Dear Farm Manager,

Weather has been favorable for hay making, but the recent heat and humidity has been difficult on people and livestock. Fortunately, we are receiving much-needed rain today.

**WESTERN BEAN CUTWORM**...traps have been placed in Tuscarawas and several counties across Ohio. Western bean cutworm is a pest of corn in Ohio and has increasingly caused concern for growers since reports of resistance to Cry1F hybrids. Monitoring for WBC is an important tool to track populations and make management decisions for our growers. Monitoring for WBC adults requires green bucket traps set with a pheromone and checked weekly. When trap counts result in an average of more than 1 moth/day (or a county average of 7 or more moths), we recommend scouting for WBC egg masses. While the pheromone is specific to WBC, occasionally other moth species can be found in the trap, such as yellow striped armyworms. It is important to look for identifying features on WBC moths, which include boomerang and dot markings on the wings.


**TAILGATE SAFETY TRAINING**...resources have been developed by OSU Extension and are available here: [https://agsafety.osu.edu/resources/tailgate-safety-training-employees](https://agsafety.osu.edu/resources/tailgate-safety-training-employees). Conducting regular
safety meetings is a key component of any organized workplace safety program. One very effective method is to conduct tailgate safety training on a regular basis. Short, frequent, safety training sessions keep safety in the forefront of employee's daily routine. Employees remain interested, losses of production are minimized, and minimum preparation by the employer is needed.
Tailgate Safety sessions are generally held daily or weekly depending on the workplace, and sessions should last no longer than 20 minutes. Even if you do not have employees, I encourage you to review the list of training resources.

**BEEF QUALITY ASSURANCE (BQA) RECERTIFICATION**...for those needing to renew in 2021 will be held the following dates and times. Sessions will take place at the Sugarcreek Stockyards. Please RSVP to the Extension office at 330-339-2337. A special thank you to the Tuscarawas County Cattle Association for co-sponsoring these trainings.
- July 21 at 1pm
- July 29 at 7pm (Light refreshments provided by TCCA)
- August 10 at 1pm
- August 25 at 7pm (Light refreshments provided by TCCA)

**POISON HEMLOCK**...is on Ohio’s Noxious Weed List ([https://farmoffice.osu.edu/blog-tags/ohio-noxious-weeds](https://farmoffice.osu.edu/blog-tags/ohio-noxious-weeds)) and can be seen in large numbers across the county. Peggy Hall, OSU Extension Ag & Resource Law Program, addresses three components of Ohio Noxious Weed Law:

**Along roadways and railroads.** The first window just closed for mandatory mowing of noxious weeds along county and township roads. Ohio law requires counties, townships, and municipalities to destroy all noxious weeds, brush, briers, burrs, and vines growing along roads and streets. There are two mandated time windows for doing so: between June 1 and 20 and between August 1 and 20. If necessary, a cutting must also occur between September 1 and 20, or at any other time when necessary to prevent or eliminate a safety hazard. Railroad and toll road operators have the same legal duty, and if they fail to do so, a township may cause the removal and bring a civil action to recover for removal costs.

**Along partition fence rows.** Landowners in unincorporated areas of the state have a duty to cut or destroy noxious weeds and brush within four feet of a partition fence, and the law allows a neighbor to request a clearing of the fence row if a landowner hasn’t done so. If a landowner doesn’t clear the fence row within ten days of receiving a request to clear from the neighbor, the neighbor may present a complaint to the township trustees. The trustees must visit the property and determine whether there is a need to remove noxious weeds and if so, may order the removal and charge removal costs against the landowner’s property tax bill.

**On private land beyond the fence row.** A written notice to the township trustees that noxious weeds are growing on private land beyond the fence row will trigger another township trustee process. The trustees must notify the landowner to destroy the weeds or show why there is no reason to do so. If the landowner doesn’t comply within five days of receiving the notice, the
trustees may arrange for destruction of the weeds. The township may assess the costs against the
landowner’s property tax bill.

Even with noxious laws in place, we recommend talking before taking legal action. If you’re worried
about a noxious weed problem in your area, have a talk with the responsible party first. Maybe the
party isn’t aware of the noxious weeds, will take steps to address the problem, or has already done
so. But if talking doesn’t work, Ohio law offers a way to ensure removal of the noxious weeds before
they become a bigger problem.

We explain the noxious weed laws in more detail in our law bulletin, *Ohio’s Noxious Weed
Laws*. We’ve also recently illustrated the procedures in a new law bulletin, *Legal Procedures for
Dealing with Noxious Weeds in Ohio’s Rural Areas*. Also see the OSU Agronomy Team’s recent article
about poison hemlock in this edition of C.O.R.N, [available through this link](#).

CUSTOM RATES...for a variety of tasks are developed by OSU Extension and are available here:
https://farmoffice.osu.edu/sites/aqlaw/files/site-
library/farmBusiness/Ohio%20Farm%20Custom%20Rates%20Draft%202020%20Final%20Revised.p
df.

EXPECT CORN SEED COST...to rise in 2022. In this article ([https://farmdocdaily.illinois.edu/wp-
content/uploads/2021/06/fdd290621.pdf](https://farmdocdaily.illinois.edu/wp-content/uploads/2021/06/fdd290621.pdf)) the University of Illinois Farmdoc authors expect, based on
historical trends, that corn seed costs in 2022 will increase.

![Figure 1. Per Acre Seed Costs for Corn in the U.S. and Central Illinois](#)

Three periods of seed costs are evident in Figure 1. From 1975 to 2005, per acre seed costs
increased steadily, with an average per acre increase in the U.S. of $1.13 per year.

During the second period from 2006 to 2013, corn prices rose due to the increasing use of corn in
producing ethanol. As a result, expected corn revenue reached higher levels, and per acre seed costs
increased. In the U.S., seed costs increased from $44 per acre in 2006 to $102 per acre in 2015, an average yearly increase of $6.50 per acre.

The third period constituted a lower commodity price period, corresponding with leveling growth of corn use in ethanol. During the 2015 to 2020 period, seed costs declined slightly from $102 in 2015 to $92 in 2020.

Corn prices moved higher in late 2020 and have persisted through 2021. Historical relationships would suggest that those higher corn prices could lead to higher seed costs in 2022.

Over time, seed costs have been positively related to expected gross revenue for corn. In addition, seed costs have trended upward over time. Currently, gross revenue for corn is expected to be higher in 2022 than in recent years. As a result, seed costs for corn should be expected to increase. An increase in the $6 to $10 per acre range is expected on an average, national basis.

CONTROLLING FLIES...improves cattle performance, as described in this OSU Extension Beef newsletter: https://u.osu.edu/beef/2021/06/30/shoo-fly-dont-bother-me-or-my-cows/#more-11116.

**Biting flies** are the major pests of cattle and can be split into two groups based on their mouthparts. Biting flies can have a piercing/sucking mouthpart or a scissor-like mouthpart. Stable flies fall into the piercing/sucking category and like to attack the legs of animals. According to Oklahoma State University, beef cattle in a feedlot setting with more than 5 flies per foreleg can decrease their average daily weight gain by 0.48 lb/day. The university states that this can increase an animal’s time in the feedlot by up to 30 days – a large increase in costs especially with current feed prices.

**Horn flies**, on the other hand, are considered to be the greatest pest of cattle on pasture. Economic hits of about $700 million per year are felt by the U.S. beef industry from this fly (University of Florida). Male and female flies take blood meals and spend the entirety of their life on cattle. The action threshold for horn flies is 200 flies/animal and when flies are properly controlled, growing and finishing cattle are able to gain 1.5 more pounds per day.

**Heel fly**, often called northern cattle grubs, is the last to discuss. Eggs are laid on the hair of cattle and the larvae burrow into the skin, eventually migrating to the crest of the neck and the spine. Once along the back of the animal, the larvae will again cut through the hide to breathe through a hole called a warble. This not only causes cattle to decrease performance and weight gain, but also reduces value of the hide for leather use and potentially the amount of carcass if warbling is extensive.

**TICKS**... and tick-borne diseases are expanding rapidly in Ohio. Here are some common myths regarding ticks and tick-vectored disease.
**Myth #1** – “Ticks are only present in the woods.” This is a very common myth that I hear frequently. While it is true that some species of ticks such as Blacklegged tick or Lone Star tick prefer a wooded habitat, some tick species such as the American Dog tick and Gulf Coast tick can tolerate a more open habitat such as a pasture, meadow, or backyard lawn.

**Myth #2** – “Ticks need to be attached for a whole day to transmit disease.” This is a recommendation based on CDC research regarding Lyme disease from Blacklegged (Deer) ticks. We are now seeing some new research regarding different transmission times depending on the pathogen, (bacteria, virus) tick life stage, (larval, nymphal, adult) as well as what disease we are concerned about. For example, it is suspected that Rocky Mountain Spotted Fever has a different transmission after attachment timeframe that Lyme disease would have.

**Myth #3** – “Ticks are only active in the summer.” Many ticks have multi-year life cycles to complete their growth. While the warmer weather of late spring through summer has an increased amount of tick activity, ticks can be active all 12 months of the year.

To keep yourself, family, and animals tick safe this year make sure to develop a personal and family protection plan that includes protective clothing, tick checks, pet protection, proper removal methods as well as knowledge of where, when, and how you can encounter ticks and tick-vectored disease. (Source: Tim McDermott, DVM & Extension Educator, OSU Extension Sheep newsletter: https://u.osu.edu/sheep/2021/06/22/learn-the-myths-about-ticks-to-keep-yourself-safe/#more-4443)

**SHIFT IN FEED PRICES...cause shrinking profits.** The ever-changing markets always makes livestock farming a challenge. And yet, there is limited control of price received for the milk, meat, etc., so most of the control lies with efficiency of production and managing the cost of production. However, where possible, the price received for the food product should be maximized.

At the onset of the pandemic, livestock farmers were quite concerned about availability and price of feeds, but it was quickly realized that agriculture is an essential business. With this aspect and harvest of the major feed grains already have taken place, feed was in ample supply at reasonable price (Figure 1, March 2020). During the fall of 2020, prices for corn and soybeans began to shift upward in response to lower stocks, both domestically and internationally, and the increased international demand. As we have moved further from the domestic harvest, this upward shift in corn and soybean prices has continued to occur, whereby it is projected to peak in July 2021 with corn at $6.91/bu and soybeans at $15.62/bu. After this point, the prices are expected to decline, but the realization is that the prices will remain above the year prior and historical prices. This will cause a squeeze on profits for livestock farmers.
**Figure 1.** Feed ingredient prices during 2020 and 2021. Corn (56 lb/bu; 35.7 bu/ton) and soybean (60 lb/bu; 33.3 bu/ton) prices after April 2021 are futures prices and soybean meal prices after April 2021 were estimated from soybean prices. Hay prices after April 2021 were estimated based on 2020 trends.

The rise in feed costs on dairy farms beginning in September 2020 (Figure 2) certainly reflect the increased prices for feed ingredients shown in Figure 1. All three methods used in Figure 2 to estimate feed costs reflect the same trends, but divergence becomes more evident as costs increase.

**Figure 2.** Projected feed costs ($/cwt milk) for dairy farms in the US using the formula for the Dairy Margin Coverage (DMC) program, a formula used by OSU in developing the 15 Measures of Dairy Farm Competitiveness, and using the OSU Dairy Enterprise Budget for a cow consuming a diet whereby 80% of the forage is corn silage and 20% is hay. The feed prices used were those from Figure 1 and commodity prices by USDA and reported in Buckeye Dairy News ([https://dairy.osu.edu/](https://dairy.osu.edu/)). The price for corn silage was left constant at $46.62/ton.
Management Options

Increasing Income

1) Efficiently increase milk yield - We typically express efficiency of milk yield as yield per unit of dry matter intake (DMI). You can use actual milk, fat-corrected milk (FCM), or energy-corrected milk (ECM). The best is to use ECM because it takes into account the fluid (lactose), protein, and fat yields (water in milk has limited value) and typically the range is 1.4 to 1.6 lb ECM/lb DMI. Efficiency can be increased by increasing yield from the same amount of DMI (A) or by achieving the same yield from less DMI (B). Improvement in efficiency can often occur by: A) removing bottlenecks to performance with improved ventilation, reducing health issues, improving reproductive performance, reducing stress, improving animal comfort, improving quality of forage, properly formulated diets, etc. and B) increasing forage in the diet and sometimes by substituting a lower digestible forage for some of the higher digestible forage in a diet (e.g. replacing some brown midrib (BMR) corn silage with non-BMR corn silage). The risk with this latter approach is that milk yield may decrease, leading to no change or a decrease in feed efficiency.

2) Increase milk fat or protein yield - Over the past two plus years, major shifts in the price for milk fat versus milk protein have been occurring as depicted in Figure 5. Milk fat prices exceeded milk protein prices during the first half of 2019. By October 2019, price for milk protein exceeded that for milk fat and has remained higher since. However, there have been major swings in price for milk protein, e.g. more than doubling between May and July 2020 and about a 50% drop occurred from November 2020 to April 2021. Protein price remains higher than fat at this time, yet volatility in prices for these components are expected to continue. Even though breeding decisions on selection for high component sires are a long-term approach, they are very important in maximizing component yields. In the short term to respond to the changes in the prices for milk fat versus milk protein, feeding changes can be implemented. Many of these aspects are addressed in the Dairy Industry Brief 43-20 published in 2020 located at: https://dairy.osu.edu/sites/dairy/files/imce/DIB%2043-20%20DIB%2043-20%20Consider%20dietary%20changes%20to%20take%20advantage%20of%20changes%20in%20milk%20component%20prices.pdf

Decreasing Feed Costs

1) Reduce prices for purchased ingredients in rations. Reduction in price paid for typical ingredients used in rations can sometimes be achieved by shopping among different suppliers, purchasing in bulk instead of bagged, paying cash instead of using credit, buying larger quantities at once, or use of forward contracting.

2) Don’t cut corners; make sure the feeding decision is the right one. One common example in this scenario is feeding a single TMR to all lactating cows on the farm, regardless of their level of milk production. This commonly increases total feed costs in comparison to feeding different
rations to the different groups. All too often, the fresh cows may be short-changed and lead to low peak milk yield that impacts the entire lactation and cows in later stages of lactation are overfed. This especially impacts the use of high-priced feed additives in rations which are typically most beneficial to fresh cows and cows at peak milk production.

3) Use lower priced ingredients for purchased feeds. The primary purpose of the specific ingredients in rations is to provide the nutrient needs of the animals, yet it is recognized that some ingredients can have other attributes. Every other month, feed prices and their calculated economic value are provided in the Buckeye Dairy News at: https://dairy.osu.edu/newsletter/buckeye-dairy-news

4) Reduce feed shrink. Feed shrink refers to any grown or purchased feed that gets lost along the way and never gets consumed by the animals. This shrink occurs during harvest, storage, loading in feed equipment, wasted by the animals at the feed bunk, and includes the refusals that are removed from the bunk and dumped as waste. The feed losses vary at each stage, which can be huge, but when you consider adding up the shrink from each stage, the losses can be enormous. Farmers should carefully evaluate each stage of feed storage and handling to reduce shrink. The cost of the feed wasted adds to overall feed cost without milk being produced from it to cover the costs. Look closely, its not like looking for a needle in a haystack.

5) Reduce the number of free loafers. Scenarios that include such animals are:
   a. Excess heifers on the farm that will not be used for replacements. The replacement heifer market is rather weak, especially for springing heifers. The heifers not needed for replacement need to be identified early and marketed. You are not running a dairy heifer sanctuary.
   b. Unprofitable cows in the herd. These cows may exist because their milk yield is so low they are not even paying for direct expenses. They may be present because of being non-pregnant or chronically ill. Sometimes, they are even contributing to overstocking that is reducing the performance of all cows. The open and ill cows are often right under our noses, but you really have to go looking for the others.
   c. Cows too long in the dry pen. At least 45 to 50 days are needed for cows to be dry, but typically 60 days is used as the target. Many dairy farmers today have reduced the number of days dry by 10 to 15 days so cows are producing milk longer to pay for expenses. A long dry period may be caused either by an incorrect breeding date, failure to confirm pregnancy, or abortion after pregnancy diagnosis. When cows are dried-up early due to low milk production, the decision as to whether the cow remains on the farm should be made.

(Source: Dr. Maurice Eastridge, OSU Animal Sciences)
PIPELINE AG SAFETY ALLIANCE (PASA)...provides educational resources that promote safe digging and excavation. A recent safety tip dealt with pipeline depth. Is there a rule for how deep a pipeline is buried?

Not all pipelines are installed to the same depth. Operators may own and operate numerous pipelines, with varying installation dates and depths, which is part of why it is so important to contact 811 by phone or ClickBeforeYouDig.com prior to any soil disturbing activities. The pipeline operator may want to be on site if the digging will occur near the utility. Corrosion and terrain modifications can also impact pipeline depth.
PROPER FERTILITY...is critical to the production of hay and haylage crops grown on more than 1 million acres across Ohio. In addition, there are over 1.3 million acres of pastureland on nearly 39,000 farms (50% of all farms) in the state of Ohio (NASS, 2017). Fertilizer costs represent 40 to 60% of the variable input costs of forage hay production (Ward et al., 2016, 2018), and so managing these costs is key to an Ohio forage producers’ ability to stay competitive. Furthermore, water quality issues in the state underscore the need for Ohio farmers to manage on-farm nutrients as efficiently as possible.

To make better and up to date forage fertility recommendations, we want to hear back from producers as to what current practices are already implemented on farms across the state. Understanding current practices and limitations to forage fertility will guide us in determining the type and kind of related research to conduct in order to revise current recommendations.

Please take this short voluntary survey regarding current forage fertility practices. This survey is part of a research effort conducted by The Ohio State University and should take 10 minutes or less to complete. Once again, your feedback is appreciated as we evaluate current forage fertility guidelines. Survey Link: https://osu.az1.qualtrics.com/jfe/form/SV_4JcqVRSdXM16pmK

Results from this survey in addition to forage fertility research will allow for revision of current recommendations for forage crops, grasses and legumes that follow guidelines already established in the Tri-State Fertility Guide. If you have any questions regarding the survey, contact Garth Ruff at ruff.72@osu.edu.

YEW...is a common landscape plant that can be deadly to livestock. Many plants have poisonous compounds that can cause all kinds of concerns, and even death, if consumed. Yew is right at or near the top of plants that cause livestock death. A disheartening scenario is when Yew trimmings are thrown over the fence by the livestock owner or neighbor thinking that the trimmings would make a great snack for the livestock. Fresh or dry trimmings, it doesn’t matter. The result will be the same – death.
(Source: OSU Extension Beef newsletter: https://u.osu.edu/beef/2021/07/07/so-lush-so-green-and-oh-so-poisonous/#more-11152)
GROWING SEASON WEATHER OUTLOOK... provided by Meteorologist Jim Noel, in this OSU Extension C.O.R.N. newsletter: https://agcrops.osu.edu/newsletter/corn-newsletter/21-2021/growing-season-outlook

July will likely go down as a bit wetter than normal with temperatures slightly warmer than normal mostly due to overnight lows being higher. It does not appear we will see maximum temperatures above 95 much in July which is good news. Rainfall is normally 3-4 inches in July across the state and it looks like most places will be in the 2-5 inch range. Isolated higher totals are also possible. So even the locations with below normal rainfall should not be too dry. If anything we may battle the slightly wetter and more humid side of things.

The remainder of the growing season trend looks to continue with slightly wetter and warmer than normal. You can see all the latest outlooks at the NOAA Climate Prediction Center located here: https://www.cpc.ncep.noaa.gov/products/predictions/long_range/lead01/off01_prcp.gif

Harvest Outlook
The autumn harvest outlook indicates the warmer than normal trend will persist with rainfall trending normal.

La Nina
It appears there could be another La Nina this winter into spring but we will know more in the next few months. We will keep you informed. Typically, La Nina has negative impacts on crops in Ohio so it is worth paying attention to.

Rainfall Pattern Across the Corn and Soybean Region
The pattern through mid to late July supports normal to above normal across much of the crop growing states with the exception of the far western areas of the Plains as shown on the graphic above. This would likely be supportive to crops overall.

WESTERN BEAN CUTWORM...trap monitoring continues across Ohio. Traps monitored from June 28 – July 4 had a total of 55 adult moths (0.6 statewide average moths per trap; Figure 1). This is an overall increase from monitoring last week.
MANURE SCIENCE REVIEW...will be held Tuesday, August 10 from 10:00am to 3:00pm at MVP Dairy near Celina, Ohio. Attendees will see and hear about this state-of-the-art dairy’s 80-cow rotary milking parlor, manure handling and management for the 4,400-cow herd, and regenerative farming practices.

Speakers will provide updates on the effectiveness of saturated buffers in reducing runoff in Grand Lake Saint Mary’s as well as issues of legacy phosphorus runoff and the KDS/Quick wash system for manure nutrient recovery. Field demonstrations will include solid and liquid applicators, the Cadman Side-dress System, Oxbo Equipment, in-season manure side-dress demos, and more.

Continuing education credits have been approved for Certified Crop Advisors, Certified Livestock Managers and Indiana State Chemist certifications. Registration costs are $25 per person until August 1st and $30 per person after that date. For program and registration details, click on the link at ocamm.osu.edu or contact Mary Wicks (wicks.14@osu.edu; 330.202.3533).


AG ECONOMY BAROMETER...is published by Purdue University. The most recent report (https://ag.purdue.edu/commercialag/ageconomybarometer/wp-content/uploads/2021/07/June-2021-Ag-Economy-Barometer.pdf) was released on July 6. Responses are from 400 U.S. farmers surveyed the last week of June.

For the second month in a row, the Ag Economy Barometer declined sharply, falling to a reading of 137, which was 21 points below a month earlier, and the weakest ag producer sentiment reading since July 2020. Producers in June were less optimistic about both current conditions on their farming operations as well as their expectations for the future.
Since peaking in April, producers’ perception of their farms’ financial performance has fallen sharply. This month’s Farm Financial Performance Index, which is based on a question that asks producers about expectations for their farm’s financial performance this year compared to last year, declined 30 points (24%) from a month earlier to a reading of 96. This was the index’s weakest reading since last July.

Weakening perceptions of farm financial performance spilled over into the Farm Capital Investment Index which declined 11 points to a reading of 54, the lowest investment index reading since May 2020. Weakness in the investment index appears to be driven more by plans to hold back on constructing new farm buildings and grain bins than farm machinery. The percentage of producers who said they’ve reduced plans for new construction rose to 61% from 58% in May and the percentage planning to increase new construction fell to just 9% vs. 14% a month earlier. This contrasts with results from a similar question regarding farm machinery purchases. The percentage of producers who plan to reduce their machinery purchases fell just 2 points to 44% while those planning to hold purchases constant rose to 45% from 40% with the percentage planning to increase purchases falling to 10% vs. 14% back in May.

Summary

The Ag Economy Barometer declined sharply for the second month in a row as producers’ perception of current conditions and future expectations for their farming operations declined. In June, farmers became noticeably more concerned that their farms’ financial performance will be weaker than a year earlier as the Farm Financial Performance Index fell 24% in just one month. Farmers expect their input costs to rise much more rapidly in the year ahead than they have over the last decade contributing to their concerns about their farm finances. Among corn and soybean producers nearly one-half expect to see farmland cash rental rates rise over the next year and among those who
expect rates to rise, there is an expectation that rates will rise sharply. Farms that normally hire non-family labor reported more difficulty in hiring labor this year than in 2020 which also contributed to some producers’ anxiety. Finally, approximately 9% of all the farms in our survey reported that they have engaged in discussions with a company about leasing some of their farmland for a solar energy project while slightly less than 3% of all farms in the June survey said they have signed a solar lease for some of their farmland.
SOYBEAN PLANTS...can tolerate a lot of defoliation without sacrificing yield. When scouting soybean fields to assess levels of damage, it is important not to let one’s eye and mind overestimate what is truly there. Japanese beetles and grasshoppers tend to hit edges of fields first before they start moving farther into the centers of the fields. And Japanese beetles tend to feed in aggregations and at the tops of plants producing a startling appearance that easily catches one's eye standing at the edge of a field looking in. It is imperative to assess the whole field and the entire plant from top to bottom to get a true picture of defoliation levels. It is very rare that we reach economic levels of defoliation here in Ohio.

A visual guide to defoliation is useful because it is very easy to over-estimate defoliation in soybean. Whether it is one species of foliage-feeding insect, or several foliage-feeding insects present in soybean the same percent defoliation guidelines can be used for all of them collectively.

A rescue treatment is advised when defoliation levels reach 40% in pre-bloom stages, 15% in bloom, and 25% during pod fill to harvest. These defoliation levels apply to the plant as a whole, not just certain leaves. Damage is often worst at the top of the canopy but on closer examination most of the plant is relatively unharmed. Make your decision based on the average condition of whole plants, not a scan of the top canopy. Also, defoliation tends to be worse on field edges, so make your assessment based on the field as a whole, including interior.

Additional information is available in this OSU Extension C.O.R.N. newsletter: https://agcrops.osu.edu/newsletter/corn-newsletter/22-2021/soybean-defoliation-it-takes-lot-really-matter
FARM SCIENCE REVIEW...will be in-person this year! Ever want to climb into the cockpit of a plane and glide over a field? At this year’s Farm Science Review Sept. 21–23, visitors will have that chance without leaving the grassy ground under them.

The upcoming, annual farm trade show will offer a series of virtual reality experiences such as operating a crop duster, high-tech planters, combines, and other equipment. Sitting in a mini IMAX-type theater, visitors to FSR can watch videos projected on a domed screen around them. They’ll get an expansive view—a bit wider than peripheral vision—so they can feel as if they’re flying a plane. Or riding a high-tech planter. Or peering into a beehive.

To film the videos, Ohio State University Extension educators mounted cameras to various spots on planters, tractors, combines, and other vehicles, so viewers can get a perspective they wouldn’t normally get.

“It’s a little bit like having a bug’s eye view of all of these places,” said Brooke Beam, Extension educator in Highland County. OSU Extension is the outreach arm of The Ohio State University College of Food, Agricultural, and Environmental Sciences (CFAES), which hosts FSR.

One of the videos was taken by drones that flew over fields throughout the state to highlight the variety in Ohio agriculture: different crops, diverse soil types, and an assortment of terrain.

A new marketplace pavilion will offer visitors a chance to try products that smaller businesses in food and agriculture are promoting, such as a dairy that might be starting a type of ice cream or a specialty cheese.

**FSR hours are 8 a.m. to 5 p.m. Sept. 21–22 and 8 a.m. to 4 p.m. Sept. 23. Tickets for the event are $7 online and at OSU Extension county offices and participating agribusinesses, or $10 at the gate. Children ages 5 and under are free. For tickets and more information about FSR, visit fsr.osu.edu.**

**High resolution photos and social media assets for FSR 2021 are available at go.osu.edu/fsr2021mediaassets**

TAR SPOT...has been confirmed in one Ohio field. The confirmation was made by Dr. Pierce Paul, OSU Extension Plant Pathology Specialist. While it’s only one, the fact that it has been confirmed in neighboring states has some folks concerned. Tar Spot is a relatively easy disease to diagnose. As the name suggests, it usually shows up as raised, black spots, primarily on the leaf. The size of the spots may vary, but they all have a very similar appearance — raised, circular-to-irregularly shaped, black spots.
This is the earliest we have seen Tar Spot in the state since it was first reported in 2018. Results from studies out west suggest that yield losses due to Tar Spot tends to be highest when it develops and spreads before tasseling (VT) on susceptible hybrids. Warm, wet, and humid conditions seem to favor the development and spread of Tar Spot, so keep your eyes on the weather, and watch the progress of the disease. If it continues to spread, a fungicide application may be warranted, but efficacy of fungicides against Tar Spot is still being investigated. Find more details on Tar Spot at: https://crop-protection-network.s3.amazonaws.com/publications/tar-spot-filename-2019-03-25-120313.pdf.

Additional information is available in this OSU Extension C.O.R.N. newsletter: https://agcrops.osu.edu/newsletter/corn-newsletter/22-2021/tar-spot-showing-early-year-note-diagnosis.

SPEEDING UP HAY CURING...is discussed in this OSU Extension C.O.R.N. newsletter: https://agcrops.osu.edu/newsletter/corn-newsletter/22-2021/steps-speed-field-curing-hay-crops and a few highlights are provided below:

**Haylage vs. Hay**
Consider making haylage/silage or baleage instead of dry hay. Haylage is preserved at higher moisture contents, so it is a lot easier and quicker to get it to a proper dry matter content for safe preservation compared with dry hay. Proper dry matter content for chopping haylage or wrapping baleage can often be achieved within 24 hours or less as compared with 3 to 5 days for dry hay. “Hay in a day” is possible when making hay crop silage. The forage is mowed first thing in the morning and laid in wide swaths to be raked in the late afternoon and chopped as haylage starting in early evening. Proper dry matter content for haylage ranges from 30 to 50% (50 to 70% moisture) depending on the structure used.

Wrapped baleage usually requires 24 hours to cure. Wrapped baleage should be dried to 40 to 55% dry matter (45 to 60% moisture).

Dry hay should be baled at 80 to 85% dry matter (15 to 20% moisture), depending on the size of the bale package. The larger and the denser the dry hay package, the drier it must be to avoid spoilage. For example, safe baling moistures for dry hay without preservatives are 18-20% for small square bales (80 to 82% dry matter), 18% or less for large round bales, and less than 17% for large square bales. See below for more information on baling with preservatives.

**Mechanically Condition the Forage**
Faster drying of cut forage begins with using a well-adjusted mower-conditioner to cause crimping/cracking of the stem (roller conditioners) or abrasion to the stems (impeller conditioners). Adjust roller conditioners so at least 90% of the stems are either cracked or crimped (roller conditioners) or show some mechanical abrasion (impeller conditioners).

**Consider Desiccants**
Desiccants are chemicals applied when mowing the crop that increase the drying rate. The most
Effective desiccants contain potassium carbonate or sodium carbonate. They are more effective on legumes than grasses and most useful for making hay rather than silage or baleage. Desiccants work best under good drying conditions.

**Maximize exposure to sunlight**

I once heard someone say "You can't dry your laundry in a pile, so why do you expect to dry hay that way?"

Exposure to the sun is the single most important weather factor to speed drying. The trick is to expose to sunshine as much of the cut forage as possible.

![Wide windrows are one or several techniques to speed hay drying.](image)

The swath width should be about 70% of the actual cut area. The mowers on the market vary in how wide a windrow they can make, but even those that make narrow windrows have been modified to spread the windrow wider.

Another way to spread out and aerate the crop for faster drying is with a tedder. Tedders are especially effective with grass crops. They can cause excessive leaf loss in legumes if used when the leaves are dry. Tedders can be a good option when the ground is damp, because the crop can be mowed into narrow windrows to allow more ground exposure to sunlight for a short time, and then once the soil has dried a bit the crop can be spread out with the tedder. Tedding twice may decrease drying time.

Research studies and experience have proven that drying forage in wide swaths can significantly speed up drying. Faster drying in wide swaths results in less chance of rain damage and studies by the University of Wisconsin showed that wide swaths (72% of the cut width) result in lower neutral detergent fiber (NDF) and higher energy in the stored forage.

**Consider Preservatives**

Sometimes the rain just comes quicker than we have time for making dry hay. As mentioned above, making haylage helps us preserve good quality forage in those short rain-free windows. A second option is to use a preservative. The most effective preservatives are based on propionic acid, which is caustic to equipment, but many buffered propionic preservatives are available that minimize that problem.
While the acid works to limit the production of mold and fungal spores that can lead to additional heating, any type of bale made over 20% moisture always has the potential to heat. Although mold production may be limited, discoloration and carmelization of the higher moisture stems can still occur. This heating can also degrade proteins in the hay, reducing overall feed quality despite still helping to preserving the hay from spoilage and hopefully making it safe to store indoors. Keep in mind that preservative treated hay should be fed within a year or less, as the preservative effect will wear off over time.

If baling on the wet side, watch those bales carefully! If hay is baled at higher moisture contents that are pushing the safe limits, keep a close watch on them for two to three weeks. Use a hay temperature probe and monitor the internal temperature of the hay during the first three weeks after baling. See the following article for more information on monitoring wet hay: https://agcrops.osu.edu/newsletter/corn-newsletter/15-2021/hay-barn-fires-are-real-hazard

WESTERN BEAN CUTWORM...numbers are beginning to increase across Ohio.

We used growing degree day calculations to predict approximate percentage of adult WBC flight as of Sunday July 11th (Figure 2). At this time, the majority of counties in NW Ohio are seeing approximately 25% adult flight, whereas counties in central and NE Ohio remain at 10%. Once GDD
numbers accumulate to 2704, approximately 50% of WBC flight will have occurred. For more information on calculating GDD and WBC please see the following article: https://cropwatch.unl.edu/2021/degree-days-prediction-western-bean-cutworm-flight

**Scouting guidelines**

Counties with adult WBC trap counts averaging 7 or more moths per week should begin scouting for WBC egg masses in corn fields that are pre-tassel approaching tassel. Freshly laid egg masses are white and turn a purplish color as they mature (Figure 3), close to hatch. To scout, randomly choose at least 20 consecutive plants in 5 locations within a field (a total of 100 plants per field). Inspect 3–4 leaves on the uppermost portion of the corn plant. It is very useful to look at leaves with the sun behind them – often the shadow of the egg mass will reveal it without having to examine the leaf closely. Field corn should be treated with a foliar treatment if more than 5% of inspected plants have eggs or larvae. Sweet corn should be treated if more than 4% of inspected plants have eggs or larvae (processing market), or 1% of plants (fresh-market). For more scouting information, view our WBC scouting video https://aginsects.osu.edu/news/western-bean-cutworm-video
**Treatment**

If the number of egg masses/larvae exceed the threshold mentioned above, foliar applications of insecticides are available, especially those containing a pyrethroid. Timing an insecticide application is critical and must happen before the caterpillar enters the ear, but after the eggs hatch. If the eggs have hatched, applications should be made after 95% of the field has tassels. If the eggs have not hatched, monitor the egg masses for the color change. Newly laid egg masses will be white but turn purple as they mature. Hatch will occur within 24–48 hours once eggs turn purple.


**BEEF QUALITY ASSURANCE (BQA) RECERTIFICATION**

...for those needing to renew in 2021 will be held the following dates and times. Sessions will take place at the Sugarcreek Stockyards. Please RSVP to the Extension office at 330-339-2337.

- July 21 at 1pm
- July 29 at 7pm (Light refreshments provided by Tuscarawas County Cattle Association)
- August 10 at 1pm
- August 25 at 7pm (Light refreshments provided by Tuscarawas County Cattle Association)

**MOBILE MEAT HARVEST**

...gauging interest. Whether you shop for local meat, raise livestock, operate a slaughterhouse, or create value-added products, the meat processing bottleneck affects you!

The project *Planning To Advance Mobile Meat Slaughter and Processing in Ohio and Central Appalachia*, conducted by The Appalachian Center for Economic Networks, Inc. (ACEnet) and project consultants, aims to draft and support a plan for a possible solution.

Will you commit ten minutes of your time to share your values and needs in a short survey? We want to hear from as many farmers, processors, and consumers in the Ohio and Central Appalachian region as we can and appreciate any feedback.

Start the survey: [https://corexmsffsqqb599k6k6d.qualtrics.com/jfe/form/SV_2iwNa7YVbJjpRtA](https://corexmsffsqqb599k6k6d.qualtrics.com/jfe/form/SV_2iwNa7YVbJjpRtA)

(Source: OSU Extension Beef newsletter [https://u.osu.edu/beef/2021/07/14/do-you-have-opinions-about-mobile-meat-harvest-in-ohio/](https://u.osu.edu/beef/2021/07/14/do-you-have-opinions-about-mobile-meat-harvest-in-ohio/))

**GROUND BEEF DEMAND**

...drives beef and dairy cull cow markets. Cull beef cows contribute to ground beef production as a source of 90% lean trimmings, which are blended with 50% lean trimmings to make the majority of our ground beef and hamburger. The other two sources of lean trimmings are dairy cows and lean beef imports. Fed cattle trimmings are the main source of 50% lean trim.
Beef cow slaughter has been averaging 9.9 percent above 2020 slaughter and 12.4 percent higher than 2019 slaughter. This means a larger supply of lean trimmings from beef cull cows. All else equal, we would expect lower cull cow and lean trim prices due to larger supplies. However, this has not been the case this year.

**SLAUGHTER COW PRICES**
Southern Plains Auction, 85-90% Lean, Weekly

![Graph showing slaughter cow prices from January to October 2021.]

Data Source: USDA-AMS
Livestock Marketing Information Center

Southern Plains slaughter cow prices have averaged 8.1 percent above 2020 and 14.7 percent above 2019 prices. Fresh 90% lean trimmings have averaged 4 percent below 2020 prices but 11 percent higher than 2019 prices. Lower dairy cow slaughter and beef imports (the other two sources of lean trim) have helped support cull cow and ground beef markets. Ground beef demand is the other factor driving cull cow values and lean trimmings prices.

Much like other meat prices, ground beef prices have averaged higher this year. Data through May 2021 from the Bureau of Labor Statistics shows that ground beef prices have averaged $4.04/lb or 0.5 percent higher than 2020. Lean ground beef prices have averaged 1.6 percent and 9.9 percent above 2020 and 2019 prices, respectively. The only way to have higher prices with larger supplies of cull cows and lean trimmings is with strong ground beef demand. (Source: OSU Extension Beef newsletter [https://u.osu.edu/beef/2021/07/14/ground-beef-demand/#more-11186](https://u.osu.edu/beef/2021/07/14/ground-beef-demand/#more-11186))
WET START...to summer. Since the start of summer, a strong heat dome has dominated the weather in the west, leaving an active jet stream and weather pattern across the Ohio and Missouri Valleys.

Forecast
The week ahead looks a bit more benign. Mostly dry and sunny conditions are expected Tuesday through Thursday. Skies will remain a bit hazy due to western wildfire smoke. A weak front moving through on Tuesday could provide a few isolated storms late in the day, mainly across northern counties. Temperatures are expected to run about average this week, with highs in the mid to upper-80s and lows in the mid-60s across southern counties. Upper-70s to mid-80s for highs with upper-50s to low-60s expected on Wednesday and Thursday across the north. A better chance of widespread summertime thunderstorms is expected on Friday through the weekend, with highs in the mid to upper-80s.

The Climate Prediction Center’s 6–10-day outlook for the period of July 27 – August 2 and the 16-Day Rainfall Outlook from NOAA/NWS/Ohio River Forecast Center indicate a shift in the pattern, with above average temperatures and below average precipitation expected. Climate averages for this period include a high temperature range of 83-87°F, a low temperature range of 62-66°F, and average rainfall of 0.70-0.90 inches.

COVERED CROPLAND VS. COVER CROPS...is the focus of this University of Illinois Farmdoc publication (https://farmdocdaily.illinois.edu/wp-content/uploads/2021/01/fdd130121.pdf). Cover crops have environmental benefits, with many resulting from cover crops that over-winter, thereby absorbing nitrates in the early spring and building organic matter in soils over time. Because they over-winter, winter wheat and hay have many attributes ascribed to cover crops. Even though cover crop acres have increased, the increase has been more than offset by declines in wheat and hay acres, implying a step backward, not forward.

Wheat and Hay Acres: The 1996 farm bill eliminated annual set asides. With a few exceptions, farms were allowed to plant whatever was desired, most likely resulting in the rotation with the highest expected return.
Since 1996, acres planted to winter wheat have declined by -41% (-21.0 million) while acres of all hay harvested declined by -14% (-8.8 million) (see Figure 1).

**Cover Crops vs. Covered Cropland:** According to the Census of Agriculture, 5 million more acres of cover crops were planted in 2017 than 2012 (see Figure 2 and Data Notes 2 and 3). This 5 million acre increase in cover crops was more than offset by a 10 million acre decline in wheat and hay acres, resulting in a 5 million acre decline in covered cropland. The decline in covered cropland is likely to be even larger. An unharvested small grain planted as a cover crop, such as wheat, is included in acres planted to the small grain. Acres of other fall-seeded crops, such as winter oats and barley, may have also declined.

**Concluding Observations**

Winter wheat and hay acres have many attributes portrayed as desirable in cover crops. Between 2012 and 2017, acres of winter wheat and hay declined more than acres of cover crops increased. In net, covered cropland acres declined by 5 million and thus took a step backward.

Unlike cover crops, winter wheat and hay generate environmental benefits while earning immediate economic returns. A winter wheat – soybean double crop rotation may generate environmental benefits while enhancing
economic returns per acre. This observation led to a policy proposal to change the goal of US public research policy from enhancing yield to “growing 2 commercial crops per acre where 1 grew before” (see October 28, 2020 farmdoc daily article). Seeking to cover more cropland more often with commercial crops potentially offers a rare win-win public policy by increasing US agricultural output while enhancing environmental quality.

The proposal raises important questions, including:

1. What is the optimal rotation of crops in terms of economic returns and environmental benefits, including nutrient loading? For example, are environmental benefits and economic returns greater from planting 2 commercial crops per acre in a year or from planting 1 longer-season commercial crop plus an overwintering cover crop?

2. What differential geographic impacts, if any, result from multiple commercial crops per acre vs. a commercial – cover crop rotation vs. current crop rotations?

ESTABLISHING WARM SEASON GRASSES...requires patience, as described in this OSU Extension Beef newsletter: https://u.osu.edu/beef/2021/07/21/patience-in-prairie-modeled-pasture/. The expected wait time for a native warm-season grass stand to reach the state considered “fully established” is three years; three whole years. In order to prepare for establishment and follow through with maintenance, the forage manager has to prepare a completely different strategy from the typical cool-season perennial plan. Preparing the site before seeding; how to exclude the area from harvest for an extended period of time; how to treat for weeds; how to fertilize; and how to harvest are all slightly different.

The primary concern of seedling native prairie grasses in year one is to establish a strong root system and then develop tillers above ground. The bunch type growth habit of these plants leads to patchy looking rows with open ground in between where annual and perennial weeds can encroach before tiller development takes off. Weed control in year one and two are critical to prevent competition for nutrients and sunlight. Tolerance to herbicides varies by grass type and should be considered before application.

One of the greatest benefits of the prairie ecosystem is the immense diversity of plants, animals, and insects that reside in the grassland. Combining native grasses, legumes, and forbs becomes complicated when managed as an agronomic crop. Depending on the intensity of the weed pressure on the site, it may be best to wait to introduce broadleaf plants (legumes and forbs) by interseeding in year three of establishment. This allows two seasons of broadleaf weed control before diversifying the pasture mix and significantly limiting weed control options.

If cool-season forages are interseeded into warm-season forages, they will likely only last one to two years under grazing and in hay systems the warm-season forages would likely struggle to develop good root systems because of competition with the cool-seasons. Due to the physiological differences in plant growth, the best way to manage warm-seasons and cool-seasons on the same farm is in separate pastures.

If considering adding warm-season annual grasses with warm-season perennials, competition is still an issue and neither crop will grow to its full potential.

When managed with care and patience a prairie modeled pasture planting can provide high yielding, good quality forage in the hottest and driest part of the growing season. Having both warm-season and cool-season options on the farm can decrease the need for stored feed, increase the total potential yield of the farm, improve soil health, and provide wildlife benefits while also meeting the needs of ruminant livestock.
There are numerous conservation programs that support the establishment of prairie modeled pasture in various complexities. To learn more about cost-share programs available in your area, contact your local Farm Service Agency, Soil and Water Conservation District, or Pheasants and Quail Forever service personnel to evaluate the feasibility of native warm-season forages on your farm.

**TO SPRAY OR NOT TO SPRAY**...foliar products to soybeans at the R3 stage is discussed in this OSU Extension C.O.R.N. newsletter: [https://agcrops.osu.edu/newsletter/corn-newsletter/23-2021/spray-or-not-spray%E2%80%A6foliar-products-r3](https://agcrops.osu.edu/newsletter/corn-newsletter/23-2021/spray-or-not-spray%E2%80%A6foliar-products-r3).

A soybean plant is at the R3 growth stage when there is a pod at least 3/16 inch long (but less than 3/4 inch long) at one of the four uppermost nodes on the main stem with a fully developed trifoliolate leaf. A leaf is fully developed, and the node is counted, when the trifoliolate leaf at the node immediately above it is open (Figure 1). Soybean plants within a field may be at different growth stages. Over half of the plants need to be at a certain growth stage for the whole field to be considered that growth stage. For more information on soybean growth stages R3 through R6, see this YouTube video: [https://www.youtube.com/watch?v=Z0A1fkU4oBU](https://www.youtube.com/watch?v=Z0A1fkU4oBU).

**When should I spray a foliar fungicide?**

First, consider the disease triangle. For a disease to develop, there must be a 1) host (Is your soybean variety resistant or susceptible?), 2) pathogen (Is there a history of a certain disease in your field? Do you see any visual symptoms of disease?), and 3) conducive environment. Most foliar diseases, such as brown leaf spot and frogeye leaf spot, are favored by wet conditions.

In the soybean agronomic trials, brown leaf spot and frogeye leaf spot tend to be the two most common soybean diseases (Figure 2). In these trials, we’ve measured a yield response to foliar fungicide applied at R3 in 9 out of 28 environments, ranging from 4 to 8 bu/acre. At the responsive locations, which tended to be in...
central and southern Ohio, there was foliar disease present (brown spot and frogeye leaf spot). Additionally, these positive yield responses occurred in years with greater precipitation. Very little to no yield response occurred in dry years and in years when soybeans were flooded. If you have visual symptoms of disease, a conducive environment, and susceptible variety, R3 is a good time to spray a foliar fungicide.

**When should I spray a foliar insecticide?**
Often, if a farmer plans on spraying a foliar fungicide, they will tank-mix a foliar insecticide. From last week’s article on soybean defoliation, “*It is very rare that we reach economic levels of defoliation here in Ohio.*” (Click here to read the entire article: [https://agcrops.osu.edu/newsletter/corn-newsletter/22-2021/soybean-defoliation-it-takes-lot-really-matter](https://agcrops.osu.edu/newsletter/corn-newsletter/22-2021/soybean-defoliation-it-takes-lot-really-matter)). Over the past several years, we’ve tested foliar insecticide in 28 Ohio environments. Out of those 28 environments, we’ve only measured a yield response (+5 bu/acre) to foliar insecticide applied at R3 one time. In the other 27 environments, soybean yield was unaffected by foliar insecticide with defoliation levels in the mid- to upper canopy at <15%.

**When should I spray foliar fertilizer?**
In Ohio, the most common micronutrient deficiency is manganese. However, even then, we’ve only measured a yield response to manganese foliar fertilizer in two out of 20 Ohio environments. Soybeans are most likely to respond to foliar fertilizer when there are visual symptoms of deficiency. Interverinal chlorosis is a visual symptom of manganese deficiency (Figure 3). Manganese deficiency tends to occur in fields with high pH or high organic matter (muck), especially if soils are droughty. In dry soil, manganese is converted to a form that is unavailable for plant uptake.

*Figure 3. Manganese deficiency symptoms include interveinal chlorosis.*
Recently, soybean agronomists across the U.S. evaluated foliar fertilizers in 46 environments and found no soybean yield increase when the products were applied prophylactically (e.g., no visual deficiency symptoms). For more information on this study, see: https://www.youtube.com/watch?v=0DtNagk6qH1. In most situations, foliar fertilizers are unnecessary.

Summary
When soybean plants are yellow due to saturated soil conditions as seen in northern Ohio last week, it can be tempting to apply foliar products to help the plants ‘recover’ (Figure 4). These fields often already have a lower yield potential and are unlikely to respond to foliar products in the absence of disease, insects, and nutrient deficiency. Multiple trials in Ohio and across the U.S. have shown that prophylactic applications of foliar fungicide, insecticide, and fertilizer provide no yield benefit. Before applying these products, it’s important to scout your fields for disease, insects, and nutrient deficiencies.

FUNGICIDE EFFICACY...for corn disease control is discussed in this OSU Extension C.O.R.N. newsletter: https://agcrops.osu.edu/newsletter/corn-newsletter/23-2021/fungicide-efficacy-control-corn-diseases. Many corn fields in Ohio are rapidly approaching silking (R1), and foliar diseases such as Gray leaf spot have been observed where the environment has been conducive to disease development, prompting growers to consider fungicide applications. The information below was developed by the Corn Disease Working Group (CDWG) as part of the Crop Protection Network. The Crop Protection Network is a multi-state and international collaboration of university and provincial extension specialists, and public and private professionals who provide unbiased, research-based information to farmers and agricultural personnel.


BEEF QUALITY ASSURANCE (BQA)...teaches best management practices, helps promote consumer confidence, and has positively impacted U.S. beef. Maintaining market access and added value for cattle raised by BQA certified producers has been significant in the past few years. On the fed cattle side, we know what happens when one of the major packers is out of the market for a period of time. Producer participation in the program has kept Tyson at Ohio markets and buying Ohio cattle. Depending on the week and who you ask, that is a value of $5-15/cwt. Evidence of added value has also been seen in the feeder cattle market. In 2019, Colorado State analyzed market data from the Western Video Markets and determined that BQA certified cattle sold with a premium of $2.71/cwt on average compared to cattle where BQA certification was not documented.

Results of the study revealed a premium of $16.80/head for cattle that had BQA listed in the lot description compared to no mention and holding other factors constant. This value was determined by applying the $2.71/cwt premium found in CSU’s statistical analysis to the average weight of cattle in the study data.

Aside from BQA, another reason to keep beef quality at the forefront is the increased demand for local beef products. While demand for local beef had been growing prior to COVID-19, the pandemic accelerated that demand to a point that many, (or any) of us had never seen.
The real question is: how much of that added demand for local beef is here to stay? That answer varies from processor to processor that I have spoken to, however they all believe that those customers who had a positive eating experience will be back to purchase local beef.

That should excite those producers who are set up for the direct marketing of quality beef. That said, the pandemic also brought to light, that there are several first-time direct marketers that need some guidance in producing that high quality product if they want to remain in that direct-to-consumer lane of beef production. This brings us back to genetics, nutrition, and cattle management topics such as BQA.
(Source: OSU Extension Beef newsletter: https://u.osu.edu/beef/2021/07/21/keeping-quality-in-mind/#more-11085)

BQA sessions are scheduled at the Sugarcreek Stockyards on the dates below. Additional sessions will be scheduled later in the year. If you attended certification in 2018, you want to register for one of the upcoming trainings. Thank you to the Tuscarawas County Cattle Association (TCCA) for their support! Please call 330-339-2337 to pre-register.

- July 29 at 7pm (Light refreshments provided by TCCA)
- August 10 at 1pm
- August 25 at 7pm (Light refreshments provided by TCCA)

FARM OFFICE LIVE...returns this Friday, July 23, at 10am. Presented by OSU Extension, this program will feature updates about legislation, CFAP 2, taxes, carbon agreements, 2020 Farm Business Analysis, and provide answers to your questions. Registration information is provided below.
THE TIME TO SEED PERENNIAL FORAGES...is fast approaching. The month of August provides a window of opportunity for establishing perennial forage stands or filling in seedings made this spring that have gaps. Rainfall and adequate soil moisture in the few weeks immediately after seeding is the primary factor affecting successful establishment.

This OSU Extension C.O.R.N. newsletter (https://agcrops.osu.edu/newsletter/corn-newsletter/24-2021/seeding-perennial-forages-late-summer) provides management tips for a successful establishment of perennial forages. A few highlights are provided below:

- **Check herbicide history of field.** A summary table of herbicide rotation intervals for alfalfa and clovers is available at http://go.osu.edu/herbrotationintervals. Forage grasses are not included in that table, so check the labels of any herbicides applied to the field in the last 2 years for any restrictions that might exist.

- **Seed selection:** Be sure to use high quality seed of adapted varieties and use fresh inoculum of the proper Rhizobium bacteria for legume seeds. “Common” seed (variety not stated) is usually lower yielding and not as persistent, and from our trials the savings in seed cost is lost within the first year or two through lower forage yields.

- **Planting date:** Planting of alfalfa and other legumes should be completed between late July and mid-August in Northern Ohio and between early and late August in Southern Ohio. Most cool-season perennial grasses can be planted a little later. Check the Ohio Agronomy Guide for specific guidelines (see http://go.osu.edu/forage-seeding-dates).

- **Planter calibration:** If coated seed is used, be aware that coatings can account for up to one-third of the weight of the seed. This affects the number of seeds planted in planters set to plant seed on a weight basis. Seed coatings can also dramatically alter how the seed flows through the drill, so calibrate the drill or planter with the seed to be planted.

- **Seed placement:** The recommended seeding depth for forages is one-quarter to one-half inch deep. It is better to err on the side of planting shallow rather than too deep.

Scout your new forage seeding this fall on a regular basis. Post-emergence herbicide options exist for alfalfa that control late summer and fall emerging winter annual broadleaf weeds. A mid- to late fall application of Butyrac (2,4-DB), bromoxynil, Pursuit or Raptor are the primary herbicide options for winter annual broadleaf weeds. *Fall application is much more effective than a spring application for control of these weeds especially if wild radish/wild turnip are in the weed mix.* Pursuit and Raptor can control winter annual grasses in the fall in pure legume stands but not in a mixed alfalfa/grass planting.
AGRONOMY UPDATE...sponsored by OSU Extension will be held Thursday, August 26, 1pm – 4pm at Durbin Farms, 4227 Durbin Rd. SE, New Philadelphia. Please call 330-339-2337 or email zoller.1@osu.edu by August 24. Topics include:

- **Parts & Equipment Shortages are Real – Be Prepared: Thoughts on 2021 Harvest & 2022 Planting**
  - Dr. John Fulton, OSU Food, Agricultural, and Biological Engineering

- **Are You Ready for Carbon Markets?**
  - Mike Estadt, OSU Extension Educator, ANR, Pickaway County

- **OSU Extension Agronomy & Farm Management Resources**
  - Chris Zoller, Extension Educator, ANR, Tuscarawas County

- **Lessons Learned from Building a Farm Shop**
  - Matt & Luke Durbin, Durbin Farms

MEATLESS MEAT INDUSTRY...is discussed in this University of Illinois Farmdoc Daily article: https://farmdocdaily.illinois.edu/wp-content/uploads/2021/07/fdd220721.pdf.

**What is Meatless Meat?**

The meatless meat industry produces two categories of products: plant-based meat and lab-grown meat. Both of these products are distinct from alternative meat products such as veggie burgers or tofurkey because they are formulated to look, smell, and taste like animal meat. Their nutritional profiles also are designed to resemble that of meat. Plant-based meat products, true to their name, are processed using only ingredients derived from plants. Formulations vary by brand – the brand “Impossible Burger” is made mostly of soy protein concentrate, coconut oil, and sunflower oil. It uses soy leghemoglobin, a compound derived from soybean, to imitate meat’s bloodiness and juiciness (Impossible Foods, 2020). Another brand, “Beyond Meat”, uses a pea-rice-mung bean formula, along with coconut oil, pomegranate juice, and beet juice. Lab-grown meat, meanwhile, is created taking starter cells from an animal biopsy or embryo and cultivating them into myocytes, muscle cells, along with fat and tissue cells. These are then proliferated in a liquid media in a piece of equipment called a bioreactor, and these cells are grown around micro-scaffolding in order to form cuts of meat. There is also an ‘animal-free’ method which involves creating a piece of animal DNA (using DNA code stored in genome databases) and inserting it into a non-animal host organism (Waschulin & Specht, 2018). Similarly, the media in which the cells grow typically has been fetal bovine serum, but formulations without animal components are also under development (2018).

**State of the Industry**

The Good Food Institute estimates that meatless meat sales comprise 1.4% of total meat sales in the U.S. (2021). The market for these products is valued at $14 billion (Theurer et al., 2019) and Barclays predicted that the market would expand to $140 billion in the next decade, capturing 10% of the globe’s $1.4 trillion meat industry (2019).

The plant-based meat products are currently on the market in the U.S. and Europe and Asia, where they are sold in restaurants and grocery stores. Lab-grown meat is still in its R&D phase and has not yet entered the market in the U.S.
Of the start-ups, there are three main competitors in the U.S. market. The first is Beyond Meat, a U.S.-based public company founded in 2009 and valued at $4.8 billion (Franklin & Sen, 2019).

Impossible Meat is the second company which sells plant-based meat products. It is a private company founded in 2011, and the company was valued at $777 million as of November 2019 (Franklin & Sen, 2019).

The third plant-based meat start-up is The Meatless Farm Company. Based in the U.K., its formula and product offerings are similar to that of Beyond Meat. It is the exclusive provider of plant-based meat to Whole Foods, and its products are also available in the United Arab Emirates, Canada, China, and Europe (Meatless Farm, 2020).

Large, established meat companies are also entering the plant-based meat market. Companies such as Tyson, ADM, JBS, Kellogg’s, and Nestlé have developed brands for their plant-based products.

For lab-grown meat, the Good Food Institute reports that there are nearly fifty start-ups globally working on cultivated meat products, 19 of which are in the U.S., the rest in 15 other countries (Good Food Institute, 2019). The largest lab-grown meat company in the U.S. is Memphis Meats, which has raised $180 million from investors (Weiner-Bronner, 2020). Memphis Meats has successfully grown beef meatballs and cuts of chicken and duck from cell culture. Another prominent one is Aleph Farms, an Israeli company that specializes in growing steaks currently valued at $14 million (Lewin, 2020). It garnered attention in 2019 when it successfully grew a steak on the international space station, to demonstrate how its production process uses few natural resources (Yeung, 2019). Mosa Meats, a Dutch start-up, grew the world’s first piece of meat from steer cells in 2013, based on research funded by Google at Maastricht University (Mosa Meat, 2020).

AG LAW UPDATE…from Jeff Lewis, OSU Extension Ag & Resource Law Program is provided here: https://farmoffice.osu.edu/blog/fri-07162021-432pm/ag-law-harvest. Highlights from the post:

- **President Biden signs executive order to reduce consolidation in agriculture.** President Biden’s recent Executive Order on Promoting Competition in the American Economy seeks to address inadequate competition within the U.S. economy that the administration believes holds back economic growth and innovation. With respect to agriculture, the Order seeks to break up agricultural markets “that have become more concentrated and less competitive.” The Biden Administration believes that the markets for seeds, equipment, feed, and fertilizer are dominated by a few large companies which negatively impacts family farmers and ranchers. The Biden Administration believes that the lack of competition increases the costs of inputs for family farmers all while decreasing the revenue a family farmer receives. The Order directs the USDA to consider issuing new rules: (1) making it easier for farmers to bring and win lawsuits under the Packers and Stockyards Act; (2) prohibiting chicken processors from exploiting and underpaying chicken farmers; (3) adopting anti-retaliation protections for farmers who speak out about a company’s bad practices; and (4) defining when meat producers can promote and label their products as a "Product of the USA." The Order also requires the USDA to develop a plan to increase opportunities for small farmers to access markets and receive a fair return and encourages the Federal Trade Commission to limit when equipment companies can restrict farmers from repairing their own farm machinery.

BEEF COW NUMBERS CONTINUE TO DECREASE…at the national level, but there is reason to be optimistic into the future. In this OSU Extension Beef newsletter (https://u.osu.edu/beef/2021/07/28/beef-cow-numbers-continue-to-decrease-at-national-level/#more-11227) Dr. Kenny Burdine, University of Kentucky Extension describes what these declines may mean for the beef industry. Most all beef related inventory categories were lower, with all cattle and calves down 1.3% from July 1, 2020. Beef cow inventory, which was off a little more
than 2% from last year, was the largest mid-year decrease in beef cow numbers since 2012, but still leaves the beef cow just 3% off its recent high in 2018. Note the gap in 2016 – no estimate was made that year.

Heifer retention estimates also paint a picture of decreasing beef cow numbers in the future. While beef heifer retention in nominal terms has been pretty flat the last three years, I like to examine that number as a percent of beef cow numbers. Put simply, if heifer retention is smaller than the culling rate, this suggests decreases in beef cow inventory. The figure below attempts to capture this as it compares heifer retention as a percentage of beef cow inventory on an annual basis (blue line) to the average of this measure going back to 1973 (black line). There was no estimate in 2016, which is why the gap exists. Note that each of the last three years have been about 1% below that long run average. Culling patterns for the balance of 2021 will be impacted by weather patterns and calf prices, but I feel pretty confident that this trend of decreasing beef cow numbers will continue into 2022.

Decreases in inventory should also line up with future increases in packing capacity, and the two together are significant reason for optimism in the next few years.

**BQA RECERTIFICATION**...sessions are scheduled at Sugarcreek Stockyards (see below). Please pre-register by calling 330-339-2337

- July 29 at 7pm (refreshments provided courtesy of the Tuscarawas County Cattle Association)
- August 10 at 1pm
- August 25 at 7pm (refreshments provided courtesy of the Tuscarawas County Cattle Association)
FARM SCIENCE REVIEW...will be held September 21, 22, and 23 at the Molly Caren Agricultural Center near London, Ohio. The FSR features exhibitors, field demonstrations, educational sessions, and so much more. Please stop in the Extension office to get tickets. Additional information about the FSR is available here: https://fsr.osu.edu/.

LINKS TO USEFUL OSU EXTENSION RESOURCES...are provided below:

- Farm Management - https://farmoffice.osu.edu/
  - Ohio Farm Business Analysis & Benchmarking Program - https://farmprofitability.osu.edu/
  - Farm Budgets - https://farmoffice.osu.edu/farm-management/farm-budgets
  - Custom Rates - https://farmoffice.osu.edu/farm-mgt-tools/custom-rates-and-machinery-costs
  - Ohio Ag Manager - https://u.osu.edu/ohioagmanager/

- Dairy - https://dairy.osu.edu/

- Beef - https://u.osu.edu/beefteam/