Welcome to OSU Extension Andrew Holden!

Hello, Northeast Ohio Counties!

We would like to welcome Andrew Holden to OSU Extension in Ashtabula County! Andrew started his new position as the Ag and Natural Resources Extension Educator yesterday.

Andrew grew up in Ashtabula County on his family’s dairy farm in Pierpont, Ohio. He worked on the farm through high school and was active in 4-H and FFA. Andrew developed a passion for agriculture and Ashtabula County which led him to pursue a degree in Ag. He attended The Ohio State University where he received his Associates of Arts Degree and his Bachelor’s Degree in Agribusiness and Applied Economics with minors in Agronomy and in History. After college Andrew returned to Pierpont to work on his family farm.

Lee Beers
Extension Educator
Ag & Natural Resources
Avoid Forage Toxicities After Frosts
By Mark Sulc, OSU Extension Forage Specialist
Source: https://agcrops.osu.edu/newsletter/corn-newsletter/2018-35/avoid-forage-toxicities-after-frosts

As cold weather approaches this week, livestock owners need to keep in mind the few forage species that can be extremely toxic soon after a frost. Several species contain compounds called cyanogenic glucosides that are converted quickly to prussic acid (i.e. hydrogen cyanide) in freeze-damaged plant tissues. A few legumes species have an increased risk of causing bloat when grazed after a frost. Each of these risks is discussed in this article along with precautions to avoid them.

Species with prussic acid poisoning potential
Forage species that can contain prussic acid are listed below in decreasing order of risk of toxicity after a frost event:

- Grain sorghum = high to very high toxic potential
- Indiangrass = high toxic potential
- Sorghum-sudangrass hybrids and forage sorghums = intermediate to high potential
- Sudangrass hybrids = intermediate potential
- Sudangrass varieties = low to intermediate in cyanide poisoning potential
- Piper sudangrass = low prussic acid poisoning potential
- Pearl millet and foxtail millet = rarely cause toxicity

Species not usually planted for agronomic use can also develop toxic levels of prussic acid, including the following:
- Johnsongrass
- Shattercane
- Chokecherry
- Black cherry
- Elderberry

It is always a good idea to check areas where wild cherry trees grow after a storm and pick up and discard any fallen limbs to prevent animals from grazing on the leaves and twigs.

Fertility can affect poisoning risk. Plants growing under high nitrogen levels or in soils deficient in phosphorus or potassium will be more likely to have high prussic acid poisoning potential.
Fresh forage is more risky. After frost damage, cyanide levels will likely be higher in fresh forage as compared with silage or hay. This is because cyanide is a gas and dissipates as the forage is wilted and dried for making silage or dry hay.

Plant age affects toxicity. Young, rapidly growing plants of species that contain cyanogenic glucosides will have the highest levels of prussic acid. After a frost, cyanide is more concentrated in young leaves and tillers than in older leaves or stems. New growth of sorghum species following a non-killing frost is dangerously high in cyanide. Pure stands of indiangrass can have lethal levels of cyanide if they are grazed when the plants are less than 8 inches tall.

Toxicity Symptoms
Animals can die within minutes if they consume forage with high concentrations of prussic acid. Prussic acid interferes with oxygen transfer in the blood stream of the animal, causing it to die of asphyxiation. Before death, symptoms include excess salivation, difficult breathing, staggering, convulsions, and collapse.

Ruminants are more susceptible to prussic acid poisoning than horses or swine because cud chewing and rumen bacteria help release the cyanide from plant tissue.

Grazing Precautions
The following guidelines will help you avoid danger to your livestock this fall when feeding species with prussic acid poisoning potential:

Do not graze on nights when frost is likely. High levels of toxic compounds are produced within hours after a frost, even if it was a light frost.

Do not graze after a killing frost until plants are dry, which usually takes 5 to 7 days. After a non-killing frost, do not allow animals to graze for two weeks because the plants usually contain high concentrations of toxic compounds.

New growth may appear at the base of the plant after a non-killing frost. If this occurs, wait for a killing freeze, then wait another 10 to 14 days before grazing the new growth. Don’t allow hungry or stressed animals to graze young growth of species with prussic acid potential. To reduce the risk, feed ground cereal grains to animals before turning them out to graze.

Use heavy stocking rates (4-6 head of cattle/acre) and rotational grazing to reduce the risk of animals selectively grazing leaves that can contain high levels of prussic acid.
Never graze immature growth or short regrowth following a harvest or grazing (at any time of the year). Graze or greenchop sudangrass only after it is 15 to 18 inches tall. Sorghum-sudangrass should be 24 to 30 inches tall before grazing. Do not graze wilted plants or plants with young tillers.

**Greenchop**
Green-chopping frost-damaged plants will lower the risk compared with grazing directly, because animals are less likely to selectively graze damaged tissue. Stems in the forage dilute the high prussic acid content that can occur in leaves. However, **the forage can still be toxic**, so feed greenchop with great caution after a frost. Always feed greenchopped forage of species containing cyanogenic glucosides within a few hours, and don’t leave greenchopped forage in wagons or feedbunks overnight.

**Hay and silage are safer**
Prussic acid content in the plant decreases dramatically during the hay drying process and the forage should be safe once baled as dry hay. The forage can be mowed anytime after a frost if you are making hay. It is rare for dry hay to contain toxic levels of prussic acid. However, if the hay was not properly cured and dried before baling, it should be tested for prussic acid content before feeding to livestock.

Forage with prussic acid potential that is stored as silage is generally safe to feed. To be extra cautious, wait 5 to 7 days after a frost before chopping for silage. If the plants appear to be drying down quickly after a killing frost, it is safe to ensile sooner. Delay feeding silage for 8 weeks after ensiling. If the forage likely contained high levels of cyanide at the time of chopping, hazardous levels of cyanide might remain and the silage should be analyzed before feeding.

**Nitrate accumulation in frost forages**
Freezing damage also slows down metabolism in all plants that might result in nitrate accumulation in plants that are still growing, especially grasses like oats and other small grains, millet, and sudangrass. This build-up usually isn't hazardous to grazing animals, but green chop or hay cut right after a freeze can be more dangerous. When in doubt, send a forage sample to a forage testing lab for nitrate testing before grazing or feeding it.

**Species That Can Cause Bloat**
Forage legumes such as alfalfa and clovers have an increased risk of **bloat** when grazed one or two days after a hard frost. The bloat risk is highest when grazing pure legume stands and least when grazing stands having mostly grass.

The safest management is to wait a few days after a killing frost before grazing pure legume stands – wait until the forage begins to dry from the frost damage. It is also a good
idea to make sure animals have some dry hay before being introduced to lush fall pastures that contain significant amounts of legumes. You can also swath your legume-rich pasture ahead of grazing and let animals graze dry hay in the swath. Bloat protectants like poloxalene can be fed as blocks or mixed with grain. While this an expensive supplement, it does work well when animals eat a uniform amount each day.

**Delayed Wheat Planting**

By Laura Lindsey, Pierce Paul

Wet weather has delayed wheat planting in many areas of the state. Generally, the best time to plant wheat is the 10-day period starting the day after the fly-free-safe date. When wheat is planted more than 10-days after the fly-free-safe date, there is an increased chance of reduced fall growth and reduced winter hardiness. The effect of planting date on wheat yield is shown in Figure 6-2 of the Ohio Agronomy Guide. (A free pdf of the guide is available here: [https://stepupsoy.osu.edu/wheat-production/ohio-agronomy-guide-15th-edition](https://stepupsoy.osu.edu/wheat-production/ohio-agronomy-guide-15th-edition))

There is still time to plant wheat, but the window is closing. Wheat planted 3-4 weeks after the fly-free-safe date can achieve the same yield as earlier planted wheat if freezing weather does not occur until late November or early December. However, as we enter three to four weeks after the fly-free-safe date, growers should plant at a higher seeding rate than the regularly recommended rate of 1.2 to 1.6 million seeds per acre for 7.5-inch rows (that is about 18 to 24 seeds per foot of row with normal sized seed) to compensate for fewer tiller development. Instead, plant at a rate of 1.6 to 2.0 million seed per acre. The number of seeds per pound and germination rate are important for determining the correct seeding rate and drill calibration. There are fewer seeds per pound of large seeds than per pound of small seeds. The number of seeds per
pound can be found on the seed bag. Additionally, late planting also means plants will be smaller than normal when entering dormancy, have smaller and more shallow root systems than normal making them more susceptible to heaving next March. The best heaving control it to get the seed placed between 1.0 and 1.5 inches deep when planting and to plant no-till. These two practices combined will reduce heaving potential by more than 95 percent.

**Boxing up ag field nitrogen**

By Susan V. Fisk

Source: [https://www.agronomy.org/science-news/boxing-up-ag-field-nitrogen](https://www.agronomy.org/science-news/boxing-up-ag-field-nitrogen)

Spring in America’s heartland is often wet. That makes its soil too soft for planting. One solution to that issue is tile drainage. Growers insert a series of pipes (drain tiles) under their fields, which drains water from the soil into nearby streams and lakes.

Many of the existing tile drains were installed over 50 years ago and helped increase yields. Growers were able to get into their fields earlier to plant without compacting the soil. Their growing season was extended by several weeks, which can greatly increase yield. However, in the late 1980s, a new problem was found: nitrate from Midwestern fields was getting into the Gulf of Mexico. It traveled a path that started at the tile drains, then into the streams, down the Mississippi River, and into the Gulf. While removing the tile drains could have solved this problem, growers wouldn’t be able to produce the same amount of food.

Scientists started to develop edge-of-field practices so that growers could keep the early planting offered by the tile drains while protecting nearby streams—and the Gulf of Mexico—from nitrate contamination.

One of those scientists is Tom Isenhart, an agronomist and professor at Iowa State University. In 2013, Isenhart and his colleagues published data about the ability of saturated strips of naturalized land near streams to remove nitrate from tile drainage water. There was good news. “The initial study on saturated riparian buffers was promising,” says Isenhart. “And it led the USDA to develop a conservation standard for the practice.”
There was a major difference in the buffer strips studied by this team. Tile drains tended to run under typical buffer strips in the Midwest. This team reconnected water flow back to the soil. “Typical riparian buffers in tiled drained landscapes do not remove much nitrate because the water flow is not connected through the soil,” says Isenhart. Water that flows down and through soil before it reaches a water source is cleaned through natural processes. (To read more about that, please see this blog.) Installation of the tile drains route the water directly to the stream, cutting out the buffer. That water doesn’t benefit from the buffer’s ability to biologically remove nitrate.

The team’s solution was to divert a fraction of the water flow as shallow groundwater within the buffer. “We excavated the tile outlet within the buffer strip,” says Isenhart. “Then we installed a control box with outlets attached to new perforated pipe that serves as a distribution pipe. We also created a system that allows us to adjust the water levels. This ensures that the water drains from farm fields into the soil of the buffer strip. Another benefit of this system is that once installed, these systems do not need to be actively managed by the farmer.”

Isenhart and his team were able to expand the study of saturated riparian buffers to an additional five sites in Iowa. “These additional studies were required to confirm the initial results at our first study site,” says Isenhart. They also determined the effectiveness of saturated riparian buffer strips in other locations. These different locations had varying soils and landscapes—important information for growers. In addition, the study was expanded to several years. This gave the researchers data about the buffers during varying weather conditions, especially varied rainfall.

Other scientists are working on other solutions to reduce nitrate levels from tile-drained fields. Isenhart and his team calculated the costs of nitrate removed for various nitrate removal systems. The cost per pound of nitrate removed for saturated riparian buffers was $1.33 (or per kilogram, $2.94), with a 40-year lifetime. Denitrifying woodchip bioreactors have a lifespan of...
around 10 years (before the woodchips need replacing) and have a cost of $0.95 per pound (or per kilogram, $2.10) of nitrogen removed.

“Saturated riparian buffer strips are comparatively simpler, cheaper, and quicker to install than many systems,” says Isenhart. “But they are not suitable for all farm fields. They require specific soils and landscape characteristics to function properly. This may limit their use within certain types of watersheds.”

By reconnecting water flow back through the soil, saturated riparian buffer strips take advantage of the natural cleansing ability of soil. When field conditions are amenable to their installation, they are an effective tool in reducing nitrate loads into nearby streams and lakes, allowing growers to continue using tile drains.

This research was published in the Journal of Environmental Quality. Funding was provided by an Agriculture and Food Research Initiative (AFRI) grant from the United States Department of Agriculture National Institute of Food and Agriculture. Additional support was provided by the Iowa Nutrient Research Center. Read about a related topic, riparian buffer strips, in this blog.

**Study reveals best use of wildflowers to benefit crops on farms**
By Cornell University

With bee pollinators in decline and pesky crop pests lowering yields, sustainable and organic farmers need environmentally friendly solutions.

One strategy is to border crops with wildflower plantings to attract pollinators and pest predators. But scientists have suggested that such plantings may only be effective when farms are surrounded by the right mix of natural habitat and agricultural land.
For the first time, a Cornell University study of strawberry crops on New York farms tested this theory and found that wildflower strips on farms added pollinators when the farm lay within a "Goldilocks zone," where 25 to 55 percent of the surrounding area contained natural lands. Outside this zone, flower plantings also drew more strawberry pests, while having no effect on wasps that kill those pests.

Still, more pollinators in this ideal landscape zone boosted strawberry yields overall. The analysis has implications for many types of state and federal programs in the United States and abroad that promote establishing pollinator habitats on farms.

"We're investing huge amounts of money on these programs and right now it's not part of the policy to think about the landscape context of where these habitats are placed," said Heather Grab, Ph.D. '17, the paper's first author and a postdoctoral researcher in the lab of Katja Poveda, associate professor of entomology and a co-author of the study. The paper, "Landscape Context Shifts the Balance of Costs and Benefits From Wildflower Border on Multiple Ecosystem Services," published Aug. 1 in Proceedings of the Royal Society B, suggests targeting wildflower borders to farms with the right conditions and modifying wildflower plant species could maximize success.

The rationale behind the Goldilocks zone theory: wildflower strips surrounded by too much natural land would not add additional beneficial insects, because ample habitat would drown out a small strip of flowers. On the other hand, farms surrounded by other farms are already low on natural habitat and beneficial insects, making a wildflower strip too small to attract more insects. "It's in this zone in the middle, where there's enough natural habitat around, and there are beneficial insects there, and you can attract them [insects] from the natural habitat into the crop habitat to actually see a benefit in terms of crop production," Grab said.

In the study, the researchers planted strawberry plots on 12 small New York state farms that represented a gradient of landscapes, from farms surrounded by natural habitat to farms next to agricultural lands. Each farm had two strawberry plantings, one plot bordered by a wildflower strip, and another control plot on the other side of the farm, edged with mowed grass.
The researchers conducted surveys of pollinators, pests, wasps that parasitize pests, fruit yield and fruit damage over three years. The tiny parasitizing wasps lay their eggs inside tarnished plant bug nymphs - a pest that costs New York strawberry growers 30 percent of their annual yield. When the eggs hatch, the larvae feed on the nymphs.

The wildflower strips were increasingly effective at attracting pollinators as each year passed. The result that "between 25 and 55 percent [surrounding natural landscapes] was the best range in terms of promoting bees," closely matched what the Goldilocks theory predicted, Grab said.

But when it came to pests, wildflowers outside the Goldilocks zone attracted the most pests and didn’t add more wasps. "It suggests the parasitoids are not responding to wildflower strips at all," Grab said. More study is needed to understand why.

Analyses revealed many wildflower species attracted both pests and bees, but some species like fleabane (Erigeron annuus) lured the most pests and were least effective at drawing bees.

"If you wanted to optimize the wildflower patches, I would suggest we eliminate some of those from the list of recommended species in the plantings," Grab said.

Future work will investigate how floral habitats influence pathogen transmission for bees, the leading driver of bee declines.

Bryan Danforth and Greg Loeb, Cornell professors of entomology, co-authored the study, which was funded in part by a Northeast Sustainable Agriculture Research and Education grant.

**Hope For Ohio to be Held on November 3**

Hope for Ohio is a FREE event for teens, parents, teachers and 4-H and FFA advisers. This event will help participants to see warning signs, explain peer-to-peer drug prevention tactics and provide tools to address our community’s opioid epidemic.

The East Region Event will be held on November 3, 2018 at FFA Camp Muskingum (3266 Dyewood Rd. SW, Carrollton, OH 44615). Registration begins at 9:30 a.m. and the program will run from 10 a.m. to 3 p.m.

Featured speakers are: Wayne Campbell, founder of **Tyler’s Light**, whose son Tyler died of a heroin overdose after becoming addicted to prescription painkillers. Dave Kohout, from **Talk is Cheap**, focusing on building character and instilling hope in the lives of young people and a panel discussion with **Erik Frederickson**.
Cost of attendance is FREE. All pre-registered participants receive a t-shirt.

To register email mmulligan@ofbf.org.

If you have any questions or would like to discuss transportation possibilities please call the county Farm Bureau office at 440.426.2195.

**Livestock Mortality Composting Program Scheduled for December 14 in Canfield, OH**

While it’s likely not the most popular dinner table topic, a plan for dealing with mortality is something that needs addressed if you raise livestock. Composting is a viable option for various types of farms, and actually allows producers to recycle on-farm nutrients. While livestock mortality composting is similar in goal to backyard composting, it follows a different methodology and requires a more specific approach. These differences, along with facility design, area selection, operation and management will be covered in class. In Ohio, certification is required to compost livestock mortalities legally.

OSU Extension Mahoning County will be hosting Rory Lewandowski on December 14, 2018 from 12P.M. to 2P.M. at the Extension office in Canfield, OH to lead the discussion. **Upon completion of the program, all participants will be certified in livestock mortality composting.** Cost for this program is $25/person, and registration includes lunch, LMC Book, handouts, and other materials. To register see flyer at the end of the newsletter. For more information call 330-533-5538.

**Become certified! Certified Crop Adviser (CCA) exam registration now open**

The Certified Crop Adviser (CCA) and Certified Professional Agronomist (CPAg) programs of the American Society of Agronomy are the benchmarks of professionalism. When you become certified, you join more than 13,000 of your peers in the largest, most recognized agriculturally-oriented certification program in North America. This program’s professional standards are widely respected by industry, academia, and government and are referenced in statutes. Get the recognition, opportunities, and respect you deserve. Exam registration is now open for the February 1, 2019 exam.
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 Beef Banquet
October 27, 2018

Trumbull County Farmer Lunch
December 4, 2018 – Farm Tax Update
January 8, 2019 – Beef Quality Assurance
March 5, 2019 – Climate Impacts for Ohio Agriculture
April 4, 2019 – Tillage and Soil Health

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

Northeast Ohio Agriculture

OHIO STATE UNIVERSITY EXTENSION
Ashtabula and Trumbull Counties
Lee Beers
Trumbull County Extension Office
520 West Main Street
Cortland, OH 44410
330-638-6783
beers.66@osu.edu
trumbull.osu.edu
Hope for Ohio is for teens, parents, teachers and 4-H and FFA advisers. This event will help participants to see warning signs, explain peer-to-peer drug prevention tactics and provide tools to address our community’s opioid epidemic.

Nov. 3

FFA Camp Muskingum
3266 Dyewood Rd. SW | Carrollton, OH 44615
Registration: 9:30 a.m. | Program 10 a.m. to 3 p.m.

By the numbers
The toll of the epidemic has contributed to the first decline in U.S. life expectancy since 1993. The US drug overdose mortality rate is 17.7 deaths per 100k ages 15-64; Ohio’s is 39.5.

IN OUR COUNTIES
Jefferson County 44.2 | Harrison County 22.5 | Carroll County 19.1 | Tuscarawas County 17.7
Carroll County alone saw a 76 percent increase in fatal drug and alcohol overdoses in the first six months of 2018 over the first half of 2017 according to the Carroll County Sheriff’s Department.

To register, email mmulligan@ofbf.org or scan the QR code.
All preregistered participants receive a T-shirt.
Trumbull County Farmer Lunch Series

OSU Extension Trumbull County, Trumbull County Soil and Water Conservation District, and the NRCS have combined efforts to offer a farmer lunch seminar series that will cover a variety of topics relevant to NE Ohio. Each program will start with lunch at 11:30 A.M. sponsored by the Trumbull County Holstein Club followed by a 1-hour presentation. Cost for individual programs is $10/person. If you would like to register for all four programs, the cost is $35/person.

Tuesday, December 4, 2018 – Tax Updates for Farms
• David Marrison, OSU Extension Coshocton County
• New tax laws that went into effect in 2018 made some changes that impacts farm taxes. This session will provide an update to those changes.

Tuesday, January 8, 2019 - Beef Quality Assurance
• Haley Shoemaker, OSU Extension Mahoning County
• The Ohio Beef Quality Assurance (BQA) program ensures that both beef and dairy cattle are raised in a manner that results in a wholesome beef product for our consumers. This program helps producers gain market access and keep their cattle desirable to the buyer in the stands.

*Wednesday, February 13, 2019 – NE Ohio Agronomy School in Bristolville, OH*

Tuesday, March 5, 2019 – Climate Impacts for Ohio Agriculture
• Aaron Wilson, OSU Byrd Polar and Climate Research Center
• Our changing climate has already influenced how Ohio farmers operate. Learn how predicted climate changes will continue to drive changes in Ohio agriculture. CCA credits available.

Tuesday, April 2, 2019 – Tillage Affects on Soil Health
• Steve Culman, Assistant Professor, State Specialist in Soil Fertility
• New tillage technologies are arriving each year, but are they hurting your soil health? Learn how tillage, and other practices can improve or hurt your soils health. CCA credits available.