CFAES COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

Western Lake Erie Basin Update

OSU Extension Water Quality Extension Associates

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Forecasted Bloom Severity

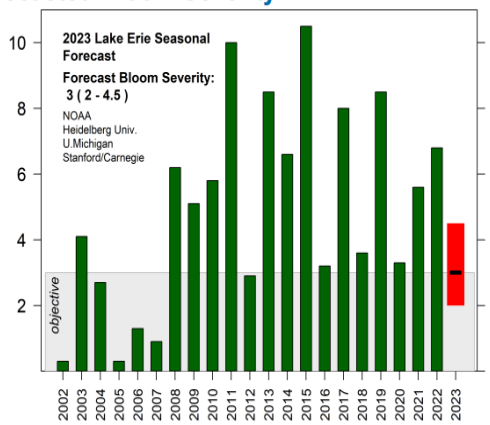

Fig. 1. Bloom severity forecast compared to previous years. The wide red bar is the likely range of severity based on the different models used and reflect uncertainty in the July TBP load. A severity below 3 is the goal of the Great Lakes Water Quality Agreement (GLWQA).

Cumulative Total Bioavailable Phosphorus

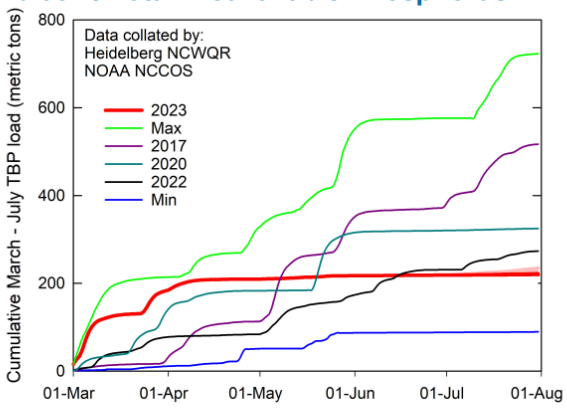

Fig. 2. Cumulative TBP loads for the Maumee River (Waterville, OH). Each line denotes a different year. 2023 is in red: the solid line is the measured load to June 26th; light red shows the possible max. The July TBP load will have the greatest impact on bloom severity, and could push the bloom severity of the maximum value (4.5).

Lake Erie Harmful Algal Blooms (HABs) Forecast 2023 Summary

Ohio Sea Grant and NOAA hosted a live webinar this afternoon to bring together researchers and the public to discuss Harmful Algal Blooms (HABs) in Lake Erie, along with the progress of research projects aiming to address the root causes of the issue. HABs have been an annual occurrence in Lake Erie for decades but have only recently drawn attention from the public. This attention stems from the Toledo Water Crisis in 2014, which left residents of Toledo with undrinkable water for days after a toxic algal bloom formed in Lake Erie. Since then, state and international funding has been dedicated to research focused on ways to mitigate the causes of HABs, mainly the result of excess nutrient runoff into the watersheds that feed Lake Erie.

Our first speaker of today's event was Dr. Laura Johnson- Director, National Center for Water Quality Research, Heidelberg University who proceeded to talk about Maumee River loading and findings for March 1 – July 31, 2023. With 23 sampling stations that provide continuous monitoring since 1975, a large amount of historical data is available in this area. Per stream flow records, this has been the driest May since 1934. This is significant to the agricultural sector as the Dust bowl was in full effect during that time caused various issues that some may still remember today.

Other items from stream flow/ loading data shows no substantial storm events after March 1 till June 29, 2023, and shows peak levels of loading after the 2023 March storms. Dr. Laura Johnson states that 83% of loading was from these March storms. Besides this, stream flow has not been this low since 2016 and 2012. Moreover, information and data shows total phosphorus is higher than expected due to uncovered ground during these large rain events, but bioavailable phosphorus and dissolved reactive phosphorus are as predicted. Dissolved reactive phosphorus and total phosphorus are still at elevated levels.

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Lake Erie Harmful Algal Blooms (HABs) Forecast 2023 Summary

Dr. Rick Stumpf- Oceanographer, NOAA'S National Centers for Costal Ocean Science our second speaker, gave an update on the 2023 forecast of the Western Lake Erie Harmful Algal Bloom. A visible bloom is not yet able to be seen but is predicted to be visible in mid- to- late July. Bloom severity is rated on a scale of 1 (least severe) to 10 (most severe). The 2023 bloom severity is predicted to be at a 3 due to total phosphorus loading during spring. Seasonal precipitation could fluctuate the bloom between a 2 -4.5. Last years bloom (2022) was rated at a 6.8. This year's blooms will be less severe and more similar in nature to the bloom in 2020. Dr. Stumpf warns everyone to keep kids, pets, yourself, and others to avoid these heavy bloom concentration areas for safety concerns of the toxins the harmful algal blooms produce. The 2023 phosphorous load is at the GLWQ threshold. As always, NOAA website provided daily updates for current bloom and scum on Lake Erie.

The third speaker of today's event was Dr. John Witter, Associate Professor of Agronomy and Soils at The Ohio State University, who discussed conservation ditch design. He began by discussing the wet landscape history of Northwest Ohio, which once was part of the Great Black Swamp. Most commonly, trapezoidal ditches were utilized to get the water quickly away from the fields and into nearby rivers. This works very well for its purpose, but comes with a few issues, including ditch bank erosion and sedimentation within the ditch channels. In order to maintain their efficacy, ditches require dredging to remove this sedimentation, as well as bank reconstruction to maintain the channels. Recently, two-stage ditches have emerged as a conservation practice that can reduce both sedimentation and bank erosion, while improving nutrient removal from the water that ends up in the ditch. Two-stage ditches are ditches where a small floodplain (or bench) is excavated to be slightly higher than the main ditch channel. This allows for vegetation to grow on the benches when the water level is low, but still accommodate large amounts of water when large runoff events occur. In addition, the vegetation on the benches allows for less sediment loss from the channel, as well as nutrient absorption from the sediment or water that moves over the plants. From two long-term research sites, Dr. Witter's team has been able to determine that over 3,000 lbs. of Phosphorus (P) can be trapped in the benches' soil, thus removed from the water moving through the ditch, over the lifetime of the two-stage ditch.

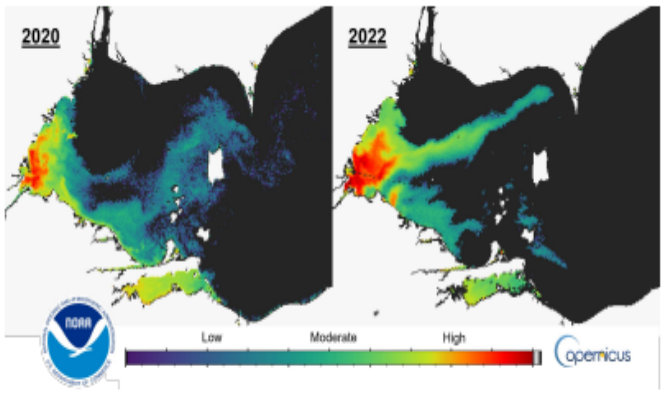

Fig. 4. The maximum bloom severity in 2020 (Aug. 21-31) and 2022 (Aug. 10-19). 2023 may be similar to 2020 and smaller than 2022. Bluish-green to dark blue indicates low cyanobacterial concentrations. Sandusky Bay has a different type of cyanobacteria that typically does not form scum.

To follow along with the current bloom position within Lake Erie or to view the HAB severity forecast, visit the NCCOS website or click here.
The 2022 Lake Erie Quality Index Report is also available to the public. To find this publication and other historical publications please click on the link for more information https://lakeerie.ohio.gov/planning-and-priorities/04-leqi

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The final speaker of today's event was Dr. Jay Martin, Professor in the department of Food, Agriculture, and Biological Engineering at The Ohio State University. Dr. Martin prefaced his talk by defining legacy P fields as locations that contain P levels much higher than soil test P recommendations (20-40 ppm P), usually due to historical applications of manure. He reiterated that the Maumee River watershed contributes 50% of the annual P load to Lake Erie and that approximately 80% of the watershed's acreage is used for crop production. He showed a figure describing that 7 of the 17 counties in the Maumee River watershed have 5-15% of their fields containing over 100 ppm P. OSU has formed a private/public partnership with three different nutrient service providers and retailers in order to locate legacy P fields in the region. Through this partnership, 12 fields were identified for research projects to determine runoff and discharge levels, as well as impacts of various structural management practices. In 5 of those fields, only monitoring is being conducted to determine Total Phosphorus (TP) and Dissolved Reactive Phosphorus (DRP) levels leaving the fields. Two sites have implemented controlled drainage structures, two sites have installed wetlands, and two sites have installed P filters. One site is currently under development and will feature both a wetland and a P filter. Out of the two sites with P filters, one reduced P loss by 58% and one showed 83% reduction. Results show that 6 of 9 fields have TP and DRP levels over the annual watershed goal, and 7 of 9 fields have DRP levels over the March-July load goal. However, results show that not all legacy P sites have high P loads, which spurred another project to identify what characteristics caused a legacy P field to have high P loss. Results from that project saw that higher silt levels in a legacy P field corresponded to higher DRP runoff levels.

Double Crop Soybeans Prompt Safety Reminders for Manure Applications

Each year after wheat harvest allows for the 2nd largest window of time for manure application. Manure applications can provide needed moisture for soybean emergence. Placing manure in contact with geminating seeds can result in severe emergence problems and on emerged plants severe leaf burning can occur or death to the plant. Precaution should be taken if red clover was frost seeded into wheat as manure can cause an accidental kill with summer applying. Be sure to print out the weather forecast when applying manure- Glen Arnold, CCA

Remember the "not greater than 50% chance of 0.5 inches of rainfall in the next 24 hours" rule in the Western Lake Erie Basin for manure applications.

Conversations on Conservation

Join us for educational conversations on a variety of topics. This series will begin with a basic overview on what non-point source vs point source pollution is and how people from every sector can do their part to help reduce this pollution. Each month will have a different topic so feel free to join us for coffee and good conversation.

July 10, 2023 • 7:30 a.m.–8:30 a.m.
OSU EXTENSION OFFICE- AUGLAIZE COUNTY
208 S. Blackhoof St.
Wapakoneta, OH 45887

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EXTENSION

Contact Information

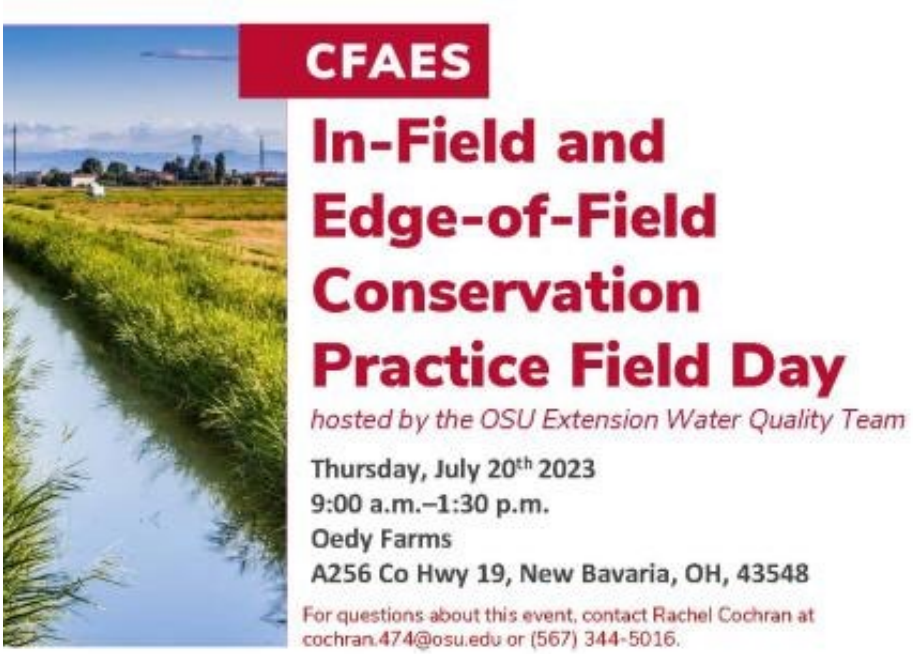
Walk ins are welcome
Contact: Jocelyn Birt OSU Extension Water Quality for Allen, Auglaize, and Mercer Counties at **419-910-6057** for more information

Kickoff this month with our first of the series of Conversations on Conservation. A variety of topics will ensue so be sure to bring your ideas, questions, and comments in order to make this as informative as possible. July will have a variety of topics such as an Introduction to Non-point source implementation strategy plans, Programs offered to reduce cost of implementation to consumers, and septic system care, maintenance, and pertinent information if time allows. No registration is required as this is an informal event. So come out and join us for some coffee and conversation at the Auglaize County Extension Office.

Upcoming Events and Field days

This field day will cover topics related to in-field and edge-of-field conservation practices, such as two-stage ditch construction and use, cover crops, and the use of Phosphorus filters to manage excess soil P. Our keynote speaker will be discussing water management and in-field practice research results.

Lunch will be provided at this event, so registration is preferred. Register at go.osu.edu/WQTeamFieldDay



Manure Science Review

Thursday, August 3 | 8:50-4:00 (EDT)

@ Innovative Ag | 10366 OH 249, Bryan, Ohio

Join us to learn about:

Logistics of handling poultry litter
Composting mass mortality from HPAI
Best practices for manure spill response
Liquid and solid manure application demonstrations
Comparing P2O5 in manures
And more!

Continuing education credits available.

For program and registration details, go to:
ocamm.osu.edu

The Ohio State University Extension

Defiance Soil & Water Conservation District

Speakers

H2Ohio updates Terry Mescher, *ODA Division of Soil and Water Conservation*

Poultry litter: Logistics, stockpiles and insect control Mike Cook, *Innovative Ag*

Composting mass mortality from HPAI Paige Kelly, *Ohio Poultry Association*

Using cultivation to incorporate manure—what the research shows Glen Arnold, *Ohio State University*

Composting bedded pack manure—research and farmer perspectives Courtney Krieger, *Ohio State University* and Aaron Stuckey, *Stuckey Farms*

Best practices for manure application in pictures Frances Springer, *ODA Division of Soil and Water Conservation*

Manure spill response: Best practices Kurt Kollar, *Ohio EPA (invited)*

Demonstrations

- Comparing P2O5 content in manures + compost
- Liquid manure applicator tool bars—new and retrofits
- Poultry litter applicators—dry box
- Spreader calibration
- Grassland applicator for minimum tillage
- 360 RAIN irrigation
- Compost turning
- Cover crops

Site visit (optional)

- Vandermade Dairy | center irrigation of separated liquids
- EnviroKure | biostimulants from chicken manure

Upcoming Events and Field days Cont'd

2023 OSU Weed Science Field Day

The 2023 OSU Weed Science Field Day will be held on Wednesday July 12th at the Western Ag Research Station in South Charleston, OH. Registration will start at 8:30 followed by a field tour. Studies can also be viewed at your own pace. Field day topics will include new corn and soybean products, waterhemp management, and cover crop trials. To register via email or for more information contact Alyssa Essman, essman.42@osu.edu.
Date: Wednesday, July 12th
Time: 9:00 am – 1:00 pm
Location: OARDC Western Agricultural Research Station
7721 S Charleston Pike,
South Charleston, OH 45368
Registration: register online at https://osu.az1.qualtrics.com/jfe/form/SV_eWFpM5eMCXKZax8 by **July 5th**

2023 Western Agronomy Field Day

We welcome you to attend the annual Western Agronomy Field Day at the Western Agricultural Research Station in South Charleston, Ohio. The field day will be held Wednesday July 19, 2023, with registration 8:30 a.m. and the program starting at 9:00 a.m., running until 3 p.m. The field day is free and open to the public and lunch will be provided. The field day will be held at the Western Ag. Research Station, 7721 South Charleston Pike, South Charleston, Ohio 45368. Pre-registration is required by July 12, 2023 to reserve your spot and lunch. To RSVP, please email to Joe Davlin, davlin.1@osu.edu or call 937-462-8016.

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