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OHIO STATE UNIVERSITY EXTENSION

NORTHEAST OHIO AGRI-CULTURE NEWSLETTER

Your Weekly Agriculture Update for Ashtabula, Portage and Trumbull Counties

December 6, 2022

OSU Extension Annual Conference keynote speaker, John Noltner

In This Issue:

Hello Northeast Ohio Counties!

This week is our OSU Extension Annual Conference and we are back in person for the first time since 2019! It is great to see all our colleagues and learn about the great programming they offer throughout the state.

We will be bringing some of these great ideas back to NE Ohio for 2023!

Have a great week and stay safe!

Lee Beers
Trumbull County Extension Educator

Andrew Holden
Ashtabula County Extension Educator

Angie Arnold
Portage County Extension Educator

Weather Update: More Active Pattern Sets in for December

By Aaron Wilson
Source: https://agcrops.osu.edu/newsletter/corn-newsletter/2022-41/weather-update-more-active-pattern-sets-december

Summary
Preciptation has increased a bit across the state in recent weeks, ending what was a very dry stretch this fall (Figure 1). Observations indicate 1.5-2 inches have fallen across NW Ohio and in couties just to the southeast of about I-71. Still, about 73% of the state is in abnormally dry to moderate drought according to the latest U.S. Drought Monitor. Temperatures overall are averaging about normal across the southern half of the state and 1-3°F above average across the north, with the typical late fall oscillation between mild and chilly air. For the latest up-to-date conditions, seasonal outlooks, and monthly climate summaries, please visit the State Climate Office of Ohio.

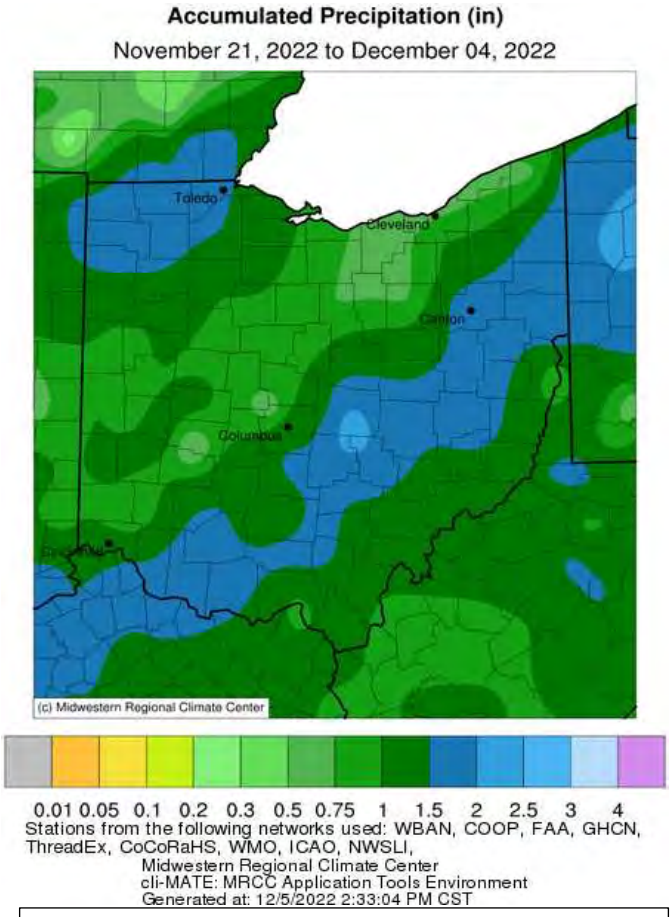

Figure 1: Total precipitation for the period November 21 - December 4, 2022. Figure courtesy of the Midwestern Regional Climate Center.

Forecast

The first in a series of storms this week will be on-going Tuesday morning. Periods of rain showers are expected across the state through Wednesday morning then again Thursday afternoon through Friday night. Temperatures

over this stretch will start out with highs in the 40s and 50s, cooling off into the 30s and 40s for the weekend. Another system will start to impact Ohio by Sunday afternoon into Monday. Overall, theWeather Prediction Center is currently forecasting 0.50 (north)-2.00 (south) of precipitation across Ohio this week (Figure 2).
The Climate Prediction Center's 8-14-day outlook for the period of December 13 – 19, 2022 and the 16-Day Rainfall Outlook from NOAA/NWS/Ohio River Forecast Center have temperatures near to above normal and precipitation leaning wetter than normal (Figure 3). Climate averages include a high-temperature range of 42-46°F, a low-temperature range of 26-30°F, and average weekly total precipitation of 0.55-0.85 inches.

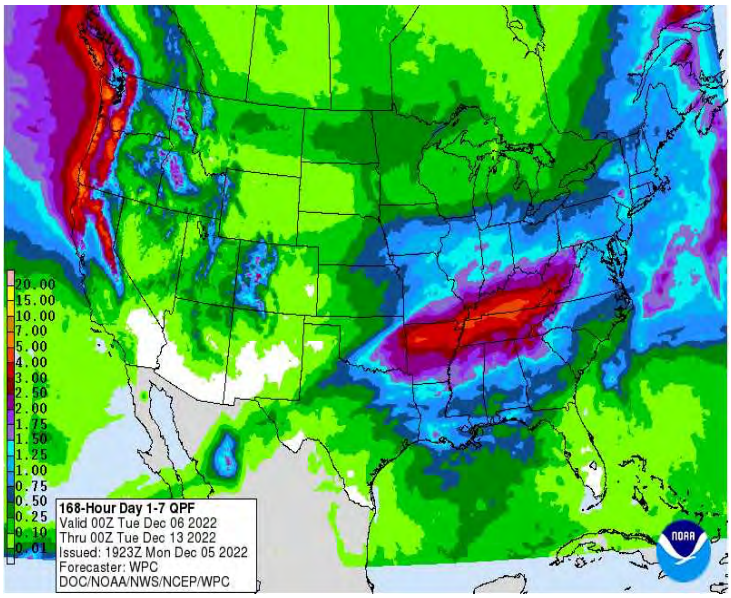

Figure 2). Precipitation forecast from the Weather Prediction Center for 7pm Monday December 5 to 7pm Monday December 12, 2022.

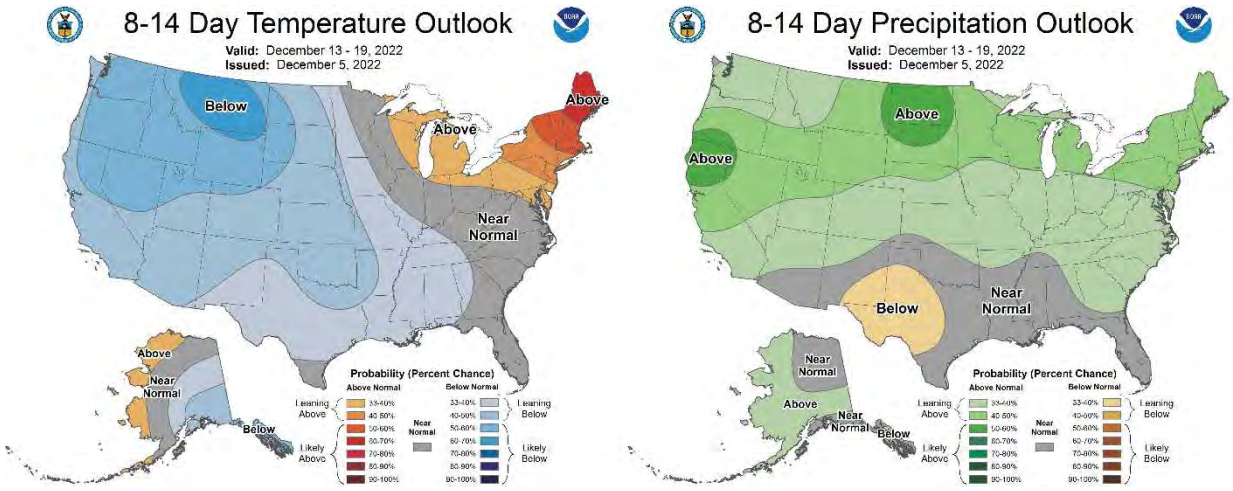

Figure 3) Climate Prediction Center 8-14 Day Outlook valid for December 13 - 19, 2022, for left) temperatures and right) precipitation. Colors represent the probability of below, normal, or above normal conditions.

The Feed Grinder Mixer, Friend, or Foe?

By Richard Purdin, ANR/CD Educator, OSU Extension Adams County
Source: https://u.osu.edu/beef/2022/11/30/the-feed-grinder-mixer-friend-or-foe/

For many livestock producers, the feed grinder is their most cherished tool.

You could say grinding feed runs in my blood. A matter of fact this was one of the first farm chores that I can remember helping dad with. If you were to ask a farmer what are the most vital pieces of equipment on the farm, you would probable expect to hear answers such as combine, tractor, skid steer loader, etc. For a farrow to finish hog, market steer, and feeder lamb operation, could there be a worse situation arise than the grinder mixer breaking down! There is not a day that the grinder mixer is not used on my farm and for many other livestock operations it would probably be considered one of the most used equipment on the farm.

It is thought that grinding grain for livestock feed started around 1860 and one of the first feed grinders invented was called the burr mill made by the Letz manufacturing company in Crown Point Indiana. By 1930 the hammer mill was created revolutionizing speed and quality of grinding feed. The grinder to this day is still highly used and the selling point remains the same – to make grain more digestible to livestock. As farmer, veterinarians, and livestock nutritionist learn more and more about livestock anatomy the improvements and modifications have been made to the feed grinder to help improve the operations of the feed grinder and avoid animal health issues that can arise from grinding feed too fine.

For both large and small ruminant producers there is a ongoing love hate relationship with feed grinders. And there is a debate whether they are truly needed? Processing or grinding grain has some bright sides such as increasing digestibility of grain. When large grains such as corn or small grains like wheat and spelts are processed by rolling or grinding the surface area of the grain is increased in the rumen. As the surface area increases digesting rumen bacteria will adhere to the grain and break it down rapidly. There are several different species of bacteria in the rumen the most well-known grain loving bacteria is called Streptococcus bovis. This species of bacteria is present in high amount in rumens of livestock fed high grain diets.

As the surface area of the grain is increased by processing or grinding these bacteria will produce high amounts of lactic acid, in turn making the rumen ph drop dramatically to levels below 5.5 ph. When this happens the animals' blood ph will drop as well When the animals blood PH levels become too acidic this a chain reaction of reduced esophagus muscle movement will occur leading to restricted regurgitation or cud chewing all while fermentation continues. The Cud Chewing process is essential for the release of gasses from the rumen and when this process is halted to restricted bloat will occur. Bloat can be life threatening causing suffocation.

When the rumen PH drops too low another condition call acidosis can occur. There are two types of acidosis, chronic and acute. Chronic Acidosis is when cattle will go off feed to compensate for digestive upset. Chronic Acidosis is often called yo-yo cattle or cattle that eat a lot one day and then go off feed for a couple of days. Chronic acidosis can quickly lead to acute acidosis when cattle gorge themselves after getting over their stomachache! Acute acidosis quickly leads to bloat and death when left untreated. Cattle feeders have struggled with bloat and acidosis for a long time and some question if the feed grinder mixer is still needed on the farm? So should grains be ground for large and small ruminant livestock? My goal was to answer said question at my field day, and after a quick demonstration with my personal feed grinder mixer I was able to stimulate thought and questions from attendees. What I found out is the answer is it depends! I believe the grinder mixer still has a place on a cattle farm but should be used with caution.

Some ways you can still utilize your feed grinder, sleep soundly at night, and keep your local feed grinder salesman in business includes the following best practices.

- **Roller mills vs Hammer mills**– If you are looking at purchasing a new feed mixer look at roller mill options.
- **Remove the screen**– If you are on a budget (like me) and want to still utilize your hammer mill grinder, remove the screen this will allow for cracking of the grain rather than pulverizing you could purchase a large whole screen 1-2" screens can be used for larger cracking.
- **Watch your tractor RPM-** 540 pto driven tractors operating at 1800 rpms allow for proper processing. I recommend reading manufactures operating manual for proper operations Running tractor rpms too fast can lead to over grinding.
- **Proper mixing can help**– Putting supplements and premixes in prior to grinding can allow for better feed mixing. Allow feed to mix for 3-5 minutes after grinding.
- **Don't blame the grinder on poor bunk or feeder management**– Take time to watch how much feed is left in bunks after feeding and adjust as needed. Don't allow automatic feeders to run out and adjust doors to make cattle work for their food. If feeder wholes are fool to overflowing adjust the doors down!

In summary, I won't be selling my feed grinder mixer anytime soon but I will be more cognizant on how I use it. Processing grain can help increase digestibility and improve

animal performance when done at the right rate and amount. Building a good relationship with a nutritionist or veterinarian is important for maintaining animal health. Last but not least management can cure many health issues, watching your cattle closely at feeding and evaluating feeders, bunks and livestock stools prevent bloat and acidosis. Following all these steps can lead to a better relationship with your feed grinder mixer!

Additional resources:
Preventing Acidosis in Feedlot Cattle: Management from Arrival Through the Finishing Period
Did My Feed Grinder Cause My Cattle to Bloat?

Starting a Food Business Webinar Series being offered by OSU Extension

By Peggy Kirk Hall, Associate Professor, Agricultural & Resource Law
Source: https://u.osu.edu/ohioagmanager/2022/11/30/starting-a-food-business-webinar-series-being-offered-by-osu/

Direct food marketing in Ohio is hot. The latest USDA survey identified 7,107 Ohio farms with direct food sales–third highest in the nation. That might be why our program receives more legal inquiries about food sales than any other area of law. And that is also why we're hosting a three-part webinar series on "Starting a Food Business," providing an introduction to what a producer needs to know about selling home-based and farm-raised foods directly to consumers and retailers.
The free webinar series will be from 7—9 p.m. on January 24, February 28, and March 28 in 2023, with these different topics each night:

- January 24: Start-Up Basics. What do you want to sell? We'll review initial considerations for selling your food product. We'll cover food safety, licensing, legal, and economic considerations for starting up a food business.
- February 28: Selling Home-Based Foods. Learn about food product development, Ohio's Cottage Food and Home Bakery laws, and requirements for selling canned foods.
- March 28: Selling Meat and Poultry. A look at the economics, processing options, and labeling and licensing requirements for selling meat and poultry.

Our teaching team for the webinar series includes:

- Nicole Arnold, Asst. Professor and Food Safety Field Specialist for OSU Extension. Nicole supports food handlers, consumers, and educators with food safety education and risk communication efforts.

- Peggy Kirk Hall, Assoc. Professor and Agricultural Law Field Specialist for OSU Extension. Peggy directs OSU Extension's Agricultural & Resource Law Program and regularly teaches and writes on food laws.
- Emily Marrison, OSU Extension Educator in Family and Consumer Sciences. Emily's food science background provides expertise and insight on food safety, product development, and selling home-based foods.
- Garth Ruff, Beef Cattle Field Specialist for OSU Extension. Garth has a background in animal science and specializes in livestock production and marketing, farm management, and meat science.

The webinar series is free, but registration is necessary. Find details and the registration link at go.osu.edu/foodbusiness

Evaluating Returns Necessary to Justify Installation of Tile Drainage

By Gary Schnitkey, Nick Paulson, Jim Baltz, Bob Rhea, and Carl Zulauf
Source: https://farmdocdaily.illinois.edu/2022/11/evaluating-returns-necessary-to-justify-installation-of-tile-drainage.html

Tile drainage improves yields on most installations by reducing moisture from fields. Herein, we present a methodology for determining the yearly break-even benefit required to cover the installation investment in tile. This methodology is based on the payment function in Microsoft Excel. For example, a $1,000 per acre installation investment requires a yearly break-even benefit of $81.74 per acre, given an 8% interest rate and a 50-year life. Higher interest rates increase yearly benefits to recover the investment.

Background
Tile drainage removes water from soils, improving yields and field operation timeliness. Studies on tile effectiveness are limited, but those that exist report yield increases. A recent study found that soybean yields increased between 4 and 8% (see here). Most who install tile report yield improvements after drainage. Benefits from tile drainage are site-specific.

Tile drainage usually has a long life, with a significant outlay occurring at installation time. Installation investment includes the purchase of the tile and the costs of installing the drainage. Relative to the installation investment, maintenance costs associated with tile systems will be minimal. Herein, we present a methodology to determine the yearly break-even benefit needed to cover the installation investment. Realized financial benefits need to exceed yearly break-even benefits to justify the investment in drainage. The methodology is based on the same methodology used to calculate the uniform payment on a loan incorporating 1) installation investment, 2) discount rate, and 3) length of time drainage will provide benefits. The methodology calculates the yearly,

uniform benefit whose present value equals the installation investment. The methodology does not consider the tax consequences of the investment. Nor does it consider the debt repayment cash flows. Therefore, this methodology should be viewed as a screening tool for evaluating potential tile investments. Usually, a more detailed present value analysis of tax, and debt considerations will not materially change break-even benefits.

The methodology will show the impacts that changing investment costs and interest rates have on needed benefits for drainage to be monetarily beneficial. In particular, rising interest rates will increase the yearly break-even benefits needed to cover the investment.

Methodology

Three values are needed to calculate the break-even value:

1. The installation investment in the tile, including the installation costs. Our example will use a value of $1,000 per acre.
2. The discount rate for determining break-even values. The discount rate can equal the interest rate on debt. Alternatively, a desired rate of return can be used as the discount rate. We will use an 8% discount rate, close to the current interest rate on agricultural loans.
3. Years of life of the tile drainage. Tile drainage usually has a long life. A 50-year life is used here. Longer lives have little impact on yearly break-even benefits.

The break-even benefit can be calculated using the payment function (PMT) in Microsoft Excel (=pmt(rate, number of periods, present value). Figure 1 below shows the implementation in a Microsoft Excel spreadsheet using the values given above.

Figure 1. Microsoft Excel Implementation of Yearly Benefit Calculation

	A	B	C	D	E	F
1						
2						
3		Installation investment	1,000			
4		Discount rate	0.08			
5		Years of life	50			
6						
7		Yearly benefit	$81.74	< formula is "=-PMT(C4,C5,C3)"		
8						

Interpretation

For the above example, the break-even yearly benefit is $81.74 per acre. Installation investment represents a relatively extensive systematic tile system. Much of the benefit comes from yield increases. Long-run prices for corn and soybeans likely are around $4.50 per bushel for corn and $10.50 for soybeans. Given these long-run prices, corn

yields need to increase by 18.2 bushels per acre (18.2 = $81.74 break-even yearly benefit / $4.50 corn price). Soybean yields need to increase by 7.8 bushels per acre (7.8 = $81.74 / 10.50).

The eight percent discount rate roughly reflects the current interest rates on agricultural loans. If debt is not used, the desired return on capital could be used in break-even benefit calculations.

Sensitivity

Yearly benefits are sensitive to discount rates. In the last year, interest rates have increased as the Federal Reserve Bank has implemented policies or lower inflation. Last year, the cost of debt was closer to 4%. A 4% discount factor results in a $46.55 per acre break-even level, 43% lower than the $81.74 level given an 8% rate.

Yearly break-even benefits are not sensitive to changes in the yearly life of the investment. We used a 50-year life in the above example. Annual benefits for longer lives are:

- $81.74 per acre for a 50-year life,
- $80.25 per acre for a 75-year life, and
- $80.04 per acre for a 100-year life.

Tax Consequence of Tile Investments

Tile investment is depreciable. Often, tile investment is written off against current year income using section 179 expensing or bonus deprecation if eligible to be used by the taxpayer. Any remaining basis in the tile investment is deducted using regular depreciation methods over times.

Other items associated with tile investments can have taxable consequences.:

- Interest on debt used to finance installation investments is tax deductible.
- Benefits from tile drainage, either in yield increases or cost reductions, that increase net income also will have tax liability impacts.

Including tax and debt consequences of drainage requires additional analysis, usually involving present value methods. The FAST spreadsheet entitled Capital Budgeting can be used to do these analyses.

Landowner Consequences

Tile drainage is a land improvement, which is the landowner’s responsibility. For cash-rent landowners, yearly benefits come from increases in cash rent. For share rent landowners, benefits come in increased yields and reduction in costs. When the landowner is not the farmer, aligning benefits with costs becomes problematic.

Environmental Impacts
Nitrates and phosphorus have been measured coming from tile drainage, causing tile drainage to come under scrutiny from an environmental standpoint. Farmers and landowners may consider environmental considerations as they install tile.

Summary
We present a method for calculating the break-even benefits of tile drainage investments, thereby providing a gauge of the benefits necessary to recover the investment in tile drainage. As interest rates have risen in recent months, considerations of calculating these break-even levels have become more critical.

References
Mourtzinis, S., J. F. Andrade, P. Grassini, J. I. R. Edreira, H. Kandel, S. Naeve, K. A. Nelson, M. Helmers, S. P. Conley. “Soybean Yield Increase Due to Artificial Drainage in the North Central US Region.” North Dakota State University. https://www.ag.ndsu.edu/broadleaf/documents/soybean-yield-increase-due-to-artificial-drainage

2022 Ohio Maple Day

Source: https://u.osu.edu/vegnetnews/2022/11/01/2022-ohio-maple-day/

We are fast approaching the date for the **2022 Ohio Maple Day** event. Join us on **Dec. 10th** at Ashland University’s John C. Meyer Convocation Center for a jam-packed program on all things maple. Updates on red maple research from both Ohio State’s Gabe Karns and the University of Vermont’s Proctor Maple Research Center’s Abby van den Berg. Add to this other talks on reverse osmosis, marketing, and insects impacting maple trees.

A maple-themed lunch and a vendor room that features a variety of maple equipment dealers, consulting foresters, and other associated equipment help round out the day. There are also SAF continuing education credits available for the program.

You can register **here**

Lee's Monthly News Column

Happy Thanksgiving, Trumbull County! I hope you are all able to take advantage of the holiday weekend to relax and reflect on the good that has happened in 2022. Thanksgiving marks the start of the Christmas shopping season, and if you are shopping for the perfect gift for the farmer in your life you know how difficult it can be. Luckily, I'm here to help with my top five suggestions!

While this first idea may not seem all that exciting (and it isn't) a farmer is always in need of filters. By that I mean oil and fuel filters. While watching someone open a filter on Christmas morning likely won't be full of thrills, this gift is rather thoughtful in the long run. What may look like a simple filter is something that actually saves your farmer a trip to the parts store, and helps make routine maintenance more efficient. The best part about this gift idea is that the oil filter number is printed right on the side of the filter. Next time you are in the shop, take a picture of the number on the old one and you can match it up easily at the parts store and always have a quick gift idea.

Farmers have an uncanny ability to break even the heaviest steel. When this happens, they usually need a good cutting torch, which is often used for the initial repair. A cutting torch will require fuel in the form of oxygen, and acetylene or propane. Once they break, cut, or replace the affected chunk of steel it will need to be reattached with a welder. Your local welding shop can help you find the right setup. I've seen some of the welds made by farmers around here, so another great gift idea would be a class on welding.

Next on my list of ideas are tires. Wander around the farm and find the worst looking tire, get the size (also usually written right on the tire), and order a replacement. There are so many tires on a farm, and it is inevitable that a tire will blow, rot, or otherwise fail at the worst time. Do all the tires look good? You can still order an extra because they are all ticking time bombs, especially given the many things they might run over on the farm or in the field.

We all know that farmers are generally a private group of individuals, and may not like "people" all that much. If this is the case, consider a four-legged companion to keep your farmer company all year long. A puppy or dog is the logical choice and will be a lifelong companion. Any dog can make a good farm dog, but certain breeds are better around livestock, including Blue Heeler, Australian Shepherd, Great Pyrenees, and many other working breeds. If your farmer isn't looking for a deep friendship, you could also consider a feeder steer or pig. They can have companionship, but without a long-term commitment.

Lastly, and most obviously, equipment is at the top of every farmer's wish list. New tractors, cattle handling chutes, combines, balers, and so on. I can't think of a better present than a shiny, new four-basket tedder sitting under the Christmas tree. Something like the Pequea HT4102 would increase our farm's efficiency so that we can spend less time in the field, and more time with the family. (A subtle hint for my wife.)

If you read this article and still have no ideas on what to get that farmer in your life, we're in this together. I guess a gift card is, I suppose, always a decent back up plan. For more great shopping advice, or questions on farming, give me a call at our office in Cortland at 330-638-6783. Please note that the OSU Extension offices will be closed on November 23rd and 24th to celebrate Thanksgiving.

If your pesticide license expires in 2023, we will have more options for recertification than ever before. OSU Extension Trumbull County will be sending out flyers in the next couple of weeks with details on recertification options. You can also find updates on all our programs at Trumbull.osu.edu or on our OSU Extension Trumbull County Facebook page.

Happy Holidays!

2022 Ashtabula County Plat Book Available

The updated 2022 version of the Ashtabula County Plat Book is available for $25 + tax at Ashtabula County - OSU Extension Office located at 39 Wall Street in Jefferson. This full color edition makes the perfect gift for the hunter, hiker or outdoorsman! Traditional landownership maps by township and range, a landowner index for easy cross referencing, and other county information are all available in the new plat book. Premium wall maps are also available. Visit mappingsolutionsGIS.com for digital versions of Ashtabula County landowner maps. Mapping Solutions is the publisher. Proceeds from the sale of the books benefit the 4-H program.

Limited 2019 books are also available ON SALE for $10 OFF the original price of $25 + tax. For more information contact the office at (440) 576-9008.