Hello, Northeast Ohio Counties!

We were fortunate that hurricane Florence decided to stay farther east. Most places are reporting less than half an inch of rain. The forecast for the first few weeks of harvest is showing slightly more rain than average.

Farm Science Review starts this week! You can see all the latest equipment, technology, and research at this large outdoor expo. You can find schedules of talks, demos, and general information here: [https://fsr.osu.edu/home](https://fsr.osu.edu/home). We hope to see you there!

Lee Beers
Extension Educator - Ag & Natural Resources
Farm Science Review Bus Trip

Farm Science Review starts today and showcases the latest equipment, research, and technology that agriculture has to offer. The only problem is the 3-hour drive to London, OH can be a bit too long for some. If you would like to take a bus to Farm Science Review, WI Miller and Sons still has seats available for their trip on Wednesday, September 19. The bus will leave WI Miller and Sons at 4A.M. and will return by 11:00P.M. Cost for the trip is $50/person and includes the bus trip, admission to Farm Science Review, and dinner at Dutch Heritage of Bellville on the way back. For more information or to reserve a seat call 330-876-6573.

Warmer and Wetter Pattern to Impact Much of the Harvest Season
By Jim Noel

The warmer pattern will continue at least into the start of October across Ohio.

The remnants of Florence went mainly east of Ohio with only light rainfall amounts. Temperatures will heat back up into the 80s for much of the rest of this week. Normal highs are in the 70s and lows in the 50s. We expect highs this week mostly in the 80s and lows in the 60s to near 70. The next rainfall system will move across the region later Friday or this weekend. Another system will move through by the middle or the end of next week.

Northeast Ohio Agriculture

OHIO STATE UNIVERSITY EXTENSION
Ashtabula and Trumbull Counties
Overall, we expect rain systems every 3-7 days until further notice. There will be dry periods mixed in as well so this will not be a continuous wet period by any means. The wetter pattern may cause some delays in the fields over the next 30-60 days so it will be important to take advantage of those dry stretches.

The first freeze is nowhere to be seen. We expect a normal first freeze in the October 10-20 range for most places.

Over the next two weeks, rainfall will average 1-3 inches with isolated 4+.

Applications Now Being Accepted for the SNAP-Ed Program Assistant Position at OSU Extension in Trumbull County

Trumbull County Extension is currently accepting applications to fill a vacant SNAP-Ed Program Assistant position until September 23, 2018. The position is full time and will be located at the Extension office in Cortland, OH.

Job duties include using standardized curriculum materials to teach food, nutrition, food resource management, and other related topics to low-income adults, youth, and/or families as part of the Education branch of the Supplemental Nutrition Assistance Program (SNAP-Ed) in a variety of community settings; use standardized evaluation instruments to assess program participants’ knowledge, skills, attitudes, and behaviors to determine educational needs and impacts; refer program participants to appropriate assistance programs; recruit adults for the program by collaborating with community agencies and programs, as well as using other tools of promotion; recruit youth for the program by collaborating with schools serving 50% or more free and reduced meals; participate in staff development and training opportunities to enhance knowledge of nutrition topics and successful methods for nutrition education; regular travel will be required throughout the county and occasionally to the state office and other regional locations around the state.

Bachelor’s degree in Nutrition, Family and Consumer Sciences, or other related field, or an equivalent combination of education and experience required.

You can find more information and details on how to apply here: https://www.jobsatosu.com/postings/89297
Ohio NRCS Announces New EQIP Application Deadline

COLUMBUS, OH, Sept. 11, 2018 – The U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) announced Friday, October 19, 2018, as the deadline to submit applications for the Environmental Quality Incentives Program (EQIP) in Ohio.

EQIP is a voluntary conservation program which helps producers make conservation work for them. Together, NRCS and producers invest in solutions that conserve natural resources for the future while also improving agricultural operations.

Through EQIP, NRCS provides agricultural producers with financial resources and one-on-one help to plan and implement improvements, or what NRCS calls conservation practices. Using these practices can lead to cleaner water and air, healthier soil and better wildlife habitat, all while improving agricultural operations. Through EQIP, you can voluntarily implement conservation practices, and NRCS co-invests in these practices with you.

Financial assistance is now available in a variety of agricultural categories such as cropland, forestry, pasture operations, and organic. Several special projects are also available which address water quality, forestry management, improving pollinator populations, applying best management practices and many more. All available agricultural categories are listed on the Ohio NRCS website under "EQIP Application Deadlines."

To participate in USDA conservation programs, applicants should be farmers or farm or forest landowners and must meet eligibility criteria. Applications signed and submitted to NRCS by the October 19 deadline will be evaluated for fiscal year 2019 funding.

To learn more about EQIP or other technical and financial assistance available through NRCS conservation programs, visit Get Started with NRCS or visit your local USDA Service Center.

Corn that acquires its own nitrogen identified, reducing need for fertilizer

By Eric Hamilton, University of Wisconsin-Madison

A public-private collaboration of researchers at the University of Wisconsin–Madison, the University of California, Davis, and Mars Inc., have identified varieties of tropical corn from...
Oaxaca, Mexico, that can acquire a significant amount of the nitrogen they need from the air by cooperating with bacteria.

To do so, the corn secretes copious globs of mucus-like gel out of arrays of aerial roots along its stalk. This gel harbors bacteria that convert atmospheric nitrogen into a form usable by the plant, a process called nitrogen fixation. The corn can acquire 30 to 80 percent of its nitrogen in this way, but the effectiveness depends on environmental factors like humidity and rain.

Scientists have long sought corn that could fix nitrogen, with the goal of reducing the crop's high demand for artificial fertilizers, which are energy intensive, expensive and polluting. Further research is required to determine if the trait can be bred into commercial cultivars of corn, the world's most productive cereal crop.

The findings are reported Aug. 7 in the journal PLOS Biology at http://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.2006352.

"It has been a long-term dream to transfer the ability to associate with nitrogen-fixing bacteria from legumes to cereals," said Jean-Michel Ané, a professor of bacteriology and agronomy at UW–Madison and a co-author of the new study.

Legumes, such as beans, are the only group of crop plants previously known to acquire a significant amount of nitrogen through fixation, which they perform in specialized tissues called root nodules.

Howard-Yana Shapiro, the chief agricultural officer at Mars, a senior fellow in the Department of Plant Sciences at UC Davis and a co-author of the report, identified the indigenous varieties of corn in a search for cultivars that might be able to host nitrogen-fixing bacteria.

The corn is grown in the Sierra Mixe region of Oaxaca in southern Mexico, part of the region where corn was first domesticated by Native Americans thousands of years ago. Farmers in the area grow the corn in nitrogen-depleted soils using traditional practices with little or no fertilizer, conditions that have been selected for a novel ability to acquire nitrogen. The biological
materials for this investigation were accessed and utilized under an Access and Benefit Sharing Agreement with the Sierra Mixe community and with the permission of the Mexican government.

The corn is striking. Most corn varieties grow to about 12 feet and have just one or two groups of aerial roots that support the plant near its base. But the nitrogen-fixing varieties stand over 16 feet tall and develop up to eight or 10 sets of thick aerial roots that never reach the ground. Under the right conditions, these roots secrete large amounts of sugar-rich gel, providing the energy and oxygen-free conditions needed for nitrogen-fixing bacteria to thrive.

Establishing that plants are incorporating nitrogen from the air is technically challenging. "It took us eight years of work to convince ourselves that this was not an artifact," said Ané, whose lab specializes in studying and quantifying nitrogen fixation. "Technique after technique, they're all giving the same result showing high levels of nitrogen fixation in this corn."
The group used five different techniques across experiments in Mexico and Madison to confirm that the Sierra Mixe corn's gel was indeed fixing nitrogen from the air and that the plant could incorporate this nitrogen into its tissues.

"What I think is cool about this project is it completely turns upside down the way we think about engineering nitrogen fixation," said Ané.

The gel secreted by the corn's aerial roots appears to work primarily by excluding oxygen and providing sugars to the right bacteria, side-stepping complex biological interactions. The research team was even able to simulate the natural gel's effects with a similar gel created in the lab and seeded with bacteria. The simplicity of the system provides inspiration to researchers looking to identify or create more crop plants with this trait.

"This corn showed us that nature can find solutions to some problems far beyond what scientists could ever imagine."

Breeding the trait into commercial cultivars of corn could reduce the need for artificial nitrogen fertilizers, which have a host of disadvantages. More than 1 percent of the world's total energy production goes toward producing nitrogen fertilizer. Developed countries contend with waterways polluted by leaching nitrogen, while adequate fertilizer is often inaccessible or too expensive for farmers in developing countries. Corn that fixes some of its own nitrogen could mitigate these issues, but more research will be required.

"Engineering corn to fix nitrogen and form root nodules like legumes has been a dream and struggle of scientists for decades," said Ané. "It turns out that this corn developed a totally different way to solve this nitrogen fixation problem. The scientific community probably underestimated nitrogen fixation in other crops because of its obsession with root nodules."
"This corn showed us that nature can find solutions to some problems far beyond what scientists could ever imagine," Ané said.

**Utilizing Corn Stalks and Extending the Grazing Season**

By Victor Shelton, NRCS State Agronomist/Grazing Specialist


The older I get, the more I tend to philosophize about things. I’ve been asked a few times why I am such an advocate for sound grazing practices. Best management grazing practices, just like conservation practices for reducing or preventing soil erosion on cropland, help preserve and or regenerate resources not only for present generation, but also for future generations. Keeping a field in forages will save more soil and conserve more water than almost all other erosion control practices. As the world population continues to increase and the acres of viable land that we can grow food on continues to decrease, we have to be more efficient and more productive with what remains while also maintaining and improving water quality. Food quality and nutrient density need to also improve.

I’ll refrain from getting too deep and prevent you from possibly thinking you need to put on gum boots. I will say that there is satisfaction having a public service position that can provide a positive influence on someone else or on the resource. But, like any position, especially thinking about teachers, it has it’s challenges. You can lead the horse to water, but you can’t make it drink.

I mentioned last month that we are on a count down to the first frost. I’m thankful for timely rains and that most of our cool-season grasses will continue to grow even after that first frost, as long as there is moisture working with the declining light hours. Most producers, including myself, would benefit from being more efficient. That efficiency is achieved first by optimizing forage growth. I’ll probably be lying on my nursing home bed, raising up my grazing stick cane and still repeating the line, “Don’t over graze it, maintain that solar panel, and keep the ground covered!” Every growth day now is an opportunity to grow more forage for later use. Most of the Midwest
will be short in hay this winter so you may really have to be creative or think outside your normal box to keep enough feed in front of your livestock.

What can you do to maximize forage growth? The more you can grow now, during these remaining autumn days, the more you will have to graze and the less feed will be needed. The first thing to think about is what can be grazed right now so forages can continue to grow? There will be a lot of corn that will be harvested soon. Grazing corn fields can certainly buy you some forage growth days. Every day the livestock are out ingesting some corn residue, they are not grazing forages and so your stockpile is able to grow.

Corn residues normally are best utilized within 60 days of harvest and also allocated out in portions to reduce waste. In general, corn stalks have a crude protein value of about 8 percent and a total digestible nutrient value of about 70 percent. The nutritional value falls over time to about 5 percent crude protein and to about 40 percent digestibility. This reduction can be two-fold. First, if livestock are not managed in such a way to allocate the residue out over time, they will eat their dessert first which is the most palatable, and leave the broccoli for later. Second, nutrient content decreases over time as the residue weathers and soluble nutrients leach out. Stalks are best utilized for spring calving cows due to lack of sufficient energy for lactating or growing animals, especially over time, unless winter annuals or brassicas have been added.

The addition of annuals such as my favorite combination of oats, a brassica such as turnips or radish, and a winter hardy annual like cereal rye make an excellent addition to stalks if they can be planted early. This mixture, especially if it has a lot of brassica in it, needs to be balanced with some dry material to be utilized most efficiently. Those high nitrogen and water containing turnips or radish are too rich to be grazed alone and are a great addition to corn residue. Adding these annuals not only helps stretch out those residues, but it helps the grazing livestock make better use of this feed and usually means a higher rate of gain.

Rough estimating, corn stalks should be stocked at the rate of 1,000 pounds live weight per acre per 30 days. Though it can vary a lot, most corn produces about 56 pounds of residue per bushel. So, a 200 bushel corn crop should yield about 11,000 pounds of residue. Of that residue, about 40 percent is leaf and husk, the part that is most readily consumed. So in this example, there is about 4,400 pounds of desirable grazable fodder available or about 75 animal unit days at 50 percent harvest efficiency; and yes, they are going to waste some. One animal unit, which is 1,000 pound live weight, will consume about 3 percent of their weight in dry matter per day or roughly 30 pounds of fodder. You can do your own math from there using your livestock numbers and acres that can be grazed. Certainly, if annuals are also part of the picture, then there is even more available.

Corn fields used for grazing that are highly erodible (HEL) must still comply with Farm Bill requirements after grazing, which can add even more value to grazable covercrops interseeded
into the stubble. Refrain from feeding any supplements or hay in crop fields or leave livestock in the field over extended time frames, especially under wet conditions to prevent compaction issues the next crop year.

Crop residue should be tested for nitrates if there was crop failure or chance that applied nitrogen was not normally utilized. Livestock water should also be readily available and ideally moved with the livestock to new allocations of stalks.

Something tells me that we could have an early fall, so remember, earlier than normal, that sudangrass and sorghum-sudan hybrids, and johnsongrass produce a cyanide compound when frosted causing the production of the prussic acid. Livestock should be removed from these forages for at least two weeks to allow for the forages to “dry down” and the prussic acid to dissipate before grazing again. Frosted areas could start with only “pockets” in a field. Any regrowth from the base of the plant after a frost can also be very high in prussic acid. If in doubt about nitrates or prussic acid, test before grazing!

There are a few droughty areas left around the state. When forage is limited and if white snakerooot is present, remember this poisonous plant can be a problem. At this time of year the plant has numerous heads of small white flowers and is quite common along woodland edges, woods and streams.

Livestock normally will avoid consuming white snakerooot under typical growing conditions, but as ample, desirable forage declines or disappears, poisonous weeds start looking good. Whether eaten in large amounts at one time or in small amounts over a period of time, both can be fatal. Nursing animals are often affected from the milk which is commonly fatal with no signs of ailment from the adult. If your grazing livestock have access to potential problem areas, it would be best to scout the area ahead of grazing. Small patches of plants can be removed but if there are too many, keep the livestock out! Leaves of the white snakerooot are opposites, have toothed edges, and taper to a point. I have been seeing quite a bit of this plant this fall. If you have problems identifying this plant, contact your local extension office for assistance.

I’ll end this article encouraging you to think about not only how you are managing your pastures, but also encouraging you to think about how you might be influencing others. Just don’t let it get
out of hand. As a really smart person once said, “If you get to thinking you’re a real person of influence, just try ordering someone else’s dog around.” Keep on grazing!

**Preparation of Grain Bins for Storage of Corn and Soybeans**

By Curtis Young, CCA


*Empty Bin Treatments for Grain Bins for Storage of Corn, Popcorn and Soybeans*

First - before using any product to treat grain bins, always read the most current label for the product to assure that the product is used correctly. This is for the protection of the grain to be stored in the bin as well as for the protection of the applicator of the product. Labels for products are subject to change from one year to the next, product registrations can be changed and/or canceled and rates may be changed. Errors made because of not reading the most current label could result in injury to the applicator or contamination of the grain with a non-labeled product making it unsalable.

Bins with perforated aeration floors (a.k.a. "false floors")

If a bin has had a known insect problem in the recent past where a residual population of the insect(s) could be hidden under the perforated aeration floor, fumigation might be the only option to destroy these hidden insects. The most likely product to be used for this purpose is aluminum phosphide (phosphine gas) which is sold under a number of different trade names such as Phostoxin, Fumitoxin and Weevil-Cide. When determining the proper dosage for treating the empty bin, one has to remember that the dosage is based on the total volume of the area into which the fumigant is being released.

There are several precautions to be addressed when using aluminum phosphide as a fumigant:

- The phosphine gas released by aluminum phosphide is only slightly heavier than air and will sink through a perforated aeration floor into the void below; however any air flow that is allowed to pass through the grain bin will easily carry off the phosphine gas from the intended target area. Thus, to accomplish a successful fumigation of the volume of the targeted area within the bin, the area must be completed sealed! If one is not willing to put forth the effort to properly seal the structure, don't use this product!
- The entire empty bin does not need to be fumigated if the true target is below the perforated aeration floor. Plastic sheeting sealed around the walls can be used to restrict the gas below the floor.
Phosphine gas is a highly toxic compound and must be handled with care following all safety requirements listed on the label and in the applicator's manual. Phosphine gas is a colorless, odorless compound. For safety purposes, the manufacturer of aluminum phosphide includes an indicator compound to warn persons of the potential presence of phosphine gas. The indicator compound is described as smelling like garlic, fish or carbide. If a person smells this indicator compound, they should leave the area immediately. Unfortunately, a person's sense of smell will become accustomed to the odor very quickly and be undetectable. Thus, absence of the odor does not mean safety.

The aluminum phosphide label and applicator's manual have gone through major revisions recently. Thus, one must read both very closely to use this product correctly.

**Interior Bin Surface Treatments**

There are very few products left registered for use around and on stored grains. Thus, the list is short. For corn and popcorn bins, products registered for interior surfaces of empty storage bins include:

- Tempo SC Ultra (a.i. is cyfluthrin) used as a liquid spray
- Centynal (a.i. is deltamethrin) used as a liquid spray
- Pyronyl (a.i. is pyrethrin) used as a liquid spray
- Diacon-D IGR (a.i. is s-methoprene) used as a dust application
- Insecto (a.i. is diatomaceous earth) used as a dust application

For soybean bins, products registered for interior surfaces of empty storage bins include:

- Tempo SC Ultra (a.i. is cyfluthrin) used as a liquid spray
- Diacon-D IGR (a.i. is s-methoprene) used as a dust application
- Insecto (a.i. is diatomaceous earth) used as a dust application

Prior to using any of these products, the first step to bin preparation for the upcoming storage is sanitation, sanitation, sanitation. Everything that comes into contact with the grain should be cleaned thoroughly to remove all old grains that could potentially be harboring insect infestations. These items include, but are not limited to: grain carts, wagons and trucks, combines, combine heads, augers, grain dumps and pits, grain legs, grain driers, and bins (inside and outside). Any spilled grain should be removed. Old seed and feed sacks should be disposed of. Any bin that is to be used for this upcoming harvest season should be empty. Never place new grain on top of old grain.

**2018 Ashtabula County Beef Banquet Tickets**

OSU Extension and the Ashtabula County Cattlemen’s Association will be holding the 29th Ashtabula County Beef Banquet on Saturday, October 27 at the Lenox Community Center.
beginning at 7:00 p.m. Banquet activities will include a prime rib dinner; business meeting; election of two members to the Ashtabula County Cattlemen’s board of directors; entertainment; door prizes; and fine fellowship.

Tickets for the banquet can be purchased from the Directors of the Cattlemen’s Association. Directors are: Bart Kanicki, Pierpont Township; David Nye, Hartsgrove Township; Zach Ward, Austinburg Township; Dr. Bryan Elliott, Cherry Valley Township and Garret Love, Linesville, PA. Tickets are $25 per person. Call the Ashtabula County Extension office at 440-576-9008 for more information. Pre-reservations should be made by October 19, 2018. A program flyer can be found at: http://go.osu.edu/ne-events

**Upcoming Events**

**Ashtabula County Master Gardener Recognition Banquet**
October 15, 2018

**Ashtabula County Beef Banquet**
October 27, 2018

**Trumbull County Farmer Lunch**
December 4, 2018

**Ashtabula County Dairy Banquet**
March 26, 2019

**Pesticide Applicator Training Dates**
Lake County “Early Bird” – November 8, 2018
Trumbull County – January 16, 2019
Geauga County – February 1, 2019
Ashtabula County – February 28, 2019
Geauga County “Last Chance” – March 28, 2019
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