

## **Auglaize County OSU Extension Weekly Agriculture Newsletter – January 22, 2020**

### **Scouting and Latest Information**



Hello!! Good afternoon! I pray you are well.

If you are a buyer or seller of hay, let me know and I can keep a list to share with others. Call the OSU Extension office at 419-739-6580 or e-mail me at [stachler.1@osu.edu](mailto:stachler.1@osu.edu). If you are in need of some grass hay, I know of an individual that has lots of Teff hay.

### **Joke: Why did the farmer call his pig “ink”??**

Rain fell Three days in the past week, but two of them were less than 0.02”, so I’m not reporting on those. Rainfall for Saturday, January 18<sup>th</sup>, ranged from 0.32” about 2 miles southwest of Fryburg to 0.88” at about 1 mile northeast of Fryburg. Rainfall for the week was the same as for the 18<sup>th</sup>. The average rainfall for the week was 0.60”. The average high temperature is still 33 degrees F. Temperatures were below normal for 4 days and above normal for 3 days. January 19<sup>th</sup> was the coldest at -12degrees from the high. January 19<sup>th</sup> is the only day of December, January, and February to have been below the average daily temperature of 17

degrees. This is important because it is believed that if we have 10 days in these three months below 17 degrees F that the Frogeye leaf spot spores should be killed. Looks to me like it will be a Frogeye Leaf Spot year!!

Wheat – I rate the wheat the same as last week which was 7% excellent, 29% good, 69% fair, and 0% for poor and very poor.

Alfalfa – Nothing to report.

Corn – There is still corn to be harvested in the county.

Soybean – Nothing to report.

Weeds – Nothing to report

Insects - No report.

**There WERE changes to the Tavium label this past week. There were NO changes to the Engenia, FeXapan and Tavium labels.** The Engenia label still has the most approved products compared to XtendiMAX and FeXapan. One new herbicide was added to the XtendiMAX label this past week, which totals 202 herbicides. No new adjuvants were added the XtendiMAX label, now totaling 386. No new nozzles were added to the XtendiMAX label, which totals 36. No new Drift Reducing Adjuvant (DRA's) were added to the XtendiMAX label this week, making a total of 64 DRA's. No new nutritional products were removed from the XtendiMAX label which totals 215. No new products were added to the Insecticides, Fungicides, Plant Growth Regulator and Other group on the XtendiMAX label which totals 97. No new adjuvants were added to the Engenia label, which now totals 500. No new herbicides were added to the Engenia label, which brings the total herbicide count to 146. No new products were added to the Other category (growth regulators, and fungicides) on the Engenia label, which totals 29. No new insecticide were added to the label which currently has 28 products. No new Drift Reducing Adjuvants (DRA's) were added to the Engenia label, which totals 108. No new nozzles were added to the Engenia label, which totals 29. No new nutritional products were added to the Engenia label which totals 177 products. No new product was added to the pH Modifier group of the Engenia label which totals 16 products. The FeXapan label has many of same the products and nozzles as the XtendiMAX label, but NOT all are the same, so check the FeXapan label carefully. There are 120 herbicides, 49 DRA's, 312 adjuvants, 151 nutritionals, 44 insecticides, fungicides, and others, and 26 nozzles that have been approved for the FeXapan label. There are 47

herbicides, 77 DRA's, 258 adjuvants, 30 nutritionals, 16, insecticides, 7 fungicides, 8 other products, and 41 nozzles approved for use with Tavium.

## Upcoming Meetings

**Get signed up for these important meetings!! Time is running out for some of these meetings.**

- 1. Auglaize County Agronomy Day.** The meeting will take place on January 27, 2020 from 9:00 AM to 3:00 PM. This meeting will meet the needs for pesticide (all categories) and fertilizer recertification. Kelley Tilmon will speak about insect pests at 10:00 AM. The meeting location is St. Joseph Parish Life Center (101 W. Pearl St.) in Wapakoneta. Lunch is on your own. The meeting is free if you are attending just for the information. If you need recertification credits for pesticide license the fee is \$30.00. If you need recertification credits for fertilizer, the fee is \$10.00. If you need both the fee is \$40.00. You can register by contacting the office at 419-739-6580.
- 2. Farm Transition/Succession Workshop.** This meeting is a two day workshop. The meeting will take place on February 3 and February 25, 2020 from 10:00 AM to 3:00 PM at Mid-Ohio Energy in Kenton, Ohio. David Marrison, Robert Moore, and Peggy Hall will be the speakers for this meeting. The cost for the meeting is \$30 per person and registration is due January 27, 2020. To register contact the Hardin County Extension office at 419-674-2297 or email [stachler.1@osu.edu](mailto:stachler.1@osu.edu).
- 3. H2Ohio Meeting by SWCD.** This meeting is being held on February 11, 2020 at 6:00 PM at the Auglaize County Junior Fair Building. Contact the Auglaize County SWCD at 419-738-4016 for more information.

**Answer to joke: Because it was always running out of the pen!**

## Choosing Corn Herbicides



It is time for farmers to choose their herbicides and other pesticides for this year's crop. Much thought goes into choosing the right herbicide, such as effectiveness, cost, carryover, and many other factors.

Most of the corn in the county is planted after some amount of spring tillage, but there is still some corn planted without tillage. For no-tillage corn apply glyphosate at 1.125 to 1.5 pounds acid equivalent per acre (32 to 44 fluid ounces per acre of Roundup PowerMAX) plus 2,4-D ester (4 pound per gallon product) at 1 pint per acre. This combination is the most broad-spectrum, but it can be a little weak on marehail. It is best to apply this combination 7 days before planting to minimize corn injury, but it can be applied after planting, but before corn emergence if you are willing to accept the injury that may occur.

There are many effective preemergence herbicides for corn. The most comprehensive products or combinations include Acuron plus atrazine, Lexar, Lumax, Cinch ATZ plus Instigate, Resicore plus atrazine, Corvus plus atrazine, Balance Flex plus atrazine premix (Bicep II Magnum or Harness Xtra as examples), SureStart plus atrazine, and Harness MAX plus atrazine. These comprehensive products have the potential to control weeds all season long. Weeds that can escape these herbicides include annual grasses such as giant foxtail and fall panicum, giant ragweed, and waterhemp. When these products are applied in a burndown prior to emergence of corn include a methylated seed oil adjuvant.

All of these preemergence herbicides can be applied early postemergence should the weather not cooperate. Instigate, Balance Flex, and Corvus must be applied no later than 2-collar corn. Since Instigate, Corvus, and Balance Flex must be applied to really small corn, fields will need to be scouted to ensure no weeds have emerged after the application. One strategy to reduce the chances of late weed emergence is to include atrazine at 2.0 pounds active ingredient per acre as long as you do not have highly erodible land and did not apply any previously. You can only apply a total of 2.5 pounds active ingredient per acre of atrazine for the season. All other products mentioned above can be applied up to 11-inch corn. Be sure to check the labels to know what adjuvants need to be mixed with these products. Mixing a high rate of atrazine with these

products will help from needing to apply a second postemergence application with the exception of fall panicum. Fall panicum is becoming more prevalent because atrazine does not control it.

Atrazine premixes such as Bicep II Magnum and Harness Xtra are cheaper options, but usually do not provide season-long control, especially for annual grasses, giant ragweed, velvetleaf, and waterhemp. A planned postemergence herbicide program is necessary with these products.

If Roundup Ready corn is planted, glyphosate applied postemergence will effectively control most of the weeds, exceptions will be marehail, giant ragweed, waterhemp, and maybe common ragweed due to resistance. The most effective postemergence broadleaf herbicides to control these resistant weeds include Callisto Xtra, dicamba plus atrazine, DiFlexx Duo, Impact plus atrazine, Shieldex plus atrazine, and Laudis plus atrazine. The use of atrazine means the herbicides must be applied before 12-inch corn, which may be too soon to control waterhemp season long. Only the DiFlexx Duo can be applied to corn larger than 12-inch which will provide more effective control of waterhemp. The next most effective postemergence herbicides that will control the glyphosate-resistant weeds and allow for applications to larger corn include Capreno and Status. To improve weed control with Status apply it at 8 ounces per acre.

If Balance Flex, Corvus, or Instigate are applied preemergence, then other HPPD inhibiting herbicides containing the active ingredient in Callisto, Impact, or Laudis should not be applied alone postemergence due to selection of resistant weeds, especially waterhemp.

For Non-GMO corn, the preemergence herbicides mentioned above can be used. There are two strategies, just use an atrazine premix or a low rate of a comprehensive preemergence program and automatically apply postemergence herbicides as they will most likely be needed or use a high rate of a comprehensive preemergence herbicide program and likely not need a postemergence treatment, but scout to make sure.

Pre-mixtures that will control grass and broadleaf weeds in non-GMO corn include Capreno and Revulin Q. Impact plus atrazine, Shieldex plus atrazine, and Laudis plus atrazine are tank-mixtures that will control most grass and broadleaf weeds. Accent Q and Steadfast Q control grasses and can be mixed with the above mentioned postemergence broadleaf herbicides to control both grasses and broadleaf weeds.

There are no new corn herbicides this year to the best of my knowledge.

## **C.O.R.N. Newsletter**

<https://agcrops.osu.edu/newsletter/corn-newsletter>

## Early Indications Point to a Wetter Spring

It is that time of the year where winter is here but spring is just around the corner.

The weather, climate and hydrology patterns still remain wet across the region. This makes Ohio vulnerable to wet conditions.

The outlook for February calls for normal to slightly below normal temperatures with not too far from normal rainfall. There is a chance February could be drier than normal but the chances are not high.

The jet stream remains active from Japan across the North Pacific Ocean into North America but not as active as last year. Therefore, the spring outlook is for a chilly start but a warmer than normal finish. At the same time, above normal rainfall is forecast so we are likely to see spring planting challenges again into 2020 like many of the last 10+ years. However, it does not look as bad as 2019 at this time.

Many of the climate models show trends toward normal or below normal rainfall and hotter weather for summer which if it comes to happen will create challenges.

You can keep up-to-date on all the NOAA climate outlooks at:

<https://www.cpc.ncep.noaa.gov/>

**Author(s):**

[Jim Noel](#)

## Managing Stored Grain Through Winter



*Stored Corn*

Managing stored grain throughout the winter is an important part of your grain marketing plan for farm profitability. This winter we are already receiving reports of stored grain going out of condition, which can lower the value and be a hazard to those working around the grain facility. At a minimum, stored grain that has gone out of condition can cause health hazards, especially when grain dust contains mold and bacteria. Out of condition grain can also form a crust or stick to the bin walls and if someone enters the bin for any reason an entrapment could occur. For more information on safety when working around grain visit <http://go.osu.edu/AFM> and listen to episode 41 of the podcast on grain bin safety.

Too many of us know the scare of a close call with grain entrapment but lived to tell the story. Even if it was just in a wagon or a truck while unloading wet grain, the fear is real. Unfortunately, it does not always stop us from entering a bin without the proper safety equipment. To help raise awareness of the dangers of working around stored grain, Champaign County will be showing a screening of the movie SILO on February 6 at 6pm at the Gloria Theater in Urbana. SILO is “inspired by true events, SILO follows a harrowing day in an American farm town. Disaster strikes when teenager Cody Rose is entrapped in a 50-foot-tall grain bin. When the corn turns to quicksand, family, neighbors and first responders must put aside their differences to rescue Cody from drowning in the crop that has sustained their community for generations.” RSVP at <https://silourbana.eventbrite.com>.

While even grain in good quality can be hazardous, maintaining grain quality can help keep you safe. This year’s grain is presenting increased challenges due to more fines during harvest, warm fall temperatures making it difficult to cool grain properly, and higher moisture grain due to the crop being drought or frost killed. This premature killing of the crop before maturity can cause our moisture tester to read drier than the crop really is. With this in mind, being sure to monitor your bins this winter will be very important. Three keys to managing grain this winter include monitoring bins every two weeks, properly cooling grain, and, if you haven’t already done so, coring bins very soon.

### **Monitoring Bins**

When monitoring bins be sure to watch for insect activity or condensation forming on the inside roof of the bin. Monitor the temperature of the grain. Ideal winter stored grain temperature is 35°F, which is obtained through proper cooling. Temperature can be monitored with a long thermometer but there are also cable-monitoring systems that can do a much better job at monitoring entire bin temperatures and catching the hot spots caused by spoilage and insect activity.

### **Coring Bins**

The most common area for spoilage is the center because of an increased concentration of fines restricting air movement. During the winter, cooling process bins should be cored to remove 90% of the fines. To properly core a bin, remove the entire peak creating a funnel shape inside. A proper core funnel starts at the bin wall, not part way up the current peak.

### **Cooling Grain**

Most grain spoilage is a result of storing grain at too warm of temperatures over the winter, so cooling and keeping the grain cool is critical. Over the past two days we have had some excellent weather for cooling stored grain and should have more favorable weather within a few weeks. Look for days with no precipitation when the outside air temperature is 10-15°F cooler than the temperature of the grain. The goal is not to freeze the grain, just cool it to the point that insect activity and mold growth is slowed or stopped (35-40°F). The amount of time it takes to move a cooling front through the bin depends on the cfm/bu of the fan. For most bins, this is between 1 to 4 days but some may take longer. If you know the cfm of your fan for winter cooling use the equation  $hours = (20/cfm/bu)$ .

While this article barely touches the surface of stored grain management, more information can be found in a recent webinar from Dr. Kenneth Hellevang of North Dakota: <https://go.osu.edu/StoredGrain>. With the importance of stored grain management we also recently hosted Dr. Kenneth Hellevang on episode 42 of our Agronomy and Farm Management podcast at: <http://go.osu.edu/AFM>.

### **Author(s):**

[Jason Hartschuh, CCA](#)





*Ohio Farm Business Summary*

Additional author: Haley Shoemaker

How well do you know your farm? Sure, you could probably drive your fields blindfolded and you could name without a doubt the cow that will always come in the parlor last; but what about your farm as a business? If this question made you stop and think, then it's time to become more familiar with your cost of production and other financial measures that make the rest of your farming operation possible.

The Ohio Farm Business Analysis Program is focused on working with farmers across Ohio to better understand the numbers behind their farm business in order to make more informed production, marketing and financial management decisions that will impact the farm's overall profitability.

Farm business analysis is a tool that can be applied to any farm, regardless of size, crop, or livestock enterprise. Financial management is critical to the success of every farm business, and with analysis, farms are able to better understand the numbers behind their profits or losses.

To complete a farm's analysis, we start with beginning and ending balance sheets from the most recent business year. To fill in the year between the balance sheets, we provide input forms that cover all income, expenses, capital purchases, sales, and enterprise information.

Farmers complete a whole farm analysis and may choose to do enterprise analysis. They receive their farm's analysis and enterprise summaries that include their costs of production per acre, per unit (bu, ton, cwt, head) as well as machinery costs per acre. At the conclusion of each year's analysis, farmers receive Ohio summary data, along with personalized benchmark reports that help them quickly identify areas of strength and concern.

All farm data is treated and handled with the utmost care to preserve confidentiality. Farms that complete analysis also contribute to the database of Ohio farm financial and production data. Ohio farm data is used for teaching, research, extension education and policy decision making.

To better serve Ohio's farmers, the Farm Business Analysis Program has three Farm Business Analysis Technicians serving central and western Ohio. These technicians work out of the County Extension Offices in Mahoning, Miami and Pickaway counties, and will also work with farms in surrounding counties. We encourage you to contact the technician nearest your farm to get started on Farm Business Analysis:

Mahoning County	330.533.5538	Christina Benton	<a href="mailto:benton.132@osu.edu">benton.132@osu.edu</a>
Miami County	937.440.3945	David Jenner	<a href="mailto:jenner.12@osu.edu">jenner.12@osu.edu</a>
Pickaway County	740.474.7534	Trish	
Levering	<a href="mailto:levering.43@osu.edu">levering.43@osu.edu</a>		

Thanks to the USDA-NIFA Farm Business Analysis grant, the cost for a farm to complete an analysis for the 2019 business year is \$100. To learn more about farm business analysis, contact Dianne Shoemaker or Haley Shoemaker at 330-533-5538 or email at [shoemaker.3@osu.edu](mailto:shoemaker.3@osu.edu) or [shoemaker.306@osu.edu](mailto:shoemaker.306@osu.edu). See past farm business summaries at <http://farmprofitability.osu.edu>.

**Author(s):**

[Dianne Shoemaker](#)

## 2019 eFields Report Available



### *2019 eFields Report*

The 2019 eFields Research Report is now available online or in a hardcopy version. 2019 was a challenging year for many farmers including the eFields team but despite the challenges, the team was able to grow. The 2019 report covers 88 on-farm, field scale trials conducted in 30 Ohio counties. and provides information on a variety of topics including new studies. Here is a list of some of the 2019 study topics and pages you can read about their results:

- **Nitrogen 4Rs:** pages 48-63
- **Fungicide and Insecticide:** pages 38-39, 104-109
- **Cover Crops:** pages 156-158 and 202
- **Forages:** pages 154-185
- **Ag Tech:** pages 186-197
- **Crop Production Budgets:** pages 26-31
- **Ohio Planting Progress:** page 22
- **2018 Farm Bill:** page 32

The e-version of the 2019 eFields report can be viewed or downloaded at [go.osu.edu/eFields](http://go.osu.edu/eFields). To receive a printed copy, contact your local OSU Extension office or email [digitalag@osu.edu](mailto:digitalag@osu.edu). We hope you find the information insightful and a resource for crop production.

The eFields team has also planned 6 regional meetings to discuss results from local and state-wide research trials. We also use these meetings to gather feedback about research interests for 2020. There is no cost to attend; for more information or to register for a meeting, visit [go.osu.edu/eFieldsMeeting](http://go.osu.edu/eFieldsMeeting). Please plan to join us for the meeting nearest you:

- 
- Southwest Region: February 10<sup>th</sup>, 9AM-12PM, Wilmington
- Northwest Region: February 26<sup>th</sup>, 9AM-12PM, Bryan
- Central Region: February 27<sup>th</sup>, 9AM-12PM,
- South Central Region: March 9<sup>th</sup>, 9AM-12PM, Circleville
- East Region: March 10<sup>th</sup>, 6-9PM, Coshocton
- West Central Region: March 16<sup>th</sup>, 9AM-12PM, Piqua

We would like to sincerely thank all of our 2019 collaborating farms and industry partners. The eFields team enjoys working with each of you and we are looking forward to continuing to learn together in 2020.

Follow our social media using @OhioStatePA on Facebook, Twitter, and Instagram or subscribe to our quarterly newsletter, Digital Ag Download ([go.osu.edu/DigitalAgDownload](http://go.osu.edu/DigitalAgDownload)), to keep up with the eFields program throughout the year. For more information on how to get involved in eFields in 2019, contact Elizabeth Hawkins at [hawkins.301@osu.edu](mailto:hawkins.301@osu.edu).

**Author(s):**

[Elizabeth Hawkins](#), [John Fulton](#)

## OSU Extension and Ohio Soybean Council Energy Study: Understanding the Impact of Demand Charges & Power Factor in Agriculture



*Grain bin*

Farmers have long explored options to provide energy savings associated with their agricultural operations. Ohio State University Extension and the Ohio Soybean Council have partnered to provide research-based data driven tools to help Ohio farmers assess and navigate various energy infrastructure investment options for their farm. Specifically, the project team is interested in learning more about your experience and interest in implementing energy management strategies such as peak demand reduction, power factor correction, and/or the integration of solar generation systems to reduce electricity costs on your farm.

Farmers with commercial rate structures that charge for peak demand and poor power factor can implement equipment and management strategies to reduce electricity costs, thus increasing long-term profitability. However, very little is known about the economic feasibility of investing in equipment to reduce peak electric demand charges in agriculture. To determine the economic feasibility of implementing energy management strategies it is important to simultaneously study the real costs of installing new equipment, ongoing risks, challenges, as well as understanding how these improvements will influence the calculations of a farms electric bill a comprehensive manner.

If you are an Ohio farmer and interested in participating, you may click the survey link below to participate in this voluntary study. The survey will take less than 5 minutes and is designed to determine the overall level of interest in implementing energy management strategies such as peak demand reduction, power factor correction, the integration of solar generation systems to reduce electricity costs on your farm and to identify individuals who have experience with on-farm energy management strategies to summarize benefits and challenges. This project will provide our research team with data to identify actionable recommendations that will inform future Extension outreach and education programs.

If you have additional questions regarding this study please contact Eric Romich, Ohio State University Extension Field Specialist, at 419-294-4931 or by e-mail at: ([romich.2@osu.edu](mailto:romich.2@osu.edu)).

Survey Link: [https://osu.az1.qualtrics.com/jfe/form/SV\\_4MaQn34JafSQIQ9](https://osu.az1.qualtrics.com/jfe/form/SV_4MaQn34JafSQIQ9)

**Author(s):**  
[Eric Romich](#)

## Ohio Farm Custom Rate Survey 2020



*Corn*

A large number of Ohio farmers hire machinery operations and other farm related work to be completed by others. This is often due to lack of proper equipment, lack of time or lack of expertise for a particular operation. Many farm business owners do not own equipment for every possible job that they may encounter in the course of operating a farm and may, instead of purchasing the equipment needed, seek out someone with the proper tools necessary to complete the job. This farm work completed by others is often

referred to as “custom farm work” or more simply “custom work”. A “custom rate” is the amount agreed upon by both parties to be paid by the custom work customer to the custom work provider.

Custom farming providers and customers often negotiate an agreeable custom farming machinery rate by utilizing Extension surveys results as a starting point. Ohio State University Extension collects surveys and publishes survey results from the Ohio Farm Custom Survey every other year. This year we are updating our published custom farm rates for Ohio.

We need your assistance in securing up-to-date information about farm custom work rates, machinery and building rental rates and hired labor costs in Ohio.

This year we have an online survey set up that anyone can access. We would ask that you respond even if you know only a few rates. We want information on actual rates, either what **you paid** to hire custom work or what **you charged** if you perform custom work. Custom Rates should include all ownership costs of implement & tractor (if needed), operator labor, fuel and lube. If fuel is not included in your custom rate charge there is a place on the survey to indicate this.

You may access the survey at: [ohio farm custom rates survey 2020](https://osu.az1.qualtrics.com/jfe/form/SV_7WN0eNQz3VO41nv)

Or: [https://osu.az1.qualtrics.com/jfe/form/SV\\_7WN0eNQz3VO41nv](https://osu.az1.qualtrics.com/jfe/form/SV_7WN0eNQz3VO41nv)

The deadline to complete the survey is March 31,2020.

**Author(s):**

[Barry Ward](#)

## Northwest Ohio Crops Day

Join OSU Extension at the Bavarian Haus, just outside of Deshler, Ohio on Friday, February 7, 2020 starting at 8:00 a.m. to 3:30 for the second annual Northwest Ohio Crops Day. Find answers to your agronomy questions, obtain private and commercial pesticide applicator and fertilizer recertification, and CCA education hours as you prepare for the next growing season. This year we are pleased to have Greg Roth from the Penn State University as our featured speaker to discuss cover crop establishment and how it relates to water quality. The entire speaker and topic lineup for the day will include the following:

### Agenda

**8:00 Registration Opens and Visit Vendors**

**8:50 Welcome and Introduction**

Garth Ruff, OSU Extension Henry Co.

**9:00 Problem Weeds ID & Control (P & Comm – Core)**  
Mark Loux, OSU Extension Weed Specialist

**10:00 Cover Crop Considerations (P-1, Comm - 2C)**  
Greg Roth, Penn State University

**11:00 2020 Commodity Outlook**  
Ben Brown, AEDE Farm Management Program

**12:00 Lunch**

**1:00 Weather Trends: What's Next**  
Aaron Wilson, OSU Extension Climatologist

**2:00 Break – Visit Vendors, Draw Door Prizes**

**2:15 Edge of Field and BMP Update (Fert Recert)**  
Greg Labarge, OSU Agronomic Crops Specialist

**3:00 2019: A “Hay Day” for Annual Forages (P-2)**  
Garth Ruff, OSU Extension Henry Co.

**3:30 Adjourn and Evaluations**

**3:45 Optional: Fumigating Grain Storage (P-6, Comm. 10c)**  
Bruce Clevenger OSU Extension Defiance Co.

During breaks in the program you will have the opportunity to visit with local and regional companies that offer an array of products and services from farm equipment to seed technology to agricultural lending. Lunch and information packet provided with registration. You won't want to miss out on this opportunity. There will be 4.5 continuing education accredits for Certified Crop Advisors in NM, CM, and IPM.

Please RSVP by January 31, 2020 by contacting OSU Extension Henry County at 419-592-0806 or you email either Garth Ruff at [ruff.72@osu.edu](mailto:ruff.72@osu.edu) or Stephanie Jaqua at [jaqua.3@osu.edu](mailto:jaqua.3@osu.edu). The event will be held at the Bavarian Haus, 3814 St. Rt. 18, Deshler, OH 43516. Registration begins at 8 a.m; event starts at 9 a.m. Early bird registration by 1/31/2020 costs \$35 and the fee covers a light breakfast, lunch, information packet, and education credits. Walk-Ins and registrations after 1/31/2020 will be charged \$45 each. For more detailed information, visit the Henry County OSU Extension website at [www.henry.osu.edu](http://www.henry.osu.edu), or the Henry County ANR Extension Facebook page.

**Author(s):**

[Garth Ruff](#)

## Other Articles

### The Ohio Ag Law Blog--In Deep Water—EPA and states face lawsuits over water pollution

Source: <https://farmoffice.osu.edu/blog/fri-01172020-416pm/ohio-ag-law-blog-deep-water%E2%80%94EPA-and-states-face-lawsuits-over-water>

By: Ellen Essman, , Senior Research Associate , Senior Research Associate Friday, January 17th, 2020  
Lawsuits against the U.S. EPA and individual states seem to be a popular strategy to address water pollution problems. Last April, we [wrote about](#) Lucas County, Ohio and its suit against the EPA over water quality in the western basin of Lake Erie. Since that time, a federal judge has given another lawsuit concerning Lake Erie, filed by the Environmental Law & Policy Center (ELPC), the green light. But not all litigation concerns Ohio waters—recently, Maryland’s attorney general was directed to sue the EPA and Pennsylvania over water pollution in the Chesapeake Bay. Here are summaries of these two developments.

#### *Environmental Law & Policy Center vs. EPA*

We wrote about this lawsuit in February 2019, when ELPC had just filed its complaint. Essentially, ELPC contended that the U.S. EPA violated the Clean Water Act (CWA) when it allowed the Ohio EPA to designate Lake Erie as an impaired water body without instituting a Total Maximum Daily Load (TMDL) for pollutants going into the lake. You can get more details on this case by reading our blog post, [here](#). Subsequently, EPA moved to dismiss the complaint. In addition, Lucas County joined ELPC as co-plaintiffs.

On November 13, 2019, the U.S. District Court for the Northern District of Ohio denied EPA’s motion to dismiss. Judge James Carr ruled that the case can go forward, finding that ELPC “plausibly alleges that Ohio EPA has clearly and unambiguously refused to develop a TMDL for Western Lake Erie.” This means that the action will go forward and that ELPC will be able to argue the case on the merits. You can read the ruling [here](#).

#### *Maryland to sue EPA, Pennsylvania*

Meanwhile, in Maryland, the governor recently sent a [letter](#) to the state’s attorney general asking him to “commence litigation” against the EPA for “failing to enforce the Chesapeake Bay” TMDL, and against its upstream neighbor, Pennsylvania, for “repeatedly falling short of necessary pollution reduction goals.” At the center of this controversy is Pennsylvania’s draft Watershed Implementation Plan (WIP), which Maryland’s governor alleges will cause Pennsylvania to fall far behind its 2025 pollution reduction targets



in addition to not meeting the TMDL. The governor asserts that by accepting Pennsylvania's WIP with very few changes, the EPA is failing to enforce Pennsylvania's compliance with the established TMDL.

#### *What's next?*

It typically takes these types of lawsuits a while to work through the courts. The way the courts decide these cases will affect how TMDLs are viewed. Are TMDLs necessary under the CWA and enforceable, as the plaintiffs claim? Or are TMDLs simply soft goals and guidelines for reducing pollution that EPA does not necessarily have to enforce? Ultimately, outcomes of these cases could have implications for agricultural runoff, which can be a contributor to pollution in both Lake Erie and the Chesapeake Bay.

## Domesticated wheat has complex parentage

Wild and cultivated wheats from southeast Mediterranean and Turkey interbred during domestication

Date: January 22, 2020

Source: PLOS

Source: <https://www.sciencedaily.com/releases/2020/01/200122150024.htm>

Certain types of domesticated wheat have complicated origins, with genetic contributions from wild and cultivated wheat populations on opposite sides of the Fertile Crescent. Terence Brown and colleagues at the University of Manchester report these findings in a new paper published January 22, 2020 in the open-access journal *PLOS ONE*.

A wild form of wheat called emmer wheat was one of the first plant species that humans domesticated. Emmer is not grown widely today, but gave rise to the durum wheat used for pasta and hybridized with another grass to make bread wheat, so its domestication was an important step in the transition from hunting and gathering to agriculture. While the archaeological record suggests that cultivation began in the southern Levant region bordering the eastern edge of the Mediterranean Sea around 9,500 years ago, genetic studies point to an origin in the northern region of the Fertile Crescent, in what is now Turkey. To clarify emmer's origins, researchers screened 189 types of wild and domesticated wheats and used the more than 1 million genetic variations that they identified to piece together the genetic relationships between different kinds of wheat.

Based on the analysis, the researchers propose that an emmer crop, which humans cultivated but had not yet domesticated, spread from the southern Levant to southeast Turkey, where it mixed with a wild emmer population and ultimately yielded the first domesticated variety. The results of this hybridization can be detected in wild emmer plants in Turkey today.

The complex evolutionary relationships between wild emmer and cultivated wheat varieties uncovered by the analysis are similar to the interbreeding that occurred between wild and cultivated populations of other grain crops, such as barley and rice.

The authors add: "We used next-generation DNA sequencing technologies to detect hundreds of thousands of variants in the genomes of wild and cultivated emmer wheat, giving us an unprecedented insight into the complexity of its domestication process. The patterns we observed do not fit well with a simplistic model of fast and localized domestication event but suggest instead a long process of cultivation of wild wheat by hunter-gatherer communities connected throughout the Fertile Crescent, prior to the emergence of a fully domesticated wheat form."

## New model shows how crop rotation helps combat plant pests

Simulations incorporate evolutionary theory to evaluate different rotation patterns

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Source: PLOS

Source: <https://www.sciencedaily.com/releases/2020/01/200116141717.htm>

A new computational model shows how different patterns of crop rotation -- planting different crops at different times in the same field -- can impact long-term yield when the crops are threatened by plant pathogens. Maria Bargaés-Ribera and Chaitanya Gokhale of the Max Planck Institute for Evolutionary Biology in Germany present the model in *PLOS Computational Biology*.

The continual evolution of plant pathogens poses a threat to agriculture worldwide. Previous research has shown that crop rotation can help improve pest control and soil quality. Other research shows that switching the environment in which a pathogen grows can limit its reproduction and change its evolution. However, these two concepts have been rarely studied together from an evolutionary point of view.

To better understand how crop rotation can protect against pests, Bargaés-Ribera and Gokhale developed a computational model of the technique that integrates evolutionary theory. They used the model to investigate a scenario in which cash crops (grown for profit) and cover crops (grown to benefit soil) are alternated, but are affected by a pathogen that only attacks the cash crops.

The analysis identified which patterns of crop rotation maximize crop yield over multiple decades under the given scenario, revealing that regular rotations that switch every other year may not be optimal. The findings suggest that the long-term outcome of crop rotation depends on its ability to both maintain soil quality and diminish pathogen load during harvesting seasons.

"Our model is an example of how evolutionary theory can complement farmers' knowledge," Bargaés-Ribera says. "In a world with ever increasing food demand, ecological and evolutionary principles can be leveraged to design strategies making agriculture efficient and sustainable."

Future research could apply the new model to specific species to assess crop rotation patterns for specific crops and their pests. The model could also be used to help study the combined effects of crop rotation and other pest control techniques, such as fungicides and use of crops that have been genetically modified for pest resistance.

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