CFAES

OHIO STATE UNIVERSITY EXTENSION

Newsletter

Perry County

Fall 2021

Dear Friends

We have made it through another fair and what a fair it was. We could not have had better weather and the livestock sale was one of the best. In a big part thanks to many of you. I am amazed every year the support this community gives to the livestock sale.

Crops are looking good overall and to date we have not seen much insect or disease pressure. Farm Science Review tickets are now available at the Extension office.

This is the first year for Beef Quality Assurance recertification. If you are needing to renew your certification, please contact me. This re-certification can also be done online https://www.bqa.org/beef-quality-assurance-certification/online-certifications. We will also be conducting these monthly at Muskingum Livestock. Future dates will be announced later. Please note two local programs scheduled for August and September.

Please take note that **THE PERRY COUNTY EXTENSION OFFICE HAS MOVED.** We are located in New Lexington at 212 South Main Street. This in the lower level of the Jobs and family building across from the New Lexington police and fire departments. Our phone number remains the same at 740-743-1602. We are now open fulltime 8:00 a.m. to 4:30 p.m. Monday through Friday.

Ted Wiseman
Extension Educator
Perry County ANR

If you would like to receive our updated information electronically, please complete the survey located at this link **www.go.osu.edu/perryANR**

cc. Pam Montgomery….

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THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

CFAES

OHIO STATE UNIVERSITY EXTENSION

UPCOMING PROGRAMS

2021

August

27	Perry SWCD/OSU Extension Open House
	1:00 pm to 4:30 pm
31	Beef Quality Assurance
	6:00 pm at the Perry County Extension Office
	Please call to RSVP.

September

7	Beef Quality Assurance
	6:00 pm at the Perry County Extension Office
	Please call to RSVP.
21-23	Farm Science Review

Contact the Perry County Extension Offices for detailed information

(Registration Deadlines and Fees, etc.)

Farm Science Review Tickets Now on Sale

The Ohio State University's Farm Science Review, which was held online last year because of the pandemic, will return this year to be live and in person for the 59th annual event. Advance tickets for the Farm Science Review are available at all Ohio State University Extension County offices for $7. This year's Farm Science Review will be held at the Molly Caren Agricultural Center in London, Ohio on September 21-23, 2021. Tickets are $10 at the gate; however, presale tickets can be purchased at your local OSU Extension for $7 per ticket through Monday, September 20, 2021. Children 5 and under are admitted free. The review hours are 8:00 a.m. to 5:00 p.m. on September 21 & 22 and from 8:00 a.m. to 4:00 p.m. on September 23. Farm Science Review is known as Ohio's premier agricultural event and typically attracts more than 130,000 farmers, growers, producers and agricultural enthusiasts from across the U.S. and Canada annually. Participants are able to peruse 4,000 product lines from roughly 600 commercial exhibitors and engage in over 180 educational workshops, presentations and demonstrations delivered by experts from OSU Extension and the Ohio Agricultural Research and Development Center. More information about the Farm Science Review is at http://fsr.osu.edu.

OSU Extension - Perry County
AND
Perry Soil & Water Conservation District

We've Moved!

JOIN US
for an OPEN HOUSE!

Friday, August 27th
1:00 - 4:30 p.m.

212 S. Main St.
Lower Level/Rear Entrance
New Lexington, OH 43764
**Former Health Dept., basement of JFS*

Light refreshments will be offered.

The Ohio State University
College of Food, Agricultural, and Environmental Sciences

Perry Soil and Water Conservation District

Answering farmers' questions about the pandemic in 2021

August 11, 2021. Gustavo M. Schuenemann, DVM, MS, Ph.D., OSU Extension Dairy Veterinarian, and Jeffrey D. Workman, OSU Veterinary Extension Program Coordinator (originally published in Farm & Dairy)

COVID-19 has certainly dominated the headlines and many of our daily conversations since March, 2020. For those directly involved in production agriculture, our lives and routines may have been disrupted; but our daily business and responsibilities of farming and raising livestock never stopped. Times like these should remind everyone of the importance of having a robust food production system to ensure a nation's food security. Below are the frequently asked questions we receive when visiting farms. To answer these questions, we should look at the unbiased science. The challenge with looking at the science regarding COVID-19 is that portions of the science do not yet exist, or are not yet confirmed through replication and hard evidence. Time must pass in order to generate data. Science is evolving as researchers around the world continue to study and learn more to create unbiased new knowledge that informs all of us. Answering one research question may lead to several new research questions, or the correct answer backed by science is no longer relevant moving forward as the virus has changed. The "gold standard" that we typically use in the U.S. for sharing information and making decisions regarding public health are the recommendations coming from the Centers for Disease Control and Prevention. The CDC develops and changes their recommendations based on the available scientific data at any given time.

- **There are coronaviruses on my farm — is this the same as COVID-19?** No, there are animal coronavirus infections that are caused by different strains of coronavirus such as: calf diarrhea, winter dysentery in cows and bovine respiratory disease complex (shipping fever). To prevent losses, producers vaccinate their animals to protect against diseases caused by coronavirus.
- **When and how will the COVID-19 pandemic end?** We can't yet say exactly when the pandemic will end, but we do know that the pandemic will essentially be over when the individuals who make up the population achieve some level of immunity which ultimately stops the spread.
- **How do you get immunity?** Immunity may be natural, or infection-induced, in which a person is infected with the virus and recovers. Immunity can also be vaccine-induced in which a vaccine helps the body to produce antibodies. Individuals who make up the population must achieve immunity to stop the spread and ultimately end the pandemic.
- **What is herd immunity?** Herd (or group) immunity occurs when a large portion of the population (or herd) has some level of immunity to a virus. This means if someone who didn't have enough immunity becomes exposed and infected, the likelihood of them passing it on to someone else is much less because the majority of their contacts in their surroundings already have immunity. When a virus infects an individual, the individual either recovers or succumbs, and the virus can only survive by spreading to another host individual. We see in other viruses such as the measles and mumps, in which the US population already has herd immunity, there are occasional small, isolated outbreaks, but the virus is unable to develop into a pandemic.
- **Is immunity a sure thing?** Typically, immunity from most viruses is never 100%. For example, we achieve immunity from the chicken pox virus through natural infection or vaccination, but there are still a few cases of reinfection identified worldwide. Influenza (flu) viruses have the ability to mutate, adapt, change and jump across species. As the flu virus changes, a person who has been vaccinated over several years, and also has some infection-induced immunity may still become infected. However, they have some immunity that lessons the severity of their infection and results in a faster recovery.

Why should I get vaccinated? The safest way to achieve some degree of immunity against COVID- 19 is through vaccination. The current COVID-19 vaccines have been shown to be as high as 94% effective at preventing COVID-19 hospitalizations. The Delta variant is the newest strain of concern because it appears to be more contagious and severe than earlier strains of COVID-19.

All indications thus far are that individuals who are fully vaccinated have protection from the Delta variant. It is important to keep in mind, if we learn that immunity wanes over time, or that the virus has significantly changed so that the current vaccine-induced immunity (or infection-induced immunity) is no longer effective; there could be recommendations for booster shots or other vaccine formulations at some point in the future. Individuals should choose whichever vaccine is available and they have the opportunity to receive. Current efficacy percentages reported are developed from subsets of people, and the true efficacy numbers will become much more valid and reliable as datasets become much larger and time passes. Keep in mind that the efficacy of the annual influenza vaccines is typically only 40-60%. All three COVID-19 vaccines have been found to be safe and effective. Everyone is biologically different and side effects vary. The reward (immunity or some degree of immunity from COVID-19) outweighs the risk (potential vaccine side effects). To conclude, the safest way to achieve immunity or some degree of immunity is by becoming fully vaccinated (individuals need both doses of a two-dose series). If an individual doesn't achieve immunity that fully prevents infection, they may achieve a degree of immunity that decreases the severity of symptoms and duration. We all do personal risk assessments and consider the risk-benefit ratio each and every day without even thinking about it. There is risk in getting up in the morning and going to work. There is risk in driving a vehicle, operating machinery, flying on an airplane and so on. Essentially everything we do in life has some degree of risk, but when individuals determine the benefit or reward outweighs the risk, they must carry on and move forward. Talk to your doctor or health care provider to discuss the best option for you and your family.

Using Nutrient Removal Rates to Improve Forage Productivity

August 4, 2021. James Morris, OSU Extension Educator, Brown County and Greg LaBarge, OSU Extension Field Specialist, Agronomic Systems

As the calendar flips over to August and temperatures continue to rise, our cool season forages are in the heart of what we call the "summer slump" and vegetative growth begins to decline. Numerous resources are available that provide excellent strategies for reducing the negative effects of this slump. Forage growers can utilize summer annuals to boost yields during this time of the year, but it's also important to ensure our forage stands are healthy prior to be exposed to heat and other environmental stressors. So, while "summer slump" seems to get all of the attention right now, what if our forages had "spring fever"?

Figure 1. Yellow unthrifty grass stand spring 2021.

We normally consider springtime to be the period of rapid and lush growth for our cool-season forages, but what if our stands look like the Figure 1? The attached image was taken this spring in a stand of a cool-season hay mix. Of course, this problem will impact tonnage, but a weak stand will also allow more opportunities for weed emergence, reduce winter survival, and as mentioned above, reduce their ability to tolerate stressful summer conditions. While it may be too late to beat the heat, action can still be taken to prepare forages for winter and set ourselves up for a better spring.

What's the issue with this stand and the several others I visited this spring? Let's put ourselves into the situation as if it was our own field. Where do we begin? Well, stunting and yellowing can be descriptions for numerous issues related to plants. As we further survey the field, a defined difference between plant health is visible between the edges and center of the field. What was done differently in along the edges? Less compaction from equipment, no herbicide application, and no harvest. We ruled out herbicide injury and didn't notice any extreme compaction. So, we took soil samples and found the culprit. Extension Educators sometimes sound like broken records as we always advise, "don't guess, soil test". This is a prime example of how soil results can easily take the guess work out of problem solving.

Nutrient Removal

Using the recommended critical levels from the *Tri-State Fertilizer Recommendations (go.osu.edu/tri-statefert)*, the results showed us that the soil phosphorus (P2O5) was only 8ppm below the critical level, but soil potassium (K2O) was 76ppm below the critical levels. Why is there such a big difference in soil levels? Let's think about what type of fertilizer was being used. Most fields I see in this condition have had repeated applications of a balanced fertilizer such as, 19 (N)-19 (P)-19 (K). What's the issue with a balance fertilizer? Well, according to our newest *Nutrient Removal for Field Crops fact sheet (ohioline.osu.edu/factsheet/anr-96),* a cool-season grass hay mix can remove 12 pounds of P2O5 and 48 pounds of K20 per ton of forage production. Again, let's put ourselves in this situation. If our hay averages 3 tons/acre yield at harvest, our crop potentially removed 36 pounds of P2O5 and 144 pounds of K2O. Hopefully, this helps explain why we saw such large difference in the soil nutrient levels. Now, we apply 200 pounds /acre of 19-19-19 fertilizer. That equals out to 38 pounds of P205 and K20 applied. As you can see in table 1, this meets our replacement needs for P205 but only replaces about 26% of the K20 that was used. If our soil levels were already deficient as shown in our example, much larger rates will be needed to begin our "build-up" process. As you can imagine building soil levels back up within our critical ranges can become expensive.

Nutrient	Nutrient Removal (lbs./ac) @ 3 ton/ac grass hay harvest	Nutrient supplied (lbs./ac) with 200 lbs./ac of 19-19-19	Nutrient Balance (lbs./ac)
P_2O_5	36	38	+ 2
K_2O	144	38	-106

Table 1. Nutrient balance when 200 lbs./ac 19-19-19 is used as fertility program for 3 ton/ac grass hay.

Since a balanced fertilizer doesn't match our unbalanced nutrient removals, we can consider using a fertilizer such as 9-23-30. An application of 200lbs/acre of this fertilizer would return 46 pounds /acre of P205 and 60 pounds /acre of K2O. This allows us to begin building up our P205 levels and replace about 41% of our K2O. We can apply additional K2O with the use of 0-0-60 (potash) fertilizer. Of course, fertilizer costs and our Return On Investment (ROI) is also a factor in this decision making process. Will we get enough yield boost to pay for the fertilizer? I am working with a producer in Brown County to conduct on-farm research that may help answer that question. We made a base application of 9-23-30 and will follow up with 3 replications of an additional application of potash vs no additional application. Yield and ROI results will be available in our 2021 OSU eFields publication.

Developing Fertilizer Recommendations

Figure 2. Grass before (top) and after (bottom) fertilization in spring/summer 2021. Now that we understand the nutrient removals rates and the approaches that can be used to maintain and build adequate fertility, how do we calculate the fertilizer needs? If you despise math, don't quit reading just yet. Our team at OSU Extension has developed an easy way to calculate nutrient needs based on soil test results and it doesn't require lengthy calculations. This spreadsheet utilizes information from the resources provided in this article to compute nutrient needs. Users simply input their soil test results, crop information, and yield expectations. The spreadsheet will automatically calculate the needs and costs per acre of P2O5, K2O, and lime applications. This spreadsheet, along with a user guide and more background information can be found at go.osu.edu/Fertility Calculator. Applying this information to create an accurate fertilizer plan for your forages can significantly increase production in deficient soils. Figure 2 shows the field from Figure 1 before a sufficient fertilizer plan was applied (top) and after (bottom).

CONSIDERING CARBON FARMING? TAKE TIME TO UNDERSTAND CARBON AGREEMENTS

By: Peggy Kirk Hall, Tuesday, August 03rd, 2021

"Carbon farming" is a term that came and went about a decade ago, but it's back and gaining traction. Ohio farmers now have opportunities to engage in the carbon farming market and receive payments for generating "carbon credits" through farming practices that reduce carbon emissions or capture atmospheric carbon. As with any emerging market, there are many uncertainties about the carbon market that require a cautious approach. And as we'd expect, there are legal issues that arise with carbon farming.

Some of those legal issues center on carbon agreements--the legal instruments that document the terms of a carbon farming relationship. Each carbon market program has its own carbon agreement, so the terms of those agreements vary from program to program. Even so, understanding the basics of this unique legal agreement is a necessity.

Here's what we know at this point about carbon agreements and the legal issues they may raise.

New terminology. Carbon markets and carbon agreements speak a new language, containing many terms we don't ordinarily use in the agricultural arena. The terms are not fully standardized, and their meanings may differ from one program to another. Understanding these new terms and their legal significance to the carbon agreement relationship is important. Common terms to know are below but check each program to clarify its definitions for these terms.

- *Carbon practices.* Farming practices that have the potential to reduce carbon emissions or sequester carbon.
- *Carbon sequestration*. The process of capturing and storing atmospheric carbon.
- *Carbon credit*. A measurable, quantifiable unit representing a reduction of carbon dioxide emissions that can be transferred from one entity to another. A credit typically represents one metric ton of "carbon dioxide equivalent, which is a metric that standardizes the global warming potential of all greenhouse gases by converting methane, nitrous oxide and fluorinated gases to the equivalent global warming potential of carbon dioxide.
- *Carbon offset.* Using a carbon credit generated by another entity to offset the emissions of an entity that emits carbon elsewhere.
- *Carbon inset.* A reduction of carbon within a specific supply chain that emits carbon, accomplished by adopting practices within that supply chain.
- *Carbon registry*. An entity that oversees the registration and verification of carbon credits and offsets.
- *Verification.* The process of confirming carbon reduction benefits, typically performed by a third-party that reviews the carbon practices and the accounting of carbon credits generated by the practices.
- *Additionality.* Carbon reduction that results from carbon practices incentivized by the carbon agreement and that would not have occurred in the absence of the incentive.

- *Permanence.* The longevity of a carbon reduction, which may be enhanced by a requirement that carbon practices remain in place over a long period of time and steps are taken to reduce the risk of reversal of the carbon reduction.

Reversal risk. Risk that a carbon reduction will be reversed by future actions such as changing tillage or harvesting the trees or vegetation planted to generate the carbon reduction.

Initial eligibility criteria. Each carbon program has specific requirements for participating in the program. Two common eligibility criteria are:

- *Location.* The program may be open only to farmers in a particular geographic location, such as within a specified watershed, region, or state.

- *Acreage.* A minimum acreage requirement often exists, although that can vary from 10 acres to 1,000 or more acres. Some projects may allow adjacent landowners to aggregate to meet the minimum acreage requirement, but that can raise questions of ineligibility should one landowner leave the program.

Land control. If the farmer doesn't own the land on which carbon practices will occur, an initial requirement may be to offer proof that the farmer will have legal control over the land for the period of the agreement, such as a written lease agreement or certification by the tenant farmer.

Payment. While the goal of a carbon agreement is often to generate carbon credits to be traded in the carbon market, there are varied ways of paying a farmer for adopting the practices that create those credits. One is a per-acre payment for the practices adopted, with the payment amount tied to the reduction of carbon resulting from the adopted practices. Another approach incorporates the carbon market—a guaranteed payment that can increase according to market conditions. Concerns about market transparency abound here. Yet another method is to calculate the payment after verification and quantification by a third-party. For each of these different approaches, the amount could be based upon a model, actual soil sampling, or a combination of the two. Payments may be annual or every several years. Another consideration is the form of payment, which could be cash, company credits, or "cryptocurrency"—digital money that can be used for certain purposes. Also be aware that some carbon agreements prohibit "payment stacking," or receiving payments for the same carbon practices from multiple private or public sources.

Acceptable carbon practices. Carbon practices are the foundation for generating carbon credits. An agreement might outline acceptable carbon practices a farmer must adopt as the basis for the carbon credit, such as NRCS Conservation Practices. Alternatively, an agreement might allow flexibility in determining which carbon practices to use or could state practices that are not acceptable. Typical carbon practices include planting cover crops, using no-till or reduced tillage practices, changing fertilizer use, rotating or diversifying crops, planting trees, and retiring land from production.

Additionality. Many agreements require "additionality," which means there must be new or "additional" carbon reductions that occur because of the carbon agreement, which would not have occurred in the absence of the agreement. On the other hand, some agreements accept past carbon practices up to a certain period of time, such as within the past two years. This is a tricky term to

navigate for farmers who have engaged in acceptable practices in the past. An agreement may address whether those practices count toward the generation of a carbon credit or for payment purposes.

Time periods. Two time periods might exist in an agreement. The first is the required length of time for participation in the program, which may vary from one year to ten or more years. The second relates to the concept of "permanence," or long-term carbon reductions. To ensure permanence and reduce the risk that gains in one year could be lost by changes in the next year, the agreement may require continuation of the carbon practices for a certain time period after the agreement ends, such as five or ten years.

Verification and certification. Here's an important question—how do we know whether the carbon practices do generate carbon reductions that translate into actual carbon credits? Verification and certification help provide an answer. But verification is a testy topic because there is uncertainty about how to identify and measure carbon reductions resulting from different practices on different soils in different settings. Predictions that are based upon models are common, but there is disagreement over appropriate and accurate methodology for the models. Some programs may also verify practices with data acquisition and on-the-ground monitoring activities and soil tests. And it's common to require that an independent third party verify and certify the practices and carbon credits, raising additional questions of which verifiers are acceptable. A final concern: who pays the costs of verification and certification?

Data rights and ownership. The verification question naturally leads us to a host of data questions. Data is critical to understanding and verifying carbon practices, and every agreement should include data sharing and ownership provisions. What data must be shared, who has access to the data, how will data be used, and who owns the data are questions in need of clear answers in the agreement.

Legal remedies. There's always the risk that a contract will go bad in some way, whether due to non-performance, non-payment, or disputes about performance and payment. A carbon agreement could include provisions that outline how the parties will remedy these problems. An agreement might define circumstances that constitute a breach and the actions one party may take if breach conditions occur. An agreement could also list reasons for withholding payment from a farmer; one concern is that insufficient data or proof of carbon reductions or carbon credit generation could be a basis for withholding payment. There could also be penalties for early withdrawal from the program or early termination of the agreement. It's important to decipher any legal remedies that are contained within a carbon agreement.

We've heard of carbon farming before, but today it raises new uncertainties. Caution and careful consideration of a carbon agreement should address some of those uncertainties. Our list offers a starting point, but it's not yet a complete list. As we learn more about the developing carbon farming market, we'll continue to raise and hopefully resolve the legal issues it can present.

For more information on carbon agreements, see this listing from the Ohio Soybean Council of programs available to Ohio farmers with a side-by-side comparison of those programs, and this report on How to Grow and Sell Carbon Credits in US Agriculture from Iowa State University Extension..