility, you’ll want to come and see the great job parks and rec did in renovating it. Cost is free due to generous funding from the Michigan Soybean Promotion Committee, but **pre-registration is required by Friday, Aug. 13** to reserve a meal (pulled pork sandwiches and grilled potatoes). Walk-ins will be accepted but lunch is not guaranteed. We are able to offer 2 RUP credits, 3 CCA credits and MAEAP Phase I credit. **Last-minute addition:** Dr. Erin Burns will join us to share about her research in the region with potato, alfalfa and hemp and answer your weed control questions. **Late-Breaking News:** Guidance was just released by MSU president Stanley in light of recent CDC recommendations regarding masks being worn indoors. We will likely have to either hold the event outdoors or mask up if we have to go indoors, but stay tuned as we get closer to the event for more details.

8:00 AM Check-in and coffee/doughnuts

Welcome and Intro

Weather Effects on 2021 Soybeans and Lessons Learned

Soybean Agronomic Management

All Your Disease Questions Answered

Weed Control Research

On-Farm Hemp Research

In-field Sensor Monitoring to Improve Irrigation Water Use Efficiency

End-of-Season Irrigation Considerations

MAEAP - Key Points

12:30 PM Credits, Lunch and Adjourn

Mike Staton

Manni Singh

Marty Chilvers

Erin Burns

Eric Anderson

Younsuk Dong

Lyndon Kelley

Mike Censke

## Organic vs Conventional Crop Rotation Profitability

Earlier this summer, Purdue University's ag economists Michael Langemeier and Xiaoyi Fang produced some resources to help folks considering transitioning a portion of their operation to organic production. These included a summative article, "[Comparison of Conventional and Organic Crop Rotations](#)", and [an Excel spreadsheet](#) that can be modified to help growers estimate profitability of each system. According to their research, organic corn, soybean and wheat prices were approximately double the corresponding prices for their conventional counterparts and the crop yield drags were 32, 33, and 24% for organic corn, soybeans and wheat, respectively. "Combining crop prices, crop yields, government payments, crop insurance indemnity payments, and miscellaneous revenue for both conventional and organic crops, gross revenue for the organic crops was higher, with the most significant difference associated with corn."

Here are the "bookend" paragraphs to the article, but you can click on the link above for the full article.

Due to continued increases in demand for certified organic grains, crop farmers that have transitioned from conventional to certified organic grains report higher net returns per acre (McBride et al., 2015; Greene et al., 2017; Greene and Vilorio, 2018; Center for Farm Financial Management, 2020). Despite this, certified organic land accounts for less than 2 percent of U.S. farmland (U.S. Agricultural Census, 2017). Information pertaining to the relative profitability of conventional and organic production is often lacking. This article compares the long-run net returns to land of conventional corn/soybean and corn/soybean/wheat crop rotations to that of an organic corn/soybean/wheat rotation. Ten-year enterprise budgets for each crop rotation were developed so that we could capture the net returns of both the transition years and organic production years for the organic crop rotation.

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An analysis of this sort requires a lot of assumptions. Producers considering transitioning a portion of their acres to certified organic crop production should carefully examine the sensitivity of net returns using alternative price, yield, and cost assumptions. It is also important to recognize that the crops grown, manure used, and tillage practices vary substantially among organic crop farms. Furthermore, the FINBIN data shows a much wider difference in enterprise net returns among organic crop farms than their conventional counterparts. This wider difference is likely due to the difficulty of managing an organic crop system, and the learning curve associated with growing organic crops.

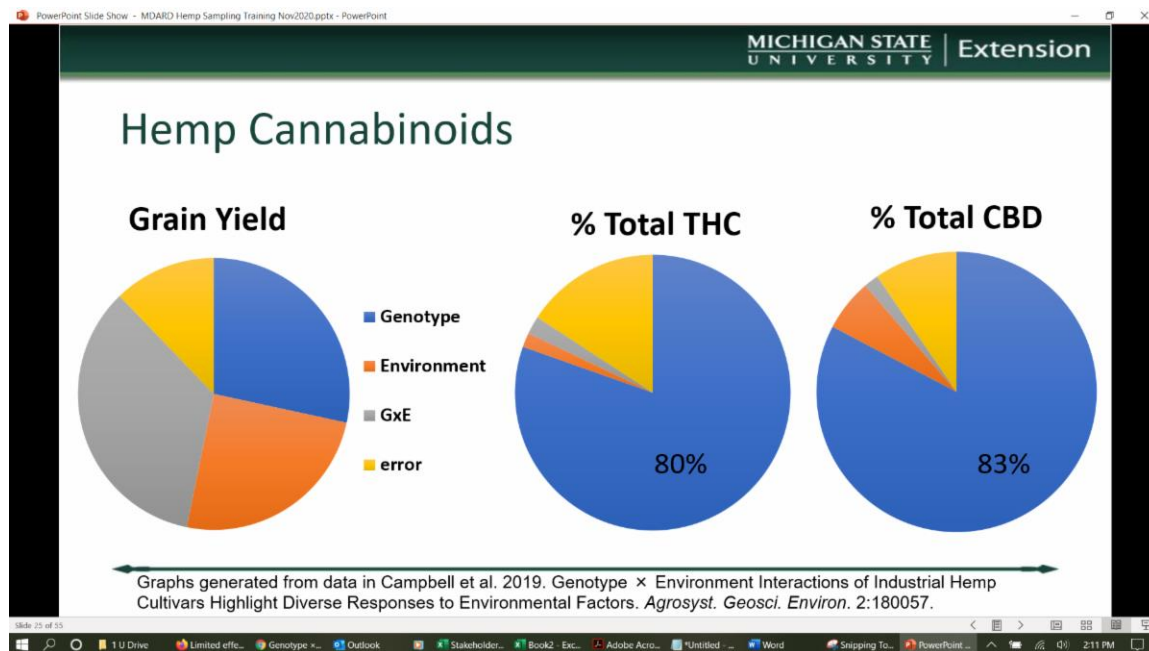
## What Causes a Hemp Crop to Go Hot?

When I first started learning about hemp a couple of years ago, there was much talk about different management practices that would make a hemp crop go "hot"—i.e., for the THC level to increase above the legal 0.3% limit. Many talked about "the right" fertilizers, or the right rates, or the right timing with some saying one thing and some another. Others said the key was to not let the plants get heat- or drought-stressed. And, since a non-compliant (hot) crop had to be destroyed by law, the pressure was on for producers to figure out how to grow the crop while keeping THC at legal levels.

Although [some of the legal restrictions have eased this year](#) (e.g. ability to mediate a hot crop by mixing with batches that were well-below the legal limit, similar to what is done with grains and mycotoxin levels), hemp growers are still concerned about keeping THC levels low, particularly for a crop being grown for CBD or other cannabinoids. [Grain and fiber varieties don't produce high levels of cannabinoids and generally are not problematic with respect to total  $\Delta 9$ -THC levels.] Two recent university studies attempted to measure how much of cannabinoid (both THC and CBD) production is controlled by genetics and to what extent it is affected by environmental factors.

[One paper from Colorado State](#) by Campbell et al. (2019) looked at grain and cannabinoid production in primarily grain varieties while [another study from Cornell](#) by Toth et al. (2021) focused on high-CBD varieties. The study from Colorado State showed that 80+% of cannabinoid production could be explained by genetic differences while less than 5% could be contributed to environment (management). The Cornell researchers introduced five types of stress during flowering (flooding, growth regulator, powdery mildew, herbicide, and physical wounding) and found that “there was no evidence that any of these stresses caused THC concentration or the ratio of THC to CBD to increase at harvest.”

The moral of the story: getting the genetics right is of utmost importance in producing a successful hemp crop. Although management is important—particularly knowing when to harvest as both CBD and THC production continue to increase the longer harvest is delayed—finding the best cultivars for your purposes that are well-adapted to your growing region is the key.

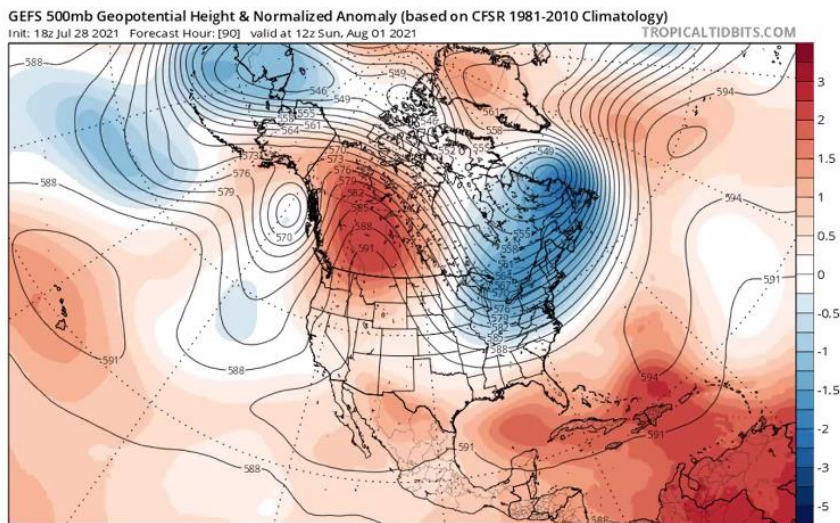


## Weather and Crop/Pest Update

### Weather

Temperatures last week were only a few degrees warmer than normal in the far west and central regions in the state and close to normal for the rest of us. We are still nearly 100 growing degree days (base 50) ahead of normal as measured since May 1. A deep upper-air trough above eastern Canada and the Great Lakes region brought cooler-than-normal temperatures to Michigan over the weekend with highs in the mid- to upper-70's. The forecasted reference evapotranspiration (FRET) for the coming week is normal for this time of year at roughly 1.25 inches of water. However, the ridge that is currently over western Canada and the Pacific Northwest will be moving our way toward the end of the week, and the 6-10 and 8-14 day forecasts predict warmer-than-normal temperatures for the second week of August.

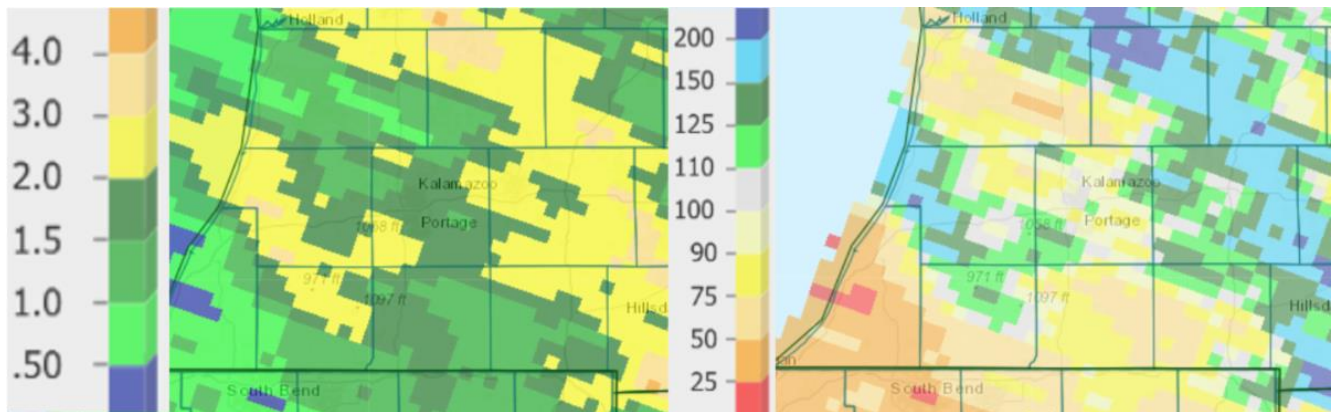
# Trouching Deepens Across Region Leading to Stretch of Cooler than Normal Weather



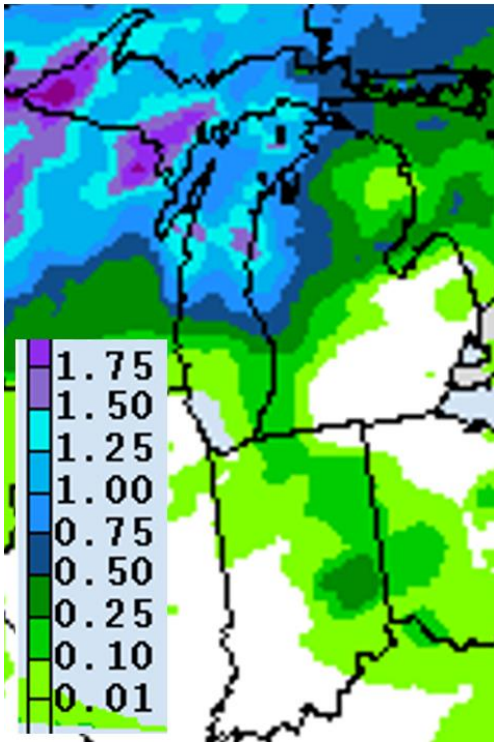
SUN 8AM

The upper-air troughing feature over the Great Lakes region this past Sunday morning. The ridge in western Canada with associated warm temperatures will moderate and make its way to Michigan toward the end of this week. Graphic courtesy of MSU Extension agricultural climatologist Jeff Andresen.

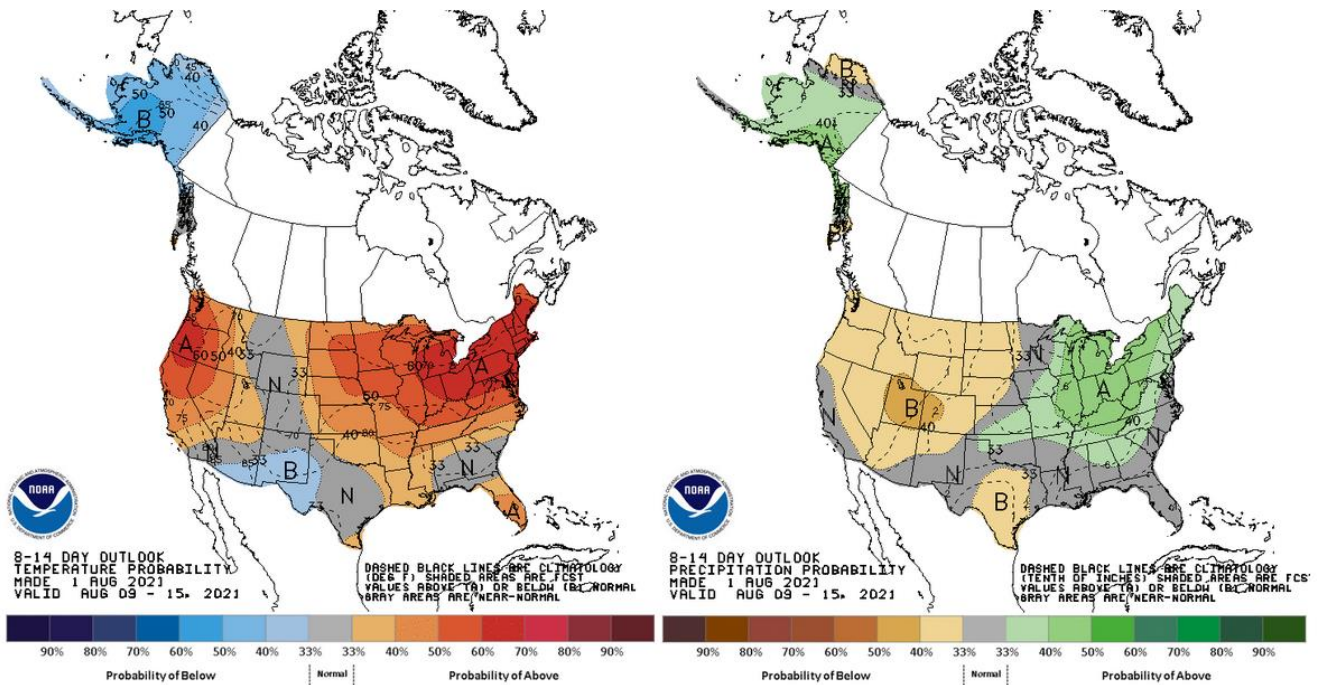
Precipitation this past month ranged from well below normal in some parts of the region to as much as two times the normal amount. Soil moisture levels are near normal on the whole (as measured by satellite) but will obviously be affected by soil type and field-specific rainfall totals. There is no rainfall forecasted for August 2-9 although the extended forecast for next week includes small chances of rain. The 6-10 and 8-14 day outlooks call for above-normal precipitation for the middle of August.



Precipitation totals (left) and percent of normal (right) for the past 14 days as of August 2.



Precipitation forecast for August 2-9

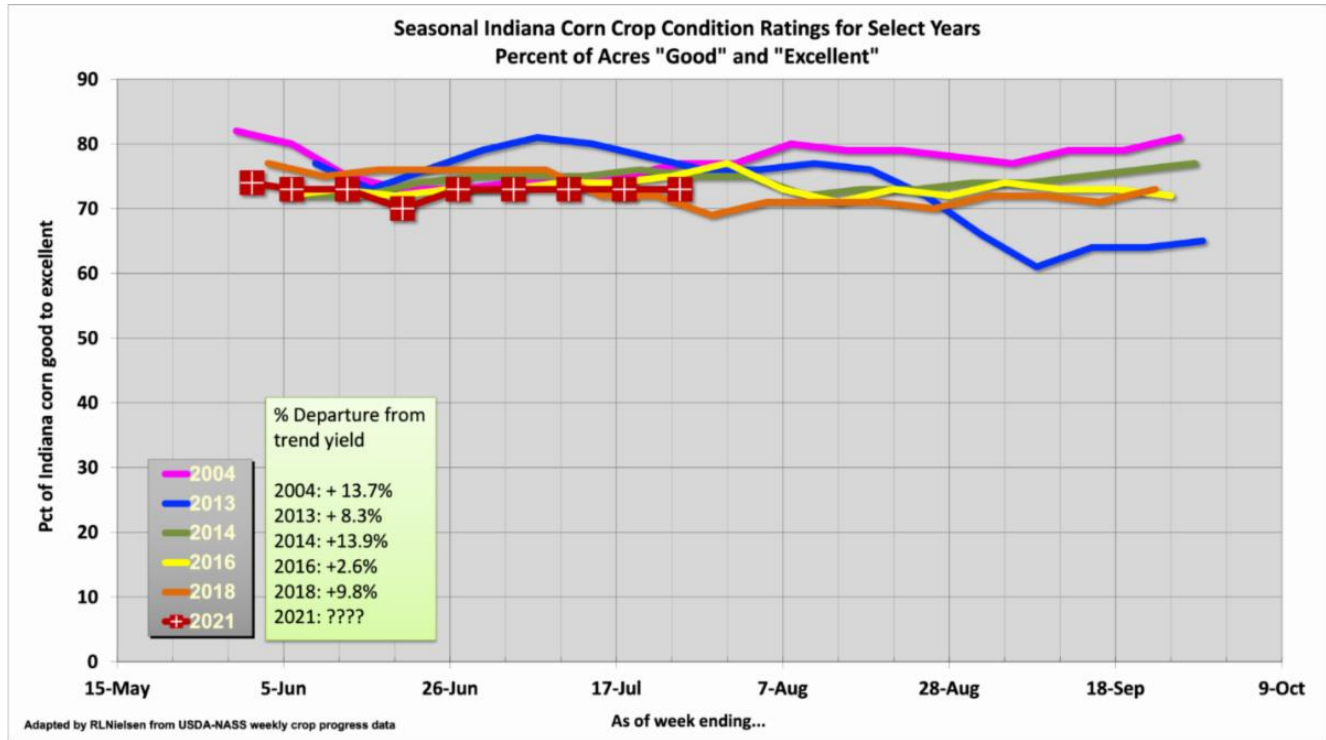


The 8-14 day outlook (Aug 9-15) for temperature (left) and precipitation (right). The 6-10 day outlook is essentially the same.

### Crops and Pests

**Corn** in the region ranges from pre-tassel to R2 (blister). Early-planted **soybean** has reached full pod (R4, 3/4-inch pod at one of top four nodes) while most fields are still in beginning pod stage (R3, 3/16-inch pod at one of top four nodes). Both crops will require roughly 1.5 inches of water this

coming week. With the variable rainfall totals over the region for the last couple of weeks, soil moisture levels can be quite different from field to field. We have seen signs of moisture stress in both corn and soybeans in some locations this past week. Some fields will be undergoing the first significant moisture stress that they have seen since mid-June. As these conditions change, growers may want to keep an eye out for our dry weather pests to begin to show up in fields. Although we have not seen significant numbers of spider mites and soybean aphids this season, dryer conditions can help provide them a foothold for establishment.

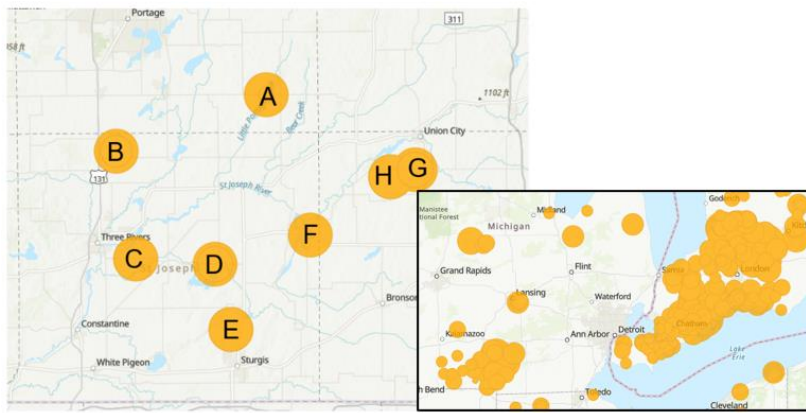


Seasonal corn crop condition ratings of “good” and “excellent” for select years in Indiana. Graphic courtesy of Bob Nielsen, Purdue University. Michigan’s ratings were 82% good or excellent as of July 27—this could be a good year for corn yields.

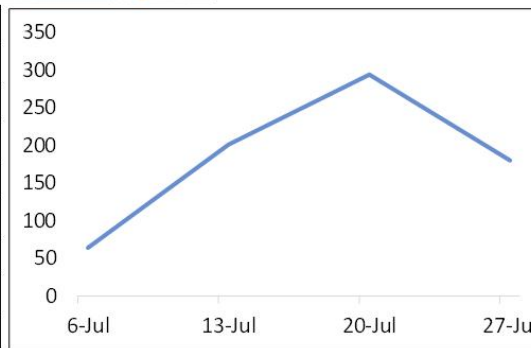
**Western bean cutworm (WBC)** moth counts were still high last week. Without knowing what the coming weeks will bring, it appears the peak flight in our region may have been the third week of July. For those who still have pre-tassel or early tassel corn, remember when scouting that thresholds are cumulative—check 20 plants at 5 different locations in the field and count the number of plants with egg masses. The treatment threshold is 5% of plants with egg masses, but if you found, for example, 2% last week and 3% this week, you have reached threshold.

Remember, WBC populations have been widely confirmed in the past couple of years as being resistant to the Cry1F Bt toxin, so assume your corn is unprotected against WBC unless you have Syngenta’s Viptera trait (Vip 3a protein). For those who had pre-tassel corn sometime over the past few weeks, recall that eggs hatch in 5–7 days and larvae begin traveling to find pollen to feed on. If you reached threshold during your scouting, insecticides should be applied before the advanced-stage larvae begin burrowing into ears.

## Southwest Michigan Field Crops Update – August 1, 2021 - 7



|   | 6-Jul | 13-Jul | 20-Jul | 27-Jul |
|---|-------|--------|--------|--------|
| A | 2     | 29     | 34     | 29     |
| B | 6     | 20     | 28     | 9      |
| C | 10    | 25     | 19     | 19     |
| D | 7     | 22     | 14     | 2      |
| E | 19    | 21     | 25     | 51     |
| F | 0     | 9      | 8      | 5      |
| G | 7     | 22     | 79     | 48     |
| H | 13    | 53     | 87     | 17     |



Western bean cutworm moth trap locations (top), counts (lower left) and total captures over time (lower right).

**Corn tar spot** initial infections were found in early July in St. Joseph County and later in July in Calhoun and Hillsdale Counties—no confirmed cases in Barry, Berrien, Branch or Kalamazoo yet. However, it is likely that the disease can be found in most if not all counties that have had it in previous years. These initial lesions presumably have had enough time to begin producing spores, which over the last couple of years has marked the time that we begin to see more tar spot in fields. With the expected cooler and drier conditions recently, we might catch a bit of a break in terms of disease spread on dryland fields. However, on irrigated fields, we should be aware that finding times of the day to apply water that minimize the overall period of leaf wetness can reduce the risk of tar spot infection that we have seen over the last several years.

You can review MSU Extension field crops pathologist Marty Chilvers' discussion of [Tar Spot Under Irrigation](#) from the [MSU Irrigation](#) webinar video. You can also watch Dr. Chilvers' presentation on [Tar Spot and White Mold Management Options](#) from the [MSU Extension Field Crops Virtual Breakfast website](#). In short, leaf wetness durations over 7 hours can increase the spread of tar spot in irrigated fields. Remember, as we move into August, we can start to see an increase of the foggy morning dews that can lead to more risk for dryland fields as well. We have seen the most significant increase of visible tar spot lesions during the mid- to late-August period, but the infection period for these lesions undoubtedly was in late July and early August.

**Weeds** August is the perfect time to begin to evaluate your weed management programs. Note any weed pockets in fields that have shown up and investigate what species they are. Look for species that are new to your operation and come up with a strategy of how to keep from spreading them across your fields. Be especially aware of pigweeds (most likely common waterhemp or Palmer amaranth) that didn't die and giant ragweed. Some fields in eastern Branch and Hillsdale counties visited recently almost certainly had glyphosate-resistant giant ragweed based on the prevalence. And unfortunately, sometimes it is more cost effective for your operation to go into the fields and remove new pockets of plants before they spread seed. Johnsongrass, Palmer and waterhemp that start out as a small pocket can take off and become very expensive to control in just 1–2 years. The best first

strategy is to control with an effective herbicide or remove the plants before they produce seed. The best second strategy is to avoid harvesting these areas until last and clean out the combine thoroughly. These approaches tend to stave off the worst of the problem for a while, but usually a more rigorous (and expensive) herbicide program will be in your future. Don't be shy about pointing out problem areas to your neighbors in their fields as well. These problem weeds do not respect field boundaries, so their problem can quickly become yours.

**Irrigation** Join us for the [MSU Irrigation Webinars](#) that air every other Wednesday through September 15<sup>th</sup>. The next episode will be on August 4<sup>th</sup> when the topics of irrigating fruit crops, water supply requirement estimates, and leaf wetness and disease prediction will be discussed. Cost is free, register online to receive the link which will be used for all episodes in the series. One RUP credit will be available for each session. Contact Lyndon Kelley ([kelleyl@msu.edu](mailto:kelleyl@msu.edu)) for more information. Recordings will be available for those who cannot make every meeting.

## Calendar

Titles are clickable links to online content when highlighted and underlined

- August 4** [Irrigation Webinar Series](#). 12-1pm. Every other Wednesday through Sept. 15. This six session series focuses on irrigation topics such as irrigation management, irrigation efficiency, new and expanding irrigation projects and a weather and crop update. Cost is free, register online.
- August 5** [Field Crops Virtual Breakfast](#). 7-8am. Insect Update with Chris DiFonzo. One RUP and one CCA credit available for each live session. No cost to you, register online once for whole season.
- [MSU Potato Field Day 2021](#). 9am – 1:30pm. Montcalm Research Center, 4629 W. McBrides Rd, Lakeview, MI. Hosted by MSU and the Michigan Potato Industry Commission. The field day will consist of three one-hour sessions that will repeat, followed by a catered lunch. Register online.
- August 11** [Tri-State Precision Agriculture Conference](#). 8am-3:30pm. Northwest State Community College, 22600 OH-34, Archbold, OH 43502. Cost is \$20 is pre-registering, register online.
- August 12** [Field Crops Virtual Breakfast](#). 7-8am. Late Season Alfalfa Harvest with Kim Cassida. One RUP and one CCA credit available for each live session. No cost to you, register online once for whole season.
- August 17** [On-Farm Research in SW MI Field Day](#). 8am-1pm. Covered Bridge Farm County Park, 56705 Covered Bridge Rd, Three Rivers, MI. Program will include updates about corn, soybean and irrigation research topics and recommendations. Cost is free, but online pre-registration is required to reserve lunch.
- August 18** [Irrigation Webinar Series](#). 12-1pm. Every other Wednesday through Sept. 15. This six session series focuses on irrigation topics such as irrigation management, irrigation efficiency, new and expanding irrigation projects and a weather and crop update. Cost is free, register online.
- August 20** [Conservation Reserve Program Grasslands Signup](#). Agricultural producers and landowners in Michigan can apply for the Conservation Reserve Program (CRP) Grasslands signup until August 20. To enroll, contact your local USDA [Service Center](#).



**August 24** [\*\*Drainage Tools Virtual Workshop\*\*](#). 9am-3pm. Learn the basics of using tools to make informed decisions about drainage for crop production and water-quality protection. Cost is free, register online.

**August 26** [\*\*MSU Soybean Research and Crop Management Update Field Day\*\*](#). 8:30am-1pm. MSU Plant Pathology Farm, 3735 N. College Road, Lansing, MI. Participants will have an opportunity to see current MSU soybean research projects and learn about the latest pest and crop management recommendations from MSU specialists and graduate students. Cost is \$10/person, register online.

## MSU Extension Digest Briefs

### **JOIN THE FIELD CROPS VIRTUAL BREAKFAST ON AUG. 5 FOR AN INSECT UPDATE**

*Published On July 29, 2021*

MSU entomologist Christina DiFonzo will discuss insect related issues on the Aug. 5 Field Crops Virtual Breakfast.

### **REGISTER FOR THE MSU SOYBEAN RESEARCH AND CROP MANAGEMENT FIELD DAY ON AUG. 26, 2021**

*Published On July 26, 2021*

Participants will see current MSU soybean research projects and learn about the latest MSU pest and crop management recommendations

### **2021 SMALL GRAINS FOR BREWING AND DISTILLING FIELD DAY SUMMARY**

*Published On July 23, 2021*

Summary of the June 25, 2021, Michigan State University Extension Small Grains for Brewing and Distilling Field Day at the W.K. Kellogg Biological Station.

### **JOIN THE IRRIGATED CORN AND SOYBEAN RESEARCH FIELD DAY IN SOUTHWEST MICHIGAN**

*Published On July 21, 2021*

Research efforts in irrigated corn and soybean production and pest management will be discussed at a field day in St. Joseph County on Aug. 17, 2021.

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