

Southwest Michigan Field Crops Updates **June 15, 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.

Consider Aerial Fertilizer Applications

by Lyndon Kelley

Producers have found innovative ways to deal with the challenges of farming high dollar crops on sandy soils. Nitrogen and potash, to some degree, have the potential to partially leach out of the root zone by mid growing season. Applying part of the fertilizer just prior to crop peak need offers efficient use of the nutrients and helps protect the environment. Splitting the application of leachable fertilizers reduces the chance of quantities moving out of the root zone before the crop can take them up. In the photo, aerial applicators are applying 100 pounds of potash to potatoes just prior to tuber set, an optimum time for potassium uptake. Aerial applications of urea prior to rainfall or irrigation allow quick and even applications in a very timely manner without disturbance to the field or compaction.



Photo courtesy of Lyndon Kelley MSU/Purdue Extension.

Irrigating Wheat

by Lyndon Kelley

Producers have found innovative ways to deal with the challenges of farming high dollar crops on sandy soil. Wheat is not a traditionally irrigated crop but fits the crop rotation for many irrigated fields offering a double-crop option for soybeans or other short-season vegetable crops. Spring of 2023 has been unusually dry with many areas of

southern Michigan and northern Indiana receiving only half of the normal April and May rainfall. Irrigation allows producers to maximize the wheat yields, but it's also often necessary to allow the seeding, germination, and production of the second crop after the first crop has depleted the soil moisture reserves. As irrigated opportunities expand in Michigan and Indiana, expect to see more irrigated double-crop options like small grains or small green forage followed by corn silage, soybeans or vegetables.



Photo courtesy of Eric Anderson.

Cass County MAEAP Field Day Focusing on Farm Safety

Join us on Wednesday July 12th for the [Cass County MAEAP Field Day](#). The event will be held at the Red Barns at Armstrong Farms (57038 M-40, Marcellus, MI) from 9am to 12pm. The focus of the event will be farm safety with topics including:

- Equipment safety
- Personal protective equipment
- Biosecurity
- Emergency planning on the farm
- Fuel and chemical storage

Presentations will be given by the Pokagon Volunteer Fire Department, the Cass County Conservation District, MAEAP, and Co-Alliance.

Attendance is free, coffee and refreshments will be provided. To register, call 269-445-8641 ext 5 or email emily.haluda@macd.org.

An event flyer for 'MAEAP: Focusing on Farm Safety'. The flyer has a golden-brown background with images of crops. It includes the following text: 'Join us July 12th, 2023', 'MAEAP: FOCUSING ON FARM SAFETY', '9:00am - 12:00pm', 'Location: Red Barn at Armstrong Farms 57038 M-40, Marcellus, MI 49067', 'With Special presentations by the Pokagon Volunteer Fire Department and Co-Alliance.', and 'To register call 269-445-8641 ext 5 or email EMILY.HALUDA@MACD.ORG'. Logos for MAEAP, Co-Alliance, and Cass County Conservation District are also present.

Biochar in Michigan Agriculture at Kellogg Biological Station

Farmers, landowners, agricultural advisors, and conservation professionals are invited to attend a morning of informational presentations, networking, and field tours to learn about the biochar industry and its use in field crops on July 17th, 2023, from 9am-12pm EST (8:30am registration). The event will take place at the Kellogg Biological Station (KBS) at

3700 E. Gull Lake Drive,
Hickory Corners, MI 49060.

The morning will include an explanation of biochar basics and its use as a soil carbon amendment, the current

economic feasibility of biochar production in Michigan, a tour of biochar research field plots, and networking opportunities among attendees and biochar industry professionals.

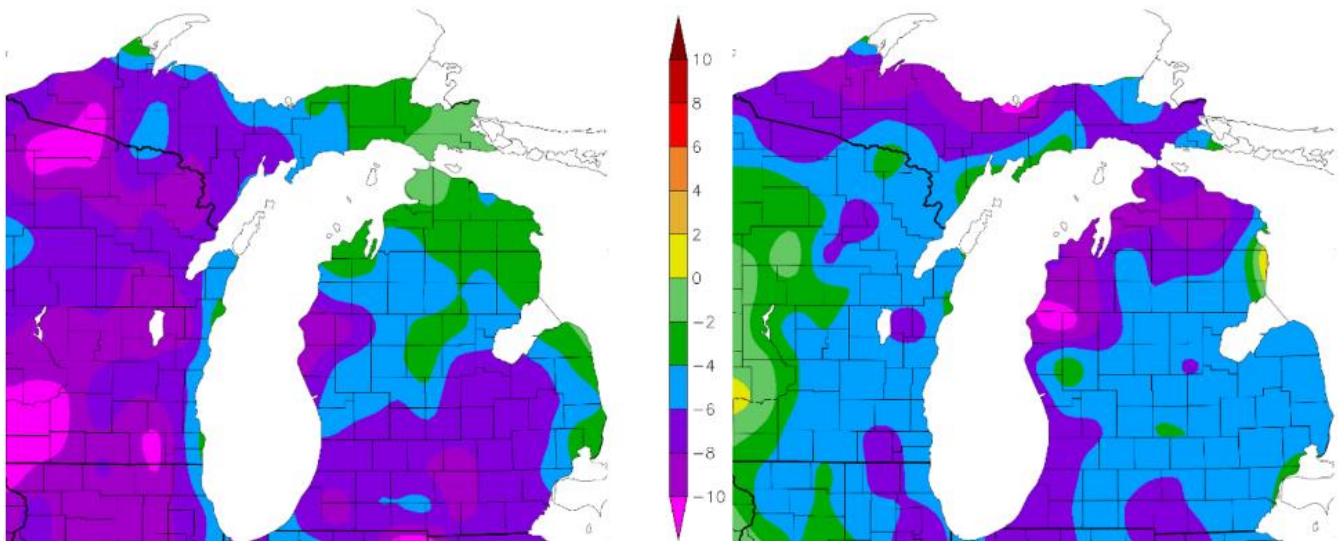


This event is presented and co-hosted by the [Great Lake Biochar Network](#), [the Long-Term Agroecosystem Research \(LTAR\) site at KBS](#), [the Long-Term Ecological Research \(LTER\) site at KBS](#), and [Michigan State University Extension](#). Funding support for this event was received from the [Michigan Sustainable Agriculture Research and Education \(SARE\) Program](#). [Registration](#) closes July 7th.

Weather and Crop Update

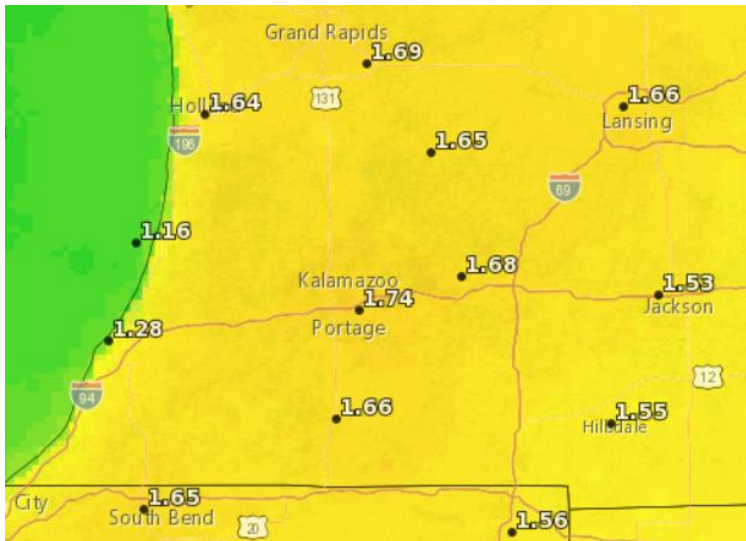
Weather

This past week was downright chilly in Michigan with daytime temperatures 4-8 degrees below normal and nighttime temperatures 6-10 degrees below normal in the southwest. We picked up only 68 growing degree days (GDD base 50 degrees) last week (130 GDD₄₀ for forages, 186 GDD₃₂ for wheat) but will add another 130 GDD₅₀ (200 GDD₄₀, 256 GDD₃₂) this coming week. The forecasted reference evapotranspiration rate (FRET) is roughly 1.6-1.7 inches in the southwest for the week ending June 21 with daily rates slightly above normal heading into the weekend and next week. The 6-10 and 8-14 day outlooks call for above-normal temperatures to close out the month.



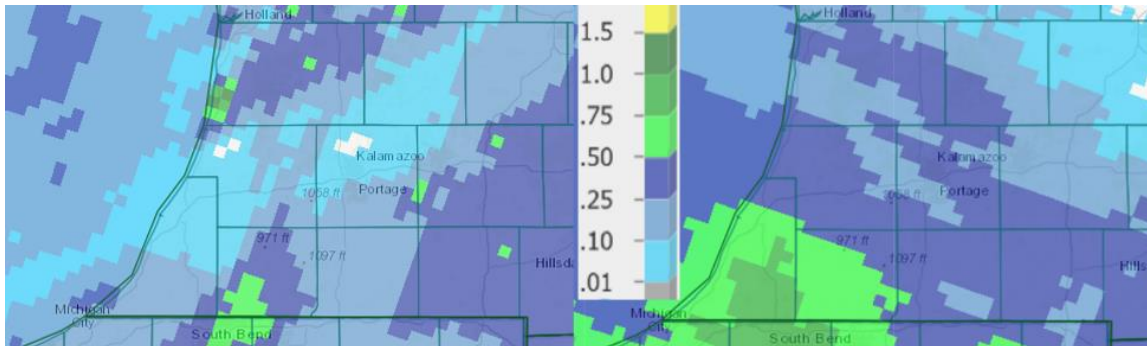
Departure from normal average minimum (left) and maximum (right) temperature for the past 7 days as of June 14.

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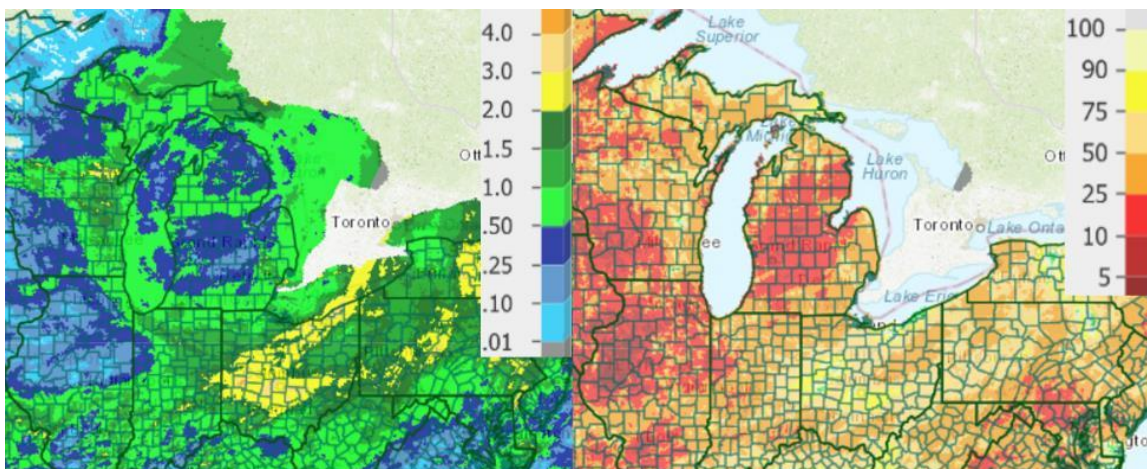


Total weekly forecasted reference evapotranspiration rate (FRET) for the week ending June 21.

We were grateful for rainfall this past week with some areas receiving 0.5-1.0 inch. However, aside from parts of Berrien and Cass counties, we were still 10-75% below normal for the week, and we remain dangerously behind for the past month. For example, prior to the rain over the past few days, the sandy loam soil at the Mendon Enviroweather station had dropped below the wilting point at 12 in depth, but there was not enough rain to make it down to 24 in depth. The drought monitor (June 15 release) shows the continued worsening of dry conditions over the past month, and 42% of Michigan is now in D1 moderate drought. The forecast is unfortunately for another dry week with less than one-tenth of an inch predicted. The current 6-10 day outlook calls for below-normal chances of rain turning slightly more optimistic in the 8-14 day outlook.

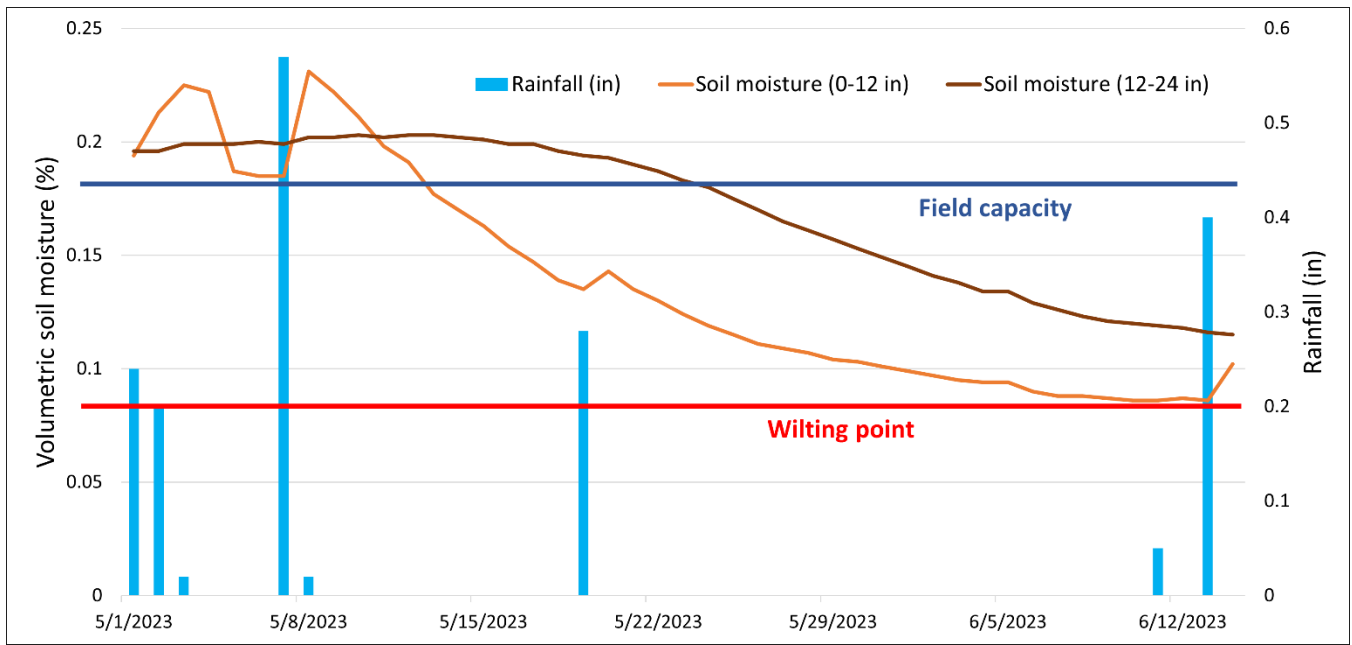


Precipitation totals from this past Sunday (left) and Tuesday (right).

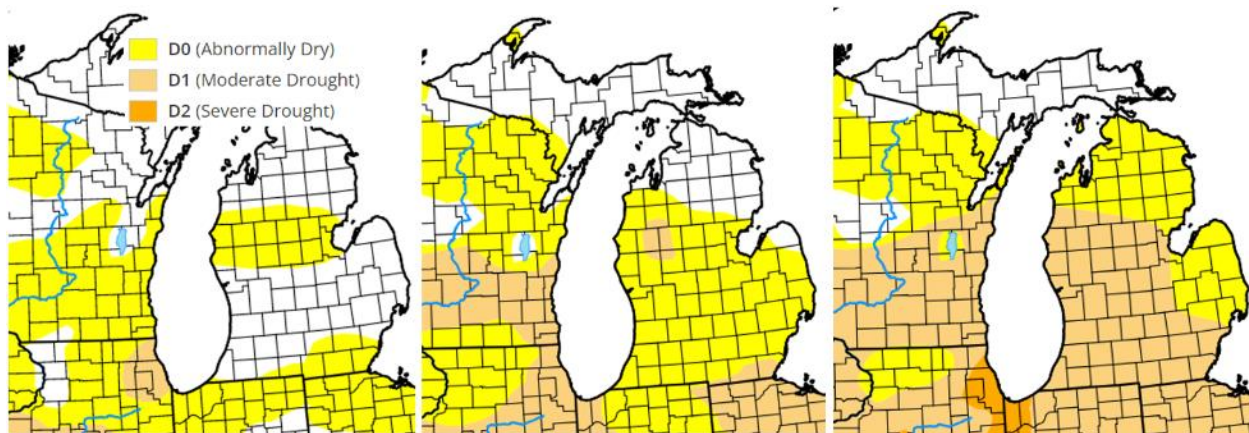


Precipitation totals from the past 7 days (left) and percent of normal for the past 30 days (right) as of June 14.

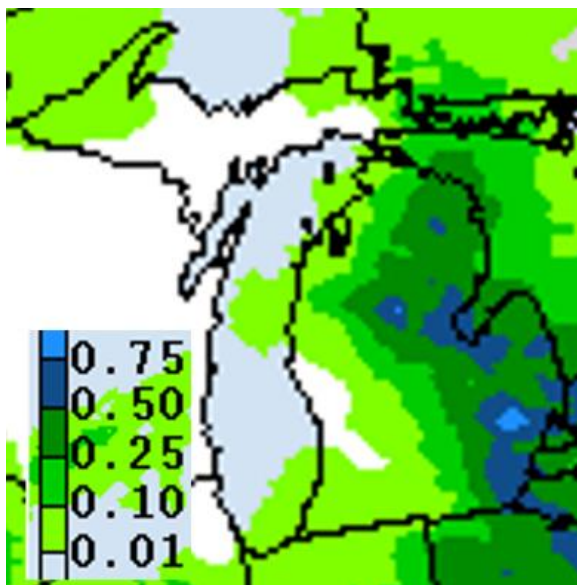
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Rainfall and soil moisture levels at 12 and 24 inch depth since May 1 as recorded at the Mendon Enviroweather station (Elston sandy loam).

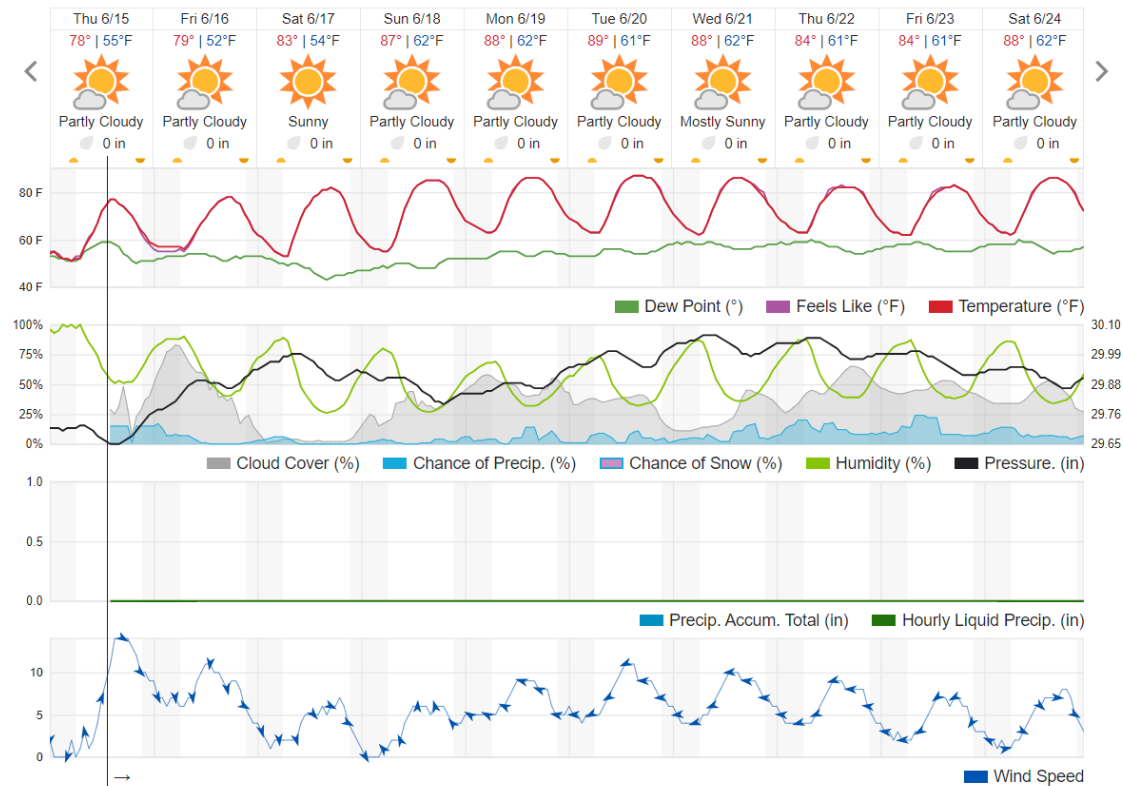


Progression of the drought—drought monitor released June 1 (left), June 8 (center), and June 15 (right).

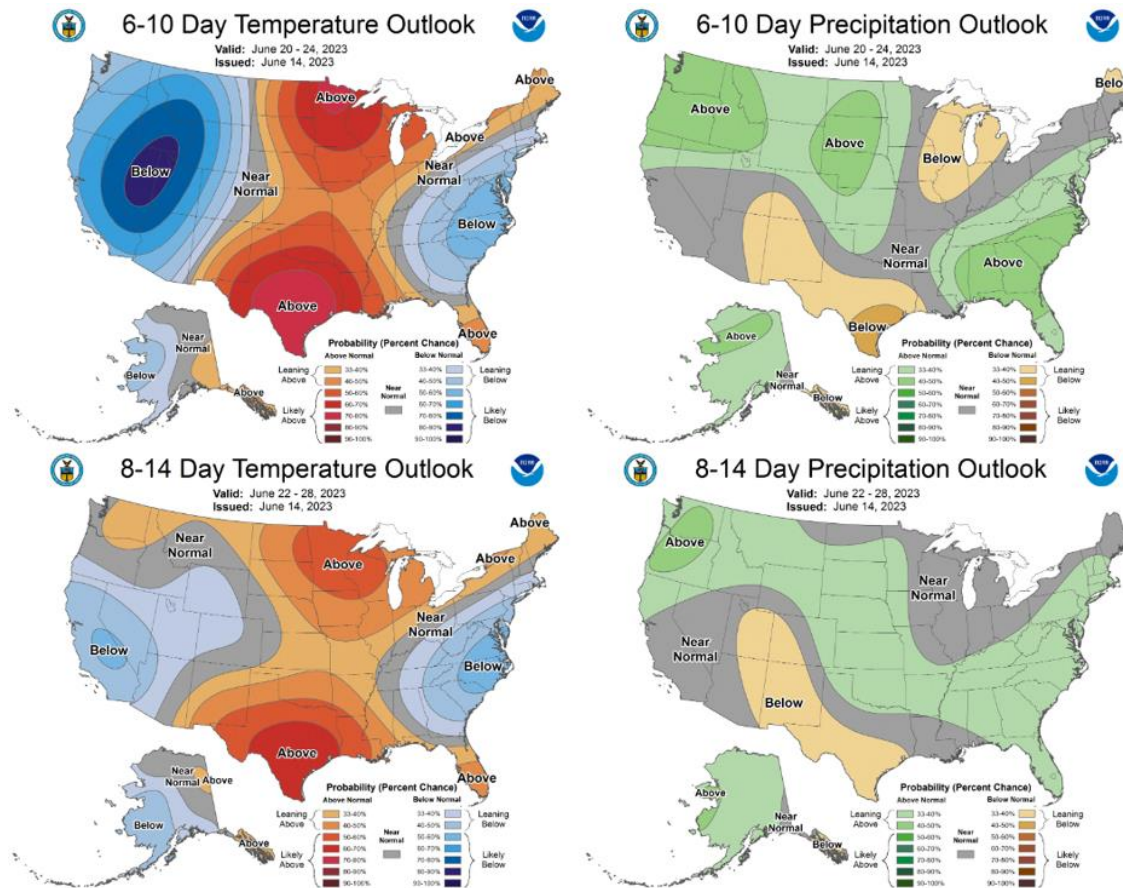


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Precipitation forecast for June 15-22.



The 10-day weather forecast for Kalamazoo according to wunderground.com.



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The 6-10 day (June 20-24, top) and 8-14 day (June 22-28, bottom) outlooks for temperature (left) and precipitation (right).

Crops and Pests

Corn and soybean planting is tapering off as we near the end of planting season with 97% of corn planted (89% emerged) and 98% of soybean planted (83% emerged) according to the latest USDA Crop Report. Both corn and soybean continue to look surprisingly good even in dryland fields visited as roots have grown deep and are accessing the soil moisture that was abundant heading into May. With essentially no rain in the forecast for the next 10 days, one wonders how long these crops will continue to thrive before reserves are used up. As corn side-dress continues, there is also concern that, without moisture where the nitrogen was placed, the N cannot be taken up and we will begin seeing signs of N deficiency.



Soybeans approaching V3 earlier this week. Photo courtesy of Eric Anderson.

One corn field visited this week had purple leaves, particularly on the headlands but also sprinkled throughout the rest of the field. This is a known issue with certain hybrids but also can be seen with a phosphorus (P) deficiency or a buildup of anthocyanin (reddish pigment) when sugars accumulate but plant metabolism can't "keep up." Purdue corn agronomist emeritus Bob Nielsen [made this observation](#): "It has been my experience that the most common factors that correlate with the development of purple corn plants is the combination of bright, sunny days and less than favorable cool nights (40's to 50's F) when corn plants are in the V3 to V6 stages of development (3- to 6-leaf collar stages)." That is exactly what we experienced this past week and that is the stage this corn was in.

Why primarily on the headlands? Another contributing factor is restricted root growth caused by compaction, wet soils, herbicide injury, etc. These and other factors are discussed in the MSU Extension article, "[Purple corn syndrome: What causes purple coloration of corn?](#)" Phosphorus levels in this field were not limiting, the soil was well-drained, and no herbicide injury was suspected. So, in this particular field, it appears the purple coloration was due to a combination of hybrid tendency, sunny days and cool nights, and soil compaction.

Cause for concern? Barring any other agronomic or weather-related factors, purpled corn is not typically yield-reducing, and the crop should grow out of it once temperatures rise.

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Corn with purple leaves at V3 growth stage in Kalamazoo County. Photos courtesy of Eric Anderson.

Winter wheat ratings in Michigan dropped again this past week according to the current USDA Crop Report with 41% rated as good or excellent and an additional 43% rated as fair. Wheat in advanced fields is coming to the end of the milk stage (Feekes 11.1) and the heads are beginning to turn color. One field scouted with a mid- to late-maturing variety that was planted late had just completed flowering; however, even with these late fields, the risk of head scab remains low for the Tri-State region even with very susceptible varieties according to the [Fusarium Risk Tool](#).



Wheat nearing the end of the milk stage. Photo courtesy of Eric Anderson.

Forages. According to the Enviroweather alfalfa weevil model, pupation and end of feeding are expected by early next week. No reports of potato leafhopper have come in yet - contact your local Extension office if you begin to see the V-shaped yellow pattern on alfalfa leaf tips (“hopper burn”) characteristic of feeding injury from this pest.









Irrigation. A summary of crop coefficients and water needs for the coming week is found in the table below with an estimated weekly FRET value of 1.7 inches. Wheat currently has a K_c of 1.05, so that crop will require nearly 1.8 inches while a forage crop nearing harvest has a K_c of 1.20 and will use 2.0 inches of water this week. With rainfall this past week that likely did not meet crop needs, and given the dry weather outlook, irrigation will continue heading into the second half of June much as it has for the last few weeks.

Summary of rooting depth and crop water need for corn and soybean during early growth stages given a weekly evapotranspiration rate of 1.7 inches.

Crop stage	Crop coefficient (K_c)	Rooting depth (in)	% of Growing season	Water needed this week (in)
Corn				
V2	0.20	6	10	0.34
V4	0.20	10	15	0.34
V6	0.39	15	20	0.66
V8	0.56	20	27	0.95
Soybean				
V0	0.20	6	0	0.34
V1	0.30	9	4	0.51
V2	0.50	12	8	0.85
V3	0.60	16	11	1.02

“**Equipping and operating boom sprayers to control insects and diseases in soybeans**” was the topic of this week’s [MSU Extension Field Crops Virtual Breakfast](#) with MSU Extension soybean senior educator Mike Staton. Controlling diseases and insects can be more challenging than controlling weeds, particularly in a tall, dense soybean canopy, because coverage is key, and getting the active ingredients down into the canopy to get adequate coverage can be challenging. Staton addressed the five most important factors in getting good spray application coverage: spray volume; droplet size; pressure; boom height; and ground speed.

- **Spray volume** has the greatest impact on canopy penetration and leaf coverage. A volume of 15 gallons per acre (20 gpa is preferred) are required for dense canopies.
- **Droplet size** is the second most important factor with fine to medium (200-350 microns) being a good balance between being large enough to penetrate the canopy and fine enough to ensure good foliar coverage. Spray nozzle manufacturers all use the same color code for droplet size in catalogs; however, these colors are in no way correlated with spray tip colors.

Category	Symbol	Color
Extremely Fine	XF	
Very Fine	VF	
Fine	F	
Medium	M	
Coarse	C	
Very Coarse	VC	
Extremely Coarse	XC	
Ultra Coarse	UC	

Color code for droplet size used by all nozzle manufacturers. Note: these colors do not coincide with spray tip colors. Graph courtesy of Mike Staton.

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- **Pressure** is important as it affects droplet size, spray volume and droplet velocity. The recommendation of 40 psi provides a good balance of canopy penetration without producing too many fine droplets.
- **Boom height** should be set to deliver product at about 2/3 the height of the crop canopy or least 5 inches deep into the canopy. Boom height will depend on height of the crop and the angle of the nozzle spray.
- **Ground speed** will ultimately be determined by the other critical factors (spray rate, desired droplet size, pressure, tip selection). Dr. Erdal Ozkan of The Ohio State University joined the meeting and added that spray boom bounce needs to be taken into consideration, particularly with sprayers that do not have sensors for maintaining boom height.

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)

- Jun 22** [Virtual Breakfast – White Mold Management in Soybean with Marty Chilvers](#). 7-8am. Register online once for the entire series.
- Jun 28** [MSU Weeds Day](#). 8:30am-1pm. MSU Agronomy Farm, 4450 Beaumont Rd, Lansing, MI. Optional afternoon tours available. Register online at \$30/person, onsite for \$40.
- Jun 29** [Virtual Breakfast – Cercospora Leaf Spot Management in Sugar Beets with Daniel Bublitz](#). 7-8am. Register online once for the entire series.
- Jul 12** [Cass County MAEAP Field Day](#). 9am to 12pm. Red Barns at Armstrong Farms, [57038 M-40, Marcellus, MI](#). Attendance is free, register by calling 269-445-8641 ext 5 or emailing [Emily Haluda](#).
- Jul 17** [Biochar in Michigan Field Day](#). 9am-12pm, 8:30am registration. Kellogg Biological Station, 3700 E. Gull Lake Drive, Hickory Corners, MI. Registration closes July 7th.
- Aug 8** [Tillage Field Day](#). 8:30am-12pm. MSU Mason Research Farm, 1614 Okemos Rd, Mason, MI. Focus on different tillage implements and their impact on the soil. Open to the public, cost is free but registration is required.
- Aug 8** [Tillage In-Service](#). 12:15-4pm. MSU Mason Research Farm, 1614 Okemos Rd, Mason, MI. More in-depth discussions on tillage and soil health. Open to MAEAP technicians, Conservation District staff, and MSU Extension staff. Cost is \$10, includes lunch, register online.

MSU Extension Digest Briefs

JUNE CROP WATER NEEDS

PUBLISHED ON JUNE 15, 2023

If soils are depleted of moisture beneath the developing plants, irrigators need to supply enough water to help establishing roots grow down into natural soil moisture.

EQUIPPING AND OPERATING SPRAYERS TO CONTROL INSECTS AND DISEASES IN SOYBEANS

PUBLISHED ON JUNE 15, 2023

Controlling insects and diseases in soybeans can be challenging. This article will help you maximize insect and disease control in soybeans by equipping and operating your sprayer properly.

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FIELD CROPS VIRTUAL BREAKFAST SERIES ADDRESSES WHITE MOLD MANAGEMENT IN SOYBEANS ON JUNE 22

PUBLISHED ON JUNE 15, 2023

The Field Crops Virtual Breakfast Series on June 22 will feature MSU Extension field crop pathologist Marty Chilvers presenting information on managing white mold in soybeans.

WHEAT WATCHERS WEEK OF JUNE 5, 2023

PUBLISHED ON JUNE 8, 2023

See how the wheat crop is progressing across Michigan this week.

SURVIVING THE DRY SPELL: MSU EXTENSION'S DROUGHT WEBSITE PROVIDES VITAL RESOURCES

PUBLISHED ON JUNE 8, 2023

Drought conditions are always troubling, but MSU Extension resources are available to help producers and landowners make the best management decisions for them.

IDENTIFYING AND CORRECTING MANGANESE DEFICIENCY IN SOYBEANS

PUBLISHED ON JUNE 8, 2023

Tips for identifying and correcting manganese deficiency, a common nutrient deficiency in Michigan soybean fields.

DROUGHT AND HIGH TEMPERATURE IMPACT ON WHEAT YIELDS IN MICHIGAN

PUBLISHED ON JUNE 7, 2023

The recent dry spell and high temperatures has growers and agronomists asking how this will impact wheat yields. Here is an overall summary of conditions and links to resources.

INTERIM UPDATE ON THE ECONOMIC IMPACT OF MICHIGAN'S AGRI-FOOD SYSTEM

PUBLISHED ON JUNE 6, 2023

This document offers an interim update on the economic impact of Michigan's agri-food and agri-energy system.

IRRIGATION TRENDS IN MICHIGAN

PUBLISHED ON JUNE 6, 2023

A look at trends in the number of irrigated acres and overall irrigation water use.

MSU AGBIORESEARCH. EXTENSION TO HOST RESEARCH CENTER FIELD DAYS THIS SUMMER

PUBLISHED ON JUNE 6, 2023

The public is invited to learn about research and programming that impact Michigan food and natural resources

CAUSES OF VARIABLE AND DELAYED SOYBEAN EMERGENCE

PUBLISHED ON JUNE 2, 2023

Understanding the causes of this year's variable or delayed soybean emergence and estimating the viability of the seeds and seedlings will help producers manage affected fields.

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