MICHIGAN STATE UNIVERSITY | Extension

# Southwest Michigan Field Crops Updates
## September 1, 2023

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.

## Volunteers Needed for Ag-Citing Experience Program at St. Joseph County Fair

For those of you in or near St. Joseph County who are interested in helping with an outreach to 3rd grade students, we are looking for a few more volunteers for the Ag-Citing Experience program that is held during the county fair. The students are bussed in from almost every school in the county to the Fair to learn about where their food comes from and how important farmers are in raising the crops and animals that go into that food. The program runs on Tuesday, Wednesday and Friday during two time blocks each day: morning (9:30-11:30) and afternoon (11:30-1:30). Here is a summary of our current needs.

- Tour Guide (escort groups of students from one stop to the next)
- Poultry Expert
- Rabbit Expert
- Swine Expert

Don't let the word "expert" throw you—you just need to know more about the animals than the average 3rd grader! If you can volunteer during any of these time slots, please call Charity Thompson at the St. Joseph County Extension office (269-467-5511). Thank you!

## Cereal Rye Cover Crop On-Farm Trial Cooperators Needed

For the past several years, the Michigan Soybean Committee has sought to conduct an on-farm trial to investigate the impact of a cereal rye cover crop in suppressing soybean cyst nematode (SCN) population development. This research question stems from findings from Iowa State where about 1/3 of trial locations did see suppressed SCN numbers. However, no cooperators have been identified in Michigan to trial this protocol.

To participate, farmers will need to have fields with known SCN populations that will be rotated to soybean in 2024. They will plant field-length strips to cereal rye this summer or fall along with alternating strips where no cover crop is established. Cover crop termination, if required, should happen in spring 2024 no later than 5 days after soybean planting. Soil sampling for SCN will be conducted in the spring and fall of 2024. The soybean in these strips will then be harvested in fall 2024 and yields from each strip will be analyzed. For those who normally plant cover crops, you would simply need to leave six alternating strips unseeded that are at least as wide as the combine width.

If you are interested in participating in this trial, please contact me, Eric Anderson, at eander32@msu.edu.

## Potash Trial Cooperators Needed

MSU has generated unbiased, research-based potassium (K, aka potash) fertilizer recommendations that maximize profitability. However, most of the potash recommendations that Michigan corn and soybean producers follow are provided by fertilizer retailers and crop consultants.

The MSU Extension Field Crops team was awarded a grant from MI Corn and MI Soybean to conduct a multi-year MSU K recommendation validation trial. The goals of the study are to use replicated, on-farm research trials to demonstrate that the MSU recommendations for K increase profitability, and to increase adoption of the MSU K fertilizer recommendations by corn/soybean producers.

We will work with producers to conduct long-term K trials in one ~40-acre field per farm. Sites that have relatively uniform soil types and have recent soil test K levels between 88-114 ppm (or 100-130 ppm if reported as Mehlich III) for coarse-textured soils (CECs ≤ 5 meq/100g) or between 105-150 ppm (or 120-170 ppm in Mehlich III) for finer textured soils (CECs > 5 meq/100g) are preferred. However, sites having lower soil test K levels are also acceptable.

The fields will rotate between corn (commercial or seed) and soybeans for at least four years. The fields will be sampled on grids in spring of 2024 (grid sampling will be covered by MSU). For those with CEC's above 5 who are planning to apply potash this fall, grid sampling would need to be done soon. Soil sampling results will be used to generate the following two treatments:

1. MSU potash recommendation
2. Producer normal practice for applying potash

The above treatments will be replicated 6 times in each field. The potash will be custom applied (most likely in 80-foot swaths) using self-propelled spinner spreaders (custom application cost will be covered by MSU, cost of potash will be covered by the cooperator). The spreader passes will be tracked using GPS at the time of application to geo-reference the treatments for repeatability over time. Yield monitor data will be recorded and analyzed each year.

If you are interested in participating in this trial this year, please contact me, Eric Anderson, at eander32@msu.edu.

## 2023 Common and Troublesome Weed Survey

Each year the National and Regional Weed Science Societies conduct a survey to gauge which weeds are most common and which are most troublesome in the country. The 2023 Survey of the Most Common and Troublesome Weeds in Grass Crops, Pasture and Turf in the U.S. and Canada is now available at: **https://www.surveymonkey.com/r/2023weeds**

The following seven grass crops are included:

1) corn
2) rice
3) sorghum
4) spring cereal grains
5) winter cereal grains
6) pastures, rangeland, other hay
7) turf

**Common weeds** refer to those weeds you **most frequently see.**
**Troublesome weeds** are those that are **most difficult to control** (but may not be widespread).

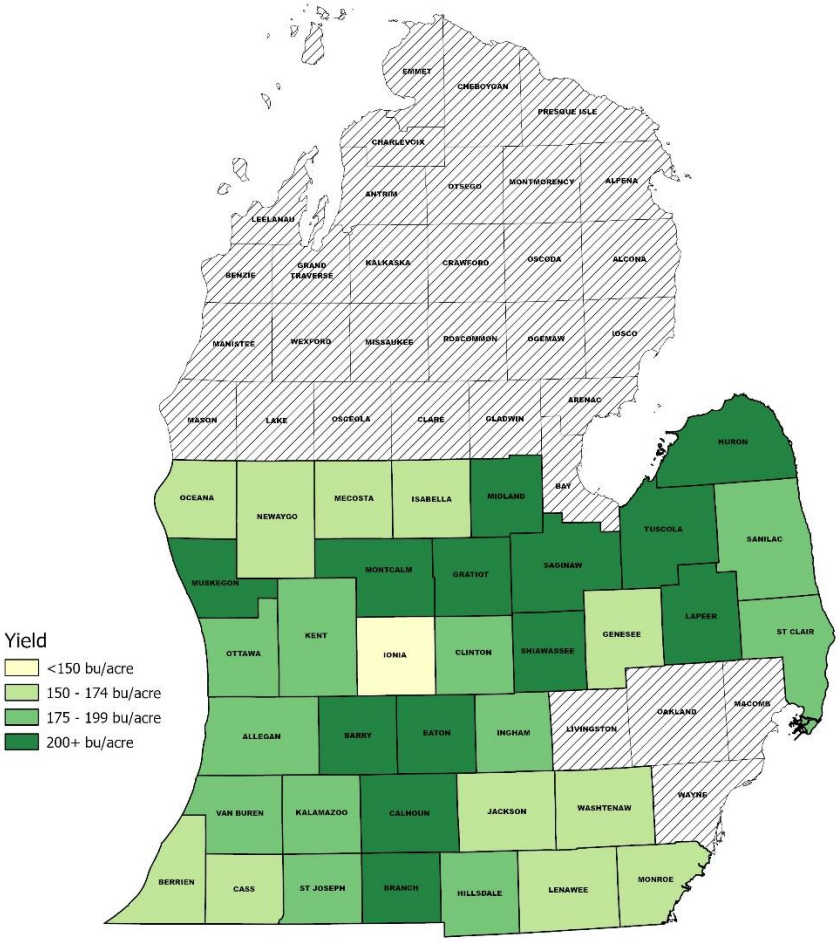
Weeds in **hemp** will be surveyed for the first time as a baseline study this year (**https://www.surveymonkey.com/r/2023hemp**). In the future, hemp will be included in the broadleaf crops weed survey that next occurs in 2025.

The survey will remain open until Labor Day (Monday, Sept. 4). Please consider taking this survey to help weed scientists better allocate resources.

## MI Corn Statewide Yield Estimates

Every summer, staff from the Corn Marketing Program of Michigan tour the state and conduct yield estimates from multiple fields in counties throughout southern Lower Peninsula. They share these estimates with attendees at their Between the Rows meetings—the closest one to SW MI being in Calhoun County this year. Their statewide estimate is 179 bu/ac which is 9 bu/ac higher than the current USDA estimate. The graphic below shows a further breakdown

estimate by county, courtesy of Kristin Poley, MI Corn Director of Research and Agronomy). These are not broken down by irrigated and rainfed unfortunately. However, if these estimates hold true, it would mean a tremendous comeback from the drought period in May and June.




## Prepare to Renew Your Pesticide Applicator Credential – A Note from MDARD

Don't wait until the last minute to start planning your pesticide applicator credential renewal. For a smooth renewal process, please remember:

- Exam scores are not accepted until the renewal period begins in October. Wait until you receive your renewal packet to schedule exams.
- If you plan on renewing by recertification seminar credits:
  - Recertification seminar credits must be completed before your credential expires.
  - View the Applicator Credit Report to verify how many credits you have.
  - Look for seminars using the List of Seminars Approved for Pesticide Recertification Credits.
  - Any categories that do not have enough credits must be renewed by taking the applicable exam.
- Renewal packets are mailed out in October. If you do not receive your renewal packet by November, contact the Michigan Department of Agriculture and Rural Development (MDARD) at MDARD-Pesticide@michigan.gov to receive a replacement.

Carefully follow all instructions included in the renewal packet. Visit the MDARD's Pesticide Certification Website for information about renewing your credential.

| Private Applicator | Commercial Applicator | Registered Applicator | Aerial or Fumigation |
|---|---|---|---|
| 16 core credits | 8 credits per category (Including core) | 8 credits per category (Including core) | 2 credits |
| OR | OR | OR | OR |
| Retake the core exam | Retake exams | Retake the core exam & category refresher training | Retake the exam(s) |

## Conventional and Organic Enterprise Net Returns

Purdue ag economist Michael Langemeier recently wrote an article comparing conventional and organic profitability. A short excerpt is below but the article can be accessed here.

Information pertaining to the relative profitability of conventional and organic production is often lacking. A previous article compared net returns for conventional and organic crop enterprises using FINBIN data from 2017 to 2021 (Langemeier, 2022). This article uses FINBIN data from 2018 to 2022 to update comparisons of crop yields, gross revenue, total expense, and net returns for conventional and organic alfalfa, corn, oats, soybeans, and winter wheat. The organic enterprise data represents farms that have already transitioned to organic production, and thus do not include information pertaining to the transition phase.

Consistent with previous work, organic corn and soybean enterprises had lower crop yields, higher crop prices and gross revenue, and higher net returns. However, there was a much wider difference in enterprise net returns among organic corn and soybean enterprises than there was among conventional corn and soybean enterprises. It is also important to note that on average alfalfa, oats, and winter wheat grown conventionally had higher net returns than alfalfa, oats, and winter wheat grown using an organic cropping system.

## Herbicide Resistance Detection in the Field

[This article excerpted from Eric Jones, Assistant Professor and SDSU Extension Weed Management Specialist]
Herbicide resistance can be defined as the inherited ability of a biotype (or an individual within a population possessing a special characteristic) of a weed species to survive and reproduce following exposure to an herbicide dose that is normally lethal. Over time, when the herbicide is applied recurrently, the weed community will transition from susceptible to resistant, because only the resistant biotypes are contributing seeds to the soil seedbank. What should you do if you think you have an herbicide-resistant weed species in the field?

First, eliminate all potential causes for herbicide failure, such as incorrect herbicide rate, sprayer malfunctions, rain events shortly after application, and other unfavorable weather conditions (for example, cold temperatures and low-light conditions). Even an herbicide-susceptible weed will not be controlled if it does not receive the lethal herbicide dose.

If the weed in question did, in fact, receive a lethal herbicide application without confounding environmental factors, then look for the four known indicators of resistance.

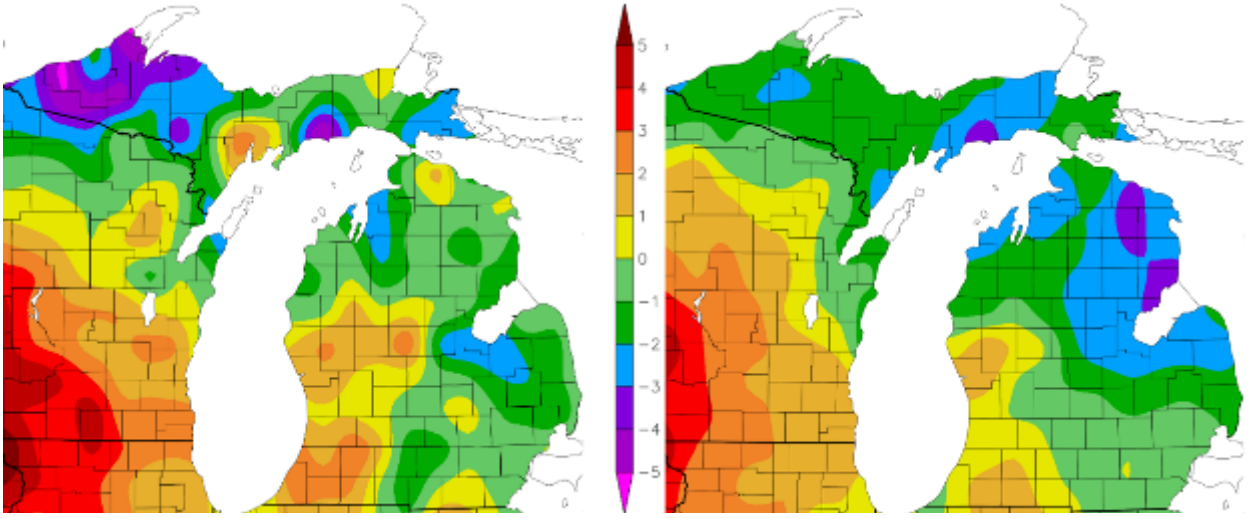
- Herbicide normally controls weed species in question. This indicator suggests that the herbicide applied in the past has controlled most of the susceptible weeds in the field.
- Poor control on one weed species, other species controlled normally. Seeing dead weeds of several species and living weeds of another species suggests that the herbicide application was lethal.
- Poor control is confined to isolated spots in the field. Recall, the resistant biotype is subsect of the population. Likely the resistant biotypes are isolated, and the seed of resistant offspring will be present in this area initially.
- Dead and alive plants of the weeds present in the area of concern. Again, recall resistant biotypes are a subsect of the population, and it is very likely that susceptible and resistant plants are interspersed together in the field.

While these four indicators can usually elucidate if a weed is herbicide-resistant, it is better to have the weed in question tested to determine if it is herbicide-resistant or -susceptible. Any weeds surviving a lethal herbicide application and exhibiting indicators of resistance should be reported to the MSU Plant and Pest Diagnostic Lab for further testing.

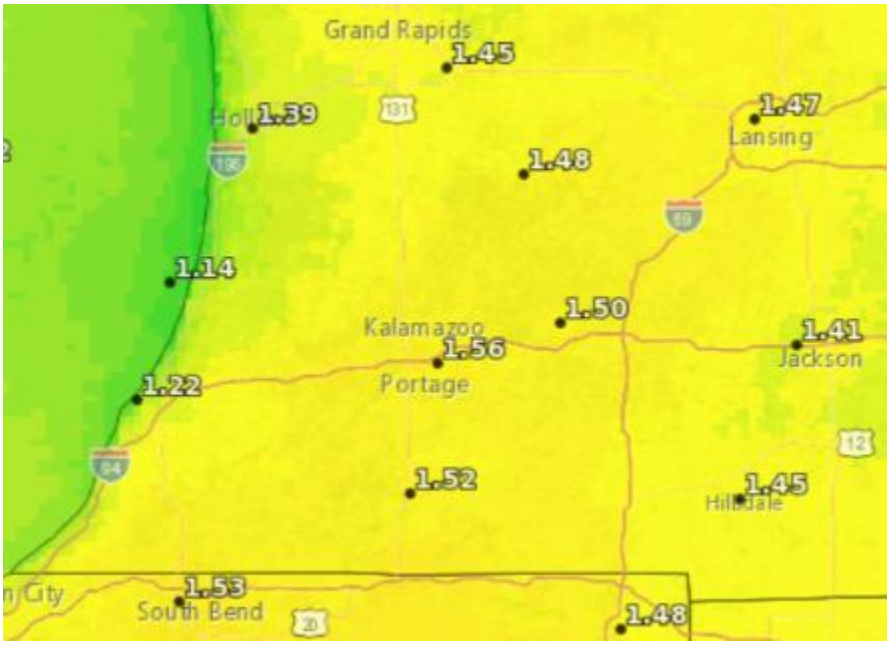
## Weather and Crop Update

**Weather**

Temperatures last week were near normal on average to 1-2 degrees above normal in the southwestern corner, and we accumulated 122 growing degree days (GDD base 50). MSU climatologist Jeff Andresen says another upper air ridge will be moving into the Midwestern states over the weekend bringing another round of hot weather early next week. He says humidity will be relatively high but not as severe as last week, but we will likely see heat index readings near 100 degrees. The forecasted reference evapotranspiration rate (FRET) is roughly 1.5 inches for the week ending September 6—nearly a half-inch higher than normal—with daily rates as high as 0.25 inch Sunday through Tuesday. An additional 163 $GDD_{50}$ are predicted for the coming week. The mid-range outlooks call for above-normal temperatures for the first half of September.




Departure from normal for average minimum (left) and maximum (right) temperatures for the week ending August 30.




Total weekly forecasted reference evapotranspiration rate (FRET) for the week ending September 6.

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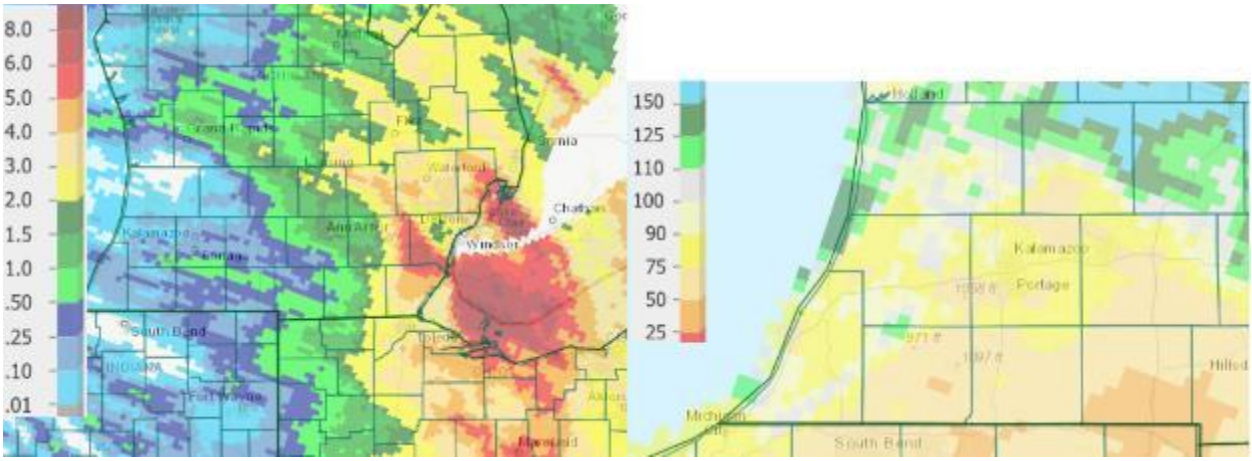
Rainfall this past week occurred on an east-west gradient with little to no rain along the lake to nearly an inch toward the eastern end of the region. The month of August was dry for our region with 10-25% less rainfall than normal in most cases, and the past two weeks have been even drier with nearly the entire region receiving less than 50% of normal rainfall.

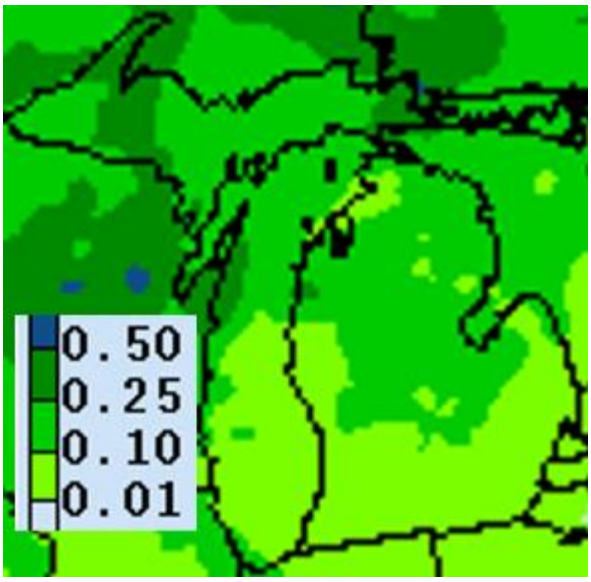
The big story in Michigan was the severe weather that came through last Thursday. Most of the damage to property, trees and crops was from high winds, but eight tornadoes were also reported in Michigan, and nearly 500,000 customers were without power for several days. Two deaths were unfortunately caused by the weather outbreak.

The precipitation forecast for the coming week predicts less than 0.1 inch for southwest Michigan and that is not expected until next Wednesday. The medium-range outlooks both call for near-normal to slightly below-normal chances of precipitation through the first half of September. Andresen says he would have pegged rainfall at below-normal for the 6-10 day outlook as well.

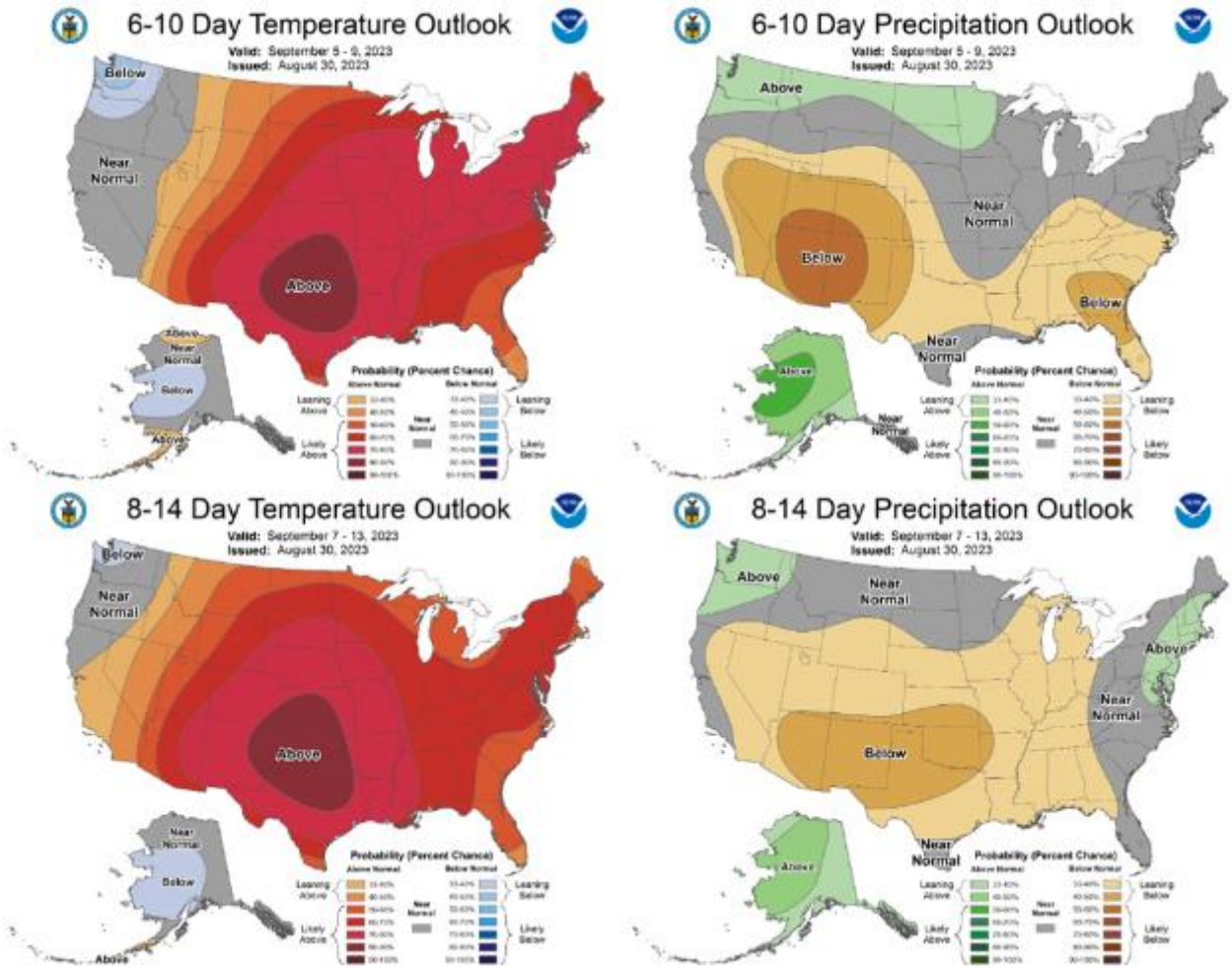


Precipitation totals from the past 7 days (left) and percent of normal for the past 30 days (right) as of August 30.

Severe weather reports from last Thursday, August 24.



Precipitation forecast for August 31-September 7.



The 6-10 day (September 5-9, top) and 8-14 day (September 7-13, bottom) outlooks for temperature (left) and precipitation (right).

**Crops and Pests**

**Corn and soybean** are only slightly behind in development compared with the 5-year average according to the most recent USDA Crop Update. Corn in Michigan is 24% dented (29% average) while 85% of soybeans are setting pods

(91% average). More advanced corn fields have reached mid-dent (R4.5) and are at ½ to ¾ milk line, i.e., the line separating soft "dough" starch from drier, hard starch. Corn silage chopping has just begun in the state with these earlier-maturing fields. Corn at ½ milk line is approximately 10 days from black layer, a.k.a. physiological maturity. All soybean fields visited this week had reached at least beginning seed (R5, seed is 1/8 inch long in the pod at one of the four uppermost nodes on the main stem) and more advanced fields are close to full seed (R6, pod containing a green seed that fills the pod capacity at one of the four uppermost nodes on the main stem). Only 2% of soybeans in the state have begun leaf drop although signs of yellowing can be seen in small patches in several fields in the region, most likely those areas that have experienced a higher degree of crop stress recently. Both crops are rated only moderately around the state with corn rated at 50% good or excellent (40% fair) and soybean rated at 43% good or excellent (47% fair).


Soybean nearing full pod stage and corn at mid-dent stage (roughly 50% milk line) in more advanced fields in southwest Michigan this week. Photos courtesy of Eric Anderson.

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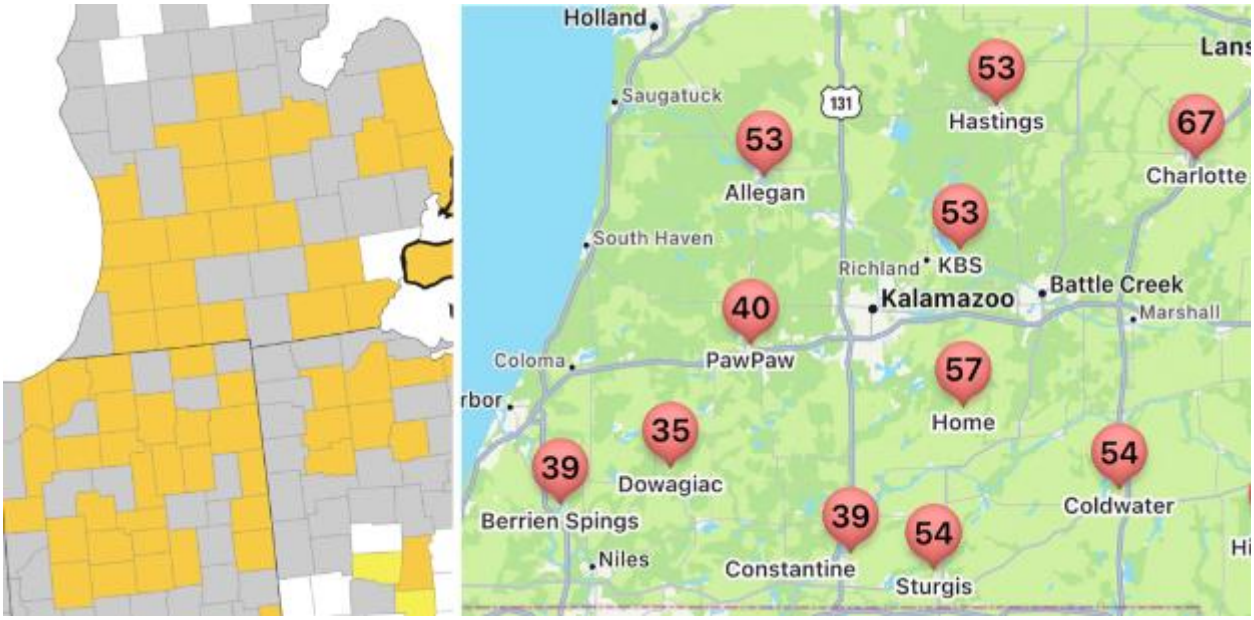
Tar spot has been confirmed in only one additional county in the southwest (Kalamazoo) since last week, and incidence remains low. For those fields still in early reproductive stages (silk to early milk), a fungicide application may be advised if the disease is found in the field. Risk is high across the region for corn still at early reproductive stages (through milk stage, R3) according to the Tarspotter app. According to Ohio State Extension: "Based on data from neighboring states, fungicides do show promising results against tar spot, particularly those with multiple active ingredients (AI). Applications made between R1 and R2 tend to give the best results in terms of tar spot control and yield response, but you may still see a benefit from an R3 application, particularly if the disease comes in late, the hybrid is highly susceptible, and the wet weather persists for several weeks."



Counties with confirmed tar spot in 2023 (gold) according to the Corn ipmPIPE website (left), and the current risk level is mostly medium according to the Tarspotter app (right).

Flowering in soybean is completed in all but the latest-planted fields. White mold continues to be a concern in those fields that had lush growth and canopied earlier, and the Sporecaster app continues to predict high risk for the southwest. White mold can be difficult to identify from the pickup, but a closer inspection will reveal the typical white mycelial growth and sclerotia on the lower stem. An aerial view will help you determine the extent of the problem and allow you to make plans for harvesting.

White mold in soybean as seen from the roadside (top), up close (middle) and from the air (bottom). Photos courtesy of Eric Anderson.


Risk of white mold in soybean according to the Sporecaster app.

**Irrigation.** Both corn and soybean in almost all fields remain at peak water use. With the estimated weekly FRET at around 1.5 for this week, both crops will use 1.8 inches of water this coming week.

**"Setting the Stage for Record Breaking Wheat Yields"** was the topic of this week's MSU Extension Field Crops Virtual Breakfast with MSU Extension wheat specialist Dennis Pennington. Wheat growers will be making several important decisions in the coming weeks that will impact the yield potential for next year's wheat crop. The first decision is what varieties to plant, and the 2023 Michigan State Wheat Performance Trials is a good resource for selecting varieties that have a track record of producing high yields in your climate. Data on multiple factors from 114 entries and 15 companies are included in the booklet. Although yield is the number one consideration, disease resistance is close behind. Look for varieties that have yielded well over multiple years and locations and plant a range of maturities. The Performance Trials booklet also includes data on which varieties responded well to high-management systems and those that did not.

Seed quality is another important factor in the success of the crop. Pennington recommends planting certified seed, but for those hoping to cut costs and plant bin run seed, clean and treat seeds, select the largest seeds with higher thousand kernel weight (TKW), and be sure to avoid seed harvested from areas of fields with diseases. Early sprouting should be less than 5%, and seeds should be checked for germination rate either at home or by sending to a lab such as Michigan Crop Improvement Association.

Timing of planting is also critical to ensure that enough fall growth and tillering occur prior to a killing frost. The goal is for plants to produce 2-3 tillers to maximize yield. Pennington showed research results from Michigan with declining yields the further past mid-September that planting occurred. Although Hessian fly is no longer a problem with wheat, the conventional Hessian fly-free date is still a good benchmark for optimal planting. For southwest Michigan, that date is between September 19 and 23. Studies from other states indicate that planting too early may result in too many tillers and lush green growth leading to lodging in the spring and declining yields. Pennington and MSU Extension cropping systems agronomist Manni Singh are planning an early planting date study to explore this.

Effect of planting date on fall tillering in winter wheat. Image provided by Dennis Pennington.

Seeding rate and planting depth are also important management decisions. With timely planting, there is no advantage to planting higher than 1 million seeds per acre, but that rate steadily increased to 1.85 million seeds per acre as an agronomically optimum seeding rate when planting in mid-November. Seed size must be taken into account when selecting a seeding rate, and Pennington showed a table with actual pounds of seed per acre required to achieve a given planting rate with a range of seed TKW values. Seedbed preparation and planting depth are important to achieve a uniform stand with an optimum seeding depth from 1-1.5 inches.

Other information shared during the presentation included:

- Row spacing was optimized at 5 inches in a Michigan study with four site-years, and there was no difference in yields between 7.5- and 10-inch spacing but significantly lower yields were produced with 15-inch rows.
- Soil pH should be 6-7 with a liming target of 6.5
- Mixed results from fall nitrogen applications have been produced, but 20-30 lb N per acre is recommended when soil nitrate levels are below 10 ppm.
- Potassium and phosphorus soil test levels should be within the maintenance range according to the Tri-State Fertilizer Recommendations for Field Crops (measured with Mehlich 3).
    - P: critical level of 30-50 ppm
    - K: critical level of 100-130 ppm if CEC < 5 or 120-170 ppm if CEC > 6

If you were not able to join the session, the recordings will be closed-captioned and available at the Field Crops Virtual Breakfast webpage and the MSU Extension Field Crops Team social media platforms: Facebook, Spotify, YouTube, Apple Podcasts, and Twitter.

## Calendar

(Note: Titles are clickable links to online content when highlighted and underlined.)

**Sep 7** **Virtual Breakfast – Marketing Your Grain Crops with Jon LaPorte**. 7-8am. Register online once for the entire series.

**Sep 14** **Virtual Breakfast – Monitoring Nematode Resistance in Soybeans with Marisol Quintanilla**. 7-8am. Register online once for the entire series.

~~**Sep 14**~~ **TBD** **2023 Soybean Harvest Equipment Field Day**. 11:30 am to 3:30 pm. 7875 Kilgore Road, Yale, MI in Sanilac County. Cost is free, includes lunch, register by calling 269-673-0370 ext. 2562 before noon on Friday, Sept. 8. FIELD DAY IS POSTPONED AS SOYBEANS WILL NOT BE READY – THOSE WHO REGISTER WILL BE CONTACTED WITH REVISED DATE.

**Sep 15** **KBS LTAR Field Day.** 10am-2pm. Kellogg Biological Station, 9693 N 40th St., Hickory Corners, MI. First annual Long-Term Agroecosystem Research Field Day featuring sustainable cropping solutions for the future. Cost is free, includes lunch, register online.

**Sep 21** **Virtual Breakfast – Fall Weed Control with Christy Sprague.** 7-8am. Register online once for the entire series.

**Sep 22** **MiAA Fall Field Day.** Managing Crop Diversity: Strategies and Benefits. 1-4pm. JD Layman Farms, 7850 Lake Rd, Berrien Center MI. Learn about the latest research in cover crops, nutrient cycling and crop rotation diversity. Cost is free, register online. Contact herricke@umich.edu or or julie@miagadvance.org with questions.

**Dec 19** **Integrated Crop and Pest Management Update.** MSU Livestock Pavilion. Save the date, details to come soon.

## MSU Extension Digest Briefs

SOIL TESTING THROUGH MSU EXTENSION
**PUBLISHED ON AUGUST 30, 2023**
MSU Extension home lawn and garden and commercial soil tests provide access to personalized fertilizer recommendations for thousands of Michigan residents every year.

HOW MUCH SHOULD PLC REFERENCE PRICES BE RAISED? - PART ONE
**PUBLISHED ON AUGUST 29, 2023**
Part 1: Considering a 10% increase to reference prices in Farm Bill's Price Loss Coverage (PLC) Program.

USDA RELEASES FARMLAND CASH RENTAL VALUES FOR MICHIGAN COUNTIES
**PUBLISHED ON AUGUST 29, 2023**
Michigan State University Extension updates their annual report with the latest data.

HOW MUCH SHOULD PLC REFERENCE PRICES BE RAISED? - PART TWO
**PUBLISHED ON AUGUST 29, 2023**
Part 2: Considering if Price Loss Coverage (PLC) reference prices matched cost of production estimates.

USDA FARMLAND CASH RENTAL RATES
**PUBLISHED ON AUGUST 28, 2023**
Rental rates per county taken from USDA's National Agricultural Statistics Services

RISK OF IRRIGATION WATER ON THE ROAD
**PUBLISHED ON AUGUST 25, 2023**
The risk associated with irrigation water on the road depends on the pressure and volume of water hitting the road and amount of traffic encountering it.

AGRICULTURAL DRAINAGE
**PUBLISHED ON AUGUST 24, 2023**
This bulletin briefly describes the history, need, types and extent of Michigan drainage as well as the pros and cons, and environmental impact related to drainage.

SOUTHWEST MICHIGAN FIELD CROPS UPDATE - AUGUST 24, 2023
**PUBLISHED ON AUGUST 24, 2023**
Corn and soybean crops continue to thrive and are approaching the growth stage where water needs begin to decrease, but crop progress is widely varied throughout the region.

FALLING NUMBERS IN WHEAT: WHAT CAUSES IT AND WHY AM I GETTING DOCKED?
**PUBLISHED ON AUGUST 23, 2023**
How are falling numbers determined and why is wheat discounted if they are too low?

THE IMPORTANCE OF CHECKING IRRIGATION SYSTEM UNIFORMITY
**PUBLISHED ON AUGUST 18, 2023**
Evaluating and retrofitting your irrigation system can help to improve irrigation water use efficiency.

WHEAT WATCHERS 2023 WRAP UP
**PUBLISHED ON AUGUST 17, 2023**
See how the wheat faired across most of Michigan.

2023 SOYBEAN HARVEST EQUIPMENT FIELD DAY SCHEDULED FOR SEPTEMBER 14
**PUBLISHED ON AUGUST 17, 2023**
Participants will improve farm income by learning where soybean harvest losses occur and how to measure and reduce them at this field day.

MSU EXTENSION WELCOMES NEW FIELD CROPS EDUCATOR IN SOUTHERN MICHIGAN
**PUBLISHED ON AUGUST 17, 2023**
Combining tried and true conservation with new technology, Madelyn Celovsky hopes to make a splash in south central Michigan.

ADEQUATE WATER SUPPLY IS THE HEART OF AN IRRIGATION SYSTEM
**PUBLISHED ON AUGUST 16, 2023**
Irrigation investments start with securing an adequate water supply that meets the state legal requirements for large-scale water use and minimal potential for conflict with neighbors or adverse resource impacts.

BEST PRACTICES FOR BUYING FARM INPUTS
**PUBLISHED ON AUGUST 16, 2023**
Lower your risk while maximizing your cash.

END OF SEASON IRRIGATION DECISIONS FOR CORN AND SOYBEANS
**PUBLISHED ON AUGUST 16, 2023**
Virtual Breakfast participants on Aug. 24 will learn to identify when corn and soybeans no longer benefit from adequate water, and the irrigation scheduling methods to maximize the crop without wasting resources.

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