

# The FARMACY

*"Agriculture is our wisest pursuit because it will in the end contribute most to real wealth, good morals and happiness"*

- Thomas Jefferson -

Agriculture & Natural Resources Newsletter

Winter 2024

### From the Ag Agent's Desk:

#### Happy Holidays from Campbell County Extension!

I hope everyone enjoys this winter season and has a great start to the New Year! Just a reminder that the **offices will be closed from December 25, 2024 through January 1, 2025** and will be back open on January 2, 2025. Please make sure any blood, soil and/or hay samples are brought to the Highland Heights office before the 25th or hold on to them until the 2nd.



If anyone does not have their Premises ID, this number can be obtained from the State Veterinarian's Office in Frankfort. Their phone number is (502) 564-3956 and their contact information is also available through the Kentucky Department of Agriculture's website at [www.kyagr.com](http://www.kyagr.com). The PIDN is required for farmers to order Electronic ID tags for their livestock, which are also available through the State Veterinarian's Office.

As always, please reach out if you have any questions or suggestions for programming that Cooperative Extension can implement. See you all next year!

Michelle Simon  
Campbell County Extension Agent  
for Agriculture and Natural Resources

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### Save the Date for these Upcoming Events:

- Cattle Market Update w/Kenny Burdine ..... Jan. 14 - 7 pm  
UK Ag Economist Environmental Education Center
- Farm Preservation Seminar..... Jan. 16 - 6 pm  
See page 3 for details - Environmental Education Center
- Kentucky Cattleman's Association Convention .... Jan. 16-17  
Visit: <https://www.kycattle.org/convention.html>
- NKHN Annual Meeting/Dinner ..... Jan. 25  
See page 15 for details - Alexandria Fairgrounds
- County Extension Council Meeting ..... Jan. 28 - 6 pm  
Highland Heights Office
- How to Sell Timber from your Land ..... Jan. 30 - 7 pm  
See page 20 for details - Environmental Education Center

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## Don't get Burnt, because not all Firewood is Created Equal

Source: Laurie Taylor Thomas, University of Kentucky extension forester at Martin-Gatton College of Agriculture, Food and Environment

**F**ires in the fireplace or outside in the fire pit are intrinsically connected to our visions of nestling in for a long, comfy winter. Outside, let the winter bring its ice and snow if it wants. Inside, we could have a fire to snuggle up to. But not all firewood is created equal.

There are some important things to know before lighting, igniting just any old wood.

- Different species of trees provide different amounts of heat. Wood is made up of air and wood fiber, or cellulose. Since the cellulose burns, but not the air, look for the heaviest or densest firewood per unit volume. The best woods would be oak, hickory and black locust. Yellow-poplar, silver and red maple are not as dense and will provide much less heat. On the other hand, they are great woods for starting a fire.
- Freshly cut wood contains a lot of water. Seasoned wood refers to wood that has been given the time for some or all of that water to evaporate. It usually takes between six and 12 months for wood to cure. If you burn it too soon, when it's still green, most of the heat generated will go into evaporating that water, rather than heating your room.
- Burning unseasoned wood can also be dangerous. Generated smoldering fire can cause a creosote buildup in your chimney. Burning pine logs, with their heavy resin, can result in the same problem. Over time, that buildup can lead to a chimney fire.

- If you're seasoning your own wood, cut it first to a length that fits your fireplace, remove the bark, and split the logs for faster drying. Stack it off the ground in an open area with good airflow. Pallets make a good base for this. Air dry it for a minimum of six months.
- If you are buying your wood from a vendor, ask what tree species the wood comes from and how long it has been seasoned. Wood that has been properly seasoned has a gray, weathered appearance and large cracks in the ends of the logs. Even if you've bought seasoned wood, storing it correctly—stacked off the ground and covered with a tarp to protect it from rain—will prevent the wood from reabsorbing water.
- Be aware, too, of unwanted visitors that can hitch a ride on your firewood. Buy firewood near the location where you plan to burn it. Moving infected firewood long distances (especially ash) can spread invasive species, such as the emerald ash borer, a destructive species that originated in Asia. You likely won't see the adult borers, which are three-eighths to one-half-inch long and very narrow. But larva and eggs could be out of sight inside the logs.

***However you plan to enjoy utilizing firewood this season, stay safe and enjoy their embers.***



## Preventing and Managing Fall Pests in your home

Source: Jonathan Larson, UK entomology assistant professor of extension

As temperatures drop this fall, you may notice more insects around your home. Insects often retreat indoors to escape the cooler temperatures as a part of their overwintering strategy.

As pests mistake your home for a heated pile of rocks, you may see hundreds, even thousands, of insects around your home this fall and winter. The most common autumn home invaders you may see are multicolored Asian ladybeetles and the brown marmorated stink bug. Brown marmorated stink bugs tend to be the first invader with the multicolored Asian lady beetle following about a month later. The lady beetle is sometimes called the Halloween beetle for its coloration

and the fact that people usually start to notice them in October.

While cooler temperatures have begun, you still have ways to pest-proof your home before pests mass exodus to warmer hideaways.

Inspect the exterior of the property and look for gaps in windows and doors, holes in screens, openings in caulk or other sealants and fix them. Without these easy entry points, insects have a tougher time coming inside.

Pesticide applications outside the home may also provide some relief but timing is crucial. When using pesticides, focus on doors, windows, utility openings and banding around the foundation.

Check the pesticide's label to make sure you can apply it to the necessary areas.

Since the primetime for pesticide application has passed, if you see clusters of pests on the exterior of your home, you may also spray them with soapy water to kill them before they start squeezing their way inside.

Once the pests have come into your home, it is best to manage them simply by vacuuming or sweeping them up for disposal. Interior pesticide applications are usually unnecessary, especially "bug bomb" type applications which usually don't reach the hiding spots of overwintering pests.

# Farm Preservation Seminar



**WHEN:** Thursday, January 16, 2025

**WHERE:** Environmental Education Center, 1261 Race Track Rd., Alexandria, KY 41001

**TIME:** 6:00pm – 8:30pm (box meal provided with rsvp)

**RSVP:** Call (859) 635-9587 or email: [ccd@campbellkyconservation.org](mailto:ccd@campbellkyconservation.org) with rsvp by January 13 for box meal.

**GUEST SPEAKER:** Attorney Bill Wilson

**PROGRAM:** Wills, trusts, easements, and tools for farm preservation

8350 E Main Street, Alexandria, KY 41001  
(859) 635-9587  
[www.campbellkyconservation.org](http://www.campbellkyconservation.org)





# Ionophore Toxicosis in Beef Cattle - Frequently Asked Questions

Dr. Michelle Arnold – DVM, MPH UK Ruminant Extension Veterinarian



## Ionophores - what are they and why are they used?

Ionophores are feed additives utilized in the beef industry since 1975 as growth promoting agents and for control of coccidiosis. The approved ionophores for use in cattle in the US include monensin (Rumensin® - Elanco Animal Health; Monovet®90 - Huvepharma), lasalocid (Bovatec® - Zoetis) and laidlomycin propionate (Cattlyst® - Zoetis). Although all ionophores act similarly, this article will focus primarily on monensin as far more information is available due to its longstanding and widespread use in the beef industry.

Technically, monensin is a “monovalent carboxylic polyether ionophore antibiotic” produced by the fungus *Streptomyces cinnamomensis*. Ionophores are so named because they carry (the Latin root “phor” means carry) “ions” across normally impervious biological membranes, leading to disruption of normal cellular functions and cell death. When properly fed, ionophores beneficially alter the normal rumen microflora (bacteria, protozoa and fungi), resulting in increased efficiency of energy metabolism and improved nitrogen metabolism. In addition,

monensin changes the ratio of volatile fatty acids in the rumen, increasing propionic acid production and reducing butyric and acetic acids, a change that ultimately provides more energy through increased production of glucose. Monensin is specifically labeled in beef cattle for 1) improved feed efficiency in mature beef cattle and cattle fed in confinement for slaughter; 2) increased rate of weight gain in stockers, feeders and replacement heifers; and 3) the prevention and control of coccidiosis in all classes of cattle (except veal calves) caused by *Eimeria bovis* and *Eimeria zuernii*. In addition to its label claims, feeding monensin to cattle is known to reduce the incidence of bloat, rumen acidosis, and acute respiratory distress syndrome. More information on the use of Rumensin in beef cattle may be found at the following link: <https://farmanimal.elanco.com/us/beef/products/rumensin> .

## Is ionophore intoxication (poisoning) a frequent occurrence?

Not at all! Ionophores are considered safe and effective when used in the approved species receiving the recommended amounts per label directions. Monensin has a relatively

wide margin of safety in cattle after a short acclimation period to the drug. Poisoning mostly occurs either from accidental contamination of feed and feed supplements for the wrong species (horses, for example) or errors in feed mixing or product selection resulting in excessively high concentrations in the diets of cattle. At high doses, ionophores affect the heart and skeletal muscle cells, causing cellular degeneration and death. An overdose may cause symptoms ranging from anorexia to severe heart and skeletal muscle damage or sudden death. There is no antidote or specific treatment for ionophore toxicosis except general supportive care. Of primary importance is the recognition of the clinical signs in multiple animals within a group of cattle as potentially feed-related, and to remove suspect feeds or minerals until testing can confirm or deny exposure.

What are the maximum approved feed concentrations of monensin for different classes of beef cattle?

Confusion can easily arise when looking at dosages and units used for ionophores. In general, feedlot cattle dosages are given in grams monensin/ton of complete feed (g/ton) since feedlot cattle in



confinement are fed a total ration delivered daily. Feedlot cattle should receive 5-40 grams monensin/ton of complete feed to provide 50-480 mg monensin per head per day. The pasture or dry lot cattle dosage is 50-200 mg monensin per head per day. The methods used to deliver the ionophore include mixed in as a complete feed, mixed and used as a top dress, or offered "free-choice" in a loose mineral, protein or mineral block form. The label concentrations may be expressed in grams/ton or parts per million (ppm) and may include additional instructions to mix the drug with grain.

### **What are the symptoms of an ionophore overdose?**

In cattle, the onset and severity of symptoms depends on the animal's weight, the amount consumed and if this was the animals' first time to consume feed containing an ionophore. Symptoms may develop quickly or may be delayed for days to weeks after exposure and include:

1. Sudden death; cattle are found dead with no symptoms noted previously;
2. Feed refusal, reduced feed intake or complete anorexia (off feed), usually within 24 to 36 hours after consuming a high dose (this is considered the most consistent symptom observed); water intake may also be negatively affected;
3. Dullness, lethargy, depression;
4. Diarrhea, signs of abdominal pain (24-48 hours post-consumption);
5. Weakness, ataxia (stumbling, incoordination, loss of balance), muscular stiffness (associated with higher dosages), muscle tremors;



**Heart and lungs from a cow with heart failure due to ionophore toxicosis. The lungs have a wet appearance compatible with pulmonary edema. Photo courtesy of Dr. Jennifer Janes, UKVDL.**

6. Difficult, rapid and/or labored breathing, especially with higher dosages;
7. Recumbency (Down) and death within 3 to 14 days of ingestion of the contaminated feed but potentially 30 days or more after poisoning;

Cattle that appear to recover from the initial overdose may develop heart failure due to the death of heart muscle cells. Heart failure looks similar to pneumonia with difficult, labored breathing due to fluid buildup in the lungs and calves may die suddenly if exercised or stressed. Deaths and/or poor performance can occur for extended periods after exposure depending on the severity of the heart damage and scarring of the heart muscle. Producers with death losses due to a known mixing error should delay filing insurance claims for at least 30 days after a deadly exposure. In addition, the Food Animal Residue Avoidance Databank (FARAD)

should be contacted ([www.FARAD.org](http://www.FARAD.org)) by a veterinarian for meat withholding information to determine when the remaining animals may be legally sold.

### **How much monensin is required for intoxication?**

The adverse effects of monensin for cattle and other species are well-documented and known to be dose dependent. In addition, the greatest risk of poisoning occurs in cattle not acclimated to an ionophore-containing ration. The monensin LD50 for cattle (the amount of monensin expected to cause the death of 50% of exposed animals) is not firmly established but has a published range by the manufacturer of 21.9-35.8 mg monensin/kg BW (Elanco, 1978). Cattle that survive an acute overdose will generally develop anorexia for several days following the incident so repeated daily intake of a high level of monensin is unlikely. However, the presence of a toxic amount of monensin in feed does not deter consumption when it is first offered.

### **How much lasalocid does it take for intoxication to occur?**

There is relatively little information regarding the toxicity of lasalocid. The recommended dose is 1 mg lasalocid/kg BW and clinical signs of anorexia and diarrhea develop at 10 -25 mg/kg BW. Deaths from lasalocid have occurred at 50 mg/kg BW and above. At 50-100 mg/kg BW, muscle tremors have been noted within 3 hours of a toxic dose. Lasalocid deaths occurred between 2-22.5 days after a 50 mg/kg BW dose and within 1-2 days after a 100 mg/kg BW dose.

**(continued on page 6)**

# Ionophore Toxicosis in Beef Cattle - Frequently Asked Questions

(continued from page 5)

## How much laidlomycin does it take for intoxication to occur?

The Freedom of Information (FOI) summary for laidlomycin (NADA 141-025, 1994) provides some toxic dosage information for laidlomycin in cattle. Cattle offered a dosage 10-50X higher than the approved dosage developed anorexia within 12 hours of the first dose, profuse watery diarrhea within 24 hours of the first dose, weight loss, decreased to absent rumen motility, slow heart rate by day 3, and depression. One animal died four days after the last dose due to cardiac (heart) muscle damage.

## How is ionophore toxicosis diagnosed?

A full postmortem examination or "necropsy" at a veterinary diagnostic laboratory is recommended. Cattle that die quickly within the first few days after an overdose may not have obvious abnormalities on necropsy that can be seen with the naked eye but the damage to the heart muscle cells can be seen microscopically. Typical findings include heart and skeletal muscle degeneration that look like pale or yellow areas within the muscle. Secondary problems that develop from heart failure such as wet, heavy lungs, and an enlarged, pale liver are frequently found. In addition to necropsy, samples of the suspected feeds and all feed labels and delivery tickets should be collected and submitted for ionophore analysis. Samples should be taken of all sources of feed and mineral as soon as a problem is suspected and, if possible, from the exact location where the animals were fed. Ionophore intoxication usually involves a recent change in feed or mineral supplementation and generally affects more than one animal. This "change in feed" may be a new batch of feed delivered,

new ration formulation, new method of mixing, same ration fed to new group of animals, same ration made by a different feed mill, same ration but in a different form (such as pelleted), or new bag of minerals offered. Unfortunately, samples of feed taken for testing may not represent what the cattle actually ate, especially in cases of incomplete mixing of ingredients or if the suspected feed was from the bottom of the feed bin and new feed has been delivered. It is imperative to interview everyone involved in feeding and mineral supplementation for the past week. Ask what was fed and when, and if any feed refusal was noticed or unusual amount of feed was left in the bunk. Gather as much evidence as possible, fully document this information, and provide it to the veterinary diagnostic laboratory to help guide the investigation. Although it is nearly impossible to determine individual monensin exposure, the heavier and more aggressive animals tend to consume the largest amount of feed and receive the highest doses.

One consistent mistake made by cattle producers is offering a medicated mixing mineral to cattle free-choice. "Mixing minerals" containing ionophores are designed to be mixed in at least 1 pound of non-medicated feed before offering to cattle daily to control intake. In addition, the label clearly states cattle should receive no more than 100 mg/head/day contained in not less than 1 pound of feed for the first 5 days of feeding. "Free choice" products, on the other hand, are formulated specifically to limit intake and reduce the risk of overconsumption. The feeding directions on the label should be followed carefully and all cautions

observed. Cattle can eat enough medicated mineral to cause intoxication, especially when offered concurrently with ionophore-medicated feeds. The potential also exists for overconsumption of monensin when a new bag of medicated mineral is offered if cattle are salt-deprived, either due to prolonged periods without access to minerals or if the available mineral has hardened due to excess moisture and is difficult to consume. Additionally, excessive rain on exposed mineral can dissolve and leach away salt, increasing the concentration of the remaining ionophore. Careful use of the correct product, reading label ingredients and recommendations, and feeding in weather-protected feeders will help prevent problems.

## Will analysis of rumen contents for ionophores prove an overdose?

Definitive diagnosis of ionophore toxicosis is not a simple task. Diagnosis is based on a history of exposure to an excessive dosage of ionophore and either sudden death or evidence of heart damage and failure on necropsy. The ionophore concentrations in rumen contents and other tissues are difficult to interpret and, if several days passed between exposure and death, concentrations can be too low to detect. Information about when the animal last ingested monensin and prior daily monensin intake are necessary to interpret the data. Otherwise, the presence of ionophores simply proves it was consumed but does not confirm an overdose.



### What if all findings point to ionophore toxicosis but no overdose is found?

One complicating factor that is poorly understood is the interaction of monensin with other compounds (such as tiamulin, oleandomycin, chloramphenicol, erythromycin, sulfonamides, or furazolidone) that can result in clinical monensin toxicosis, despite using the feed additive within the approved range. One hypothesis proposed to explain this increased toxicity is certain antibiotics may delay clearance of monensin by the liver, resulting in its accumulation to toxic levels. In an unusual case published in 1999, macrolide antibiotic residues found in dried distiller's grains within the feed appeared to affect the otherwise safe levels of monensin, leading to clinical ionophore poisoning. In any case, it is critical to obtain a thorough history regarding all other drugs the animals received concurrently with the suspect feed to make this diagnosis.

#### Important take-home points:

1. The greatest risk for intoxication is when cattle receive a feed containing an ionophore for the first time because the rumen microflora are not adapted to the new ingredient. Many products containing monensin require an acclimation period during which cattle should receive no more than 100 mg per head per day for the first 5 days of feeding.
2. Feed ingredients must be monitored when they are delivered and initially fed, especially when a ration change has been implemented. Rapid recognition of anorexia and diarrhea within 24 hours of the introduction of a new feed or mineral, followed by the prompt removal of the new feed may help avoid more severe consequences and losses.
3. Implement standard operating protocols for feeding cattle on the farm to reduce the risk of mistakes. Employee training is essential. Do not assume that employees new to feeding cattle know the differences in feed ingredients and the importance of correctly measuring them. Communicate what employees need to do, why it is important, and then follow-up, follow-up, and follow-up to ensure it is done correctly.
4. Thorough mixing is necessary to ensure the ionophore is evenly distributed throughout the feed. In addition, minimizing the sorting of feed ingredients by cattle is critical to ensure consistent intakes since cattle will pick out (or "sort") the ingredients they like best and eat those first if given the opportunity.
5. When offering feed containing ionophores, make sure a free-choice medicated mineral is not available at the same time.
6. Follow label mixing directions for correct drug delivery when using a medicated mixing mineral rather than offering it free-choice.
7. It is the producer's responsibility to read the feed label ingredients to ensure purchase of the correct product prior to offering it to cattle

In summary, ionophores are an excellent supplement in beef cattle and very safe when fed appropriately according to label directions. There are other possible causes of symptoms resembling ionophore toxicosis in cattle such as from consumption of cardiotoxic (heart damaging) plants (Cassia occidentalis or Coffee senna, Taxus spp., some milkweed species, white snakeroot, mountain laurel, and others), gossypol, and selenium-toxicosis or deficiency (nutritional myopathy) that cause skeletal and cardiac muscle degeneration and necrosis. Work with your veterinarian to arrive at an appropriate diagnosis.

#### Example of Mixing Instructions for a Medicated Feed Supplement:

"Feed at rate of 440 ppm monensin mixed in 0.45 kg of feed"

Conversion: 440 mg monensin/kg supplement \* 0.45 kg/pound

= 200 mg monensin in 1 lb feed

The Electronic Code of Federal Regulations regarding all types of drugs in animal feeds may be found at the following website: [https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=1219f1e875dbdd97d2eed1d4e2069116&mc=true&n=sp21.6.558.b&r=SUBPART&ty=HTML#se21.6.558\\_1311](https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=1219f1e875dbdd97d2eed1d4e2069116&mc=true&n=sp21.6.558.b&r=SUBPART&ty=HTML#se21.6.558_1311)

## Getting the Most Out of Your Stockpiled Grass

Dr. Chris Teutsch, UK Research and Education Center, Princeton

**S**tockpiling tall fescue is the most economical way to feed cows during the winter months. Once stockpiled growth has accumulated, how you choose to utilize it can dramatically impact how many grazing days you get per acre. Research in Missouri showed that giving cows access to only enough forage for 3-days versus 14-days resulted in a 40% increase in grazing days per acre. The following tips will help to get the most out of your stockpiled forages.

### **Graze pastures that contain warm-season grasses first.**

Although we often like to think of pastures as monocultures, they are often complex mixtures of cool- and warm-season grasses, legumes and weedy forbs. If pastures contain warm-season grasses, use these first since their quality will decline rapidly as we move into winter.

### **Graze pastures containing clover next.**

We are always happy to see clover in pastures. However, in a stockpiling scenario it does not hold up to freezing and thawing as well as tall fescue. So graze grass-clover mixtures before pure stands of tall fescue.



Figure 1. Strip grazing stockpiled grass can extend grazing by as much as 40%.

### **Save pastures with primarily tall fescue for later grazing.**

Tall fescue is by the best grass for stockpiling in terms of maintaining its nutritive value as you head into winter. So graze pure stands last.

Strip graze tall fescue. At this point in time, strip grazing is probably the most important tool that you have for extending grazing. As mentioned above, limiting access to stockpiled forage can significantly increase grazing days per acre. Strip grazing

usually starts at the water source and then uses a single strand of electrified polywire to allocate only enough forage for the predetermined time period. It could be 1, 2, 3, or more days. The shorter the time period the better utilization you will get. Since pastures are not actively growing during the winter months, you can start at your water source and no back fencing is needed.

**Bonus Tip:** When strip grazing, never take your forward fence down

## Training Animals to Electric Fencing

- Expose animals in a secured area
- Setup temporary fence around perimeter
- First experience should be safe, but memorable
- Usually trained in 1 to 2 days





until the back fence (new one) is up. If you do, the cows will be on the other side of the pasture!

You will need the following items to strip graze with:

1. Two reels with polywire with dual purpose handles
2. Temporary fence posts, one every 25 or 30 feet depending on the terrain
3. A small solar charger if you do not have ready access to an existing electric
4. A temporary grounding rod for the solar charger
5. A good fault finder to check your voltage.
6. Cattle trained to electric fence! If your cattle are not used to electric fencing and polywire, it is essential to train them prior to strip grazing.

To many producers that have not stripped grazed, the idea of moving a temporary fence two or three times a week or even once a week can seem overwhelming. However,

once you are set up it really goes pretty fast and the pay back is huge—a free day of feed every time you move the fence. Is it less work than feeding hay? Probably not less, but just different and the pay back is much better!

**Stretch pasture with hay.** In most cases, stockpiled pastures will be higher in forage quality than most of the hay that we make. Feeding some hay while grazing stockpiled pasture can help stretch your remaining pasture and at the same time the stockpiled or winter annual pasture can act as a supplement for the lower quality hay.

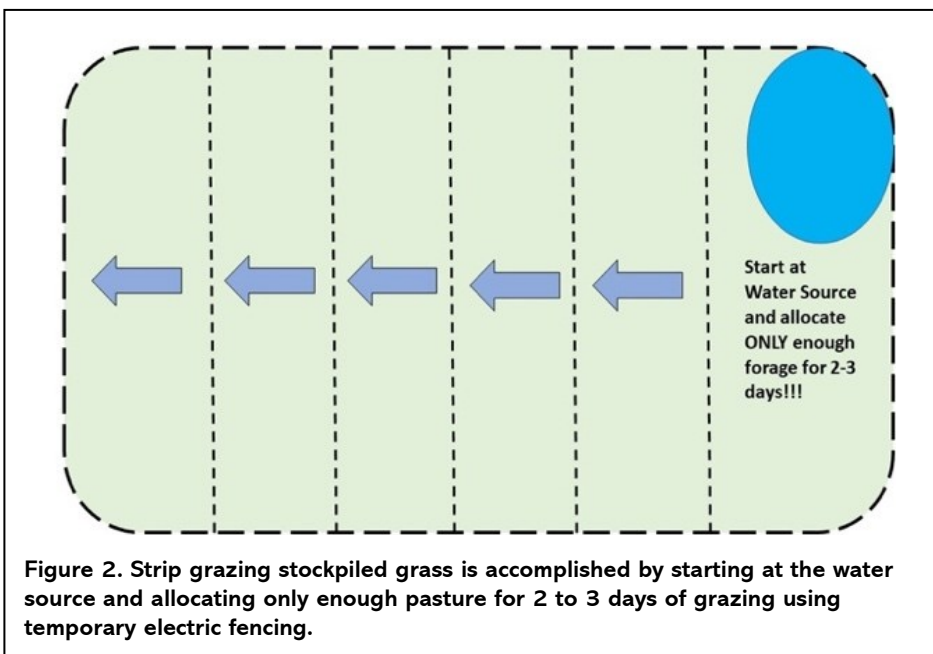
The last thing that I want to mention about utilizing strip grazing is that how often you move the fence needs to fit your schedule. Many producers work off the farm and it is dark when they leave and dark when they get home. So, for them it makes sense to move the fence once a week on Saturdays or Sundays. It is important to remember that grazing systems need to benefit not only the pasture and cows, but also you!



## State Apiarist Office Hours!

Starting in January, Dr. Amanda Skidmore – the Kentucky State Department of Agriculture State Apiarist, will be hosting a monthly zoom meeting open to anyone that would like to participate. *This will be a way for her to communicate important beekeeping related information and an opportunity for you to ask her questions!* The first meeting will be Thursday, January 23, 2025 from 12pm EST/11am CT. If you would like to participate, please fill out the google form linked here and she will add you to her email list where you will be able to sign up for the meetings!

Sign up here: <https://forms.gle/hwpyX1giH1Wd2Gmv9>

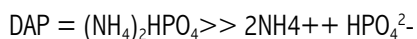
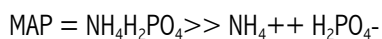
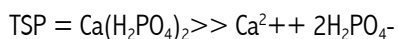


## Triple Super Phosphate (TSP, 0-46-0): A Good Source of P Nutrition

Dr. John Grove, UK Extension Soil Specialist

Triple super phosphate (TSP, typically 0-46-0) is reemerging as a dry fertilizer P source. This calcium phosphate material was widely used post WWII, until the early 1970's, when technology for monoammonium and diammonium phosphate (MAP, typically 11-52-0; and DAP, typically 18-46-0; respectively) manufacture was widely adopted (Englestad, 1985). The half century of MAP/DAP dominance means that TSP is no longer familiar to growers, and this has resulted in several questions.

These phosphate fertilizers all readily dissolve in moist soil as shown below:



With fertilizer granule dissolution, different soil chemical reactions do occur, depending on the fertilizer material. The initial pH near the dissolving TSP or MAP granule is acid, between 1.5 and 3.5, because the  $\text{H}_2\text{PO}_4^-$  ion is itself a moderately strong acid. The low pH may increase the solubility of certain micronutrients (copper, iron, manganese, and zinc). Near a dissolving DAP granule, the pH is much higher, around 8.5, because the  $\text{HPO}_4^{2-}$  ion is a moderately good base. The higher pH may have the opposite impact on micronutrient solubility. The higher pH with DAP may also cause some temporary ammonia ( $\text{NH}_3$ ) release. The initial soil pH condition around the position of granule dissolution lasts from a few days to a few weeks, depending on the soil buffer capacity. The volume of soil influenced by these initial pH conditions is small – the larger impact is the significant soil acidity from the biological



nitrification of the ammonium ( $\text{NH}_4^+$ ) ion in MAP and DAP.

Is the P from TSP as soluble/plant available as that from the ammonium phosphates? The short answer is 'yes'. This answer does depend a bit on bulk soil pH, with TSP and MAP a bit better when the pH is 6.0 and above. In-furrow DAP rates greater than 15 to 20 lb N/acre (need to consider crop species, row width, soil pH, soil texture, application rate) can cause ammonia injury to seeds/seedlings in high pH/calcareous soils. Differences in P source availability to plants are small compared with differences caused by other P management practices, especially placement (Havlin et al., 2014).

One question I've had is whether the calcium in TSP is a "problem". An application of 100 lb TSP per acre delivers 46 lb  $\text{P}_2\text{O}_5$  and 13 lb Ca per acre. Against background extractable soil Ca levels between 2000 and 6000 lb per acre, additions of calcium phosphate fertilizer cause negligible increases in soil Ca levels. These Ca additions will not interfere with potassium (K) and magnesium (Mg) nutrition.

What about rate, placement and timing of TSP, relative to the ammonium phosphates? Given that P availability is equal, rates are

based simply on the  $\text{P}_2\text{O}_5$  content of the TSP, which can range from 44 to 52%, but is typically 46%. Placement, whether surface, surface-incorporated, or banded, will deliver P nutrition equivalent to the ammonium phosphates. Are there differences in the timing of TSP and the ammonium phosphates? Not in terms of P nutrition to the crop, though soil differences in P fixation/clay

mineralogy and soil pH may drive some subtle short-term P fixation differences. Considering seasonal decision-making, MAP or DAP might be favored over TSP for fall applications to winter barley, canola, wheat and rye, as well as the cool season grasses (fescue, orchard grass) – crops that can use the fall applied N. Fall application of TSP might be favored for next spring's crop of corn and soybean, where fall applied N from MAP or DAP is more likely to be lost/less efficient. In the spring, I'd favor TSP over MAP or DAP for direct application ahead of full-season soybean (which doesn't need the N in MAP/DAP). Corn can benefit from a synergism between the ammoniacal N and phosphate often occurring after spring applied DAP or MAP.

In summary, TSP management is about the same as that for DAP, MAP and other similar fertilizer materials (e.g. MES, etc.), though there are situations where one or the other might be favored. TSP is indeed a good source of P nutrition.

### References:

Englestad, O.P. (ed.). 1985. Fertilizer Technology and Use, 3rd ed.. Soil Sci. Soc. Am. Madison, WI.

Havlin, J.L., S.L. Tisdale, W.L. Nelson and J.D. Beaton. 2014. Soil Fertility and Fertilizers, 8th ed. Pearson, Inc. Saddle River, NJ.



## Winter Safety!

Brandon Peloquin - National Weather Service Wilmington, OH  
Jane Marie Wix - National Weather Service Jackson, KY

Wintertime can bring a wide range of hazards, whether it be exposure to the cold (for you and your animals), slick surfaces and roads that can lead to accidents and falls, or fires resulting from the improper use of heaters. Hundreds of people are injured or killed each year as a direct result of winter weather.

Here are some tips to remember when winter turns especially harsh:

- Stay dry to stay warm! Wet clothes result in much faster heat loss.
- Wear multiple layers. Wool keeps you warmer than cotton because wool fibers trap air pockets and when wool is exposed to damp conditions, it wicks moisture away from your skin and helps keep you dry.
- Cover everything you can! At least half your body heat can be lost if your head isn't covered.
- Avoid overexertion, such as shoveling heavy snow, or walking in deep snow. The strain from the cold and the hard labor may cause a heart attack. Sweating could lead to a chill and hypothermia.
- Remember the animals! - make sure they have access to melted water, plenty of food, and shelter to keep them protected.
- Stay informed on the latest weather forecast. All Kentucky National Weather Service offices have a phone line the public can call to get a weather forecast for their areas. Also, NOAA Weather Radios are specially built radios that only play a recorded forecast and other weather information. These can be purchased in many stores.

It's also important to know the signs that someone is getting too

cold. Hypothermia is a medical emergency that occurs when your body loses heat faster than it can produce it. Confusion, shivering, difficulty speaking, sleepiness and stiff muscles are all signs of hypothermia and signs that medical attention is needed - call 911 immediately! To warm someone up who is showing signs of hypothermia, lie close to the person and cover both of you with thick blankets. The hotter you get, the more warmth you can give to the other person. Frostbite is another medical emergency that causes damage to the body's tissue (mainly on extremities such as hands and feet, or any place that is unprotected) due to blood vessels

diverting blood to other parts of the body to help keep your vital organs warm. This will cause the affected area to become frozen, and can be a very dangerous situation, especially since it becomes numb and the victim can be unaware of its severity.

Finally, even though winter will often bring cold and snow, occasionally warm spells in the winter can lead to thunderstorms or flooding. Stay up to date with the latest weather forecasts to know what weather hazards or threats could impact you and your family this upcoming winter.

For more information visit: <https://www.weather.gov/safety/winter>

## BEEF MANAGEMENT WEBINAR SERIES

If you are interested and would like to be registered, send an email to [dbullock@uky.edu](mailto:dbullock@uky.edu) with **BEEF WEBINAR SERIES** in the Subject line and your **NAME** and **COUNTY** in the Message. You will receive an invitation with a **Zoom Link** and **Password** the morning of the presentation.

**All Sessions begin at 8:00pm ET / 7:00pm CT**

January  
**14**

**Important Traits for Bull Selection in Kentucky**

Dr. Matt Spangler, Professor, University of Nebraska

February  
**11**

**Marketing Opportunities for the Spring**

Dr. Kenny Burdine, Professor, and Kevin Laurent, Extension Specialist, University of Kentucky

March  
**11**

**Preparing for a Successful Spring Breeding Season**


Dr. Les Anderson, Extension Professor, University of Kentucky

April  
**8**

**Health Update and Internal Parasite Field Study Results**

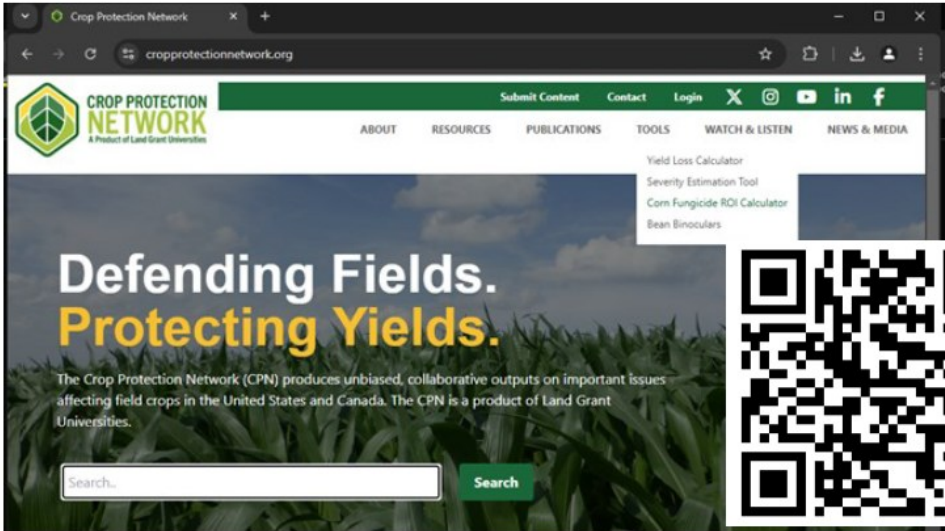
Dr. Michelle Arnold, Extension Veterinarian, and Dr. Jeff Lehmkuhler, Extension Professor, University of Kentucky

If you have any questions or need additional information please email [dbullock@uky.edu](mailto:dbullock@uky.edu). If you are already registered you will get a Zoom invitation the morning of each session with the link and password.

 Martin-Gatton  
College of Agriculture,  
Food and Environment

# A New Tool to Help with Corn Fungicide Decisions in 2025

Dr. Kiersten Wise, Extension Plant Pathology



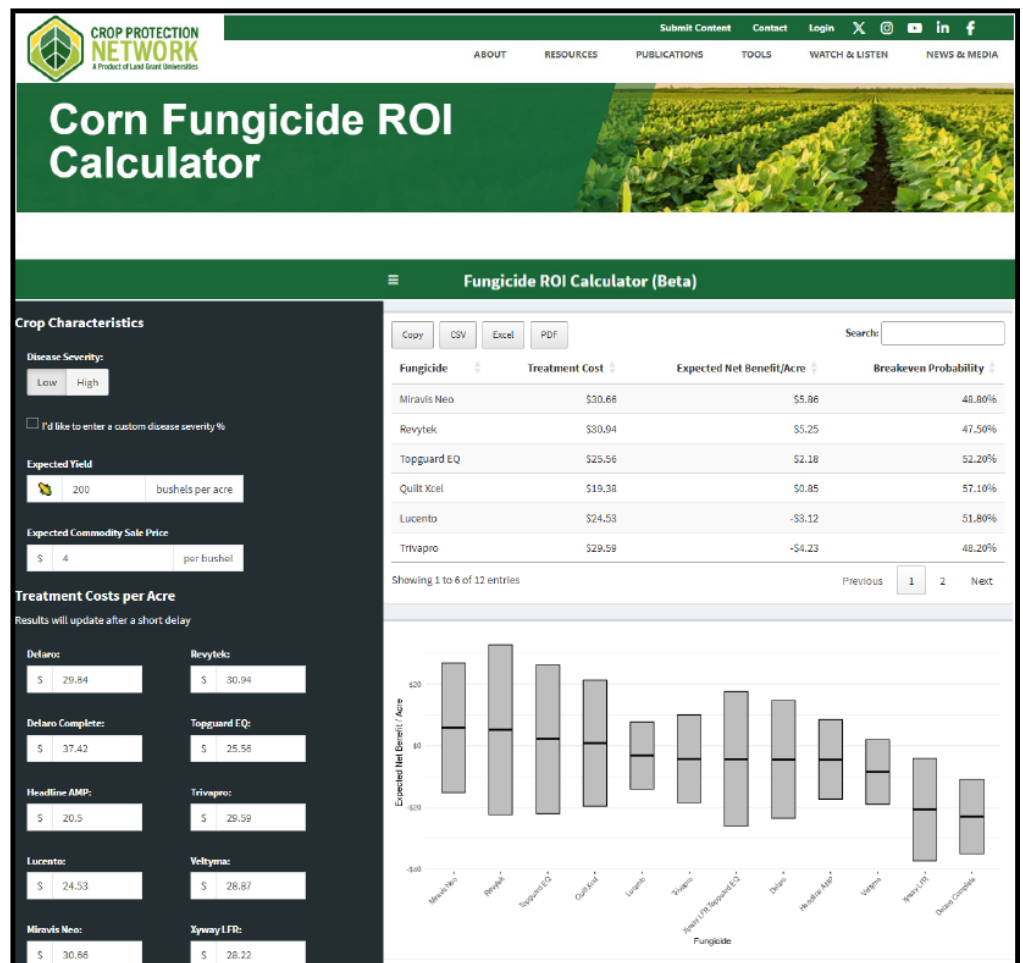
and the breakeven probability of specific products and expected yields, based on robust fungicide data sets. Results are based on a single fungicide application that occurs at tasseling/silking (VT/R1). The calculator will be updated annually with additional University data sets, improving its prediction accuracy and relevance over a broad geography. For questions on the calculator, contact Kiersten Wise, Extension Plant Pathologist at [Kiersten.wise@uky.edu](mailto:Kiersten.wise@uky.edu).

Farmers and other stakeholders have a new resource to help them make fungicide input decisions in corn. The interactive Corn Fungicide ROI Calculator is available through the Crop Protection Network website, <https://cropprotectionnetwork.org/fungicide-roi-calculator>. This calculator uses multiple years of University corn fungicide datasets from across 19 U.S. states and Ontario Canada to help predict the probability of a positive return on investment (ROI) for a range of fungicide products and economic scenarios in corn.

The tool, built in collaboration with the Crop Protection Network and the University of Wisconsin-Madison Data Science Institute, has over 1,100 data points and multiple Kentucky trials incorporated into the data set used for analysis. Southern rust and tar spot were prominent diseases in many of the trials included in the data set, which also increases the relevancy to Kentucky farmers, as these are diseases that can be economically important in Kentucky.

The tool can be customized to reflect the user's expected yield, contracted or expected corn pricing, and actual fungicide costs from retailers or industry representatives. These customized numbers are used to calculate real estimates of ROI

**Figure 2. Example ROI calculated for an expected yield of 200 bushels per acre and an expected commodity sale price of \$4/bushel at a range of default fungicide prices.**





## Selling Black Walnuts in Kentucky - 2024

*Renee' Williams, Forestry and Natural Resources - Extension, University of Kentucky*

Black walnuts can be sold to commercial hullers in Kentucky (see Table 1). Bring the whole seed to the huller locations and they will run them through a machine to remove the hulls. They will weigh the walnuts after the hulls have been removed and pay you a specific amount per 100 lbs. Normally, they accept walnuts throughout the fall. However, it is recommended that you contact your local huller prior to gathering nuts.

<b>Table 1. Commercial Huller Operations in Kentucky – 2024</b>			
<i>Huller Operator</i>	<i>City (County)</i>	<i>Phone #</i>	<i>Address</i>
Hertzler, Henry	Bethel (Bath)	606-336-8810	1972 Mt Pleasant Rd., Owingsville, KY 40360
Benneman, Alvin	Campbellsville (Taylor)	270-937-4377	3050 Barney School Rd., Campbellsville, KY 42718
Ottenheim Country Store	Crab Orchard (Lincoln)	606-355-7464	5920 Kentucky 643, Crab Orchard, KY 40489
Yoder, Samuel	Cynthiana (Harrison)	859-588-1211	1013 Salem Pike, Cynthiana, KY 41031
Brubaker, Timothy	Elkton (Todd)	270-265-3970	1201 Miller Valley Rd., Elkton, KY 42220
Coblentz, Tim	Flemingsburg (Fleming)	606-748-2219	1591 Maddox Pike, Flemingsburg, KY 41041
Troyer, Ammon	Glasgow (Barren)	270-590-1943	7675 Oil Well Rd., Glasgow, KY 42141
Cris Miller	Harrodsburg (Mercer)	859-407-9787	855 Mt. Pleasant Rd., Harrodsburg, KY 40330
Grayson County Implement-Paul Young	Leitchfield (Grayson)	270-259-0075	3363 Owensboro Rd., Leitchfield, KY 42754
Byler, Roy	Marion (Crittenden)	270-559-6995	2865 Mt Zion Rd, Marion, KY 42064
Farmwald, Delbert	Monticello (Wayne)	606-348-6281	3521 St Hwy 1009, Monticello, KY 42633
Fisher, Daniel	Mount Sterling (Montgomery)	859-404-1864	908 Gibson Ln, Mt. Sterling, KY 40353
Raber, Roman	Pleasureville (Henry)	502-878-4211	10712 Castle Hwy., Pleasureville, KY 40057

If you need directions, please go to Hammons Products Company's website (<http://www.black-walnuts.com/>) and click on the *Locate a Buying Station* where you will find the hulling locations.

## Campbell County Conservation District Rental Equipment



**Kasco  
Vari-Slice Seeder**

**Cricket/BBI  
Lime Spreader**



**Land Pride Seeder**

**For rental information, contact the district office (859) 635-9587 or email [ccd@campbellkyconservation.org](mailto:ccd@campbellkyconservation.org)**

# Key Changes in the 2024 IRS Publication 225

Kara Schlinke - Kentucky Farm Business Analysis Specialist

Farmers face unique tax challenges due to the specific nature of their work, including income fluctuations, capital expenses, and the need for specialized deductions. The IRS regularly updates its guidelines to help farmers navigate these complexities. For 2024, several important changes to IRS Publication 225, "Farmer's Tax Guide" may have significant implications for farm tax filings. These changes cover a range of topics, from depreciation rules to revised credit opportunities, and each may impact farmers' ability to manage their tax liabilities effectively.

## 1. Increased Section 179 Deduction Limits

The Section 179 deduction, which allows farmers to deduct the cost of qualifying property (such as machinery and equipment) in the year it is placed in service, has seen an increase in limits for 2024.

**What changed?** The maximum Section 179 deduction has risen to **\$1,170,000** in 2024, up from **\$1,160,000** in 2023. The deduction limit begins to phase out after **\$2.89 million** of qualifying property is purchased, which has also increased slightly from the previous year.

Farmers who invest in new equipment or capital improvements can immediately deduct a larger portion of the expense, improving cash flow and potentially reducing taxable income for the year. This benefit is especially helpful for farmers who make substantial investments in machinery or structures to maintain or grow their operations.

## 2. Changes to Bonus Depreciation

Farmers can take advantage of bonus depreciation to recover the cost of certain property faster than

regular depreciation schedules would allow. However, the bonus depreciation rate is set to phase down starting in 2023.

**What changed?** The bonus depreciation rate for **2024** is set at **80%**, down from the previous 100% in 2022 and 2023. This gradual reduction continues over the next few years, with the rate expected to drop to **60%** in **2025** and eventually phase out by 2027.

While farmers can still benefit from accelerated depreciation, the reduced rate means that they will be able to deduct less of their property's cost in the first year. This could result in higher tax liabilities in future years if large purchases are made.

## 3. Revised Eligibility for Qualified Business Income Deduction (QBI)

The **Qualified Business Income (QBI)** deduction allows farmers who operate as pass-through entities (such as sole proprietors, partnerships, or S corporations) to deduct up to 20% of their qualified business income.

**What changed?** There are updates regarding the ability to claim the QBI deduction, particularly for farmers who have income from both agricultural and non-agricultural activities. The IRS has clarified that farmers engaged in farming activities may still claim the full deduction if their taxable income falls below certain thresholds.

This revision is important for farmers who also have income from other sources, as it can help them maintain access to the full 20% deduction. Farmers with diversified businesses should review their eligibility to ensure they're not inadvertently disqualifying themselves from this tax-saving benefit.

## 4. Updates to Farm Income Averaging Rules

Farm income averaging allows farmers to spread out their income from a particularly good year over a period of three years, potentially lowering their overall tax liability.

**What changed?** For 2024, the income averaging rules have been refined to ensure more farmers can benefit from this strategy, particularly those who have fluctuating income due to weather patterns or market conditions.

Income averaging can be especially beneficial for farmers who experience significant year-to-year income swings. By averaging high earnings over several years, farmers can reduce their taxable income in years with higher-than-usual profits, lowering their effective tax rate.

## 5. Revisions to Farm Vehicle Deduction Rules

Farmers often use vehicles for both personal and business purposes, and the IRS provides specific rules for deducting expenses related to farm vehicles.

**What changed?** The IRS has clarified which types of vehicles qualify for deductions and has updated the calculation methods for business use versus personal use of farm vehicles.

Farmers should review their records carefully to ensure they are claiming only the business portion of vehicle expenses. The IRS has also updated the per-mile rate and the limits for depreciation on certain farm vehicles, meaning that farmers who own or lease vehicles may need to adjust their deductions accordingly.

## 6. Expanded Opportunities for Conservation Incentives and Credits

The IRS continues to encourage environmentally friendly practices



through conservation incentives and credits.

**What changed?** New rules make it easier for farmers to claim deductions for conservation efforts, such as implementing soil and water conservation methods, or using renewable energy sources in their farming operations.

Farmers investing in sustainable practices can access additional tax savings, which can offset the costs of these investments. This is particularly relevant for farmers seeking to adopt new technologies or practices aimed at reducing their carbon footprint or improving soil health.

### 7. Clarification of Farm Income Reporting

In recent years, the IRS has been tightening its rules around how farmers report income, particularly in relation to cash accounting versus accrual accounting.

**What changed?** The IRS has provided clearer guidelines on when farmers should report income and expenses under cash basis accounting versus accrual basis accounting.

Farmers who use cash basis accounting (which is often more beneficial for tax purposes) will need to ensure they're accurately reporting income in the year it is received and expenses in the year they are paid. The IRS has also updated rules on reporting crop insurance proceeds and disaster relief payments, which should be closely tracked to avoid errors in reporting.

### 8. Changes to Self-Employment Tax (SE Tax) Exemptions

Farmers are subject to self-employment taxes on their net earnings from farming, but there are certain exemptions available.

**What changed?** There have been updates to the self-employment tax exemption for certain farm workers and farm owners, particularly in cases where farm income is low or where specific income thresholds are not met.

Farmers who qualify for these exemptions could see a reduction in their self-employment tax liability. It's important to review income levels and farm

ownership structure to ensure any available exemptions are applied. By understanding these changes, farmers can better position themselves to take full advantage of available tax-saving opportunities. You should consult with a tax professional to ensure they're applying these new guidelines correctly and maximizing their benefits under the latest tax rules.

Source: <https://www.irs.gov/publications/p225>

**Saturday, January 25, 2024**

# NKHN ANNUAL MEETING & DINNER



2024 MEETING WILL INCLUDE CATERED MEAL WITH LIVE MUSIC FROM THE CHART-TOPPING INDIE COUNTRY ARTIST TRAVIS REID BALL!

Silent Auction to open at 5:00pm and ending at 7:00pm



## Alexandria Fairgrounds

Doors open at 4:30pm

Dress to Impress in your boots and jeans!

Bring your drink of choice if it's not a soft drink or water.

Bring a Friend who is new to the NKHN family, and they will receive a free 2025 Single Membership or 25% off a family membership!

RSVP by January 20, 2025 to reserve your seats

Contact Campbell County Extension office at 859-572-2600

# OFF THE HOOF

## Beef Cattle Timely Tips

Dr. Les Anderson, Beef Extension Professor,  
University of Kentucky



### Timely Tips for Cattle Producers

#### Spring Calving Herd

- Be sure that weaned heifer calves are on a feeding program that will enable them to reach about 65% of their mature weight before the start of the breeding season. Rations should be balanced to achieve gains sufficient to get heifers from their current weight to that “target” weight. Heifers should reach their target weight approximately 30 days before the start of the breeding season.
- Body condition is important, plan an adequate winter program for cows to be at least body condition score 5 (carrying enough flesh to cover the ribs) before the calving and breeding season. This will help them to breed early in the spring. Thin cows should be fed to regain body condition prior to winter. Don't let cows lose weight/condition. Supplementation will most likely be needed. Find low-cost supplemental feeds to meet the nutrient needs of cattle.
- Divide the herd into groups for winter feeding:
  - weaned heifer calves
  - first-calf heifers, second-calvers and thin mature cows
  - the remainder of the dry cows which are in good body condition
  - herd sires

- Begin feeding the lowest quality forage to dry cows which are in good condition during early winter and save the best hay for calving time or for weaned calves.
- Order and number ear tags for next year's calf crop this winter. It is also a good time to catch up on freeze branding and replacing lost ear tags.

#### Fall Calving Herd

- The fall breeding season has started. Breeding can best be accomplished on stockpiled fescue pasture; otherwise, cows with calves should be fed 25-30 pounds of good quality hay or its equivalent. Supplement with grain, if needed, and minimize hay waste. **DON'T ALLOW THESE COWS TO LOSE BODY CONDITION PRIOR TO OR DURING THE BREEDING SEASON.** It is easy to wait too long to start winter feeding.
- If you haven't turned bulls out yet, have a Breeding Soundness Evaluation (BSE) performed on them (even if you used them this spring). A BSE is a risk management tool as BSE's accurately identify infertile bulls.
- Observe performance of bulls during breeding season. Watch cows for return to estrus, if you see several in heat, try to determine the cause and consider changing bulls.

#### General

- Complete soil testing pastures to check for fertility and pH.
- Consider putting down geotextile fabric and covering with gravel in feeding areas before you begin hay feeding to minimize waste of expensive hay. Or, perhaps, construct concrete feeding pads for winter feeding areas.
- Another option to consider for winter feeding is bale grazing. Bale grazing helps spread nutrients across the pasture and can have regenerative effects on your pastures.
- Monitor body condition and increase feed, if needed, for all classes of cattle. It often gets cold in December and the nutrient needs of cattle increase as temperatures fall below their comfort level. Be especially mindful of cold, wet conditions and increase energy availability. Consult your nutritionist to ensure that your rations are meeting the nutrient requirements during stressful weather.

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-- US Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410.





**Martin-Gatton**  
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Food and Environment



**Applications due  
February 1**



# KY Farm Launch Beginning Farmer Training Program



**Launch into your farming journey with accelerated, hands-on farm training, business planning, and customized mentorship**

Our 9-month, in-person program provides customized training to prepare beginning farmers for sustainable, commercial production. Weekly workshops on production, business and market planning, and more are complemented by an individualized mentoring plan tailored to your farming goals.

## **Interested?**

Visit our website for more details & apply:  
<https://bfrdp.ca.uky.edu/>

## **Highlights:**

- Program ‘tracks’ provide hands on production experience in:
  - Vegetable + small fruits
  - Livestock including beef cattle, sheep, goats, + poultry
- 1:1 business + market planning
- Classroom and hands-on learning at UK’s Central Kentucky Farms
- Field trips + training at mentor farms
- Learning in community with your KY Farm Launch cohort
- There is no cost for the program, but space is limited
- Ability to attend weekly workshops from March – Nov is required



# KY Farm Launch Beginning Farmer Training Program

 **Martin-Gatton**  
College of Agriculture,  
Food and Environment

 Kentucky  
**SHEEP & GOAT**  
DEVELOPMENT OFFICE

 **KCARD**  
Kentucky Center for Agriculture and Rural Development

**Our 9-month, in-person program includes weekly in-depth workshops in program 'tracks', including the following topics:**

## **Vegetable + Small Fruits Track:**

Skills to sustainably produce and market a variety of vegetables + small fruit, including:

- Crop Planning
- Soil Health, Compost, + Crop Rotation
- Transplant Production
- Irrigation Management and Fertigation
- Soils + Fertility Management
- Cover Crops + Living Mulch Systems
- Tillage + Cultivation
- Plasticulture + Bare Ground Production
- Biointensive Production Systems
- Seedling + Transplanting
- Season Extension + Greenhouse Basics
- Weed Identification and Management
- Insect Identification and Management
- Beekeeping 101 and Pollinator Resources
- Disease Management
- Pesticide Management
- Harvest Management
- Post-Harvest Handling + Cold Storage
- Processing + Value-Added Products
- Marketing + Customer Retention
- You-Pick and Agritourism
- ...and more!

## **Farm Business + Management – All Tracks:**

- Business Plan Development
- Market Channel Development + Relationship Building
- Management + Operations Plans
- Understanding Profit/Loss, Cash Flow, + Balance Sheets
- Food Safety Considerations + Certifications
- Record Keeping + Farm Income Taxes
- Farm Insurance + Risk Management
- ...and more!

## **Diversified Livestock Track:**

Skills to sustainably raise small beef cattle herds, sheep, goats, + small flock poultry

- Pasture + Forage Evaluation
- Fencing
- Feed Mixing + Ration Development
- Nutrient Management
- Livestock Guardian Dogs
- Stocking for Single- + Multi-Species
- Meat Processing Basics
- Livestock Anatomy
- Parasite Management
- Lambing/Kidding
- Hoof Trimming
- Grading + Quality Assurance
- Genetics + Selection
- Finishing, Processing, + Marketing
- Mobile Coop Construction
- Egg Handling + Safety
- ...and more!

## **Interested?**

Visit our website for  
more details + application:  
<https://bfrdp.ca.uky.edu/>







# 10-MINUTE BEAN SOUP

Servings: Makes 4    Serving Size: 1/4 of recipe    Recipe Cost: \$6.52    Cost per Serving: \$1.63



## Ingredients:

- 1 tablespoon olive oil
- 1 teaspoon minced garlic
- ¼ cup onion, finely chopped
- 2 (15.8 ounce) cans of great northern beans, rinsed and drained
- 1 (14.5 ounce) can diced tomatoes with basil, garlic and oregano
- 1 (14 ounce) can low-sodium vegetable or chicken broth
- 4 cups kale, torn into small pieces
- 1 tablespoon lemon juice
- ½ cup grated Parmesan cheese

## Directions:

1. In a medium saucepan, heat oil over medium heat and sauté garlic and onion for 3 minutes or until onion is tender.
2. Add beans, tomatoes and broth to saucepan. Stir and simmer for 5 minutes. Add kale and cook until tender, for about 2 minutes.
3. Mix in lemon juice and Parmesan cheese just before serving. Optional, garnish with finely chopped fresh basil or dried basil.

## Notes:

Cooked, dried beans may be substituted for canned beans. Using prepared dry beans in place of canned will reduce sodium in this dish. If you can't find diced tomatoes with basil, garlic and oregano, use regular diced tomatoes and add dried versions of these seasonings.

## Nutrition facts per serving:

400 calories; 8g total fat; 2.5g saturated fat; 0g trans fat; 10mg cholesterol; 500mg sodium; 62g carbohydrate; 15g fiber; 4g sugar; 24g protein; 140% Daily Value of vitamin A; 160% Daily Value of vitamin C; 40% Daily Value of calcium; 30% Daily Value of iron.

Source: Caroline Durr, Area Nutrition Agent for Kentucky Nutrition Education Program, University of Kentucky Cooperative Extension Service



Join us for this program...

# HOW TO SELL TIMBER FROM YOUR LAND

- How to Maximize Your Profit
- Timber Sales Contracts
- Best Management Practices While Logging
- Helpful Resources Available to Landowners



## January 30, 2025 7:00 pm

**Environmental Education Center  
1261 Race Track Road  
Alexandria, KY 41001**

**Questions?  
Call the  
Extension Office  
859-572-2600**



**Michelle Simon**  
Extension Agent, Agriculture and Natural Resources



**DJ Scully**  
Extension Agent, Natural Resources and Environmental Education, Agriculture and Natural Resources

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