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Hello, Coshocton County! It appears as the cooler weather will be around for a few weeks. In fact, there is a frost warning for tonight and even better chance early Saturday morning. Once we hit the later portion of May, it looks like warmer temperatures will return.

Our beef and forage teams have released a lot of great information over the past few weeks on forages, hay making and baleage. While our forages are off to a slow start, these articles are helpful as you prep up for hay season. Baleage is a great feed source for cattle but needs to be made correctly. Plan on making baleage when it needs to be made—don't wait until the rain is coming over the hill and then make baleage out of hay that is half-way dry.

Some of you may have seen news about the Asian Giant Hornet circling the internet. While it has been confirmed in Washington State, there have been NO reports of this hornet in Ohio. I have included a nice article on this new hornet in today's issue.

Stay well and remember, while our office is closed to the public I can still be reached directly at 740-722-6073 or via email at [marrison.2@osu.edu](mailto:marrison.2@osu.edu). Stay safe!

Sincerely,

*David Marrison*

Coshocton County OSU Extension ANR Educator



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AND ENVIRONMENTAL SCIENCES

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## Much Like April, Cool Weather Lingers During the First Week of May

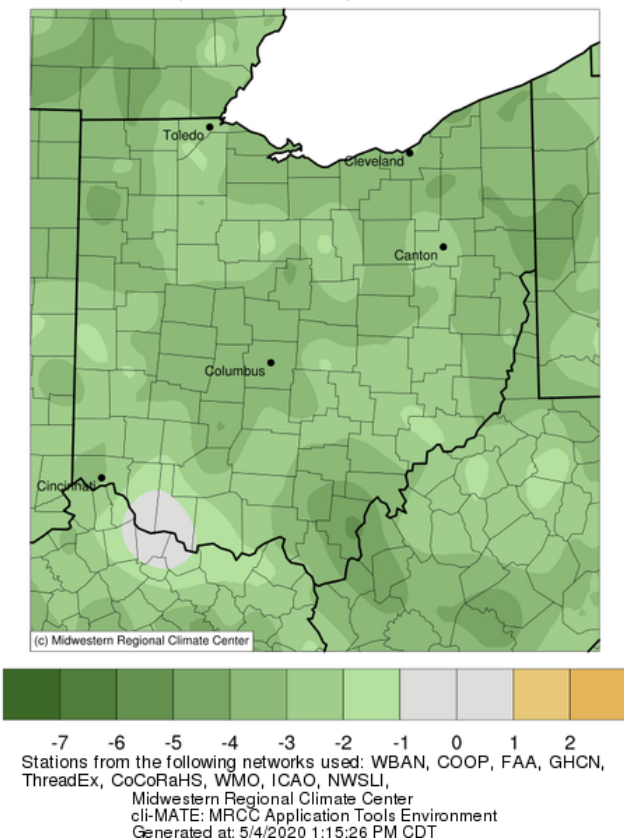
By: Aaron Wilson

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2020-12/much-april-cool-weather-lingers-during-first-week-may>

Temperatures in April were about 2-5°F below the long-term mean (1981-2010; Figure 1-Left) and included three major freeze events that brought some horticultural damage across southern counties and scattered minor reports of burned tips on alfalfa and wheat.

Precipitation varied significantly across the state. Unlike much of the spring of 2019, lighter amounts fell across northwest Ohio compared to southeast Ohio. Only about 1 inch of rain fell in southern Fulton/northwest Henry Counties for the month, with more than six inches in parts of Adams, Monroe, and Belmont Counties. These totals are about 1-2 inches below the long-term mean in the northwest, with most counties southeast of I-71 showing surpluses of 1 to 4 inches for the month (Figure 1 – right). For more information on recent climate conditions, check out the weekly Hydro-Climate Assessment from the [State Climate Office of Ohio](#).

**Average Temperature (°F): Departure from 1981-2010 Normals**  
April 01, 2020 to April 30, 2020



**Accumulated Precipitation (in): Departure from 1981-2010 Normals**  
April 01, 2020 to April 30, 2020

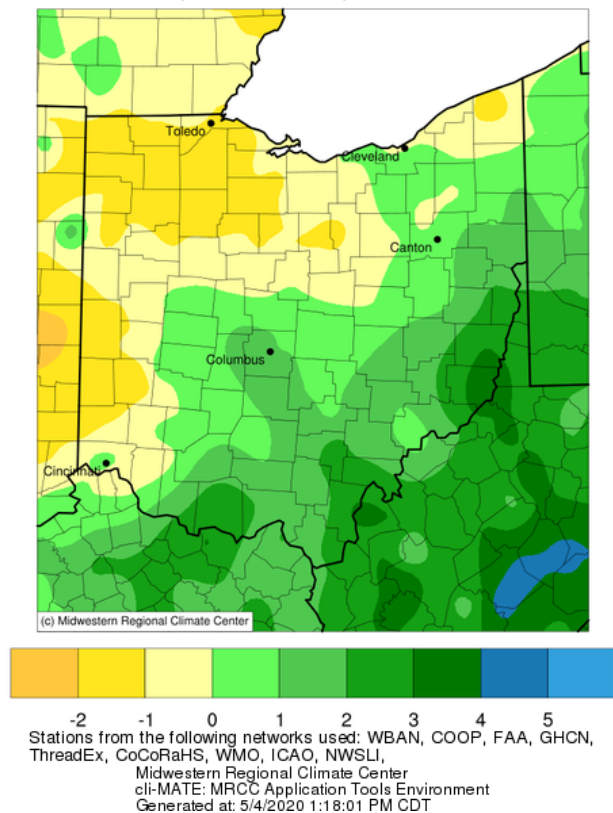


Figure 1: Left) Average temperature differences for April 2020 compared to long-term normal April conditions. Right) April 2020 precipitation differences compared to the long-term April mean. All differences are calculated with respect to the 1981-2010 period

This past weekend, many areas throughout Ohio hit 80°F for the first time this season, but those conditions are gone and not likely to return for a while. In fact, temperatures are expected to be more April-like over the next couple of weeks. Highs will generally be in the upper-40s to upper-50s (north to south) and overnight lows in the 30s, with a few passing disturbances that may bring some light rain during the week. A few spots, mainly across northern Ohio and low-lying areas elsewhere may be dealing with some frost/light freeze conditions throughout the week and even some conversational snowflakes by the weekend as well. Be sure to monitor changes from your [National Weather Service](#) offices and local media.

The latest [NOAA/NWS/Climate Prediction Center](#) outlook for the 6-10 day period (May 10-14) shows a strong probability for below average temperatures with slightly elevated probability for below average precipitation (Figure 2). Highs during the period should be in the upper-60s to mid-70s (north to south) with overnight lows in the mid-40s to low-50s and about 0.9-1.10" of precipitation per week. The [16-Day Rainfall Outlook from NOAA/NWS/Ohio River Forecast Center](#) reflects near to slightly below average precipitation over the next couple of weeks as well.

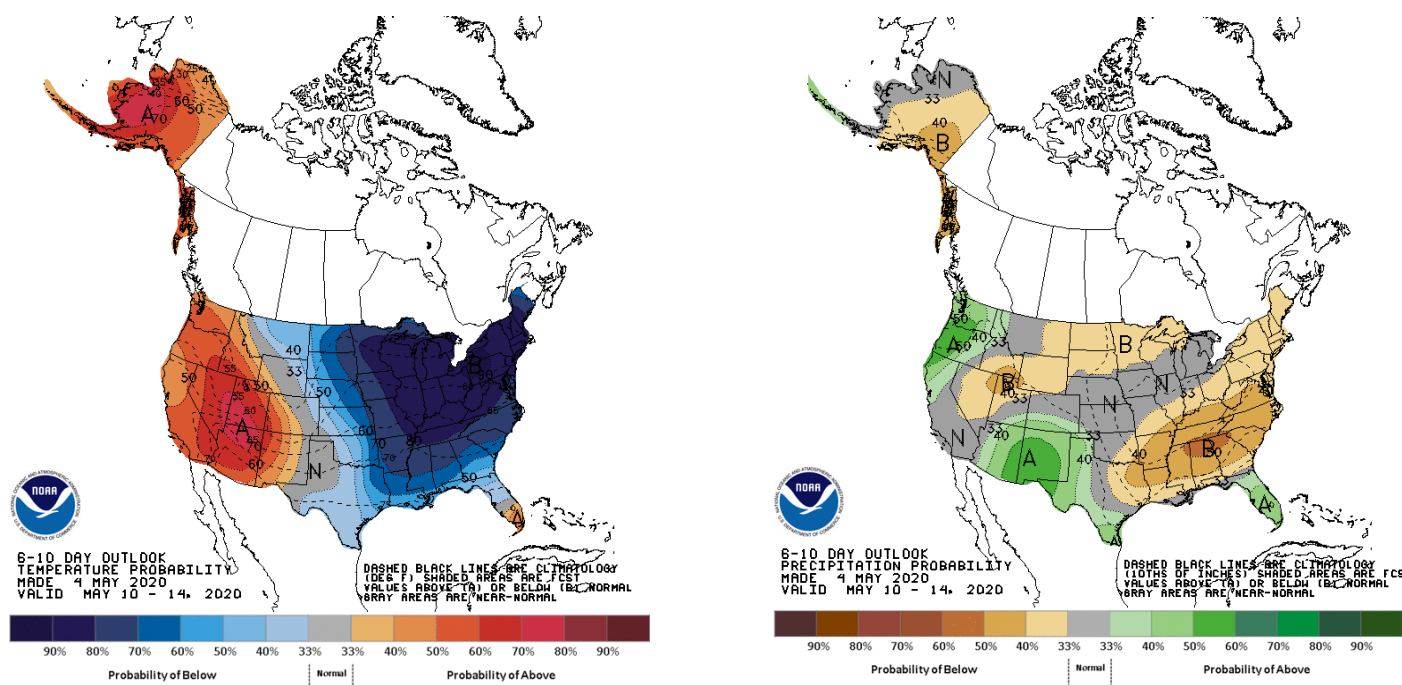


Figure 2: Climate Prediction Center 6-10 Day Outlook valid for May 10-14, 2020 for top) temperatures and bottom) precipitation. Colors represent the probability of below, normal, or above normal conditions.

## How Late Can I Plant Forages?

By: Mark Sulc

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2020-12/how-late-can-i-plant-forages>

The Ohio Agronomy Guide states that most cool-season perennial forages should be planted by the first of May. While some of you reading this article were able to plant forages by now, many of us (myself included) once again were not able to meet that deadline due to wet weather. So how hard and fast is the May 1 deadline, especially in a cold spring like we have experienced? Don't we have a little more time to plant forages? I hate to say this, but the answer is neither simple nor clear cut.

The planting deadlines in the Ohio Agronomy Guide are based on data and years of experience of what is best management practice. The risk of stand establishment problems increases as we move further and further past the published deadlines. Tell me it will not turn hot and dry in early to mid-June and that weeds won't emerge and grow like gangbusters with all the moisture we've had, then I'll tell you that forage plantings can still be successful. Unfortunately, the law of averages increases against forage establishment success the later into May that we plant.

Having said all that, I will still try to plant my experiments up until May 11-15 in central Ohio. For each of us, it is a matter of balancing the risk versus the cost and competing tasks at hand. The rainfall outlook for May is normal to above normal with summer going from wet to drier. Temperatures in May will average near normal, but summer temperatures are projected to be above normal. The warmer summer and projected trend towards drier conditions is concerning for young forage seedlings trying to become established in June and July. Late



established seedlings will be at risk of being exposed to moisture and heat stress before they have a strong root system established.

A firm seedbed and good seed placement are essential when seeding late, as this will help moisture move through the soil to the germinating seeds resulting in fast emergence and better early growth. Summer annual weeds will now be emerging with the forage seedlings and we know that weeds are very competitive and destructive when they emerge at the same time as new forage seedlings. In pure alfalfa stands, we have herbicide options that can help against both broadleaf and grassy weeds, in forage grass stands we have only broadleaf herbicide options, and in grass-legume mixtures we have virtually no effective herbicide options during establishment. You might want to seed a pure stand now to provide more herbicide options, and then interseed the secondary species into the stand in August.



Consider your options and management carefully before planting perennial cool-season forages the next two weeks. I've had success and failures in the past with late plantings – but the law of averages is starting to work against us now. The latest I have planted alfalfa was in a small experiment on June 2 in central Ohio. In that case I planted Roundup Ready alfalfa, and we received adequate rainfall through June. The stand established well, and we were able to control weeds effectively with Roundup. But the stand really did not produce much yield that seeding year. I think we had one small cutting the entire growing season. It was as if the alfalfa was just growing the root system so the above ground growth remained short all summer. The following year it produced excellent yields though.

An alternative to consider now is to plant a short-season annual forage crop that can be harvested in late June and July, followed by planting the cool-season perennial forage stand in early to mid-August when the law of averages will once again be more in favor of forage seedling establishment. This is what many of us had to do last year.

If you do plant in the next two weeks and the resulting stand ends up with thin spots, it will be important to work hard at keeping the thin areas from going to weed seed production this summer. You can interseed those areas with a no-till drill beginning in early August. This is true even for alfalfa seedlings made this spring. Autotoxicity to alfalfa seedlings is not a big concern until the existing alfalfa plants are a year old. It is also possible to interseed alfalfa now into a thin stand of alfalfa that was planted last summer, and this spring is your last opportunity to do it; however, the discussion above about late plantings still applies to such interseedings.

### ***Hay Making and the Balancing Act...Quality vs Quantity***

By: [Stan Smith](#), PA, OSU Extension, Fairfield County (originally published in the Spring 2020 issue of [The Ohio Cattleman](#))

Source: <https://u.osu.edu/beef/2020/04/29/hay-making-and-the-balancing-act-quality-vs-quantity/>

With age comes experience, and with experience eventually comes some of those things that you can only shake your head at. This is the time of year when I usually begin to hear one of my favorites, "I don't like to get in hurry with that first cutting . . . we don't want it rained on, and I like to let it grow a little longer so we get more. Besides, even if made a little late, it's still got to be better than snowballs!"

If nothing else, the last two springs have taught us this one thing. Not all first cutting forage is better than snowballs. In fact, the inability to make hay in a timely fashion has cost Midwest cattlemen lots in terms of hay quality that's resulted in loss of cow condition, breed back issues, poor quality colostrum, and ultimately poor calf health and performance. If there was ever a time to carefully balance hay quality issues with the quantity of hay needed, weather permitting, this must be it! In fact, with some aggressive planning and a little cooperation

from Mother Nature, perhaps we can have both quality and quantity this year. Following are some points to consider.

Generally speaking, we're out of quality hay in Ohio and have been for the better part of two years. The condition of some of our cows confirms it, the price of hay at auction markets confirms it, and laboratory forage analysis confirms it. Not only have the last two years proved to be challenging for forage harvest, but they arrived with little hay inventory on hand.

As we approach the end of April, cows need feed and to add insult to injury, soil conditions for grazing around much of the state have not been the best and may not be great for mechanical harvest either. Regardless, hay needs to come off in a timely fashion.

The first reason is quality. Regardless how tall it gets; the maturity and quality clock has been ticking since forages broke dormancy last month.

We need tonnage to replenish inventory. Getting first cutting off early should result in a more aggressive regrowth, and hopefully the opportunity to harvest an extra cutting in 2020.

Lactating cows need high quality feed now if there's any hope of getting them bred back in a timely fashion this year. If grazing conditions are less than ideal this spring, careful consideration must be given to whether there's benefit to pulling cows back off grass after a quick first pass (if and when soil conditions have permitted!) and feeding some early made, high quality hay and perhaps even supplementing it with some additional energy.

An early made first cutting not only guarantees quality that's been lacking in our forages during recent years, but perhaps more importantly, also allows the opportunity for an extra cutting in 2020. Another opportunity would be the ability to graze the regrowth earlier in the season, thus allowing pastures that were stressed late into fall and throughout winter and early spring a chance to rest.

As an aid to balancing the quality versus quantity conundrum, consider these suggestions:

- Consider not making an annual fertilizer application prior to the first cutting. Most years it results in more first cutting forage than can be harvested in a timely fashion.
- Instead, make the first fertilizer application of the year immediately after first cutting in an effort to boost production of a high quality second cutting.
- Be prepared to wet wrap, or chop and ensile part or all of first cutting in an effort to get it off more timely.
- Beginning with the first bale you make, plan to inventory similar qualities of hay/forage together and keep record of where they're located. This allows for easy access for forage testing, and also for feeding those different quality forages once test results come back and a feeding strategy is developed around those results.
- If soil conditions are allowing grazing animals to do damage to pastures, don't hesitate to graze quickly and lightly, and then pull animals in and feed first cutting until soil conditions allow proper grazing. Proper pasture rest periods can be just as important in spring as in late summer with regard to yearlong productivity of the forage.

Frankly, the concern for choosing between quality and quantity is no challenge at all. We can have both . . . and need both!

## ***Making and Maintaining Quality Baleage***

By: [Brady Campbell](#), Program Coordinator, OSU Sheep Team

Source: <https://u.osu.edu/beef/2020/04/29/making-and-maintaining-quality-baleage/>

It almost seems like a broken record. We have continually talked about the excessive amount of poor quality hay made last year and the issues surrounding how to incorporate it as a viable feed source in livestock diets. Here in Ohio, we have yet to have had an actual winter and the rain continues to fall. This weather pattern may be the new norm, thus we must learn how to adapt to these challenges. So, the question becomes, how will producers make quality first cutting hay that maintains a high feed value in the future?

The greatest challenge with making dry hay is simply getting the forage dry enough for baling before the next precipitation event. With this being said, how can we decrease this time interval while still maintaining a high quality product? The solution may be making baleage or baled haylage. Baleage is certainly not a new concept, but may be for those that are not accustomed to feeding this type of forage. Thankfully, for those with uncertainty of how to feed this type of forage or looking for more information on improving their current system, on Friday, February 21 at the Ohio Forages and Grasslands Council Annual Conference in Reynoldsburg, Ohio attendees had the opportunity to listen to Dr. Jimmy Henning, a professor and extension forage specialist with the University of Kentucky as he discussed the in's and out's of making and maintaining quality baleage.



During his presentation, Dr. Henning noted that the biggest issue that producers have to get a handle on when making baleage is determining the moisture content 'in the moment.' When making baleage, moisture should be between 40%-60%, however, this can be difficult to hit this moisture mark! Some may be thinking, that's a 20% range, how can this be so challenging? The challenge here is that forages dry faster than what we think. When mowed, forages are roughly 80% moisture. Dependent upon several environmental conditions, wilting and drying time will vary significantly.

Do you have a moisture tester on farm? When making quality baleage, this is an important tool to have on hand. This range is considered ideal for baleage to properly ferment. Baleage made beyond these recommended ranges can be problematic. Drier forages will tend to have poor fermentation, but can still be fed if done in a quick manner. Some have referred to these forages as sweet hay. Forages baled at a higher moisture content has the potential to break equipment and be toxic when fed to livestock. Just as we always suggest with dry hay samples, it is recommended that baleage also be tested prior to feeding to livestock!

Another tip that Dr. Henning offers is that the best bales to make baleage with are those that are uniform and tight. These bales tend to have flat ends and will line up nicely in an inline tube wrapper. The key here is that we exclude as much oxygen as possible to allow for fermentation to properly occur. Tight, uniform bales are also easier to maneuver, handle, and wrap. Dr. Henning recommends that producers use at least 6 layers of plastic or more. He notes that 4 layers is enough, but at this rate there is no safety net! When wrapping bales, it is better to be safe than sorry. Speaking of plastic, it should also be noted that plastic does not keep out 100% of the oxygen. Plastics will slowly deteriorate over time as well, this is why it is recommended that wrapped forages be fed within the year as forage quality may decrease as plastic integrity diminishes.

Overall, this process sounds simple, but there are some pieces to this puzzle that you must be cautious about. For proper fermentation to occur, a pH of 5.0 or below must be achieved. When mowing our forages, we want to ensure that our ash levels are as low as possible as higher ash levels have been associated with toxic issues. One of the greatest concerns revolves around botulism, which is a toxin that is produced by *Clostridium botulinum* bacteria. However, Dr. Henning notes that *Clostridium botulinum* fermentation does not equal

botulism. Small grains tend to have more issues with botulism than grasses and legumes. Small grains in the spring are higher in moisture content (low lactic acid) and tend to have a high ash content due to tillage and/or planting which all lead to potential issues with botulism. These issues pose serious risks when determining how to feed this feed source to livestock as in some cases this will result in animal death due to ingestion of the toxins. Regardless if you suspect there to be an issue with your baleage or not, it is critical to have these feeds tested. You do the math, how many forage tests can you run before it costs more than losing just one animal due to a toxic issue?

Just as Dr. Henning did during his presentation, I will leave you with the two lists that he provided us. The first of which is key steps to making good baleage. This is a good rule of thumb set to follow when making baleage, regardless of your experience level. The second list outlines high risk baleage factors. These are certainly factors that we would like to avoid at all costs! Good luck during the 2020 haying season and may the weather be in your favor!

#### Good baleage:

- Cut early
- Tight uniform bales
- Mow only what can be wrapped in one day
- Bale at wet end of moisture range (60%)
- Use at least 6 layers of plastic
- Ensure that you are using quality plastic

#### High risk baleage factors:

- Moisture content above 70%
- Loose, uneven bales
- 4 layers of plastic or less
- A BAD smelling odor (butyric acid)
- pH greater than 5.0
- Ash content is greater than 11%

### ***What's in Your Baleage? Inadequate Fermentation May Lead to Botulism***

By: Dr. Michelle Arnold, UK Veterinary Diagnostic Laboratory

Source: <https://u.osu.edu/beef/2020/04/29/whats-in-your-baleage-inadequate-fermentation-may-lead-to-botulism/>

Botulism is a disease caused by one of the most potent toxins known to man. This toxin is produced by *Clostridium botulinum*, a Gram-positive bacterium from the Clostridia family. This bacterium survives in the environment as a “spore” and contaminates plant material during harvest. For the bacteria to multiply and produce toxin, an anaerobic (“without oxygen”) environment must be maintained. Under certain conditions, round bale silage (or “baleage”) can provide the correct place for botulism toxin to form. In the absence of oxygen (as is found in wrapped hay) and a pH greater than 4.5 (poor fermentation), the spores enter a vegetative state, multiply and produce toxin. This toxin, once consumed and absorbed into the blood stream, blocks transmission of nerve impulses to the adjacent muscles. Two forms of the toxin, Types B and C, occur most frequently in KY cattle. Type B is associated with improperly fermented forage while Type C occurs from the accidental feeding of dead birds, dogs, cats or poultry litter contaminated with dead birds in the rations of cattle.

Round bale silage or “baleage” is an increasingly popular alternative to baling dry hay that allows shorter hay curing time and saves valuable nutrients in the face of approaching adverse weather conditions. Baleage is simply forage of a relatively high moisture content that is baled with a round baler and then stored in a sealed container, usually a long plastic tube or individually wrapped in plastic, to keep oxygen out. Both grasses and legumes can be preserved by this method if proper techniques are followed. Forage cut at the correct stage of maturity, allowed to wilt to a 40-60% moisture range, then tightly baled and quickly wrapped in 6 or more layers



of UV-resistant plastic will undergo fermentation (“ensiling”), a process that should drop the pH of the feed below 5.0 (ideally below 4.5) where spoilage organisms (including Clostridials) do not grow well. Problems arise when there is a lack of adequate fermentation to reach this low pH, which occurs most often with small grains (rye, oats, wheat, barley) but can occur with any type forage. If fermentation is restricted, it is critically important to maintain the integrity of the wrap to keep an anaerobic environment in the sealed bale and preserve the silage. If wrapping is delayed or there is damage to the plastic covering, spoilage may result which supports the growth of Clostridial organisms. On the other hand, very wet, non-wilted, and/or overly mature forages wrapped for baleage have less soluble sugars available for completion of fermentation and are also at an elevated risk for botulism toxin formation. Bacteria from the Clostridia family thrive in wet environments where forage moistures are in the higher 67-70% range; greater than 70% moisture is very high risk for Clostridial growth and spoilage.

Both types of toxin produce the same characteristic clinical picture in cattle including:

1. Typically, multiple cattle will be affected with symptoms at the same time; some cases may present as sudden deaths. Otherwise, animals first appear dull, depressed, lethargic and eventually become thin and dehydrated due to the inability to eat and drink;
2. Progressive muscle weakness leading to recumbency (downers) depending on the amount of toxin ingested; clinical signs may be first observed from about 24 hours up to 17 days after exposure to the toxin;
3. Decreased Tongue Tone (Figure 1) – Tongue weakness is characteristic of botulism. Without tongue control, a cow will have other associated signs such as a dirty nose, difficulty chewing and swallowing, drooling, and may plunge the nose deep in a watering trough to drink. Although they may appear to chew hay or grass, there is an inability to swallow so feed and forage may be seen to fall from the mouth or may be found within the mouth (Figure 2);
4. Jaw Laxity and Decreased Muscle Tone – In affected cattle, back and forth movement of the lower jaw may be very loose; the upper eyelid and tail tone are often noticeably limp;
5. Constipation/Raising the tail while straining. Sometimes see colic (abdominal pain) and a “hunched up” appearance;
6. Most cattle that go down due to botulism toxin will die due to paralysis of muscles of the diaphragm, dehydration, or complications from being a “downer”. Cattle with a more gradual progression of signs and that maintain the ability to eat and drink may recover although it can take 30 days or longer to return to normal function.



Figure 1: Decreased Tongue and Jaw Tone are characteristic findings in botulism cases. If the tongue is grasped and pulled out the side of the mouth, the tongue may hang from the side of the mouth or is pulled in very slowly as the disease progresses. Without tongue control, a cow will have other associated signs such as a dirty nose, difficulty chewing and swallowing, drooling, and plunging the nose deep in a watering trough to drink (Photo: <http://www.nadis.org.uk/bulletins/clostridialdisease-in-cattle.aspx>)

Treatment consists of supportive care including administering fluids for dehydration and propping cows up on the sternum (breastbone) to prevent them from lying down flat on their sides. A vaccine (toxoid) for Clostridium botulinum type B (Bot Tox B, Neogen Corporation) is approved for horses and can be used in an extra-label fashion in cattle if a valid veterinary-client-patient relationship exists. This vaccine will not reverse clinical signs already present but may help to prevent new cases. Dead animals must be disposed of properly as the meat is not safe for human consumption.



Diagnosis is difficult and is usually based on history and clinical signs. Rumen contents recovered at necropsy are the best sample for identification of the toxin. A sample of the suspected baleage should also be submitted for pH and moisture testing. Baleage testing for quality and a fermentation profile are highly recommended. Other possible causes of muscle weakness and downer cows include low blood levels of calcium, potassium or magnesium, ionophore toxicity (monensin, lasalocid), organophosphate or carbamate insecticides, heavy metals such as lead, and infectious causes such as listeriosis or rabies. Calves may exhibit extreme muscle weakness due to a lack of selenium. A thorough physical examination by a veterinarian will help rule out these other possible diseases.

Prevention is based on ensuring proper harvest and preservation of wrapped forages and maintaining proper feedout rates to reduce the risk of growth of organisms dangerous to cattle. Correct moisture content is of primary importance; there is a field method to assess moisture that will yield a general idea of moisture content but there are far more accurate methods available. Cut forage at the proper stage of maturity so it contains adequate levels of fermentable carbohydrates for good ensiling. See Quality Hay Production (AGR-62) for specific cutting recommendations for various forage crops <http://www2.ca.uky.edu/agc/pubs/agr/agr62/agr62.pdf>. Also, achieving the highest bale density possible, especially with high internal core densities, removes the maximum amount of oxygen with few air pockets.



Figure 2: Hay dropped from the mouth of a bull affected by botulism toxin

Wrapping the bales quickly after baling with a good quality plastic, preferably with an ultraviolet inhibitor and 6-8mm thickness, and using multiple (4-6) layers will extend the storage time. Bale weight can be a safety and equipment issue. Details of proper techniques can be found in the UK Extension Fact Sheet AGR-173 entitled “Baling Forage Crops for Silage” at your local extension office or on the web at <http://www2.ca.uky.edu/agc/pubs/agr/agr173/agr173.pdf>. Another excellent resource is the UK Forage Figure 2: Hay dropped from the mouth of a bull affected by botulism toxin website for more information: <http://www.uky.edu/Ag/Forage/ForagePublications.htm#Silage/Balage0> and look for Baleage:

Frequently Asked Questions. If holes appear during storage, these should be covered immediately with the proper repair tape. Store the wrapped bales on a north facing slope if available because prolonged exposure to the summer sun may cause the upper side and the south face of the bale to dry out, with the moisture condensing on the bottom or north face of the bale.

In summary, it is advisable to test the pH and moisture content of your baleage at the very least to insure adequate fermentation before offering it to cattle. Samples can be submitted to a forage laboratory such as Dairy One for quality and a fermentation profile requested. This type of forage analysis will include a pH and volatile fatty acid profile and will give a very good idea of the quality of feed produced. This is a common practice for corn silage and one should consider this with fermented forages of all types to avoid health risks. It is important to remember that thousands of round bales are wrapped annually with only a few cases of botulism occurring; the risk of disease is low if one applies the proper management techniques from time of harvest through feeding.

## ***The Basics of Pricing Freezer Beef***

By: [Garth Ruff](#), OSU Extension Henry County

Source: <https://u.osu.edu/beef/2020/05/06/the-basics-of-pricing-freezer-beef/>

Over the last decade the demand for locally raised meats have steadily increased and that demand has skyrocketed as of late, due to the implications of the COVID-19 pandemic on animal agriculture and the meat packing sector. With the significant increase of demand in local product we have also seen an increase in the number of producers entering the world of direct marketing. Perhaps the toughest aspect of direct marketing is determining how to set a price. In this article I am going to address that very subject and answer the question: What should I charge for a freezer beef?

There are a couple of ways that we could go about calculating a price but at the end of the day we must know two things: 1) your breakeven price; 2) how much money (profit) you want to make.

To determine a breakeven price, one must know their cost of production. Below are potential factors that should be considered as production expenses on a per head basis.



Despite higher prices, demand for high quality beef continues to grow

### Whole, Half, and Quarter Beef

**Cost of Animal** – If the animal was purchased, what did it cost? If home raised, what did it cost to keep a cow for a year?

+ **Feed** – Value or cost of feedstuffs and mineral that were either produced and purchased.

+ **Veterinary** – Any vaccinations, dewormer, other medications, veterinary bills.

+ **Bedding and Supplies**

+ **Transport** – Fuel, wear and tear on truck and trailer.

+ **Advertising** – Cost of acquiring a customer.

+ **Value of Your Time** – Value of time invested on average per head.

= Breakeven cost per head

Once you have calculated a breakeven cost add you desired profit per head and divide that total by the hanging carcass weight to determine a price per pound.

$(\text{Breakeven} + \text{Profit}) / \text{Carcass weight} = \text{price per pound}.$

Profit margin can be flat rate per head or a percentage of the cost of production. Determine a margin that suits your enterprise and your customer.

Often, the customer will want an idea of what the final price per pound is going to be before the animal is harvested in order to make purchasing and storage decisions. Carcass weight can be estimated prior to harvest by estimating dressing percentage. Dressing percentage =  $(\text{Carcass Weight} / \text{Live Weight}) * 100.$

For grain fed, non-dairy type, steers and heifers the average dressing percentage is around 62% and closer to 59% for a dairy steer. Dressing percentage can vary depending on gut fill, muscling, fatness and cleanliness of the hide.

### Individual Beef Cuts

To determine prices for individual, retail beef cuts the formula to calculate cost of production is similar, however the cost of harvesting, processing, packaging, and labeling the end product must be accounted for. Time spent marketing and advertising can be considerably high when marketing individual cuts.

Furthermore, Ohio producers must factor in the cost of a Warehouse License if storing product and either a

Mobile or Temporary Food License depending on the outlet of sale. More information regarding those documents can be found at <https://farmoffice.osu.edu/sites/aglaw/files/site-library/Food%20Sales%20at%20Farm%20law%20bulletin%20final.pdf>.

When calculating the average price per pound of individual cuts, one must consider cutting yield. Cutting yield = (Pounds of retail product/carcass weight) \*100. Cutting yield will be influenced by boneless vs. bone in product, muscling, amount of fat needed to be trimmed, and amount of fat in ground beef.

The University of Tennessee Extension service has a great factsheet that estimates the carcass cutting yield and how much product the customer can expect at <https://extension.tennessee.edu/publications/documents/pb1822.pdf>

Once the carcass cutting yield is known, the average price per pound required to reach a target profit can be calculated. Not all cuts have the same value in the marketplace. That value is determined by demand and the proportion of the carcass that yields each specific cut.

### Comparison Pricing

When selling wholes, halves, or quarters the first place to compare prices with is the local livestock auction. It is recommended that at minimum that freezer beef carcass prices be set above what the live animal is worth at the current time.

Anyone selling retail cuts directly to the consumer should consider comparison pricing as well. Comparing retail prices to the local grocery retailer is a good place to start. Rarely should direct marketed retail beef be cheaper than that in the retail meat case.

## ***Thoughts Concerning the US Beef Industry***

By: [Francis L. Fluharty](#), Professor and Head, Department of Animal and Dairy Science, University of Georgia

Source: <https://u.osu.edu/beef/2020/05/06/thoughts-concerning-the-u-s-beef-industry/#more-8774>

The beef and pork industries are in a tremendously stressful period with Covid-19 causing temporary shut downs in several meat processing plants due to worker concerns over their health. This is having devastating short-term losses in all segments of the supply chain. I want to address a disturbing trend over the past few weeks where people claim that the current beef marketing system is completely broken, and that we need to go back to more small-scale packers and not import foreign lean beef. I support small-scale packers, and have worked with several. I've helped start regional branded beef programs that market to the non-implant, non-antibiotic marketplace, and I have family members who market the beef they raise through direct sales to customers. I've spent my career in support of family farms, and I own a small cow herd. What these experiences have given me is a perspective of the complexity of the beef industry, from the processing, distribution, restaurant and retail segments of the industry that most people working only in the cow-calf and feedlot sectors are never afforded the opportunity to see. In 2019, there were 3,236,800 cull cows, 3,271,700 dairy cows, 546,600 stags and bulls, and 26,500,200 fed steers and heifers harvested in the U.S. (Source: <https://www.ers.usda.gov/data-products/livestock-meat-domestic-data/livestock-meat-domestic-data/>). That's a total harvest of 33,555,300 head of cattle, and working 5 days per week for 52 weeks, that's 645,294 per week or 129,059 per day. The message is that we're a large industry, and the reality is that we rely on beef exports to boost the return per head of our cattle, and imports to meet the requirements of consumers for ground beef while simultaneously using the fat and fat trim from over 26.5 million fed cattle, respectively.

Consolidation increases as you move from the cow-calf segment to the packing industry. There are 727,906 beef farms and ranches, and these farms are the backbone of many rural economies, as 91% are family-owned or individually-operated. The calves from these operations go into 30,320 feedlots. On January 1, 2019, there were 14.37 million head of cattle on feed, with approximately 85.8% of feedlots having less than 1,000 head of capacity, which calculates to 26,015 primarily farmer-feeders feeding 2.73 million cattle, while the remaining 14.2% of feedlots, approximately 4305 operations, feeding 11.64 million cattle.

(<http://www.beefusa.org/beefindustrystatistics.aspx>). Understand that these numbers are a point in time, and commercial feedlots have an average number of days on feed of approximately 140 to 200 days, depending on the size of the animals entering the feedlot, so these numbers are accurate for the number of feedlots, but represent less than half of the total number of animals fed as described in the previous paragraph as they are the number of animals in feedlots on January 1, 2019.

Due to outbreaks of Covid-19, and the closing of many businesses, the meat and milk that restaurants, cruise lines, airlines, airports, conference centers, and others use are not being purchased or are being purchased, but in significantly lower amounts. However, a lot of meat destined to these outlets was already purchased and in cold storage as boxed beef. This beef was no longer owned by the packers, but by the distributors and end users. Thus, it was not easily shifted to retail when this pandemic began.

This has put tremendous economic pressure on the purchasers of farm products like cattle, hogs, poultry, and milk. In addition, Cargill, Tyson, JBS, and National are having to close beef processing plants, and Smithfield Foods and Tyson are having to close pork processing plants due to workers becoming infected with Covid-19. While these may be closed for only a couple of weeks to a month, it has greatly disrupted the supply chain. Large-scale shutdowns, even for relatively short periods of time, across the food chain, have caused the markets to decline, rapidly. The processing industry relies on a constant flow of products to distributors who use cold storage of fresh meat and fresh and frozen export meat and byproducts. We've never seen this type of industry-wide slowdown, and yes, the consequences have been devastating and heartbreaking.

We need to understand that packers will harvest those cattle that they own, or have contracts on, first. With approximately 80% of finished cattle being sold on contracts by Quality Grade and Yield, feedlots will try to use diets that do not result in excess fat. However, this will be difficult. Most large feedlots try to split ownership one of 3 ways: owned cattle, partnered cattle, and customer cattle, and risk management is put on nearly 100%, with 'Puts' used to set a floor. However, the approximately 2.7 million head of cattle that small-scale (<1000 head) feedlots produce will likely see the greatest losses. Many smaller feeders do not use risk management or forward contracts, which puts them in a cash market. Having to hold these cattle that are ready to market will likely result in more heavy-weight discounts and Yield Grade 4 discounts. Currently, the average YG4 discount is \$12/cwt and the average heavy-weight discount is \$15/cwt.

([https://www.ams.usda.gov/mnreports/lm\\_ct169.txt](https://www.ams.usda.gov/mnreports/lm_ct169.txt)). Together, these could result in a \$27/cwt discount, which on a 900-pound carcass would be a \$243 loss, not including the additional feed, labor, and yardage costs. While this is a terrible loss brought on by this market disruption, is the solution to move to smaller-scale packers and limit imports of red meat as many producers are suggesting? Let's look at the numbers.

According to the USMEF, 'in 2019, U.S. beef exports totaled 1.32 million metric tons with a value of \$8.1 billion, averaging \$309.75 per head of fed cattle. These beef exports accounted for 14.1% of total beef production and 11.4% for muscle cuts).' (<https://www.usmef.org/news-statistics/press-releases/u-s-pork-exports-record-large-in-2019-approaching-7-billion-beef-export-value-again-tops-8-billion-2/>). The value of these exports is largely ignored by people who are arguing against a concentrated processing industry. However, this \$309.75 was possible largely due to consolidation and the export of highly-marbled cuts and byproduct drop value items.

USDA By-product Drop Value ([https://www.ams.usda.gov/mnreports/nw\\_ls441.txt](https://www.ams.usda.gov/mnreports/nw_ls441.txt)) includes items such as the hide, tongues, cheek meat, cheek meat, head meat, oxtail, lips, liver, tripe, lungs, fat melts, meat and bone meal, and blood meal. This is where large-scale packers make a portion of their money. These products are largely sold in large, shipping container lots as frozen, chilled, or dried products. It takes a large-scale plant to take advantage of these opportunities. Currently, it's worth approximately \$97, but that's down from over \$200 a couple of years ago. However, a small-scale packer pays a rendering company to pick up these products. The difference can be as much as \$200 to \$250 per head between a large-scale and a small-scale packer, based on my experience working with small-scale packers. These costs get passed on to consumers. They can result in a \$.50 per pound difference in price of beef at retail.



As an industry, currently, we provide safe, wholesome products to all consumers at a reasonable cost, and we have value-added opportunities for those producers and small-scale packers that serve local and regional product demands, especially for differentiated products like non-antibiotic and non-hormone, or grass-raised. The reasons we don't have more small-scale packers include the cost of building a packing plant, equipment, cooler costs, HACCP oversight and paperwork, the availability and cost of rendering, making up the losses from fat trim, finding a workforce that wants to work in a chilled environment, insurance, refrigerated trucking, and worker's compensation as meat processing has one of the highest rates. It's a business that people need to really want to be in, because it's not a great return on investment at a small scale.

Now, let's look at what happens to a fed beef animal that's harvested, and the implications for the entire industry. How much product comes from a 1350-pound steer? A fed steer that's a Yield Grade 3 will have a carcass that's approximately 65% red meat, 20% fat, and 15% bone (<https://extension.sdstate.edu/how-much-meat-can-you-expect-fed-steer>). Naturally, these vary depending on the muscling and fatness of the animal. However, I am using these in this example.

1350 live weight x 62.5 dressing % = 844 lb. Hot Carcass Weight  
844 x .65 = 549 lb. lean  
844 x .20 = 169 lb. fat and 50/50 fat trim  
844 x .15 = 126 lb. bone

We must understand that seam fat is the largest fat depot in a steer. If we did not have lean trim from cull cows and imported lean to mix with the fat and fat trim, all fed cattle would be worth less. We consume approximately 70% of our beef as ground beef, which can contain at most 30% fat, and the most common blends are 80% lean with 20% fat, and 85% lean with 15% fat.

Do we have enough cow culls to use all this fat, and how much can a cull cow yield? Remember that there were 3,236,800 cull beef cows and 3,271,700 cow dairy cows harvested in the U.S. in 2019. Thus, we are using ALL of our cull cows to go into the meat supply chain! According to the USDA National Agricultural Statistics Survey, there are 31,316,700 beef cows in the U.S. on January 1, 2020. ([https://www.nass.usda.gov/Charts\\_and\\_Maps/Cattle/bcow.php](https://www.nass.usda.gov/Charts_and_Maps/Cattle/bcow.php)). We have the same cow herd inventory as we did in the early 1960's, and we are down by over 14.3 million cows compared with the high in 1975 of 45.7 million beef cows. (<https://beef2live.com/story-beef-cow-inventory-1920-2014-88-116224>). In the same time frame, there were 11.139 million dairy cows in 1975 ([https://www.ers.usda.gov/webdocs/publications/47162/17864\\_sb978\\_1\\_.pdf?v=41056](https://www.ers.usda.gov/webdocs/publications/47162/17864_sb978_1_.pdf?v=41056)) compared with 9.33 million on January 1, 2020 ([https://www.nass.usda.gov/Publications/Todays\\_Reports/reports/cat10120.pdf](https://www.nass.usda.gov/Publications/Todays_Reports/reports/cat10120.pdf)), a decrease of 1.8 million dairy cows. In addition, there are over 330,701,590 people in the U.S. today compared with 209,513,341 people in 1970 (<https://www.worldometers.info/world-population/us-population/>, Accessed 5-4-2020). Over a period of 45 years, our human population in the U.S. has increased by over 121 million people at the same time that we've reduced our beef and dairy cow numbers by a total of approximately 16.1 million head. Thus, we have a greatly increased demand for beef and fewer cull animals to go into ground beef.

So, what's the red meat yield of a cull cow? It varies greatly, but using the example of a lean cull animal, which closely resembles the lean beef that's being imported. 'Cows with a BCS of 1 to 4 and an estimated red-meat yield of 85 to 90%; will yield at most a few merchandisable cuts with the majority of the carcass used for boneless processing beef'

([https://www.beefresearch.org/CMDocs/BeefResearch/PE\\_White\\_%20Papers/Beef\\_from\\_Market\\_Cows.pdf](https://www.beefresearch.org/CMDocs/BeefResearch/PE_White_%20Papers/Beef_from_Market_Cows.pdf)). Let's use an 85% lean meat yield and 15% bone with very little fat.

1200 pound cow, BCS 1-4 (lean)  
Hot Carcass Weight (HCW) 45%–55% range, use 50%.  
1200 lb live x 50% dress = 600 pounds  
600 pounds x 85% lean = 510 pounds lean

The fed steer weighing 1350 pounds in our carcass example had 169 pounds of fat trim. The cull cow in our example had 510 pounds of lean trim. Remember that ground beef may not contain greater than 30% fat.

At an 80/20 mix, 510 pounds of lean needs to be mixed with 124 pounds of fat to come up with 634 pounds of 20% fat ground beef.

At an 85/15 mix, 510 pounds of lean needs to be mixed with 90 pounds of fat to come up with 600 pounds of 15% fat ground beef.

Let's now look at the amount of cull cows that are needed to use this trim fat. There were 26,500,200 fed steers and heifers harvested in the U.S. in 2019. Using the 169 pounds of fat trim in our example: 26,500,200 head x 169 pounds fat trim = 4,481,913,800 pounds of fat trim. In 2019, the U.S. imported 3,057,176,000 pounds of lean beef and veal (<https://www.ers.usda.gov/data-products/livestock-and-meat-international-trade-data/>). At 510 pounds of lean per cull cow in my example, this equates to 5,994,462 cull cow equivalents imported. This isn't surprising as we are down over 16.1 million head of beef and dairy cows since 1975. We need imported lean, because we don't have enough cull cows! This is one example. It's not perfect, but it gives a good representation of the size of the industry, and the structural changes that have occurred over the past several decades. We can't forget that we export a high-marbling product and import lean, and the reason we need the lean meat is to mix with the fat trim from our fed cattle due to a reduction in the U.S. cow herd size and an increase in the human demand for beef, domestically.

There is no doubt that producers are under stress, and that anger is one of the stages of grief over the fear of losing a way of life that's been the backbone of our country. When things aren't going well, everyone looks for a reason, whether it's corporate profits, international ownership of traditionally American companies, or profit taking by different segments of the industry. Some of these probably have merit. Everyone I know in animal agriculture has been through tough times. At these times, we need to do things that improve our operations. Many people don't weigh their cattle, but if a producer can identify the most and least profitable animals in a herd, the operation becomes more efficient. One way to do this is to divide the calf weaning weight by the dam's weight at weaning, and rank cows from highest to lowest percentage. Another thing that producers are doing is focusing on developing value-added markets. Many cow-calf and backgrounding operations need to focus on management that improves forage utilization. One final thought is that most of us wouldn't think of driving a car without insurance, but the vast majority of beef producers don't do much in the way of risk management or marketing. Perhaps, it's time that we all started there. I have faith in our collective ability to survive this.

## ***Cressleaf Groundsel in Wheat & Hay***

By: Mark Loux & Jeff Stachler

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2018-14/cressleaf-groundsel-wheat-and-hay>

Originally published in 2016

It's definitely a big year for cressleaf groundsel (*Senecio glabellus*), the yellow-flowered weed that can be seen about everywhere right now. While it is most often found in no-till corn and soybean fields that have not yet been treated with burndown herbicides, there seems to be an above-average number of wheat and hayfields and pastures with substantial populations.





Cressleaf groundsel can be identified by its hollow and grooved stem with a purplish color, and yellow sunflower-type flowers. It is a winter annual that emerges in late summer into fall, and can infest late-summer seedings of forages and hay, and fall seedings of wheat. It can be controlled with herbicides in most crops, ideally in the fall or early spring when plants are small and most susceptible to herbicides.

At this time of the year, plants are flowering and will be going to seed, thus ending their life cycle. Applying herbicides to hay fields at this time probably won't do much to reduce the risk of toxicity to animals (and it's too late to apply any herbicides to wheat). Plants that have flowered are more difficult to control, and will still be there even if killed by herbicides. Major management goals at this time are mowing infestations soon enough to prevent seed production, and deciding what the risk of



toxicity in hay or straw is based on the level of infestation. Cressleaf groundsel should not be present in hay fields following the first cutting. However, it is advisable to scout fields in late fall for the presence of newly emerged plants, and treat with herbicides if necessary.

Cressleaf groundsel is poisonous to cattle, horses, goats, sheep, and humans due to the presence of pyrrolizidine alkaloids (PAs). Symptoms include weight loss, unthriftiness, poor hair coat, anorexia, behavioral changes, sunscald, aimless walking, diarrhea, jaundice, liver damage, and possibly death. All parts of the plant are toxic. Drying or ensiling the plants during the hay or straw making process does not reduce the toxicity of cressleaf groundsel. Historically, no confirmed cases of poisoning by *S. glabellus* have been reported by the Ohio Department of Agriculture's Animal Disease Diagnostic Laboratory, although liver lesions suggestive of PA poisoning have been observed on rare occasions.

Although the presence of the occasional plant in a hay or wheat field is probably not cause for concern, producers are advised to avoid harvesting areas of the field that have high concentrations of the plants. Or bale and discard hay or straw from those areas of the field, if this is more desirable than leaving the plant residue in the field.

This is not a new problem, and we have a fact sheet available on cressleaf groundsel at the OSU Weed Management website – <http://u.osu.edu/osuweeds>. Hover over “weeds”, and then click on “other” to get to it. This article was originally published in issue 2016-13.

## ***Thinking of Planting Trees in Your Yard?***

By Gary Graham, Extension Educator, Holmes County  
Originally written for the Bargain Hunter

Every spring brings people to start thinking of planting trees in their yards. There are things to think about and steps to take to provide a good choice and not future headaches. I have always been an advocate of planting trees, just the right ones. I tell people all the time you should plant trees for the next generation to enjoy, not to have to deal with the poor choices and placement of trees we make. Trees give us many benefits like shade, windbreaks, shelter, wood products, and many more. However, trees can cause many more problems when they start doing what they are designed to do and that is grow and capture as much of the environment around them so they can reproduce offspring.

So what should you plant? This is where you need to do your homework and not create more headaches later. It is always better to plant trees “native” to our area. Take into account where you want to plant it. Will it fit that space when it is mature? Think about the space a six-foot tall tree bought at the nursery will need when 30

feet tall. Some trees identification cards at the nursery will tell you the mature height, but not always the mature width. Planting trees next to buildings, power lines, driveways, etc. could lead to major issues as it matures. Think about the mature version of the tree. Not the six-foot-tall version with a colorful tag on it to help make a sale. Again, do your homework on what tree to plant and where to plant it.

Next comes digging the hole for your tree of choice. When planting balled and burlapped or container-grown trees in well-drained soils, dig a hole that is 2 to 3 times wider than the diameter of the tree's root ball. The depth of the hole should be 2 or 3 inches less than the height of the root ball. Slope the sides of the hole so the top of the hole is several inches wider than the bottom. Too often, the hole is dug too deep or too shallow and the root collar (the point where the tree stem meets the soil surface) ends up out of the ground too high or too deep. Both will cause the tree to struggle to reestablish and could kill it.

#### Trees not to plant:

Every spring we enjoy the beautiful flowering of many trees. Cherry blossoms come to mind. However, there is another "showy" tree that blossoms every spring that you should not plant. The dreaded Callery or Bradford Pear is one tree you should not plant, ever! Other names this pear nemesis goes by is Aristocrat, Chanticleer and Cleveland Select. A bad tree by any name is still a bad tree. The breeding of this pear was to help fight disease issues in native pear trees. They were thought to be sterile, but they are not.

They are invasive to the point that the Ohio Department of Natural Resources added the Callery/Bradford pear to the state's invasive species listing in 2018. In 2023 it will be illegal to buy or plant this species in Ohio. This is a good move, it is just about 20 years too late. The ones planted are spreading exponentially and are causing serious problems. They were bred to not bear fruit, but they do. Birds gorge on the plentiful, but low energy fruit then distribute seeds in their waste everywhere and the next tree takes off creating an endless and devastating cycle. Driving around you will see the effect of this unchecked, invasive species. A good example is to look at the hillside off Glen drive in Millersburg between the coin laundromat and Rodhe's IGA. The thick impenetrable mass of Callery pears are taking over the area choking out any possibility of native trees to compete with it.

Callery/Bradford pears are weak structured with steep "V" notched branches that are prone to breaking off in ice, snow, and windy conditions. They will get to roughly 10 to 15 years old and then start falling apart. The other issue is the waxy leaves decompose very slowly causing headaches in landscape and street tree settings, as well as compost piles. Simply put, please DO NOT plant a Callery/Bradford pear and if have one now, cut it down before its invasive seeds are spread any further or it falls apart.

#### Other trees to never plant in your landscape or anywhere for that matter are listed below and the quick version of why to not plant.

1. Siberian elm (*Ulmus pumila*) is a fast-growing, aggressive tree that tolerates all kinds of difficult growing conditions. But it's messy, seeds itself and frankly isn't the most attractive tree. Siberian elm is also weak-wooded and prone to storm and ice damage.
2. Tree of heaven (*Ailanthus altissima*) is very much misnamed. It is nonnative, invasive, dirty, messy, smelly and just not suited to home landscapes. It seeds itself, but worse yet; it gives off a chemical to kill competing vegetation, making it difficult to landscape around. This tree is also a harboring site for the Spotted Lanternfly that can cause great economic losses for fruit tree and grape growers. This invasive insect is just 15 miles from the Ohio border in Pennsylvania right now.
3. Lombardy poplar (*Populus nigra*) was once beloved as a quick-growing screen tree. Growing 4 to 5 feet a year—in an upright shape that fit many backyards—it was the perfect tree. Until it was not. Homeowners quickly found out that the Lombardy poplar had a limited shelf life of about 15 years, thanks to an all-too-common canker disease. Better to purchase the largest evergreen trees you can afford and space them out appropriately (mature size) and give them time to create the desired screen you are looking for.
4. Weeping willow (*Salix babylonica*) is a beautiful tree in the right environment like when seen along the shoreline. However, it is much too big and messy for the typical home landscape. Add in the fact that



the roots go everywhere in search of water (particularly problematic near septic systems, sewer pipes, curtain drains around home foundations), so keep them out of your yard. They are also messy and will drop limbs and leaves all summer long. You will continually have keep trimming up the lower limbs in order to mow under it.

5. Staghorn sumac (*Rhus typhina*) is a relative of poison ivy and causes allergic skin reactions in many (but not all) people. It is quite attractive in fall, when it turns color, but its roots keep popping up new sprouts, so before you know it, you have a colony of staghorn sumacs giving your skin the willies.
6. Mulberry (*Morus* spp.) is a messy tree you do not want anywhere near your clothes line, driveway, walkway, porch, deck, patio, pool, cars, let's get straight to the point: you don't want this tree in your yard, period. The fruit stains everything it comes in contact with. Yes, the fruit is edible, but it is rather bland and the birds get most of it, and then leave highly staining droppings everywhere. Mulberries also grow readily from seed, so you will undoubtedly have more weeding to do in the years to come.
7. Ginkgo (*Ginkgo biloba*) is a great tree to have in your yard—IF it is a male tree. It grows at a slow to moderate pace and has a pretty shape, beautiful fall foliage, and a lineage that dates to the time of the dinosaurs. However if you get a female ginkgo in your yard, it will drop messy fruit in fall that smells a like a combination of vomit and dog poo when it starts to rot. You can ask for a male tree, but it is not always 100% accurate.
8. Cottonwood (*Populus deltoids*) is a majestic, awe-inspiring tree when it matures. However, its roots can be problematic around house foundations and it releases cottony seeds in late spring/early summer that can be a nuisance if they are sticking to your window screens. The trees are also messy, continually dropping leaves and sticks. Best left in nature helping to keep creek banks from eroding.
9. Black Locust (*Robinia pseudoacacia*) is a fast-growing hardwood tree with fragrant white flowers. The wood is heavy and holds a lot of fuel value, so it is a good tree to have around if you need firewood. However, it is brittle and has sharp thorns that will puncture lawn mower tires. In addition, black locust tends to seed itself a little too generously. As a result, this tree is often a pest and considered invasive in some areas.
10. Russian olive (*Eleagnus angustifolia*) or Autumn olive (*Elaeagnus umbellata*) are tough, a little too tough, meaning you cannot kill them easily. Both imported, the Russian olive from southern Europe and Autumn olive from Asia. Both have become invasive. They might not seem like such a bad thing, but Russian and Autumn olives are thugs. They produce high volumes of low energy fruit. Birds eat the fruit and distributes the seeds in their waste. Then the trees sprout into groves so thick it crowds out other plants and can only be passable on your hand and knees. Once thought to be good deer habitat, but they will get so thick even the deer cannot get through them. Cut them down and they continue to re-sprout, making them an invasive pest. Chemically killing them is the only option and it will take years of treatments to get all the re sprouts treated. They are also on Ohio's invasive species list.
11. Silver maple (*Acer saccharinum*) is often called the ugly duckling of the maple family. While some manage to put out a bit of fall color, the show pales in comparison to the superior sugar, black and Japanese maples. A rapid grower, silver maple tends to develop multiple competing main stems or trunks. Being a soft maple they tend to snap off larger limbs in storms and ice events which then creates center rot. These make great places for critters to hide during the day and giving easy access to your garden and flowers at night. Its shallow rooting and tendency to push up "knee" roots will wreak havoc on lawn mower blades. Besides all this they are messy, and just not a great yard tree.
12. Norway maple (*Acer platanoides*) was overplanted in the 1960's as a street tree when Dutch elm disease decimated the American elm population. People are drawn to the cultivar called "Crimson King" as they have the purple leaves. It is a pretty tree with nice fall foliage, but Norway maples are nonnative and weak trees. Just when it gets to be a good shade tree, it will up and die or start falling apart.

Some folks would say any maple is bad to plant as the fruit known as samaras (or most people call them helicopters or whirlybirds) get into the landscape and hundreds of little sprouts pop up in summer. Better to deal with samaras than Hickory nuts or Catalpa tree seedpods in your yard that become missiles out from under the mower.

ODNR has a complete listing of invasive species to not plant and alternatives to plant as well as many other great tree resources on their web site that I encourage you to use before you go planting something that will

cause you headaches later. Look to <http://forestry.ohiodnr.gov/> for more information on trees to plant. Then look at the invasive species to avoid at <http://forestry.ohiodnr.gov/invasive> .

## **Asian Giant Hornet**

By: [Joe Boggs](#)

Source: <https://bygl.osu.edu/node/1453>

The Asian Giant Hornet (AGH) (*Vespa mandarinia*) has not been found in Ohio. In fact, it has not been confirmed anywhere in the U.S. beyond the extreme northwest corner of Washington State.

Previous BYGL Alerts noted that AGH had never officially been confirmed in North America. That changed September 18, 2019, when an AGH nest was found and destroyed in the town of Nanaimo on Vancouver Island, British Columbia. The identity of the hornets was confirmed by Canadian entomologists and international experts contacted by the British Columbia Ministry of Agriculture. It was the first confirmed report of AGH being found in North America.

In December 2019, the Washington State Department of Agriculture (WSDA) confirmed that a dead hornet collected by a resident in Blaine, WA, was AGH. Blaine is on the U.S. – Canadian border almost directly across the Strait of Georgia from Nanaimo, B.C. It was the first confirmation of an AGH adult being found in the U.S.; however, no nests were discovered.

Subsequently, WSDA was notified of three more potential AGH sightings near Blaine and in Bellingham, WA, which is located around 10 miles south. Although specimens were not confirmed, two of the sightings were made by experienced beekeepers. The WSDA will be deploying detection traps this season in the Blaine and Bellingham areas.

You can read more details about the confirmations by following the hotlinks listed under "The Confirmations" below.

### The Hornet

AGH is the world's largest hornet with a body length of 1.5 – 2" and a wingspan from 1.5 – 3". Two of its most notable features are its large orange or orangish-yellow head and distinct orangish-yellow and reddish-brown bands on its abdomen.

AGH produce annual underground nests often taking advantage of cavities created by burrowing rodents and other animals. Their seasonal development matches that of our own North American yellowjackets (*Vespula* spp.) and bald-faced hornets (*Dolichovespula maculata*) with the nests only being used for one season.

Despite the social media hype and dubious web postings, experts consistently note that AGH is not particularly hostile towards humans, pets, and large animals. As with our native yellowjackets and bald-faced hornets, AGH generally goes about its business unless its nest is





threatened. Of course, swatting at an AGH may also elicit a painful introduction to its 1/4" stinger.

However, AGH is a predator of other insects and extremely aggressive towards European honey bees (*Apis mellifera*). AGH will mass-attack honey bee hives and quickly dispatch the workers primarily by clipping off their heads. They then rip out the honey bee larvae and pupae, fly back to their underground nests and feed the mellifera meat morsels to their young.

This discriminating taste for honey bees is a two-edged sword. On one hand, AGH can be highly destructive by quickly devastating honey bee hives. On the other hand, their strong preference for honey bee meat means beehives are highly effective in revealing undetected AGH populations. For this reason, beekeepers will most likely be the first to observe AGH in an area where this non-native has established new outposts.



**PLEASE NOTE:** A possible AGH discovery is meaningless unless it's officially confirmed by a regulatory agency such as the Ohio Department of Agriculture (ODA) or the USDA Animal and Plant Health Inspection Service (USDA APHIS). A specimen is required for an official confirmation. Thus, it's very important to collect a specimen (dead specimens kept frozen) and contact the ODA if you live in Ohio.

While photographs can't serve as official confirmations, efforts should still be made to take pictures because they help to separate AGH from various look-a-likes. Likewise, "sightings" carry no official recognition unless backed by a photograph or more importantly, a specimen.

#### Look-A-Likes

The two insects most commonly mistaken for AGH are European Hornets (*V. crabro*) and our native Cicada Killer Wasps (*Sphecius speciosus*). Cicada killers are the largest native wasp found in Ohio. They appear with the arrival of their namesake food item, Annual Dog-Day Cicadas (*Tibicen* spp.; family Cicadidae), and disappear once annual cicada activity concludes for the season.

European hornets were first found in the U.S. in New York State around 1840. Since that time, the hornets have spread to most states east of the Mississippi and a few states to the west. European hornets are impressively large, measuring 1 - 1 1/4" in length. Their black and yellow markings on their abdomen make them look like yellowjackets on steroids; however, their head and thorax have distinct chestnut-colored markings. Yellowjackets have black and yellow markings on the head and thorax.



Technically, European hornets are now the only "true hornet" found in Ohio. Taxonomically, our native bald-faced hornets are not hornets; they are grouped with yellowjackets which is why they are in the same genus as native Aerial Yellowjackets (*D. arenaria*).

Unlike our native yellowjackets and wasps, European hornets can cause noticeable girdling damage to twigs and branches of trees and shrubs by stripping bark to the white wood. It is speculated that the hornets are extracting sugar from the phloem tissue. Although the damage may be noticeable, it's seldom significant enough to cause concern.

European hornets construct paper nests that may look similar to the bald-faced hornet nests. However, they are most often found in hollow trees and sometimes in the walls of homes. They do not produce underground nests.

Normally, European hornets overwinter just like our native bald-faced hornets, paper wasps, and yellowjackets with only the queens that are produced this season surviving the winter. The new queens leave the nests to seek protected overwintering sites; old nests are not re-used. However, occasionally the entire European hornet nest will survive the winter if they are sufficiently protected. Indeed, although it is rare, nests in Ohio have been observed surviving through three winters.

European hornets are reputed to be highly aggressive and their large size does make them look pretty scary. However, during past encounters with this hornet, I was able to take close-up images and move branches with hornets on them without being stung or even charged by the hornets. Still, landscapers should be cautious around these large stinging insects. Like wasps and yellowjackets, they are capable of stinging repeatedly.

The European hornets may also fly at night and are attracted to porch lights or lights shining through windows. They have been known to repeatedly charge windows at night inducing panic in homeowners.

#### The Confirmations

The following websites document the AGH discoveries in Washington State as well as British Columbia and also provide additional helpful information:

WSDA Pest Alert: Asian giant hornet

<https://wastatedeptag.blogspot.com/2019/12/pest-alert-asian-giant-hornet.html>

Washington State University Extension, Additional Information on Asian Giant Hornet

<https://extension.wsu.edu/wam/asian-giant-hornet-found-locally-what-we-know/>

WSDA Asian Giant Hornet Reporting in Washington State

<https://agr.wa.gov/departments/insects-pests-and-weeds/insects/hornets>

British Columbia Ministry of Agriculture, Three Asian giant hornets found in Nanaimo

<https://news.gov.bc.ca/releases/2019AGRI0102-001759>

British Columbia Ministry of Agriculture, Asian giant hornet nest eradicated in Nanaimo

<https://news.gov.bc.ca/releases/2019AGRI0106-001818>

British Columbia Ministry of Agriculture, Pest Alert: Asian Giant Hornet

[https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/animal-and-crops/plant-health/pest\\_alert\\_asian\\_hornet.pdf](https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/animal-and-crops/plant-health/pest_alert_asian_hornet.pdf)





## CRESSLEAF GROUNDSEL



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Recently, county agents and others have been asking questions about a yellow-flowered weed called cressleaf groundsel, *Senecio glabellus*, and its potential toxicity to livestock. It is weed species relatively new to Ohio, having been recorded in OSU herbarium samples from only four counties prior to 1990. Since that time cressleaf groundsel has spread to other parts of Ohio. Cressleaf groundsel appears to have entered Ohio from the south, where it is more prevalent, but it has now been reported as far east as Coshocton and Perry Counties and as far north as Hancock and Putnam Counties. Cressleaf groundsel is currently included in Ohio's Noxious Weed List due to its poisonous characteristics.

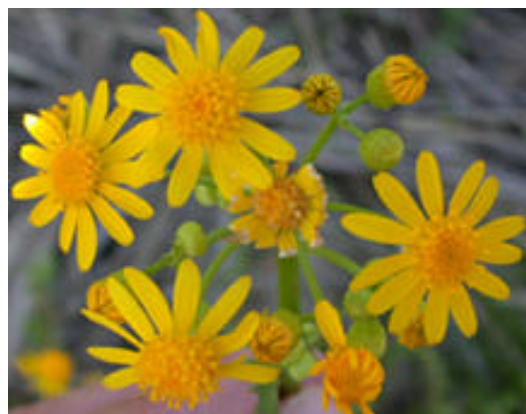
### BIOLOGY/IDENTIFICATION

Cressleaf groundsel is a member of the Aster/Composite family. It goes by many other names, including butterweed, yellowtop, golden ragwort, and yellow ragwort. It has a winter annual life cycle, meaning that it emerges in the fall and flowers in the spring (after the 10<sup>th</sup> of May). Cressleaf groundsel reproduces only from seeds. Each plant produces many (probably 100's of thousands) seeds that are readily moved by wind currents. It grows well in many different environments including saturated soils.

As a seedling in the fall, cressleaf groundsel appears very similar to yellow rocket, having rounded-tipped leaves with no lobes at first. Lobes become apparent as the later leaves emerge. Lobes of cressleaf groundsel leaves have an opposite orientation, compared to the smaller size and alternate orientation of yellow rocket leaves. The lobes have serrated to toothed margins. Cressleaf groundsel leaves and stems are usually quite purple in color. The stems of cressleaf groundsel are hollow and grooved, and the entire plant is hairless. The flowers are similar to those of other species in the Aster family, having ray (outside) and disk (center) petals. Both petals are bright yellow in color, and the ray petals being 0.33 to 0.75 inches in length. Individual flowers are grouped together in clusters, and there are usually several branches of flowers.



rosette in early spring



individual flowers in a cluster

## TOXICITY

Nearly all species of *Senecio* are considered potentially toxic plants because they contain compounds called pyrrolizidine alkaloids (PAs). These are metabolized in the liver to other compounds that are toxic, primarily to the liver cells. *Senecio glabellus* is considered nearly as toxic as some of the more troublesome plants in this genus, but fortunately, it does not appear to be very palatable to grazing livestock. The PAs are found in the plant throughout the growing season but appear to be at their highest levels when the plant is in the bud to flower stage. The flowering portions of the plant and the youngest tissues generally contain the highest concentrations. PAs are not destroyed by the hay-making and curing process. Ensiling of forages may reduce the concentration of PAs, but will not entirely eliminate them. Sheep are considered more resistant to the effects of PAs than cattle and horses, and have been used in some areas to control the plant. However, sheep are susceptible to poisoning if they consume sufficient amounts.

Under typical grazing conditions in Ohio, it is unlikely that animals will consume significant quantities of the *S. glabellus* because of the availability of higher quality, more palatable forages. Poisoning could result under unusual conditions, such as drought, where good quality forage is not available. Hay containing significant amounts of the plant may pose a greater risk. Poisoning usually occurs as a result of consumption of the plants over several days to several months. Because the effect on the liver is cumulative, signs of poisoning can occur weeks to months after consumption of the plant ceases. The signs are directly attributable to liver degeneration and failure. Affected animals usually show depression and loss of appetite initially, and progress to neurological signs with head pressing, aimless walking, incoordination, and rectal straining. At post mortem examination, the liver will usually be shrunken and fibrotic with grayish blue to yellowish discoloration. Treatment is only symptomatic and not usually successful once signs appear.

Historically, no confirmed cases of poisoning by *S. glabellus* have been reported by the Ohio Department of Agriculture's Animal Disease Diagnostic Laboratory, although liver lesions suggestive of PA poisoning have been observed on rare occasions. However, the plant appears to be expanding in its distribution in Ohio and, in some cases, its concentration in fields. Although the presence of the occasional plant in a hay field is probably not cause for concern, producers are advised to avoid harvesting areas of the field that have high concentrations of the plants. Subsequent cuttings during that growing season may be safe, although the plant may be present again in the fall.

## CONTROL

The goals of a cressleaf groundsel management program should be to minimize its occurrence in areas where it could poison livestock, and prevent seed production to reduce future infestations. This can be accomplished through mowing in the spring, where size of the field or groundsel patches allows. To minimize the risk to grazing livestock or reduce the amount of groundsel in hay, mow often enough to prevent the plant from becoming more than several inches tall. This strategy can also minimize seed production, although small groundsel can still flower and produce seed. Delaying the mowing until the plant is in the bud to flower stage will most effectively prevent seed production, but may not minimize the risk of poisoning. The groundsel is not likely to regrow after the first cutting of hay in the spring, but a goal of control strategies should be to prevent it from contaminating the first cutting.

Cressleaf groundsel is most easily controlled with herbicides in the late fall or early spring. Most of the plants will have emerged by late October, and will be small enough in fall or early spring to be controlled with 2,4-D or other low-cost treatments. Plants become considerably more difficult to control once they have started to grow in the spring and are more than several inches in diameter. Control of groundsel in pastures and hayfields directly reduces the risk of livestock poisoning. Cressleaf groundsel should also be controlled by the flower stage in roadsides and fallow areas, and neighboring corn, soybean, and wheat fields. Movement of seed from mature groundsel plants in these areas can be a source of new infestations in nearby pasture and hayfields.

#### CONTROL IN GRASS PASTURES

Apply 2,4-D (1 qt/A) in late October or early November. Low-volatile ester formulations can be more effective than amine formulations, but the latter are less likely to volatilize and injure nearby sensitive broadleaf vegetation. This treatment can also be effective in spring if applied in late March or early April when the rosettes of groundsel are less than several inches in diameter. Larger plants are more tolerant of 2,4-D, and effective control will require a mixture of dicamba (e.g. Banvel, Clarity, Sterling) and 2,4-D. Desirable legumes in the pasture will be injured or killed by any of these treatments. Some examples of 2,4-D products available at agrichemical outlets and farm supply stores:

##### Amine

Weedar 64

2,4-D Amine

Amine 400 2,4-D Weedkiller

##### Ester

Weedone LV4, LV6, or 650

2,4-D LV4 or LV6

LV 400 2,4-D Weedkiller

Hi-Dep Broadleaf Herbicide

#### CONTROL IN ALFALFA OR GRASS/ALFALFA HAYFIELDS

Herbicide options are less numerous and more costly than in grass pastures, and many herbicides effective on cressleaf groundsel can injure legumes. In alfalfa fields, the most effective treatments are:

- Sencor 75DF (1.3 lbs/A) or Velpar (2 to 3 qts/A) applied in late February when alfalfa is still dormant. These herbicides can be applied to established alfalfa only (more than one year old). Sencor can be used in fields that have established grasses in addition to the alfalfa. Do not use Velpar in fields with desirable grasses or fields that will be rotated to another crop within the next two years.
- Pursuit (2.16 oz/A) may suppress groundsel when applied in late fall or early spring. Fall applications are likely to be most effective. Plants should still be in the rosette stage and less than 3 inches tall at the time of application. In the spring, apply during periods of relatively warm weather – daytime temperatures above 60 degrees F and nighttime temperatures above 50 degrees F. Include the appropriate spray adjuvants per the herbicide label. Pursuit can be used in seedling or established alfalfa, but alfalfa seedlings must have at least two trifoliate leaves at the time of application. Do not use this treatment where desirable grasses are present.
- Glyphosate (Roundup Ultra Max, Touchdown, etc) can be applied as a spot treatment in the spring in any legume or legume/grass hay field. This treatment will injure or kill all vegetation in the treated area, and should be used only when all other control measures have failed.



## CONTROL IN NO-TILLAGE CORN AND SOYBEANS

Apply 2,4-D ester (1 qt/A) in late October or early November. This treatment can also be effective in late March or early April when applied to small plants not more than several inches in diameter. Control of larger plants will require a mixture of 2,4-D with glyphosate (26 oz/A of Roundup UltraMax or 32 oz/A of other glyphosate formulations) or Canopy XL. The rate of most 2,4-D ester products should not exceed 1 pint per acre when applied within 30 days of soybean planting.

## CONTROL IN WINTER WHEAT

Apply a mixture of 2,4-D plus either dicamba (Banvel, Sterling, etc) or Harmony Extra in early spring when groundsel rosettes are less than several inches in diameter. In no-tillage wheat consider an application of glyphosate before wheat emerges in the fall to reduce the population.



whole plant



stem leaf



hollow stem



grooved and purple-colored stem