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OHIO STATE UNIVERSITY EXTENSION

NORTHEAST OHIO AGRI-CULTURE NEWSLETTER

Your Weekly Agriculture Update for Ashtabula and Trumbull Counties

August 22, 2023

It's a great time to scout for white mold in NE Ohio

In This Issue:

Hello Northeast Ohio Counties!

We're winding down summer quickly and many schools started this week. The last half of summer brought a lot of rain that was perfect for corn pollination, but many of our bean fields could use a pool noodle. Waterlogged soils prevent oxygen getting to the roots and limit nutrient uptake leading to soybeans dying back.

Those conditions are also the perfect storm for white mold. We don't have to look too hard to find it in Trumbull so get out into your fields to scout. You may not see any die back from the roads just yet, but you should see the white fuzz on the plant stems in the field.

Have a good week and stay safe!

Lee Beers
Trumbull County
Extension Educator

Andrew Holden
Ashtabula County
Extension Educator

The Ag Law Roundup: your legal questions answered

By Peggy Kirk Hall

The summertime slowdown hasn't affected the number of agricultural law questions we've received from across Ohio. Here's a sampling of recent questions and answers:

Is a tree service business considered "agriculture" for purposes of Ohio rural zoning?

No, tree trimming and tree cutting activities are not listed in the definition of agriculture in Ohio's rural zoning laws, although the definition does include the growing of timber and ornamental trees. The definition ties to the "agricultural exemption" and activities that are in the "agriculture" definition can be exempt from county and township zoning. Here is the definition, from Ohio Revised Code sections 303.01 and 519.01: "agriculture" includes farming; ranching; algaculture meaning the farming of algae; aquaculture; apiculture; horticulture; viticulture; animal husbandry, including, but not limited to, the care and raising of livestock, equine, and fur-bearing animals; poultry husbandry and the production of poultry and poultry products; dairy production; the production of field crops, tobacco, fruits, vegetables, nursery stock, ornamental shrubs, ornamental trees, flowers, sod, or mushrooms; timber; pasturage; any combination of the foregoing; and the processing, drying, storage, and marketing of agricultural products when those activities are conducted in conjunction with, but are secondary to, such husbandry or production.

What are the benefits of being enrolled in the "agricultural district program" in Ohio, and is there a penalty for withdrawing from the program?

There are three benefits to enrolling farmland in the agricultural district program:

1. The first is the nuisance protection it offers a landowner. A landowner can use the defense the law provides if a neighbor who moves in after the farm was established files a lawsuit claiming the farm is a "nuisance" due to noise, odors, dust, etc. Successfully raising the defense and showing that the farm meets the legal requirements for being agricultural district land would cause the lawsuit to be dismissed.

2. The second benefit is that the law also exempts agricultural district land from assessments for water, sewer and electric line service extensions that would cross the land. As long as the land remains in agricultural district program, the landowner would not be subject to the assessments. But if the land is changed to another use or the landowner withdraws the land from the agricultural district program, assessments would be due. The assessment exemption does not apply to a homestead on the farmland, however.

3. A third benefit of the agricultural district program law is that it requires an evaluation at the state level if agricultural district land is subject to an eminent domain action that would affect at least 10 acres or 10% of the land. In that case, the Director of the Ohio Department of Agriculture must be notified of the eminent domain project and must assess the situation to determine the effect of the eminent domain on agricultural production and program policies. Both the Director and the Governor may take actions if the eminent domain would create an unreasonably adverse effect.

As for the question about a withdrawal penalty, the law does allow the county to assess a penalty when a landowner withdraws land from the agricultural district program during the agricultural district enrollment period, which is a five-year period. If a landowner removes the land from the agricultural district, converts the land to a purpose other than agricultural production or an agricultural conservation program, or sells the land to another landowner who does not elect to continue in the agricultural district program, the landowner must pay a withdrawal penalty. The amount of the penalty depends on whether the land is also enrolled in the Current Agricultural Use Value program. See the different penalty calculations in Ohio Revised Code 929.02(D(1).

Read the agricultural district program law in Chapter 929 of the Ohio Revised Code and contact your county auditor to learn about how to enroll in the program.

My farmland is within the village limits and the village sent me a notice that I must cut a strip of tall grass on my land. Do I have to comply with this?

Yes. Ohio law allows a municipality such as a village to have vegetation, litter, and "noxious weeds" laws. These laws can set a maximum limit for the height of grass, require removal of litter on the property, and require ridding the land of "noxious weeds." The purpose of the laws is to protect property values, protect public health by preventing pests and nuisances from accumulating, and keep noxious weeds from spreading to other properties. The village is within its legal authority to enforce its grass, litter, and noxious weeds laws on a farm property that is within the village limits. Failing to comply with an order by the village can result in a fine

or financial responsibility for all expenses incurred by the village to remedy the problem.

Is it legal to pull water from a river or stream to irrigate land in Ohio?

Yes, as long as the withdrawal occurs on private land or with the consent of the public or private landowner. Registration with the Ohio Department of Natural Resources is required, however, if the amount withdrawn exceeds 10,000 gallons per day and the State has the ability to scale the 10,000 gallon amount back if the withdrawal is within an established groundwater stress area. Withdrawal registration information is available on the Division of Water Resources website. Note that according to Ohio's "reasonable use" doctrine, if a water withdrawal causes "unreasonable" harm to other water users, a legal action by harmed users could stop or curtail the use or allocate liability for the harm to the person who withdrew the water. To avoid such problems, a person withdrawing the water should ensure that the withdrawal will not cause "unreasonable" downstream effects.

An urban farmer wants to build a rooftop greenhouse to grow hemp and then wants to make and sell cannabis-infused prepared foods at a market on her property. Who regulates this industry and where would she go for guidance on legal and regulatory issues for these products?

Regulation and oversight of food products that contain cannabis is a combination of federal and state authority. Federal regulation is through the U.S. Food and Drug Administration and state regulation is via the Ohio Department of Agriculture's Food Safety Division. She should refer to these resources:
U.S. - https://www.fda.gov/news-events/public-health-focus/fda-regulation-cannabis-and-cannabis-derived-products-including-cannabidiol-cbd#legaltosell
Ohio - https://agri.ohio.gov/divisions/food-safety/resources/Hemp-Products

As for the growing of hemp, the Ohio Department of Agriculture (ODA) regulates indoor hemp production in Ohio. There is a minimum acreage requirement for indoor production—she must have at least 1,000 square feet and 1,000 plants. See these resources from ODA:
https://agri.ohio.gov/divisions/hemp-program/cultivation.
https://agri.ohio.gov/divisions/hemp-program/faqs

Stay Vigilant for Red Crown Rot of Soybean

By Horacio Lopez Nicora
Source: https://agcrops.osu.edu/newsletter/corn-newsletter/2023-28/stay-vigilant-red-crown-rot-soybean

Red crown rot (RCR) is a soybean disease caused by the soilborne fungus *Calonectria ilicicola* that is spreading to parts of the Midwest. There have been no confirmed reports of RCR in Ohio, but it has been detected in Kentucky and Illinois. Soybean growers should stay vigilant when scouting fields as RCR can be easily confused with other soybean diseases that cause similar foliar symptoms.

Figure 1. Foliar symptoms of red crown rot. Image Credit: N. Kleczewski

RCR can be misidentified as sudden death syndrome (SDS) or brown stem rot (BSR) as all three diseases can cause yellowing between the leaf veins or interveinal leaf chlorosis (Figure 1). Proper diagnosis will require digging up the plant, scraping the soil off, and inspecting for red discoloration on the outer stem (Figure 2). Also look for small, brick red perithecia (fungal sexual structure) on the lower stem or root crown area.

Figure 2. Outer stem coloration caused by red crown rot. Image Credit: N. Kleczewski and S. Geisler

These perithecia will be smaller than the tip of a pencil and more likely to be observed following wet weather.

In general, concentrate scouting efforts for RCR in low-lying, saturated areas of the field between the R3 (beginning pod) and R5 (beginning seed) growth stages. Keep an eye out for scattered patches of plants dying off early.

Ohio producers who suspect they may have RCR should contact their county extension office and submit samples for diagnosis at the Soybean Pathology and Nematology Laboratory in Columbus. To submit samples, dig out 3-5 symptomatic plants including the roots, place them in a plastic bag, and submit to the following address:

OSU Soybean Pathology and Nematology Lab
Attn: Horacio Lopez-Nicora, Ph.D.
110 Kottman Hall
2021 Coffey Rd.
Columbus, Ohio 43210
lopez-nicora.1@osu.edu

Understanding Biostimulants and Their Tie to Soil Fertility

By Leanna Nigon and Tom Bruulsema
Source: https://acsess-onlinelibrary-wiley-com.proxy.lib.ohio-state.edu/doi/full/10.1002/crso.20303

In recent years, biostimulants and biologicals have gained substantial traction in the marketplace with dozens of products available for growers and consultants to choose from. However, biostimulants vary widely in type and mode of action in the plant. To best understand how some of these products may be tied to soil fertility, a deeper understanding of biostimulants and biologicals is worth acquiring.

Biological versus Biostimulant

The terms biostimulant and biological are often used interchangeably but differ in their meaning. A **biological** product contains living organisms (as the definition of biology itself infers living), which includes beneficial microorganisms (e.g., fungi or bacteria). On the other hand, **biostimulants** encompass both living and non-living substances. Many of the non-living products are derived from nature, plants, microbes, or their exudates; hence the name **bio**stimulant.

There has been much discussion and several definitions suggested by industry groups and researchers that strongly echo one another. More broadly, academics and industry

alike agree that biostimulants are substances or microorganisms that enhance plant growth, nutrient uptake, crop quality or yield, and/or stress tolerance (du Jardin, **2015**; Drobek et al., **2019**; du Jardin et al., **2020**; Castiglione et al., **2021**; BPIA & TFI, **2022**). Recently, the Plant Biostimulant Act of 2022 (H.R.7752; see **https://bit-ly.proxy.lib.ohio-state.edu/HR7752**) was introduced to the U.S. Congress to provide a formal national definition for biostimulants and remove ambiguity in the industry:

"The term 'plant biostimulant' means a substance, micro-organism, or mixture thereof, that, when applied to seeds, plants, the rhizosphere, soil, or other growth media, act to support a plant's natural processes independently of the biostimulant's nutrient content, including by improving nutrient availability, uptake or use efficiency, tolerance to abiotic stress, and consequent growth, development, quality, or yield."

While biostimulants can improve nutrient use efficiency, they are not fertilizers and do not provide nutrients directly to the plant. Rather, some biostimulants are designed to enhance the plant's ability to absorb nutrients from the soil (Calvo et al., **2014**). Furthermore, researchers have drawn a line to differentiate biostimulants from biopesticides or biocontrol agents as they do not fit the function of benefiting plant growth as designated in the biostimulant definition (du Jardin, **2015**; BPIA & TFI, **2022**). Science-based experimentation with biostimulants may lead to the identification of novel biological molecules and phenomenon—pathways and processes—that would not have been discovered if the category of biostimulants did not exist or was not considered legitimate.

Types of Biostimulants

Biostimulants can be synthesized from a wide range of natural (living or previously living) materials, such as plant or seaweeds, humic and fulvic acids, amino acids, or beneficial microorganisms. They may also be derived through the synthesis of purified single molecules from natural or synthetic sources (Calvo et al., **2014**; du Jardin, **2015**; BPIA & TFI, **2022**).

There are dozens of types of biostimulants, each with their unique properties and benefits to crop health. To make sense of the various types, a U.S. Biostimulant Industry Workgroup formed from the Biological Products Industry Alliance (BPIA) and The Fertilizer Institute (TFI) to create the following five plant biostimulant categories (BPIA & TFI, **2022**):

1. **Microbial Inoculants**

   These products include beneficial microorganisms that can help improve soil health and nutrient availability/uptake (Rouphael & Colla, **2018**). Examples include mycorrhizal fungi like *Glomus*, *Rhizobacteria, Bacillus, Azotobacter, Azospirillum*, and *Trichoderma*, and complex products based on non-living microorganisms and their metabolites or combinations of various microbes. These products primarily target improving nutrient use efficiency.

2. **Algal or Plant (Seaweed) Extracts**
   Algal or plant (seaweed) extracts are derived from various types of macroalgae species and contain natural growth hormones, micronutrients, and trace elements that promote plant growth and development. Seaweed extracts, as they are more commonly called, are reported to act as chelators to improve nutrient utilization and soil structure. Other research has also indicated the extracts can help plants withstand environmental stresses such as drought, salt, and heat (Calvo et al., **2014**). Examples include *Ascophyllum, Spirulina, Chlorella, Ecklonia, Allium*, and *Medicago*.

3. **Complex Carbon-Based Products**
   Humic acid, fluvic acid, and humin make up this category. These are organic (meaning they contain carbon) substances that are formed from the decomposition of plant and animal matter, and the impacts of humics are widely recorded in the scientific literature. They can help improve soil structure, water retention, and nutrient availability and can promote root growth and enhance plant resilience to stress.

4. **Protein Hydrolysate and Amino Acids**
   Free amino acids and peptides are the building blocks of proteins and are essential for plant growth and development. These products are derived from plant, animal, or microbial proteins through chemical or enzymatic hydrolysis. Biostimulants containing amino acids have been shown to enhance nutrient uptake, especially of nitrogen (N), and to promote N assimilation and thus growth of the plant (du Jardin, **2015**).

5. **Purified Molecules From Minerals, Plants, Animals, and Microbes**
   Purified molecules are obtained by synthesis and can include organic molecules (polyamines, polyphenols, betaines, oligosaccharides, alginates, carboxylic acids, fatty acids, chitin, and chitosan) and minerals not recognized as plant nutrients (i.e., silicon or selenium). The organic molecules are reported to influence plant cell receptors and therefore stress responses. These biostimulants target improving stress tolerance to environmental variables (abiotic stresses).

When incorporating any biostimulant into nutrient management programs, it's essential to consider the specific needs of the crops, the growing conditions, and the goal you are trying to accomplish with the biostimulant. Choosing a biostimulant designed to increase root growth may be beneficial for scavenging nutrients or water or aerating compacted soils. Other products might be chosen to reduce negative abiotic stress responses in crops, such as stress responses to drought conditions. If your aim is to improve nutrient

uptake or cut back on fertilizer applications, there are a few important nuances to keep in mind.

Biostimulants and Fertilizer Use Efficiency

Biostimulants are not fertilizers and do not provide any nutrients to the crop, nor can they replace the nutrients provided by fertilizers. Biostimulants aim to improve nutrient use efficiency through (1) enhanced agronomic efficiency, where applied or residual nutrients are more accessible, mobile, and/or bioavailable to be taken up more effectively, or (2) improved internal utilization of plant where nutrients are more efficiently converted to increased yields.

Though it can be calculated in many ways, nitrogen use efficiency (NUE) is a metric that explains how soil and/or fertilizer N is recovered and utilized by the crop. In corn, research shows that a considerable portion of nitrogen (N) taken up by the crop is supplied by non-fertilizer sources (e.g., via mineralization, introduction via rainfall and irrigation, etc.). Ranges of 25 to 40% or as wide as 10 to 60% have been reported for nitrogen recovery efficiency (RE_N) (Kitchen et al., **2022**), suggesting that much of the fertilizer N applied is not directly taken up by the plant.

Yet, on average in 2021, the United States corn crop yielded 177 bu/ac with fertilizer N input of 150 lb/ac (USDA-NASS, **2023**). Assuming a bushel of corn contains 0.67 lb of N, the ratio of output to fertilizer input—the partial N balance (PNB) for fertilizer applied to corn—was 79%. If the N input from manure and atmospheric deposition is also considered, the PNB for N input to corn declines to around 64%. The two metrics of N use efficiency show that (1) the soil often supplies the majority of the N taken up by corn (RE_N <50%), and (2) since inputs exceed outputs (PNB<100%), there is room for improvement without depleting soil organic N. Thus, biostimulants have potential to improve N use efficiency by influencing the processes associated with both soil supply and plant uptake.

Biostimulants may induce plants or microbes to exude enzymes that enhance soil biological activity by breaking down organic materials and minerals to release nutrients (Sible et al., **2021**). In doing so, however, soil organic matter may decline. Mycorrhizal enhancement can extend the volume of soil explored for nutrients, which is particularly beneficial for less mobile nutrients such as phosphorus and zinc (Rouphael & Colla, **2018**). Biostimulants may also influence the size, distribution, and nature of root systems by stimulating the plant to allocate more resources from photosynthesis to the roots. The diversion of these resources away from leaf canopy expansion and grain fill to support larger root systems or enhanced mycorrhizal colonization, however, can reduce potential yields.

Enhancing Nitrogen Fixation

Inoculants have played a major role in the successful cultivation of legume crops. Symbiotic *Rhizobium* bacteria in soybean and alfalfa crops fix hundreds of pounds of N per acre in root nodules that protect the sensitive nitrogenase enzyme from oxygen. Legume crop yields respond well to inoculation in soils when the crop is sown the first time. Subsequent responses may be smaller if sufficient inoculum often remains in the soil. Changing the bacterial strain can be difficult owing to competition from the existing strains in the soil.
Inoculants for non-rhizobial bacterial species (e.g., *Azospirillum, Bacillus, Gluconacetobacter, Methylobacterium*, etc.) are promoted with the promise of supplying N through fixation for grass crops like corn, wheat, or sorghum. Without application or inoculation, endophytic, associative, and free-living species are estimated to fix around 22 and 29 lb/ac of N for rice and sugarcane crops but less than 4 lb/ac of N for other non-legume crops (Herridge et al., **2008**). These bacteria do not form nodules with roots.

Peer-reviewed studies on efficacy of such inoculants are limited though existing research reveals that yield responses are environment specific and inconsistent between studies (du Jardin, **2015**; Sible et al., **2021**). This was evident in recent research (unpublished) at the University of Minnesota where the use of a biological free N-fixer supplied roughly 20 lb of N at one of six site-years (Peltier et al., **2023**). This response is promising but indicates the product use was highly specific to certain conditions. The inconsistency in biostimulant performance can be due to not only the environment, but also the variation in formulation of the inoculants.

Other Considerations
In a single teaspoon of soil, there is roughly 1 billion bacteria. If the existing soil biome is not conducive to the biological (like a free-living N-fixer bacteria), the biological will be overwhelmed and outcompeted by the microbes already present in the soil. Some biologicals may not be able to compete with some existing soil microbiomes.
Also, when using any biological (living) product, it is important to consider that not only does the microbe product have to compete with the natural soil microbes, but prior to its application, it must be kept alive. It is important to ensure proper storage and handling to keep microbial products viable, which may be specific to each product. Furthermore, the compatibility of these biological products with other fertilizers and crop protection chemicals needs to be considered.

And finally, while increased nutrient use efficiency is excellent for reducing nutrient loss from agricultural systems, care must be taken to not “mine” the soil of its nutrient reserves. Biostimulants do not directly supply nutrients and are not fertilizers. Therefore, continued fertilization will be essential to ensure adequate nutrient is available in the soil for the crop with increased uptake. If growth is truly “stimulated” and increased, this may mean the crop will need additional nutrient to supply its growth. This balance will vary by product but should be considered for each biostimulant.

Bottom Line—How to Test Products Yourself

Across the literature, and especially in row crop production, the yield response to using biostimulants remains mixed (Lenssen et al., **2019**; Sible et al., **2021**). For some biostimulant products, performance is highly specific to the environment, and growers and consultants will have to make room for trial and error in finding the best product for their growing system.
With the wide array of products out there, it will take time for researchers to adequately evaluate them all, and the environment-specific nature of these products will require even more research to make any mainstream recommendations. That said, a good approach to determine if a product is right for your operation is to test it on your own fields.

Should you want to try incorporating biostimulant products into your fertility program, start by specifically identifying what problem you are looking to address. If it is nutrient uptake or efficiency, also consider the modes of action. Will increasing the root mass be a good starting point, or is your aim to try a biological N-fixer? Or maybe a humic substance that may increase nutrient availability? Have a specific purpose for the product in mind.

Once you have a product identified, start by trying the product in a couple of field areas with diverse soil properties (e.g., sandy versus clay dominant soils). Replicate your treatments at least three times (four or five replications is optimal), and include a control treatment (without the product) with each replication. It is best to randomize treatment strips throughout your trial area and try to avoid simply splitting a field in half to evaluate. Splitting a field removes the ability to account for spatial variability. If you are evaluating a N product, create a ramp of N rates consisting of your target rate, a lower rate, and a higher rate. Try to vary this by at least 30 lb/ac of N lower and higher (Peltier et al., **2023**). Apply each of the N rates with and without the product.

Follow the recommended application rates and timing, and see what works for your system. When testing on-farm, it is important to keep your other nutrient and crop protection applications uniform. Remember, replication and randomizing strips will ensure that your findings are valid and not due to random chance. On-farm evaluation in your crop system, soil microbiome, and climatic environment can serve as a great starting point in choosing biostimulants. With there being many to choose from, make sure to have a specific purpose in mind when picking a product.

Remember, use of a biostimulant does not replace other crop management practices. Make sure to keep up proper 4R nutrient management practices to feed your crop along with other crop protection practices.

Start little by little and take time to get to know products; just because it worked or didn't work for someone else does not mean you will have the same results. Biostimulants are climate, soil, and crop specific. Test out products on small areas and work from there. As we all know, there is no silver bullet in agriculture, and not every product will work on every acre or on every hybrid.

Poultry Litter Application

By Glen Arnold
Source: https://agcrops.osu.edu/newsletter/corn-newsletter/2023-28/poultry-litter-application

Getting the poultry litter to the fields ahead of spreading makes time makes the whole process more efficient. Poultry litter is an excellent source of plant nutrients and readily available in most parts of the state. With fall harvest just around the corner these poultry litter piles will soon be spread across farm fields.

Stockpiles of poultry litter can be seen in farm fields across Ohio. While common each year in wheat stubble fields, there are also stockpiles commonly found in soybean fields.

Poultry litter can be from laying hens, pullets, broilers, finished turkeys, turkey hens, or poults. Most of the poultry litter in the state comes from laying hens and turkey finishers. Typical nutrient ranges in poultry litter can be from 45 to 57 pounds of nitrogen, 45 to 70 pounds of P_2O_5, and 45 to 55 pounds of K_2O per ton. The typical application rate is two tons per acre which fits nicely with the P_2O_5 needs of a two-year corn/soybean rotation.

Like all manures, the moisture content of the poultry litter greatly influences the amount of nutrients per ton. Handlers of poultry litter have manure analysis sheets indicating the nutrient content.

Poultry manure for permitted operations needs to follow the Ohio Department of Agriculture standards when being stockpiled prior to spreading. These include:

- 500 feet from neighbors
- 100 feet from a public road
- 300 feet from streams, grassed waterways, wells, ponds, or tile inlets
- not on occasionally or frequently flooded soils
- stored for not more than six months
- not located on slopes greater than six percent
- located on soils that are deep to bedrock (greater than 40 inches to bedrock)

Farmers who want to apply the poultry litter delivered to their fields are required by Ohio law to have a fertilizer license, Certified Livestock Manager certificate, or be a Certified Crop Advisor.

Ohio's Farm Lease Termination Deadline Approaching

By Robert Moore
Source: https://farmoffice.osu.edu/blog/tue-08152023-856pm/ohio's-farm-lease-termination-deadline-approaching

A new Ohio law took effect last year that impacts some landowners who want to terminate their farm crop leases. If a farm lease does not include a termination date or a termination method, the law requires a landowner to provide termination notice to the tenant by **September 1**. The law was adopted to prevent late or otherwise untimely terminations by landowners that could adversely affect tenants.

It is important to note that the law only applies to verbal leases or written leases that do not include a termination date or method of notice of termination. If a written lease includes a termination date or method of notice, the terms of the lease apply and not the termination notice law. Also, the law does not apply to leases for pasture, timber, farm buildings, horticultural buildings, or equipment.

The notice can be provided to the tenant by hand, mail, fax, or email. If termination is provided by September 1, the lease is terminated either upon the date harvest is

complete or December 31, whichever is earlier. While no specific language is required for the termination notice, it is good practice to include the date of notice, an identification of the leased farm and a statement that the lease will terminate on the completion of harvest or December 31. If termination is provided after September 1, the lease continues for another year unless the tenant voluntarily agrees to terminate the lease early.

A tenant is not subject to the new law and can terminate a lease after September 1 unless the leasing arrangement provides otherwise. Because it is generally easier for a landowner to find another tenant, even on short notice, the law protects only the tenant from untimely terminations, not landowners.
For more information, see *Ohio's New Statutory Termination Date for Farm Crop Leases* law bulletin available at farmoffice.osu.edu.

New Exhibitors Join Line-Up for 2023 Farm Science Review

BY Emily Bennett
SOURCE: HTTPS://CFAES.OSU.EDU/NEWS/ARTICLES/NEW-EXHIBITORS-JOIN-LINE-FOR-2023-FARM-SCIENCE-REVIEW

LONDON, Ohio (Aug. 16, 2023) - More than 50 companies will join the ranks as exhibitors for the 61st Farm Science Review Sept. 19-21 at the Molly Caren Agricultural Center. The new exhibitors represent various sectors in the agriculture industry including livestock handling, equipment advancements, agronomic technology, agricultural policy and more.

"We are witnessing a new wave of technology in agriculture and are looking forward to the advancements our new exhibitors are bringing to the show," said Nick Zachrich, Farm Science Review manager. "We continue to be a farm show that has something for everybody and that is thanks to the number of exhibitors that show up year-after-year."

A few of the new exhibitors joining the line-up at this year's show include:

- **Holganix** (Booth #554) - Holganix has two unique products for the agricultural market: Bio 800 Agriculture and Bio 800 Breakdown. Holganix Bio 800+ products harness the power of over 800 species of soil microbes to

build soil health, increase yield, reduce fertilizer and increase the breakdown of crop residue.

- **Garford and Zurn USA** (Booth #690) - Garford Farm Machinery Ltd manufactures a range of robotic mechanical weed control products specializing in row crop equipment. They are recognized as a world leader for their range of products, which use cameras and image analysis software to locate the position of the crop and guide the tractor mounted equipment left and right to follow the crop row as necessary.
- **Carswell Distributing** (Booth #930,1312 Ride and Drive) - Carswell supplies consumer and commercial electric outdoor power equipment.
- **Agri Spray Drones** (Booth #203) - Agri Spray Drones combines its history of working with farmers and technological expertise to provide customers with drones for custom application services. They are the only drone sales company that operates heavy drones in custom application services.
- **Midwest Air LLC** (Booth #287) - Midwest Air LLC is an Ohio-based, licensed custom application drone retailer.

Visitors can find a full list of exhibitors and create a personalized show planner on the Farm Science Review app. Visit fsr.osu.edu/visitors/mobile-app to stay connected and updated on this year's upcoming show.

Tickets for the 2023 Farm Science Review are available to purchase both online (now available) and at participating Extension offices and agribusinesses across Ohio and Indiana. Tickets will be $15 at the gate. Children ages 5 and under are free.

Farm Science Review is hosted by the College of Food, Agricultural, and Environmental Sciences at The Ohio State University. Year-after-year, Farm Science Review welcomes more than 100,000 attendees and over 500 different exhibitors to the Molly Caren Agricultural Center in London, Ohio, making it the heart of agricultural innovation and education. Show hours are 8 a.m. to 5 p.m. on Sept. 19-20 and 8 a.m. to 4 p.m. Sept. 21. For more information, visit fsr.osu.edu or follow Farm Science Review on social media.

2023 FARM PESTICIDE DISPOSAL COLLECTION

Do you have unwanted, unused, or unknown FARM chemicals? Bring them to a collection and disposal event coordinated by ODA and EPA - at no cost to farmers.

All events are 9:00 am to 3:00 pm.
To pre-register, or for more information, contact the Ohio Department of Agriculture at 614-728-6987.

Wednesday, August 9
Morgan County Fairgrounds
2760 South Riverside Drive | McConnelsville

Thursday, August 10
Putnam County Fairgrounds, Gate 5
1206 East Second Street | Ottawa

Tuesday, August 22
Miami County Fairgrounds, North Gate
650 North County Road 25A | Troy

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Ohio Department of Agriculture

agcrops.osu.edu



THE OHIO STATE UNIVERSITY
EXTENSION

WOMEN IN AG- ASHTABULA COUNTY

Farm Tour: Lois Wright Morton Outwash Terrace Farm

DATE:

Sunday, August 27th

2:00 p.m.–4:00 p.m.

LOCATION:

Pierpont, OH

RSVP for address, details, & directions

wayman.31@osu.edu
440-576-9008

Lois Wright Morton, a 7th generation farmer in Pierpont, Ohio owns and manages a small diversified farm of specialty crops, primarily blueberries and raspberries, commodity crops corn-bean, and hardwood forest on the East Branch of the Ashtabula River headwaters. She uses a variety of technologies including an on-farm weather station, soil moisture sensors, an augmentation box for composting berries; wetland water filtration; and ¾ ac blueberries grown under 85gm exclusion net, allowing her to minimize insecticide use.

Dr. Morton is also Professor Emeritus of Rural Sociology, Iowa State University, with publications on human-natural agroecosystems, climate smart agriculture, farmer decision making, and rural livelihoods.

Dr. Morton serves on Solutions from the Land (SfL) Board of Directors, has written extensively on the future of agriculture and food systems, and has prepared and presented recommendations to United Nations, FAO policies on how farmers concurrently produce food and nutrition security, agricultural products, protect soil and water resources and contribute to household livelihoods and community economies.

RAIN OR SHINE! Wear sturdy shoes, dress for the weather, & bring a camp chair if needed.

For questions, accommodations, or to RSVP, contact Julie Wayman 440-576-9008 or wayman.31@osu.edu